



**Documents of the Regional Administrative Conference for FM Sound Broadcasting in the VHF band  
(Region 1 and certain countries concerned in Region 3) (2nd session)  
(Geneva, 1984)**

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INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 1-E  
10 April 1984  
Original : English

PLENARY MEETING

Note by the Secretary-General

AGENDA OF THE CONFERENCE

The agenda of the Conference is contained in Resolution No. 896 adopted by the Administrative Council at its 38th session.

The text of the Resolution is attached.

R.E. BUTLER  
Secretary-General

Annex : 1





R No. 896 REGIONAL ADMINISTRATIVE CONFERENCE FOR FM SOUND BROADCASTING IN THE VHF BAND (REGION 1 AND CERTAIN COUNTRIES CONCERNED IN REGION 3)

The Administrative Council,

considering

- a) that the First Session of the Conference prepared a report to the Second Session setting out the technical criteria and methods to be used for planning of the band 87.5 - 108 MHz;
- b) that the CCIR was requested to carry out additional studies on :
  - propagation in extreme super-refractivity conditions and the relationship between propagation over land and over sea (Recommendation AA),
  - propagation in Africa (Recommendation BB),
  - the possibility of improving the immunity of receivers in the aeronautical radio-navigation service to interference caused by FM broadcasting emissions (Recommendation CC),
  - the maximum obtainable suppression of spurious emissions in the band 108 - 137 MHz from broadcasting stations operating in the band 87.5 - 108 MHz (Recommendation DD);
- c) that some of the criteria for compatibility between the broadcasting service in the band 87.5 - 108 MHz and the aeronautical radionavigation service in the band 108 - 117.975 MHz need to be supplemented and possibly revised on a worldwide basis;
- d) that the stations of permitted services will not be taken into account in the planning process;

considering further the results of the consultation conducted by telegram on 10 May 1983;

decides

1. that the Second Session of the Conference will be held in Geneva from 29 October 1984 for a maximum period of 6 weeks;
  2. that the agenda of the Second Session will be as follows :
    - 2.1 to review those parts of the Report of the First Session relating to the items listed in considering b) in the light of the relevant CCIR contributions;
    - 2.2 to prepare an agreement and an associated frequency assignment plan for the sound broadcasting stations in the band 87.5 - 108 MHz on the basis of the Report of the First Session as it might be modified in accordance with decides 2.1, taking account of the need to ensure adequate protection to stations of the aeronautical radionavigation service in the band 108 - 117.975 MHz;
    - 2.3 to adopt transitional procedures for bringing into service the assignments in the plan in order to enable normal operation of stations of other services to which parts of the band 87.5 - 108 MHz are also allocated in accordance with Radio Regulations Nos. 581, 582, 587, 588, 589 and 590, under the conditions specified therein;
    - 2.4 to evaluate the financial impact of the Conference's decisions, in accordance with .
- No. 627 and other relevant provisions of the Nairobi Convention.
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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 2-E

10 April 1984

Original : English

## PLENARY MEETING

### Note by the Secretary-General

#### CREDENTIALS OF DELEGATIONS

1. Under Article 67 of the International Telecommunication Convention, Nairobi, 1982, the delegations sent by a Member of the Union to a conference shall be duly accredited in accordance with Nos. 381 to 387 of the Convention.
2. For ready reference, I hereby transmit to the Conference the text of the aforesaid Article 67 (see Annex).

R.E. BUTLER

Secretary-General

Annex : 1

A N N E X

ARTICLE 67

Credentials for Delegations to Conferences

- 380 1. The delegation sent by a Member of the Union to a conference shall be duly accredited in accordance with Nos. 381 to 387.
- 381 2. (1) Accreditation of delegations to Plenipotentiary Conferences shall be by means of instruments signed by the Head of State, by the Head of the Government or by the Minister for Foreign Affairs.
- 382 (2) Accreditation of delegations to administrative conferences shall be by means of instruments signed by the Head of State, by the Head of the Government, by the Minister for Foreign Affairs or by the Minister responsible for questions dealt with during the conference.
- 383 (3) Subject to confirmation prior to the signature of the Final Acts, by one of the authorities mentioned in Nos. 381 or 382, delegations may be provisionally accredited by the Head of the diplomatic mission of the country concerned to the government of the country in which the conference is held. In the case of a conference held in the country of the seat of the Union, a delegation may also be provisionally accredited by the Head of the Permanent Delegation of the country concerned to the United Nations Office at Geneva.
- 384 3. Credentials shall be accepted if they are signed by the appropriate authority mentioned under Nos. 381 to 383, and fulfil one of the following criteria:
- 385 - they confer full powers;
- 386 - they authorize the delegation to represent its government, without restrictions;
- 387 - they give the delegation, or certain members thereof, the right to sign the Final Acts.
- 388 4. (1) A delegation whose credentials are found to be in order by the Plenary Meeting shall be entitled to exercise the right to vote of the Member concerned and to sign the Final Acts.
- 389 (2) A delegation whose credentials are found not to be in order by the Plenary Meeting shall not be entitled to exercise the right to vote or to sign the Final Acts until the situation has been rectified.
- 390 5. Credentials shall be deposited with the secretariat of the conference as early as possible. A special committee as described in No. 471 shall be entrusted with the verification thereof and shall report on its conclusions to the Plenary Meeting within the time specified by the latter. Pending the decision of the Plenary Meeting thereon, a delegation of a Member of the Union shall be entitled to participate in the conference and to exercise the right to vote of the Member concerned.

- 391 6. As a general rule, Members of the Union should endeavour to send their own delegations to conferences of the Union. However, if a Member is unable, for exceptional reasons, to send its own delegation, it may give the delegation of another Member powers to vote and sign on its behalf. Such powers must be conveyed by means of an instrument signed by one of the authorities mentioned in Nos. 381 or 382.
- 392 7. A delegation with the right to vote may give to another delegation with the right to vote a mandate to exercise its vote at one or more meetings at which it is unable to be present. In such a case it shall, in good time, notify the Chairman of the conference in writing.
- 393 8. A delegation may not exercise more than one proxy vote.
- 394 9. Credentials and the transfer of powers sent by telegram shall not be accepted. Nevertheless, replies sent by telegram to requests by the Chairman or the secretariat of the conference for clarification of credentials shall be accepted.
-

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 3-E  
10 April 1984  
Original : English

PLENARY MEETING

Note by the Secretary-General

IMPROVEMENT OF THE IMMUNITY OF AIRBORNE RADIONAVIGATION  
EQUIPMENT TO INTERFERENCE FROM FM BROADCASTING STATIONS

The abovementioned Report of CCIR Interim Working Party 8/12 was sent to all Administrations in Region 1 (and to Afghanistan and Iran) on 29 July 1983.

R.E. BUTLER  
Secretary-General

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 4-E  
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PLENARY MEETING

Note by the Secretary-General

At the request of the Director of the CCIR, I have the honour to transmit herewith a copy of a Report by CCIR Study Group 10 to the Second Session of the Conference, in partial response to Recommendation DD of the 1st Session of the Conference.

Following further consultation and decisions in CCIR, a new Joint Interim Working Party has been formed which will prepare a further consolidated Report dealing with both Recommendations CC and DD. The Report of this Joint Interim Working Party, after approval by Study Group 8 of the CCIR, will be published as a further Conference document (approximately in June).

R.E. BUTLER  
Secretary-General

Annex : mentioned



INTERNATIONAL TELECOMMUNICATION UNION

## **CCIR**

INTERNATIONAL  
RADIO CONSULTATIVE  
COMMITTEE

# **REPORT**

**TO THE SECOND SESSION OF THE REGIONAL  
ADMINISTRATIVE RADIO PLANNING CONFERENCE  
FOR SOUND BROADCASTING  
IN THE BAND 87.5-108 MHz FOR REGION 1  
AND CERTAIN COUNTRIES  
CONCERNED IN REGION 3**

**Conclusions from SG10; September 1983  
(Rec. DD of the First Session)**

Geneva, 1983



CCIR REPORT  
TO THE SECOND SESSION OF THE REGIONAL ADMINISTRATIVE RADIO  
PLANNING CONFERENCE FOR SOUND BROADCASTING IN THE BAND 87.5 - 108 MHz  
FOR REGION 1 AND CERTAIN COUNTRIES CONCERNED IN REGION 3

REDUCTION OF THE LEVEL OF SPURIOUS EMISSIONS FALLING IN  
THE FREQUENCY BANDS ALLOCATED TO THE AERONAUTICAL SERVICES  
FROM FM BROADCASTING STATIONS

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## **1. Introduction**

The decision of the World Administrative Radio Conference held at Geneva in 1979 to extend the VHF/FM broadcast band to 108 MHz put broadcasting and aeronautical radionavigation services in adjacent frequency bands. That this might lead to problems of interference was recognized in the agenda of the ITU Conference held in Geneva in 1982 to determine the technical constraints to be used in planning the new band, which specifically called for consideration to be given to the avoidance of interference to the aeronautical services. IWP 10/8 was set up in response to Recommendation DD made at this conference.

The report of the Conference (CARR-1-1982) describes the mechanism by which interference can arise and gives conditions which it is thought will avoid interference. Two general types of interference are distinguished. Components radiated from the broadcast transmitter at or near the frequency of the aeronautical service constitutes Type A interference whereas components generated within the aeronautical receiver constitutes Type B interference. In the latter case remedial measures can be taken at the receiver; in the former they cannot.

This Report deals with Type A interference only - Type B interference being the concern of CCIR Interim Working Party 8/12.

## **2. Terminology**

### **2.1 Type A interference**

In the normal operation of broadcast transmitters Type A interference may arise in two ways. First, the broadcast transmitters operated at the same station or in geographical proximity may intermodulate to produce terms in the aeronautical frequency bands; this is termed Type A1. Second, the sidebands of a broadcast transmitter may include non-negligible components in the aeronautical bands; this mechanism, which is designated Type A2, will in practice arise only from transmitters having frequencies near to 108 MHz.

#### **2.1.1 Type A1 interference**

Variously described as "in-band" or "on-channel", caused by spurious emissions (including intermodulation products) from the broadcast transmitter station. This is generally a low-level effect and can be regarded as harmful interference, as defined in the Radio Regulations, in cases where the level is sufficient to affect the performance of avionics receivers. No rejection can be provided at the airborne receiver. Suppression at source, the choice of broadcast assignment, and/or distance separation are the only practical solutions.

#### **2.1.2 Type A2 interference**

Interference to ILS channels near to the 108 MHz band edge due to out-of-band emissions from broadcasting stations operating on carrier frequencies in the upper end of the broadcasting band, approximately within 200 kHz of 108 MHz.

### 3. Type A1 interference

#### 3.1 Aeronautical radio-navigation services at risk

##### 3.1.1 ILS

The aeronautical service which is generally considered to be most at risk is that of the Instrument Landing System (ILS), operating in the frequency band 108-112 MHz. It was decided at the first session of the CARR-FM (Geneva, 1982) that a protection ratio of 17 dB was appropriate against FM broadcast interference; this is 3 dB more stringent than was found necessary for the worst receiver measured in tests carried out in the United Kingdom, the additional margin being provided in order to make provision for multiple interference. The specified minimum field strength for Category I ILS is 40  $\mu\text{V/m}$  or + 32 dB ( $\mu\text{V/m}$ ) so that the maximum permissible level of a radiated intermodulation product (i.p.) co-incident in frequency with an ILS transmission is 15 dB ( $\mu\text{V/m}$ ).

The 17 dB protection ratio referred to above is based on measurements where the interfering signal was frequency-modulated with deviations of 75 kHz and 225 kHz to simulate third order intermodulation. IWP 10/8 endorses the view expressed in the report of IWP 8/12 that future measurements should be based on signals typical of actual broadcast transmissions, such as coloured noise in accordance with Recommendation 559.

Two contributions from the Federal Republic of Germany to IWP 10/8, Documents 10/53 and 10/66, show that protection ratios are critically dependant on the modulation content of the broadcast transmitters and propose that the coloured noise modulation of Recommendation 559 and a set-up frequency deviation of 32 kHz in accordance with Report 796-1 provide realistic test conditions. These two contributions add support to the separate statements in the IWP 8/12 Report, also endorsed by IWP 10/8, that there is a critical worst case condition for unmodulated interfering signals in close proximity to the ISL carrier frequencies and that protection ratios for type A1 interference are not necessarily applicable to type A2 interference.

##### 3.1.2 VOR

Another aeronautical service that may be affected is VOR (VHF Omnidirectional Range) which uses the frequency band 108-118 MHz. Opinion in aeronautical circles is that interference to this service is unlikely to be as critical as that to ILS but this is not reflected in the Conference report which was that the same protection ratio should be used as for ILS pending further measurements. The minimum field strength for the VOR service is 90  $\mu\text{V/m}$  or + 39 dB ( $\mu\text{V/m}$ ) but the service areas are much greater than for ILS, more especially for those having frequency allocations in the 112-118 MHz frequency band.

##### 3.1.3 VHF/Communications

The third aeronautical service is that of VHF Communications in the frequency band 118-137 MHz. The Conference recommendation was again for a protection ratio of + 17 dB and the minimum field strength specified for the service is 75  $\mu\text{V/m}$  (37 dB ( $\mu\text{V/m}$ )).

### 3.2 Intermodulation in a transmission system

When two or more transmission frequencies  $f_a$ ,  $f_b$ ,  $f_c$  ... are combined into one antenna system there is a possibility of intermodulation taking place somewhere in the transmission system. At VHF the intermodulation frequencies which are most likely to cause interference with other services are of the form  $(2f_a - f_b)$  or  $(f_a + f_b - f_c)$  [Wass,1948] because these frequencies remain in the VHF band and are therefore radiated efficiently by the antenna system. They are also more difficult to filter out than those which appear close to the harmonic frequencies. The disposition of these intermodulation frequencies is shown diagrammatically in Figure 1a for the case of three transmitters having equally-spaced frequencies. Figure 1b shows a more general case for unequally spaced frequencies, in this case for  $\Delta$  and  $\Delta/2$ , where multiple intermodulation products need not occur at one frequency, and the number of frequencies with intermodulation products is greater.

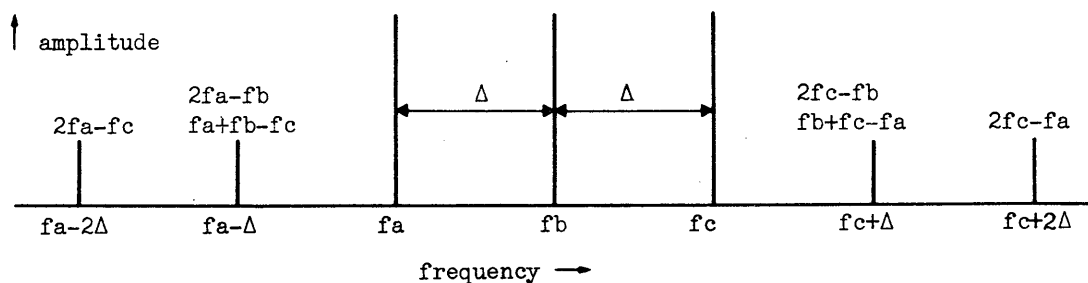


FIGURE 1a - Equally spaced transmission,  $\Delta$

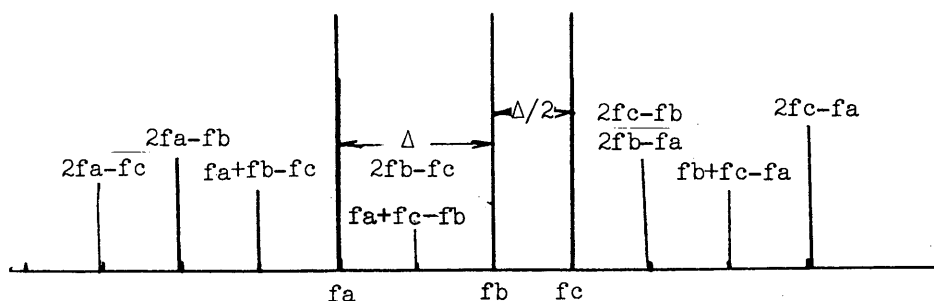


FIGURE 1b - Unequally spaced transmission,  $\Delta$  and  $\Delta/2$

Occurrence of third-order intermodulation products  
at a three-frequency transmitting station

Intermodulation at the transmitting station may take place by either of two distinct processes. By the first process the transmitter combining unit\* may allow a low level of voltage from one transmitter (frequency  $f_a$ ) to reach the output stage of another transmitter (frequency  $f_b$ ) where mixing takes place to produce a frequency  $(2f_b - f_a)$ . The production involves a conversion loss in going from the input level of  $f_a$  to the output level of  $(2f_b - f_a)$ . The conversion loss is dependent on the working conditions of the amplifier, i.e. class B, C or D, the terminating impedances for the mixing products on other relevant frequencies,  $(f_b - f_a)$ ,  $(f_b + f_a)$ , harmonics, etc, and the frequency response of the output circuit at these frequencies. In addition to the conversion loss, power matching between the combiners and the mixing function in the transmitter affects the final levels of the intermodulation products. This factor depends on the electrical length of the connecting feeders between the combiners and the transmitters. With valve transmitters, variations of intermodulation products of up to 10 dB with feeder length have been reported.

Data on various arrangements for combining transmitters, including methods of calculation and measurements on some representative installations, is given later in the report in Annex I.

The second process takes place in the transmission system after frequencies have been combined and may be due to arcing or to the non-linear resistance of metal-to-metal contacts within the feeder and antenna system. In general, however, the levels thus produced are likely to be lower than those produced due to an imperfect transmitter combining unit. The possibility of intermodulation having taken place by the second process can be checked by comparing the levels of products measured in the radiated field with those measured in the main feeders.

When considering levels that are likely to be produced it is necessary to consider (a) the circuit of the transmitter combining unit and its transfer characteristics at all relevant frequencies and (b) the conversion loss in the conversion process. Because of complicated nature of the terminating impedances at the various frequencies, especially in transistorized power amplifiers, where the mixing occurs in a number of combined amplifiers, conversion losses cannot be accurately predicted. Conversion losses for valve transmitters, including matching effects, have been reported as being between 9 and 26 dB, typically 20 dB.

For transistorized amplifiers conversion losses of 6 to 25 dB have been reported, but further investigations are needed.

The above values are based on 1.8 MHz spacing between carriers. Mistuning a tuned amplifier can increase intermodulation products by up to 10 dB. Care must also be taken to ensure the final amplifier has been correctly neutralized.

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\* Alternative terms for transmitter combining unit include transmitter combiner or diplexer, channel combiner, star filter and hybrid filter.

### **3.3 Possibilities and techniques for improving suppression of intermodulation products at broadcast transmitting stations**

Contributions from members of the IWP have shown that it is possible to design and build broadcast transmitting stations that will have intermodulation products suppressed to a level lower than that required by Radio Regulations and that such levels can be maintained over a long period of time. It has also been shown that still lower levels may be obtained at individual stations where the additional cost and effort are justified. It remains to be seen whether these levels can equally be maintained in service.

The ITU Radio Regulations (1982) require that the mean power of an intermodulation product supplied by a transmitter of mean power above 25 W to the antenna transmission line shall be at least 60 dB below the wanted signal and shall not exceed 1 mW. Thus for a transmitter power of 1 kW the highest relative level for the i.p. is -60 dB while for one of 40 kW the relative level must not exceed -76 dB. From Table I-II, it may be seen that old UK stations exhibit i.p. levels 5 dB or more below the ITU requirement and the two new stations achieve even lower levels, at least in the short term. It seems likely that levels at least 10 dB below the ITU requirement can be achieved and maintained in service for transmitters of 25 W or more. For transmitters of powers below 25 W it is believed that no improvement is necessary.

In order to achieve the required levels of suppression of intermodulation products it is necessary to design and engineer the transmitter installation with meticulous attention to detail. In particular, the following aspects have been found to be important.

#### **3.3.1 Combining units**

The required isolation between transmitters sharing an antenna should be calculated taking into account the conversion loss at the transmitter and any attenuation in the combiner of the intermodulation product as discussed in Section 3.3 above.

#### **3.3.2 Antennas**

If transmitters are fed into separate antennas, the mutual coupling between them should be taken into consideration when deciding what additional filters will be required.

If a common antenna is used, one having a large aperture and a relatively lower power density would be expected to have a better linearity than a small-aperture, high-power density antenna.

The antenna construction should take into account the local environment. Materials and finishes should be chosen to minimize the possibility of rectification effects at junctions.

#### **3.3.3 Antenna transmission line**

The use of multiple contacts in a transmission line should be minimized as these may become non-linear with oxidation. Thus a continuous semi-flexible transmission line would be preferable to a rigid, sectionalized line.

#### 3.3.4 Transmitter drives

Any significant coupling between transmitter drives, albeit low level, can give rise to i.p.s which will degrade the overall performance. If a number of drives are mounted close together the electro-magnetic screening should be of high standard. Similarly, if the co-axial transmission lines between the drives and the power amplifiers run together, e.g. in a duct, the screening between the lines should be of a high order; it may be necessary to use double screened cable or feeder having a solid outer.

#### 3.3.5 Position of filter for optimum attenuation i.p.s.

Adjustment of the length of feeder between transmitter and combining unit is necessary to achieve optimum performance.

#### 3.3.6 I.p.s. suppression in solid-state amplifiers

For transmitters with solid-state amplifiers it has been suggested that conversion loss can be increased up to about 25 dB by combining two amplifier stages by means of 90° phase shifting networks [Ku, Erickson et al., 1977].

### 3.4 Conclusions (Type A1 interference)

3.4.1 In Region 1, particularly in Europe, FM broadcast stations with multiple transmitters are usually multiplexed into the same antenna, although in other areas, e.g. in the USA, this is exceptional. The use of multiplexed transmitters can cause difficult cases of spurious emission, viz, third order intermodulation products falling in the frequency band allocated to the aeronautical services (108-137 MHz). Consequently, Footnote 10 to Appendix 8 of the International Radio Regulations specifically applies to FM broadcasting transmitters operating in the band 87.5-108 MHz.

3.4.2 Spurious emission measurements reported by administrations, participating within the IWP, showed wide variations in values. All experiences reported concerned spurious emissions from transmitters operating with less than 50 kW transmitter power. Measurements ranged from about -60 dB to about -100 dB, depending upon transmitter filtering used, age of the systems, and particular installation characteristics. The IWP is of the opinion that considerable difficulties in compatibility may arise if transmitter powers of greater than 50 kW are used, particularly in multiplexed installations.

3.4.3 Recognizing that broadcasters must contribute towards overcoming incompatibility problems between the broadcasting and aeronautical services operating in adjacent bands, the spurious emission limits recommended by IWP 10/8 to the 2nd session of the Regional Broadcasting Conference should be a significant improvement on the requirements of the Radio Regulations.

3.4.4 Although the appropriate spurious emission limits are specified relative to transmitter power, it is important to be able to calculate the limits relative to effective radiated power.

3.4.5 Head Note 4 to Appendix 8 of the Radio Regulations also is specifically applicable to the FM broadcasting service. Tighter spurious emission limits than those specified by Appendix 8 are feasible for the following reasons:

- a) suitable equipment is available;
- b) most transmitter installations have a better performance; and
- c) Some administrations' domestic regulations already stipulate tighter limits.

3.4.6 In Region 2, FM assignments have been in operation up to 107.9 MHz for some time and interference to aeronautical services has been documented. Therefore, taking into account the extension of the broadcast band to 108 MHz in Region 1, the Interim Working Party is recommending more stringent spurious emission limits than those in Appendix 8 of the Radio Regulations for planning purposes in these areas. In particularly difficult situations, it should be feasible to achieve an even tighter value (i.e., a further 10 dB suppression) subject to technical and economic considerations.

3.4.7 Present costs of adding, for example, one separate filter to a transmitter so as to provide an attenuation characteristic of the order of 15 - 20 dB, could range from about \$2000-4000 for 10 kW transmitter outputs, up to perhaps \$10,000 or more of transmitters having 50 kW output, depending upon:

- a) frequency spacing of both nearby or multiplexed transmitters;
- b) geographical proximity (strong signal presence) from other transmitters;
- c) materials used in filter construction; and,
- d) engineering problems associated with the particular installation, combiners, ducting, fittings and tuning can significantly increase this cost.

### 3.5 Recommendations

#### **Recommended reduced levels of spurious emissions**

(Type A1 interference)

Considering the special circumstances within Region 1 and some areas of Region 3, IWP 10/8 recommends that the second session of the Regional Broadcasting Conference use the following limits for spurious emissions for planning purposes in the VHF/FM broadcasting band in cases where type A1 interference in the aeronautical band can be expected.



TABLE I - Levels of i.p.s

Transmitter power kW	Maximum level of i.p.s.	
	ITU requirement	IWP 10/8 Recommendations
0.01	-56 dB	-56 dB
0.02	-59 dB	-59 dB
0.1	-60 dB	-66 dB
0.2	-60 dB	-69 dB
1.0	-60 dB	-76 dB
4.0	-66 dB	-82 dB
10.0	-70 dB	-85 dB
20.0	-73 dB	-85 dB
40.0	-76 dB	-85 dB

The recommendations relate to levels of spurious emissions, in terms of the mean power level of any spurious component supplied by a transmitter to the antenna transmission line, measured after all filters, combiners and multiplexers etc., which may affect the radiated levels of the spurious emissions.

The mean power of spurious emissions from FM broadcasting stations falling in the frequency band allocated to the aeronautical services should not exceed 25  $\mu$ W for transmitter powers up to approximately 8 kW.

The attenuation (mean power within the necessary bandwidth to the mean power of the spurious component concerned) for transmitter powers above approximately 8 kW should be at least 85 dB. (See attached graph (Fig.2) and Table I).

**Note 1** - The above mentioned levels are considered to be realistic for multiple FM broadcasting transmitters radiating from the same antenna and spaced in frequency down to 1.8 MHz.

**Note 2** - Transmitters with an output power in excess of 50 kW are unlikely to be used.

**Note 3** - In difficult cases requiring additional attenuation, particularly for high power transmitters an examination on a case-by-case basis is necessary. An extra 10 dB attenuation is technically possible, but this higher value cannot be recommended as a general limit that can be maintained continuously in all operating conditions of broadcasting service. Economic considerations should also be taken into account.

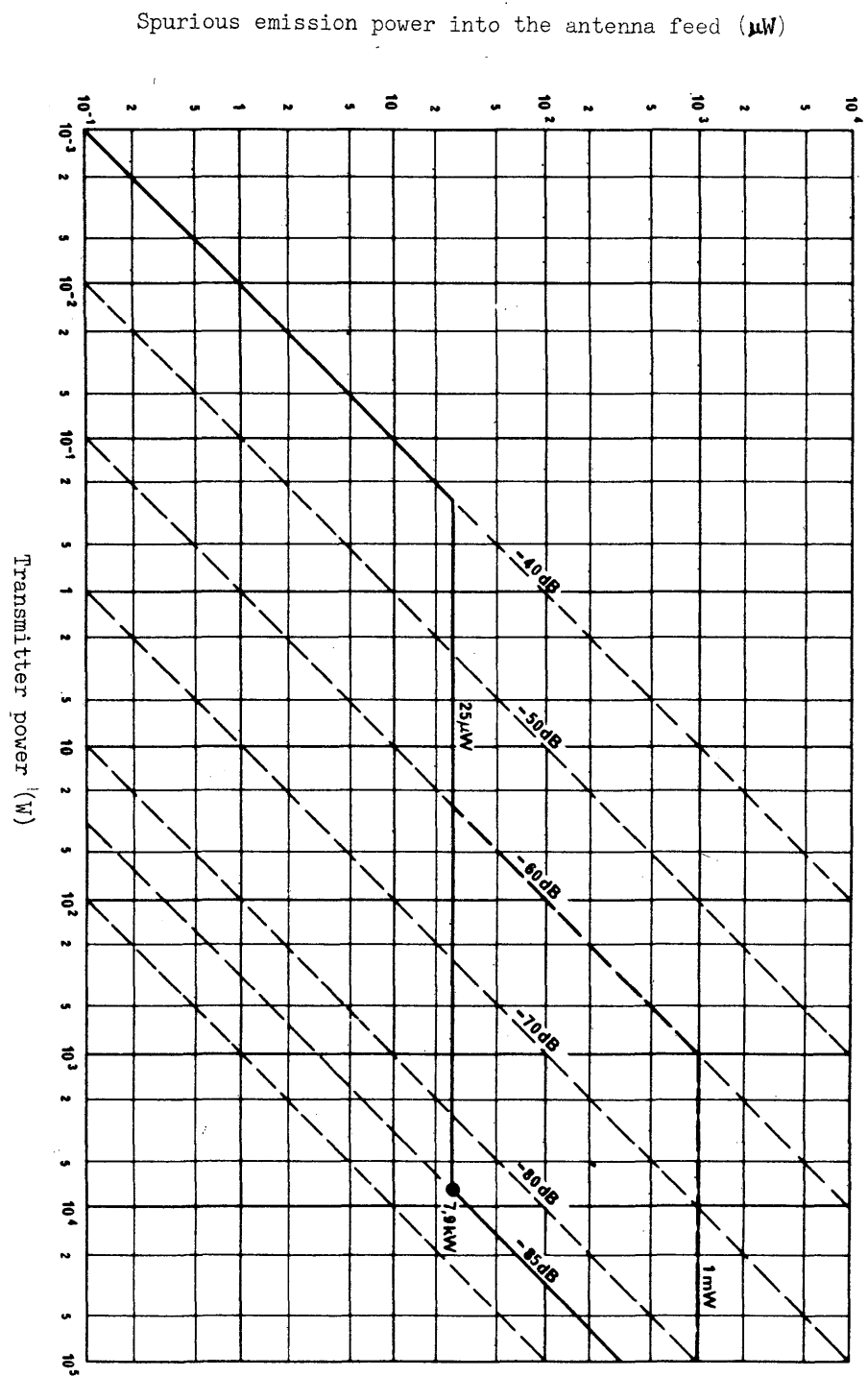


FIGURE 2

#### 4. Type A2 interference

4.1 The limited information available from some administrations concerning the spectral characteristics of FM broadcast emissions is presented in Annex II.

4.2 It was agreed that appropriate protection ratio values for ILS- and VOR-receivers against A2 type of interference are necessary in order that administrations can afford protection for the aeronautical radionavigation service when they assign frequencies in the vicinity of 108 MHz to broadcasting stations. Such protection ratio values are urgently required especially for planning the FM sound broadcasting service in Region 1 and certain countries of Region 3. It is recommended that the protection ratios required for ILS- and VOR-reception in case of type A2 interference should be established by carrying out measurements using an unwanted signal which is modulated with standardized coloured noise in accordance with Recommendation 559-1 and a set-up frequency deviation of  $\pm 32$  kHz in accordance with Report 796-1. This type of simulated FM sound broadcast signal is considered to correspond very closely to the real operating characteristics of FM sound broadcasting transmitters.

4.3 Various options of possible utilization of filtering out-of-band emissions (for example, notch filters and band pass filters) were discussed. However, the utilization of certain types of filters may affect the spectral characteristics, introduce asymmetry of spectrum and degrade the quality of sound.

4.4 It was felt that feasibility studies were needed to determine whether special filtering of FM broadcast emissions could be employed successfully. It was agreed that type A2 interference resulting from FM transmitters (for instance, on 107.9 MHz) to aeronautical radionavigation services could be treated in particularly difficult situations on a case-by-case basis to determine the best solution (for example, power restrictions, filtering, etc.) which satisfies the interests of both the broadcasting and the aeronautical radionavigation services.

## ANNEX I

### DATA ON TRANSMITTER COMBINING UNITS

#### 1. Types of combining units

Several different types of combining units are in use for combining two or more broadcast transmitters into a common antenna.

Figs. I-1a, I-1b, I-2a and I-2b show representative arrangements for combining two transmitters and the accompanying tables, relating to RAI installations, provide typical performance data for such arrangements.

A variation of the arrangement of Figure I-2b recently used in BBC stations for combining three transmitters is shown in Fig. I-3. This will be explained in greater detail to illustrate the principles involved, and to calculate the levels of the third radiated order intermodulation products based on measurements of cross insertion loss on the combining units. The results of these calculations (Table I-I) can then be compared with actual measurements of the radiated intermodulation products from the BBC high power station, Wrotham (see Table I-II).

It may be seen from Fig. I-3 that the combining unit installation is in two sections comprising 3 dB directional couplers connected together by equal-length lines carrying resonators. The cross insertion losses from transmitter T1 to transmitter T2 and T3 at frequency  $f_1$  are mainly determined by the Q of the  $f_1$  resonators and this is related to their physical size. The same is true of the cross-loss from transmitter T2 to transmitter T3 at frequency  $f_2$ . However, the cross-losses from transmitter T3 to transmitter T2 and from T2 and T3 to T1 are determined solely by the 3 dB couplers. This means that, if no other factors were involved, the levels of the intermodulation products  $(2f_2 - f_3)$ ,  $(2f_1 - f_2)$  and  $(2f_1 - f_3)$  could be relatively high. However, intermodulation products generated in T1 and T2 are diverted to the load and so couple weakly with the antenna. The net result of these factors may be seen from Table I-I where the levels of intermodulation products are calculated from cross-loss measurements on the combining unit.

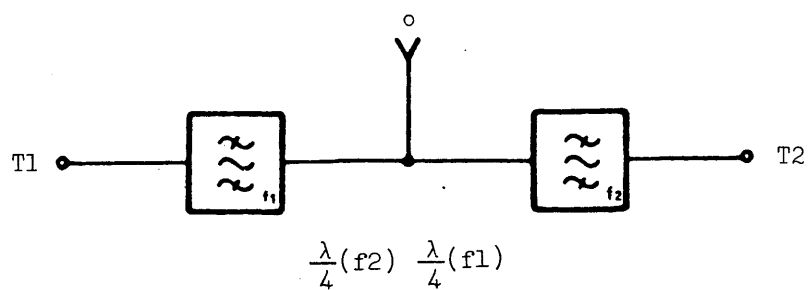


FIGURE I-1a - Star filter, with pass-band cavity

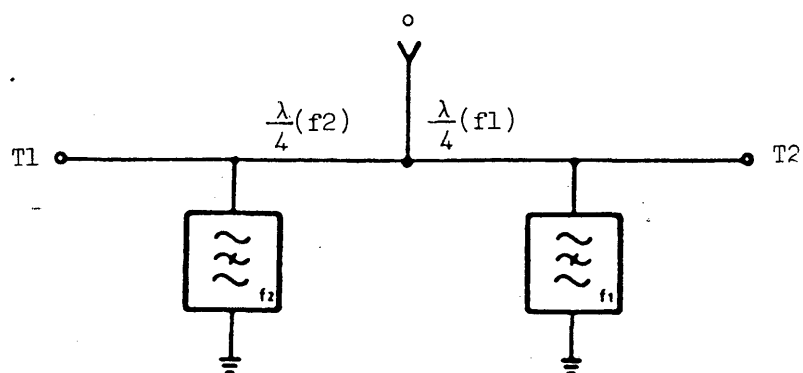


FIGURE I-1b - Star filter with compensated stop-band cavities

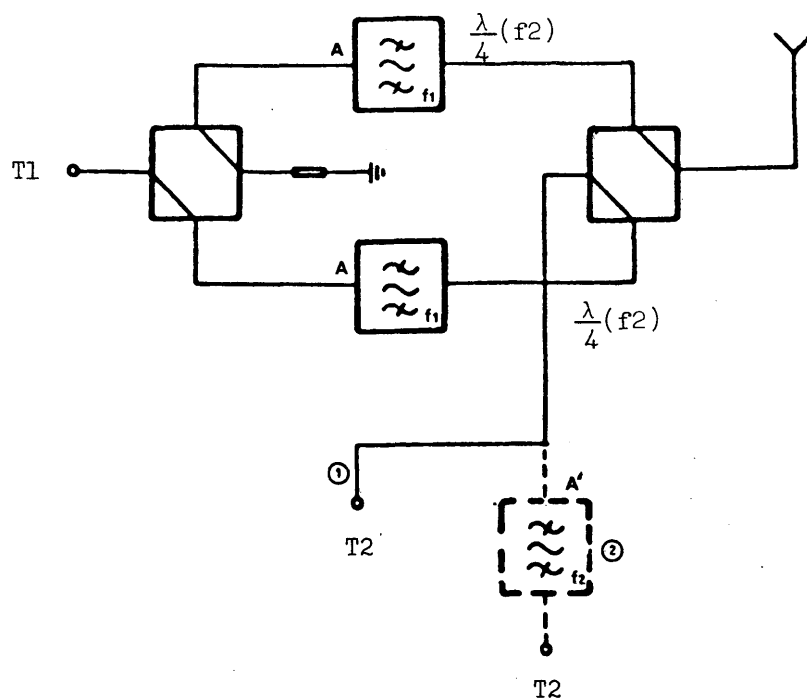


FIGURE I-2a - Hybrid filter, with pass-band cavity

For Fig. I-2a, two variations are considered:

- in case 1, the normal case, the spurious frequency ( $2f_2 - f_1$ ) has a much higher level than ( $2f_1 - f_2$ );
- in case 2, this is overcome by the additional cavity at the T2 output.

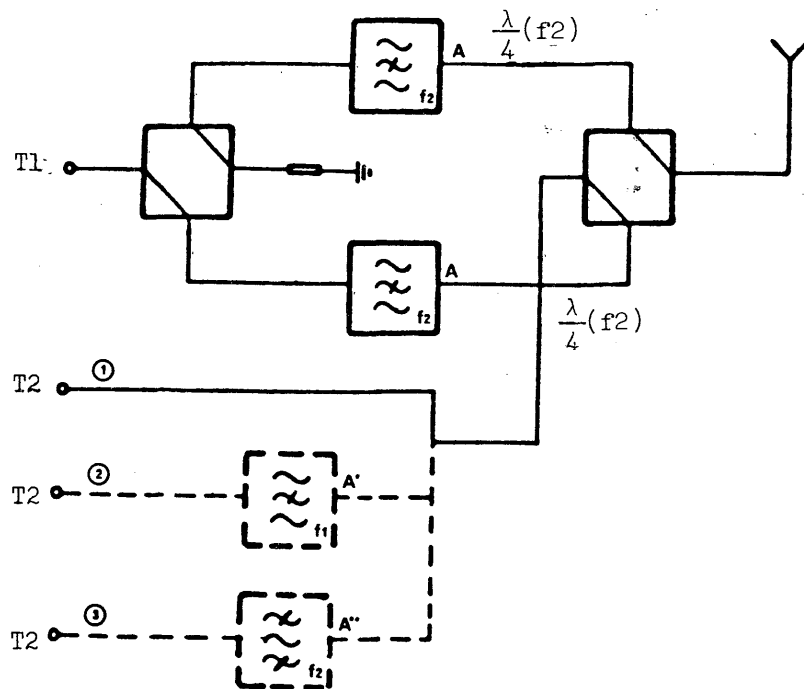


FIGURE I-2b - Hybrid filter with stop-band cavities

For filter Fig. I-2b, three variations are considered:

- in case 1, the normal case, the spurious frequency  $(2f_2 - f_1)$  has a much higher level than  $(2f_1 - f_2)$ ;
- in case 2, there is an additional stop-band cavity  $A'$  at the T2 output;
- in case 3, the additional stop-band cavity is replaced by pass band cavity  $A''$ . The spurious suppression is very high, especially in case 3.

TABLE I-I - Calculation of i.p. levels

(2.2 MHz spacing)

Frequency	Cross-insertion loss	Conversion loss (assumed)	Cross-insertion loss to antenna	Relative level of i.p.
$2f_1 - f_3$	T1, T3 at $f_3$ -51 dB	-22 dB	T1→ant at $2f_1-f_3$ -36 dB	-109 dB
$2f_1 - f_2$	T1, T2 at $f_2$ -63 dB	-14 dB	T1→ant at $2f_1-f_3$ -15 dB	-92 dB
$2f_3 - f_2$	T3, T2 at $f_2$ -88 dB	-14 dB	T3→ant at $2f_3-f_2$ 0 dB	-102 dB
$2f_3 - f_1$	T3, T1 at $f_1$ -72 dB	-22 dB	T3→ant at $2f_3-f_1$ 0 dB	-94 dB

Some refinements to the arrangement of Fig. I-3 are possible. First, additional notch filters may be added to attempt greater suppression of particular i.p.s. Whilst in principle it would be possible to attenuate the i.p. directly on the antenna feeder, it will usually be preferable to fit the notch filter to the output of the generating transmitter, where the total power level is lower. Another refinement is to adjust the impedance of the load on the section closest to the antenna as shown in Fig. I-3. This has the effect of controlling the level of frequency  $f_2$  that reaches transmitter T1 and so affects the level of the i.p. at frequency  $(2f_1 - f_2)$ .

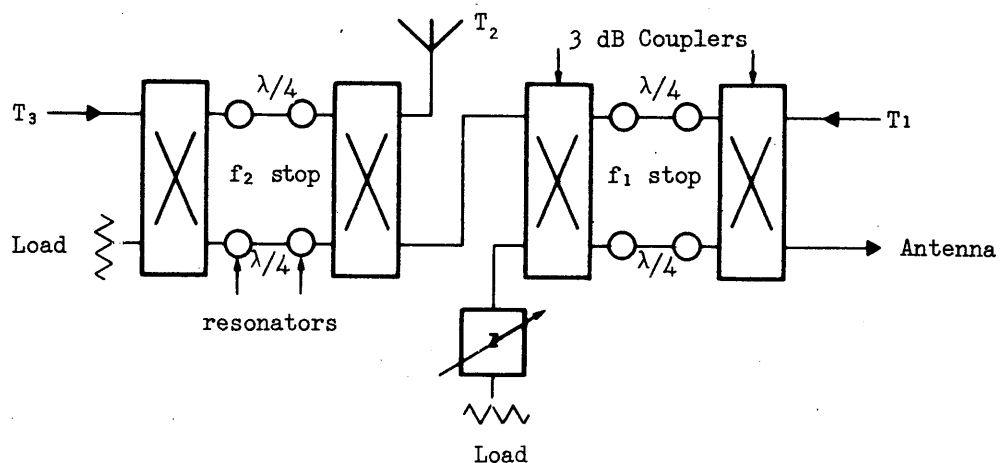


FIGURE I-3 - A three-frequency combining unit



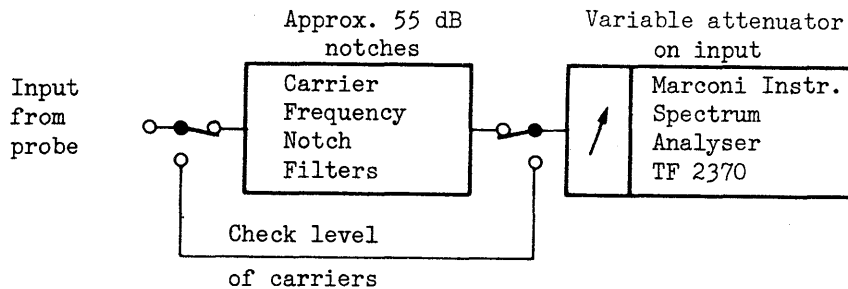
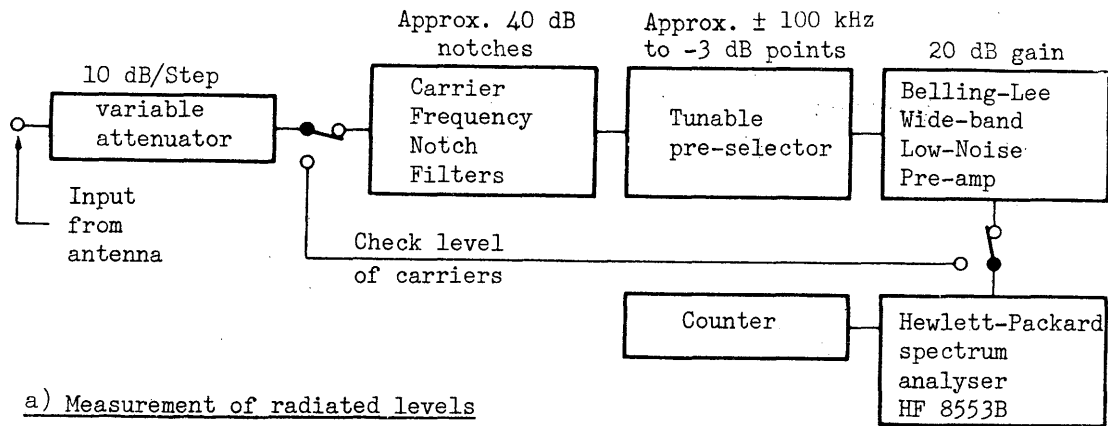


FIGURE I-4 - Methods of measurement

## 2. Measurements of intermodulation product levels at representative broadcast transmitting stations

The majority of UK stations transmit three equally spaced frequencies from a common antenna. The spacing is usually 2.2 MHz. Measurements of i.p.s made at a selection of these stations are shown in summary in Table I-II and include examples of high, medium and low-powered stations. Two of the stations are newly built, the remainder were built between 15 and 30 years ago. In each case the measurements were made on forward-wave directional coupler installed in the antenna feeders after these measurements were supplemented by measurements of the radiated levels made on the same day. The methods of measurement are shown in Fig. I-4.

TABLE I-II - Measurements at stations with regularly (2.2 MHz) spaced channels

Station	Relative level of intermode product (dB)				Where measured
	$f_1 - 2\Delta$	$f_1 - \Delta$	$f_3 + \Delta$	$f_3 + 2\Delta$	
Wrotham (new; high power valved transmitters)	-104 -104	-94 -93	-102 -102	-102 -104	feeders field
Tacolneston (old; high power valved transmitters)	-90 -96	-81 -82	-79 -80	-86 -86	feeders field
Peterborough (old; medium power valved transmitters)	-94 -87	-83 -71	-82 -76	-90 -86	feeders field
Cambridge (old; low power solid-state transmitters)	-72	-78	-75	-72	feeders
Northampton (new; low power solid-state transmitters)	-70	-82	-86	-78	feeders

The above results are similar to those obtained in other countries.

It may be seen from Table I-II that for the valved transmitters, with the exception of Wrotham, the levels of the  $(f_1 - \Delta)$  and  $(f_3 + \Delta)$  terms are in the neighbourhood of -80 dB, while those of the  $(f_1 - 2\Delta)$  and  $(f_3 + 2\Delta)$  are nearer -90 dB. This difference is ascribed to the frequency selectivity of the output circuit of the transmitter in which the term is generated; the wider the frequency spacing the greater is the conversion loss of the intermodulation process. It is also an indication that the levels of the  $(f_1 - \Delta)$  and  $(f_3 + \Delta)$  terms are determined by intermodulation taking place in the transmitters and not to any great extent elsewhere.

It is to be noted that the policy of the BBC at the time the stations described as "old" were built was to suppress intermodulation products to a much higher degree than that required by the Radio Regulations in order to protect mobile services then using frequencies below 88 MHz and above 97.6 MHz. The target was in fact a relative level of -100 dB [Hayes, 1957]. This was never achieved, despite strenuous efforts including a detailed investigation into some of the mechanisms by which intermodulation products are generated. Nevertheless, the levels achieved were, and for the most part still are, appreciably lower than those required by Radio Regulations.

There are two stations in the list described as "new"; both are about two years old and radiate lower levels of intermodulation products than earlier stations of a similar type. However, it has yet to be demonstrated that such levels can be maintained in service without inordinate effort.

ANNEX II

DATA ON TYPE A2 INTERFERENCE

**RF emissions of FM transmitters**

Limited data on the measured RF emissions of some FM broadcasting transmitters in Regions 1 and 2 have been presented by the Netherlands (Document 19 to the CARR-1-1982), Greece (Document 21 to the CARR-1-1982) and Canada (Document 9 to IWP 10/8). Table II-I contains data on the relative level of FM spectrum below the unmodulated FM carrier; these data are also presented in Fig. II-4.

TABLE II-I - Measured RF emissions of some FM broadcast transmitters in Regions 1 and 2

$\Delta f$ (kHz)	Relative level of FM spectrum below unmodulated FM carrier (dB)				
	Conference 1st session		IWP 10/8 Doc. 9		
	Doc. 19	Doc. 21	Fig. 1	Fig.2	Fig. 3
50	17	18	7	20	16
100	35	37	31	31	33
150	52	56	56	58	58
200	75	75	67	71	73
250	83	80	70	71	73
300	85	80	70	71	73

**Note 1** -  $\Delta f$  = frequency difference relative to FM carrier.

**Note 2** - In Document 19 peak envelope values of the FM spectrum are given in a measurement bandwidth of 1 kHz. Document 21 gives a theoretical estimate.

**Note 3** - Figs. II-1, II-2 and II-3 (from IWP 10/8 Document 9) show photographs of RF spectra of modulated FM carriers in a measuring bandwidth of 10 kHz taken in a short period of time. The maximum levels of the unmodulated carriers were assumed to be 6 dB above the modulated carriers. Therefore, 6 dB was added to each data point obtained from the outer envelope of these three figures.

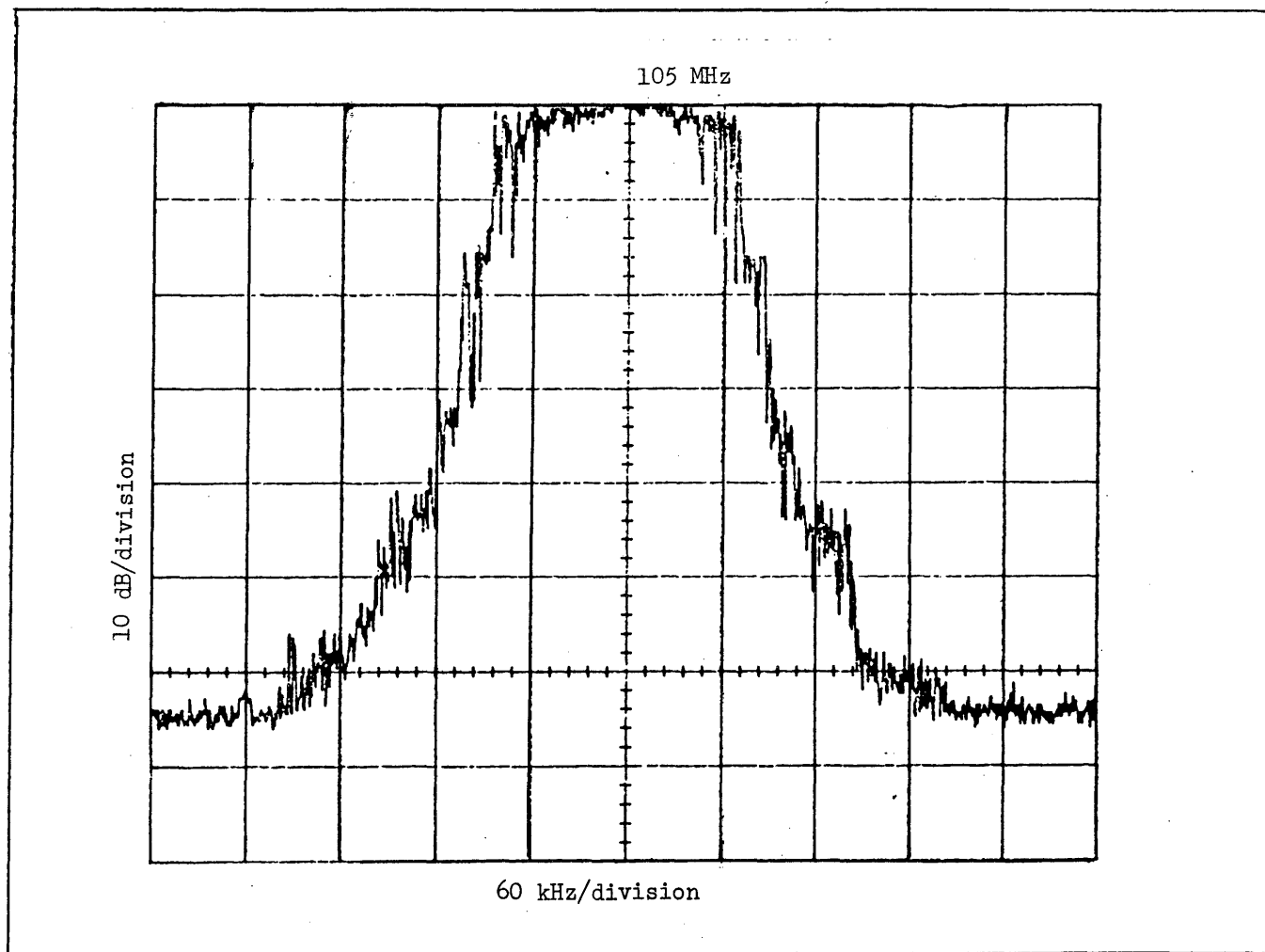


FIGURE II-1

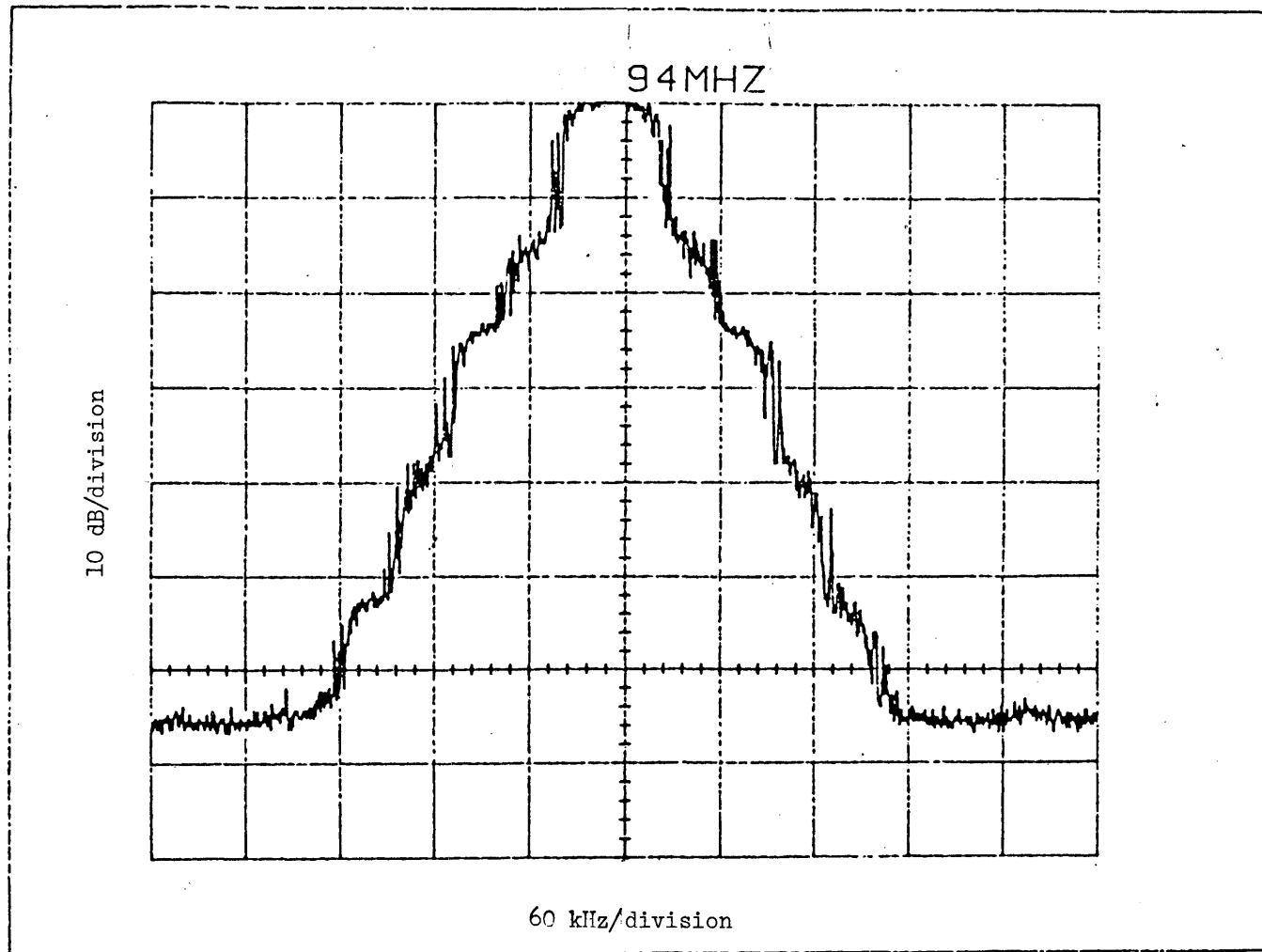


FIGURE II-2

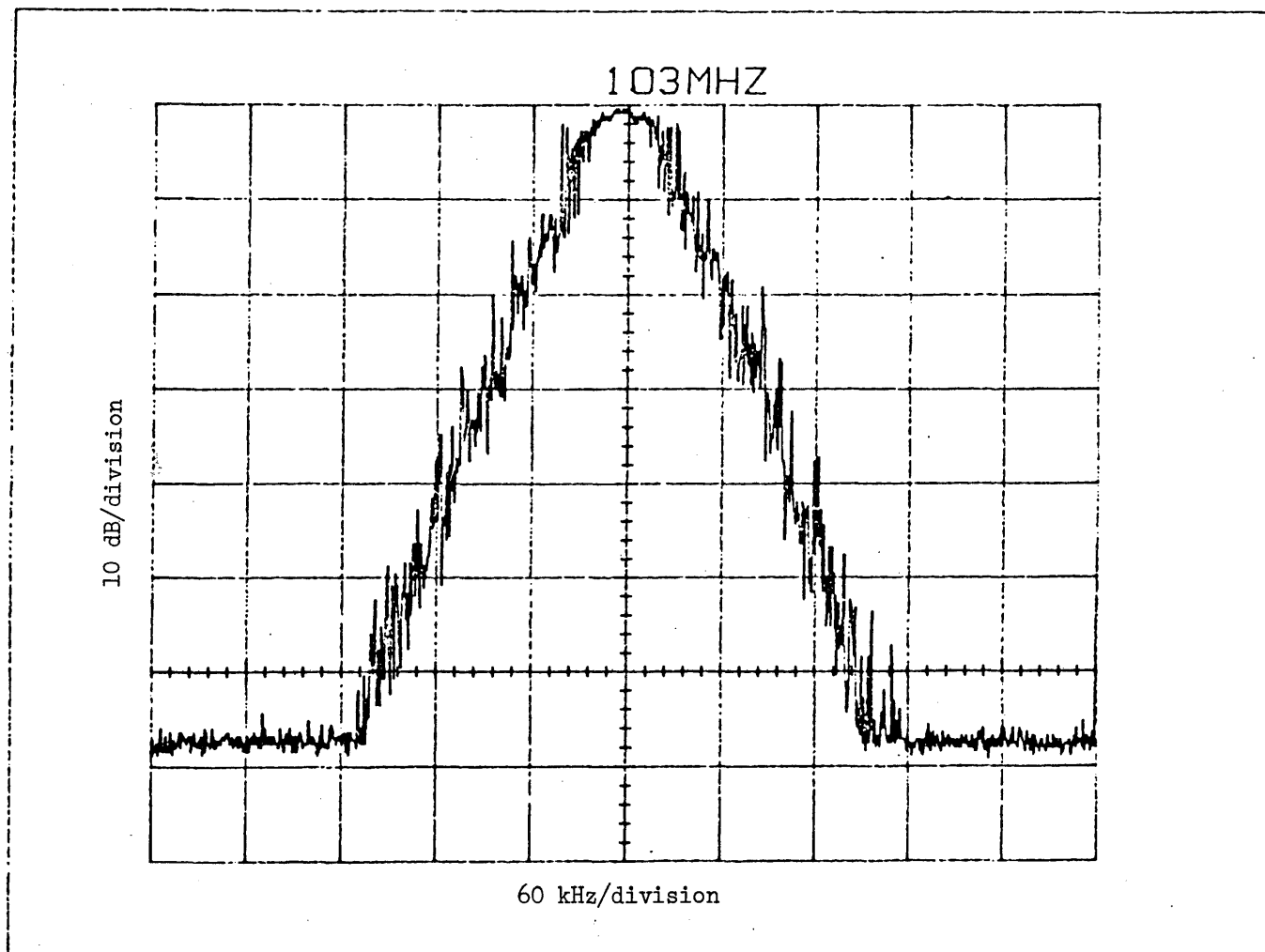


FIGURE II-3

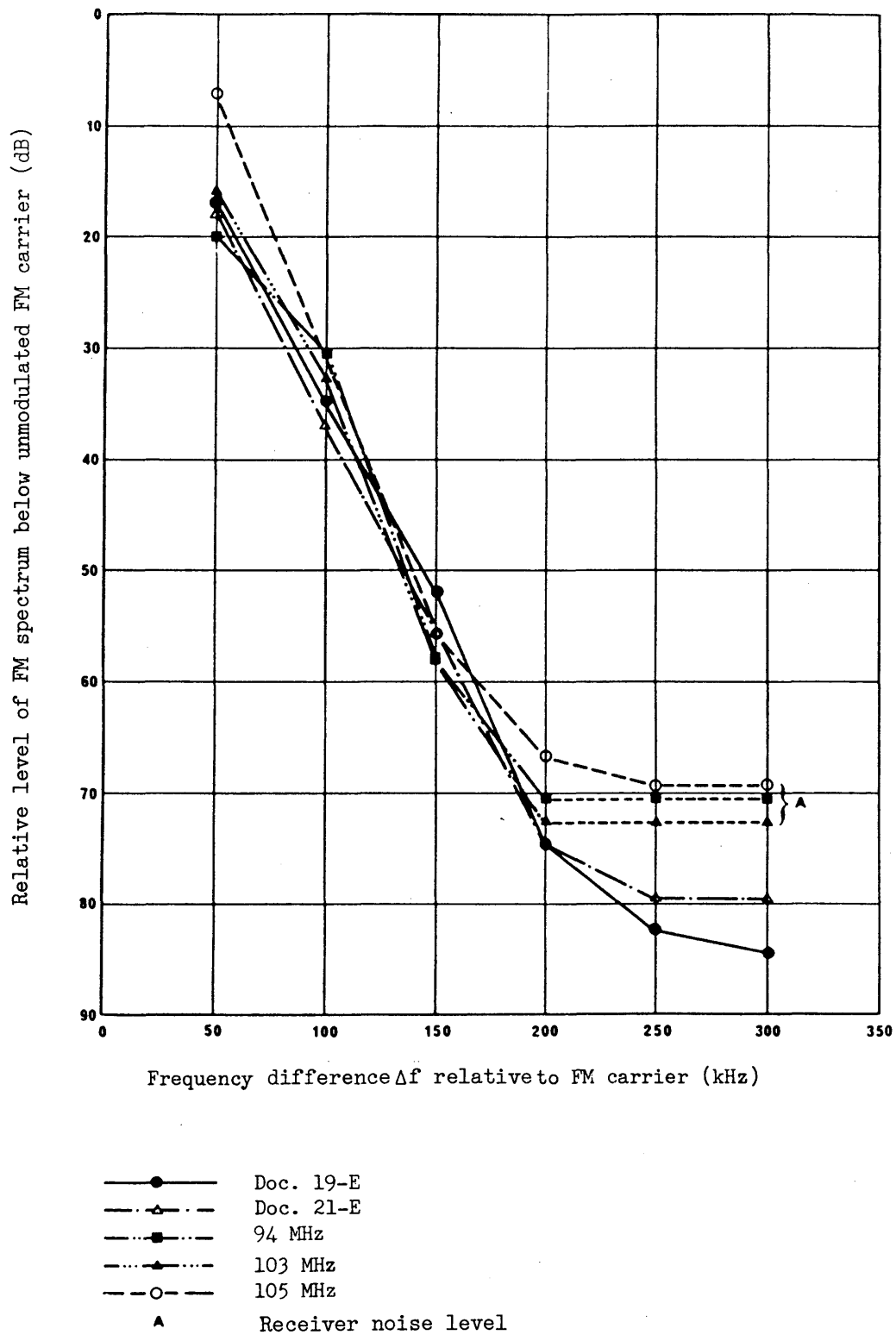


FIGURE II-4 - Plot of measured RF emissions of some FM broadcast transmitters in Regions 1 and 2 (Ref.: Table II-I)

Measurements concerning the RF spectrum of FM emissions were recently carried out in the Federal Republic of Germany. Both coloured noise signals as described in Recommendation 559-1 and a sequence of programme samples representative of a typical stereophonic programme were used to substitute a real programme in the measurements.

The results obtained with coloured noise which were found to represent the highest interference potential are given in Fig. II-5. The energy density distribution of the coloured noise signal corresponds very closely to that of a typical programme. The dynamic range of the noise signal is, however, considerably smaller than that of a programme signal. The deviation produced by the noise signal was chosen to be  $\pm 32$  kHz in accordance with the RF protection ratio measuring method given in Report 796-1. Hence the modulation conditions in the measurements are representative of average programme conditions.



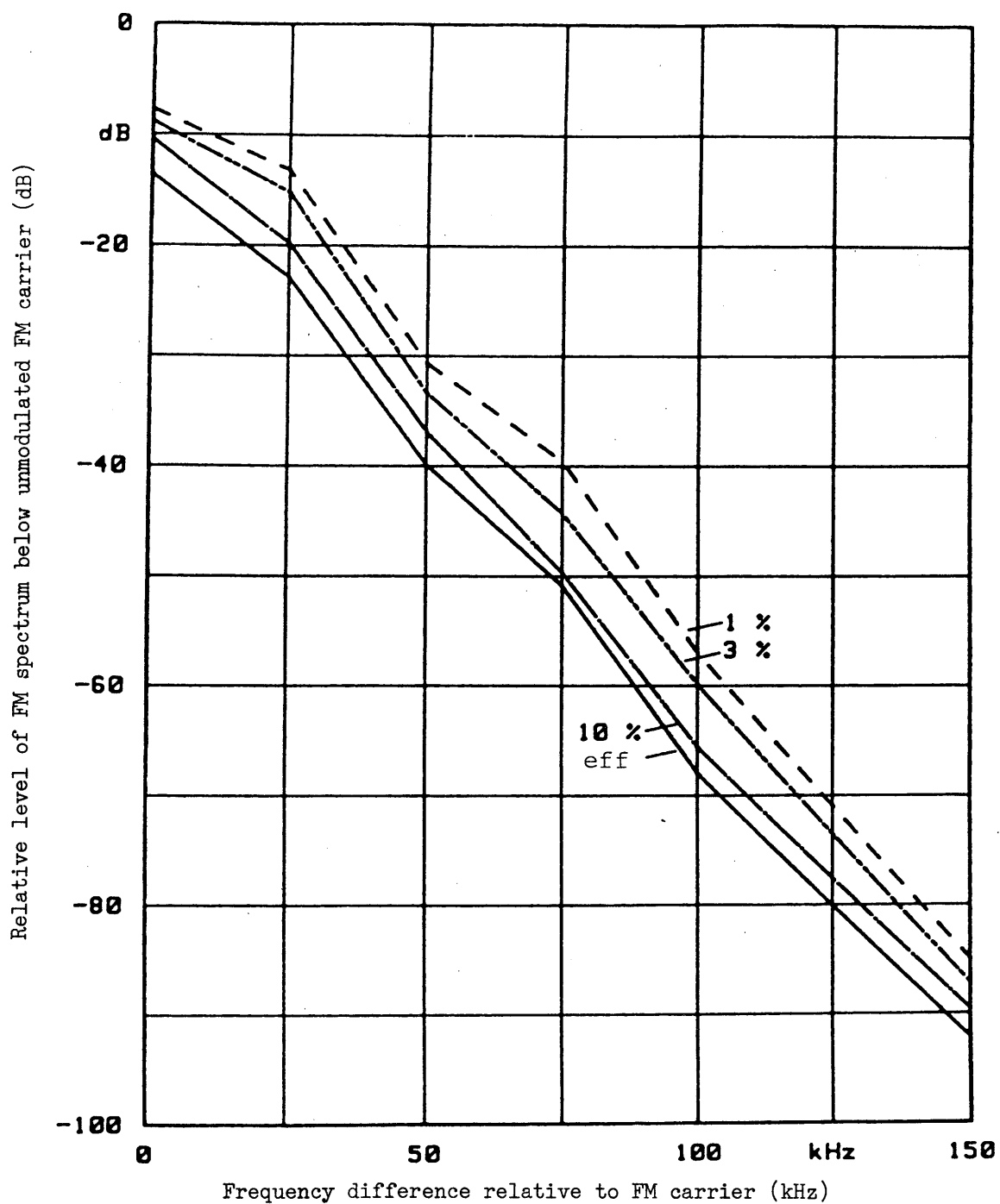


FIGURE II-5 - FM spectrum with coloured noise (stereo)

parameter : percentage of time for which  
a level is exceeded

eff : r.m.s. level of the FM spectrum

#### REFERENCES

- CARR-1 [1982] Regional Administrative Conference for FM Sound Broadcasting in the VHF Band (Region 1 and certain countries concerned in Region 3). First session, Geneva, 1982: Report to the second session of the Conference.
- HAYES, W.E. and PAGE, H. [1957] The BBC sound broadcasting service on very high frequencies. **Proc. IEE**, Vol. 104, Part B.
- KU, ERICKSON, RABE and SEASHOLTZ [May, 1977] Design techniques and intermodulation analysis of broad-band solid-state power analysis. **IEEE Trans. Electromag. Compt.**
- WASS, O.A.A. [1948] A table of intermodulation products. **Proc. IEE**, Vol. 95, Part III, 31-39.
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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Addendum 1 to  
Document 5-E  
29 June 1984  
Original : English

## PLENARY MEETING

### Note by the Secretary-General

At the request of the Director of the CCIR, I have the honour to transmit herewith further information relative to the propagation chapter of the report to the Second Session of the Conference.

As foreseen at the end of the first paragraph of my note on the cover page of Document 5, Interim Working Party 5/5 met in Geneva from 30 April to 4 May. Following examination of additional data, the IWP proposed the modifications appearing in Annex 1 to the present document. These proposals have been authorized by the Chairman of Study Group 5.

During the examination of these additional data, the members of IWP 5/5 came to the conclusion that certain other propagation information, which arguably could be considered as provided in response to Recommendation AA, may also be thought useful by the Second Session of the Conference.

The comments of the IWP, which have also been approved by the Chairman of Study Group 5, are set out in Annex 2 to the present document.

With respect to Recommendation BB of the First Session of the Conference which concerns propagation data for Africa, the Director of the CCIR wishes to advise the Conference that the only response received to its circular-letter consisted of statements that the information is not available.

R.E. BUTLER

Secretary-General

Annexes : 2

ANNEX 1

A. PROPOSED MODIFICATIONS TO ANNEX I OF DOCUMENT 5

1. At the end of the paragraph of section 2.1 add the following text :

"It is recognized that there is a need to identify the form of prediction for those transition cases in which a propagation path crosses the suggested boundary between Eastern and Western Mediterranean (meridian 30°E). It is therefore proposed that an approximation based upon the mixed path method explained in section 2.1.3.4 of the report to the Second Session of the Regional Administrative Conference for FM Sound Broadcasting in the VHF Band (Region 1 and certain countries concerned in Region 3) could be adopted but it is clear that much more evidence is required. Administrations are urged to consider this important aspect and to offer proposals for a more precise technique.".

2. Section 2.1.1 replace the first paragraph by the following :

"Oversea paths are considered to be those traversing seas and other substantial bodies of water (as a criterion, one which can encompass a circle of diameter 100 km). For 1% of the time, oversea paths in this area are considered to include also a coastal strip extending in general not more than 50 km inland. In order to reflect the important influence that the terrain within this coastal strip will play in determining the actual propagation it would be desirable to indicate a terrain height limit above which the oversea propagation curve would not be used. However, such terrain data may not be readily available, and for the purposes of computation it is recommended that the use of the oversea curve within the area be simply defined by the inland limit of the 50 km coastal strip. In detailed bilateral discussions of specific cases this simple definition may not be appropriate. In such instances distances other than 50 km and a height limitation (e.g. 100 m) may be used to define the coastal strip and hence the use of the 1% curve.".

3. Section 2.1.1 at the end of the second paragraph replace "without limitation of distance" by the following :

"up to a range of 500 km. Beyond 500 km there is little evidence at present on which to base a curve for the Eastern Mediterranean. Furthermore, examination of results from propagation experiments in Italy, France and along the North African coast has yet to be completed. Therefore it is not yet possible to define the differences between Eastern and Western Mediterranean propagation. However the effects of super-refractivity are clearly evident in measurements over the shorter ranges in the Eastern Mediterranean. Therefore for initial planning at the Second Session of the RABC it is recommended that for the longer ranges, i.e. beyond 500 km the single 1% curve to be used in the area should be that employed for the sea area between the Shatt-el-Arab to the Gulf of Oman.".

4. Section 2.2.1 replace the first paragraph by the following :

"Oversea paths are considered to be those traversing seas and other substantial bodies of water (as a criterion, one which can encompass a circle of diameter 100 km). For 1% of the time, oversea paths in this area are considered to include also a coastal strip extending in general not more than 50 km inland. In order to reflect the important influence that the terrain within this coastal strip will play in determining

the actual propagation it would be desirable to indicate a terrain height limit above which the overseas propagation curve would not be used. However, such terrain data may not be readily available and for the purposes of computation it is recommended that the use of the overseas curve within the area be simply defined by the inland limit of the 50 km coastal strip. In detailed bilateral discussions of specific cases this simple definition may not be appropriate. In such instances distances other than 50 km together with a height limitation (e.g. 100 km) may be used to define the coastal strip and hence the use of the 1% overseas curve. Alternatively the situation may be defined by the attenuation factor  $\gamma_d$  which has resulted from studies carried out by member states of the Gulfvision organization."

5. Section 2.2.1 replace the second paragraph by the following :

"For overseas paths, propagation for 1% of the time should be based on free space values up to 400 km. Beyond this distance the curve should observe an additional linear attenuation of 6 dB per 100 km referred to the free space value of 400 km; for example, the attenuation value to be applied to a distance of 550 km would be the free space value at 400 km plus 9 dB."

B. PROPOSED MODIFICATION AND ADDENDUM TO THE APPENDIX TO ANNEX I OF DOCUMENT 5

1. Number the existing text entitled "Details of Measurements" as section 1.

2. Add a new section 2 as follows :

"IWP 5/5 at its meeting from 30 April to 4 May 1984 examined those contributions, primarily from RAI (Italy), IBA (UK), BBC (UK), IRT (RFA) and FCC (US), providing comprehensive measurement data relating to broadcasting services in Bands I, II and III.

The data comprised extensive mobile measurements in the coverage area of two different transmitters in the southern part of Germany and also a total of 179 overland and overseas paths in the United States, the North Sea and Mediterranean area. The path lengths varied in the range 90 - 800 km, the transmitting and receiving effective heights being in the ranges 15 - 1,500 metres and 5 - 700 metres, respectively. The measurement periods varied between three months and four years duration, during normal broadcasting hours (generally 0900 - 2300 hrs, local time). A considerable majority of the measurement periods were of approximately one year's duration.

It is known that much of the measurement data formed the basis of the original CCIR curves produced for the Stockholm Conference in 1961 and subsequently incorporated in CCIR Recommendation 370. There was however a significant amount of new data available.

The objective in examining the measurement data was to enable a comparison to be made with predictions using :

- a) the curves in Recommendation 370; and
- b) the modifications to the Recommendation 370 curves as provisionally proposed in Document 5 of the CARR-1(2).

The above modifications are principally concerned with the production of separate overland and oversea curves for 50% and 10% of the time for the North Sea areas and 50% of the time for the Mediterranean area. To facilitate the comparison, the measurement data were normalized for an e.r.p. of 1 kW and, in most cases, for effective transmitting and receiving antenna heights of 300 m and 10 m respectively. The analysis and subsequent comparison were confined to 50% and 10% time values, the results of which are given in Table II.

### Conclusions

The results of the initial analysis (Table II) show a good degree of agreement between measurement data and the existing overland curves of Recommendation 370 for 50% and 10% time.

The analysis clearly shows that the previously mentioned Document 5 proposals offer a distinct improvement in prediction accuracy over Recommendation 370 curves for 50% and 10% North Sea and 50% Mediterranean areas.

There is some evidence to suggest that the corrections proposed in Document 5 to the existing Figures 1 and 2a of Recommendation 370 to produce new sea curves for 50% and 10% time may tend to underestimate field strength values. However, since there is agreement that in due course a separate series of curves should be produced in the CCIR for each VHF broadcasting band, no further changes to the Document 5 proposals for modification of the propagation curves could be considered at this time. The use of the curves as described in Document 5 for the purposes of the forthcoming CARR-1(2) is confirmed."

3. Add new Table II as follows:

TABLE II

(a) Overland paths

Data source	50% time		10% time	
	Mean ratio (dB)	Stand dev. (dB)	Mean ratio (dB)	Stand dev. (dB)
USA	+0.2	6.2	-1.5	6.8
UK-BBC	0	8.1	+1.5	8.5
UK-IBA	+6.1	2.8	+3.0	5.1
IRT*	-1.0			
IRT*	-1.8			
IRT*	+4.1			

\* Mobile measurements in the distance range 10 - 100 km.

(b) Oversea paths : North Sea and Mediterranean area : 50% time

Data source	Rec. 370 comparisons		IWP 5/5 comparisons	
	Mean ratio (dB)	Stand dev. (dB)	Mean ratio (dB)	Stand dev. (dB)
UK-IBA IRT	+9.4	1.7	+3.8	2.0
UK-BBC	-	-	+1.5	5.8
RAI	+8.7	4.0	+4.5	2.6

North Sea area : 10% time

UK-IBA IRT	+11	4.7	+6.1	4.6
UK-BBC	-	-	+4.0	5.8

Mediterranean area : 10% time

RAI	+7.7	3.8	Not applicable.
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C. PROPOSED MODIFICATION TO ANNEX II OF DOCUMENT 5

1. In section 2 "Sea Paths", in the fourth classification relating to 1% of the time add the word "Western" immediately before the word "Mediterranean".

D. PROPOSED MODIFICATION TO THE APPENDIX TO ANNEX II OF DOCUMENT 5

1. In the paragraph relating to the Mediterranean 10% of the time and distances less than 200 km add the words "the Western Mediterranean for" immediately preceding "1% of the time".



ANNEX 2

FURTHER COMMENTS CONCERNING THE REPORT OF THE FIRST SESSION

1. Receiving antenna height correction

In section 2.1.3.3 of the report to the Second Session the receiving antenna height correction is indicated as being -9 dB for a change in height from 10 to 3 m, independent of distance. In section 2.3 on the other hand, the correction is stated as ranging from -9 dB to -4.5 dB depending on the distance. IWP 5/5 carefully studied this matter in the light of more recent information, and came to the conclusion that there is no distance dependence. Consequently, the IWP considers that the statement made in section 2.1.3.3 is correct, while that made in section 2.3 is not supported by later evidence.

As Figures 2.11 and 2.12 of the report have been produced for the land mobile service for effective transmitter antenna heights from 37.5 m to 600 m by applying the correction factor as given in section 2.3, the IWP has constructed a revised version of each of these two Figures by applying the constant -9 dB correction to Figures 2.2 and 2.3 of the above report, Figures 2.2 and 2.3 having been the basis of the original Figures 2.11 and 2.12. Copies of the revised Figures 2.11 and 2.12 are attached, and IWP 5/5 would invite the attention of the Conference to this information.

2. Effective transmitter heights above 1,200 m

Information is given in section 2.1.3 of the above report concerning the determination of field strength for effective transmitting antenna heights above 1,200 m. However, the formula provided is applicable only at distances beyond the horizon, and this restriction is not stated in the section. The omission has been identified by the Administration of the Federal Republic of Germany which in a contribution to the CARR-1(2) clarifies the validity of the formula and proposes a procedure applicable to distances within the horizon.

IWP 5/5 supports the proposal made in the above contribution from the Federal Republic of Germany.

3. Effective transmitter heights below 37.5 m

In section 2.1.3 of the above report antenna height correction factors are provided for the derivation of field strength curves relating to effective transmitter antenna heights of 20 m and 10 m. IWP 5/5 has observed that the application of these factors gives rise to curves which are inconsistent with physical reality in the distance range 50 - 150 km. The Administration of the Federal Republic of Germany has also recognized the problem and in the above mentioned contribution (section 2) has proposed an alternative method for determining the curves for use by the Conference. The IWP would support the use of this alternative method for frequencies in Band II. This would include the use of this alternative method for the land mobile service, based on Figures 2.11 and 2.12 (see also 1 above).

4. Terrain irregularity correction

IWP 5/5 has reconsidered the use of the  $\Delta h$  correction factor in the VHF band. The analysis of measurement results from different administrations show that the application of this terrain irregularity correction can lead to large errors in the calculation of both service areas and interference. In section 2.1.3.2 of the report of the CARR-1(2) it is stated "no terrain irregularity correction shall be made". In section 2 of Annex A of that report however a detailed description of the irregularity parameter  $\Delta h$ , and of the associated correction factors (see Figures 2.14 and 2.15) is given. To avoid the errors indicated above therefore the following suggestion is made :

- the reference to the terrain irregularity correction contained in the final sentence of section 2.1.3.2 of the report of the CARR-1(1) should be deleted;
- referring to Annex A of the above mentioned report, section 2 and Figures 2.14 and 2.15 should be deleted;
- a final sentence should be added to section 2.1.3.2 of the above report, reading as follows : "For bilateral and multilateral coordination actual path profiles may be considered."

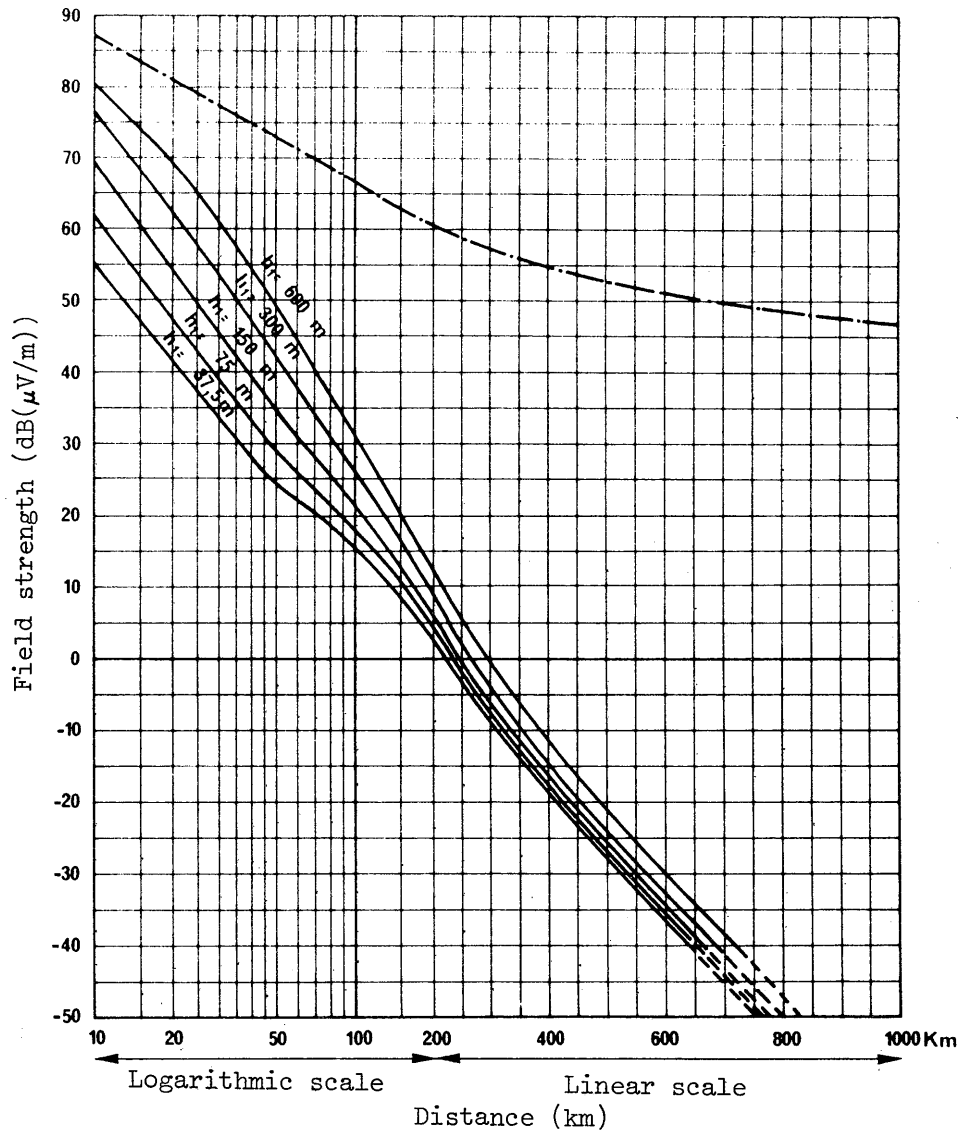


Figure 2.11 - Field strength (dB( $\mu$ V/m)) for 1 kW e.r.p.

Frequency : 30 to 250 MHz, land, and cold sea;  
10% of the time; 50% of the locations;  $h_2 = 3$  m

· — · — · — · — : Free space

PROPAGATION CURVES FOR THE LAND MOBILE SERVICE

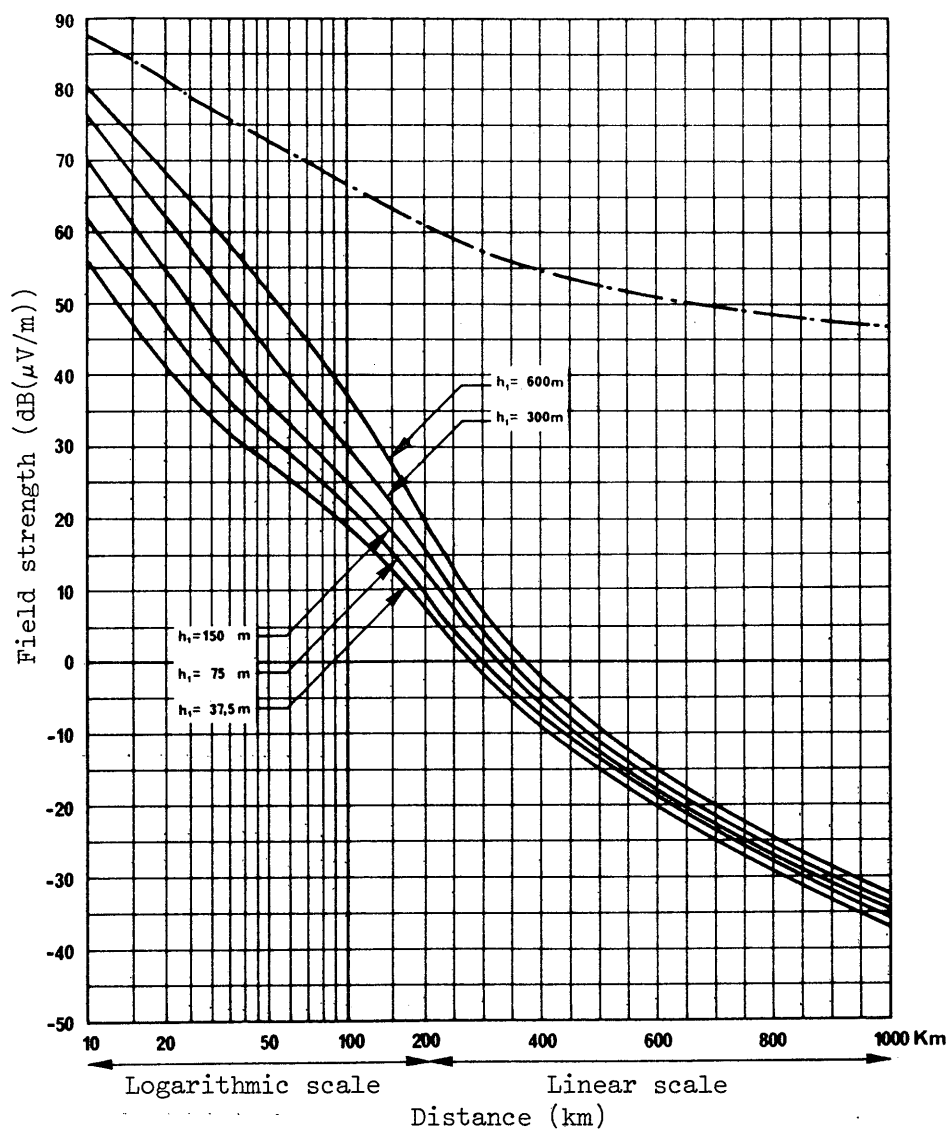


Figure 2.12 - Field strength (dB( $\mu$ V/m)) for 1 kW e.r.p.

Frequency : 30 to 250 MHz; Warm sea;  
10% of the time; 50% of the locations;  $h_2 = 3$  m

· — · — · — · : Free space

PROPAGATION CURVES FOR THE LAND MOBILE SERVICE

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 5-E

10 April 1984

Original : English

## PLENARY MEETING

### Note by the Secretary-General

At the request of the Director of the CCIR I have the honour to transmit herewith a copy of Doc. 5/196 of Study Group 5 of the CCIR, which sets out the response to Recommendation AA of the 1st Session of the Conference. The Director of the CCIR informed me that, as propagation measurements are still being made that are relevant to the terms of Recommendation AA, Study Group 5 has charged Interim Working Party 5/5 to meet in Geneva in order to consider possible up-dating of the information set out in the abovementioned Document, and if the IWP takes action in that sense I will inform the Conference further.

Concerning Recommendation BB of the 1st Session of the Conference, your attention is drawn to Section 3 of Doc. 5/196.

R.E. BUTLER

Secretary-General

Annex : mentioned

Documents  
CCIR Study Groups  
Period 1982-1986

Document 5/196-E\*  
17 November 1983  
Original : English/  
French

Source : Documents 5/2, 5/168(Rev.1),  
TEMP. 5/8

Working Group 5-A

REPLIES TO THE REQUESTS FORMULATED BY THE  
REGIONAL ADMINISTRATIVE RADIO PLANNING CONFERENCE  
(GENEVA, 1982)  
IN RECOMMENDATION AA AND IN RECOMMENDATION BB

1. In relation to the first request in Recommendation AA, CCIR Interim Working Party 5/5 took note of the work carried out by Gulfvision and the Islamic Republic of Iran in the region between Shatt-al-Arab and the Gulf of Oman and by the State of Israel in the Mediterranean east of the 30°E meridian.

The conclusion drawn from these studies is given in Annex I.

2. In connection with the second request in Recommendation AA, Interim Working Party 5/5 re-examined Recommendation 370-4 and Report 239-5 together with the earlier versions and as a result proposed a new interpretation (see Annex II) of the propagation curves in Recommendation 370-4 for land and sea paths respectively.

3. In relation to the request in Recommendation BB Study Group 5 wishes to draw attention to the fact that at the present time, it has had no input concerning results of measurements effected in the African continent.

Annexes : 2

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\* Note by the Secretariat. This text includes the modifications made by Study Group 5 on 22 November 1983 during its Interim Meeting.

ANNEX I

1. Description of present results

Reports have been received concerning three Band II measurement campaigns, relating to oversea, overland and mixed paths measured at one site in the Eastern Mediterranean, and at different sites in the area from the Shatt-al-Arab to the Gulf of Oman. The measured paths are listed in Table I of the Appendix to Annex I, and, were measured to include the maximum seasonal ducting periods in general and the maximum diurnal ducting periods in particular. The duration of the measurements ranging from 14 months to four months, all including the months of June, July and August.

These results also suggest that there are two distinct parts of the year as far as propagation analysis is concerned. Summer is characterized by high and stable signal levels, while winter is characterized by low and stable signal levels, with two transition periods of unstable signal levels approximately March/April and October/November.

2. Provisional data for planning\*

2.1 Provisional data for planning in the East of the Mediterranean area

The above measurement results (see also Appendix of Annex I) indicate that the following data are suitable for planning purposes at this time in the Eastern Mediterranean (that is, that part of the Mediterranean Sea east of meridian 30°E).

2.1.1 Oversea paths

Oversea paths are considered to be paths traversing seas, oceans and other substantial bodies of water (as a criterion, one which can encompass a circle of diameter 100 km). For 1% of the time, oversea paths are considered to include also coastal areas of an altitude not more than 100 m above sea level but not extending more than 50 km inland.

For oversea paths, interference propagation relative to 1% of the time should be based on free-space propagation values without limitation of distance.

Relating to coverage on oversea paths, Figure 2.1 of the Report of the First Session of the Regional Administrative Conference for FM Sound Broadcasting in the VHF Band (Region 1 and certain countries concerned in Region 3) should be used as indicated in that Report.

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\* For reasons of meteorology, it is possible that the following general areas of Region 1 may have similar propagation characteristics : the Red Sea, the Straits of Gibraltar and the West African coast from the Equator to the Tropic of Cancer.

2.1.2 Overland paths

Overland paths include all land other than the coastal strip defined in 3.1.1 above. For interference predictions, the overland path should be appraised according to Figure 2.7 of the Report of the First Session of the Regional Administrative Conference for FM Sound Broadcasting in the VHF Band (Region 1 and certain countries concerned in Region 3). For coverage areas Figure 2.1 of that Report should be used.

2.1.3 Mixed paths

Mixed paths should be appraised for both interference and coverage according to the procedure set out in section 2.1.3.4 of the Report of the First Session of the Regional Administrative Conference for FM Sound Broadcasting in the VHF Band (Region 1 and certain countries concerned in Region 3).

2.2 Provisional data for planning in the area from the Shatt-al-Arab to the Gulf of Oman

The measurement results (see Appendix to Annex I) indicate that the following data are suitable for planning purpose at this time in the area from the Shatt-al-Arab to the Gulf of Oman.

2.2.1 Oversea paths

Oversea paths are considered to be paths traversing seas and other substantial bodies of water (as a criterion, one which can encompass a circle of diameter 100 km). For 1% of the time, oversea paths are considered to include also a coastal strip of an altitude not more than 100 m above sea level but not extending more than 50 km inland; this figure is provisional at this stage of the study and more data are necessary concerning the distance of penetration of ducts inland.

For oversea paths, interference propagation relative to 1% of the time should be based on free-space propagation values for distances up to 500 km. Beyond this distance additional attenuation of 5 dB per 100 km is applicable.

Relating to coverage on oversea paths, Figure 2.1 of the Report of the First Session of the Regional Administrative Conference for FM Sound Broadcasting in the VHF Band (Region 1 and certain countries concerned in Region 3) should be used as indicated in that Report.

2.2.2 Overland paths

See section 2.1.2 above.

2.2.3 Mixed paths

See section 2.1.3 above.



Appendix  
(to Annex I)

Details of measurements

The signal level distributions for the oversea paths during the summer season show that the differences between monthly 1% and 10% values are only of the order of a few decibels. The 50% values in winter are less than the 50% summer values by about the order of 30 dB. Values exceeded for 1% and 10% of the time in winter are always less than in summer and show a wider distribution. For distances up to around 500 km the values for 1% of the time were about free space levels. For greater distances the measurements made between Kuwait and Abu Dhabi and between Dubai and Kuwait (around 820 km), show that the level exceeded for 1% of the time was 15 dB below free space. At this time, no data confirm such a decrease in the Eastern Mediterranean. In this respect it is to be noted that although for practical reasons the measurements could not be carried out on a continuous basis i.e. 24 hours per day, the measurement periods are considered to be sufficiently representative for the above information to be valid for planning purposes.

Based on the pronounced stability of the long distance oversea signals already measured in the above areas, it seems reasonable to identify provisionally the worst months as June, July and August, but the month of maximum received signal level (i.e. the worst month for ducting interference) has a year-to-year variability as well as a geographical variability.

For mixed land and sea paths there is greater seasonal and diurnal variation in signal level.

Propagation paths in coastal strips may, depending on meteorological conditions and topography, show characteristics similar to oversea paths or to overland paths at any time, and this situation is best dealt with statistically.

TABLE I  
Measurement paths

Transmitter	Receiver	Frequency (MHz)	Distance (km)
1. <u>Oversea paths</u>			
1.1 Eastern Mediterranean			
Adana	Tel Aviv	89.2	560
Akrotiri	Tel Aviv	92.1	330
1.2 Area from the Shatt-al-Arab to the Gulf of Oman			
Abu Dhabi	Bandar Abbas	93.5	355
Abu Dhabi	Dayyer	93.5	450
Doha	Dayyer	97.5	290
Dubai	Bandar Abbas	92	240
Dubai	Damman	92	537
Dubai	Failaka	92	834
Dubai	Bahrain	92	487
Failaka	Bahrain	98.8	414
Failaka	Abu Dhabi	98.8	818
Bahrain	Damman	96.5	49
2. <u>Overland paths</u>			
2.1 <u>Eastern Mediterranean region</u>			
Amman	Tel Aviv	99	110
Beer Sheba	Tel Aviv	103.8	88
Safad	Tel Aviv	101.1	120
3. <u>Mixed paths - Land/sea</u>			
3.1 Area from the Shatt-al-Arab to the Gulf of Oman			
Basna	Failaka	88.3	124
Bahrain	Abu Dhabi	96.5	434
Failaka	Doha	98.8	558
Bahrain	Doha	96.5	144
Dubai	Muscat	92	378
Failaka	Abe Teymour	98.8	200
Bahrain	Doha	80	137

ANNEX II

PROPAGATION FOR FREQUENCIES IN THE BAND 87.5 - 108 MHz

ON LAND AND SEA PATHS

1. Land paths

For land paths the curves in Figures 1 (50% of the time), 2a (10% of the time) and 4a (1% of the time) of Recommendation 370-4 are to be used.

2. Sea paths

For the oversea paths :

- for the North Sea and the Mediterranean, 50% of the time, the curves of Figure 1 apply;
- for the North Sea, 10% of the time, the curves of Figure 2 apply;
- for the Mediterranean, 10% of the time, the curves of Figure 3 apply;
- for the North Sea, 1% of the time, and for the Mediterranean, 1% of the time, curves 4b and 4c respectively of Recommendation 370-4 are to be used.

Note 1 - Details of the procedure used to derive Figures 1, 2 and 3 are given in the Appendix of Annex II. The derivation is based on the application of the  $\Delta h$ -correction factor given in Figure 7 of Recommendation 370-4.

Note 2 - The "Mediterranean" curves are only suitable for Mediterranean zones which are not subject to frequent superrefraction phenomena which may lead to a duct effect. In other cases reference should be made to the indications given in Annex I.

Note 3 - It should be noted that if the curves proposed in Figures 1, 2 and 3 find acceptance by the Conference, then Figure 1 would apply when determining coverage area in the special regions addressed in Annex I (Sections 2.1.1, 2.1.2 and 2.2.1).

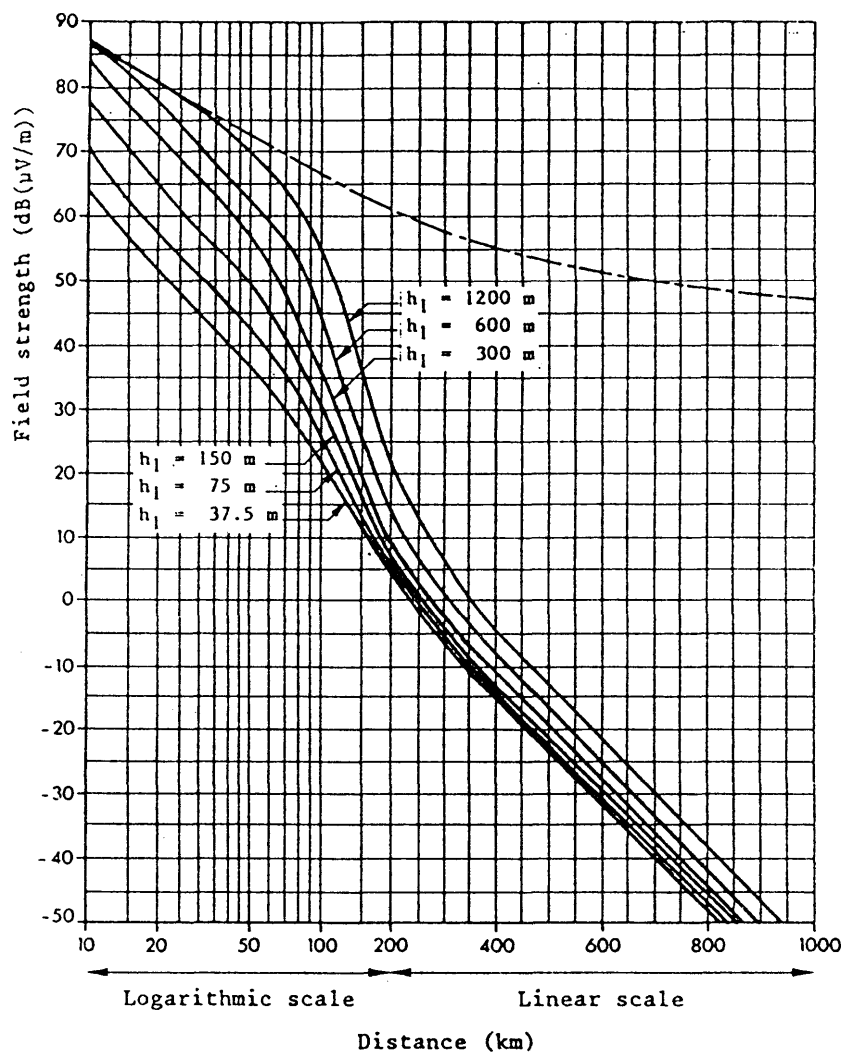


FIGURE 1

Field-strength [dB (μV/m)] for 1 kW e.r.p.

Frequency: 30 to 250 MHz (Bands I, II and III); Mediterranean Sea, North Sea;  
50% of the time; 50% of the locations;  $h_2 = 10$  m

----- Free space

5/196-E

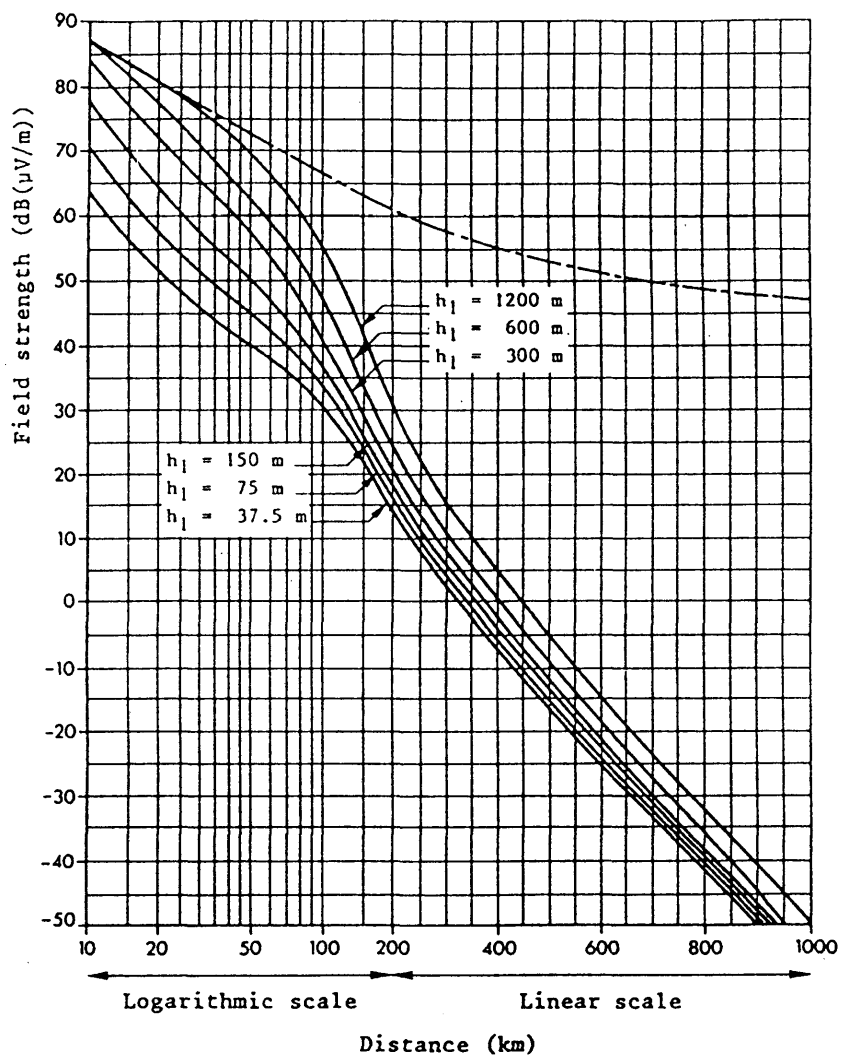


FIGURE 2

Field-strength [dB ( $\mu$ V/m)] for 1 kW e.r.p.

Frequency: 30 to 250 MHz (Bands I, II and III); North Sea; 10% of the time;  
50% of the locations;  $h_2 = 10$  m

5/196-E

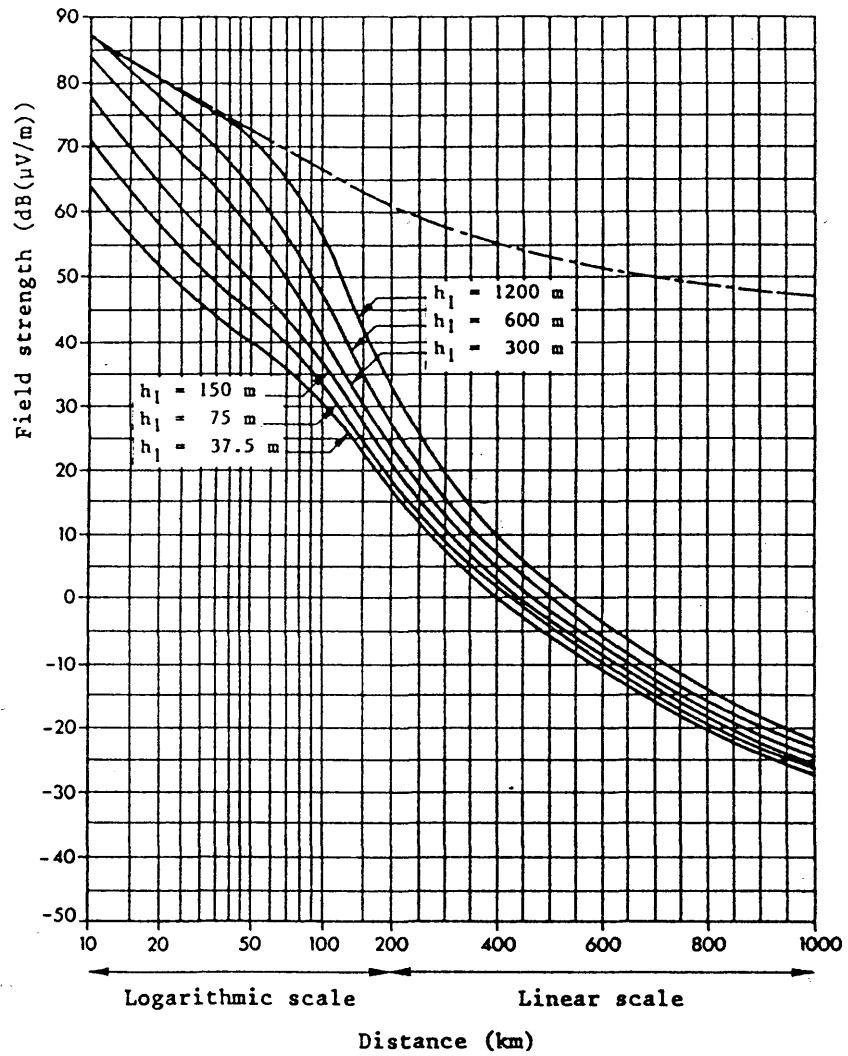


FIGURE 3

Field-strength [dB (μV/m)] for 1 kW e.r.p.

Frequency: 30 to 250 MHz (Bands I, II and III); Mediterranean Sea; 10% of the time; 50% of the locations;  $h_2 = 10$  m

----- Free space

Appendix  
(to Annex II)

The curves in Figures 1, 2 and 3 of Annex II have been established as follows :

- For the North Sea and Mediterranean, 50% of the time (Figure 1) the curves have been taken from Figure 1 in Recommendation 370-4 corrected for a value  $\Delta h = 10$  m at all distances obtained using Figure 7 of Recommendation 370-4, except where this correction would result in values higher than those which would be obtained in the same conditions for 10% of the time, in which case the latter values have been adopted.
  - For the North Sea, 10% of the time, the curves are from Figure 2a in Recommendation 370-4, corrected for a value  $\Delta h = 10$  m at all distances obtained using Figure 7 of Recommendation 370-4, except where this correction would result in values higher than those which would be obtained in the same conditions for 1% of the time, in which case the latter values have been adopted.
  - For the Mediterranean, 10% of the time (Figure 3), the curves have been obtained as follows :
    - for distances of less than 200 km, the values from Figure 2a of Recommendation 370-4 (land and North Sea, 10% of the time,  $\Delta h = 50$  m) have been corrected for  $\Delta h = 10$  m in accordance with Figure 7 of Recommendation 370-4, except where this correction would result in values higher than those obtained in the same conditions for 1% of the time, in which case the latter values have been adopted;
    - for distances of more than 200 km, the values given by the curves in Figure 2b of Recommendation 370-4 have been maintained because the curves for those distances have been derived directly from measurements.
-

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 6-E

10 April 1984

Original : French

## PLENARY MEETING

### France

#### PROPOSAL

#### CRITERIA FOR SHARING BETWEEN THE FM SOUND BROADCASTING SERVICE AND THE LAND MOBILE SERVICE

##### 1. Introduction

The work of the first session of the Regional Administrative Conference for FM Sound Broadcasting in the VHF Band led to the publication of a report to the second session. This report sets out the technical criteria and methods to be used in planning the 87.5 - 108 MHz band. Chapter 5 of the report is concerned with the compatibility of the sound broadcasting service with other services using the band, establishing among other things the technical criteria for sharing with the land mobile service.

Tests carried out between the two sessions have shown, however, that these sharing criteria are unsuitable for wideband radio relays in the land mobile service. This contribution is therefore intended to establish, in the particular case of land mobile service equipment of the type used in France, the technical criteria to be added to those already published in order to protect this service, which is authorized on a permitted basis.

##### 2. Analysis of the proposal

2.1 The criteria for sharing between the sound broadcasting service and the land mobile service adopted by the first session were the subject of theoretical analysis, laboratory simulations and field tests. The results show that wideband low-power radio-relay equipment operated by the land mobile service in France, in accordance with No. 589 of the Radio Regulations,\* cannot operate correctly on the basis set out in Chapter 5. Thus, with a signal-to-noise ratio of 30 dB at the threshold and a sensitivity at the receiver input of 1.4  $\mu$ V, the results of tests carried out in accordance with the criteria of the first session are as follows :

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\* The frequency assignments to stations using this type of equipment have been notified to the IFRB.



TABLE 1

Signal-to-noise ratio obtained by applying the  
criteria of the first session

Frequency separation between carriers of the two services (kHz)	Protection ratio for FM land mobile services (dB)	Signal-to-noise ratio measured
0	8	24
25	6	22
50	- 5.5	( Measurement impos-
75	- 17.5	( sible. Capture
100	- 27.5	( phenomenon due to
		( the AGC

F/6/1

2.2 The tests made also showed that only specific criteria could ensure the desired protection. In order not to call in question the results of the first session, the French Administration proposes that the table of protection ratios for the AM and FM land mobile services in section 5.1 of the report should be modified to cover the case of FM land mobile services using wideband radio relays.

The table in Chapter 5 (section 5.1) should be replaced by the following Table 2, in which a fourth column has been added.

It should also be specified that the third column of the table applies to narrow-band services.

TABLE 2

Protection ratio for land mobile services

Frequency separation between carriers of the two services (kHz)	Protection ratio for AM land mobile services (dB)	Protection ratio for FM land mobile services (dB)	Protection ratio for land mobile services using wideband radio- relays (dB)
0	18	8	15.8
25	16	6	15.7
50	4.5	- 5.5	13.9
75	- 7.5	- 17.5	12.1
100	- 17.5	- 27.5	8.9

F/6/2

3. Conclusion

The second session of the Conference is therefore invited to take into consideration Chapter 5 of the report of the first session as thus modified to allow for this particular case. This proposal is consistent with the spirit of the agenda for the second session, which recognizes the principle of "normal operation of stations of other services to which parts of the band 87.5 - 108 MHz are also allocated in accordance with [the] Radio Regulations".

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INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

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10 April 1984  
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PLENARY MEETING

France

PROPOSAL

PROCEDURES FOR THE BRINGING INTO SERVICE  
OF THE FM SOUND BROADCASTING PLAN

The first session of the Regional Administrative Conference for FM Sound Broadcasting in the VHF Band (Region 1 and certain countries concerned in Region 3) prepared, in accordance with its agenda, the technical bases for the frequency assignment plan to be established at the second session and the criteria for sharing between the sound broadcasting service and the permitted services in the band 87.5 - 108 MHz. At the first session, it was further decided (section 6.2.4 of the report) that the existing or planned stations of the permitted services in the aforesaid band should not be taken into account during planning of the broadcasting service at the second session.

It is therefore essential to define transitional procedures for bringing the Plan into operation, in order to allow for the normal functioning of the stations of services permitted under Nos. 581, 582, 587, 588, 589 and 590 of the Radio Regulations, as specified in item 2.3 of the agenda adopted for the second session.

In a more general context, when the Plan is brought into operation, administrations will have to take all the necessary measures to ensure the protection of the permitted services, particularly those whose frequencies are notified to the IFRB.

The French Administration, whose mobile service (all France) is authorized on a permitted basis in the band 104 - 108 MHz until 31 December 1995 (RR 589), therefore proposes that the annexed provisions should be inserted in the Agreement.

F/7/1

This Administration further considers that any modification of the Plan, whether relating to a change in the characteristics of a broadcasting station entered in the Plan or to the bringing into service of a new broadcasting station, should be subject to a coordination procedure.

Annex : 1

ANNEX

PROVISIONS TO BE INSERTED IN THE AGREEMENT  
FOR THE PROTECTION OF PERMITTED SERVICES

F/7/2

1. Bringing into operation of the Broadcasting Plan

1.1 The contracting administrations undertake to adopt the necessary measures to reduce harmful interference caused to existing stations of the permitted services of another country as the result of the bringing into operation of the Broadcasting Plan.

1.2 When a contracting administration decides to bring into service a broadcasting station entered in the Plan in a band allocated to the permitted services of another country, it shall take all the necessary measures to ensure that, within the limits of the notified service area of the stations to be protected, the radiated field strength values of its station are in conformity with the standards given in chapter 5, section 5.1, of the report of the first session.

1.3 The above provisions will no longer be applicable as from the date on which the permitted services cease to be authorized (see RR 581, 582, 587, 588, 589 and 590).

F/7/3

2. Harmful interference

If the bringing into service of a broadcasting station causes harmful interference to a notified station of a permitted service of another country, the administration of the station suffering interference shall inform the administration concerned, which shall take, without delay, appropriate measures to reduce the radiated field strength, in conformity with the standards referred to in paragraph 1.2 above.

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INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 8-E  
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Original : English

PLENARY MEETING

Republic of South Africa

PROPOSAL FOR THE WORK OF THE CONFERENCE

PROCEDURE FOR BRINGING INTO SERVICE THE  
ASSIGNMENTS IN THE PLAN  
(Agenda item 2.3)

In South Africa there are 496 FM transmitters in operation at 120 transmitting stations using frequencies in accordance with the African VHF/UHF Plan, Geneva, 1963. The operating frequencies of all these transmitters will have to be changed to conform to the new plan.

It will not be possible to change the operating frequencies of all these transmitters on any given date, such as a date which the second session of the Conference might determine as the date of implementation of the new plan. A transitional period will be necessary to effect the necessary changes.

The question of the most effective way of implementing the changes in frequency is still being studied. This study has as aims the minimum interruption to the broadcasting services while completing the work in the most cost-effective manner and in the shortest time compatible with these aims.

It is intended that a further proposal will be submitted to the second session of the Conference when these studies have been completed as an addendum to this document and containing a more definite statement regarding the necessary length of the transitional period. The data input for these studies must include the FM broadcasting assignments in neighbouring countries.

AFS/8/1

It is proposed that many details of the transitional period (or the implementation of the frequency changes) should be coordinated with the countries concerned, that is all countries having FM broadcasting stations in operation within the coordination distance of any of the stations within the Republic of South Africa.

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 9-E  
10 April 1984  
Original : French

## PLENARY MEETING

### Socialist Republic of Romania

#### PROPOSALS FOR THE WORK OF THE CONFERENCE

##### Introduction

The Romanian Administration hereby submits for consideration at the second session of the Conference some proposals concerning the method of work and the bases for the calculations, in the light of the report of the first session of the RARC (Geneva, 1982).

1. The Plan will be equitable and acceptable only if the principle of the same number of equivalent national coverages (see section 6.1.2 of the above-mentioned report) in the band 87.5 - 108 MHz is applied without any exceptions. The maximum value of this number is well below 6 or 7 in many parts of Europe, owing to the terrain and the numerous frontiers.

ROU/9/1

The following planning procedure is therefore proposed :

- in a first stage, entries in the Plan will consist only of emissions ensuring for all countries the same number - as large as possible - of protected equivalent coverages in the national territory;
- thereafter, a new coverage will be added in the regions where this is possible for all the countries of the region, without prejudice to entries already made; the same procedure will be followed for ensuing coverages.

2. Countries which have not used the sub-band 87.5 - 100 MHz for sound broadcasting and are considering doing so in the future will have very limited opportunities for using this sub-band in border areas with countries having prior assignments in those areas (section 6.1.3, paragraph 3, of the report). It would be fair to give them local priority in the sub-band 100 - 108 MHz, so that they may have in the whole band at least the same number of national coverages as their neighbours already have secured below 100 MHz.

ROU/9/2

3. The protected field strength levels are generally much higher than the minimum usable field strength (section 3.4 of the report); a major reason for this is the high density of towns in Europe, for which national plans try to ensure coverage at a field strength of 60 - 66 dBμ or more, thus implicitly providing this high level over nearly all the national territory.

ROU/9/3

Considering that the minimum usable field strength values for rural areas do not constitute a realistic basis for planning, it is proposed that, in each frontier area, an attempt should be made first of all to eliminate the interferences which raise the protected field strength well above the mean value of the protected field strengths calculated for all the emissions of the area.

ROU/9/4

4. It seems advisable to deal first with transmitters having an e.r.p. equal to or above 10 kW and then to enter in the Plan transmitters with a lower power, provided that their emissions do not cause harmful interference to those of the higher-power transmitters. In this way, the protected field strength of small transmitters could be much higher than that of the main transmitters.

5. Approximate calculation of interference (Annex G to the report, section 2.1) is inadequate in many cases. Calculation at the site of the transmitter to be protected is particularly misleading in the case of a high-power transmitter and a low-level but nearby interfering emission.

ROU/9/5

When more accurate calculations are required, the corrections described in Annex A to the report should be used. For the interfering field strength, it would seem reasonable to consider as the value of parameter  $\Delta h$  the value for the reception area, provided the transmitting antenna is in the clear and there are no unduly large obstacles on the propagation path.

ROU/9/6

If the propagation path of an interfering emission crosses mountain ranges higher than the altitude of the transmitter and situated at least 40 - 50 km away, the e.r.p. of the interfering emission might well be considered to be virtually reduced by the number of dB which would result from the application of correction 3 of Annex A (terrain clearance angle) on the transmitter side, without the 16 km limit.

Note - The above proposals are derived from the experience acquired in preparing the national Plan and effecting coordination with neighbouring countries. For these operations, we used computer programs which include :

- a program which assigns to every transmitter in a region, in a preset order of priorities, the least affected channels among those adjacent to its site in the theoretical network;
  - a program which inserts new emissions in an already existing Plan, in the channels ensuring the best mutual protection;
  - a program for checking the plan, which calculates for each assignment in the Plan, in 12 directions (or more), the protected field strengths, the radii of the coverage areas and the individual contributions of significant interfering emissions.
-

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 10-E  
10 April 1984  
Original : Russian

PLENARY MEETING

USSR

PROPOSALS FOR THE WORK OF THE CONFERENCE

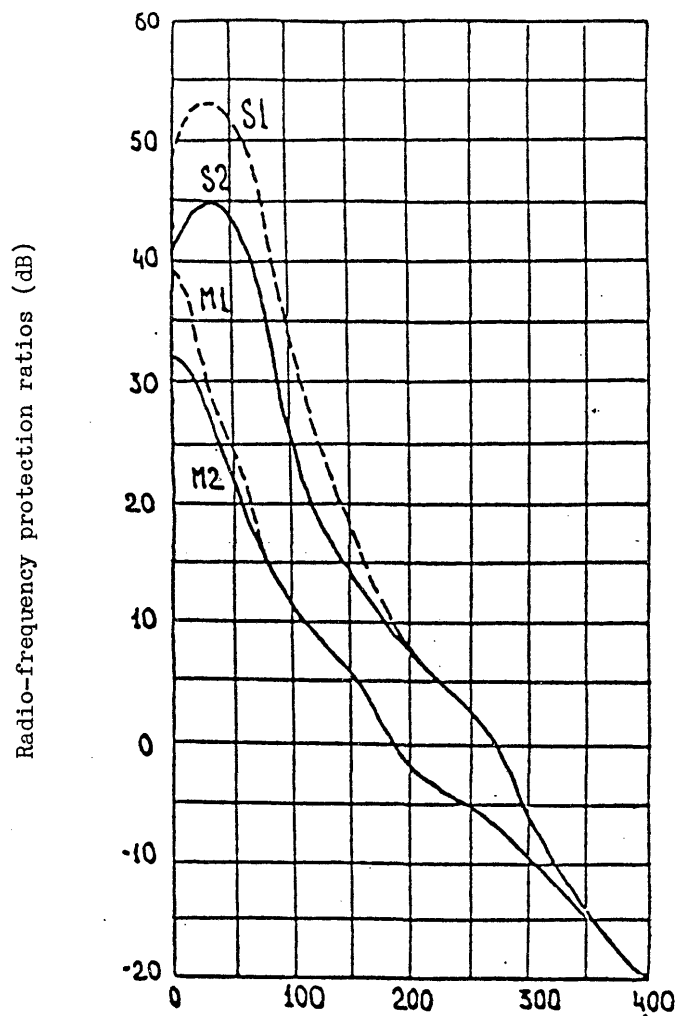
- URS/10/1      1.      To obtain satisfactory monophonic reception in cases of tropospheric interference (99% of the time) in systems using a maximum frequency deviation of  $\pm 50$  kHz, it is proposed to use for planning the radio-frequency protection ratios given in curve M2 of Figure 1. For steady interference, a higher degree of protection must be provided, in accordance with curve M1 of Figure 1. For convenience, protection ratios for different frequency spacing values are also listed in Table 1.
- URS/10/2      2.      To obtain satisfactory stereophonic reception in cases of tropospheric interference (99% of the time) in systems using a maximum frequency deviation of  $\pm 50$  kHz, it is proposed to use for planning the radio-frequency protection ratios given in curve S2 of Figure 1. For steady interference, a higher degree of protection must be provided, in accordance with curve S1 of Figure 1. For convenience, protection ratios for different frequency spacing values are also listed in Table 1.
- URS/10/3      3.      If the wanted and interfering transmitters use different maximum frequency deviations ( $\pm 50$  kHz and  $\pm 75$  kHz), it is proposed that planning for satisfactory stereophonic reception should be based on the radio-frequency protection ratios given in Table 2.

Reasons : These proposals are based on theoretical and experimental studies conducted in the USSR and reflected in draft Recommendation 412-3 (MOD I) approved at the Interim Meeting of CCIR Study Group 10 in 1983.

The data given in these proposals of the USSR Administration are intended to supplement the information on protection ratios appearing in the report of the first session of the Conference and will help to solve problems of coordinating frequency assignments at the frontiers of countries using VHF/FM broadcasting systems with different maximum frequency deviations.



URS/10



Difference between wanted and interfering carrier frequencies (kHz)

FIGURE 1

Radio-frequency protection ratios required by broadcasting  
services in band 8 (VHF) using a maximum  
frequency deviation of  $\pm 50$  kHz

Curve M1 : Monophonic broadcasting, steady interference

Curve M2 : Monophonic broadcasting, tropospheric interference  
(99% of the time)

Curve S1 : Stereophonic broadcasting, steady interference

Curve S2 : Stereophonic broadcasting, tropospheric interference  
(99% of the time)

URS/10

TABLE 1

Frequency spacing (kHz)	Radio-frequency protection ratios (dB) using a maximum frequency deviation of $\pm 50$ kHz			
	Monophonic		Stereophonic	
	Steady interference	Tropospheric interference	Steady interference	Tropospheric interference
0	39	32	49	41
25	32	28	53	45
50	24	22	51	43
75	15	15	45	37
100	12	12	33	25
125	7.5	7.5	25	18
150	6	6	18	14
175	2	2	12	11
200	-2.5	-2.5	7	7
225	-3.5	-3.5	5	5
250	-6	-6	2	2
275	-7.5	-7.5	0	0
300	-10	-10	-7	-7
325	-12	-12	-10	-10
350	-15	-15	-15	-15
375	-17.5	-17.5	-17.5	-17.5
400	-20	-20	-20	-20

TABLE 2

URS/10

Frequency spacing (kHz)	Maximum frequency deviation : wanted transmitter $\pm 50$ kHz interfering transmitter $\pm 75$ kHz		Maximum frequency deviation : wanted transmitter $\pm 75$ kHz interfering transmitter $\pm 50$ kHz	
	Radio-frequency protection ratios (dB) stereophonic		Radio-frequency protection ratios (dB) stereophonic	
	Steady interference	Tropospheric interference	Steady interference	Tropospheric interference
0	49	41	45	37
25	53	45	51	43
50	51	43	51	43
75	45	37	45	37
100	33	25	33	25
125	25	18	24.5	18
150	18	14	18	14
175	12	11	11	10
200	7	7	7	7
225	5	5	4.5	4.5
250	2	2	2	2
275	0	0	-2	-2
300	-7	-7	-7	-7
325	-10	-10	-11.5	-11.5
350	-15	-15	-15	-15
375	-17.5	-17.5	-17.5	-17.5
400	-20	-20	-20	-20

CARR-1(2)/10-E

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 11-E

27 April 1984

Original : French

## PLENARY MEETING

### France

#### PROPOSAL

#### COORDINATION PROCEDURES

##### 1. Introduction

Modifications to the characteristics of stations appearing in the Stockholm (1961) and Geneva (1963) Plans are currently made in accordance with the procedures laid down, respectively, in Articles 4 and 3 of those Agreements.

Since these procedures have proved satisfactory in the past, it is proposed to retain them for the purposes of the Agreement to be signed in 1984, with the adjustments required to make provision for sharing with permitted services in the same frequency band and to ensure compatibility with the aeronautical radionavigation service in the higher frequency band.

In drawing up the Agreement, every effort should be made to adopt modification procedures entailing as few administrative formalities and calculations as possible, both for administrations and for the IFRB.

##### 2. General principles to be embodied in the Agreement

- F/11/1 2.1 The French Administration considers that modifications to the Plan, whether these involve modifications to characteristics of a station entered in the Plan (except those which lessen the risk of interference) or the bringing into service of a new station, should be the subject of consultation between the administrations concerned whenever there is a risk of interference as described in paragraph 3.
- F/11/2 2.2 Coordination should be carried out either directly between administrations or through the IFRB, at the choice of the administration undertaking the coordination.
- F/11/3 2.3 When coordination has been carried out under the conditions described below and an agreement has been reached to which reservations have been expressed by either the permitted services or the aeronautical radionavigation service as regards the bringing into service of the broadcasting transmitter, the technical characteristics of the transmitter involved in the coordination shall be entered in the Plan with a distinctive sign.

Transmitters bearing this sign may only be brought into service with the subsequent agreement of the administration concerned.

3. Cases of coordination

F/11/4 3.1 Coordination in relation to the broadcasting service

As under the Stockholm and Geneva Agreements, cases where coordination is required should be identified using tables of consultation distances. In order to avoid needless consultations wherever possible, the tables should cater for a sufficient number of effective antenna heights (e.g., 37.5 - 75 - 150 - 300 - 600 - 1,200 m) and radiated powers (e.g., 1, 2, 5, 10, 20, 50, 100, 200, 500 W and 1, 2, 5, 10, 20, 50, 100, 200, 500 kW).

The consultation distances should be calculated from the broadcasting station to the boundary, so that the consulted administration is able to protect both its stations which are entered in the Plan and its future stations.

However, in order to avoid deadlock situations, reasons must be given for any refusal (protection of a station entered in the Plan or one which is planned).

3.2 Coordination in relation to the aeronautical radionavigation service

F/11/5 Cases where coordination is required should be identified using tables of consultation distances. In order to avoid needless consultations wherever possible, the tables should cater for a sufficient number of broadcasting transmitter antenna heights and radiated powers.

F/11/6 They should also be drawn up according to the broadcasting transmitter frequency (to take account of the fact that a transmitter using a frequency below 100 MHz is less likely to cause interference than if it were operating on a frequency between 104 and 108 MHz).

F/11/7 The consultation distances should be calculated from the site of the broadcasting station to either the site of the VOR or the ILS test points. The ILS or VOR to be taken into account are those included in a list which should be annexed to the Plan and those subsequently notified to the IFRB.

F/11/8 The request for coordination should indicate the ILS or VOR transmitter(s) likely to be caused interference.

3.3 Coordination in relation to services to which the band is allocated on a permitted basis

F/11/9 In cases involving the broadcasting service and the services to which the band is allocated on a permitted basis, the provisions of Article 12 of the Radio Regulations shall apply for the protection of already notified stations in the permitted services.

F/11/10 With regard to the protection of the land mobile service, the consultation distance should be calculated on the basis of the field strength to be protected and the protection ratios given in Chapter 5 of the report of the first session (with any amendments adopted by the second session).

F/11/11

Any proposed modification to the characteristics of a broadcasting station (or any proposal to bring into service a new station) in which the distance to the nearest edge of the service area of a notified station in the permitted service is less than the consultation distance should be subject to coordination.

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 12-E

1 August 1984

Original : English

PLENARY MEETING

## Note by the Secretary-General

At the request of the Director of the CCIR, I have the honour to transmit herewith a copy of a Report established by the Joint Interim Working Party (JIWP) 8-10/1 to the Second Session of the Conference, in response to Recommendations CC and DD of the First Session of the Conference.

R.E. BUTLER  
Secretary-General

Annex : mentioned



INTERNATIONAL TELECOMMUNICATION UNION

## **CCIR**

INTERNATIONAL  
RADIO CONSULTATIVE  
COMMITTEE

# **REPORT**

**TO THE SECOND SESSION OF THE REGIONAL  
ADMINISTRATIVE CONFERENCE FOR FM  
SOUND BROADCASTING IN THE VHF BAND  
(REGION 1 AND CERTAIN COUNTRIES  
CONCERNED IN REGION 3)**

**Conclusions from Joint Interim Working Party 8-10/1;  
May, 1984 (Recommendations CC and DD  
of CARR-1-82)**

Geneva, 1984





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FOREWORD

Recommendations CC and DD of the CARR-1-(1) requested the CCIR to provide further guidance in the technical criteria to be applied in planning FM broadcasting with respect to the possibility of improving the immunity of receivers in the aeronautical radionavigation service to interference caused by FM broadcasting emissions and to the maximum obtainable suppression of spurious emissions in the band 108-137 MHz from broadcasting stations operating in the band 87.5-108 MHz.

Circular letters G.8/1275 and G.10/1184 of 17 September 1982 advised of the formation of IWP 8/12 and IWP 10/8 to carry out studies for the respective Study Groups to prepare information for the Second Session of the above referenced conference.

The Reports of the IWPs were circulated to Administrations as documents No. 3 and 4 of the Second Session of the CARR-1.

Nevertheless, from the result of these studies it was noted that further improvements in compatibility could still be achieved since CCIR studies were still in progress.

It was therefore considered appropriate to study the question further to provide all information available. To that end, Joint Interim Working Party 8-10/1 was established by circular letters G.1/1321, G.8/1324 and G.10/1230 in accordance with CCIR Resolution 24-5 and in consultation with the Chairmen of the concerned Study Groups, to:

- consider the Reports of Interim Working Parties 10/8 and 8/12 as well as new contributions;
- determine whether further improvements in compatibility can be made; and
- prepare a consolidated Report.

JIWP 8-10/1 met in Geneva from 9 to 16 May 1984 and prepared the Report required by its mandate.

I am pleased therefore to transmit herein the CCIR Report prepared by JIWP 8-10/1, which contains the best information presently available related to the compatibility problem. This Report was approved administratively by CCIR Study Group 8 at its Interim Meeting in June 1984, for transmission by the Director to the Second Session of the Conference. The Report replaces and supersedes the earlier CCIR Reports prepared by Interim Working Parties 8/12 and 10/8, respectively distributed as Conference Document Nos. 3 and 4.

Director, CCIR

## 1. Introduction

1.1 The decision of the World Administrative Radio Conference held at Geneva in 1979 to generally extend the VHF/FM broadcast band to 108 MHz put broadcasting and aeronautical radionavigation services in adjacent frequency bands. That this might lead to problems of interference was recognized in the agenda of the Regional Administrative Conference for FM Sound Broadcasting in the VHF Band (Region 1 and certain countries in Region 3), First Session (CARR-1), held in Geneva in 1982 to determine the technical constraints to be used in planning the new band for the broadcasting service.

At that Conference the potential interactions between FM broadcasting in the band of about 88-108 MHz and the aeronautical services in the band 108-137 MHz (ILS localizer, VOR and VHF COM) were examined in the light of existing CCIR texts and various contributions made to the Conference. As a result the Conference adopted certain technical criteria for broadcasting frequency assignment planning purposes which were intended to reduce to a minimum the likely interference to the aeronautical safety services from future FM broadcasting stations.

However, it was observed that these criteria could impose severe practical restrictions on planning for FM broadcasting in that band. Bearing in mind that the criteria were derived from limited measurements performed in laboratories in various countries on existing airborne equipment, the Conference agreed that further guidance was required in good time for the Second Session of the Conference, Geneva, 1984.

The Conference therefore urged the CCIR to further study:

"... with the retention of existing airborne receiving equipment, by how much can the value of immunity to FM sound broadcasting interference of that equipment be improved over those values established at this Session?

.... by the replacement of existing airborne equipment by new better performance airborne equipment, by how much the value of immunity to FM sound broadcasting interference of that equipment can be improved over those values established at this Session?" (Recommendation CC)

and to study also:

"... the maximum suppression of spurious emissions, particularly intermodulation products, from the broadcasting transmitting stations into the aeronautical frequency bands between 108 and 137 MHz which can be maintained continuously in all operational conditions of the broadcasting service" (Recommendation DD).

1.2 Furthermore Resolution No. 6 of the Plenipotentiary Conference (Nairobi, 1982) attached importance to this problem, considering that "compatibility criteria between the two services may have to be applied on a world-wide basis". The Administrative Council subsequently adopted Resolution No. 896 at its 1983 Session including the decision that the Second Session shall review those parts of the Report of the First Session relating to "... compatibility between the broadcasting service and the aeronautical radionavigation service ..." in the light of the relevant CCIR contributions.

1.3 In accordance with CCIR Resolution 24-5 the Director of the CCIR in consultation with the respective Study Group Chairmen immediately organized Interim Working Parties 8/12 and 10/8 to carry out the studies for the respective Study Groups and to prepare the information required. The Reports of the IWPs were circulated for advance information to Administrations as documents No. 3 and 4 of the Second Session of the Conference.

1.4 From the results of these studies, it could be noted that compatibility between both services could be difficult to achieve, perhaps impossible in certain geographical locations, with existing immunity characteristics of aeronautical receivers. Even those immunity characteristics initially suggested by the aeronautical community for future receivers, may not have allowed final FM broadcast planning in some areas. Since the termination of the work of the two IWPs, studies have been continued by administrations and in the competent international organisations such as ICAO. The results of these studies provided further technical information that showed that improvements in compatibility could still be achieved.

It was, therefore, appropriate to review once again all information available. To that end, Joint Interim Working Party 8-10/1 was established to:

- consider the reports of Interim Working Parties 10/8 and 8/12 as well as new contributions;
- determine whether further improvements in compatibility can be made;
- prepare a consolidated report.

1.5 This consolidated report outlines the possibilities and techniques for improving suppression of intermodulation products at broadcast transmitting stations, deals with aspects of the necessary protection ratios for the aeronautical radionavigation receivers and presents future improvements of the immunity of airborne radionavigation equipment to interference from FM broadcasting stations. It also describes some procedures that may be used to better assess interference situations in general or in special circumstances.

1.6 World-wide standards for aeronautical systems as prescribed by ICAO are necessary to facilitate international operation by aviation.

Although JIWP 8-10/1 has to prepare a report for submission by the CCIR to the Second Session of the CARR-1 (2), it has to take into account the above-mentioned fact and Resolution No. 6 of the Plenipotentiary Conference, stating that compatibility criteria between the broadcasting and the aeronautical services may have to be applied on a world-wide basis.

JIWP 8-10/1 considers, however, that in applying these criteria, due account must be given to the fact that in some countries a satisfactory situation already exists between extensive FM broadcast networks and the aeronautical services, coordinated on a case-by-case basis.

## 2. Terminology

The Report of the First Session of the Conference (CARR-1-82) and CCIR Report 929 identify several mechanisms by which interference to aeronautical services from FM broadcasting can arise. These can be divided into two general types. Those arising from components radiated from broadcasting transmitters at or near the frequency of the aeronautical service constitute Type A interference, whereas those arising within the aeronautical receiver constitute Type B.

### 2.1 Type A interference

In the normal operation of broadcast transmitters Type A interference may arise in two ways. First, a single transmitter may generate spurious emissions or several broadcast transmitters may intermodulate to produce terms in the aeronautical frequency bands; this is termed Type A1. Second, the sidebands of a broadcast transmitter may include non-negligible components in the aeronautical bands; this mechanism, which is designated Type A2, will in practice arise only from transmitters having frequencies near to 108 MHz.

From the viewpoint of the aviation receiver the spectral characteristics of the unwanted signal are of particular significance. To a first approximation the effects of modulated FM broadcasting signals are likely to be "noise-like" in the receivers, with a consequential reduction in the wanted operational performance of aviation receivers.

In addition, adverse effects in the ILS/VOR audio (identification) channel can occur.

However, if unmodulated broadcast transmission were to produce stable frequency components close to the ILS modulation signal frequencies (e.g.  $\pm 15$  Hz of the modulation frequencies 90 Hz and 150 Hz) then highly significant interference could occur even at very low levels of unwanted signals (see CCIR Report 927).

#### 2.1.1 Type A1 interference

Variously described as "in-band" or "on-channel", caused by spurious emissions (including intermodulation products) from the broadcast transmitter station. This is generally a low-level effect and can be regarded as harmful interference, as defined in the Radio Regulations, in cases where the level is sufficient to affect the performance of avionics receivers. No rejection can be provided at the airborne receiver. Suppression at source, the choice of broadcast assignment, and/or distance separation are the only practical solutions.

#### 2.1.2 Type A2 interference

Interference to ILS channels near to the 108 MHz band edge due to out-of-band emissions from broadcasting stations operating on carrier frequencies in the upper end of the broadcasting band.



## 2.2 Type B interference

Mechanisms producing this type of interference can occur due to radiations from broadcast transmitters outside the aeronautical band. Their incidence depends on a number of factors which include:

- the very large power differentials between the two services;
- the wide variability of the geometry between the aircraft, the aviation ground transmitters and the FM broadcasting transmitters;
- the susceptibility of the aviation receivers (which varies from receiver to receiver and which also depends on the frequency separation between wanted and unwanted signals);
- the installed aviation system differences (particularly antenna radiation pattern and feeders);
- the FM broadcasting station antenna radiation pattern.

The airborne receiver, designed to work in a low-power environment and needing to detect small wanted input signals, cannot easily cope in the presence of an unwanted signal close in frequency and at a very much greater power level (perhaps higher by 80 dB or more).

The two main interference mechanisms involved are receiver-generated intermodulation (B1) and receiver desensitization (B2). It is important to note that these are separate mechanisms with separate characteristics.

### 2.2.1 Type B1 interference

Intermodulation generated in an airborne receiver as a result of the receiver being driven into non-linearity by a high-powered broadcasting signal outside the aeronautical band. In this case at least two broadcasting signals need to be present and they must have a frequency relationship which, in non-linear combination, can produce an intermodulation product within the wanted RF channel in use by the airborne receiver. One of the broadcasting signals must be powerful enough to drive the receiver into regions of severe non-linearity but interference may then be produced even though the other signal(s) may be significantly less powerful.

Perhaps the most serious practical aspect of this mechanism from the frequency planning viewpoint is that an acceptable existing situation involving FM broadcasting signals at non-critical levels can be transformed into a practical problem by, for example, the addition of a new broadcasting station or an increase in power at an existing broadcasting station.

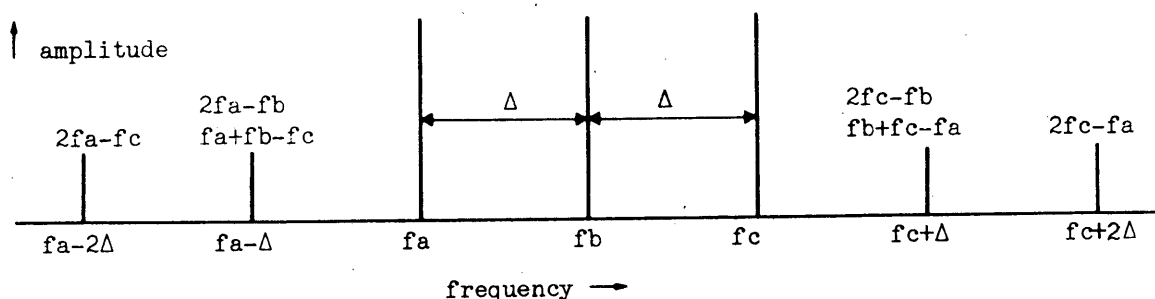
### 2.2.2 Type B2 interference

Desensitization or "front-end overload" which occurs when an airborne receiver RF section is overloaded by a single (or multiple) broadcasting transmission outside the aeronautical band. The effect arises because the RF selectivity of airborne receivers is relatively wide-band and it is difficult to provide sharp RF "cut-off" immediately below 108 MHz.

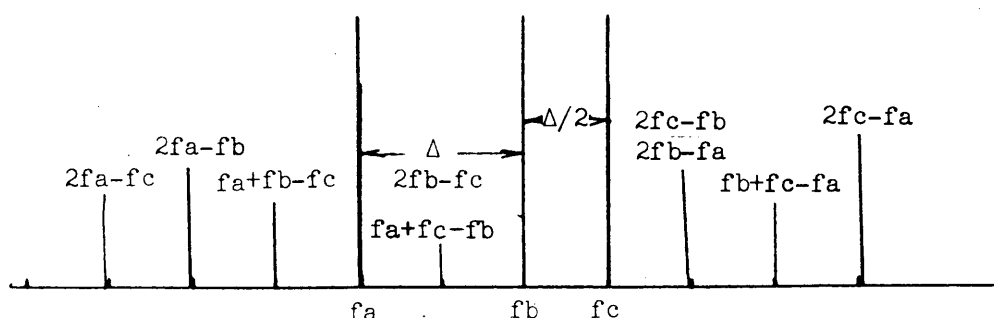
### 3. Improving the suppression of intermodulation products and out-of band emissions at broadcast transmitting stations and determination of protection ratios

#### 3.1 Intermodulation in a transmission system

When two or more transmission frequencies  $f_a$ ,  $f_b$ ,  $f_c \dots$  are combined into one antenna system there is a possibility of intermodulation taking place somewhere in the transmission system. At VHF the intermodulation frequencies which are most likely to cause interference with other services are of the form  $(2f_a - f_b)$  or  $(f_a + f_b - f_c)$  because these frequencies remain in the VHF band and are therefore radiated efficiently by the antenna system. They are also more difficult to filter out than those which appear close to the harmonic frequencies. The disposition of these intermodulation frequencies is shown diagrammatically in Fig. 1a for the case of three transmitters having equally-spaced frequencies. Figure 1b shows a more general case for unequally-spaced frequencies, in this case for  $\Delta$  and  $\Delta/2$ , where multiple intermodulation products need not occur at one frequency, and the number of frequencies with intermodulation products is greater.



(a) - Equally-spaced transmission,  $\Delta$



(b) - Unequally-spaced transmission,  $\Delta$  and  $\Delta/2$

FIGURE 1 - Occurrence of third-order intermodulation products at a three-frequency transmitting station

Intermodulation at the transmitting station may take place by either of two distinct processes. By the first process the transmitter combining unit\* may allow a low level of voltage from one transmitter (frequency  $f_a$ ) to reach the output stage of another transmitter (frequency  $f_b$ ) where mixing takes place to produce a frequency ( $2f_b - f_a$ ). The production involves a conversion loss in going from the input level of  $f_a$  to the output level of ( $2f_b - f_a$ ). The conversion loss is dependent on the working conditions of the amplifier, i.e. class B, C or D, the terminating impedances for the mixing products on other relevant frequencies ( $f_b - f_a$ ), ( $f_b + f_a$ ), harmonics, etc., and the frequency response of the output circuit at these frequencies. In addition to the conversion loss, power matching between the combiners and the mixing function in the transmitter affects the final levels of the intermodulation products. This factor depends on the electrical length of the connecting feeders between the combiners and the transmitters. With valve transmitters, variations of intermodulation products of up to 10 dB have been reported relative to feeder length.

Data on various arrangements for combining transmitters, including methods of calculation and measurements on some representative installations, is given later in the report in Annex I.

The second process takes place in the transmission system after frequencies have been combined and may be due to arcing or to the non-linear resistance of metal-to-metal contacts within the feeder and antenna system. In general, however, the levels thus produced are likely to be lower than those produced due to an imperfect transmitter combining unit. The possibility of intermodulation having taken place by the second process can be checked by comparing the levels of products measured in the radiated field with those measured in the main feeders.

When considering levels that are likely to be produced it is necessary to consider:

- the circuit of the transmitter combining unit and its transfer characteristics at all relevant frequencies; and
- the conversion loss in the conversion process.

Because of the complicated nature of the terminating impedances at the various frequencies, especially in transistorized power amplifiers where the mixing occurs in a number of combined amplifiers, conversion losses cannot be accurately predicted. Conversion losses for valve transmitters, including matching effects, have been reported as being between 9 and 26 dB, typically 20 dB.

For transistorized amplifiers, conversion losses of 6 to 25 dB have been reported but further investigations are needed.

The above values are based on 1.8 MHz spacing between carriers. Mistuning a tuned amplifier can increase intermodulation products by up to 10 dB. Care must also be taken to ensure the final amplifier has been correctly neutralized.

---

\* Alternative terms for transmitter combining unit include transmitter combiner or diplexer, channel combiner, star filter and hybrid filter.

### 3.2 Possibilities and techniques for improving suppression of intermodulation products at broadcast transmitting stations

Contributions available to the JIWP have shown that it is possible to design and build broadcast transmitting stations that will have intermodulation products suppressed to a level lower than that required by the Radio Regulations and that such levels can be maintained over a long period of time. It has also been shown that still lower levels may be obtained at individual stations where the additional cost and effort are justified. It remains to be seen whether these levels can equally be maintained in service.

The ITU Radio Regulations (1982) require that the mean power of an intermodulation product supplied by a transmitter of mean power above 25 W to the antenna transmission line shall be at least 60 dB below the wanted signal and shall not exceed 1 mW. Thus for a transmitter power of 1 kW the highest relative level for the i.p. is -60 dB while for one of 40 kW the relative level must not exceed -76 dB. From Table I-II of Annex I, it may be seen that old UK stations exhibit i.p. levels 5 dB or more below the ITU requirement and the two new stations achieve even lower levels, at least in the short term. It seems likely that levels at least 10 dB below the ITU requirement can be achieved and maintained in service for transmitters of 25 W or more. For transmitters of powers below 25 W it is believed that no improvement is necessary.

In order to achieve the required levels of suppression of intermodulation products it is necessary to design and engineer the transmitter installation with meticulous attention to detail. In particular, the following aspects have been found to be important.

#### 3.2.1 Combining units and frequency-separation dependence of transmitter conversion loss

With regard to the generation of intermodulation products within broadcasting transmitters, measurements in the UK have confirmed that transmitter conversion losses for the generation of two-frequency intermodulation products increase as the frequency separation increases. Hence, if the broadcast transmitter frequencies that may cause third-order intermodulation products in the aeronautical bands above 108 MHz are relatively widely spaced (i.e. by more than about 3.0 MHz) it follows that the required low levels of intermodulation products will generally be achieved without significant increase in the cost or complexity of the transmitter combining units.

The conversion losses for three-frequency intermodulation products have been found to be higher than in the two-frequency case so that it is probably unnecessary to make special provision in the combining unit design for the suppression of intermodulation products in the three-frequency case.

The required isolation between transmitters sharing an antenna should be calculated taking into account the conversion loss at the transmitter and any attenuation of the intermodulation product in the combiner as discussed in Section 3.2 above.

### 3.2.2 Antennas

If transmitters are fed into separate antennas, the mutual coupling between them should be taken into consideration when deciding what additional filters will be required.

If a common antenna is used, one having a large aperture and a relatively lower power density, it would be expected to have a better linearity than a small-aperture, high power density antenna.

The antenna construction should take into account the local environment. Materials and finishes should be chosen to minimize the possibility of rectification effects at junctions.

In calculating the effect of radiated intermodulation products, the result will be more accurate if allowance is made for the radiation pattern of the antenna (see Section 5.3) taking into account the beam tilt where appropriate (see example given in Annex II).

Where possible, data on the radiation pattern for the intermodulation product frequency should be used in the case of Al interference, although the example in Annex II shows that the pattern is approximately the same as the pattern at frequencies within the broadcast band.

### 3.2.3 Antenna transmission line

The use of multiple contacts in a transmission line should be minimized as these may become non-linear with oxidation. Thus a continuous semi-flexible transmission line would be preferable to a rigid, sectionalized line.

### 3.2.4 Transmitter drives

Any significant coupling between transmitter drives, albeit low level, can give rise to i.p.s which will degrade the overall performance. If a number of drives are mounted close together the electromagnetic screening should be of high standard. Similarly, if the coaxial transmission lines between the drives and the power amplifiers run together, e.g. in a duct, the screening between the lines should be of a high order; it may be necessary to use double screened cable or feeder having a solid outer conductor.

As a guide, transmitter drives should carry no stray pick-up of unwanted frequencies higher than -75 dB relative level. Screening must be sufficient to reduce direct pick-up of the radiated signals from transmitters on other frequencies, as well as reducing the mutual coupling mentioned above.

### 3.2.5 Position of filter for optimum attenuation of inter-modulation products

Adjustment of the length of feeder between the transmitter and combining unit is necessary to achieve optimum performance.

### 3.2.6 Suppression of intermodulation products in solid-state amplifiers

For transmitters with solid-state amplifiers it has been suggested that conversion loss can be increased up to about 25 dB by combining two amplifier stages by means of 90° phase shifting networks.

## 3.3 Conclusions regarding Type A1 interference

3.3.1 In Region 1, particularly in Europe, FM broadcast stations with multiple transmitters are usually multiplexed into the same antenna, although in other areas, e.g. in the USA, this is exceptional. The use of multiplexed transmitters can cause difficult cases of spurious emission, viz, third-order intermodulation products falling in the frequency band allocated to the aeronautical services (108-137 MHz). Consequently, Footnote 10 to Appendix 8 of the International Radio Regulations specifically applies to FM broadcasting transmitters operating in the band 87.5-108 MHz. Other relevant Radio Regulations are RR 304, 343 and 1813.

3.3.2 Spurious emission measurements reported by a number of administrations showed wide variations in values. All experiences reported concerned spurious emissions from transmitters operating with less than 50 kW transmitter power. Measurements ranged from about -60 dB to about -100 dB, depending upon transmitter filtering used, age of the systems, and particular installation characteristics. The JIWP is of the opinion that considerable difficulties may arise if transmitter powers of greater than 50 kW are used, particularly in multiplexed installations.

3.3.3 Recognizing that broadcasters must contribute towards overcoming incompatibility problems between the broadcasting and aeronautical services operating in adjacent bands, the spurious emission limits suggested should be a significant improvement on the requirements of the Radio Regulations.

3.3.4 . Although the appropriate spurious emission limits are specified relative to transmitter power, it is important to be able to calculate the limits relative to effective radiated power.

3.3.5 The Report of the First Session of the CARR-1 to the Second Session states "... it is technically feasible to reduce the radiated power of the third-order intermodulation products to -85 dB relative to the effective radiated power". (The reference in this case is the maximum e.r.p. of the highest powered broadcast transmission.) The JIWP supports this statement on the basis of measurements on broadcast transmitters. Since the measurements were of the sum of components falling on any one frequency, it is not necessary to add to the protection ratio (quoted in Section 5.3.2.2 of the Report of the First Session) for aeronautical receivers an allowance for multiple interference from a single broadcasting site.

3.3.6 Head Note 4 to Appendix 8 of the Radio Regulations is also specifically applicable to the FM broadcasting service. Tighter spurious emission limits than those specified by Appendix 8 are feasible for the following reasons:

- suitable equipment is available;
- most transmitter installations have a better performance;
- and
- some administrations' domestic regulations already stipulate tighter limits.

3.3.7 In Region 2, FM assignments have been in operation up to 107.9 MHz for some time and interference to aeronautical services has been documented. Therefore, taking into account the extension of the broadcast band to 108 MHz in Region 1, the Joint Interim Working Party is recommending more stringent spurious emission limits than those in Appendix 8 of the Radio Regulations for planning purposes in these areas. In particularly difficult situations, it should be feasible to achieve an even tighter value (i.e., a further 10 dB suppression) subject to technical and economic considerations.

#### 3.4 Out-of-band emissions

From the limited information made available, it is possible to indicate the approximate spectral characteristic of an FM broadcast emission (CCIR Report AI/10, Geneva, 1983).

In view of the rapid fall-off of an FM transmission spectrum with frequency difference from the nominal carrier frequency it is likely that further reduction of energy outside  $\pm 150$  kHz would give negligible benefit (see Section 4).

Various options of possible utilization of filtering out-of-band emissions (for example, notch filters and band-pass filters) have been considered. However, the utilization of certain types of filters may affect the spectral characteristics, introduce asymmetry of spectrum and degrade the quality of sound.

#### 3.5 Protection ratios

##### 3.5.1 Type A1 interference

3.5.1.1 The JIWP decided that the protection ratios shown in Table I are appropriate for Type A1 FM broadcast interference. (See also Section 5.1.)

TABLE I - Protection ratios for ILS/VOR receivers for Type A1 interference

	Protection ratio (dB)
At frequency coincidence	17
± 50 kHz from frequency coincidence	10
± 100 kHz from frequency coincidence	5
± 150 kHz from frequency coincidence	2
± 200 kHz from frequency coincidence	-1

3.5.1.2 These protection ratios were developed from studies conducted by several administrations, and include a small safety margin. The protection ratios are applied at the input of the ILS receiver. When calculating the wanted signal to interference ratio at the receiver input, the effective total FM broadcast interference power should be taken into account.

The Second Session of CARR-1 will need to decide on an appropriate method of calculation of the effective total FM broadcasting interference power.

3.5.1.3 The very limited amount of VOR data was similar to the equivalent ILS data. Therefore, the JIWP considered that both the ILS and VOR receivers should be treated the same, for Type A1 interference.

### 3.5.2 Type A2 interference

3.5.2.1 Although the A2 interference is due to out-of-band emissions from the FM broadcast transmitter, the spectral power distribution of a frequency-modulated sound broadcast transmitter helps little in the evaluation of interference effects. The effect of such an interference spectrum on the ILS/VOR receiver depends also on the characteristics of that receiver. For this reason the JIWP considered that the RF protection ratios should be measured directly and several input documents presented data taken using that method. Those papers show measured results taken on several receivers and exhibit a wide range of values as shown in Table II.



TABLE II - RF protection ratios (in dB) for ILS localizer receivers for Type A2 interference

	Doc.10/128		FAA/TC tests														
	CCIR noise							Voice programme material					Rock music programme material				
$\Delta f$ kHz	RX1	RX2	RXA	RXB	RXC	RXD	RXE	RXA	RXB	RXC	RXD	RXE	RXA	RXB	RXC	RXD	RXE
200	-74	-77	-72	-76	-77	-76	-56	-73	-71	-78	-74	-55	-76	-76	-80	-75	-55
300	-79	-81	-74	-73	-76	-78	-78	-74	-74	-82	-76	-76	-80	-73	-79	-78	-77
500	-79				-80	-78	-82			-77	-79	-81			-80	-79	-79
800	-80		-86	-69	-78	-83	-69	-84	-69	-86	-82	-68	-92	-69	-78	-84	-68

Note. - These data were taken with respect to a -86 dBm (11  $\mu$ V) desired signal. There is no information available to show whether the receivers were in saturation.

3.5.2.2 To take into account the limited number of ILS receivers tested and to protect the full range of current receivers, the JIWP recommends the protection ratios in Table III should be used to protect ILS from Type A2 interference. The values in Table III include a 5 dB safety margin to account for the limited survey.

TABLE III - Protection ratios for ILS/VOR receivers for Type A2 interference

$\Delta f^{(1)}$ (kHz)	Protection ratio (dB)
200	-50
300	-68
500	-72

(1)  $\Delta f$ : frequency separation between nominal carrier frequency of broadcasting transmission and tuned channel frequency ILS receiver.

3.5.2.3 The very limited amount of VOR data was similar to the equivalent ILS data, therefore, the JIWP considered that both the ILS and VOR receivers should be treated the same, for Type A2 interference.

3.5.2.4 However, the JIWP was of the opinion that the interference caused at frequency separations greater than about 400 kHz was probably due to a combination of FM broadcast transmitter and aeronautical receiver characteristics. In view of this, the JIWP recommends that further tests on transmitter spectra and receiver performance be carried out to characterize this type of interference.

3.5.2.5 The Director of the CCIR is requested to bring this matter to the attention of ICAO with a view to improving relevant technical characteristics of future ILS and VOR receivers.

### 3.5.3. Type A interference test methods

The protection ratios required for ILS and VOR reception in the case of Type A interference may be approximated by carrying out measurements using an unwanted signal which is modulated with standardized coloured noise in accordance with CCIR Recommendation 559-1 with a set-up frequency deviation of  $\pm 32$  kHz in accordance with CCIR Report 796-1. It should be noted however that in order to simulate stereo transmissions (which are not covered by Report 796) some of the tests have been made with a noise modulation source applied to the left and right channels with a 6 dB difference in level. (See also Section 4.1.4.4.)

## 4. Improving the immunity of airborne radio equipment to interference from FM broadcasting stations

### 4.1 Assumptions and bases for assessments

#### 4.1.1 General

The considerable material submitted to the JIWP and previous relevant bodies clearly showed a wide variation of test methods and test parameters. It is therefore very important to standardize on certain basic factors in order to permit easier comparison between measurements and to ensure that common assumptions about operational aspects are included.

#### 4.1.2 Variation of test results between different equipments

It is stressed that even when identical test methods and test parameters are used the results of bench measurements of interference effects in airborne receivers still exhibit wide variation between different models and also between different sets of the same model.

#### 4.1.3 Consideration of a complete airborne system

4.1.3.1 It is very important to appreciate the factors which can and will modify a receiver's characteristics once it is connected to a feeder and antenna in an aircraft.

4.1.3.2 Starting with the antenna, its radiation pattern is highly dependent on the airframe and each aircraft type will be different. Differences of 20 dB between maxima and minima of the antenna diagram are quite common, both in the horizontal and vertical planes. The antenna is required to have a relatively wide bandwidth which mitigates against a sharp "roll-off" outside the desired band.

Antenna feeder lengths and parameters are clearly very dependent on the individual airframe type. In many aircraft, multiple antennas and equipment are fitted thus complicating the assessment of the losses and matching. Depending on aircraft type, the overall antenna/feeder system gain can vary from 1 or 2 dB to about -10 dB.

4.1.3.3 The above factors introduce a very wide range of variability and uncertainty into the practical situation. Within the aviation system itself (i.e., the 'wanted' system) allowances have been made for some of these problems via the ICAO Standards and the airborne equipment specification machinery, but the precise airborne system characteristics outside the aviation bands have not been studied in depth. It is known that there is a very wide range of reactive characteristics exhibited out-of-band and this leads to difficulty in determining a "typical" out-of-band antenna/feeder response and in standardizing on the correct circuit reference impedance for measurements and specifications. Hence, there is an uncertainty in determining the correct conversion factors between field strengths and their corresponding receiver input parameters. Even the more straightforward matter of the different in-band antenna/feeder losses presents a significant problem in the interference assessment. If, for interference assessment, a single loss value is chosen as representative of all aircraft, then with a variation of over 10 dB among the population of aircraft antenna/feeder systems, some aircraft receivers will be significantly penalised in performance or unnecessary restrictions may be placed on broadcasting planning.

4.1.3.4 It is also important to note that wide variations in the resistive and reactive component of input impedance of ILS, VOR and COM receivers are permissible and encountered in practice within their relevant pass bands. These characteristics must be considered in detail and test data developed.

#### 4.1.4 Bases for assessments

##### 4.1.4.1. Common reference point for airborne equipment measurements and future specification

It was decided to standardize on voltage referenced to the receiver input calculated on the basis of the generator output matched to 50 ohms (see Annex III). It is stressed that this does not affect the final results in terms of permissible field strengths at the receiver antenna but is solely a highly desirable means of reducing confusion in the future. Annex III also shows an example of the resulting RF generator level setting procedures.

##### 4.1.4.2 Wanted signal characteristics

###### (1) ILS

A minimum wanted signal of 40  $\mu\text{V/m}$  is taken, as given in ICAO Annex 10 and in Section 5.3.2.1 of the Report of the First Session (see Annex IV for conversion of field strength to voltage at receiver input reference point).

(ii) VOR

A minimum wanted signal of  $90 \mu\text{V/m}$  is taken, as per ICAO Annex 10 and Section 5.3.3.1 of the Report of the Conference (see Annex IV for conversion of field strength to voltage at receiver input reference point).\*

(iii) COM

In Section 5.3.4.1 of the Report of CARR-1 a minimum specified wanted signal strength of  $75 \mu\text{V/m}$  is given. It should be noted that ICAO Annex 10 does not specify this value as a minimum - rather it states that this value shall be exceeded for a "large percentage of occasions". In practice there are many occasions when VHF communications need to take place below the  $75 \mu\text{V/m}$  level and hence a lower figure is considered appropriate, for quantitative assessment purposes. It was considered that a value of  $40 \mu\text{V/m}$  is appropriate (see Annex IV for conversion of field strength to voltage at receiver input reference point). It is also necessary to consider the case where no wanted signal exists.\*

(iv) Special factors

The above values are regarded as appropriate for assessing airborne equipment immunity against interference from FM broadcasting. However, in practice, it should be noted that:

- Ground equipment may, at some specific locations, provide field strengths of the wanted signal above the quoted levels. Such circumstances may offer additional margins in particular, difficult broadcast assignment cases.
- The choice of a representative level for COM services for compatibility assessment is particularly difficult. There are many occasions and circumstances where safety messages are required to be passed using a wanted signal below  $10 \mu\text{V}$ . In addition, the assessment of voice quality is largely subjective and hence difficult to quantify.
- In the ILS and VOR systems arrangements are made to cause a "flag" to appear in the ILS (or VOR) receiver to warn the aircrew or autopilot when the wanted signal falls below a certain level (e.g. due to ground equipment malfunction). However, if interference is present it may prevent the "flag" from appearing and thus create a critical situation. These circumstances have been observed in actual practice during flight investigation of FM broadcast interference.

\*Further information, in particular on the effect of the radio horizon, below which the wanted field strength falls rapidly, is available in ICAO Annex 10.

- The JIWP was aware that some interference incidents in the past had been found to be due to re-radiated intermodulation from within the Emergency Locator Transmitters carried on board.

#### 4.1.4.3 Standard interference thresholds for bench measurements

Note. - It is stressed that these thresholds are for the purpose of standardizing bench measurements and whilst they are chosen to be reasonable representations of typical operational situations there will be some circumstances where they do not provide adequate protection to the aviation service in practice.

#### **Measurements**

##### **(i) ILS**

The changes to course guidance current due to the interference effects from FM broadcasting signals should not be permitted to add appreciably to the course structure perturbations permissible in ICAO Annex 10 due to other causes. With the wanted signal at the required level (Section 4.1.4.2 (i)) and the signal adjusted to give a deflection of  $90\mu\text{A}$  the change in course guidance current should not exceed  $7.5\mu\text{A}$ . In the case of changes to flag operation, there is less assurance in defining common criteria to cover all designs of flag systems. Therefore until further refinement can be made, the following tentative limits may be employed:

- In the case of an unwanted signal forcing a flag to appear, a maximum change in flag current of 20% of the difference in current between the flag showing and the flag not showing.
- In the case of the unwanted signal forcing a flag to disappear, the value which just puts the flag out of sight.

The above values should be used for both Type A and B interference modes.

Note. - The above does not consider centring error. The centring error due to FM broadcasting interference, when statistically combined with other specified environmental conditions, should not be permitted to exceed the levels prescribed by ICAO.

##### **(ii) VOR**

The wanted signal at the required level (Section 4.1.4.2 (ii)) shall be modulated with a standard VOR test signal as described in RTCA [19]. The interference threshold should then be:

- a change of the bearing indication by  $0.5^\circ$  corresponding to  $7.5\mu\text{A}$  deflection current; or
- a change in the audio voltage level by 3 dB; or
- the appearance of the flag.

(iii) COM

- With a signal at the required level (see 4.1.4.2 (iii)) the interference criterion should be a reduction in the audio signal-to-noise ratio  $\frac{(s + n)}{n}$  to 6 dB.
- With no wanted signal present, the interference shall not cause more than 5 dB (equivalent RF) increase in AGC voltage or an audio interference-to-noise ratio  $\frac{(i + n)}{n}$  of greater than 6 dB.

4.1.4.4 Unwanted (broadcast) signal characteristics

The various test results have convincingly demonstrated that the particular modulation characteristics chosen for the unwanted signal(s) can significantly affect the interference potential. Therefore considerable difficulty exists in deciding which modulation characteristics are most appropriate on the bench to represent the real-life situation and whether or not different modulation characteristics should be chosen when investigating different interference modes (see also Section 3.5.3).

However, in many instances the worst case ILS/VOR interference problem is generated by utilizing actual FM programme material as the unwanted signals taking into account Region 1 and Region 2 FM transmission characteristics, including supplementary channels where applicable.

It was decided to propose the standard modulation characteristic described in Section 3.5.3 for the purposes of comparison of bench measurements and to stress its limitations beyond that context.

Note 1. - Particular attention may need to be made on the bench to reduce unintentional noise modulation effects.

Note 2. - If using a single signal source to simulate interfering third-order intermodulation products, increased deviations may be required.

4.2 Immunity of existing airborne equipment

4.2.1 Introduction

It is stressed that the following immunity assessments are based on the parameters proposed in Section 4.1 and they can therefore not be taken as adequately representing the full range of existing equipments or all the circumstances existing in operational practice. Hence the use of the immunity assessments is not a definitive indication of whether interference will or will not occur in practice. Detailed case-by-case assessment will have to be carried out by the administrations concerned when the immunity assessment calculations indicate the possibility of interference.

4.2.2 Existing ILS immunity

(a) Type A1

TABLE I - Protection ratios for ILS/VOR receivers for Type A1 interference

	Protection ratio (dB)
At frequency coincidence	17
± 50 kHz from frequency coincidence	10
± 100 kHz from frequency coincidence	5
± 150 kHz from frequency coincidence	2
± 200 kHz from frequency coincidence	-1

b) Type A2

TABLE III - Protection ratios for ILS/VOR receivers for Type A2 interference

$\Delta f^{(1)}$ (kHz)	Protection ratio (dB)
200	-50
300	-68
500	-72

(1)  $\Delta f$ : frequency separation between nominal carrier frequency of broadcasting transmission and tuned channel frequency ILS receiver.

(c) Type B1 (intermodulation)

(i) 2-signal, 3rd-order case

$f_1$  and  $f_2$  : broadcasting frequencies (MHz)  
 $f_a$  : ILS channel tuned frequency (MHz)

$$2f_1 - f_2 = f_a \quad (f_1 > f_2)$$

When  $f_1$   
is in the frequency  
range (MHz)

Condition for interference  
(unwanted signal at  
receiver input)

107.7-108.0

$$2N_1 + N_2 + 120 \geq 0$$

below 107.7

$$2N_1 + N_2 + 3(40 - 20 \log \Delta f / 0.4) \geq 0$$

where:

$N_1$  : level of  $f_1$  (dBm)

$N_2$  : level of  $f_2$  (dBm)

$\Delta f = 108.1 - f_1$

(ii) 3-signal, 3rd-order case

The theoretical derivation of three-signal third-order intermodulation interference expands the above two-frequency formula as follows:

$f_1, f_2$  and  $f_3$  : broadcasting frequencies (MHz)

$f_a$  : ILS channel tuned frequency (MHz)

$f_a = f_1 + f_2 - f_3$  ( $f_1 > f_2 > f_3$ )

When  $f_1$  is  
in the frequency  
range (MHz)

Condition for interference  
(unwanted signal at  
receiver input)

107.7 - 108

$N_1 + N_2 + N_3 + 126 \geq 0$

below 107.7

$N_1 + N_2 + N_3 + 3(42 - 20 \log \Delta f_1 / 0.4) \geq 0$

where:

$N_1$  : level of  $f_1$  )

$N_2$  : level of  $f_2$  ) (dBm) (see Note 1)

$N_3$  : level of  $f_3$  )

$\Delta f_1 = 108.1 - f_1$  ( $f_1 > f_2$ )

Note 1. - For convenience of comparison with the Report of the First Session of CARR-1 these values are given in dBm. A 50 ohm receiver has been assumed.

Note 2. - Theoretical considerations indicate that the frequency-dependent term of the 2-signal and 3-signal B1 formulae could be further expanded to associate each broadcasting signal with a frequency-dependent term. This possible expansion has not so far been fully investigated and further work is needed in order to determine if it can take place and therefore possibly be used as a planning tool. The formulae that result from these considerations, as proposed by one administration, are given in Annex V.

(d) **Type B2 (desensitization)**

Maximum permitted level of broadcasting signal at 107.9 MHz = 22 000  $\mu$ V (equivalent to -20 dBm at 50 ohm receiver input). Below 107.9 MHz additional immunity may be assumed in accordance with the following (see Fig. 2):

Frequency of  
broadcasting  
signal (MHz)

Maximum level of  
receiver input  
(dBm)

88 - 100

+10

106

-5

107.9

-20



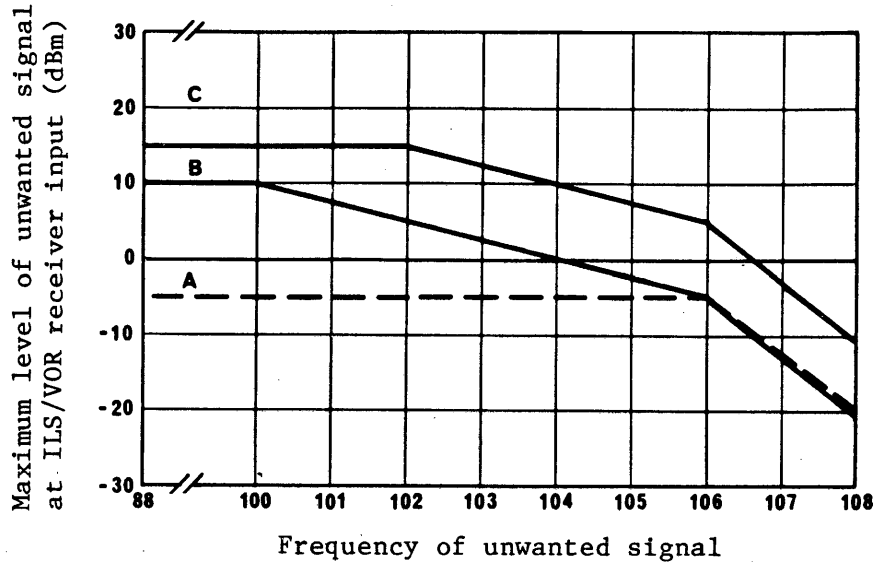


FIGURE 2 - ILS/VOR desensitization immunity criteria (Type B2)

- A : First Session CARR-1-82  
assumed existing immunity
- B : JIWP 8-10/1 existing immunity
- C : JIWP 8-10/1 future immunity

(e) Additional airborne system losses (e.g. antenna, feeder, couplers, etc.)

Although considerable variation exists among the many different aircrafts, the following characteristic is considered to be appropriate in the context of the JIWP:

3.5 dB plus 1 dB per MHz from 108 to 100 MHz and then  
0.5 dB per MHz below 100 MHz

Note. - The frequency dependent element of the above expression is considered to be almost entirely due to the antenna. Measurement data was available which tended to confirm the above values.

(f) Conversions to field strength (see also Annex IV)

After applying the above factors as appropriate, assume an isotropic loss-less antenna/feeder at ILS frequency.

Note. - With respect to (e) and (f) an inconsistency has been identified resulting from the fixed element (3.5 dB) of the system loss in (e). Logically this loss needs to be applied to both wanted and unwanted signals and thus would lower the wanted input signal at the receiver (for a given wanted field strength in space i.e. 40  $\mu\text{V/m}$ ). This factor should be taken into account in future measurements.

#### 4.2.3 Existing VOR immunity

##### (a) and (b) Type A1 and Type A2

As for ILS immunity.

##### (c) Type B1 (intermodulation)

###### (i) 2-signal, 3rd-order case

$f_1$  and  $f_2$  : broadcasting frequencies (MHz)

$f_a$  : VOR tuned frequency (MHz)

$$2f_1 - f_2 = f_a \quad (f_1 > f_2)$$

$N_1$  : level of  $f_1$  (dBm)

$N_2$  : level of  $f_2$  (dBm)

$$\Delta f = 108.0 - f_1$$

When  $f_1$  is  
in the frequency  
range (MHz)

Condition for interference  
(unwanted signal at  
receiver input)

107.4 - 108

$$2N_1 + N_2 + 105 \geq 0$$

(for  $f_a < 112$  MHz)

$$2N_1 + N_2 + 60 \geq 0$$

(for  $f_a \geq 112$  MHz)

below 107.4

$$2N_1 + N_2 + 3(35 - 30 \log \Delta f / 0.6) \geq 0$$

(for  $f_a < 112$  MHz)

$$2N_1 + N_2 + 3(20 - 30 \log \Delta f / 0.6) \geq 0$$

(for  $f_a \geq 112$  MHz)

The above formulae assume the existence of in-band selectivity in VOR receivers. Although investigations prior to this JIWP revealed only VOR receivers exhibiting in-band selectivity, some doubts were expressed with respect to a conclusion that all receivers would show this characteristic. Administrations and ICAO are therefore urged to investigate this matter for presentation of more data to CARR-1 (2).

If in-band selectivity cannot be assumed, the following formulae are considered valid:

When  $f_1$  is  
in the frequency  
range (MHz)

Condition for interference  
(unwanted signal at  
receiver input)

107.4 - 108

$$2N_1 + N_2 + 105 \geq 0$$

below 107.4

$$2N_1 + N_2 + 3(35 - 30 \log \Delta f / 0.6) \geq 0$$

(ii) 3-signal, 3rd-order case

$f_1, f_2$  and  $f_3$  : broadcasting frequencies (MHz)  
 $f_a$  : VOR tuned frequency (MHz)

$$f_1 + f_2 - f_3 = f_a \quad (f_1 > f_2 > f_3)$$

<u>When <math>f_1</math> is in the frequency range (MHz)</u>	<u>Condition for interference (unwanted signal at receiver input)</u>
107.4 - 108	$N_1 + N_2 + N_3 + 111 \geq 0$ (for $f_2 < 112$ MHz) $N_1 + N_2 + N_3 + 66 \geq 0$ (for $f_a \geq 112$ MHz)
below 107.4	$N_1 + N_2 + N_3 + 3(37 - 30 \log \Delta f / 0.6) \geq 0$ (for $f_a < 112$ MHz) $N_1 + N_2 + N_3 + 3(22 - 30 \log \Delta f / 0.6) \geq 0$ (for $f_a \geq 112$ MHz)

The considerations in the 2-signal case, regarding the in-band selectivity are also valid in the 3-signal case. For the situation that in-band selectivity cannot be assumed, the following formulae are valid:

<u>When <math>f_1</math> is in the frequency range (MHz)</u>	<u>Conditions for interference (unwanted signal at receiver input)</u>
107.4 - 108	$N_1 + N_2 + N_3 + 111 \geq 0$
below 107.4	$N_1 + N_2 + N_3 + 3(37 - 30 \log \Delta f / 0.6) \geq 0$

If in-band selectivity is used by the Conference as a general planning rule, the flexibility for aviation frequency assignments may be reduced. Conversely, if in-band selectivity is not used as a general planning rule, then broadcast frequency assignment planning may be restricted.

Note. - Theoretical considerations indicate that the frequency-dependent term of the 2-signal and 3-signal B1 formulae could be further expanded to associate each broadcasting signal with a frequency-dependent term. This possible expansion has not so far been fully investigated and further work is needed in order to determine if it can take place (and therefore possibly be used as a planning tool) without requiring a modification to the basic formula in (c) (i) and (c) (ii) above. Equations corresponding to those presented in Annex V can be developed in a similar way.

(d) Type B2 (desensitization)

As for ILS.

(e) Additional airborne system losses

As for ILS.

(f) Conversions to field strength (see also Annex IV )

After applying the above factors as appropriate, assume an isotropic loss-less antenna/feeder at the VOR frequency.

Note. - See also the Note after Section 4.2.2 (f)).

4.2.4 Existing COM immunity values

(a) Type A1

No further data being available to the JIWP after the First Session of the Conference a 17 dB protection ratio shall be retained.

(b) Type A2

This type of interference does not occur.

(c) Type B1 (intermodulation)

$f_1$  and  $f_2$  : broadcasting signal frequencies (MHz)

$f_a$  : COM channel tuned frequency (MHz)

$$2f_1 - f_2 = f_a \quad (f_1 > f_2)$$

When  $f_1$  is  
in the frequency range  
88-108 MHz

Maximum unwanted signal  
at receiver input  
-10 dBm (=70 000  $\mu$ V)

(d) Type B2 (desensitization)

Maximum permissible broadcasting signal (at any frequency in the range 88-108 MHz) : -10 dBm = 70 000  $\mu$ V at the receiver input.

(e) Additional airborne system losses (e.g. antenna, feeder, couplers, etc.)

Although considerable variation exists among the many different aircraft, the following characteristic is considered to be appropriate: 1 dB/MHz below 118 MHz.

Note. - This expression is believed to be entirely due to the antenna.

(f) Conversions to field strength (see also Annex IV)

After applying the above factors as appropriate, assume an isotropic, loss-less, antenna/feeder at the COM frequency.

4.2.5 ILS and VOR Type B1 (frequency-offset case)

Only very limited measurements were available on this matter and further investigation prior to the Conference is recommended. However, tentative guidance on the appropriate correction factors for both ILS and VOR existing equipments is given in Annex VI. It is stressed that this initial guidance presents correction factors which are likely to be conservative from the viewpoint of protecting aeronautical services.

#### 4.3 Means of improving the immunity of existing airborne equipment

##### 4.3.1 Background

Earlier studies considered possible options for improving the immunity characteristics of existing aviation receivers. The only possibility that was presented was the optional use of add-on filters. It was agreed that filtering could not be effective for Type A interference. Filtering for Type B interference was considered, but several questions remained regarding filter performance in aircraft, resulting in statements questioning the feasibility of using filters. In addition to existing material presented in earlier studies, two contributions to the JIWP concerned the use of filters for Type B interference.

##### 4.3.2 Filter data analysis

The data presented related to the response curves of filters. None of the three filters discussed met the stringent criteria presented earlier of not more than 1 dB insertion loss at 108.0 to 118 MHz and not less than 15 dB at 105 MHz for ILS and VOR receivers. Even though data presented for one filter included response curves for various load impedances, a primary concern of earlier studies, there was still insufficient data to decide that filters could be used as a planning tool. It was suggested that filters might provide an option for individual administrations to handle unique or difficult interference problems in respect of a particular aircraft installation.

##### 4.3.3 Case study

One paper presented information on the use of a filter to resolve an interference problem on one aircraft. In this case, the interference to one aviation receiver, tuned to an ILS on 108.7 MHz, was eliminated by application of an add-on filter. In this specific case, the final solution for the interference problem was an ILS frequency change to 110.1 MHz. The JIWP felt, therefore, that this limited application of a filter could not be taken as a universal solution, but could be at least a solution for some difficult cases.

##### 4.3.4 Conclusions on the use of filters

Based on the information presented, the JIWP concluded that the use of add-on filters, when such devices are available and operationally acceptable, should be considered as an option-of-choice in specific cases. However, this option should not be used for planning purposes.

#### 4.4 Improvements in the immunity of future designs of airborne equipment

##### 4.4.1 Introduction

It is stressed that the following immunity assessments are based on the parameters proposed in Section 4.1 and they can therefore not be taken as adequately representing all the circumstances existing in operational practice.

#### 4.4.2 Future ILS and VOR immunity

For future designs it was decided that ILS and VOR may be treated identically.

##### (a) **Type A1**

TABLE I - Protection ratios for ILS/VOR receivers for Type A1 interference

	Protection ratio (dB)
At frequency coincidence	17
± 50 kHz from frequency coincidence	10
± 100 kHz from frequency coincidence	5
± 150 kHz from frequency coincidence	2
± 200 kHz from frequency coincidence	-1

##### (b) **Type A2**

Insufficient data are available to offer quantitative advice at this time (see also Sections 3.5.2.1, 3.5.2.4 and 3.5.2.5).

##### (c) **Type B1 (intermodulation)**

###### (i) 2-signal, 3rd-order case

$f_1$  and  $f_2$  : broadcasting frequencies (MHz)

$f_a$  : ILS frequency (MHz)

$$2f_1 - f_2 = f_a \quad (f_1 > f_2)$$

When  $f_1$  is  
in the frequency  
range (MHz)

Condition for interference  
(unwanted signal at  
receiver input)

107.7 - 108

$$2N_1 + N_2 + 72 \geq 0$$

below 107.7

$$2N_1 + N_2 + 3(24 - 20 \log \Delta f / 0.4) \geq 0$$

###### (ii) 3-signal, 3rd-order case

$f_1, f_2$  and  $f_3$  : broadcasting frequencies (MHz)

$f_a$  : ILS/VOR frequency (MHz)

$$f_a = f_1 + f_2 - f_3 \quad (f_1 > f_2 > f_3)$$

When  $f_1$  is  
in the frequency  
range (MHz)

Condition for interference  
(unwanted signal at  
receiver input)

107.7 - 108

$$N_1 + N_2 + N_3 + 78 \geq 0$$

below 107.7

$$N_1 + N_2 + N_3 + 3(26 - 20 \log \Delta f / 0.4) \geq 0$$

where:

$N_1$  : level of  $f_1$  (dBm)  
 $N_2$  : level of  $f_2$  (dBm)  
 $N_3$  : level of  $f_3$  (dBm)

$\Delta f = 108.0 - f_1$  for VOR ( $f_1 > f_2$ )  
 $\Delta f = 108.1 - f_1$  for ILS

Note. - Theoretical considerations indicate that the frequency-dependent term of the 2-signal and 3-signal B1 formulae could be further expanded to associate each broadcasting signal with a frequency-dependent term. This possible expansion has not so far been fully investigated and further work is needed in order to determine if it can take place (and therefore possibly be used as a planning tool) without requiring a modification to the basic formula in (c) (i) and (c) (ii) above. As, with the agreement of its Member States, the ICAO has already commenced its formal action to incorporate the basic formula into its Annex 10, significant complications will occur if changes to the basic formulae occur.

(d) Type B2 (desensitization)

<u>Frequency of broadcasting signal (MHz)</u>	<u>Maximum level of receiver input (dBm)</u>
88 - 102	+ 15
104	+ 10
106	+ 5
107.9	- 10

Between adjacent points the  
relationship is linear

Note. - See also Fig.2

(e) Additional airborne system losses (e.g. antenna, feeder, couplers, etc.)

It is considered that no improvements can reasonably be anticipated here.

4.4.3 Future COM immunity

(a) Type A1

No further data being available to the JIWP after the First Session of the Conference, a 17 dB protection ratio shall be retained.

(b) Type A2

Not applicable.

(c) Type B1 (intermodulation)

The maximum level of unwanted signal due to FM broadcasting signals shall be -5 dBm.

(d) Type B2 (desensitization)

The maximum level of unwanted signal due to FM broadcasting signals shall be -5 dBm.

4.5 Factors influencing the practical implementation time scales including pertinent regulatory issues

4.5.1 The JIWP noted that this matter had been addressed in earlier studies and had anticipated that it was unlikely that introduction into service of a new design of airborne equipment would be completed world-wide before 15 years from the date of availability of a performance specification.

4.5.2 The JIWP was advised that the coordination of relevant standards had been completed within ICAO. In this regard, appropriate amendment to the standards contained in Annexes to the Convention on International Civil Aviation is now being processed within ICAO in order to ensure world-wide implementation of airborne receivers complying with the new immunity criteria by 1 January 1998.

4.5.3 Documentation was submitted to the meeting which contains data on a typical sequence of events leading to the introduction in service of a new design of airborne equipment. The delays associated with each of the different phases of the introduction process included the following:

- definition and adoption of the equipment characteristics,
- development and adoption of the minimum performance specifications,
- equipment certification,
- issuance of national regulations,
- budget cycle,
- procurement of equipment,
- installation or retrofitting of equipment, and
- aircraft certification where required.

It was observed that the above delays would vary from administration to administration and also between the various categories of the aviation population.

4.5.4 After detailed examination of all the factors involved, the JIWP concluded that the applicability date of 1 January 1998 appeared realistic.



## 5. Other aspects of compatibility assessment

### 5.1 Interference to ILS by unmodulated broadcasting signals

Concern has been expressed about the degree of co-channel interference from the third-order intermodulation product from two (or three) broadcast transmissions when the transmitters are unmodulated or have simultaneous pauses in modulation. This problem might arise for Type A1 or B1 interference.

The reason for concern is that CCIR Report 927 (Section 3.1 of Annex I) gives a protection ratio of 46 dB for cases where a CW signal may have a stable frequency difference of 90 Hz or 150 Hz from the ILS carrier frequency, thus producing amplitude modulation to which the receiver is most sensitive. This exceeds the planning co-channel protection ratio of 17 dB by 29 dB, thus suggesting up to 29 dB greater sensitivity to interference than would be expected using the normal criteria.

However, the actual situation at broadcast transmitters is that during normal programme transmission there is a residual noise level causing a minimum of  $\pm 20$  Hz deviation of each transmitter, giving about  $\pm 35$  Hz deviation on a third-order product. It may therefore be unnecessary to take further precautions against the radiation of intermodulation products of very low deviation. Further tests are required to establish the position. Studies carried out by one administration show that, if it should prove necessary in certain cases, at least one acceptable solution to the problem exists, as described below. This means that it will not be necessary to make special allowance for the problem in planning.

Having studied some alternative solutions, the one proposed by one administration is a small frequency offset from the nominal frequency for either the broadcast transmitters or the ILS transmitter, to ensure that the intermodulation product is never closer than 160 Hz from the ILS carrier. Tests with ILS receivers have confirmed that this is sufficient to remove the problem.

With practical frequency tolerances, e.g.  $\pm 1$  kHz for broadcast and  $\pm 2$  kHz for ILS (somewhat smaller than the maximum tolerances in the Radio Regulations) an example of a possible solution is as follows. The broadcast transmitters would operate with a nominal 2 kHz offset in different directions, so that a nominal offset of 6 kHz is created on the third-order intermodulation product. With adverse extremes of the suggested tolerances this would reduce the offset to a minimum of 1 kHz.

A similar example can be given for the offset applied instead to the ILS transmitter. In this case (assuming that the ILS tolerance is improved to  $\pm 1$  kHz) an offset of 4.5 kHz is sufficient. This value of offset is used in two-frequency ILS localizer installations.

### 5.2 Propagation anomalies

Note was taken by the JIWP that countries which border on bodies of water as large, for example, as the Mediterranean Sea, can experience anomalous propagation enhancement due to ducting effects which can occur under certain circumstances of, for example, temperature, pressure and humidity. It is difficult to predict these effects with great accuracy.

### 5.3 Theoretical modelling of the vertical radiation pattern of FM broadcasting antennas

For Type A and Type B interference to occur at some distance from an FM broadcasting site, an aircraft must normally be within the main beam of the FM antenna radiation pattern.

The Report of the First Session of CARR-1-82 (Section 5.3.8) stated that the vertical radiation pattern of the FM broadcasting antenna is a factor that can be taken into account in an electromagnetic compatibility analysis. Annex VII presents techniques for such an analysis.

### 5.4 Analysis method for predicting the compatibility between broadcasting stations and aeronautical services

The Report of the First Session of CARR-1 establishes a method for assessing the risk of interference to ILS and VOR equipment from broadcasting stations transmitting in the upper part of the 87.5-108 MHz band.

This method, however, has many shortcomings and is liable, depending on the particular case, to overestimate or underestimate the possible interference according to the position of the broadcasting station in relation to the aeronautical station service volume.

In particular for VORs, the large number of broadcasting stations within each service volume makes the above method impracticable for a realistic assessment of compatibility.

Annex VIII describes methods which are now in use by two administrations for their own compatibility analyses. These methods, although based on the First Session criteria, have been developed in a way which overcomes some of these problems.

### 5.5 Application of trigger and cut-off values to the prediction of Type B1 intermodulation products

In general, when assessing the interference potential at any point, many FM broadcast signals will be present, each pair or triple of which is potentially an interference i.p. source. However, a large number of these will have insufficient power to infringe the receiver interference threshold. The employment of the concept of trigger and off set values offers a method of avoiding unnecessary calculations (see Annex IX).

### 5.6 Flight testing for interference

The procedures used for frequency planning are predictive only. Prior to implementation of a broadcast or aeronautical frequency assignment, the administration concerned may need to determine whether or not a flight testing is necessary.

The results of a flight test will be affected by the following aeronautical factors:

- the make and model of receiver used;
- the frequency response of the aircraft antenna;
- the radiation pattern of the aircraft antenna.

Thus, the detection of interference by the flight testing aircraft can only be a guide as to the operational situation.

The JIWP considers it important that such flight tests should be carried out in a standardized way. Therefore it is requested that the Director of the CCIR bring this matter to the attention of the ICAO with a view to developing flight test procedures and standardized acceptance criteria.

#### 5.7 Effect of multiple interfering signals

Simultaneous multiple Type A and Type B interference effects may be experienced at airports having a large number of FM broadcasting stations in the area. In addition to FM broadcasting stations, other external sources of radiation known to have caused harmful interference include industrial, scientific and medical (ISM) equipment, cable distribution systems (CATV) and receiver local oscillators. Aircraft in flight are, therefore, subjected to many potentially interfering non-aeronautical signals which should be taken into account by administrations during planning and for which airborne systems have to be tolerated by ICAO.

### 6. Conclusions

#### 6.1 Maximum obtainable suppression of spurious emissions in the band 108-137 MHz, from broadcasting stations operating in the 87.5-108 MHz band

##### 6.1.1 Recommended reduced levels of spurious emissions

Considering special circumstances within Region 1 and some areas of Region 3, the JIWP recommends that the Second Session of CARR-1 use the following values for spurious emissions for assessment and planning purposes in the VHF/FM broadcasting band in cases where Type A1 interference in the aeronautical band can be expected.

TABLE IV - Maximum relative level of spurious emissions

Transmitter power (kW)	Maximum relative level of spurious emissions	
	ITU requirement (dB)	JIWP recommendations (dB)
0.01	-56	-56
0.02	-59	-59
0.1	-60	-66
0.2	-60	-69
1.0	-60	-72
4.0	-66	-82
10.0	-70	-85
20.0	-73	-85
40.0	-76	-85

The recommendations relate to the total mean power level of all spurious components at any one frequency in the aeronautical band, supplied to the antenna system transmission line at FM broadcasting stations. The level is measured after taking into consideration all filters, combiners, multiplexers, etc. which may affect the radiated level of spurious emission.

To meet the recommendations, the power level of spurious components from an FM broadcasting station should not exceed 25 uW for transmitter powers up to approximately 8 kW.

Also the attenuation (mean power within the necessary bandwidth to the mean power of the spurious component concerned) for transmitter powers above approximately 8 kW should be at least 85 dB (see Table IV and graph (Fig. 3)).

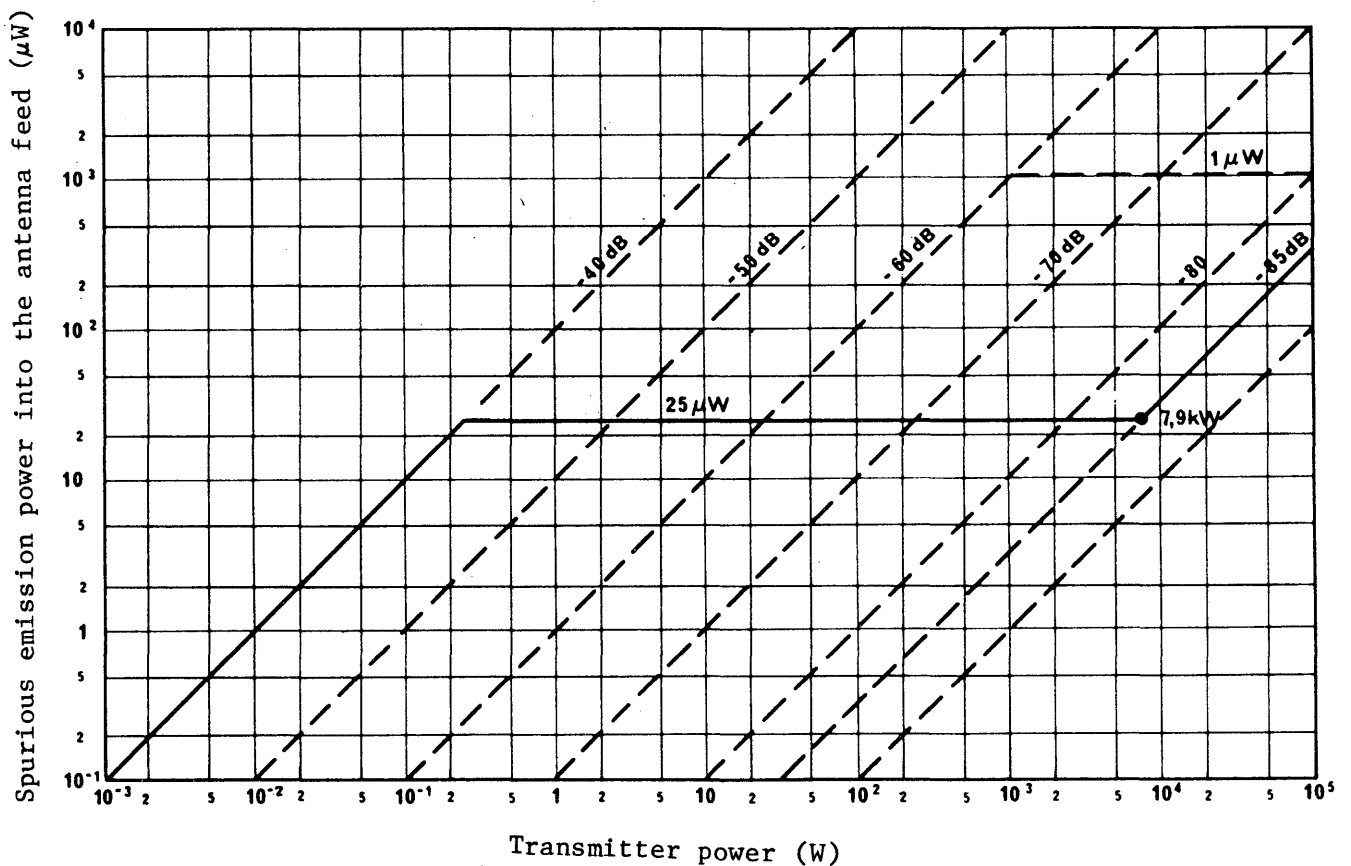


FIGURE 3

## 6.2 Possibility of improving the immunity of airborne radionavigation equipment to interference from FM broadcasting equipment

### 6.2.1

- Based on the information presented, the JIWP concluded that the use of add-on filters, when such devices are available and operationally acceptable, should be considered as an option-of-choice in specific cases. However, this option should not be used for planning purposes (Section 4.3).

### 6.2.2

- The A1 protection ratio of 17 dB and its frequency dependency should be retained (Section 3.5).

- Multiple A1 interference entries should be taken into account by a summation of effective interfering powers at the airborne receiver (Section 3.5).

- It is unlikely that future airborne receivers will show any improvement over current receivers with regard to Type A1 interference immunity (Section 4.4.2.(a)).

### 6.2.3

- Type A2 interference can be affected by both the broadcast transmitter spectrum and the airborne receiver characteristics (particularly selectivity) (Section 3.5).

- The possibility of improving future airborne receivers with respect to Type A2 interference should be investigated by ICAO (Section 4.4.2 (b)).

- The broadcast transmitter spectrum should be characterized by administrations, paying particular attention to low-level components widely separated from the nominal carrier frequency (Sections 3.4 and 3.5).

### 6.2.4

- Airborne receiver in-band selectivity needs further investigation prior to CARR-1 (2) (Section 4.2.3 (c)).

### 6.2.5

- The interference immunity of airborne receivers is dependent, among other things, on the modulation characteristics of the interfering broadcast transmissions (Sections 3.5.3 and 4.1.4.4).

### 6.2.6

- The date of 1 January 1998 for implementing the use of new-design airborne equipment appears realistic (Section 4.5).

### 6.2.7

- Very little measurement data exists concerning the immunity of COM receivers.

#### 6.2.8

- Account needs to be taken in Type A1 and B1 interference modes of broadcasting interference which falls close to the wanted aeronautical frequency (Section 4.2.5).

#### 6.2.9

- The data base used to reach these conclusions is limited and its expansion is necessary before the Second Session of CARR-1 .

#### 6.2.10

- Figure 4 with comparison of interference for ILS/VOR cases is given for information.

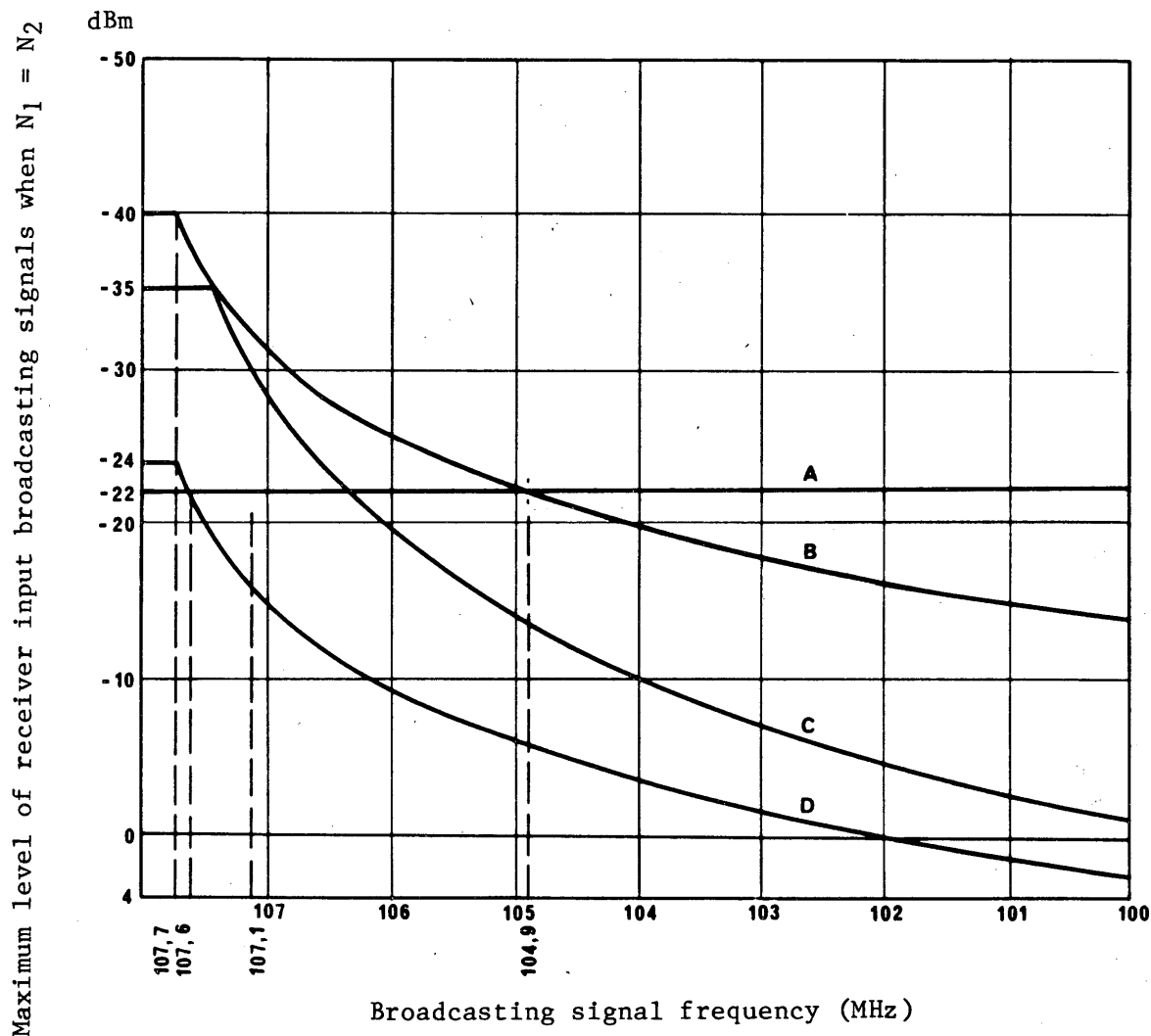


FIGURE 4 - Graphical presentation of ILS/VOR receiver immunity characteristics against Type B1 interference in cases where the two interfering broadcasting signals have the same level

- A : CARR-1 immunity
- B : current immunity (ILS)
- C : current immunity (VOR) < 112 MHz
- D : future immunity (ILS/VOR)
- E : VOR > 112 MHz current immunity

## REFERENCES

RTCA Radio Technical Commission for Aeronautics. Doc. DO-153A,  
Minimum performance standards for VOR.

## ANNEX I

### DATA ON TRANSMITTER COMBINING UNITS

#### 1. Types of combining units

Several different types of units are in use for combining two or more broadcast transmitters into a common antenna.

Figures I-1a, I-1b, I-2a and I-2b show representative arrangements for combining two transmitters. The accompanying tables, relating to RAI installations, provide typical performance data for such arrangements.

A variation of the arrangement of Fig. I-2b recently used in BBC stations for combining three transmitters is shown in Fig. I-3. This will be explained in greater detail to illustrate the principles involved, and to calculate the levels of the third-order radiated intermodulation products based on measurements of cross insertion loss on the combining units. The results of these calculations (Table I-I) can then be compared with actual measurements of the radiated intermodulation products from the BBC high power station, Wrotham (see Table I-II).

It may be seen from Fig. I-3 that the combining unit installation is in two sections comprising 3 dB directional couplers connected together by equal-length lines carrying resonators. The cross insertion losses from transmitter T1 to transmitter T2 and T3 at frequency  $f_1$  are mainly determined by the Q of the  $f_1$  resonators and this is related to their physical size. The same is true of the cross-loss from transmitter T2 to transmitter T3 at frequency  $f_2$ . However, the cross-losses from transmitter T3 to transmitter T2 and from T2 and T3 to T1 are determined solely by the 3 dB couplers. This means that, if no other factors were involved, the levels of the intermodulation products  $(2f_2 - f_3)$ ,  $(2f_1 - f_2)$  and  $(2f_1 - f_3)$  could be relatively high. However, intermodulation products generated in T1 and T2 are diverted to the load and so couple weakly with the antenna. The net result of these factors may be seen in Table I-I, where the levels of intermodulation products are calculated from cross-loss measurements on the combining unit.

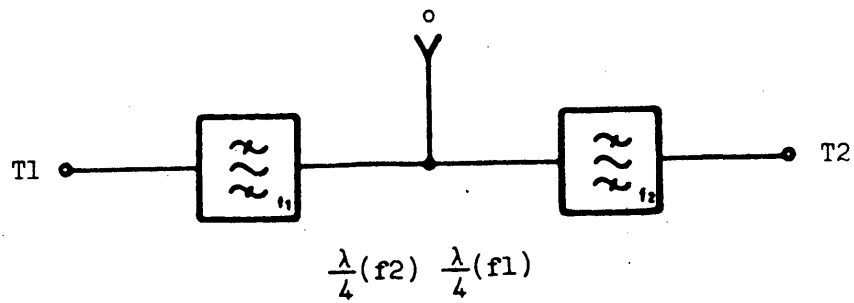


FIGURE I-1a - Star filter, with pass-band cavity

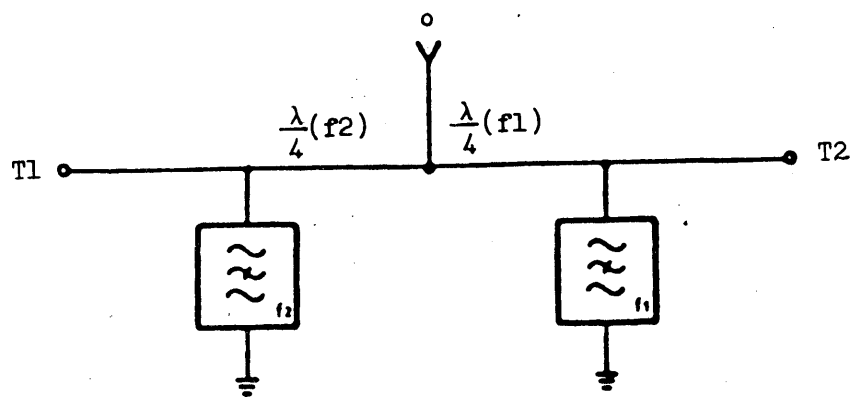


FIGURE I-1b - Star filter with compensated stop-band cavities



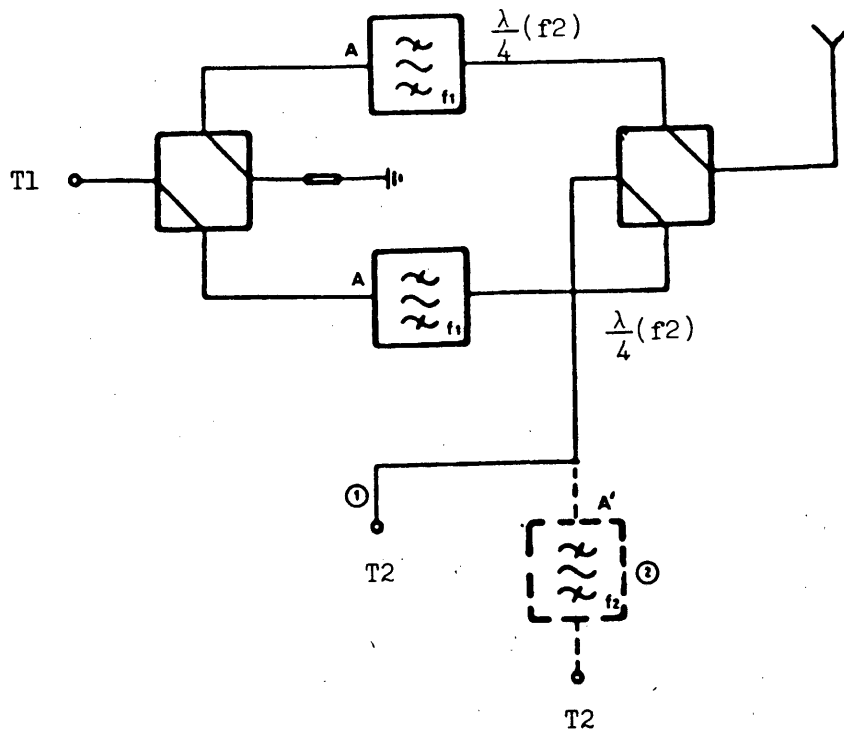


FIGURE I-2a - Hybrid filter, with pass-band cavity

In Fig. I-2a, two variations are considered:

- in case 1, the normal case, the spurious frequency ( $2f_2 - f_1$ ) has a much higher level than ( $2f_1 - f_2$ );
- in case 2, this is overcome by the additional cavity at the T2 output.

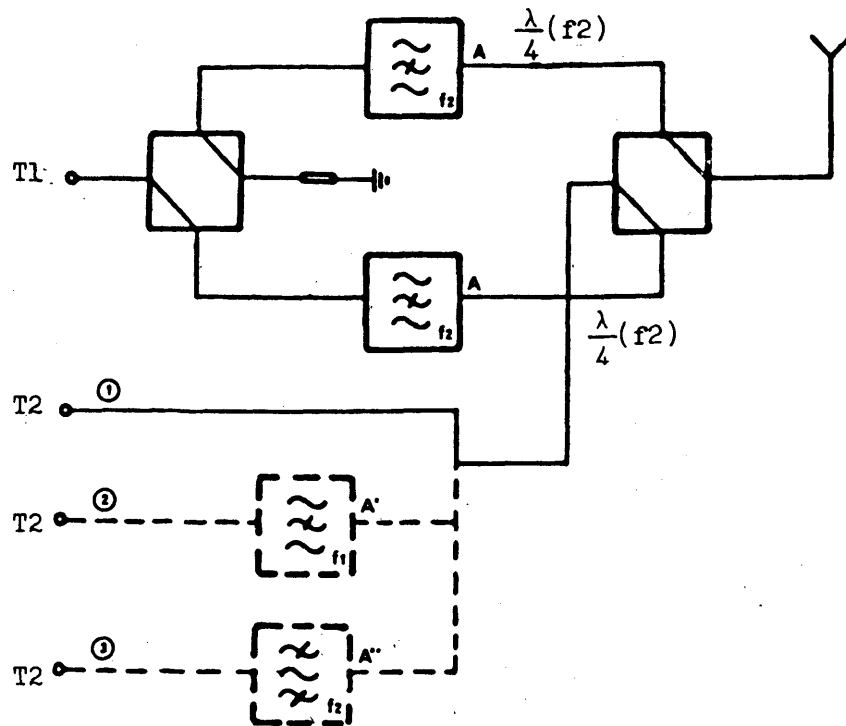


FIGURE I-2b - Hybrid filter with stop-band cavities

In Fig. I-2b, three variations are considered:

- in case 1, the normal case, the spurious frequency  $(2f_2 - f_1)$  has a much higher level than  $(2f_1 - f_2)$ ;
- in case 2, there is an additional stop-band cavity  $A'$  at the T2 output;
- in case 3, the additional stop-band cavity is replaced by pass band cavity  $A''$ . The spurious suppression is very high, especially in case 3.

TABLE I-I - Calculation of i.p. levels  
(2.2 MHz spacing)

Frequency	Cross-insertion loss (dB)	Conversion loss (assumed) (dB)	Cross-insertion loss to antenna (dB)	Relative level of i.p. (dB)
$2f_1 - f_3$	T1, T3 at $f_3$ -51	-22	T1->ant at $2f_1-f_3$ -36	-109
$2f_1 - f_2$	T1, T2 at $f_2$ -63	-14	T1->ant at $2f_1-f_2$ -15	-92
$2f_3 - f_2$	T3, T2 at $f_2$ -88	-14	T3->ant at $2f_3-f_2$ 0	-102
$2f_3 - f_1$	T3, T1 at $f_1$ -72	-22	T3->ant at $2f_3-f_1$ 0	-94

Some refinements to the arrangement of Fig. I-3 are possible. First, additional notch filters may be added to attempt greater suppression of particular i.p.s. Whilst in principle it would be possible to attenuate the i.p. directly on the antenna feeder, it will usually be preferable to fit the notch filter to the output of the generating transmitter, where the total power level is lower. Another refinement is to adjust the impedance of the load on the section closest to the antenna as shown in Fig. I-3. This has the effect of controlling the level of frequency  $f_2$  that reaches transmitter T1 and so affects the level of the i.p. at frequency  $(2f_1 - f_2)$ .

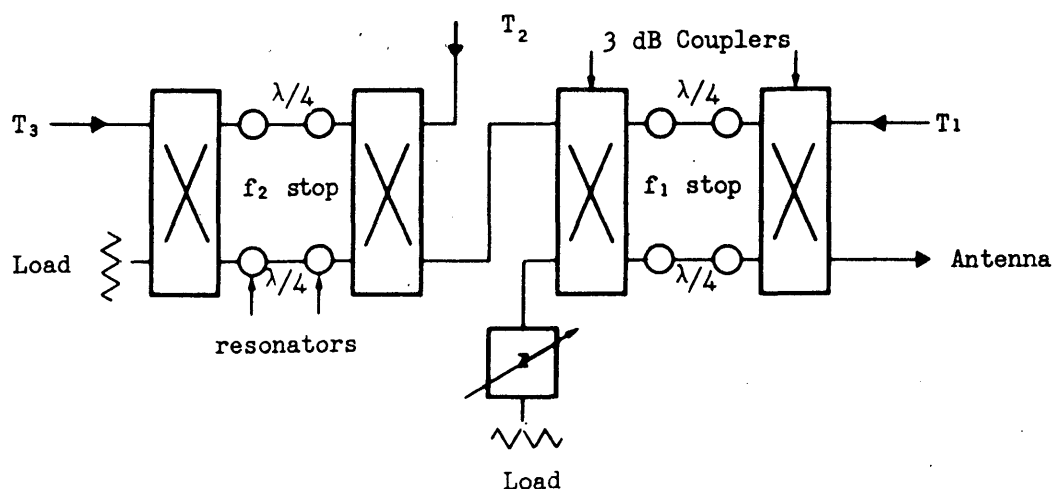
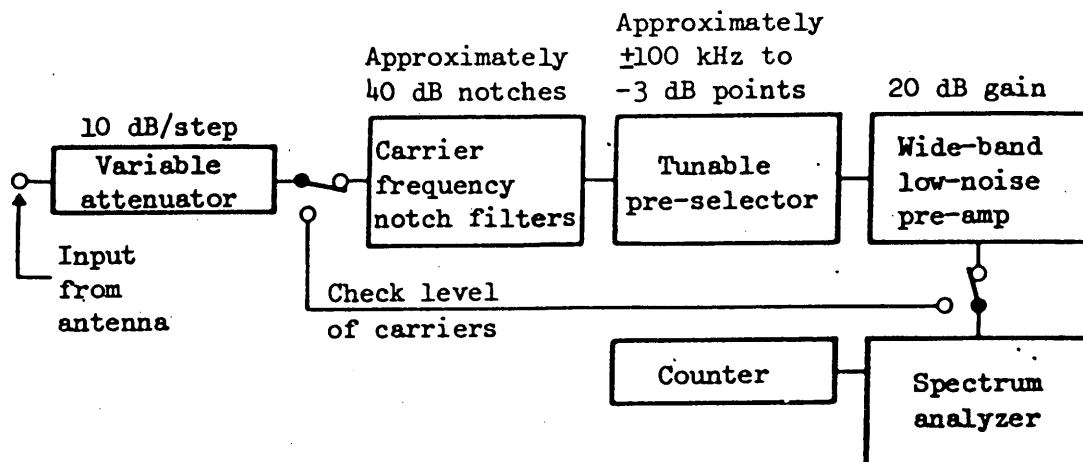
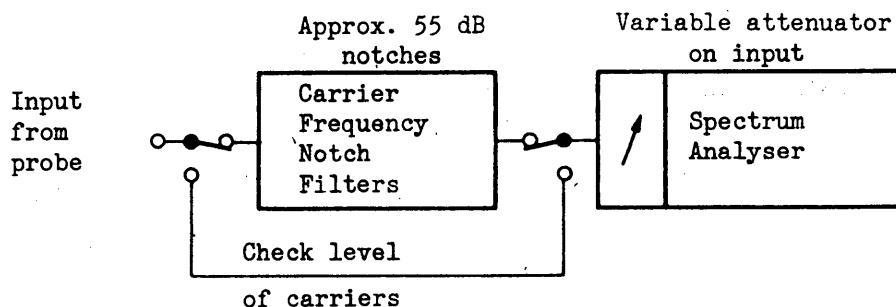


FIGURE I-3 - A three-frequency combining unit



(a) Measurement of radiated levels



(b) Measurement of levels in transmitter feeders

FIGURE I-4 - Methods of measurement

## 2. Measurements of i.p. levels at representative broadcast transmitting stations

The majority of UK stations transmit three equally-spaced frequencies from a common antenna. The spacing is usually 2.2 MHz. Measurements of i.p.s made at a selection of these stations are shown in summary in Table I-II and include examples of high, medium and low-powered stations. Two of the stations are newly built, the remainder were built between 15 and 30 years ago. In each case the measurements were made on forward-wave directional couplers installed in the antenna feeders after these measurements were supplemented by measurements of the radiated levels made on the same day. The methods of measurement are shown in Fig. I-4.

TABLE I-II - Measurements at stations with regularly (2.2 MHz) spaced channels

Station	Relative level of intermode product (dB)				Where measured
	$f_1 - 2\Delta$	$f_1 - \Delta$	$f_3 + \Delta$	$f_3 + 2\Delta$	
Wrotham (new; high power valved transmitters)	-104 -104	-94 -93	-102 -102	-102 -104	feeders field
Tacolneston (old; high power valved transmitters)	-90 -96	-81 -82	-79 -80	-86 -86	feeders field
Peterborough (old; low power solid-state transmitters)	-94 -87	-83 -71	-82 -76	-90 -86	feeders field
Cambridge (old; low power solid-state transmitters)	-72	-78	-75	-72	feeders
Northampton (new; low power solid-state transmitters)	-70	-82	-86	-78	feeders

The above results are similar to those obtained in other countries.

It may be seen from Table I-II that for the valved transmitters, with the exception of Wrotham, the levels of the  $(f_1 - \Delta)$  and  $(f_3 + \Delta)$  terms are in the neighbourhood of -80 dB, while those of the  $(f_1 - 2\Delta)$  and  $(f_3 + 2\Delta)$  are nearer to -90 dB. This difference is ascribed to the frequency selectivity of the output circuit of the transmitter in which the term is generated; the wider the frequency spacing the greater is the conversion loss of the intermodulation process. It is also an indication that the levels of the  $(f_1 - \Delta)$  and  $(f_3 + \Delta)$  terms are determined by intermodulation taking place in the transmitters and not to any great extent elsewhere.

It is to be noted that the policy of the BBC at the time the stations described as "old" were built was to suppress intermodulation products to a much higher degree than that required by the Radio Regulations in order to protect mobile services then using frequencies below 88 MHz and above 97.6 MHz. The target was in fact a relative level of -100 dB [Hayes, 1957]. This was never achieved, despite strenuous efforts, including a detailed investigation into some of the mechanisms by which intermodulation products are generated. Nevertheless, the levels achieved were, and for the most part still are, appreciably lower than those required by the Radio Regulations.

There are two stations in the list described as "new"; both are about two years old and radiate lower levels of intermodulation products than earlier stations of a similar type. However, it has yet to be demonstrated that such levels can be maintained in service without inordinate effort.

#### REFERENCES

HAYES, W. E. and PAGE, H. [1957] The BBC sound broadcasting service on very high frequencies. Proc. IEE., Vol. 104, Part B.

#### ANNEX II

##### EXAMPLES OF MEASURED ANTENNA PATTERN

Some examples of measured field strengths of a broadcast transmitter have been provided by Sweden. When a vertical aperture of several wavelengths is employed, the vertical radiation will reduce the variation of field strength, at a fixed height of the order of 1000 feet, as a function of horizontal distance from the transmitter. Figure II-1 gives an example of a measurement of a broadcast signal at 97.5 MHz. The antenna in this case was an 8-tier array with a downward tilt of the main beam of  $10^\circ$ ; measurements were made at a constant altitude of 1000 feet above the mast-top. Further measurements of an unwanted product at a frequency near 107 MHz showed a similar type of curve for the variation with distance. These and other measurements suggest that the pattern for frequencies above 108 MHz would be approximately but not exactly the same as for the broadcast frequency.

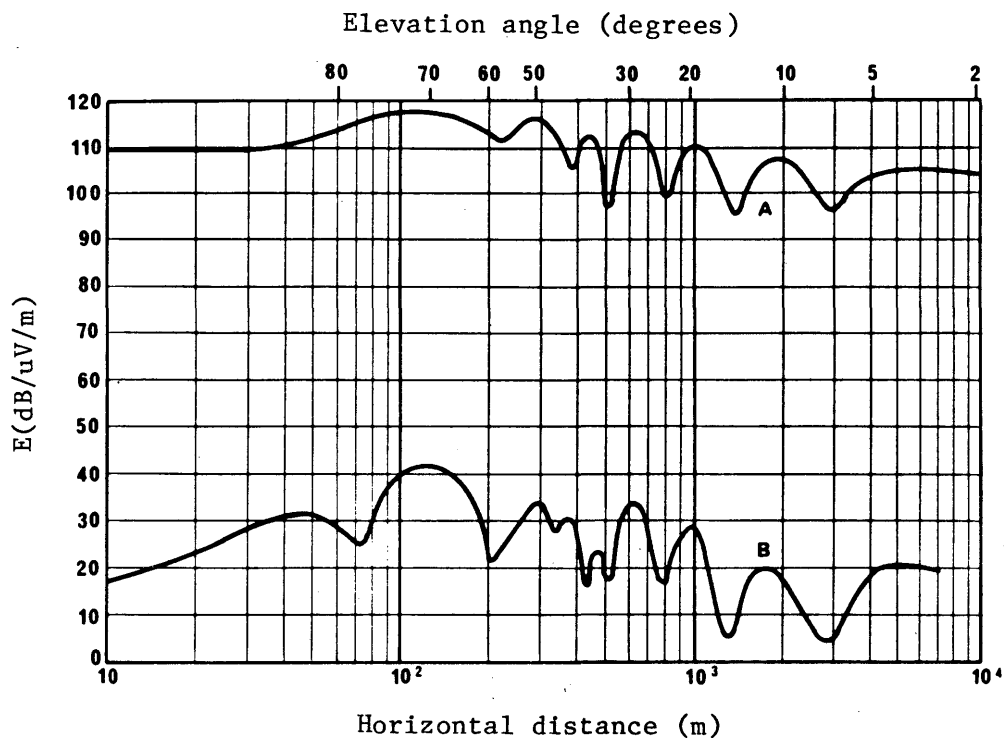


FIGURE II-1 - Example of a measurement of a broadcast signal at 97.5 MHz

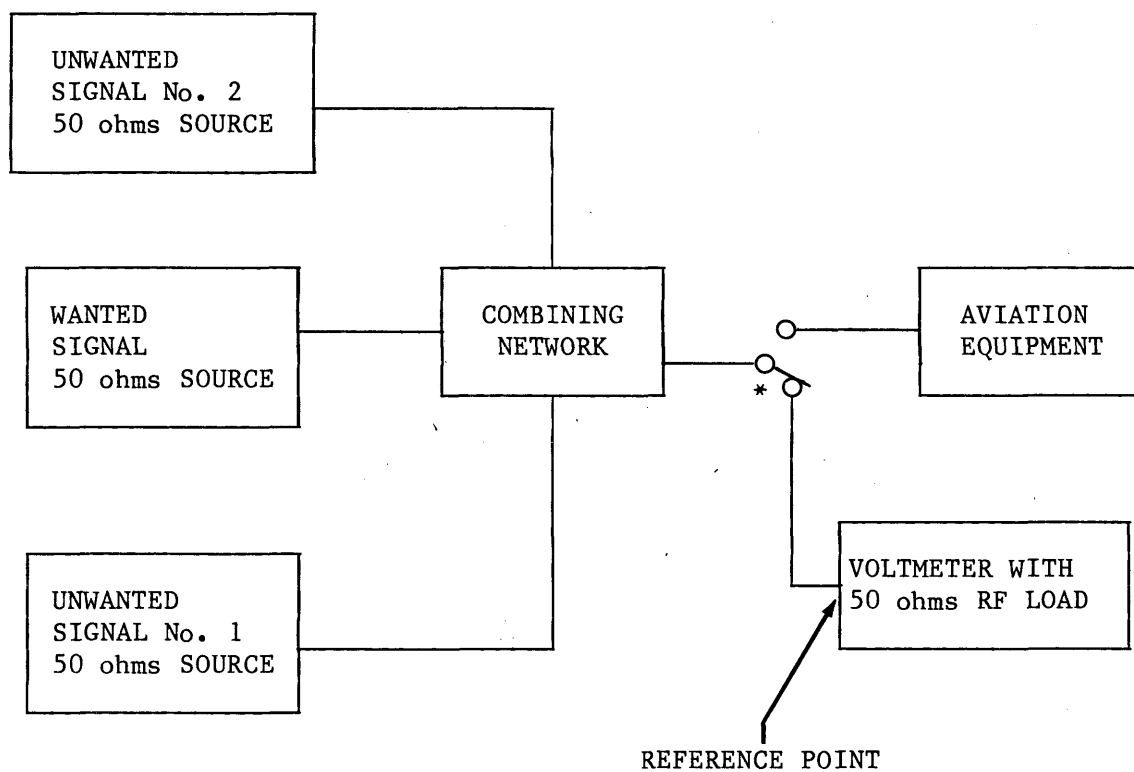
A : transmitter f : 97.5 MHz  
B : spurious f : 107.290 MHz

Note. - Broadcasting FM antenna: an antenna consisting of 24 elements mounted in 3 directions and 8 levels.

Transmitter frequencies: 88.9, 95.1, 97.5 MHz.  
Maximum e.r.p. : 60 kW

### ANNEX III

#### DEFINITION OF STANDARD REFERENCE POINT FOR SPECIFICATION AND MEASUREMENT OF AIRBORNE RECEIVER IMMUNITY



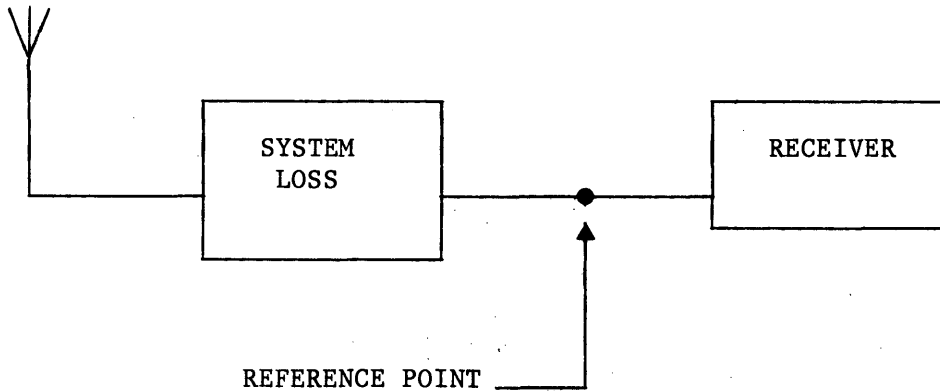
\*Substitute voltmeter with 50 ohms load for aviation equipment to set RF levels.



## ANNEX IV

### CONVERSIONS TO FIELD STRENGTH

#### Example of conversion calculations



To convert a voltage level at the receiver reference point to the equivalent field strength in space (and vice versa), the following steps should be followed:

1. Change the reference point level in volts to a received power in dBm assuming 50 ohms.

$$P_R(\text{dBm}) = 30 + 10 \log \left( \frac{(\text{volts})^2}{50} \right) \quad (1)$$

$P_R$  : received power

2. Modify  $P_R(\text{dBm})$  by system loss and out-of-band responses.

$$P_A(\text{dBm}) = P_R + L_S + L(f) \quad (2)$$

$L_S$  : system fixed loss (dB);

$L(f)$  : system frequency-dependent loss at appropriate frequency.

3. Convert  $P_A(\text{dBm})$  to  $P_Z$  (watts), then convert  $P_A$  (watts) to field strength in space.

$$P_A(\text{watts}) = \frac{\text{antilog } (P_A(\text{dBm}) - 30)}{10} \quad (3)$$

$$E = \sqrt{\frac{P_A (\text{watts}) \times f^2}{1.9 \times 10^{-11}}} \quad (4)$$

E : field strength ( $\mu\text{V/m}$ );  
f : frequency (MHz)

Equation (4) is derived from standard formula for converting received power to field strength in space assuming a loss-less isotropic antenna ( $G_R = 1$ ).

$$P_R = \frac{E^2 G_R \lambda^2}{480 \pi^2} \quad (5)$$

## ANNEX V

### FREQUENCY DEPENDENCY OF THE B1 COMPATIBILITY CRITERIA

In effect, the frequency dependent equations in Section 4.2.2. (c) represent a receiver with an initial passive stage of out-of-band rejection followed by an active stage which is capable of generating i.p.s. The frequency-dependent part of each equation gives the effect of the input selectivity, but only takes into account the separation of the highest broadcasting frequency from the band edge.

A closer approach to the physical reality would be to consider the effect of the input selectivity on each broadcasting component separately.

For the two-component ILS case this leads to:

$$\begin{aligned} &2(N_1 - 20 \log (\Delta f_1/0.4)) \\ &+ N_2 - 20 \log (\Delta f_2/0.4) + 120 < 0 \end{aligned} \quad (1)$$

where  $f_1 > f_2$ .

For the three-component ILS case the equation is:

$$\begin{aligned} &N_1 - 20 \log (\Delta f_1/0.4) + N_2 - 20 \log (\Delta f_2/0.4) \\ &+ N_3 - 20 \log (\Delta f_3/0.4) + 126 < 0 \end{aligned} \quad (2)$$

For these two formulae,  $\Delta f_n = (108.1 - f_n)$  and  $f_n$  is the frequency of the nth broadcasting component. If a lower limit of 0.4 MHz is placed on  $\Delta f_n$  then the formulae also cover the two- and three-frequency cases of  $f_1$  in the range 107.7-108 MHz.

## ANNEX VI

### CORRECTION FACTORS TO PERMISSIBLE BROADCAST SIGNAL LEVELS FOR TYPE B1 INTERFERENCE RELATIVE TO VALUES AT FREQUENCY COINCIDENCE

#### 1. VOR

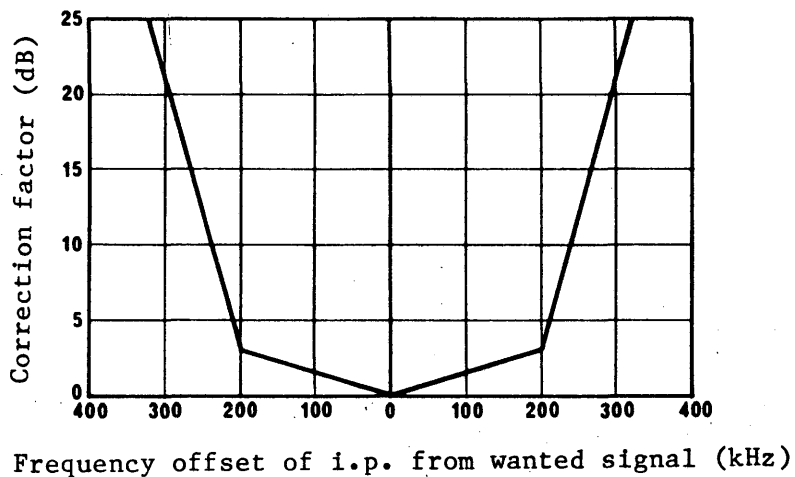


FIGURE VI-1 - Correction factor for VOR  
vs. frequency offset

Modulation : 1 kHz with  $\pm 75$  kHz deviation at both transmitters.

#### 2. ILS

Frequency separation (kHz)	Correction factor (dB)
$\pm 100$	12
$\pm 200$	19

Modulation : Coloured noise as in Section 3.5.3 at both transmitters.

## ANNEX VII

### THEORETICAL MODELLING OF THE VERTICAL RADIATION PATTERN OF AN FM BROADCASTING ANTENNA

#### 1. Modelling of 3 dB beam width of main lobe

To determine an aircraft's position with respect to the main beam of an FM antenna vertical radiation pattern, consider the geometry shown in Fig. VII-1 [Augstman and Lubienietzky, 1982].

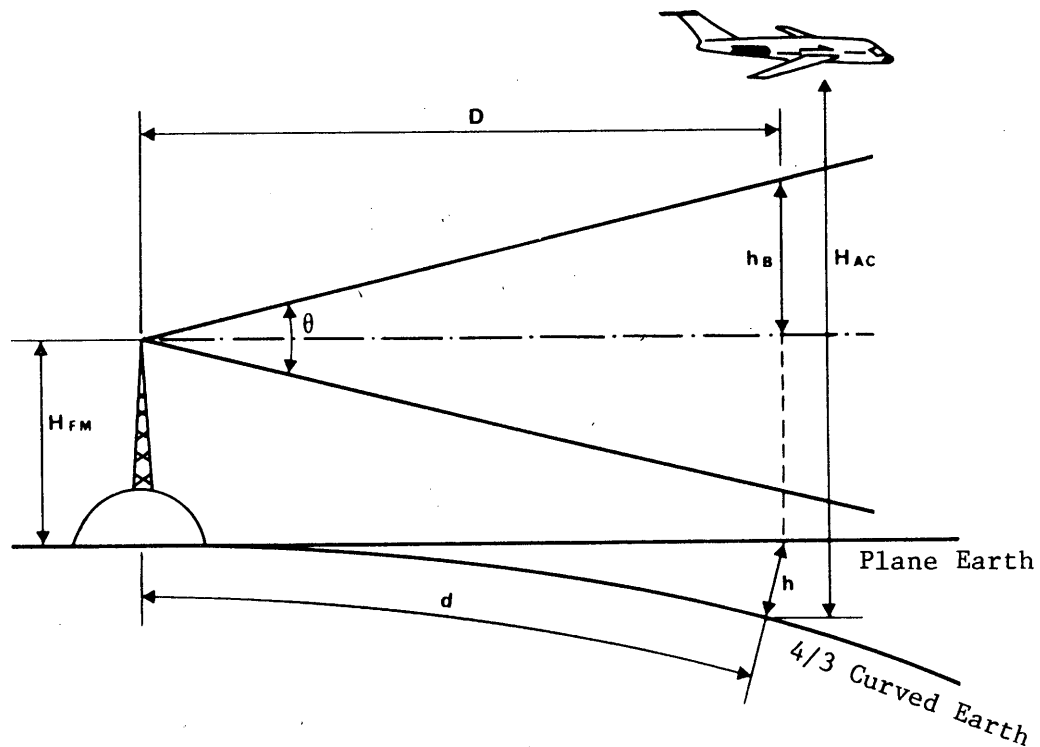


FIGURE VII-1 - Aircraft position with respect to main beam of  
FM antenna vertical radiation pattern

In Figure VII-1, let:

- $H_{AC}$  : aircraft altitude (m ASL)
- $H_{FM}$  : height of centre of FM antenna radiating elements (m ASL)
- $\theta$  : 3 dB beam width of FM main lobe (degrees)
- $h$  : correction factor for 4/3 earth's curvature (m)
- $D$  : distance between aircraft and FM antenna over plane earth (km)
- $h_B$  : half of 3 dB beam width of FM main beam at distance  $D$  (m)
- $d$  : distance measured along the surface of the Earth from a point directly beneath the aircraft to the base of the FM antenna (km).

Let the maxium height of the FM main beam over 4/3 curved earth = HMB (m)

$$\text{Therefore, } HMB = H_{FM} + h_{\beta} + h \quad (1)$$

$$= H_{FM} + 1000 [D \tan (1/2 \theta )] + 0.06D^2 \quad (2)$$

Taking antenna beam tilt (depression angle, in degrees) into account, equation (2) becomes:

$$HMB = H_{FM} + 1000 [D \tan (1/2 \theta - \beta)] + 0.06D^2 \quad (3)$$

An aircraft is in the main beam of the FM antenna radiation pattern if:

$$H_{AC} < H_{FM} + 1000 [D \tan (1/2 \theta - \beta)] + 0.06D^2 \quad (4)$$

Equation (4) assumes that the aircraft is within radio line-of-sight of the FM broadcasting antenna. When broadcasting stations at several different locations are involved, such as in a three-signal intermodulation case, equation (4) has to be satisfied for each of the stations.

## 2. Modelling of vertical radiation pattern envelope

Another antenna modelling technique characterizes the envelope of the vertical radiation pattern with a set of nominal values [CCIR, 1982-86]. Consider the vertical radiation pattern of the high gain antenna shown in Fig. VII-2.

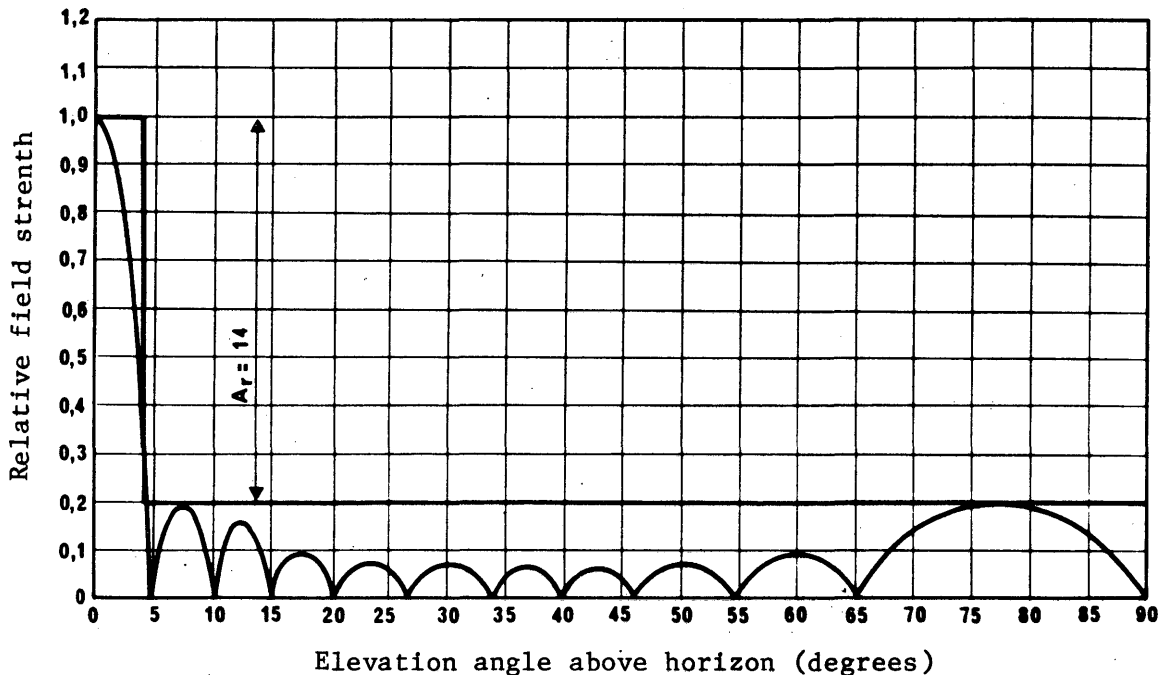


FIGURE VII-2 - Example of vertical radiation pattern for high gain antenna

From Fig. VII-2,  $A_r = 0$  dB for  $\alpha < 40^\circ$   
and  $A_r = 14$  dB for  $40^\circ \leq \alpha \leq 90^\circ$

where:

$A_r$  : attenuation of vertical radiation pattern for a fixed elevation angle  $\alpha$  (in degrees) above horizon.

Techniques such a cosecant-squared modelling of the vertical radiation pattern can also be used.

#### REFERENCES

AUGSTMAN, E. and LUBIENIETZY, A. [1982] Interference to aircraft VHF NAV/COM receivers from FM broadcast stations. Department of Communications and Transport, Ottawa, Ontario, Canada.

CCIR Documents  
[1982-86]: JIWP 8-10/1-11 (Yugoslavia).

#### ANNEX VIII

##### ANALYSIS METHODS FOR PREDICTING THE COMPATIBILITY BETWEEN BROADCASTING STATIONS AND AERONAUTICAL SERVICES

##### 1. First method (for ILS only)

The method retains the principle of checking compatibility at a number of fixed test points. However, the number of points is high enough so there is no need to make special provision for stations inside the ILS area.

In order to determine what this number should be, the points must be distributed in such a way as to minimize the risk of failing to identify a potential source of interference, particularly in the critical ILS approach area.

The basic assumptions were as follows:

- in the approach area, interference from a low-power transmitter (e.r.p. 100 W) has to be identified;
- the cut-off value (see Annex IX) is taken as -42 dBm (the threshold from which a transmitter can be involved in Type B1 interference), giving a field strength of 79.5 dB  $\mu$ V/m (or 9.5 mV/m).

Since the e.r.p. (P in kW), the field strength ( $E_T$  in dB  $\mu$ V/m) and the distance (D in km) are equated as follows:

$$E_T = 106.9 + 10 \log P - 20 \log D$$

it can be deduced that for  $E_T = 79.5 \text{ dB } \mu\text{V/m}$  and  $P = 0.1 \text{ kW}$  the distance  $D$  between an FM station and a test point must always be less than 7.4 km or 4 nautical miles.

The aim, therefore, is to cater for the ILS coverage area as fully as possible using circles with a radius of 4 nautical miles. This is achieved by using 11 test points distributed as shown in Fig. VIII-1, since practically every point in the coverage area is less than 4 nautical miles from a test point. It will be seen that the critical approach area receives closer attention (points E, F, and G in the figure).

The analysis can, if necessary, be further refined by graphical methods, but experience has shown that this is necessary only in extremely rare cases and that even in such cases the closer analysis need only be partial.

Broadcasting stations with an e.r.p. of less than 100 W may be regarded as causing interference at a short distance only; in general the levels they generate will not add to interference in greater part of the ILS area.

Failure to detect unwanted field strength in the critical ILS area would be more serious. The use of four test points (A, E, F, G) spaced 5.6 km apart enables this problem to be solved satisfactorily.

#### DISTRIBUTION OF TEST POINTS

Point	A	E	F	G	H	I	J	K	L	M	N	D	B	C
p km	0	5.6	11.1	16.7	26	35.2	42.6	20	28.3	20	28.3	46.3	31.5	31.5
$\theta$ deg	0	0	0	0	0	0	0	-35	-24	+35	+24	0	-35	+35
Height (m)	0	300	300	300	600	600	600	300	600	300	600	600	300	300

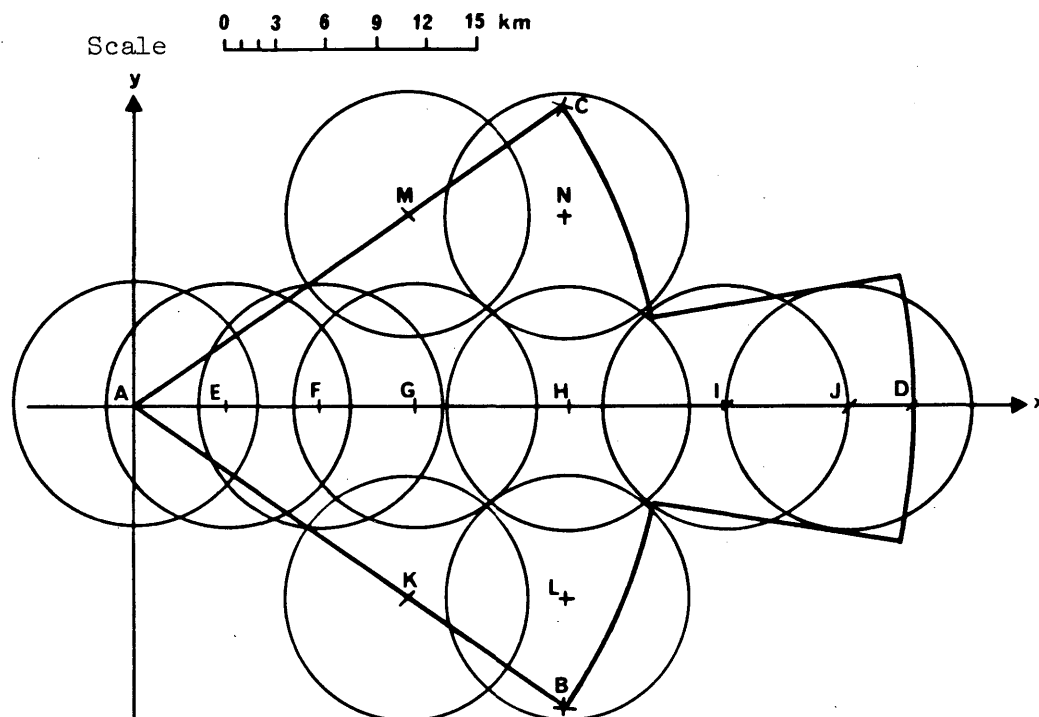


FIGURE VIII-1 - Distribution of test points

## 2. Second method (for ILS and VOR)

### 2.1 ILS

The following relaxations of criteria, as compared to the First Session, were used with a view to minimizing the data which had to be produced and inspected:

- when ILS back-beams are not included and where broadcasting stations are in close proximity to the runway or the last 5 nautical miles or so of final approach, special test points should be included;
- a lower cut-off value of receiver input power, below which a broadcasting station is assumed not to contribute to BI problems, is defined and detailed values and reasoning are given in Annex IX;
- the 100 m distance for the in-volume case in Section 4.1.2 of Annex J of the Report of the First Session, can be replaced by 3.5 km. This was considered to be far more realistic to cover the general operational case. The location of this point is chosen to be on the maximum of the horizontal radiation pattern for a directional station and on the line joining the broadcasting and aeronautical stations if the former is omnidirectional;

operationally critical cases have to receive special attention and require additional test points at horizontal distances of less than 3.5 km. Up to 12 special test points per aeronautical station are permitted within the programs existing in the United Kingdom;



- since neither the First Session nor further studies produced a view on the case of the B1 offset compatibility criteria, it was assumed to follow the offset adjustment used for the A1 protection criteria (see also Section 4.2.5).

## 2.2 VOR

The approach to VOR is similar to that for ILS.

The modified criteria are as follows:

- the concept of a lower cut-off value can be used, as for ILS (see Annex IX);
- the 300 m horizontal separation for in-volume cases in Section 4.2.2 of Annex J of the Report of the First Session can be replaced by 3 km.

In the case of VOR, a test point is only included if a conflict can be triggered; otherwise, the broadcasting station is treated as a possible contributor only (see Annex IX).

In addition to the standard four cardinal points, up to twelve further test point locations at appropriate heights to ensure line-of-sight to the VOR transmitter can be used to check any particular problems;

- in the case of the additional test points, the vertical radiation pattern of the broadcast antenna can be taken into account in order to alleviate potential problems;
- it is assumed that for the offset A1 and B1 cases the criteria for ILS will be used.

## 2.3 Output results

2.3.1. All results are given in terms of protection margins, i.e., the amount by which a given compatibility criterion is exceeded.

In each case where results are printed, the following information is given:

- name and frequency of broadcasting station ) repeated
- for A1 and A2: field strength at each test point ) for
- for B1 and B2: receiver input power at each test point ) each
- for B1 and B2: receiver input power at each test point ) contributing
- for B1 and B2: receiver input power at each test point ) component
- for A1 and B1: the frequency of the i.p. and the protection margin for each test point are also given;
- for B2: the power sum of all individual contributions is also given in the form of a protection margin for each test point.

### 2.3.2 A1

Results for all test points are printed in any case where the protection margin of the worst test point is less than +18 dB. In this case, it is assumed that 85 dB suppression of i.p.s is normally achieved.

### 2.3.3 A2, B1, B2

Results for all test points are printed in any case where the protection margin at the worst test point is less than +3 dB.

## ANNEX IX

### APPLICATION OF TRIGGER AND CUT-OFF VALUES TO THE PREDICTION OF TYPE B1 INTERMODULATION PRODUCTS

#### 1. Definitions

##### 1.1 Trigger value

The minimum power level, measured at the input to the ILS/VOR receiver, considered necessary for a broadcast signal to initiate the production of intermodulation products (i.p.) which are of sufficient power to potentially infringe the receiver interference threshold.

##### 1.2 Cut-off value

The minimum power level, measured at the input to the ILS/VOR receiver, considered necessary for a broadcast signal to be one input to the non-linear process which results in the formation of an i.p. of sufficient power to potentially infringe the receiver interference threshold.

#### 2. Recommended values

##### 2.1 Trigger value

From the formula used to express the receiver interference threshold (Section 4.2) it is seen that it is necessary for one of the i.p. components to have a power level at least equal to the equi signal solution of these equations. The following formulae give the equi signal levels ( $N_1=N_2$  or  $N_1=N_2=N_3$ ).

##### (i) ILS current receivers

$$N = -40 + 20 \log (\Delta f / 0.4) \text{ dBm} \quad (2f \text{ case})$$

$$N = -42 + 20 \log (\Delta f / 0.4) \text{ dBm} \quad (3f \text{ case})$$

$$\Delta f = 108.1 - f : \Delta f \geq 0.4 \text{ MHz}$$

(ii) VOR current receivers

$$N = -35 + 30 \log (\Delta f / 0.6) \text{ dBm} \quad (2f \text{ case})$$

$$N = -37 + 30 \log (\Delta f / 0.6) \text{ dBm} \quad (3f \text{ case})$$

$$\Delta f = 108 - f : \Delta f \geq 0.6 \text{ MHz}$$

(iii) Future ILS and VOR receivers

$$N = -24 + 20 \log (\Delta f / 0.4) \text{ dBm} \quad (2f \text{ case})$$

$$N = -26 + 20 \log (\Delta f / 0.4) \text{ dBm} \quad (3f \text{ case})$$

$$\Delta f = 108.1 - f : \Delta f \geq 0.4 \text{ MHz.}$$

For each case, 3 frequency i.p. considerations lead to the smaller signal value. It is these values, reduced by a further 2 dB for safety, that are recommended for use as trigger values. They are plotted in Fig. IX-1.

## 2.2 Cut-off value

The concepts of trigger and cut-off values are similar to those of primary and secondary level signals described in CCIR Report 929. By analogy with this Report, the cut-off value would be -54 dBm. However, since the trigger value is frequency-dependent it is logical to make the cut-off value also frequency-dependent. A value of 10 dB below the trigger value, at the frequency being considered, appears to be appropriate. They are plotted in Fig. IX-2.

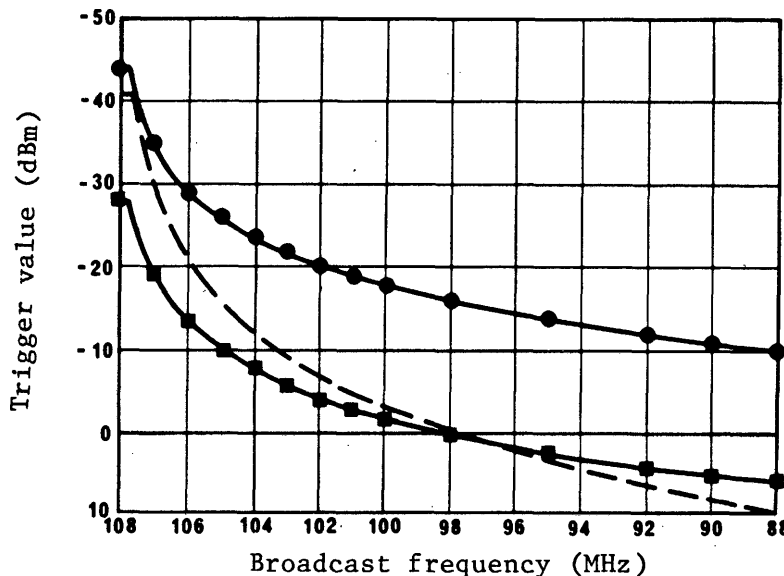
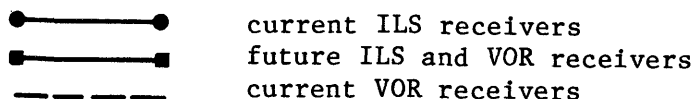


FIGURE IX - 1 - Trigger values for Type B1 interference



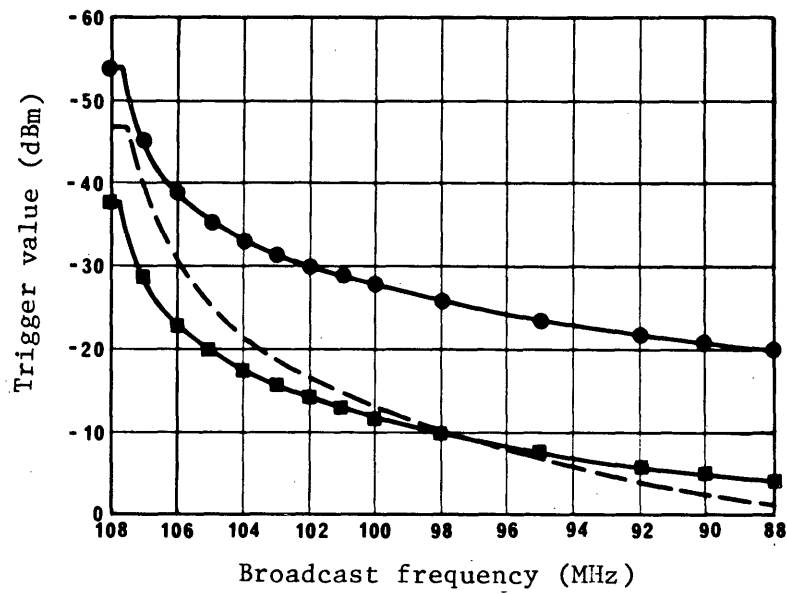


FIGURE IX-2 - Cut-off values for Type B1 interference

- — current ILS receivers
- — future ILS and VOR receivers
- current VOR receivers

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 13-E

29 June 1984

Original : English

## PLENARY MEETING

### Federal Republic of Germany

#### PROPOSAL FOR THE WORK OF THE CONFERENCE

#### ARTICLE 4

#### Procedure for Modifications to the Plan

##### 4.1 Introduction

- D/13/1 4.1.1 When a Contracting Administration proposes to make a modification to the Plan, i.e. either:
- to change the characteristics of a frequency assignment to a broadcasting station in accordance with the Agreement, whether or not the station has been brought into use, or
  - to include in the Plan an assignment to a broadcasting station not appearing in the Plan, or
  - to cancel a frequency assignment to a broadcasting station,

the following procedure shall be applied before any notification is made under the provisions of Article 12 of the Radio Regulations (see Article [ ] of this Agreement).

- D/13/2 4.1.2 The term "assignment in accordance with the Agreement" means any frequency assignment appearing in the Plan or for which the procedure of this Article has been successfully applied.

##### 4.2 Proposed changes in the characteristics of an assignment or the inclusion in the Plan of a new assignment

- D/13/3 4.2.1 Any administration proposing a change in the characteristics of an assignment or the inclusion in the Plan of a new assignment shall seek the agreement of all Contracting Administrations concerned. In this case, the following action shall be taken:
- D/13/4 4.2.2 If the distances from the station under consideration to the nearest points of the boundaries of other countries, the administrations of which are Contracting Administrations, are less than the limits corresponding to the proposed power of the station and other characteristics specified in Annex 1, the administrations of those countries shall be consulted by registered post.

- D/13/5 4.2.3 In effecting this consultation, the administration proposing the change shall furnish the administrations that are being consulted with all information specified in Appendix 1, Section A, of the Radio Regulations (see Annex 2).

The administrations that are being consulted may request any other information they need to assess the probability of harmful interference to their services to be protected so that a final agreement can be prepared therefrom. If necessary, this final agreement can also be drafted in negotiations conducted by the administrations concerned.

- D/13/6 4.2.4 The agreement shall be drafted according to the principle of equal rights of all parties involved with the aim of finding a compromise solution. For this purpose, the "reference situation" according to Annex 3 or any other procedure on which the administrations concerned will agree in each individual case can be taken as a basis. Consideration of local conditions (topography) and measurements may assist in reaching agreement.

- D/13/7 4.2.5 Administrations which have been consulted and have not replied within [3 months] following the date of registration of the consultation letter in the post of the country of origin shall be reminded by urgent telegram. Administrations which have not replied within [2 weeks] following the despatch of the urgent telegram shall be considered to have agreed to the proposed change.

- D/13/8 4.2.6 If agreement is reached between the administrations concerned, the administration proposing the change may proceed with its project.

- D/13/9 4.2.7 If a change - although made according to the provisions of this Article - causes harmful interference to services of other Contracting Administrations, the administration which has made the change shall be liable to take measures so as to eliminate that interference.

- D/13/10 4.2.8 If no agreement is reached between the administrations concerned, the IFRB shall make any technical examination that may be requested by the administration proposing the change, or by administrations whose services may be affected by the proposed change, and shall inform them of the results of such examination.

- D/13/11 4.2.9 If the proposed modification to the Plan concerns a developing country, the administrations shall endeavour to find a solution in the interest of the economic development of the broadcasting system of the developing country, adequately considering the respective principles laid down in the preamble of the Agreement.

D/13/12 4.2.10 Subject to the application of Article 12 of the Radio Regulations, the administration proposing the change may proceed with its project without consulting other administrations if:

- a) the proposed modification relates to a reduction in power or to other changes of technical characteristics which would reduce the probability of harmful interference to services of other countries, or
- b) the distances from the station under consideration to the nearest points of the boundaries of other countries, the administrations of which are Contracting Administrations, are equal to, or greater than, the limits corresponding to the proposed power of the station and other characteristics specified in Annex 1.

D/13/13 4.2.11 In the cases referred to in sub-paragraphs 4.2.6 and 4.2.10 above, the administration proposing the change shall inform the IFRB of the particulars specified in sub-paragraph 4.2.3 above and, where appropriate, of the names of the administrations consulted.

D/13/14 4.2.12 The IFRB shall publish the information in a "Special Section" of its weekly circular, specifying either that the proposed change is the result of consultation carried out under the provisions of sub-paragraphs 4.2.2, 4.2.3 and 4.2.6 above, or that it is being effected under the provisions of sub-paragraph 4.2.10 above.

D/13/15 4.2.13 Any administration which considers that it should have been included in the list of administrations whose frequency assignments are considered to be affected may, giving its reasons for so doing, request the IFRB within [ ] days from the date of publication to include its name in the list.

A copy of the request shall be sent - together with the corresponding reasons - to the administration proposing the modifications to the Plan.

Any administration shall have the right to take the IFRB publications (see sub-paragraph 4.2.11) as a basis for resuming, with well-founded arguments, the procedure according to the provisions of this Article for changes of the frequency assignments.

D/13/16 4.3 Procedure for stations of services other than broadcasting

For stations of services other than broadcasting, the provisions of the Radio Regulations shall apply, taking into account the categories of service and allocations specified in Article 8 thereof. Contracting Administrations proposing to change the technical characteristics of such stations or to establish new stations of such services shall take into account those broadcasting stations which have an assignment in accordance with the Agreement and may proceed with their project only after reaching mutual agreement with the administrations that may be concerned.

D/13/17 4.4 Cancellation of an assignment

When an administration decides to cancel an assignment in conformity with the Agreement, it shall immediately notify the IFRB, which shall publish the cancellation in a "Special Section" of its weekly circular.

D/13/18 4.5 Settlement of disputes

If, after application of the procedure described in this Article, the administrations concerned are unable to reach agreement, they may resort to the procedure established in Article 50 of the Convention. The administrations also may apply, by common agreement, the Optional Additional Protocol to the Convention.

3 annexes



D/13/19

Annex 1

**Tables of Limiting Distances to be used in  
Application of Article 4 of the Agreement**

The following tables give, as a function of the effective radiated power, the effective transmitting antenna height and the nature of the path under consideration, the limiting distances to be taken into account in the application of Article 4 of the Agreement.

The distance values in the tables were determined from the propagation curves given in the [Technical Data] for the case of strongest interference (co-channel). They ensure that the "nuisance field", i.e. the field strength of an interfering transmitter at its actual e.r.p. enlarged by the pertinent RF protection ratio, does not exceed the minimum usable field strength of 54 dB( $\mu$ V/m).

For power values different from those in the tables the limiting distance shall be determined by linear interpolation for the e.r.p., expressed in dBW.

For antenna height values different from those in the tables the limiting distance shall be determined by linear interpolation for the height. Antenna heights below 10 m and above 1800 m are to be considered as 10 m or 1800 m, respectively. Although linear interpolation would not fully meet the physical relationship it would, nevertheless, provide satisfactory accuracy.

In the case of mixed paths the limiting distance  $D_M$  shall be the sum of the pertinent fractions of the limiting distances for over-land propagation paths,  $D_L$ , and for over-sea propagation paths,  $D_S$ . The pertinent fractions are the ratio of the over-land portion,  $d_L$ , or the over-sea portion,  $d_S$ , and the total path length,  $d_T$ , from the transmitter to the border of the country concerned:

$$D_M = \frac{d_L}{d_T} D_L + \frac{d_S}{d_T} D_S$$

TABLE I - Limiting distances  $D_L$  in km for propagation over land

Effective radiated power (e.r.p.)		Effective antenna height							
		10m	37.5m	75m	150m	300m	600m	1200m	1800m
55 dBW	300 kW	495	495	505	520	540	570	610	645
50	100	440	440	450	465	485	515	555	590
45	30	385	385	395	410	430	460	500	535
40	10	330	330	340	355	375	405	445	480
35	3	280	280	290	305	325	350	390	425
30	1	200	225	240	255	275	300	340	375
25	300 W	110	170	185	200	220	250	295	325
20	100	60	125	140	155	175	205	250	280
15	30	40	85	105	120	140	170	210	240
10	10	30	55	75	90	110	140	180	200
5	3	25	40	55	70	85	110	150	165
0	1	20	35	45	60	75	95	125	140

D/13/21

**TABLE II - Limiting distances  $D_s$  in km for propagation over cold sea**

Effective radiated power (e.r.p.)		Effective antenna height							
		10m	37.5m	75m	150m	300m	600m	1200m	1800m
55 dBW	300 kW	745	745	760	775	800	830	870	905
50	100	645	645	660	675	700	730	770	805
45	30	555	555	570	585	610	640	685	715
40	10	480	480	495	510	530	560	600	635
35	3	410	410	425	440	460	495	535	565
30	1	350	350	365	380	400	430	470	505
25	300 W	300	300	310	325	345	375	415	450
20	100	240	240	255	270	290	325	365	395
15	30	120	185	200	215	240	275	315	345
10	10	60	130	145	160	180	225	270	295
5	3	30	85	100	115	135	175	220	240
0	1	20	55	70	80	100	130	175	190

TABLE III - Limiting distances  $D_s$  in km for propagation over warm sea

Effective radiated power (e.r.p.)		Effective antenna height							
		10m	37.5m	75m	150m	300m	600m	1200m	1800m
55 dBW	300 kW	1200	1200	1200	1200	1200	1200	1200	1200
50	100	1200	1200	1200	1200	1200	1200	1200	1200
45	30	950	950	990	1020	1055	1090	1130	1160
40	10	715	715	755	785	815	850	890	920
35	3	560	560	600	625	650	685	725	755
30	1	440	440	475	500	520	555	595	625
25	300 W	350	350	375	400	420	450	490	520
20	100	275	275	300	320	340	370	405	440
15	30	140	210	235	255	275	300	335	375
10	10	60	145	170	195	215	245	280	315
5	3	35	90	115	140	165	195	230	265
0	1	20	55	75	100	120	150	185	220

Form No.:		Date:		<b>COORDINATION FORM</b>		<b>AP2/GE84</b>	
<b>A</b> ADMINISTRATION		<b>B</b> Administration Serial No.		<b>VHF BROADCASTING STATION</b> (Annex 2, Geneva 84)			
<b>C</b> First Coordination <input type="checkbox"/>		<b>E</b> <b>GE 84</b> Plan update <input type="checkbox"/>		<b>F</b> Coordination intended for		ADD <input type="checkbox"/> MOD <input type="checkbox"/> of an assignment	
<b>D</b> Resubmission <input type="checkbox"/>							

### CHARACTERISTICS OF THE ASSIGNMENT

<b>1</b> Frequency _____ MHz		<b>2c</b> Date D M Y		<b>5</b> Class of station <b>B C</b>		<b>5</b> Height of terrain above mean sea level _____ Metres	
<b>4a</b> Name of transmitting station _____		<b>4b</b> Country _____		<b>4c</b> Longitude Degrees E W Min.		<b>Latitude</b> Degrees N S Min.	

### CHARACTERISTICS OF THE TRANSMISSION

<b>G</b> Coordination intended for		ADD <input type="checkbox"/> MOD <input type="checkbox"/>																																																																																																																																																																																																				
<b>FM SOUND BROADCASTING</b>																																																																																																																																																																																																						
<b>7a</b> Designation of emission _____		<b>9d</b> Polarization _____																																																																																																																																																																																																				
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### OTHER RELATED INFORMATION

<b>11</b> Coordination or Agreement with other Administrations		<b>H</b> OTHER INFORMATION	
Provisions	Country Symbols	Supplied on a separate sheet <input type="checkbox"/>	

D/13/23

Annex 2

EXPLANATORY NOTES ON THE COORDINATION FORM

(to Annex 2)

Column 1 Assigned frequency

Column 2c Date of bringing into use

Indicate the proposed date of bringing the frequency assignments into use.

Column 4 Particulars of the transmitting station

Column 4a Indicate the name of the locality by which the transmitting station is known or in which it is situated.

Column 4b Indicate the country or geographical area in which the station is located. Symbols from the Preface to the International Frequency List should be used.

Column 4c Indicate the geographical coordinates (longitude and latitude in degrees and minutes) of the transmitter site.

Column 5 Height of terrain above mean sea level of the site of the transmitting antenna

Column 6 Class of station and nature of service

Indicate the class of station and nature of service performed using the symbols shown in Appendix 10 (Radio Regulations)

Column 7a Class of emission, necessary bandwidth and description of transmission

Column 8 Maximum effective radiated power (e.r.p), in dBW

**Column 9 Transmitting antenna characteristics**

**Column 9a Azimuth of maximum radiation**

1. If a directive transmitting antenna is used, indicate the azimuth of maximum radiation of the transmitting antenna in degrees (clockwise) from True North.
2. If a transmitting antenna with non-directional characteristics is used, insert "ND" in this column.

**Column 9d Polarization**

The polarization of radiation should be indicated by using the following symbols:

Symbol	Polarization	Definition
H	Horizontal	The electric field intensity vector is in the horizontal plane
V	Vertical	The electric field intensity vector is in the vertical plane
RC	Right circular or Direct	The electric field intensity vector, observed in any fixed plane, normal to the direction of propagation, while looking in the direction of propagation rotates with time in a right-hand or clockwise direction
LC	Left circular or Indirect	The electric field intensity vector, observed in any fixed plane, normal to the direction of propagation, while looking in the direction of propagation rotates with time in a left-hand or anticlockwise direction

**Column 9f Maximum effective antenna height**

The height should be expressed in metres and aligned to the right of the box. Indicate by means of the symbol + or - whether the value is positive or negative. In the absence of such a symbol, the value is assumed to be positive.

**Column 9k Antenna height above ground level**

Indicate the height (in meters) of the geometrical centre of the antenna above ground level.

**Column 11 Coordination with other administrations**

Indicate the country with which the coordination has to be performed according to the provisions of the Plan and indicate the provision in which such a coordination is required.

**Use of the coordination form in case of modifications to the Plan**

If, due to changes of the characteristics of a broadcasting transmitter, a new coordination form has to be filled in, reference should be made to the original coordination form and the letter "M" should be entered before the corresponding box of the modified characteristics and the letter "A" for additional characteristics.

**Hints to entries in the coordination form**

All numbers should be entered right-justified and all letters left-justified.



D/13/24

Annex 3

Reference situation of the adopted Plan

The reference situation describes the interfering effect of the original Plan when the latter will come into force, with reference to the usable field strength of each transmitter at the transmitter's site.

The usable field strength is calculated according to item... [technical Appendix] of this Agreement.

Modifications to the Plan, which will lead to an increase in the usable field strength, have to be coordinated with the administrations responsible for the transmitters concerned.

Changes resulting in an increase of the usable field strength of [at least 0.5 dB for transmitters with a power larger than 1 kW and at least 1.5 dB for transmitters with a power smaller than 1 kW] compared with that specified in the Plan need not be readily accepted by the administration concerned.

Annex: List of the usable field strengths of the transmitters contained in the Plan

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INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984.

Document 14-E  
29 June 1984  
Original : English

PLENARY MEETING

Federal Republic of Germany

PROPOSALS FOR THE WORK OF THE CONFERENCE

EXTRAPOLATION OF FIELD-STRENGTH CURVES FOR EFFECTIVE TRANSMITTING  
ANTENNA HEIGHTS BELOW 37.5 M OR ABOVE 1,200 M, RESPECTIVELY

1. Introduction

In Chapter 2 of the Report to the Second Session of the Conference on propagation proposals are made concerning the application of the propagation curves (item 2.1.3) and, in particular, the extrapolation of field-strength curves for effective transmitting antenna heights  $h_1$  below 37.5 m or above 1200 m, respectively. Since then it was realized that the corresponding proposals as they appear in the fourth para of 2.1.3 are not fully satisfactory and may lead into difficulties. It is, therefore, proposed to apply, during the Second Session of the Conference, the extrapolation procedure set out below.

D/14/1 2. Proposals

2.1 Transmitting antenna heights below 37.5 m

Additional curves for transmitting antenna heights of 20 m and 10 m may be derived from the 37.5 m curve by applying correction factors of -5 dB and -11 dB for distances up to 25 km, and of 0 dB in both cases for distances in excess of 250 km, with linear interpolation between these values for intermediate distances. To obtain field-strength values corresponding to effective transmitting antenna heights ( $h_1$ ) of less than 10 m the values derived for 10 m shall be used.

Reasons:

The proposal contained in the Report to the Second Session of the Conference results in propagation curves which, for tropospheric propagation (Figs. 2.2 - 2.9) and for distances in the range between 50 km and 100 km show - particularly for  $h_1 = 10$  m - an increase of the extrapolated field strength with the distance. Apart from there being no justification for such a distance dependency on technical or physical grounds an extrapolation based on this rule might lead into difficulties in the iterative process of determining the coverage range of a transmitter.

The proposal made in this contribution is based on careful consideration of the work which was done in this respect in the CCIR. In doing so it was attempted to avoid extrapolation of questionable reliability in a distance range for which some inaccuracies, particularly in the 37.5 m curve, were noticed.

D/14/2 2.2 Transmitting antenna heights above 1200 m

To obtain field-strength values corresponding to effective transmitting antenna heights in excess of 1200 m, the field strength at a distance of  $x$  km from the transmitter may be taken to be the same as the field strength given by the curve at a distance of  $(x + 70 - 4.1\sqrt{h_1})$  km for a transmitting antenna height of 300 m. As this extrapolation is only applicable to trans-horizon distances its use shall be limited to distances beyond  $x = (4.1\sqrt{h_1} + 70)$  km. For distances between 100 km and  $x = (4.1\sqrt{h_1} + 70)$  km it may be assumed that the field strength exceeds that for 1200 m by the same amount as at  $x = (4.1\sqrt{h_1} + 70)$  km calculated in accordance with the above procedure. For smaller distances this increment shall be determined by linear interpolation between 0 dB at 20 km and the height-dependent value at 100 km distance. The extrapolation is subject to the condition that the free-space field is not exceeded.

Reasons:

The proposal contained in the Report to the Second Session of the Conference was derived from a procedure which is only valid for trans-horizon distances. At distances within the horizon the procedure tends to lead to excessive field-strength values. Example: For  $h_1 = 1210$  m and  $x = 100$  km the field strength resulting from Fig. 2.1 would be 64 dB, i.e. 16 dB above the 1200 m curve.

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 15-E

29 June 1984

Original : English

PLENARY MEETING

Federal Republic of Germany

PROPOSAL FOR THE WORK OF THE CONFERENCE

INSERTION OF SUPPLEMENTARY MODULATION SIGNALS WITH  
DIFFERENT CHARACTERISTICS FOR SOUND BROADCASTING AT VHF

D/15/1

Planning is based on stereophonic reception with fixed receiving installations having a directional antenna at a height of 10 m above ground with a front-to-back ratio of 12 dB.

This does not preclude the use of other modulation signals having different characteristics (e.g. other pre-emphasis characteristics, digital modulation) provided that the use of such characteristics does not cause greater interference than the use of the reference system on which the Plan is based.

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 16-E

31 July 1984

Original : French

## BUDGET CONTROL COMMITTEE

### Note by the Secretary-General

#### BUDGET OF THE REGIONAL ADMINISTRATIVE CONFERENCE FOR FM SOUND BROADCASTING IN THE VHF BAND

The budget of the Conference, as approved by the Administrative Council of the Union at its 38th Session (1983), is annexed hereto for the information of the Budget Control Committee.

It is emphasized that the estimated expenditure of this regional Conference do not form part of the ordinary budget of the Union. Under No. 115 of Article 15 of the International Telecommunication Convention, Nairobi, 1982, expenses shall be borne by all Members of Region 1 and certain countries concerned in Region 3, in accordance with their unit classification, and, on the same basis, by any Members of other Regions which would have participated in that Conference.

R.E. BUTLER  
Secretary-General

Annex : 1

ANNEX

- 2 -  
CARR-1(2)/16 -E

Section 14.3 <u>Regional Administrative Conference,</u> <u>Region 1+</u> Items		Budget 1984 - Swiss francs -
<u>Sub-head I</u>	<u>Preparatory work</u>	
14.301	IFRB salaries and related expenses	613,000
14.302	Insurance	119,000
14.303	Office space, furniture	30,000
14.304	Electronic equipment	50,000
14.311	CCIR preparatory meetings	48,000
		860,000
<u>Sub-head II</u>	<u>Staff expenses</u>	
14.351	Salaries and related expenses of the Conference Secretariat staff	1,314,000
14.352	Salaries and related expenses of the translation, typing and reproduction services staff	604,000
14.353	Travel (recruitment)	75,000
14.354	Insurance	47,000
		2,040,000
<u>Sub-head III</u>	<u>Travel expenses</u>	
14.361	Transport at the conference venue	-
14.362	Travel to and from the conference venue	-
14.363	Shipping of equipment to and from the conference	-
<u>Sub-head IV</u>	<u>Premises and equipment</u>	
14.371	Premises, furniture, machines	55,000
14.372	Document production	58,000
14.373	Office supplies and overheads	30,000
14.374	Postage, telephone calls, telegrams	50,000
14.375	Technical installations	5,000
14.376	Sundry and unforeseen	10,000
14.377	Use of outside computers	90,000
		298,000
<u>Sub-head V</u>	<u>Other expenses</u>	
14.381	Interest credited to the ordinary budget	64,000
<u>Sub-head VI</u>	<u>Final Acts</u>	
14.391	Final Acts of the Conference	176,000
	Total, Section 14.3	3,438,000

Section 14.3	Budget
	1984
<u>Regional Administrative Conference,</u>	
<u>Region 1+</u>	- <u>Swiss francs</u> -

### Preparatory work

By Resolution No. 870, the Administrative Council at its 37th session approved the creation of 9 posts in the IFRB Specialized Secretariat, 3 of them to be charged to the RARC 1+ budget as from 1.1.1983 (1 P.4 and 2 G.4).

For 1984, it has been decided to maintain the 3 posts authorized for 1983 under the RARC 1+ budget and to strengthen the team in charge of preparatory work for the Conference by creating in the IFRB Specialized Secretariat, an additional P.4 post (12 months), a G.7 post (12 months) and four G.4 posts (6 months).

Moreover, the first session of CARR 1+ requested the CCIR to carry out studies in preparation for the second session.

The overall cost of preparatory work in 1983 and 1984 thus amounts to 860,000 Swiss francs, broken down as follows :

	<u>1983</u>	<u>1984</u>	<u>Total</u>
<u>IFRB</u>	(1 P.4 + 2 G.4)	(2 P.4 + 1 G.7 + 6 G.4)	
- Salaries and allowances	182,000	431,000	613,000
- Insurance	35,000	84,000	119,000
- Office space, furniture	-	30,000	30,000
- Electronic equipment	-	50,000	50,000
	<u>217,000</u>	<u>595,000</u>	<u>812,000</u>
<u>CCIR</u>	48,000	-	48,000
	<u>265,000</u>	<u>595,000</u>	<u>860,000</u>
Total	=====	=====	=====

Section 14.3	Budget 1984
<u>Regional Administrative Conference,</u>	
<u>Region 1+</u>	- Swiss francs -

Salaries and related expenses of the conference secretariat staff

It has been foreseen that for the proper functioning of the Conference it would be necessary to set up a secretariat comprising the staff shown in the table below (for language service, typing and reprography services and draughtsmen, see following page).

	Work before and after the Conference		Work during the Conference		
	Days	Sw. frs.	Number	Days	Sw.Frs.
Chairman's secretary	7	1,100	1	40	6,900
Executive Secretariat	120	17,300	2	80	11,500
Common services					
- Interpretation (2/3 teams)	-	-		1,484	790,000
- Minute-writers	55	16,800	17	596	159,900
- Language reference service	63	9,900	3	120	18,800
- Meeting room service	40	5,100	2	80	10,300
- Registration of delegates	28	3,400	2	80	9,800
- Documents control	14	2,100	3	120	16,600
- Documents distribution	86	9,300	4	140	15,000
- Messengers	60	6,100	11	442	44,000
- Security guards	-	-	6	240	23,700
- Telephonists	-	-	2	80	8,500
- Sick bay	-	-	1	40	5,100
Personnel/Finance	180	23,100	2	80	10,300
Editorial Committee	-	-	2	55	9,300
Miscellaneous		20,000			-
		114,200			1,139,700
Provision for payment of overtime to General Services staff		20,000			40,000
Total		134,200			1,179,700
Rounded off to		134,000			1,180,000
1,314,000 =====					



Section 14.3	Budget 1984
<u>Regional Administrative Conference,</u> <u>Region 1+</u>	- Swiss francs -

Salaries and related expenses for the translation, typing and reproduction services

Provision is made for the following expenses for language, typing, reproduction and draughtsmen's services.

A. Preparatory work

	Volume of work in pages *)	Days of work	Sw.frs.
<u>Translation</u>			
Translators	)	60	32,000
Revisers	) 440	25	14,600
Typists	)	40	6,000
<u>Typing</u>			
Typists	) 735	60	9,000
<u>Reproduction</u>			
Offset operators	)	30	4,900
Assemblers	) 425,000	60	8,300
<u>Draughtsmen</u>		60	10,800
<u>Total A</u>			85,600
		Rounded off to	86,000

B. Conference ( 40 days)

	Volume of work in pages*)	Number	Calendar days	Sw. frs.
<u>Language Service</u>				
Translators	)	11	440	167,500
Revisers	) 2,380	4	160	68,500
Typists	)	7	280	29,900
<u>Typing</u>				
Typists	)	15	600	64,000
Heads of team	) 5,100	3	120	16,900
Heads of section	)	7	280	35,900
<u>Reprography</u>				
G.4	)	4	160	18,700
G.3	) 2,300,000	4	160	17,100
G.2	)	10	400	39,500
<u>Draughtsmen G.5</u>		2	80	10,300
<u>Total B</u>				468,300
			Rounded off to	468,000

\*) For the evaluation of the number of work days based on the volume of work foreseen, see the daily production standards in Section 17.

Section 14.3

Budget  
1984

Regional Administrative Conference;

Region 1+

- Swiss francs -

Total A + B	554,000	
Provision for payment of overtime to General Services staff	<u>50,000</u>	604,000 =====
<u>Travel expenses (recruitment)</u>		
Travel expenses entailed by recruitment of non-local supernumerary staff have been estimated at		75,000 =====
<u>Insurance</u>		
Accident and sickness insurance expenses for supernumerary staff recruited specifically for the work of the Regional Conference have been estimated at		47,000 =====
<u>Premises, furniture, machines</u>		
Meeting rooms at the CIGG must be reserved for 40 days + 2 days for preparation and 2 days for clearing = 44 days (free of charge)	-	
Use of simultaneous interpretation equipment	20,000	
Maintenance of meeting rooms, security at night and weekends	20,000	
Rental of furniture and machines	<u>15,000</u>	55,000 =====
<u>Document production</u>		
The volume of documentation is expected to amount to 2,700,000 pages. The cost of material used is 43,000 Swiss francs, to which should be added a provision, estimated at 15,000 Swiss francs, for work that may have to be done outside.		58,000 =====
<u>Supplies and overheads</u>		30,000 =====

Section 14.3

Regional Administrative Conference,  
Region 1+

Budget  
1984

- Swiss francs -

PTT

Mainly the cost of postage for dispatch of documents 50,000  
=====

Technical installations 5,000  
=====

Sundry and unforeseen 10,000  
=====

Use of outside computers 90,000  
=====

Interest credited to the ordinary budget

Under Article 44.1.iii) of the Financial Regulations,  
and on the basis of an interest rate of 4% per annum for amounts  
advanced from the ordinary account over a period of 6 months,  
the interest credited to the Union budget have been estimated at 64,000  
=====

Final Acts

It has been estimated that the Final Acts of the Conference  
would number 600 pages and that 500 copies would be printed in  
French, 1000 in English and 100 in Spanish. Accordingly, the  
following production costs have been foreseen :

- a) Cost of printing the "Blues", "Pinks" and  
"Whites", charged entirely to the budget of the  
Conference 16,000
- b) Translation into Russian and Arabic :  
600 pages at 100 Swiss francs per page (x 2) 120,000
- c) Data capture for the storage of the texts in first  
reading ("Blues"), correction for the texts in  
second reading ("Pinks") and correction for the  
final texts ("Whites")

Section 14.3	Budget
<u>Regional Administrative Conference</u>	<u>1984</u>
<u>Region 1+</u>	- Swiss francs -

Under paragraph 20 of Annex 2 to the Financial Regulations of the Union, it will be for the Plenary Meetings of the Conference to decide on the percentage of the composition costs to be borne by the Conference budget and the supplementary publications budget respectively. On the basis of the experience of earlier conferences, it is proposed to charge 1/3 of the composition costs to the Conference budget and 2/3 to the supplementary publications budget.

If the Conference was to follow this procedure, the share to be covered under Section 14 would amount to 1/3 of 120,000 Swiss francs, or

	40,000
	<hr/>
Total	176,000
	<hr/> <hr/>

Section 31	Income	Budget	Budget
<u>Regional Administrative Conference,</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
<u>Region 1+</u>			
	- <u>Swiss francs</u> -		

Contributions by Members of the Union towards defraying the expenses of the Regional Administrative Conference for FM Sound Broadcasting in the VHF band (Region 1 and certain countries concerned in Region 3) (second session)

Under No. 95 of the Nairobi Convention, expenses incurred by regional administrative conferences shall be borne in accordance with their unit classification by all the Members of the Region concerned and, where appropriate, on the same basis by any Members of other Regions which have participated in such Conferences.

In accordance with the recapitulation of credits given in Section 14, it is estimated that the expenses to be paid by the Members of Region 1 and some Members of Region 3 would amount to 3,438,000 Swiss francs.

The Members of Region 1 and certain countries concerned in Region 3 are the following :

	Contributory units
1. Albania (Socialist People's Republic of)	1/4
2. Algeria (Algerian Democratic and Popular Republic)	1
3. Germany (Federal Republic of)	30
4. Angola (People's Republic of)	1/4
5. Saudi Arabia (Kingdom of)	10
6. Austria	1
7. Bahrain (State of)	1/2
8. Belgium	5
9. Benin (People's Republic of)	1/4
10. Byelorussian Soviet Socialist Republic	1/2
11. Botswana (Republic of)	1/2
12. Bulgaria (People's Republic of)	1
13. Burundi (Republic of)	1/8
14. Cameroon (Republic of)	1/2
15. Cape Verde (Republic of)	1/8
16. Central African Republic	1/8
17. Cyprus (Republic of)	1/4
18. Vatican City State	1/4
19. Comoros (Federal and Islamic Republic of the)	1/8
20. Congo (People's Republic of the)	1/2
21. Ivory Coast (Republic of the)	1

Section 31	Income	Budget	Budget
Regional Administrative Conference,	1982	1983	1984
<u>Region 1+</u>			
	- <u>Swiss francs</u> -		

22. Denmark	5
23. Djibouti (Republic of)	1/8
24. Egypt (Arab Republic of)	1
25. United Arab Emirates	1
26. Spain	3
27. Ethiopia	1/8
28. Finland	5
29. France	30
30. Gabonese Republic	1/2
31. Gambia (Republic of the)	1/8
32. Ghana	1/4
33. Greece	1
34. Guinea (Republic of)	1/8
35. Guinea-Bissau (Republic of)	1/8
36. Equatorial Guinea (Republic of)	1/8
37. Upper Volta (Republic of)	1/8
38. Hungarian People's Republic	1
39. Iraq (Republic of)	1/4
40. Ireland	2
41. Iceland	1/4
42. Israel (State of)	1
43. Italy	10
44. Jordan (Hashemite Kingdom of)	1/2
45. Kenya (Republic of)	1/4
46. Kuwait (State of)	1
47. Lesotho (Kingdom of)	1/8
48. Lebanon	1/4
49. Liberia (Republic of)	1/4
50. Libya (Socialist People's Libyan Arab Jamahiriya)	1 1/2
51. Liechtenstein (Principality of)	1/2
52. Luxembourg	1/2
53. Madagascar (Democratic Republic of)	1/4
54. Malawi	1/8
55. Mali (Republic of)	1/8
56. Malta (Republic of)	1/4
57. Morocco (Kingdom of)	1
58. Mauritius	1/4
59. Mauritania (Islamic Republic of)	1/4
60. Monaco	1/4
61. Mongolian People's Republic	1/4
62. Mozambique (People's Republic of)	1/4
63. Namibia	-
64. Niger (Republic of the)	1/8
65. Nigeria (Federal Republic of)	2
66. Norway	5
67. Oman (Sultanate of)	1/2
68. Uganda (Republic of)	1/8
69. Netherlands (Kingdom of the)	10

Section 31	Income	Budget	Budget
Regional Administrative Conference,	1982	1983	1984
Region 1+	- Swiss francs -		
70. Poland (People's Republic of)			2
71. Portugal			1
72. Qatar (State of)			1/2
73. Syrian Arab Republic			1/2
74. German Democratic Republic			3
75. Ukrainian Soviet Socialist Republic			1
76. Romania (Socialist Republic of)			1/2
77. United Kingdom of Great Britain and Northern Ireland			30
78. Rwanda (Republic of)			1/8
79. San Marino (Republic of)			1/4
80. Sao Tome and Principe (Democratic Republic of)			1/8
81. Senegal (Republic of the)			1
82. Sierra Leone			1/8
83. Somali Democratic Republic			1/8
84. Sudan (Democratic Republic of the)			1/8
85. Sweden			10
86. Switzerland (Confederation of)			10
87. Swaziland (Kingdom of)			1/4
88. Tanzania (United Republic of)			1/8
89. Chad (Republic of the)			1/8
90. Czechoslovak Socialist Republic			2
91. Togolese Republic			1/4
92. Tunisia			1
93. Turkey			1
94. Union of Soviet Socialist Republics			30
95. Yemen Arab Republic			1/4
96. Yemen (People's Democratic Republic of)			1/8
97. Yugoslavia (Socialist Federal Republic of)			1
98. Zaire (Republic of)			1/2
99. Zambia (Republic of)			1/4
100. Zimbabwe (Republic of)			1/2

Members of the Region 3 :

- Afghanistan (Democratic Republic of)	1/8
- Iran (Islamic Republic of)	1
Total	<u>239 7/8</u>

Amount of the contributory unit :  $\frac{3,438,000}{239.875} = \underline{\underline{14,332.46 \text{ Sw.frs.}}}$

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**  
(SECOND SESSION) GENEVA, 1984

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BUDGET CONTROL  
COMMITTEE

Note by the Secretary-General

CONTRIBUTIONS OF NON-EXEMPT RECOGNIZED PRIVATE  
OPERATING AGENCIES AND INTERNATIONAL ORGANIZATIONS

No. 623 of the International Telecommunication Convention, Nairobi, 1982 provides that :

..."The amount of the contribution per unit payable towards the expenses of administrative conferences by recognized private operating agencies which participate in accordance with No. 358 and by participating international organizations shall be fixed by dividing the total amount of the budget of the conference in question by the total number of units contributed by Members as their share of Union expenses ... They (the contributions) shall bear interest from the sixtieth day following the day on which accounts are sent out, at the rates fixed in No. 614".

Since the budget of the Regional Administrative Conference for FM Sound Broadcasting in the VHF Band totals 3,438,000 Swiss francs and the Members' contributory units total  $237 \frac{7}{8}$ , the amount of the contributory unit for recognized private operating agencies and international organizations which are not exempt under the provisions of Administrative Council Resolution No. 574 is 14,332 Swiss francs. This figure may however have to be adjusted if the budget of the Conference is affected by changes in the United Nations common system of staff salaries and allowances.

A list of the non-exempt recognized private operating agencies and international organizations participating in the work of the Conference, with the number of contributory units chosen by them, will be published later.

R.E. BUTLER  
Secretary-General



# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 18-E

30 August 1984

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## PROPOSAL FOR THE WORK OF THE CONFERENCE

COMPATIBILITY BETWEEN THE SOUND BROADCASTING  
AND THE AERONAUTICAL RADIONAVIGATION SERVICES

(Type A2/B2 interference - susceptibility of future receivers)

The report of JIWP 8-10/1 shows protection ratios for ILS/VOR receivers for type A2 interference. These protection ratios are applicable to existing receivers. For future receivers no proposal was made since only insufficient data were available. The JIWP was of the opinion that the spectral power distribution of a frequency-modulated sound-broadcast transmitter is of little help in the evaluation of the interference effect. The effect of such an interfering signal depends also on the characteristics of the receiver. For this reason the JIWP considered that the RF protection ratios should be measured directly and recommended that further tests should be carried out to characterize this type of interference.

Four aeronautical receivers were measured in order to obtain data for type A2 interference for use in evaluating RF protection ratios which can be realized in future equipment. Using the modulation and interference criteria proposed by JIWP 8-10/1 the following receivers were measured:

- |            |         |
|------------|---------|
| 1) King    | KX 175B |
| 2) Collins | 51 RV1  |
| 3) Bendix  | RIA 35A |
| 4) Bendix  | RNA 26F |

The results of these measurements are given in Tables 1 and 2 for ILS and VOR, respectively. For comparison purposes the measured permissible broadcast signal levels are given in Tables 3 and 4, respectively. Two different measuring conditions were taken into account:

- with stereophonic modulation
- without any modulation.

In the latter case no out-of-band emissions are to be expected. The protection ratios or maximum signal levels given in the Tables are required to avoid desensitization. Thus, type B2 interference (desensitization) was measured, too.

D/18/1

It can be seen that above some 250 kHz only little difference between A2 and B2 interference is experienced. This difference depends on the characteristics of the respective receivers and is due to spurious responses. From the measurement results it is concluded that this latter effect need not be taken into account. At least those protection ratios which are already realized in present receivers should be satisfactory with future equipment. For planning purposes it is, therefore, proposed to use the following RF protection ratios against A2 interference:

f (kHz)	protection ratio (dB)
150	-63
200	-73
above 200	no value specified; see, however, B2 interference

Protection ratios of future ILS/VOR receivers  
for type A2 interference

Above 200 kHz the measured (and therefore possible) protection ratios are so large that the permissible interfering signal levels given for type B2 interference should be used.

TABLE 1: TYPE A2/B2 INTERFERENCE

( ILS , out-of-band emissions / desensitization )

BC5-1

df1 kHz	RF - P R O T E C T I O N   R A T I O   ( dB )									
	( Parameters: modulation, receiver )									
	stereophonic modulation					without modulation				
	A	B	C	D	E	A	B	C	D	E
0	11	10	11	12						
50	-9	-5	-7	-10		-62	-71	-76	-68	
100	-38	-31	-30	-39		-72	-82	-82	-71	
150	-68	-62	-65	-67		-75	-86	-83	-71	
200	-74	-84	-83	-70		-76	-87	-84	-71	
250	-75	-81	-84	-71		-77	-87	-84	-71	
300	-76	-83	-82	-71		-78	-87	-86	-72	
400	-76	-85	-82	-74		-78	-89	-86	-74	
500	-73	-86	-83	-76		-79	-90	-86	-76	
800	-74	-86	-84	-82		-81	-91	-87	-82	
1000	-74	-87	-86	-85		-82	-91	-87	-85	
2000	-78	-88	-86	-89		-85	-92	-88	-89	
4000	-85	-90	-87	-91		-85	-90	-88	-91	
8000	-88	--	-89	-92		-88	-91	-89	-92	
E Ue Pv	32 dB(uV/m) = 40 uV/m 21 dB(uV) ( 50 Ohm ) 4 dB(pW) = -86 dBm									

Note: f1 is modulated with coloured noise using a deviation of dF = 32 kHz

TABLE 2: TYPE A2/B2 INTERFERENCE  
( VOR , out-of-band emissions / desensitization )

BC5-2

df1 kHz	RF - P R O T E C T I O N   R A T I O   ( dB )									
	( Parameters: modulation, receiver )									
	stereophonic modulation					without modulation				
	A	B	C	D	E	A	B	C	D	E
0	13	7		11						
50	-8	-9		-9		-58	-82		-73	
100	-38	-35		-40		-66	-82		-74	
150	-61	-63		-63		-67	-82		-75	
200	-70	-73		-70		-69	-83		-75	
250	-70	-80		-72		-70	--		-76	
300	-69	-83		-73		-70	--		-76	
400	-69	-75		-76		-70	-83		-76	
500	-69	-83		-77		-72	-84		-77	
800	-63	-83		-81		-73	-85		-81	
1000	-70	-85		-83		-74	--		-83	
2000	-71	-88		-87		-77	-88		-87	
4000	-79	-92		-89		-79	-92		-89	
8000										
E	39 dB(uV/m) = 90 uV/m									
Ue	28 dB(uV) ( 50 Ohm )									
Pv	11 dB(pW) = -79 dBm									

Note: f1 is modulated with coloured noise using a deviation of dF = 32 kHz

TABLE 3: TYPE A2/B2 INTERFERENCE

INTERFERING-SIGNAL LEVELS

( ILS , out-of-band emissions / desensitization )

BC5-3

df1 kHz	M A X I M U M      L E V E L      ( dBm )									
	( Parameters: modulation, receiver )									
	stereophonic modulation					without modulation				
	A	B	C	D	E	A	B	C	D	E
0	-97	-96	-97	-98						
50	-77	-81	-79	-76		-24	-15	-10	-18	
100	-48	-55	-56	-47		-14	-4	-4	-15	
150	-18	-24	-21	-19		-11	0	-3	-15	
200	-12	-2	-3	-16		-10	1	-2	-15	
250	-11	-5	-2	-15		-9	1	-2	-15	
300	-10	-3	-4	-15		-8	1	0	-14	
400	-10	-1	-4	-12		-8	3	0	-12	
500	-13	0	-3	-10		-7	4	0	-10	
800	-12	0	-2	-4		-5	5	1	-4	
1000	-12	1	0	-1		-4	5	1	-1	
2000	-8	2	0	3		-1	6	2	3	
4000	-1	4	1	5		-1	4	2	5	
8000	2	--	3	6		2	5	3	6	
E Ue Pv	32 dB(uV/m) = 40 uV/m 21 dB(uV) < 50 Ohm > 4 dB(pW) = -86 dBm									

Note: f1 is modulated with coloured noise using a deviation of dF = 32 kHz

TABLE 4: TYPE A2/B2 INTERFERENCE  
INTERFERING-SIGNAL LEVELS  
( VOR , out-of-band emissions / desensitization )

BC5-4

df1 kHz	M A X I M U M      L E V E L                      ( dBm )									
	( Parameters: modulation, receiver )									
	stereophonic modulation					without modulation				
	A	B	C	D	E	A	B	C	D	E
0	-92	-86		-90						
50	-71	-70		-70		-21	3		-6	
100	-41	-44		-39		-13	3		-5	
150	-18	-16		-16		-12	3		-4	
200	-9	-6		-9		-10	4		-4	
250	-9	1		-7		-9	--		-3	
300	-10	4		-6		-9	--		-3	
400	-10	-4		-3		-9	4		-3	
500	-10	4		-2		-7	5		-2	
800	-16	4		2		-6	6		2	
1000	-9	6		4		-5	--		4	
2000	-8	9		8		-2	9		8	
4000	0	13		10		0	13		10	
8000										
E Ue Pu	39 dB(uV/m) = 90 uV/m 28 dB(uV) ( 50 Ohm ) 11 dB(pW) = -79 dBm									

Note: f1 is modulated with coloured noise using a deviation of dF = 32 kHz

# REGIONAL BROADCASTING CONFERENCE

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## PROPOSAL FOR THE WORK OF THE CONFERENCE

COMPATIBILITY BETWEEN THE SOUND BROADCASTING  
AND THE AERONAUTICAL RADIONAVIGATION SERVICES

(Correction factors to permissible broadcast signal levels  
for type B1 interference in the frequency offset case)

In the report of JIWP 8-10/11 formulae are given to evaluate the permissible broadcast signal levels for type B1 interferences. These formulae are valid only if the intermodulation products coincide with the wanted signal frequency (co-channel interference). However, many intermodulation products are generated at a frequency different from the wanted signal frequency by a frequency offset. These intermodulation products must not be neglected.

Only very limited measurement results were available to JIWP 8-10/1 on this matter and further investigations prior to the Regional Broadcasting Conference were recommended by JIWP. Therefore, four aeronautical receivers were measured to obtain correction factors to permissible broadcast signal levels in the frequency offset case. Using the modulation and interference criteria proposed by JIWP 8-10/1 the following receivers were measured.

- |            |           |
|------------|-----------|
| 1) King    | KX 175B   |
| 2) Collins | 51 RV1    |
| 3) Bendix  | RIA 35A   |
| 4) Bendix  | RNA 26 CF |

The results of these measurements are given in Tables 1 and 2 for ILS and VOR, respectively. For comparison purposes the measured permissible broadcast signal levels are given in Tables 3 and 4, respectively.

As can be seen from Tables 1 and 2, the correction factors for larger frequency offsets (150 kHz and more) depend considerably on receiver characteristics. For receivers having good intermodulation characteristics, type B2 interference prevails in most cases.

D/19/1 Based on the receiver with the worst intermodulation characteristics measured so far, the following correction factors for ILS and VOR are proposed for planning purposes:

frequency offset	correction factor
± 0 kHz	0 dB
± 50 kHz	2 dB
± 100 kHz	8 dB
± 150 kHz	16 dB
± 200 kHz	26 dB

Correction factors to permissible broadcast signal levels  
for type B1 interference relative to values for frequency coincidence  
(VOR and ILS).

TABLE 1: TYPE B1 INTERFERENCE ( INTERMODULATION )  
CORRECTION FACTORS FOR FREQUENCY OFFSET  
( ILS , 2-signal , 3rd-order )

BC3-1

offset kHz	CORRECTION FACTOR ( dB ) ( Parameters: frequency difference df1, receiver )									
	df1 = 1 MHz					df1 = 4 MHz				
	A	B	C	D	E	A	B	C	D	E
-400	--	--	--	--		--	--	--	--	
-350	--	--	--	--		--	--	--	--	
-300	--	--	22	26		--	--	--	--	
-250	27	19	22	25		27	--	--	--	
-200	27	19	19	22		25	--	15	--	
-150	16	14	12	15		16	12	12	12	
-100	8	8	7	7		7	7	7	7	
-50	2	3	2	2		2	3	2	2	
0	0	0	0	0		0	0	0	0	
50	2	2	2	2		2	2	2	2	
100	8	7	6	8		7	6	6	7	
150	16	12	11	13		16	12	11	12	
200	27	17	17	22		22	--	13	--	
250	27	16	21	26		22	--	--	--	
300	--	--	21	26		--	--	--	--	
350	--	--	--	--		--	--	--	--	
400	--	--	--	--		--	--	--	--	
E Ue Pv	32 dB(uV/m) = 40 uV/m 21 dB(uV) ( 50 Ohm ) 4 dB(pW) = -86 dBm									

Note: f1 and f2 are modulated with coloured noise from separate sources using a deviation of df =32 kHz (stereo mode)

offset = f2 frequency difference to nominal value



TABLE 2: TYPE B1 INTERFERENCE ( INTERMODULATION )  
CORRECTION FACTORS FOR FREQUENCY OFFSET  
( VOR , 2-signal , 3rd-order )

BC3-2

offset kHz	CORRECTION FACTOR ( dB ) ( Parameters: frequency difference df1, receiver )									
	df1 = 1 MHz					df1 = 4 MHz				
	A	B	C	D	E	A	B	C	D	E
-400	--	--		--						
-350	--	--		--						
-300	--	--		--						
-250	26	19		27						
-200	26	17		25						
-150	17	12		17						
-100	8	7		9						
-50	3	3		3						
0	0	0		0						
50	3	2		3						
100	7	7		8						
150	17	10		14						
200	25	16		27						
250	26	18		--						
300	--	--		--						
350	--	--		--						
400	--	--		--						
E Ue Pv	39 dB(uV/m) = 90 uV/m 28 dB(uV) ( 50 Ohm ) 11 dB(pW) = -79 dBm									

Note: f1 and f2 are modulated with coloured noise from separate sources using a deviation of df =32 kHz (stereo mode)

offset = f2 frequency difference to nominal value

TABLE 3: TYPE B1 INTERFERENCE ( INTERMODULATION )  
INTERFERING-SIGNAL LEVELS FOR FREQUENCY OFFSET  
( ILS , 2-signal , 3rd-order)

BC3-3

offset kHz	M A X I M U M L E V E L ( dBm )									
	( Parameters: frequency difference df1, receiver )									
	df1 = 1 MHz					df1 = 4 MHz				
	A	B	C	D	E	A	B	C	D	E
-400	--	--	--	--		--	--	--	--	
-350	--	--	--	--		--	--	--	--	
-300	--	--	-2	-2		--	--	--	--	
-250	-18	-1	-2	-3		0	--	--	--	
-200	-18	-1	-5	-6		-2	--	2	--	
-150	-29	-6	-12	-13		-11	0	-1	0	
-100	-37	-12	-17	-21		-20	-5	-6	-5	
-50	-43	-17	-22	-26		-25	-9	-11	-10	
0	-45	-20	-24	-28		-27	-12	-13	-12	
50	-43	-18	-22	-26		-25	-10	-11	-10	
100	-37	-13	-18	-20		-20	-6	-7	-5	
150	-29	-8	-13	-15		-11	0	-2	0	
200	-18	-3	-7	-6		-5	--	0	--	
250	-18	-4	-3	-2		-5	--	--	--	
300	--	--	-3	-2		--	--	--	--	
350	--	--	--	--		--	--	--	--	
400	--	--	--	--		--	--	--	--	
E Ue Pu	32 dB(uV/m) = 40 uV/m 21 dB(uV) ( 50 Ohm ) 4 dB(pW) = -86 dBm									

Note: f1 and f2 are modulated with coloured noise from separate sources using a deviation of df = 32 kHz (stereo mode)

offset = f2 frequency difference to nominal value

TABLE 4: TYPE B1 INTERFERENCE ( INTERMODULATION )  
INTERFERING-SIGNAL LEVELS FOR FREQUENCY OFFSET  
( VOR , 2-signal , 3rd-order )

BC3-4

	M A X I M U M      L E V E L      ( dBm )									
	( Parameters: frequency difference df1, receiver )									
offset	df1 = 1 MHz					df1 = 4 MHz				
kHz	A	B	C	D	E	A	B	C	D	E
-400	--	--		--						
-350	--	--		--						
-300	--	--		--						
-250	-16	3		0						
-200	-16	1		-2						
-150	-25	-4		-10						
-100	-34	-9		-18						
-50	-39	-13		-24						
0	-42	-16		-27						
50	-39	-14		-24						
100	-35	-9		-19						
150	-25	-6		-13						
200	-17	0		0						
250	-16	2		--						
300	--	--		--						
350	--	--		--						
400	--	--		--						
E	39 dB(uV/m) = 90 uV/m									
Ue	28 dB(uV) ( 50 Ohm )									
Pv	11 dB(pW) = -79 dBm									

Note: f1 and f2 are modulated with coloured noise from separate sources using a deviation of df = 32 kHz (stereo mode)

offset = f2 frequency difference to nominal value

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

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## PROPOSAL FOR THE WORK OF THE CONFERENCE

## COMPATIBILITY BETWEEN THE SOUND BROADCASTING

## AND THE AERONAUTICAL RADIONAVIGATION SERVICES

(Type B1 interference with three BC transmitters involved)

All types of aeronautical radionavigation receivers exhibit RF preselection circuits. Therefore, the levels of the interfering signals are attenuated before intermodulation occurs. The attenuation depends on frequency separation and preselection characteristics. Several administrations proposed in their contributions to the JIWP 8-10/1 that the formulae for the evaluation of type B1 interference should be expanded accordingly, i.e. each broadcasting signal level should be associated with a frequency-dependent term.

The formulae contained in the report of JIWP 8-10/1 were derived empirically from data obtained for two interfering signals, only. However, the simple extension of these formulae valid for intermodulation caused by two interfering signals to cover also the case of three interfering signals as suggested in the JIWP report, would not take adequate account of the physical effects. The reason therefore is quite simple. In the case of two interfering broadcast signals with frequencies  $f_1$  and  $f_2$ , the lower of the two frequencies involved,  $f_2$ , is determined by the frequency differences  $\Delta f$  between the aeronautical tuning frequency  $f_a$  and the higher frequency,  $f_1$  ( $\Delta f = f_a - f_1 = f_1 - f_2$ ). In the case of three interfering signals the frequency separation  $\Delta f$  is determined by the highest interfering signal frequency,  $f_1$ , and is equal to the frequency difference between the other two interfering signals,  $f_2 - f_3$ , ( $\Delta f = f_a - f_1 = f_2 - f_3$ ). Thus, the frequencies  $f_2$  and  $f_3$  are controlled by  $\Delta f$  with respect to their relative positions but not their absolute values. Consequently, the attenuation of these signals by the RF preselection and, hence, the level of the intermodulation product will be quite different from those calculated from the two-signal formulae, i.e. it depends additionally on the actual frequencies  $f_2$  and  $f_3$ . Therefore, it is necessary to consider the attenuation of each interfering signal separately.

The possible expansion of the respective formulae has been theoretically derived in Doc. JIWP 8-10/1-27 (see Annex to this contribution). However, no measurement results were put forward to the meeting, and therefore, the JIWP asked for further investigations to determine if the expansion is applicable and can possibly be used as a general planning tool.

For this reason four aeronautical receivers were measured using three interfering broadcast signals in order to cause type B1 interference. Using the modulation and interference criteria proposed by JIWP 8-10/1 the following receivers were measured:

- |            |          |
|------------|----------|
| 1) King    | KX 175B  |
| 2) Collins | 51 RV1   |
| 3) Bendix  | RIA 35A  |
| 4) Bendix  | RNA 26CF |

The results of these measurements are given in Table 1. In addition to the measured values pertaining to the four receivers investigated, calculated maximum levels of the interfering signals are shown. These levels were obtained using different methods:

- a) using the formula from the main part of the report of JIWP 8-10/1
- b) using the formula of Annex V to the report of JIWP 8-10/1
- c) using the formula of document JIWP 8-10/1-27 (modified for current receivers)

The table clearly shows that Doc. JIWP 8-10/1-27 takes the frequency dependency of the interfering broadcast signal correctly into account. Even the 2 dB more stringent values calculated with the formula of Annex V to the report of JIWP 8-10/1 could be accepted. The only difference to Doc. JIWP 8-10/1-27 is the use of 0.4 instead of 0.5 as denominator in the frequency dependent term.

D/20/1 Based on the theoretical derivation (see Annex) and the measurement results in Table 1, it is proposed that the evaluation of type B1 interference for ILS and VOR should be modified. This modification should be made for existing as well as for future equipment.

The frequency dependency of the interfering signals should be taken into account as proposed in Annex V to the JIWP report, however, using a denominator of 0.5 which is theoretically in accordance with the existing two-signal formulae:

#### Condition for interference

$$N_1 + N_2 + N_3 - 20 \lg (\Delta f_1/0.5) - 20 \lg (\Delta f_2/0.5) - 20 \lg (\Delta f_3/0.5) + k \geq 0$$

$N_i$ : level of interfering signal (dBm)

$\Delta f$ : frequency separation between wanted and interfering signal frequency (MHz)

$k$ : Intermodulation constant<sup>1)</sup>  
126 for existing receivers  
78 for future receivers

---

1) With  $k = 3 K+6$  the above formula proposed for three interfering signals is identical to that of Doc JIWP 8-10/1-27

TABLE 1: TYPE B1 INTERFERENCE ( ILS, 3-signal, 3rd-order )  
( wanted signal frequency 108.1 MHz )

BC1-1

FREQUENCIES ( MHz )			M A X I M U M L E V E L ( dbm )							
F1	F2	F3	measured values for receiver					JIWP 8-10/1	Annex V	Doc JIWP27
A	B	C	D	E						
107.9	107.8	107.6	-48	-26	-31	-40		-42.0	-41.4	-43.4
"	107.6	107.4	-48	-24	-30	-38		"	-39.7	-41.7
"	107.4	107.2	-48	-23	-30	-37		"	-38.0	-40.0
"	106.9	106.7	-48	-22	-29	-33		"	-35.2	-37.2
"	105.9	105.7	-45	-21	-22	-28		"	-31.9	-33.9
"	103.9	103.7	-38	-19	-18	-21		"	-28.2	-30.3
"	99.9	99.7	-29	-16	-15	-16		"	-24.4	-26.4
107.6	107.4	106.9	-48	-23	-29	-35		-40.1	-36.6	-38.6
"	107.2	106.7	-48	-22	-28	-34		"	-35.4	-37.4
"	106.5	106.0	-47	-21	-26	-30		"	-32.5	-34.5
"	105.5	105.0	-43	-20	-21	-26		"	-30.0	-32.0
"	103.5	103.0	-36	-18	-17	-20		"	-26.9	-28.9
"	99.5	99.0	-29	-15	-15	-15		"	-23.4	-25.4
107.1	106.9	105.9	-47	-21	-26	-29		-34.0	-31.2	-33.2
"	106.7	105.7	-47	-21	-25	-28		"	-30.5	-32.5
"	106.0	105.0	-44	-20	-22	-25		"	-28.6	-30.6
"	105.0	104.0	-40	-19	-20	-22		"	-26.7	-28.7
"	103.0	102.0	-34	-17	-17	-18		"	-24.1	-26.1
"	99.0	98.0	-27	-14	-14	-14		"	-21.0	-23.0
104.1	103.9	99.9	-29	-14	-15	-14		-22.0	-19.8	-21.8
"	103.7	99.7	-29	-14	-15	-15		"	-19.6	-21.6
"	103.0	99.0	-28	-13	-15	-14		"	-18.9	-20.9
"	102.0	98.0	-27	-13	-14	-13		"	-18.1	-20.1
"	100.0	96.0	-24	-11	-12	-12		"	-16.8	-18.8
"	96.0	92.0	-21	-10	-11	-10		"	-14.8	-16.8
E Ue Pv			32 dB(uV/m) = 40 uV/m 21 dB(uV) ( 50 Ohm ) 4 dB(pW) = -86 dBm							

Note: f2 is modulated with coloured noise using a deviation of dF = 32 kHz  
(mono mode)

Annex : 1

ANNEX

The IWP 8/12 has empirically established the following functional relation between level and frequency of the interfering signal on the basis of numerous measurements.

$$(1) 2N_1 + N_2 + 3 (K - 20 \lg \frac{\Delta f}{0.4}) = 0$$

$N_1, N_2$  are the interfering signal levels in dBm

$$\Delta f = 108.1 - f_1 = f_1 - f_2$$

$K$  is a constant which has yet to be determined

$f_1, f_2$  are the interfering signal frequencies in MHz

$$\Delta f_{\min} = 0.4, \text{ i.e. } f = 0.4 \text{ for } f_1 > 107.7 \text{ MHz}$$

Equation (1) only applies to two interfering signals and, strictly speaking, only to interference caused to the lowest ILS channel at 108.1 MHz.

In order to be able to calculate interference by three interfering signals and interference caused to other ILS channels, the preselection as a function of the frequency must be known. It can be obtained from (1) as follows:

Generally we have:

$$(2) 2N_1 + N_2 - 2a(f_1) - a(f_2) + 3K \leq 0$$

where  $a(f)$  is the preselection as a function of the frequency. A comparison with (1) leads to

$$(3) 2a(f_1) + a(f_2) = 60 \lg \frac{108.1 - f_1}{0.4}$$

$$\text{If we assume } a(f) = 20 \lg \frac{f_{\text{ILS}} - f}{\Delta s} \quad (4)$$

equation (3) - with  $f_{\text{ILS}} = 108.1$  - can be written as

$$40 \lg \frac{108.1 - f_1}{\Delta s} + 20 \lg \frac{108.1 - f_2}{\Delta s} = 60 \lg \frac{108.1 - f_1}{0.4}$$

Since  $(108.1 - f_2) = 2 \times (108.1 - f_1)$ , this leads to

$$40 \lg \frac{108.1 - f_1}{\Delta s} + 20 \lg \frac{108.1 - f_1}{\Delta s} + 20 \lg 2 = 60 \lg \frac{108.1 - f_1}{0.4}$$

or

$$60 \lg \left( \frac{108.1 - f_1}{\Delta s} \times \sqrt[3]{2} \right) = 60 \lg \frac{108.1 - f_1}{0.4}$$

The two sides are identical if

$$\Delta_s = 0.4 \times \sqrt[3]{2} \approx 0.504$$

Thus

$$(5) a(f) = 20 \lg \frac{f_{ILS} - f}{0.504}$$

for  $f_{ILS} - f \geq 0.4$ ;  $a(f) = 0$  for  $f_{ILS} - f < 0.4$

$a(f)$  is the fictitious selectivity characteristic derived from equation (1).

For three interfering signals we have:

$$(6) N_1 + N_2 + N_3 - a(f_1) - a(f_2) - a(f_3) + 3K + 6 \leq 0$$

6 dB have to be added because in the case of three interfering signals the level of the intermodulation product is 6 dB higher than in the case of two interfering signals. ( $N_1 = N_2 = N_3$ ).

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**REGIONAL BROADCASTING  
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## PROPOSAL FOR THE WORK OF THE CONFERENCE

## COMPATIBILITY BETWEEN THE SOUND BROADCASTING

## AND THE AERONAUTICAL RADIONAVIGATION SERVICES

(RF-protection ratios against type A1 interference)

The JIWP 8-10/1, having considered the available information necessary to determine the limits of compatibility between the sound broadcasting and the aeronautical radionavigation services noted that this information was incomplete and asked for further investigations of several of these problems. In conjunction with investigations carried out in this respect in the Federal Republic of Germany, some data on type A1 interference were obtained. The RF-protection ratios proposed by the JIWP for this type of interference are based on a few data only. Therefore, this additional material is being submitted, although the JIWP did not directly address administrations in this respect.

The measurement results in Table 1 show clearly that the proposed protection ratios against third-order intermodulation products radiated from a sound-broadcast station are by far too stringent. This is especially true in the frequency-offset case, due to the fact that in the former measurements a sinusoidal modulation of the interfering broadcast signal was used with deviations of up to three times the maximum peak deviation of  $\pm 75$  kHz, i.e. up to  $\pm 225$  kHz.

Although it seems technically justifiable to consider, in cases of third order intermodulation products, maximum frequency deviations of the intermodulation product which are three times greater than the maximum deviation of a standard VHF-FM broadcast signal, it is inadequate to use this deviation in conjunction with a sinusoidal tone. In a real broadcast programme peak amplitudes of the AF signal have a maximum duration of some milli-seconds, only, and the mean power content of the programme signal is by far smaller than that of a sinusoidal signal producing the same maximum deviation. The short programme peaks mentioned above do not really influence any ILS or VOR receiver. Moreover, modulating a single transmitter with three times the maximum peak deviation is not quite the same as generating third-order intermodulation at a broadcast station with different transmitters and programmes. Therefore, a method of measurement using sinusoidal modulation is not appropriate to evaluate the effects of type A1 interference.

The coloured-noise modulation proposed by the JIWP is far more suitable for these measurements. Therefore, the RF-protection ratios were determined using this type of modulation, as proposed by the JIWP. For the measurements two transmitters were modulated from separate sources. The following four aeronautical receivers were investigated, using the interference criteria proposed by the JIWP:

- |            |           |
|------------|-----------|
| 1) King    | KX 175 B  |
| 2) Collins | 51 RV 1   |
| 3) Bendix  | RIA 35 A  |
| 4) Bendix  | RNA 26 CF |

The measurement results, given in Table 1, show that the most susceptible receiver needs only an RF-protection ratio of 13 dB at frequency coincidence. Typical RF-protection ratios required for existing airborne receivers are presented in the following table:

frequency difference	protection ratio
0 kHz	17 dB
± 50 kHz	10 dB
± 100 kHz	-4 dB
± 150 kHz	-19 dB
± 200 kHz	-38 dB

RF-protection ratios for existing ILS/VOR  
receivers for type A1 interference

The measurement results in Table 1 show clearly that there are already receivers available with a much higher immunity against this type of interference. Even if optimum performance characteristics and immunity are conflicting design parameters it can be expected that future equipment will show at least the same immunity as the best existing receivers. Therefore the following protection ratios for future airborne receivers are recommended:

frequency difference	protection ratio
0 kHz	10 dB
± 50 kHz	3 dB
± 100 kHz	-12 dB
± 150 kHz	-37 dB
± 200 kHz	-63 dB

RF-protection ratios for future ILS/VOR  
receivers for type A1 interference

TABLE 1: TYPE A1 INTERFERENCE ( INTERMODULATION )  
PROTECTION RATIOS  
( 2-signal , 3rd-order )

BC6-1

offset kHz	RF - P R O T E C T I O N   R A T I O   ( dB )									
	( Parameters: service, receiver )									
	I L S					V O R				
	A	B	C	D	E	A	B	C	D	E
-400	--	--	--	--		--	--		--	
-350	--	--	--	--		--	--		--	
-300	--	--	--	--		--	--		--	
-250	--	--	--	--		--	--		--	
-200	-70	-44	-43	-54		-64	-43		-67	
-150	-37	-29	-24	-30		-38	-26		-36	
-100	-13	-13	-9	-10		-10	-14		-15	
-50	5	2	5	6		4	-1		2	
0	11	10	11	12		13	7		11	
50	5	3	5	6		4	0		2	
100	-13	-12	-8	-11		-9	-14		-14	
150	-37	-29	-23	-30		-38	-27		-35	
200	-70	-44	-43	-54		-63	-42		-67	
250	--	--	--	--		--	--		--	
300	--	--	--	--		--	--		--	
350	--	--	--	--		--	--		--	
400	--	--	--	--		--	--		--	
E	32 dB(uV/m) = 40 uV/m					39 dB(uV/m) = 90 uV/m				
Ue	21 dB(uV) ( 50 Ohm )					28 dB(uV) ( 50 Ohm )				
Pv	4 dB(pW) = -86 dBm					11 dB(pW) = -79 dBm				

Note: f1 and f2 are modulated with coloured noise from separate sources using a deviation of df =32 kHz (stereo mode)

offset = f2 frequency difference to nominal value

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PROPOSAL FOR THE WORK OF THE CONFERENCE

COMPATIBILITY BETWEEN THE SOUND BROADCASTING  
AND THE AERONAUTICAL RADIONAVIGATION SERVICES

(In-band selectivity of aeronautical receivers)

Contributions to the JIWP 8-10/1 indicated that aeronautical receivers already now exhibit in-band selectivity. In fact, up to now no receiver has been presented which was not equipped with a tuned front end. Nevertheless, some doubts were expressed at the JIWP meeting as to whether every aeronautical receiver presently in use really disposes of a tuned front end and exhibits the consequential in-band selectivity.

However, one can expect and should even demand that in future only receivers be permitted which show this performance in order that their susceptibility to interference be reduced and the compatibility between the broadcasting and the aeronautical radionavigation services is improved.

It was pointed out by the JIWP that the in-band selectivity of airborne receivers needs further investigation and, if in-band selectivity were used by the Conference as a general basis for planning, that the flexibility for adjustments to aviation assignments may be restricted. However, this restriction would only apply in the case of type B2 interference.

In fact, if type B2 interference already occurs in an ILS or VOR service area, the frequency of the respective aeronautical transmitter must not be lowered towards the broadcasting band, provided that in-band selectivity was already taken into account in the earlier planning procedure.

On the other hand no consequences would result from the taking account of in-band selectivity for type B1 interference. In this latter case interference would only occur in an ILS or VOR service area at one specific frequency but not necessarily at others. Hence, a change in frequency towards the lower end of the band would increase the susceptibility to interference but at the same time eliminate existing interference. Type B1 interference at the new frequency could only be created by a group of 2 or 3 transmitters which are - at least in part - different from the former ones. Thus, whether or not the in-band selectivity was taken into account in the former case, the compatibility will anyway have to be checked.

D/22/1 It is, therefore proposed to use, for planning purposes, a new definition for the frequency difference,  $f$ , in all formulae concerning type B1 interference as follows:

$$\Delta f = f_a - f_b$$

where

$f_a$ : the ILS/VOR tuning frequency;  
 $f_b$ : the respective broadcasting frequency involved  
( $f_1$ ,  $f_2$  or  $f_3$ ).

It should be noted that all future aeronautical receivers must conform to the selectivity function (including in-band selectivity),  $a(f)$ , on which planning is based.

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## PLENARY MEETING

Islamic Republic of Iran

PROPAGATION CRITERIA IN PERSIAN GULF AREA

Page 2, IRN/23/1, 1st paragraph, replace the formula by the following :

$$\begin{aligned}\text{Field-Strength} &= 106.9 - 20 \text{ Log } d && \text{for } 10 \leq d \leq 400 \\ &= 106.9 - 20 \text{ Log } d - .04(d-400) && \text{for } 400 \leq d \leq 1000\end{aligned}$$

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PLENARY MEETING

Islamic Republic of Iran

PROPOSAL FOR THE WORK OF THE CONFERENCE

PROPAGATION CRITERIA IN PERSIAN GULF AREA

In response to Recommendation AA of the First Session of the Regional Administrative Conference for FM Sound Broadcasting in the VHF Band (Region 1 and Certain Countries Concerned in Region 3), Islamic Republic of Iran Broadcasting (IRIB) has carried out an extensive program of measurement and analysis of propagation conditions in the Persian Gulf area.

The proposal given in next pages introduce a simple, yet bestly suited to experiment, method for interference and coverage field-strength calculation for the Second Session.

A brief description of the details of experiment is given in Annex I.

Annex II is a table of geographical data points defining the borderline of the hypothetical sea and land to be used for 1% of time field-strength calculation in the method.

PROPOSAL(S)

METHOD FOR CALCULATION OF FIELD-STRENGTH

IN THE AREAS WITH EXTREME SUPERREFRACTIVITY CONDITIONS

PERSIAN GULF AND THE GULF OF OMAN

IRN/23/1 1- Oversea paths for 1% of time

The field-strength for 1KW e.r.p. of a VHF Band II Transmitter with any transmitting antenna height, for oversea paths and a receiving antenna height of 10m, for 1% of time and 50% of locations should be calculated by the following formula:

$$\begin{aligned}\text{Field-Strength} &= 106.9 - 20 \text{ Log } d && \text{for } 10 \geq d \geq 400 \\ &= 106.9 - 20 \text{ Log } d - .04(d-400) && \text{for } 400 > d \geq 1000\end{aligned}$$

d is the great circle distance between transmitting and receiving antennas in kilometers and the Field-Strength is in terms of dBs over one microvolt per meter.

Figure 1 is a graphical representation of the above formula.

Since the superrefractivity conditions penetrate in land areas adjacent to the seas, oversea paths are considered to include also coastal areas next to the seas extending up to a distance of 50km inland, with respect to closest seashore.

A map (Figure 2) demonstrates the coastal areas under concern and the borderline of hypothetical sea and land areas. It is obvious that all the islands located in the seas at this map are considered to be a part of the coastal areas.

IRN/23/2 2- Oversea paths for 50% of time

For calculation of 50% of time, 50% of locations field-strength for oversea paths, the curves in Figure 2.1 of the Report of the First Session should be used. In this case no penetration of superrefractivity conditions inland is assumed. Therefore, oversea paths are limited to the seashore.

IRN/23/3 3- Overland paths for 1% of time

For calculation of 1% of time, 50% of locations field-strength for overland paths, the curves in Figure 2.7 of the Report of the First Session should be used, having in mind that the coastal areas defined in section 1 are not considered to behave like land areas and are assumed to be a part of the sea.

IRN/23/4 4- Overland paths for 50% of time

For calculation of 50% of time, 50% of locations field-strength for overland paths, the curves in Figure 2.1 of the Report of the First Session should be used, the borderline of land and sea being the geographical seashore.

IRN/23/5 5- Mixed paths

The procedure given in section 2.1.3.4 of the Report of the First Session should be used for calculation of field-strength for mixed land/sea paths for both percentages of time (1% & 50%). It is obvious that the ratio of the oversea path length to the total path length of any mixed path will be two different figures for 1% and 50% of the time.



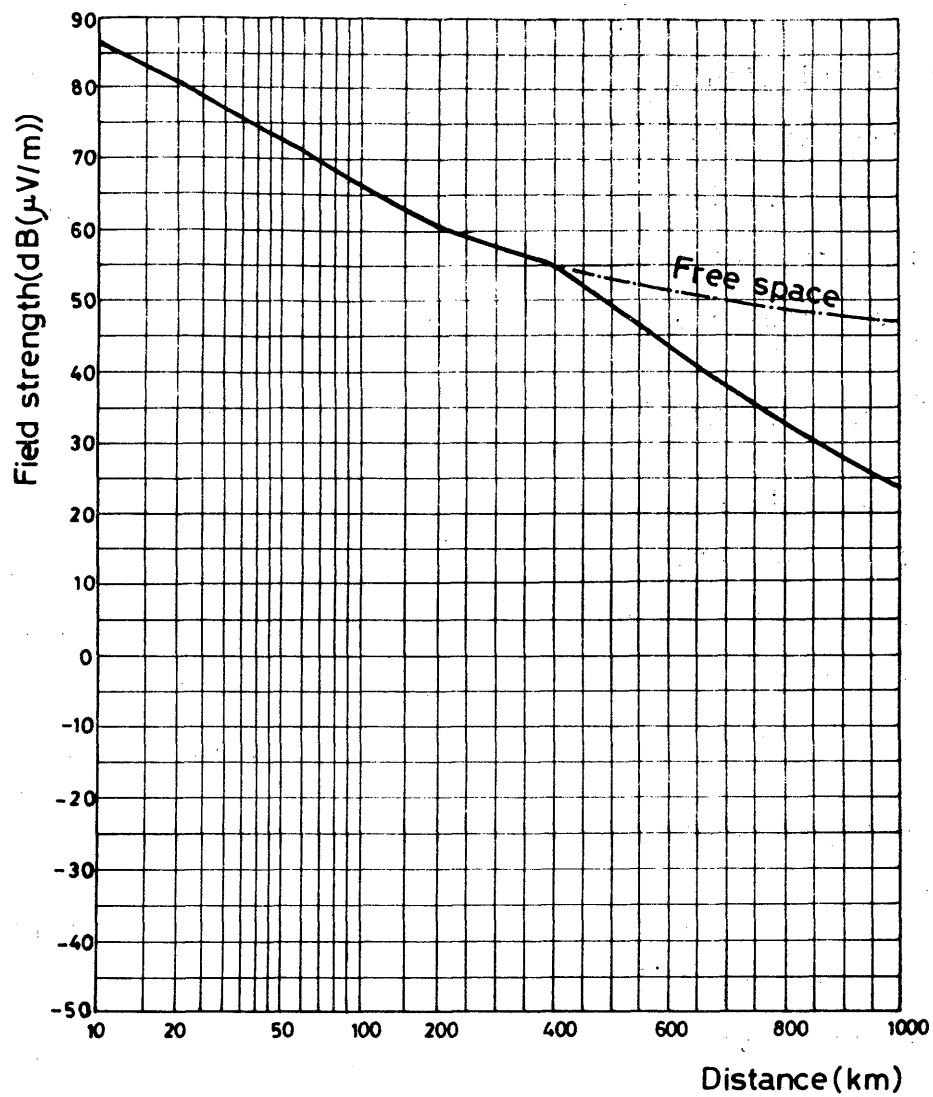


FIGURE 1

Field-strength (dB(uV/m)) for 1 kW e.r.p.

VHF, Band II: Sea, superrefractive area

1% of time: 50% of locations;  $h_2 = 10\text{m}$

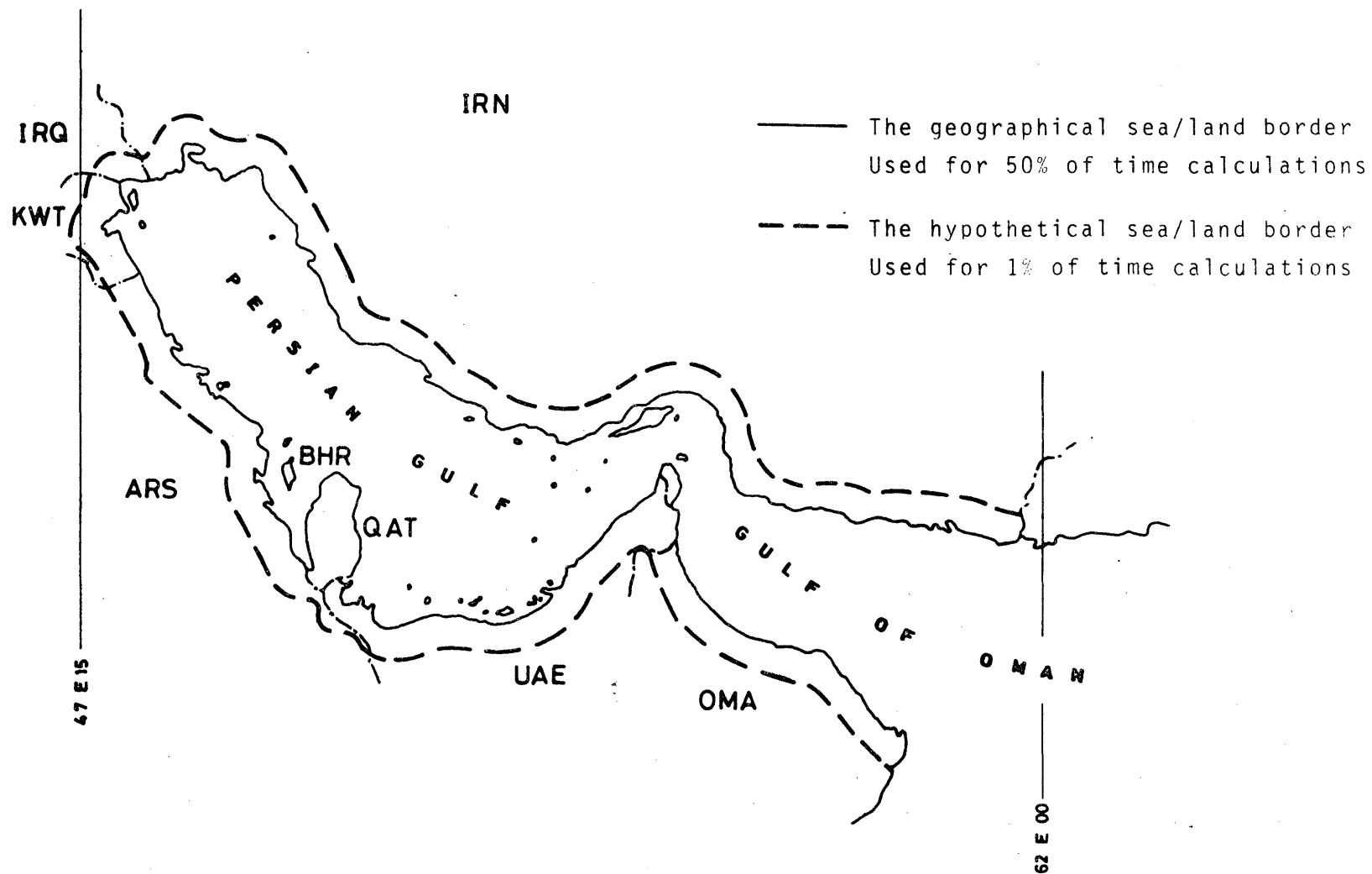


FIGURE 2

ANNEX I

THE DETAILS OF EXPERIMENT ON PROPAGATION CONDITIONS  
IN PERSIAN GULF AREA

The experiment consists of measurement of field-strength and calibrated recording of demodulated signal, processing of gathered data and presentation of results, analysis of outcome and finally generation of a method for calculation of field-strength.

Measurements consist of: a) long-term measurements of field-strength for long oversea paths in two fixed stations and b) short-term measurements for long and short sea/mixed paths in a mobile station. The first group of measurements includes 4 different oversea paths having path lengths of 240 to 450km, from 3 FM broadcast transmitters for a period of at least one year (2 years for one of the paths), including two successive superrefractivity seasons, measured 6 days a week, 2 to 4 hours each day, the hours of measurements distributed in different hours of day (between 8.00 to 24.00 hours, local time). The total hours of measurement for these paths is about 6500 hours of continuous field-strength recording. The mobile measurements consist of field-strength recordings with a similar type of equipment and principles as in the fixed stations, for periods of a few hours up to about 100 hours, distributed in a week or month. These measurements serve the purpose of verifying: a) the degree of penetration of superrefractivity condition in coastal areas for different

percentages of time, b) the effect of the height of receiving site on the measured signal, c) receiving antenna height gain and location variability, d) the daily cycle of reception level in different locations and seasons and e) short distance propagation conditions.

All the chart recordings were processed manually and the necessary statistics were gathered in comprehensive figures and tables. These data, together with the details of measurements and some analysis of results were presented to IWP 5/5 in three progress reports in January and September 1983 and April 1984.

ANNEX II

COORDINATES OF DATA POINTS FOR HYPOTHETICAL SEA/LAND BORDER  
USED FOR 1% OF TIME CALCULATIONS, WITH CORRESPONDING DISTANCES  
FROM NORTH POLE. LONGITUDINAL RESOLUTION IS 0.25°.

N	Longitude	Northern Coast		Southern Coast	
		Latitude	Dist.(km)	Latitude	Dist.(km)
1	47E00				
2	47E15	29N36	6715	29N09	6765
3	47E30	29N50	6689	28N51	6787
4	47E45	30N01	6669	28N44	6812
5	48E00	30N30	6615	28N17	6862
6	48E15	30N29	6617	27N47	6917
7	48E30	30N40	6597	27N19	6969
8	48E45	30N50	6578	27N08	6989
9	49E00	30N51	6576	26N52	7019
10	49E15	30N46	6586	26N44	7034
11	49E30	30N39	6599	26N32	7056
12	49E45	30N38	6600	26N06	7104
13	50E00	30N40	6597	25N21	7187
14	50E15	30N38	6600	24N53	7240
15	50E30	30N28	6619	24N37	7269
16	50E45	30N00	6671	24N23	7296
17	51E00	29N47	6695	24N02	7335
18	51E15	29N25	6736	23N56	7346
19	51E30	29N01	6780	23N48	7360
20	51E45	28N18	6860	23N35	7385
21	52E00	28N17	6862	23N39	7377
22	52E15	28N16	6864	23N37	7379
23	52E30	28N06	6882	23N42	7372
24	52E45	28N01	6891	23N49	7358
25	53E00	27N48	6915	23N51	7355
26	53E15	27N31	6947	23N44	7367
27	53E30	27N27	6954	23N43	7369
28	53E45	27N21	6965	23N43	7370
29	54E00	27N12	6982	23N42	7372
30	54E15	27N11	6984	23N51	7354

N	Longitude	Northern Coast		Southern Coast	
		Latitude	Dist.(km)	Latitude	Dist.(km)
31	54E30	27N08	6990	24N02	7335
32	54E45	27N01	7002	24N10	7319
33	55E00	27N10	6986	24N23	7296
34	55E15	27N17	6965	24N45	7255
35	55E30	27N25	6958	24N57	7233
36	55E45	27N28	6952	25N04	7219
37	56E00	27N35	6939	24N43	7259
38	56E15	27N38	6934	24N21	7299
39	56E30	27N37	6936	24N06	7326
40	56E45	27N36	6938	23N52	7353
41	57E00	27N32	6945	23N40	7375
42	57E15	27N21	6965	23N32	7390
43	57E30	26N57	7009	23N26	7400
44	57E45	26N12	7093	23N30	7393
45	58E00	26N09	7099	23N22	7409
46	58E15	26N04	7108	23N14	7423
47	58E30	26N04	7108	23N14	7423
48	58E45	26N01	7114	22N47	7474
49	59E00	25N58	7119	22N30	7504
50	59E15	25N54	7127	22N13	7537
51	59E30	25N55	7125	22N08	7545
52	59E45	25N52	7130	22N03	7555
53	60E00	25N50	7134		
54	60E15	25N51	7132		
55	60E30	25N54	7127		
56	60E45	25N52	7130		
57	61E00	25N41	7151		
58	61E15	25N37	7158		
59	61E30	25N38	7156		
60	61E45	25N38	7156		
61	62E00	25N06	7216		
62	62E15	25N13	7203		
63	62E30	25N15	7199		
64	62E45	25N16	7197		
65	63E00	25N13	7203		

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France

PROPOSALS

COMPATIBILITY BETWEEN THE BROADCASTING  
AND AERONAUTICAL RADIONAVIGATION SERVICES

FREQUENCY DEPENDENCY FOR THREE-SIGNAL TYPE B1 INTERFERENCE

1. Introduction

Joint Interim Working Party 8-10/1 adopted the following formulae for 3-signal B1 broadcasting interference :

$$f_1 + f_2 - f_3 = f \text{ aeronautical}$$

- for ILS :

$$f_1 \leq 107.7 \text{ MHz} : N_1 + N_2 + N_3 + 3x(42-20x\log_{10} \frac{\text{Max}(0.4; 108.1-f_1)}{0.4}) = 0$$

$$f_1 \geq 107.7 \text{ MHz} : N_1 + N_2 + N_3 + 126 = 0$$

- for VOR :

$$f_1 < 107.4 \text{ MHz} : N_1 + N_2 + N_3 + 3x(37-30x\log_{10} \frac{\text{Max}(0.4; 108.0-f_1)}{0.6}) = 0$$

$$f_1 > 107.4 \text{ MHz} : N_1 + N_2 + N_3 + 111 = 0$$

Furthermore, in Annex V to its report, JIWP 8-10/1 proposes formulae which take account of  $f_2$  and  $f_3$  as well as  $f_1$ . They are as follows, where  $\text{Max}(a ; b)$  is the greater of the two values  $a$  and  $b$  :

- for ILS

$$\begin{aligned} & N_1 - 20x\log_{10} \frac{\text{Max}(0.4; 108.1-f_1)}{0.4} \\ & + \\ & N_2 - 20x\log_{10} \frac{\text{Max}(0.4; 108.1-f_2)}{0.4} + 126 = 0 \\ & + \\ & N_3 - 20x\log_{10} \frac{\text{Max}(0.4; 108.1-f_3)}{0.4} \end{aligned}$$

- for VOR

$$\begin{aligned}
 N_1 &= 30 \times \log \frac{\text{Max}(0.6; 108.0 - f_1)}{0.6} \\
 + \\
 N_2 &= 30 \times \log \frac{\text{Max}(0.6; 108.0 - f_2)}{0.6} + 111 = 0 \\
 + \\
 N_3 &= 30 \times \log \frac{\text{Max}(0.6; 108.0 - f_3)}{0.6}
 \end{aligned}$$

For lack of experimental data, these formulae could not be accepted by the JIWP which has therefore invited administrations to carry out laboratory tests on them.

## 2. Experimental conditions

The three broadcasting transmitters are frequency-modulated by three independent sources of coloured noise (in accordance with CCIR Recommendation 559). Decoupling between the transmitters is 70 dB, suppressing intermodulation products at transmission. The radionavigation receivers and the ILS/VOR signal generator are placed inside a Faraday cage in order not to receive any outside interference.

The wanted signals are -86 dBm for ILS and -79 dBm for VOR, with a 90 µA meter current. Interference due to intermodulation accounts for a 7.5 µA meter current attenuation.

The following receivers were used :

Airline : COLLINS 51 RV1 (ILS/VOR)

Business : KING KX 175B (ILS/VOR)

Light aircraft : BECKER NR 2030 (ILS/VOR)  
NARCO NAV 112 (ILS/VOR)

## 3. Measurement results

The tables below show the results obtained for various groupings of the interfering signal frequencies  $f_1$ ,  $f_2$  and  $f_3$  producing the same combination frequency (108.1 MHz for the ILS table and 108.2 MHz for the VOR table). The fourth, fifth and sixth columns show, for receivers A, B and C, the dBm level required on frequencies  $f_1$ ,  $f_2$  and  $f_3$  to cause interference.

For purposes of comparison, the values obtained by applying the formulae adopted by JIWP 8-10/1 on the one hand and those proposed in Annex V to the latter's report on the other are given in the columns headed "8-10" and "Annex V".

The last two columns in the VOR table show the results obtained by applying the formulae proposed below (section 5).



F(ILS) = 108.1 MHz

F1	F2	F3	A	B	C	8-10	ANNEX V
*****							
107.9	107.4	107.2	-30	-42	-40	-42	-38
107.9	105.9	105.7	-25	-39	-30	-42	-32
107.9	99.9	99.7	-18	-24	-19	-42	-24
107.6	106.5	106.0	-25	-43	-32	-40	-33
107.6	103.5	103.0	-21	-37	-22	-40	-27
107.6	99.5	99.0	-18	-23	-18	-40	-23
107.1	106.7	105.7	-21	-40	-30	-34	-31
107.1	105.0	104.0	-19	-34	-25	-34	-27
107.1	103.0	102.0		-29	-21	-34	-24
104.1	103.7	99.7	-19	-21	-16	-22	-20
104.1	102.0	98.0		-20	-16	-22	-18
104.1	96.0	92.0		-17	-13	-22	-15

F(VOR) = 108.2 MHz

F1	F2	F3	A	B	C	8-10	ANNEX V	PROP1	PROP2
*****									
107.9	107.4	107.1	-27	-37	-29	-37	-35	-36	-33
107.9	105.9	105.6	-22	-34	-26	-37	-26	-29	-27
107.9	99.9	99.6	-18	-18	-17	-37	-14	-22	-19
107.6	107.2	106.6	-28	-38	-28	-37	-32	-34	-30
107.6	105.5	104.9	-22	-33	-24	-37	-24	-28	-25
107.6	99.5	98.9	-17	-19	-16	-37	-14	-21	-18
107.1	106.7	105.6	-23	-35	-27	-32	-26	-30	-25
107.1	105.0	103.9		-29	-22	-32	-20	-26	-22
107.1	103.0	101.9		-23	-18	-32	-16	-23	-19
104.1	103.7	99.6		-18		-13	-9	-18	-15
104.1	102.0	97.9		-16		-13	-7	-17	-13
104.1	96.0	91.9		-10		-13	-2	-13	-10

4. Comments on the measurement results

4.1 The frequency dependency, which is unquestionable, is brought out very well by keeping the same value of  $f_1$  and changing that of frequencies  $f_2$  and  $f_3$ .

4.2 In the above tables, the results given in columns A and B for ILS and VOR are for the same receivers (whereas receiver C is not the same in the two tables). The frequency performance is the same because of an identical first RF stage in which intermodulation is produced. The ILS and VOR levels change in the same way when the FM band is swept with the three interfering signals.

It will be seen that, in the case of VOR, the law set out in Annex V to the JIWP 8-10 report seems too optimistic and is inoperative for receivers A and C despite their low sensitivity to intermodulation (in ILS).

The deficiency in the law in Annex V arises from the fact that the coefficient 30 before the common logarithm does not correspond to any theoretical filter; a first-order (Butterworth) filter corresponds to a coefficient of 20 and a second-order filter to one of 40. As well as being unrealistic, the value 30 would entail the construction of VOR receivers which were more sensitive to interference than existing ones, for interfering frequencies below 95 MHz.

5. Proposals

For VOR, a new formula is proposed in which the coefficient 30 is replaced by the more realistic value 20 (proposal 1).

In order to make planning easier, it is proposed (proposal 2) to adopt the same interference law, apart from the constant, for both ILS and VOR. The constant takes into account the wanted signal level and the non-linearity coefficient, which are not the same for ILS and VOR. The frequency characteristics, which have been included in the logarithmic expression, are identical for ILS and VOR.

F/24/1 Proposal 1

The following formula is proposed for adoption :

$$\begin{aligned}
 N_1 &= -20 \times \log \frac{\text{Max}(0.6; 108.0 - f_1)}{0.6} \\
 + \\
 N_2 &= -20 \times \log \frac{\text{Max}(0.6; 108.0 - f_2)}{0.6} + 111 = 0 \\
 + \\
 N_3 &= -20 \times \log \frac{\text{Max}(0.6; 108.0 - f_3)}{0.6}
 \end{aligned}$$

This law is not contradicted by receivers A and C; as it is more pessimistic than proposal 2, it corresponds more closely to receiver B.

Receiver B is frequency-selective but behaves as if its cut-off frequency were set at 106.5 MHz instead of being 108.1 MHz. If 106.5 MHz is substituted for 108.1 MHz in the law, the results obtained are almost identical to those in the table and the frequency dependency is not affected.

F/24/2 Proposal 2

Instead of proposal 1, it is proposed to adopt the following formula which has the advantage of applying to both VOR and ILS :

$$\begin{aligned}
 N_1 & - 20 \times \log \frac{\text{Max}(0.4; 108.1 - f_1)}{0.4} \\
 + \\
 N_2 & - 20 \times \log \frac{\text{Max}(0.4; 108.1 - f_2)}{0.4} \\
 + \\
 N_3 & - 20 \times \log \frac{\text{Max}(0.4; 108.1 - f_3)}{0.4} \\
 & + K [ \text{ILS/VOR} ] = 0
 \end{aligned}$$

This proposal has the advantage of being consistent with the law adopted for future ILS and VOR receivers. The proposed law (with the acceptance of frequency dependency) for future receivers involves changing  $K [ \text{ILS/VOR} ]$ , i.e., the new receivers will have the same frequency performance as the existing ones; they will have a better non-linearity coefficient because they will be able to withstand much higher input levels than those currently permitted (an improvement of more than 10 dB in the level of each interfering signal received).

6. Conclusions

Two alternatives are proposed :

- 6.1 either the adoption of formulae taking account of each interfering signal for ILS and VOR, with a more realistic coefficient for VOR.

These formulae (already given above) are :

- for ILS :

$$\begin{aligned}
 N_1 & - 20 \times \log \frac{\text{Max}(0.4; 108.1 - f_1)}{0.4} \\
 + \\
 N_2 & - 20 \times \log \frac{\text{Max}(0.4; 108.1 - f_2)}{0.4} \\
 + \\
 N_3 & - 20 \times \log \frac{\text{Max}(0.4; 108.1 - f_3)}{0.4} \\
 & + 126 = 0
 \end{aligned}$$

- for VOR :

$$\begin{aligned}
 N_1 & - 20 \times \log \frac{\text{Max}(0.6; 108.0 - f_1)}{0.6} \\
 + \\
 N_2 & - 20 \times \log \frac{\text{Max}(0.6; 108.0 - f_2)}{0.6} + 111 = 0 \\
 + \\
 N_3 & - 20 \times \log \frac{\text{Max}(0.6; 108.0 - f_3)}{0.6}
 \end{aligned}$$

6.2 or the adoption of a single formula for both ILS and VOR, as follows :

$$\begin{aligned}
 N_1 & - 20 \times \log \frac{\text{Max}(0.4; 108.1 - f_1)}{0.4} \\
 + \\
 N_2 & - 20 \times \log \frac{\text{Max}(0.4; 108.1 - f_2)}{0.4} + K [ \text{ILS/VOR} ] = 0 \\
 + \\
 N_3 & - 20 \times \log \frac{\text{Max}(0.4; 108.1 - f_3)}{0.4}
 \end{aligned}$$

$K [ \text{ILS/VOR} ] =$  126 for current ILS receivers  
 111 for current VOR receivers  
 78 for future ILS/VOR receivers

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PLENARY MEETING

France

PROPOSAL

COMPATIBILITY BETWEEN THE BROADCASTING AND  
AERONAUTICAL RADIONAVIGATION SERVICES

TYPE B1 INTERFERENCE

Correction factors to permissible broadcast signal  
levels relative to values at frequency coincidence

1. Introduction

In Annex VI of its report, Joint Interim Working Party 8-10/1 adopted the correction factors to be applied when the intermodulation product ( $2f_1 - f_2$ ) or ( $f_1 + f_2 - f_3$ ) no longer coincides with the wanted ILS or VOR signal channel.

The VOR curve was obtained with a modulation of 1 kHz with  $\pm 75$  kHz deviation at both broadcasting transmitters whereas the ILS curve was measured with a stereo coloured noise modulation in line with the Recommendations of the CCIR. This explains the great disparity between the factors proposed.

It was considered useful therefore to carry out measurements with the two different types of modulation for one and the same receiver.

2. Experimental conditions

Two receivers operating for ILS and VOR were used :

KING KX 175 B

NARCO NAV 112.

The wanted signal levels were as follows :

- 86 dBm for ILS
- 79 dBm for VOR

The meter current was 90  $\mu$ A.

The frequencies were selected so that :

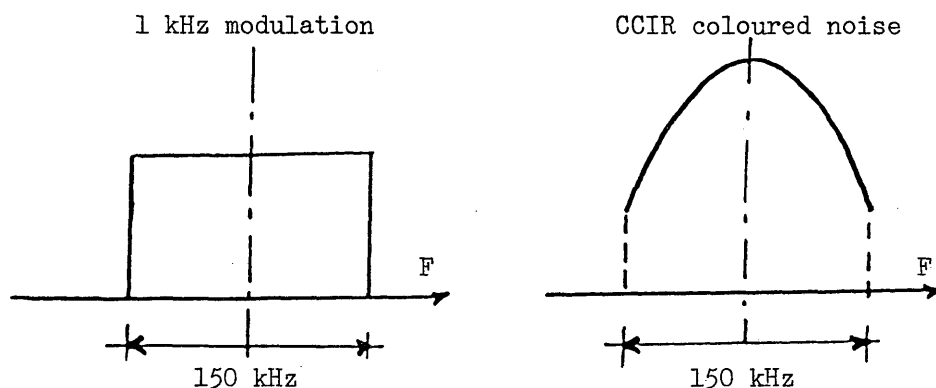
- $2f_1 - f_2 = f_{\text{aeronautical}} + \Delta f$ .

The values are given in dBm and represent the level necessary with the two frequencies  $f_1$  and  $f_2$  to create the interference.

	Receiver A		Rec A		Rec. B	
	Coloured noise		1 KHz		Coloured noise	
! Delta F !	ILS	VOR	ILS	VOR	ILS	VOR
*****						
300	-15.0	-16.0	-19.0	-15.0	-3.5*	-1.5*
250	-22.0	-16.0	-22.0	-17.0	-3.5*	-1.5*
200	-17.0	-12.0	-36.5	-31.0	-4.0*	-2.0*
150	-17.5	-13.0	-36.5	-31.0	-6.5	-6.0
100	-29.0	-25.0	-37.0	-31.0	-14.0	-15.0
50	-37.0	-32.0	-37.0	-32.0	-19.0	-21.0
0	-39.5	-34.5	-37.5	-32.0	-22.0	-23.5
-50	-37.0	-32.0	-37.0	-32.0		
-100	-30.0	-24.0	-37.0	-32.0		
-150	-20.0	-15.0	-37.0	-31.0		
-200	-13.0	-8.0	-36.5	-31.0		
-250	-11.0	-7.0	-24.0	-17.0		
-300	-13.0	-7.0	-17.0	-10.0		
*****						

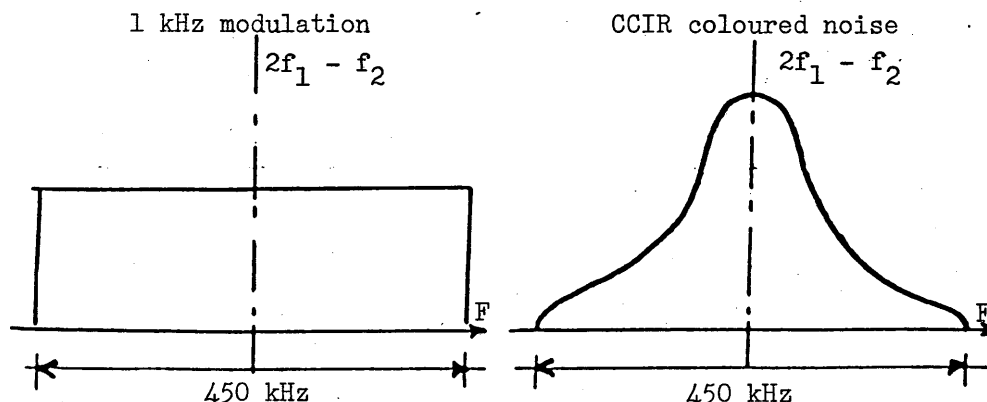
\* Receiver B is saturated.

To enable the two types of modulation to be compared, the curve for receiver A for ILS is annexed hereto. The difference which is found depending on the type of modulation is not surprising if the broadcasting signal spectra are considered. Schematically we have :



With the transition to non-linearity, the 1 kHz modulation spectrum is multiplied by three without attenuation whereas multiplication of the modulation by coloured noise favours the frequencies close to the carrier. Thus, at the frequency ( $2f_1 - f_2$ ), the level of the coloured noise signal is higher than that of the 1 kHz signal.

After multiplication, we have :



To determine the correction factors, it is logical to take into account only the results obtained with a transmitter modulated by coloured noise in conformity with CCIR Recommendation 559, as advocated in § 3.5.3 of the report of Joint Interim Working Party 8-10/1. The maximum level 1 kHz signal (deviation  $\pm 75$  kHz) is not really representative of the actual modulation signals. It can only correspond to very specific instances of transmitter operation (maintenance or test procedures).

Broadcasters encountering the difficulties raised by the use of such signals will be able to take the necessary precautions. Under these conditions, it is possible to derive the correction factor table to be used from the measured results :

Receiver A			Receiver B		
Delta F	ILS	VOR	ILS	VOR	
300	24.5	18.5	18.5	22.0	
250	17.5	18.5	18.5	22.0	
200	22.5	22.5	18.0	21.5	
150	22.0	21.5	15.5	17.5	
100	10.5	9.5	8.0	8.5	
50	2.5	2.5	3.0	2.5	
0	0.0	0.0	0.0	0.0	
-50	2.5	2.5			
-100	9.5	10.5			
-150	19.5	19.5			
-200	26.5	26.5			
-250	21.5	27.5			
-300	26.5	27.5			

\*\*\*\*\*

F/25/1

4.

Proposal

On the basis of the results obtained, it is possible to propose the same correction factors for ILS and VOR operation, i.e. :

2.5 dB at  $\pm$  50 kHz

10 dB at  $\pm$  100 kHz

20 dB at  $\pm$  150 kHz.

At  $\pm$  200 kHz the factor would be higher than 20 dB so that this case would not be studied.

Annex : 1

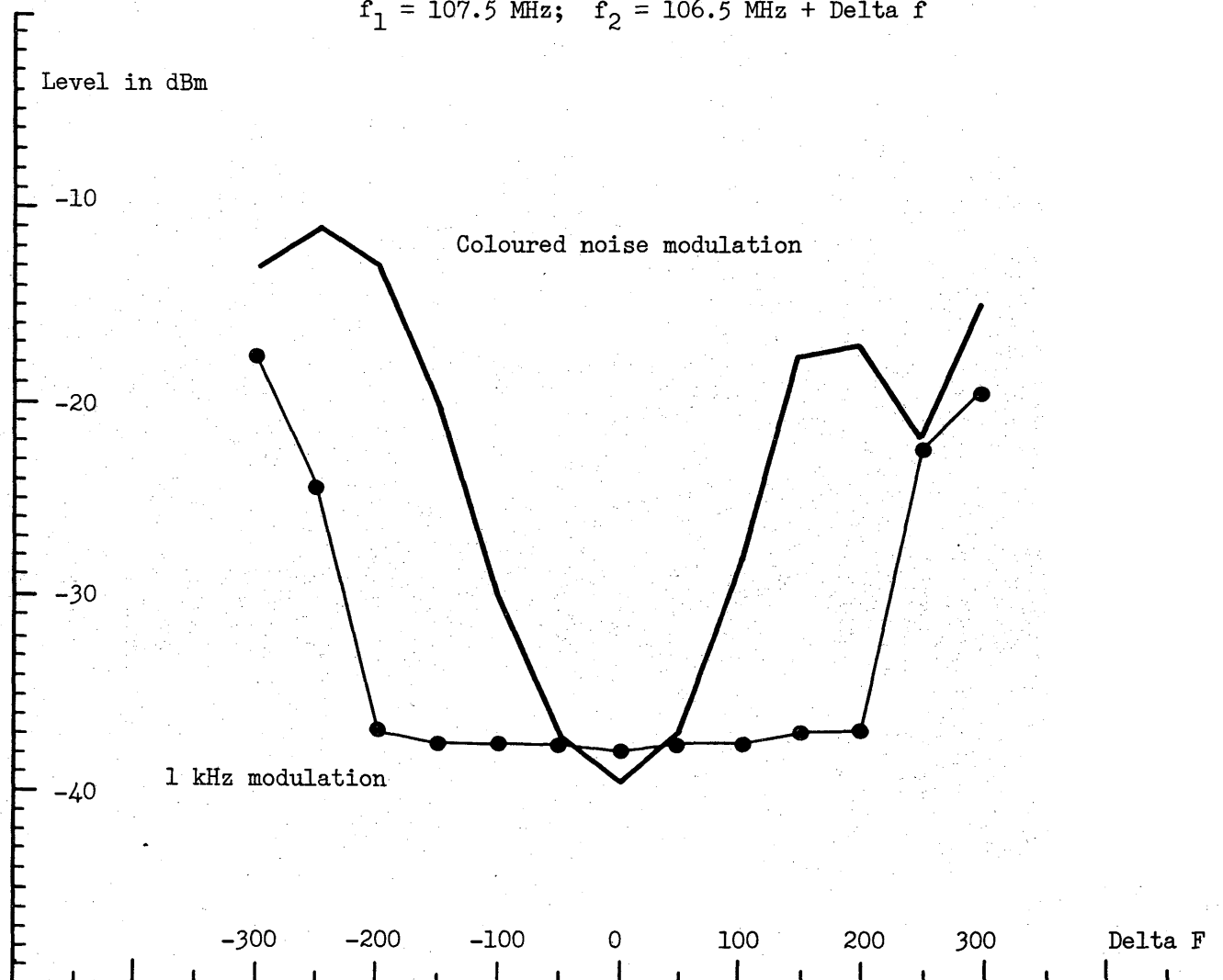


ANNEX

Receiver A

$f$  (ILS) = 108.5 MHz

$f_1 = 107.5$  MHz;  $f_2 = 106.5$  MHz + Delta  $f$



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PLENARY MEETING

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PROPOSALS

COMPATIBILITY BETWEEN THE BROADCASTING  
AND AERONAUTICAL RADIONAVIGATION SERVICES

TYPE B1 INTERFERENCE

Determination of a limit level below which a broadcasting station  
no longer contributes to B1 type interference  
because of the preponderance of B2 type interference

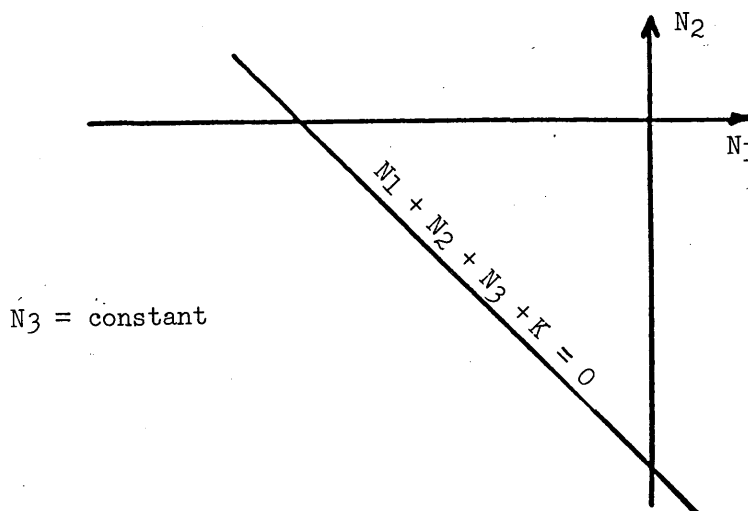
1. Introduction

Joint Interim Working Party 8-10/1 adopted the concept of cut-off values in the application of planning criteria for B1 type interference. We have tried to demonstrate the existence of such a threshold by means of a series of measurements, the results of which are given in the present contribution. These results show that the cut-off phenomenon does not exist in reality but that it is replaced by the occurrence of interference which is created by a desensitization mechanism and whose effects predominate over intermodulation phenomena.

2. Non-existence of the cut-off level

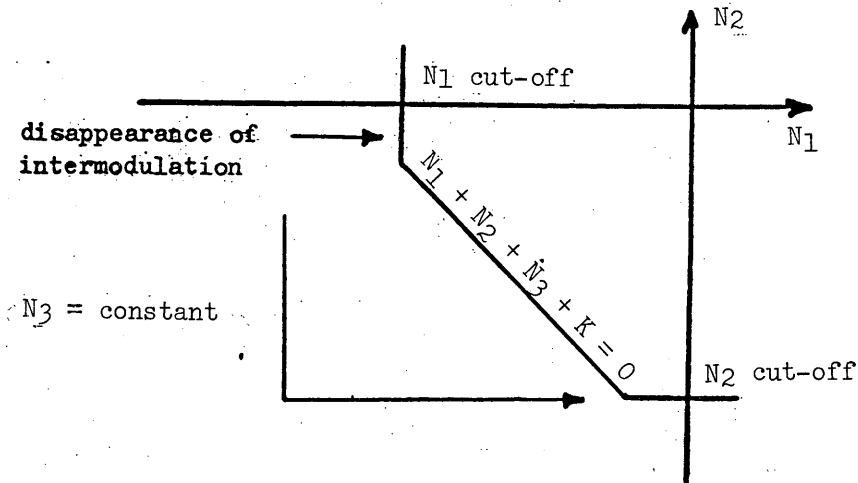
The intermodulation criterion is a  $N_1, N_2, N_3$  linear law of the form  
 $N_1 + N_2 + N_3 + K = 0$ .

If  $N_3 = \text{constant}$ , the relationship between  $N_1$  and  $N_2$  can be plotted as follows :



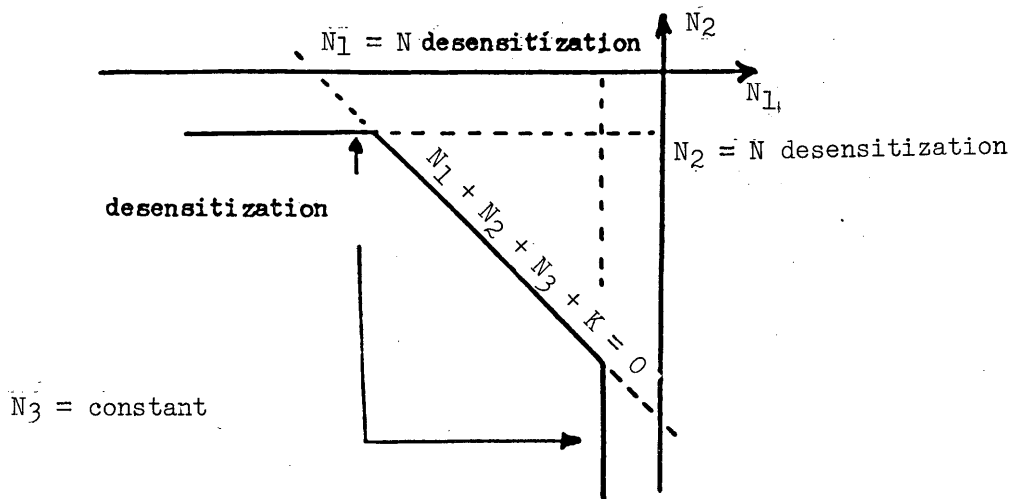
The existence of a cut-off threshold on  $N_1$  is expressed by the fact that there is no longer any intermodulation for  $N_1 \leq N_1$  cut-off. The same applies to  $N_2 \leq N_2$  cut-off.

If such a cut-off value really existed, the preceding theoretical curve would in reality be deformed as follows :



Curves 1.1 to 1.6 were plotted on the basis of tests carried out with radionavigation receivers (see Annex 1).

The deformation described above never occurs. It will however be seen that the curves have the following appearance :



The reason for this is the occurrence of a desensitization phenomenon which, from a certain threshold onwards, masks the intermodulation phenomenon.

3. Determination of limit conditions when Type B2 interference predominates over Type B1 interference

3.1 Assumptions (ILS) :

- Interference by 3 broadcasting station is expressed by :
- the combination of the frequencies :

$$f_1 + f_2 - f_3 = f_{\text{aeronautical}}$$

- the following equation involving the levels :

$$N(f_1) + N(f_2) + N(f_3) + K(f_1, f_2, f_3, f_{\text{aero}}) = 0$$

- X (f) will be used to denote the expression

$$20 \log \frac{\text{Max} (108.1 - f; 0.4)}{0.4}$$

in which Max (a; b) represents the larger of the two values a and b.

Thus for  $f \geq 107.7$  MHz,  $X (f) = 0$ .

The frequency dependence now seems clearly demonstrated by the various experiments carried out (see French Contribution No. ); it is thus possible to write :

$$K = 126 - X (f_1) - X (f_2) - X (f_3)$$

- Nd (f) will be used to denote the desensitization level at frequency f (see § 4.2.2 of the Report of JIWP 8-10/1).

3.2 Theoretical determination of the transition point between the two types of interference

Let us try and determine the minimum level NL (f) corresponding to the transition from Type B1 to Type B2 interference.

For the signal at frequency  $f_1$  this value is obtained for a simultaneous desensitization created by signals  $f_2$  and  $f_3$ , i.e. :

$$(1) \quad NL (f_1) + Nd (f_2) + Nd (f_3) + 126 - X (f_1) - X (f_2) - X (f_3) = 0.$$

By permutation of the role of each signal we obtain also :

$$(2) \quad NL(f_2) + Nd(f_1) + Nd(f_3) + 126 - X(f_1) - X(f_2) - X(f_3) = 0$$

$$(3) \quad NL(f_3) + Nd(f_1) + Nd(f_2) + 126 - X(f_1) - X(f_2) - X(f_3) = 0$$

It can be logically assumed that  $NL(f)$  is of the following type :

(4)  $NL(f) = X_0 + X(f)$ , where  $X_0$  is a constant to be determined; the measurements have always shown that there is a frequency dependence of the form  $X(f)$ .

If equation (4) is inserted in systems (1), (2) and (3), we obtain :

$$X_0 + X(f_1) = -126 + X(f_1) + X(f_2) + X(f_3) - Nd(f_2) - Nd(f_3)$$

$$X_0 + X(f_2) = -126 + X(f_1) + X(f_2) + X(f_3) - Nd(f_3) - Nd(f_1)$$

$$X_0 + X(f_3) = -126 + X(f_1) + X(f_2) + X(f_3) - Nd(f_1) - Nd(f_2)$$

Resolving this system, we get :

$$X_0 + 126 = 2[X(f_1) - Nd(f_1)] = 2[X(f_2) - Nd(f_2)] = 2[X(f_3) - Nd(f_3)]$$

For any frequency  $f$  involved in an intermodulation product it is therefore possible to write :

$$Nd(f) = -1/2 \cdot (X_0 + 126) + X(f)$$

$Nd(f)$  is therefore defined in two ways :

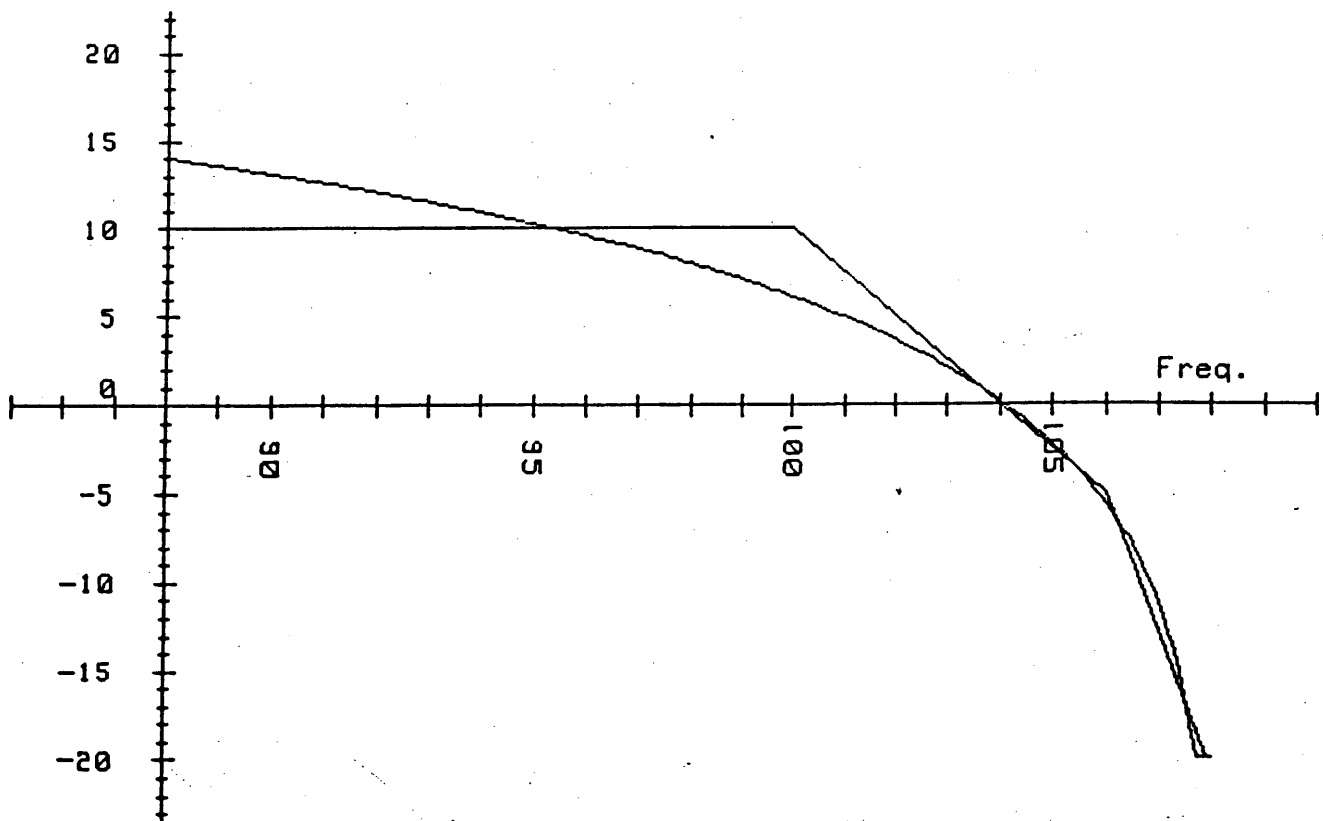
- by three straight line sections (Figure 2 of § 4.2.2 of the Report of JIWP 8-10/1).

Such a law obviously constitutes the linear approximation of a law without discontinuity;

- by the function  $X(f)$  apart from a vertical translation represented by the constant

$$\frac{1}{2} \cdot (X_0 + 126)$$

If these two laws are compared graphically (see Figure 1), it is found that the three straight line segments represent a good approximation of the law  $X(f)$  for  $\frac{1}{2} (X_0 + 126) = 20$ .



### 3.3 Conclusion

For ILS, the limit value sought follows the law

$$NL(f) = -86 + 20 \log \frac{\text{Max}(108.1 - f, 0.4)}{0.4}$$

We can do the same with VOR if we take

$$K = 111 - \sum_{i=1}^3 20 \log \frac{\text{Max}(108.0 - f, 0.6)}{0.6}$$

$$\text{We find } NL(f) = -79 + 20 \log \frac{\text{Max}(108.1 - f, 0.6)}{0.6}$$

For future radionavigation receivers, the choice of the three straight line sections (figure from JIWP 8-10/1 Report) also produces a satisfactory approximation of  $X(f)$ , in particular between 100 and 108 MHz.

With

$$K = 78 - \sum_{i=1}^3 20 \log \frac{(108.1 - f, 0.4)}{0.4}$$

we find

$$NL(f) = -58 + 20 \log \frac{\text{Max}(108.1 - f, 0.4)}{0.4}$$

F/26/1 4.

Conclusion

The hypothesis of cut-off thresholds is contradicted by experimental measurements and it has been demonstrated that it is pointless in practice to take in account Type B1 interference liable to occur below a certain threshold. The effects of such interference are in such cases completely masked because the predominant interference is of the B2 type. On the basis of the above calculations it is proposed that the following formulae defining the limit values be adopted.

Current ILS receivers

$$f < 107.7 \quad N(f) > -86 + 20 \log \frac{108.1 - f}{0.4} \quad \text{dBm}$$

$$f \geq 107.7 \quad N(f) = -86 \text{ dBm}$$

Current VOR receivers

$$f < 107.4 \quad N(f) > -79 + 20 \log \frac{108.0 - f}{0.4}$$

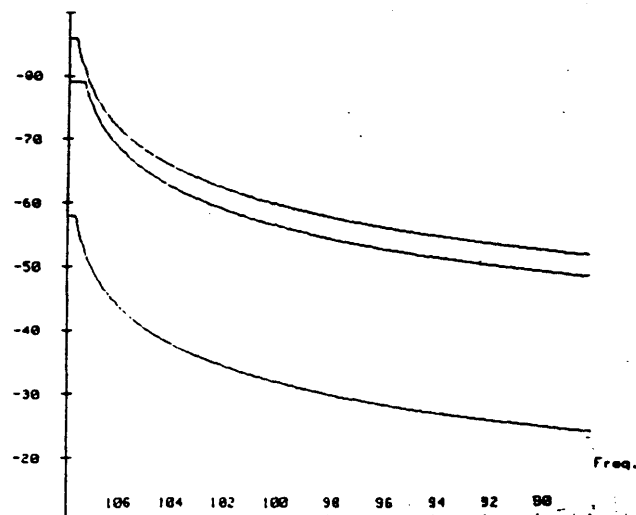
$$f \geq 107.4 \quad N(f) = -79 \text{ dBm}$$

Future ILS and VOR receivers

$$f < 107.7 \quad N(f) > -58 \text{ dBm} + 20 \log \frac{108.1 - f}{0.4}$$

$$f \geq 107.7 \quad N(f) = -58 \text{ dBm}$$

Figure IX-2 in Annex IX of the Report of JIWP 8-10/1 can be replaced by the following curve :



ANNEX 1

COMPATIBILITY BETWEEN THE BROADCASTING AND RADIONAVIGATION SERVICES

TYPE B1 INTERFERENCE MEASUREMENT CURVES

WITH 4 RADIONAVIGATION RECEIVERS

Experimental conditions

The three broadcasting transmitters were frequency modulated by three independent sources of coloured noise (in accordance with CCIR Recommendation 559). Decoupling between the transmitters is 70 dB, which eliminates the intermodulation products at transmission. The radionavigation receivers and the ILS/VOR signal generator were placed inside a Faraday cage to prevent any outside interference from being received.

The wanted signals were -86 dBm for ILS and -79 dBm for VOR with a meter current of 90  $\mu$ A. The interference due to intermodulation corresponded to a meter current attenuation of 7.5  $\mu$ A.

The following receivers were used :

Airline	: COLLINS 51 RV 1 (ILS/VOR)
Business	: KING KX 175 B (ILS/VOR)
Light aircraft	: BECKER NR 2030 (ILS/VOR)
	NARCO NAV 112 (ILS/VOR)

Reading the curves

The laws sought are of the form :

$$N_1 + N_2 + N_3 + K = 0$$

where  $N_1$ ,  $N_2$ ,  $N_3$  are the levels in dBm of the three broadcasting transmitters at frequencies  $f_1$ ,  $f_2$  and  $f_3$  respectively.

To make the curves easier to use, they have been plotted for three values of  $N_3$ ; each of these curves at ( $N_1$ ,  $N_2$ ) must have a slope equal to -1

$$N_1 + N_2 + (N_3 + K) = 0$$

Modification of the slope coefficient is brought about by desensitization of the receiver.

For each of the curves, we find levels ( $N_1$ ,  $N_2$ ,  $N_3$ ) which are lower than the cut-off level proposed by Annex IX of the Report of Joint Interim Working Party 8-10/1 and for which Type B1 interference was measured.

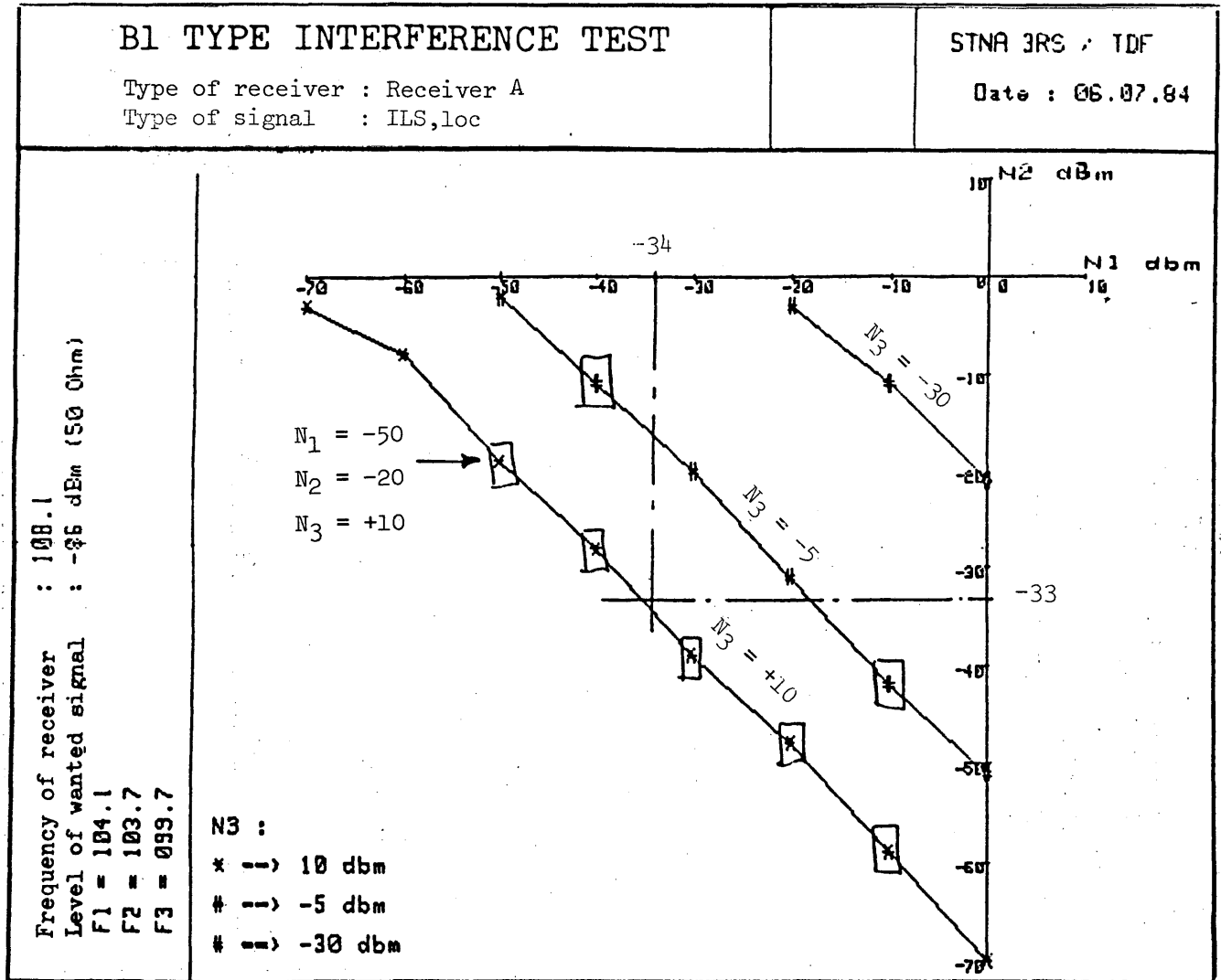
The cut-off levels are represented by broken straight lines. They are dependent on the frequency considered and on the type of receiver used (ILS or VOR).



The equation of the intermodulation law operating according to the classical pattern when the slope is equal to -1 is shown under each of these curves.

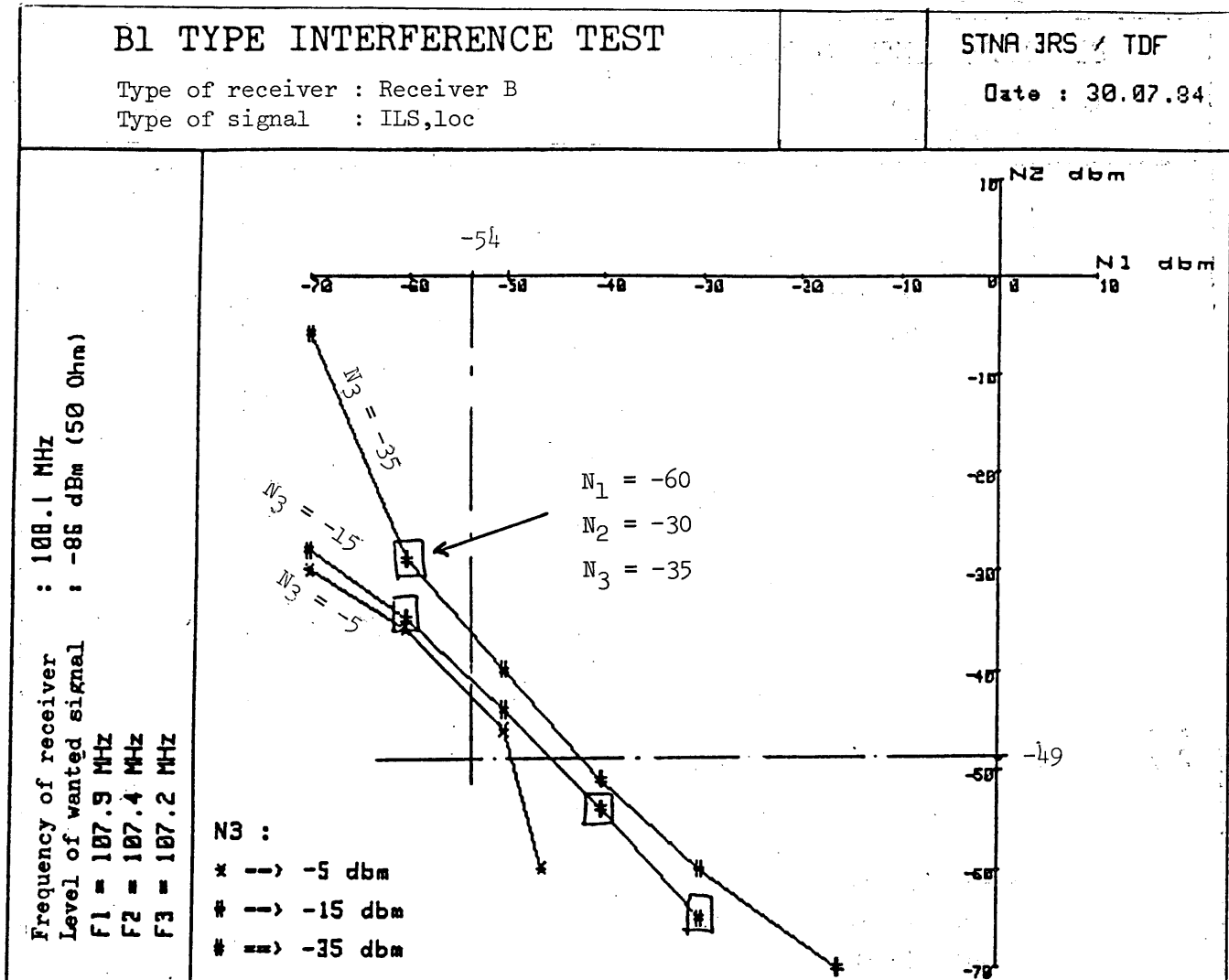
Curve 1.6 shows the desensitization of the receiver. It will be seen that :

- where  $N_1 = -20$  dBm for  $f_1 = 107.9$  MHz, there is the same interference with  $N_2 = -50, -60$  or  $-70$  dBm;
- similarly when  $N_2 = -8$  dBm for  $f_2 = 107.5$  MHz,  $N_1$  may be  $-40, -50, -60$  or  $-70$  dBm, the same interference occurs.



Equation obtained :  $N_1 + N_2 + N_3 + 60 = 0$

Curve 1.1



Equation obtained :  $N_1 + N_2 + N_3 + 126 = 0$

Curve 1.2

# B1 TYPE INTERFERENCE TEST

Type of receiver : Receiver C  
Type of signal : ILS, loc

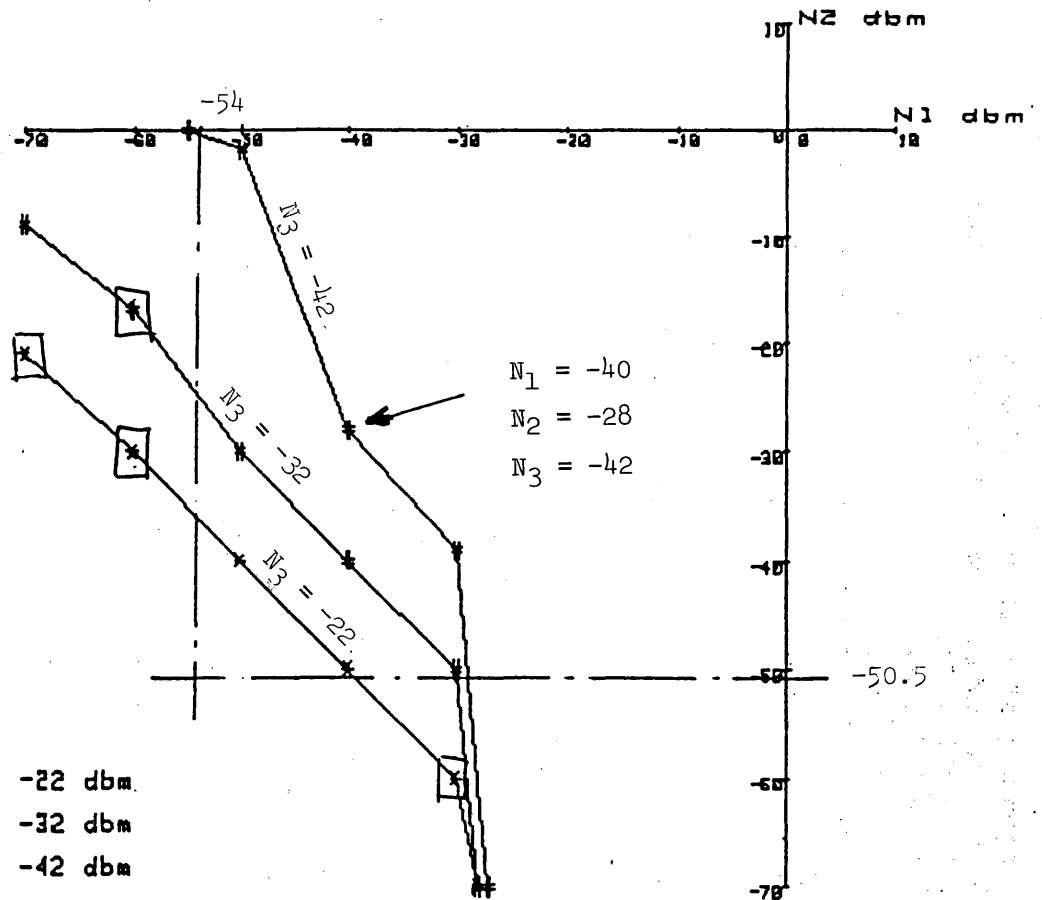
STNA 3RS / TDF

Date : 27.06.84.

Frequency of receiver : 108.5 MHz  
Level of wanted signal : -86 dBm (50 Ohm)  
F1 = 107.9 MHz  
F2 = 107.5 MHz  
F3 = 106.9 MHz

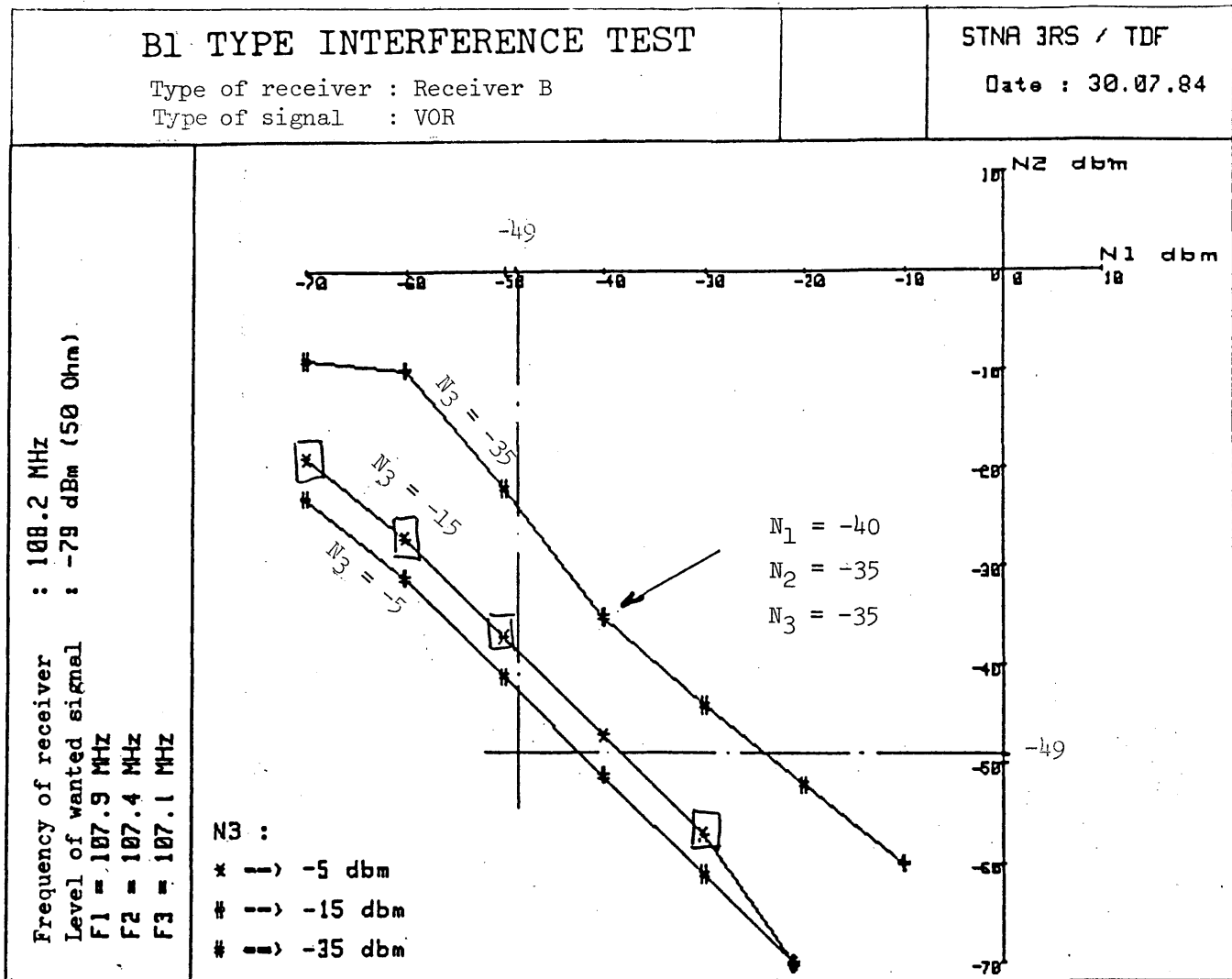
N3 :

\* --> -22 dBm  
# --> -32 dBm  
# --> -42 dBm



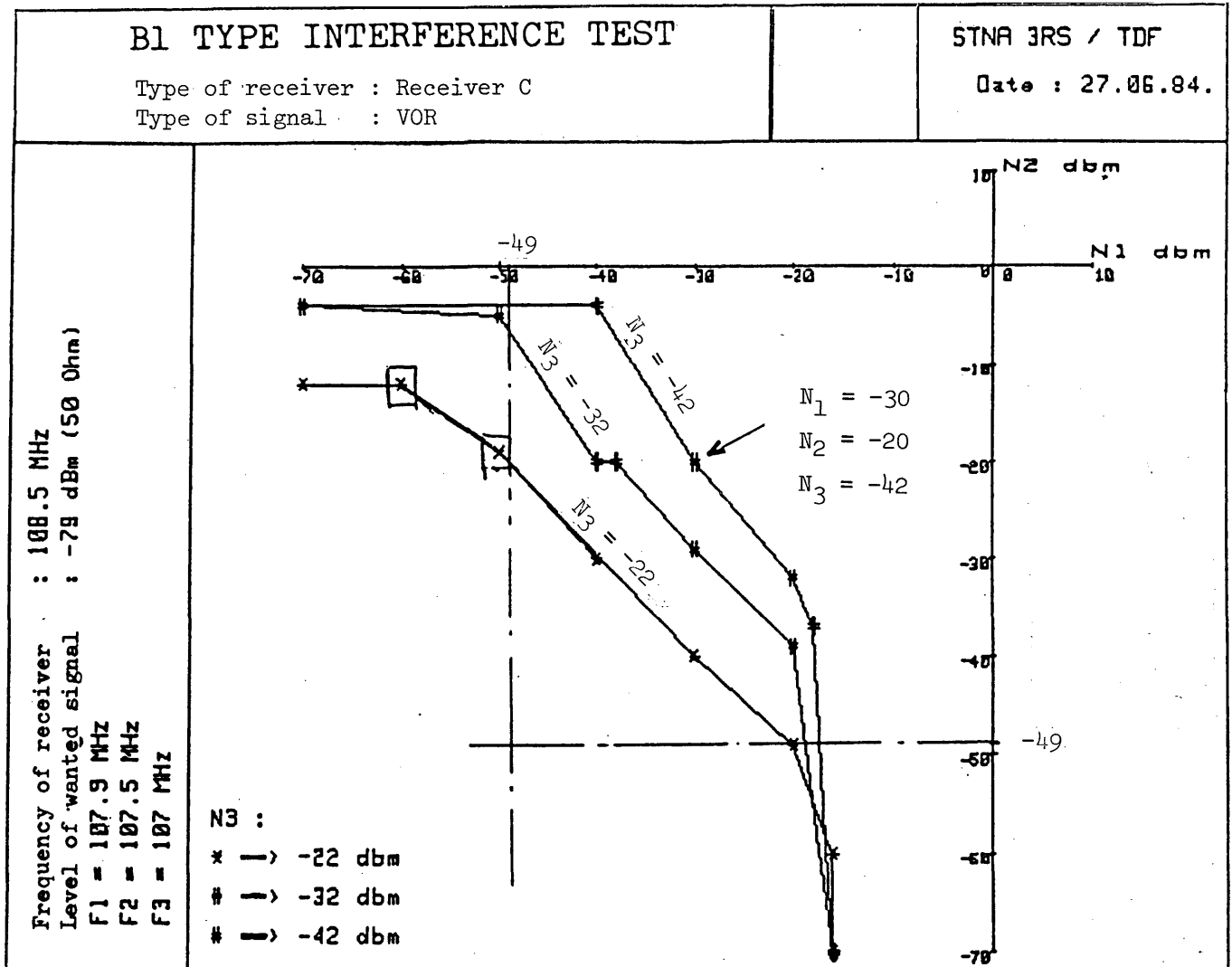
Equation obtained :  $N_1 + N_2 + N_3 + 112 = 0$

Curve 1.3



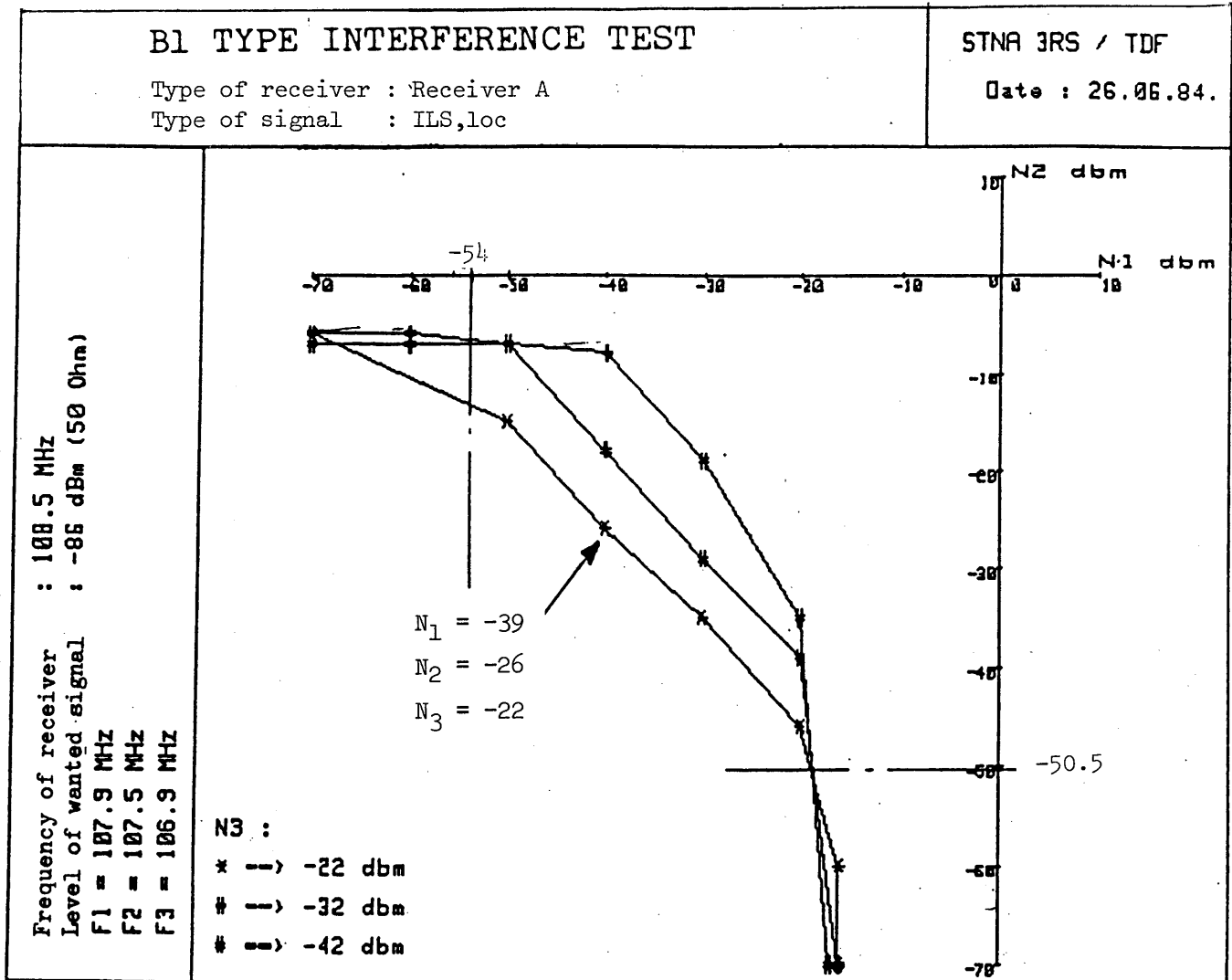
Equation obtained :  $N_1 + N_2 + N_3 + 108 = 0$

Curve 1.4



Equation obtained :  $N_1 + N_2 + N_3 + 90 = 0$

Curve 1.5



Equation obtained :  $N_1 + N_2 + N_3 + 87 = 0$

Curve 1.6

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
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PLENARY MEETING

France

PROPOSALS

BROADCASTING/AERONAUTICAL RADIONAVIGATION COMPATIBILITY  
PROTECTION RATIO FOR ILS/VOR RECEIVERS FOR TYPE A2 INTERFERENCE

DISTINCTION BETWEEN TYPE A2 INTERFERENCE AND TYPE B2 INTERFERENCE

Introduction

Joint Interim Working Party 8-10/1 adopted protection ratios for type A2 interference on the basis of measurements which took no account of whether the receivers were in saturation. It was thus impossible to know whether the interference was type A2 or B2.

This contribution describes a measurement method which distinguishes between the two types of interference, and gives the results obtained for type A2 interference.

Description of the method

The method consists in measuring the protection ratio when the broadcasting signal is : 1) modulated by coloured noise conforming to CCIR standards and 2) unmodulated. If it emerges that the interference is identical for a pure carrier and for a frequency modulated signal, it follows that it is the overall power which is causing the interference and not the modulation spectrum leak.

Experimental conditions

Measurements were carried out on three ILS/VOR receivers; the wanted signals were those recommended by the first session of the RABC; the level was -86 dBm for the ILS signal and -79 dBm for the VOR signal.

Note - The measurements were carried out under the following conditions : taking  $\Delta f$  to designate the difference between the radionavigation (ILS/VOR) frequency and the broadcasting frequency, the only possible broadcasting frequencies at which measurements for  $\Delta f = 0$  and  $\Delta f = 50$  kHz (reference values) could be carried out were 108.0 MHz for VOR and 108.1 MHz for ILS.

If the broadcasting frequency is then kept fixed at 107.9 or 108.0 MHz and the radionavigation signal frequency is moved  $\Delta f$  within its band, the radionavigation receivers will always have the same desensitization characteristic, as this only depends on the broadcasting frequency.

Note - For  $\Delta f = 0$  for an unmodulated signal the value is given merely as an indication.



TABLE 1

Broadcasting transmitter fitted with a passband filter

Receiver A						Receiver B						Receiver C					
I.L.S.			V.O.R.			I.L.S.			V.O.R.			V.O.R.					
Δ	F	M	N	M	N	M	N	M	N	M	N	M	N				
*****																	
0	11.5	13.0	10.5	26.0	10.0	11.0	10.0	26.0									
50	-14.0	-61.0	-12.5	-49.0	-12.0	-60.0	-17.0	-63.0	-1.0	-49.0							
100	-43.0	-74.0	-50.0	-74.0	-41.5	-69.0	-47.0	-72.0	-44.0	-54.0							
150	-76.0	-77.0	-75.0	-70.0	-70.0	-71.0	-76.0	-76.0	-53.0	-53.0							
200	-79.5	-80.0	-79.0	-74.0	-72.0	-72.0	-78.0	-79.0	-52.5	-52.5							
300	-80.5	-83.0	-76.0	-74.5	-74.5	-75.0	-92.0	-90.0									
400	-85.0	-86.0	-87.0	-88.0	-76.0	-76.0	-91.0	-93.0									
500	-79.0	-86.0	-74.0	-75.0	-76.5	-76.5	-92.0	-92.5									
800	-86.0	-86.0	-86.0	-88.0	-77.0	-77.0	-91.0	-91.0									
1000	-86.0	-86.0			-74.0	-77.0											
*****																	

TABLE 2

Broadcasting transmitter without passband filter

Receiver A						Receiver B					
Δ	F	M	N	M	N	M	N	M	N		
0	8.0	10.0	10.0	10.0	3.0	8.0					
50	-11.0	-22.5	-12.0	-24.0	-15.5	-32.0					
100	-46.0	-57.0	-47.0	-57.5	-49.0	-68.5					
150	-72.5	-73.0	-72.0	-73.0	-70.0	-70.0					
200	-76.0	-76.5	-76.0	-75.0	-78.0	-77.0					
300	-78.0	-77.5	-77.0	-75.5	-81.5	-82.0					
400	-80.5	-80.0	-81.5	-82.0	-86.5	-86.5					
500	-79.0	-83.0	-74.5	-75.0	-92.0	-93.0					
800	-79.0	-85.0	-82.0	-84.0	-90.0	-92.0					
1000	-81.0	-85.5	-79.0	-79.0	-89.0	-90.0					

M : Broadcasting signal modulated with coloured noise  
N : Unmodulated broadcasting signal

Comments

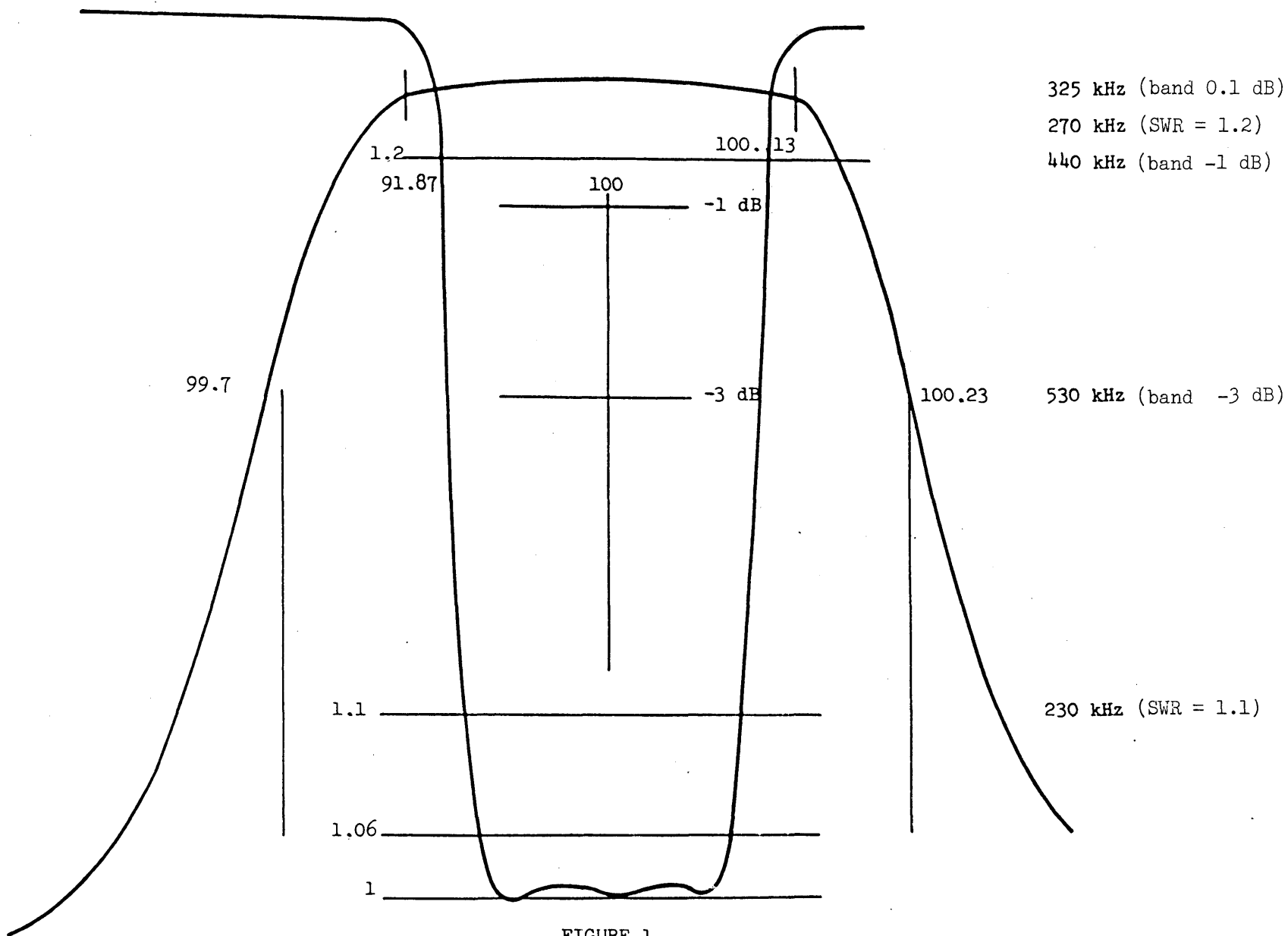
The first set of measurements was taken after a passband filter had been fitted at the transmitter output. This filter, the frequency response of which is shown in Figure 1, served to attenuate the residual noise of the transmitter (already very low) outside its wanted band, so that very small values of protection ratio (less than -80 dB) could be measured. It in no way altered the quality of the wanted signal of the broadcasting transmitter. The other measurements were conducted after the filter had been removed, and are set out in Table 2. It may be noted that up to  $\Delta f$  values of the order of 200 to 300 kHz, the filter has only a slight effect on the results for the modulated signal.

Conclusion and proposal

F/27/1

The results of the measurements show quite clearly that type A2 interference only occurs for differences between the aeronautical frequency and the broadcasting frequency of 100 to 150 kHz. Above 150 kHz, the fact that the measurements conducted with and without the modulation signal produce almost identical results proves that the interference is no longer caused by the broadcasting signal spectrum bandwidth.

It may be concluded that, for practical purposes, when planning the FM band type A2 interference may be disregarded since the minimum frequency difference between the signals of the two services is 200 kHz (108.1 - 107.9 MHz).



- 4 -  
 CARR-1(2)/27-E

FIGURE 1

Output filter of an FM stereo transmitter (3 cavities)

# REGIONAL BROADCASTING CONFERENCE

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PLENARY MEETING

## Note by the Secretary-General

### FINANCIAL RESPONSIBILITIES OF ADMINISTRATIVE CONFERENCES

The Conference may wish to keep in mind the relevant decisions of the Plenipotentiary Conference (Nairobi, 1982) now embodied in Article 80 of the Convention as well as Resolution No. 48 of that Conference. Copies of the concerned provisions and the Resolution in full are attached for reference.

R.E. BUTLER

Secretary-General

Annexes : 2

ANNEX 1

ARTICLE 80

**Financial Responsibilities of Administrative Conferences  
and Plenary Assemblies of the CCIs**

- 627 1. Before adopting proposals with financial implications, administrative conferences and the Plenary Assemblies of the International Consultative Committees shall take account of all the Union's budgetary provisions with a view to ensuring that these proposals will not result in expenses beyond the credits which the Administrative Council is empowered to authorize.
- 628 2. No decision of an administrative conference or of a Plenary Assembly of an International Consultative Committee shall be put into effect if it will result in a direct or indirect increase in the expenses beyond the credits that the Administrative Council is empowered to authorize.

ANNEX 2

RESOLUTION No. 48

**Impact on the Budget of the Union of Certain Decisions  
of Administrative Conferences and Plenary Assemblies of  
the International Consultative Committees**

The Plenipotentiary Conference of the International Telecommunication Union (Nairobi, 1982),

*noting*

a) the need for effective financial management on the part of the Union and its Members, necessitating close control over all demands upon the annual budgets;

b) that administrative conferences and Plenary Assemblies of the CCIs have taken decisions or adopted resolutions or recommendations with financial implications including additional and unforeseen demands upon the annual budgets of the Union;

c) that the financial resources of the Union need therefore to be taken into account by all administrative conferences and by all Plenary Assemblies of the CCIs;

*recognizing*

that the decisions, resolutions or recommendations mentioned above may be crucial to the successful outcome of individual administrative conferences or Plenary Assemblies of the CCIs;

*recognizing also*

that the Administrative Council in reviewing and approving the annual budgets of the Union, is bound by the financial limitations of Additional Protocol I and may not of its own authority be able to satisfy all the demands made upon the budgets;

*recognizing further*

that the provisions of Articles 7, 69, 77 and 80 of the Convention reflect the importance of effective financial management;

*resolves*

1. that before adopting resolutions or taking decisions which are likely to result in additional and unforeseen demands upon the budgets of the Union, future administrative conferences and Plenary Assemblies of the CCIs, having regard to the need for economy, shall:

1.1 prepare and take into account estimates of the additional demands made on the budgets of the Union;

1.2 where two or more proposals are involved, arrange them in an order of priority;

1.3 prepare and submit to the Administrative Council a statement of the estimated budgetary impact, together with a summary of the significance and benefit to the Union of financing the implementation of those decisions, and an indication of priorities where appropriate;

2. that the Administrative Council shall take all such statements, estimates and priorities into account when reviewing, approving and deciding on the implementation of such resolutions and decisions within the limits of the budget of the Union.

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

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## PLENARY MEETING

### Note by the Secretary-General

#### INVITATIONS

1. Members of the Union

On 31 October 1983 invitations to send delegations to the Conference were sent to the Members belonging to Region 1 (with the exception of the Republic of South Africa) as well as Afghanistan and Iran. That same day the other Members were informed that the Conference was to be held.

The Annex to this document lists the replies received to date.

2. United Nations, specialized agencies

On 1 November 1983, invitations to send observers to the Conference were sent to the United Nations\*) and to the following specialized agencies :

- United Nations Educational, Scientific and Cultural Organization (UNESCO)\*)
- International Civil Aviation Organization (ICAO)\*\*)

3. Regional telecommunication organizations (Article 32 of the Convention)

On 1 November 1983, invitations to send observers to the Conference were sent to the following regional telecommunication organizations :

- African Postal and Telecommunications Union (UAPT)\*\*)
- Arab Telecommunication Union (ATU)
- Asia-Pacific Telecommunity (APT)
- Inter-American Telecommunications Conference (CITEL)
- Panafrican Telecommunication Union (PATU)

---

\*) Has replied that it would not be able to send an observer.

\*\*) Has accepted the invitation

R.E. BUTLER  
Secretary-General

Annex : 1

ANNEX

COUNTRIES WHICH HAVE ANNOUNCED THEIR PARTICIPATION IN THE CONFERENCE

(in French alphabetical order)

(position on 26 October 1984)

Albania (Socialist People's Republic of)	Denmark
Algeria (People's Democratic Republic of)	Egypt (Arab Republic of)
	United Arab Emirates
Germany (Federal Republic of)	Spain
Angola (People's Republic of)	Ethiopia
Saudi Arabia (Kingdom of)	Finland
Austria	France
Bahrain (State of)	Gabonese Republic
Belgium	Ghana
Benin (People's Republic of)	Greece
Botswana (Republic of)	Guinea (Republic of)
Bulgaria (People's Republic of)	Hungarian People's Republic
Burundi (Republic of)	Iran (Islamic Republic of)
Cameroon (Republic of)	Iraq (Republic of)
Central African Republic	Ireland
Cyprus (Republic of)	Israel (State of)
Vatican City State	Italy
Comoros (Islamic Federal Republic of the)	Jordan (Hashemite Kingdom of)
Congo (People's Republic of the)	Kenya (Republic of)
	Kuwait (State of)
Ivory Coast (Republic of the)	Lesotho (Kingdom of)



Libya (Socialist People's Libyan Arab Jamahiriya)	German Democratic Republic
Liechtenstein (Principality of)	Romania (Socialist Republic of)
Luxembourg	United Kingdom of Great Britain and Northern Ireland
Madagascar (Democratic Republic of)	Rwandese Republic
Malawi	San Marino (Republic of)
Mali (Republic of)	Senegal (Republic of)
Malta (Republic of)	Sweden
Morocco (Kingdom of)	Switzerland (Confederation of)
Mauritania (Islamic Republic of)	Swaziland (Kingdom of)
Monaco	Tanzania (United Republic of)
Mozambique (People's Republic of)	Chad (Republic of)
Niger (Republic of the)	Czechoslovak Socialist Republic
Norway	Tunisia
Oman (Sultanate of)	Turkey
Uganda (Republic of)	Union of Soviet Socialist Republics
Netherlands (Kingdom of the)	Yemen (People's Democratic Republic of)
Poland (People's Republic of)	Yugoslavia (Socialist Federal Republic of)
Portugal	
Qatar (State of)	Zaire (Republic of)
Syrian Arab Republic	Zambia (Republic of)

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

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PLENARY MEETING

Note by the Secretary-General

NOTIFICATION TO INTERNATIONAL ORGANIZATIONS

1. In agreement with the Administrative Council and in application of Nos. 349 and 372 of the Convention, those international organizations which seemed likely to be interested in the work of the Conference were notified that the Conference was to be held.
2. Formal applications for admission to the Conference have been received from :
  - International Association of Broadcasting (AIR)\*)
  - International Radio and Television Organization (OIRT)
  - Arab States Broadcasting Union (ASBU)
  - Union of National Radio and Television Organizations of Africa (URTNA)
  - European Broadcasting Union (EBU)
  - International Air Transport Association (IATA)
3. Pursuant to No. 351 of the Convention, the Conference is requested to decide whether these organizations are to be allowed to participate in an advisory capacity.

R.E. BUTLER  
Secretary-General

---

\*) Formerly : Inter-American Association of Broadcasters.

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
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Note by the Secretary of the Conference

LOSS OF THE RIGHT TO VOTE

Under the Nairobi Convention, 1982 :

1) Non signatory Members which have not acceded to the Convention are not entitled to vote at Conferences\*);

2) A Member loses its right to vote when it is in arrears in its payments to the Union for so long as the amount of its arrears equals or exceeds the amount of the contribution due from it for the preceding two years (see No. 117 of the Convention).

At present, for one or other of the above reasons and until such time as their situation is rectified, the following Members do not have the right to vote :

Country (in French alphabetical order)	In arrears in the payment of contributions	Non signatories which have not acceded to the Convention
CAPE VERDE (Republic of)	x	
CENTRAL AFRICAN REPUBLIC	x	
COMOROS (Islamic Federal Republic of the)	x	x
DJIBOUTI (Republic of)		x
UNITED ARAB EMIRATES		x
GUINEA-BISSAU (Republic of)	x	x
LIBERIA (Republic of)	x	x
MAURITIUS		x
MAURITANIA (Islamic Republic of)	x	
SIERRA LEONE	x	x
SUDAN (Democratic Republic of the)	x	
CHAD (Republic of)		x

\*) Under No. 178 of the Convention, a signatory government which fails to deposit an instrument of ratification does not lose its right to vote until the end of a period of two years from the date of entry into force of the Convention.

J. JIPGUEP

Secretary of the Conference

For reasons of economy, this document is printed in a limited number. Participants are therefore kindly asked to bring their copies to the meeting since no additional copies can be made available.

**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

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CAPE VERDE (Republic of)	x	
CENTRAL AFRICAN REPUBLIC	x	
COMOROS (Islamic Federal Republic of the)	x	x
DJIBOUTI (Republic of)		x
UNITED ARAB EMIRATES		x
GUINEA-BISSAU (Republic of)	x	x
LIBERIA (Republic of)	x	x
MAURITIUS		x
MAURITANIA (Islamic Republic of)	x	
SIERRA LEONE	x	x
SUDAN (Democratic Republic of the)	x	
CHAD (Republic of)		x

\*) Under No. 178 of the Convention, a signatory government which fails to deposit an instrument of ratification does not lose its right to vote until the end of a period of two years from the date of entry into force of the Convention.

R.E. BUTLER  
Secretary-General

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**REGIONAL BROADCASTING  
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PLENARY MEETING

Note by the Secretary-General

REPORT BY THE INTERNATIONAL FREQUENCY REGISTRATION BOARD  
TO THE SECOND SESSION OF THE REGIONAL ADMINISTRATIVE CONFERENCE  
FOR FM SOUND BROADCASTING IN THE VHF BAND (REGION 1 AND CERTAIN  
COUNTRIES CONCERNED IN REGION 3)

At the request of the International Frequency Registration Board,  
I transmit the attached IFRB Report for the information of the Conference.

R.E. BUTLER  
Secretary-General

Annex : 1

A N N E X

REPORT BY THE INTERNATIONAL FREQUENCY REGISTRATION BOARD  
TO THE SECOND SESSION OF THE REGIONAL ADMINISTRATIVE CONFERENCE  
FOR FM SOUND BROADCASTING IN THE VHF BAND (REGION 1 AND CERTAIN  
COUNTRIES CONCERNED IN REGION 3)

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REPORT BY THE INTERNATIONAL FREQUENCY REGISTRATION BOARD  
TO THE SECOND SESSION OF THE REGIONAL ADMINISTRATIVE  
CONFERENCE FOR FM SOUND BROADCASTING IN THE VHF BAND  
(REGION 1 AND CERTAIN COUNTRIES CONCERNED IN REGION 3)

1. INTRODUCTION

1.1 In its Resolution No. 510, the World Administrative Radio Conference (Geneva, 1979), considering that the primary allocation to the broadcasting service in Region 1 had been extended from 87.5 - 100 MHz to 87.5 - 108 MHz and that the band 100 - 108 MHz was allocated in some countries to the mobile, except aeronautical mobile (R), service and also to the fixed service, resolved that a regional conference, to take place in two sessions, should be convened to draw up an agreement for Region 1 and the countries concerned in Region 3 and an associated plan for sound broadcasting in the band 87.5 - 108 MHz for Region 1 and for parts of Afghanistan and Iran contiguous with Region 1. WARC-79 also invited the Administrative Council to take the necessary steps for convening the conference.

1.2 The First Session of the Regional Administrative Conference for FM Sound Broadcasting in the VHF band (Region 1 and certain countries concerned in Region 3) was held in Geneva from 23 August to 17 September 1982 and, in compliance with its agenda, prepared a report for the Second Session of the Conference.

1.3 At its 38th session, the Administrative Council, in Resolution No. 896, decided that the Second Session of the Conference would be held in Geneva from 29 October to 7 December 1984 and adopted its agenda.

1.4 The First Session of the Conference assigned a number of tasks which are set out in the Report to the Second Session together with a detailed work programme and schedule. Despite the large number of requests and the diversity and complexity of the tasks assigned to it, the Board has made every effort to perform the work within the time-limits set. The present document contains a report by the Board on its activities concerned with the preparation of the Second Session.

2. TASKS ASSIGNED TO THE IFRB BY THE FIRST SESSION OF THE CONFERENCE

2.1 The activities and tasks to be performed by the IFRB are defined in general in Resolutions B and D. They cover the appropriate provisions throughout the Report to the Second Session. In Chapter 7 and Annexes F, G, H, I and J, in particular, are described the details concerning the procedures and execution of the workload. A general overview of this workload is as follows:

- (i) theoretical network planning with different channel distributions over the European area and the Middle East and African areas;
- (ii) identification of sound broadcasting (BC) and television (BT) stations to be protected according to Resolution No. 510 (WARC-79);



2.1 (contd.)

- (iii) establishment of the Inventory of requirements submitted by administrations;
- (iv) preparation of the computer programs needed for data capture and the validation, analysis of the plan and synthesis, as well as all the programs needed to perform compatibility calculations with television stations or aeronautical radionavigation services (ILS/VOR);
- (v) execution of appropriate programs with respect to the first, second and third preliminary analyses prior to the Second Session;
- (vi) publication of the Inventory, corrected Inventory and corresponding results on microfiche and paper.

3. SCHEDULE OF ACTIVITIES

3.1 The workload given to the IFRB had to be accomplished in the period between the two sessions and a time schedule was established which proved very demanding. The procedure to be followed is described in Chapter 7 of the Report and includes the following important time-limits:

<u>31 December 1982</u>	Dispatch by IFRB of a circular-letter with instructions necessary for theoretical lattice planning accompanied by forms for presentation of requirements (A, A1, A2, B, C) and appropriate description of format for requirements sent on magnetic tape.
<u>1 October 1983</u>	Invitation to Administrations to submit their requirements.
<u>1 January 1984</u>	Telex reminder sent to Administrations.
<u>31 January 1984</u>	Date limit for presentation of requirements.
<u>30 April 1984</u>	Publication of the complete Inventory in microfiche form and on separate printout for each Administration.
<u>30 June 1984</u>	Date limit for submission of corrections limited to material errors related to the Inventory published in April.
<u>July 1984</u>	Execution of first preliminary analysis.
<u>31 July 1984</u>	Publication of corrected Inventory and results of first preliminary analysis on microfiche and separate printout.
<u>30 September 1984</u>	Date limit for modifications proposed by Administrations, limited to changes in characteristics of requirements initially communicated and intended to improve the plan.

3.1 (contd.)

October 1984

Execution of second/third analysis.  
Presentation of results (second/third analysis) and  
IFRB Report to the Conference.

4. PRESENTATION OF REQUIREMENTS (IFRB Circular-letter No. 529 of  
15 December 1982)

4.1 Distribution of theoretical lattice points

4.1.1 For initial planning purposes, based on the use of theoretical lattices, the First Session adopted the principle of lattices orientated over plane surfaces and requested the IFRB to prepare more accurate maps to an appropriate scale.

4.1.2 Because the linear translation from a plane surface to the sphere is impossible, the IFRB was faced with a complex problem to reach a satisfactory solution for the required lattice distribution using only the reference points adopted by the Conference. Having made a detailed study, the IFRB was able to prepare the required maps by making a distribution of the lattice apexes over the spherical surface using the orientation given in the Report to the Second Session. Some distortion of the lattice as a consequence of its distribution over a spherical surface and of the size of the surface was unavoidable. However, at the edge of the planning area, this distortion did not exceed 7% (Annex 11 to IFRB Circular-letter No. 529).

4.1.3 To enable Administrations to select appropriate frequencies on the basis of the lattice planning method, the geographical maps referred to in Note 2 of Annex F to the Report to the Second Session were drawn up (Annex 10 to IFRB Circular-letter No. 529) and the apexes of the two different types of lattices calculated over the whole planning area. The coordinates for these apexes were given in Annex 12 to IFRB Circular-letter No. 529.

4.1.4 This task was accomplished within the specified time-limit and explanations with necessary instructions given in IFRB Circular-letter No. 529, dispatched on 15 December 1982. Upon receipt of these calculations, Administrations were able to assign appropriate frequencies to their requirements.

4.2 Presentation of requirements (Forms A, A1, A2)

4.2.1 The forms to be used by Administrations for presentation of their requirements were originally published in the Report to the Second Session and again with the necessary instructions in IFRB Circular-letter No. 529.

4.2.2 Three Forms (A, A1 and A2) were to be used for submission of requirements for frequency assignments.

4.2.3 The IFRB also designed a format to be used for requirements submitted on magnetic tape (Annex 9 to IFRB Circular-letter No. 529).

4.3      Indication of aeronautical radionavigation stations  
          (Forms B and C)

4.3.1      As decided by the First Session, when establishing the new frequency assignment plan in the band 87.5 - 108 MHz, special attention should be paid to the aeronautical radionavigation services.

4.3.2      Consequently, technical limitations were adopted for the sound broadcasting (BC) service in order to provide satisfactory conditions and acceptable levels of interferences (spurious components and intermodulation products) for ILS (Instrument Landing System) and VOR (VHF Omnidirectional Radio range) equipment.

4.3.3      During the course of these studies, Administrations were invited to communicate to the IFRB, by means of fully completed Forms B and C, a list of aeronautical radionavigation stations possibly affected and their relevant test points. The IFRB would then execute the corresponding compatibility program to identify the type and level of interference.

4.3.4      The radionavigation file was created on the basis of the Forms B submitted by Administrations before 1.2.1984. The list of ILS/VOR stations was dispatched with IFRB Circular-letter No. 579 of 30 April 1984.

5.      DATA ENTRY AND PROCESSING BY THE IFRB

5.1      Submission of requirements by Administrations

5.1.1      On 15 October 1983, Administrations were invited to present their requirements according to the Report to the Second Session.

5.1.2      On 1 January 1984, Administrations were reminded that the time limit for submission of their requirements was 31 January 1984.

5.1.3      Within the time limit, 72 Administrations submitted their requirements on paper or on magnetic tape. It was noted that a certain number of Administrations communicated incomplete or incorrect data and that the decisions of the First Session and instructions given in IFRB Circular-letter No. 529 had not always been followed.

5.1.4      Twenty-nine Administrations either (1) did not reply within the specified time-limits or (2) did not send their requirements. Therefore, the IFRB has entered the necessary data on behalf of these Administrations, according to Chapter 7.2 of the Report. For two Administrations, no reference data existed.

5.1.5      Although such a high absence of minimal entries had not been foreseen by the First Session, every effort has been made by the IFRB to respect the deadlines imposed by the Conference.

5.1.6      In addition, 35 Administrations submitted completed Forms B (approximately 1500) relating to the aeronautical radionavigation service.

5.1.7 Supplementary data, including test points for the aeronautical radio-navigation stations ILS/VOR which may be affected, had to be submitted at a later stage (30 June 1984) using the Form C, as indicated in the Report. The IFRB entered these data in a special radionavigation file to be used for compatibility calculations during the second preliminary analysis.

## 5.2 Software for data capture, validation and publication

5.2.1 A series of complex computer programs has been prepared for the computerised operations involving incoming data.

5.2.2 A program for data capture was set up for "on-line" data capture in interactive mode. The appropriate screens based on Forms A, A1, A2 and B were created to make the entry operation simple and fast.

5.2.3 For the purpose of data validation, 144 possible tests were foreseen. Logical limit values for certain parameters were entered by the IFRB in order to identify possible inconsistencies. By means of this procedure, all entries (manual and on tape) were validated, confirmed, modified or rejected if the parameters concerned did not meet the appropriate conditions.

5.2.4 The format for presentation to Administrations of the Inventory of requirements is described in IFRB Circular-letter No. 579 of 30 April 1984. One assignment per page was published with the complete data submitted by Administrations and validated by the IFRB. In cases of inconsistency or missing data, appropriate messages including action by the IFRB were shown on the separate printed list.

## 5.3 Missing data, tentative values

5.3.1 As already indicated, the instructions given in IFRB Circular-letter No. 529 were not always followed by Administrations. Data of fundamental importance were missing, in particular, the variation of effective antenna height.

5.3.2 It was further noted that, in the absence of the required antennae diagrams and incomplete antennae characteristics (box 12), there were not sufficient data to make precise calculations. All possible measures were undertaken by the IFRB to obtain the missing data within the time-limits. In the absence of an answer from the Administration concerned, IFRB entered tentative values for those parameters which were essential for calculations (e.g. coordinates, polarisation, system, effective antenna height). These values were corrected later by administrations.

5.3.3 When the indicated frequency was not in conformity with the adopted planning method (100 kHz spacing), it was modified by the IFRB and the Administrations concerned informed. This was the case for four Administrations.

5.3.4 For an additional twenty-seven Administrations (see Annex C), the IFRB assigned approximately 5000 frequencies on the basis of the Africa Plan, Geneva, 1963, with basic characteristics as they appear in the Plan (station name, coordinates, maximum effective radiated power, polarisation, effective antenna height). The system assigned was stereo.

5.3.5 In the case of two Administrations (Afghanistan\*) and Mongolia), the IFRB made an appropriate choice of frequencies and other parameters for a minimum number of requirements on the basis of the theoretical lattice planning method.

5.3.6 Administrations were informed and invited to make further comments. No comments were received within the time-limit before the first preliminary analysis.

5.4 Publication of the Inventory of requirements  
(IFRB Circular-letter No. 579)

5.4.1 The basic Inventory of requirements contains approximately 47,000 requirements, submitted by Administrations within the agreed time-limits, and entered on behalf of 103 Administrations including requirements without frequency assignments and all low-power stations with maximum effective radiated power < 100 W.

5.4.2 The status of assignments, which has been assigned to all requirements which met the conditions prescribed in the Report to the Second Session, is shown by the symbol (MIFR) or (ST61), respectively.

5.4.3 The format for presentation of requirements is explained in detail in IFRB Circular-letter No. 579, dispatched on 30 April 1984, together with the complete Inventory published in microfiche form and sent in duplicate to all Administrations (see Annex A). The Inventory of each Administration's requirements was also published separately on paper with one assignment per page and sent in duplicate to Administrations. Administrations were invited to submit their corrections, to be limited to material errors only, on one copy of the printout. The date limit for submission of corrections was 30 June 1984, as indicated in the Report to the Second Session.

5.5 Dispatch of microfiche readers

Following a decision of the First Session, the General Secretariat of the ITU provided each Administration with two microfiche readers, portable type INFORMANT II. They were dispatched to Administrations on 15 April 1984, together with necessary instructions for their use. Some Administrations have indicated that they did not receive them.

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\*) The Administration of Afghanistan submitted their requirements on 16 October 1984.

6. CORRECTED INVENTORY (IFRB Circular-letter No. 586)

6.1 Principles, time-limits

6.1.1 According to the procedures adopted in the Report to the Second Session, corrections were to be limited to material errors only. By 30 June, 10,471 such correction forms had been received. An additional 5000 forms with major modifications, including proposed additions, were left pending for entry during the September period or for submission directly to the Second Session for further consideration and action.

6.1.2 The corrections were entered and the appropriate validation programs applied. The corrected assignments were annotated with an appropriate remark.

6.2 Publication of corrected Inventory

6.2.1 The complete corrected Inventory was published in microfiche form and dispatched in duplicate to Administrations on 31 July 1984 together with IFRB Circular-letter No. 586. On a separate printed list, forwarded to Administrations on 13 August 1984, were published only those assignments which had been corrected.

6.2.2 IFRB Circular-letter No. 586 also contained all necessary information concerning the procedure to be followed prior to the Second Session.

7. ANALYSIS AND SYNTHESIS PROGRAMS

7.1 General

7.1.1 The analyses and synthesis programs represent the software basis prepared by the IFRB according to the Report to the Second Session, e.g.:

- a) software for analysis of the Plan on the site was used during the first and second analyses, as indicated in Chapter 7.2 of the Report to the Second Session;
- b) software for analysis at the test points was used for compatibility calculation of the television stations operating in the band 87.5 - 100 MHz;
- c) software was developed for the purpose of spectrum occupancy analysis in terms of EuF diagrams. These diagrams were prepared after the first preliminary analysis for each unsatisfactory assignment and may be used on request during the Second Session in the foremost priority planning method (see Annex H to the Report to the Second Session) for exceptional cases only;
- d) software for calculation of the coverage area was developed to be used during the Conference only upon request;

7.1.1 (contd.)

- e) software for complying with frequency planning constraints permitting the identification of incompatibilities at the initial stage of the planning procedure;
- f) software for ILS/VOR compatibility calculation was developed by an Administration and adapted by the IFRB to the ITU computer and, as required by the First Session, was used during the second analysis.

7.1.2 A description of the complete software package developed by the IFRB to be used during the Second Session is given in Annex E, which will be published as an addendum to this Report.

7.2 Technical criteria

7.2.1 All the software developed is based on the technical criteria according to the Report to the Second Session. This concerns in particular the propagation curves, protection ratios and ILS/VOR compatibility criteria, which may be changed by the Second Session.

7.2.2 However, with regard to the propagation curves and their extrapolation procedure for an effective antenna height higher than 1200 m and lower than 37.5 m, a rational approach has been used (see paragraph 7.2.4) since the instructions given in the Report relating to this particular item were ambiguous and could have lead to difficulties; the CCIR Report to the Second Session (Addendum No. 1 to Document No. 5) also contained information on this subject.

7.2.3 To avoid any inaccurate results during the first and second analyses prior to the Second Session, the IFRB has adopted the procedure described below, which is submitted to the Second Session for consideration.

7.2.4 Description of extrapolation approach

7.2.4.1 Transmitting antenna heights above 1200 m: To obtain field-strength values corresponding to effective transmitting antenna heights in excess of 1200 m, the field strength at a distance of  $x$  km from the transmitter may be taken to be the same as the field strength given by the curve at a distance of  $(x + 70 - 4.1\sqrt{h_1})$  km for a transmitting antenna height of 300 m. As this extrapolation is only applicable to transhorizon distances, its use should be limited to distances beyond  $x = (4.1\sqrt{h_1} + 70)$  km. For distances between 100 km and  $x = (4.1\sqrt{h_1} + 70)$  km, it may be assumed that the field strength exceeds that for 1200 m by the same amount as at  $x = (4.1\sqrt{h_1} + 70)$  km calculated in accordance with the above procedure. For smaller distances this increment should be determined by linear interpolation between 0 db at 20 km and the height-dependent value at 100 km distance. The extrapolation is subject to the condition that the free-space field is not exceeded.

7.2.4.2 The method contained in the Report to the Second Session of the Conference was derived from a procedure which is only valid for transhorizon distances. At distances within the horizon, the procedure tends to lead to excessive field-strength values. Example: for  $h_1 = 1210$  m and  $x = 100$  km, the field strength resulting from Figure 2.1 (Chapter 2, Report to the Second Session) would be 64 dB, i.e. 16 dB above the 1200 m curve.

7.2.4.3 Transmitting antenna heights below 37.5 m: Additional curves for transmitting antenna heights of 20 m and 10 m were derived from the 37.5 m curve by applying correction factors of -5 dB and -11 dB for distances up to 25 km, and of 0 dB in both cases for distances in excess of 250 km, with linear interpolation between these values for intermediate distances. To obtain field-strength values corresponding to effective transmitting antenna heights ( $h_1$ ) of less than 10 m, the values derived for 10 m were used.

7.2.4.4 The method contained in the Report to the Second Session of the Conference results in propagation curves which, for tropospheric propagation (Figures 2.2 to 2.9) and for distances in the range between 50 km and 100 km show - particularly for  $h_1 = 10$  m - an increase of the extrapolated field strength with the distance. Apart from there being no justification for such a distance dependence on technical or physical grounds, an extrapolation based on this rule might lead to difficulties in the iterative process of determining the coverage range of a transmitter.

7.3 Based on studies carried out by the CCIR (IWP 5/5) regarding the extreme super-refractivity conditions in the Eastern Mediterranean (> 30 E) and in the area from Shatt-al-Arab to the Gulf of Oman, the Board prepared an appropriate version for an analysis program which may be used if the Conference so decides.

## 8. REFERENCE SITUATION

### 8.1 Reference list of sound broadcasting (BC) and television (BT) stations

8.1.1 According to the Report to the Second Session (Annex I), the IFRB established a Reference List of BC and BT stations which are situated in the coordination area with countries using the band 87.5 - 100 MHz and operating in accordance with the Regional Agreement, Stockholm, 1961. According to Resolution No. 510 (WARC-79), they should be protected against deterioration of their service area.

8.1.2 The IFRB established the first list of such stations according to the Report and on the basis of the available files (MIFR and Stockholm, 1961 Plan) early in August 1983, which was sent to Administrations under IFRB Circular-letter No. 557 of 30 September 1983.

8.1.3 A second revised list was published in April 1984 (IFRB Circular-letter No. 575 of 10 April 1984) when the Stockholm, 1961, and MIFR files were updated after successful application of the Regional Agreement, Stockholm, 1961, procedure had been concluded on 1 December 1983.

8.1.4 Finally, a Corrigendum to the second Reference List was published as Annex 6 to IFRB Circular-letter No. 586 and sent to Administrations in September 1984, together with the results of the Reference Situation.



8.1.5 In the case of one Administration, the Board was not notified before the closing date that the procedure of the Regional Agreement, Stockholm, 1961, had been successfully applied before 1 December 1983, as requested by the First Session (Report to the Second Session, Annex I, paragraph 6). Consequently, these assignments are submitted to the Second Session of the Conference in a separate list.

## 8.2 Test points (Form D)

8.2.1 Administrations were invited to communicate to the IFRB the geographical position of test points, according to paragraph 5, Annex I, for all stations indicated in the Reference List.

8.2.2 The test points (maximum 12) should be defined within the existing service area and within the national territory. For this purpose, the IFRB drew up the appropriate Form D. There were 1893 sound broadcasting and 314 television frequency assignments indicated in the Reference List which meant approximately 15,000 test points for which calculations were to be made.

## 8.3 Reference File

8.3.1 This file contains all sound broadcasting and television stations which should be protected and all those which appear to be potential interferers.

8.3.2 This file also contains other sound broadcasting stations, which appear as potential interferers and which were selected on the basis of the Stockholm, 1961, Plan updated on 1.12.84, with the addition of Afghanistan, Iran, Turkey (>40E).

## 8.4 Reference Situation calculation

8.4.1 According to Annex I (paragraph 8), the usable field strength (Eu) was calculated at the test points communicated by Administrations for all stations appearing in the Reference List. The technical criteria used were those given in Chapter 4 of the Report to the Second Session.

8.4.2 The Reference Situation was established separately for television video carriers and television audio carriers because the protection curve was not clearly defined in the Report.

## 9. PRELIMINARY ANALYSES

### 9.1 First preliminary analysis

9.1.1 The first preliminary analysis, as described in Annex G of the Report to the Second Session, was made in July 1984. Of the corrected Inventory of some 47,000 requirements, approximately 37,000 were included as the remaining 10,000 were low-power stations (< 100 W) or assignments without frequency.

9.1.2 For this first preliminary analysis, the usable field strength (Eu) on the site was calculated using both the power sum method (PSM) and the simplified multiplication method (SMM). Calculations were made using both methods, as no extra work was involved. The mean value of usable field strength (EuM) and the standard deviation ( $\delta$ ) of all the assignments of each administration was also calculated (see EXAMPLE 1).

9.1.3 The compatibility with television stations was calculated in order to identify at which test points, previously communicated by the administration concerned, the increase of usable field strength (Eu) was higher than 0.5 dB. Compatibility with television and sound broadcasting stations was calculated according to Annex I of the Report to the Second Session. Since both sound broadcasting as well as television stations could possibly be affected by stations appearing in the new Plan. Usable field strength (Eu) has been calculated twice. The reference value of usable field strength (Eur) was obtained during the first run based on the Reference File. A list of potential interferers, obtained during the second run, has been given at each test point and two values of usable field strength (Eur) and (Eu) were indicated. When the difference was higher than 0.5 dB, it was considered to be an unsatisfactory assignment. The main parameters of the wanted station, as they appear in the Reference File and the Official File, have also been given (see EXAMPLE 2).

9.1.4 For all those assignments which have a usable field strength (Eu) higher than the mean value (EuM) + 10 dB, a synthesis has been made to identify a possible better choice of frequency (Report to the Second Session, Annex G, paragraph 5.2). Spectrum occupancy may be seen on a particular site on the Eu/f diagram which was made for each unsatisfactory assignment. Basic parameters are also displayed. Arrows indicate the actual frequency as well as the frequency where the usable field strength (Eu) is minimal. It was also possible to recognize which other frequencies were proposed for the same site (where the Eu values are maximal) (see example in Annex D).

## 9.2 Presentation of results

The following results were published in IFRB Circular-letter No. 586 dated 31 July 1984:

- the results of the first preliminary analysis in microfiche form and separate printout for each Administration's requirements (Annexes 3A and 3B);
- the results of the synthesis for all unsatisfactory assignments according to the criteria established by the First Session (Annex 4);
- the results related to compatibility with sound broadcasting and television stations, published separately and sent to the administrations concerned.

EXAMPLE 1

WANTED

IFRB Serial No.	Admin.	Frequency	Country	Name	Polarization	System	Eu mean	Standard deviation	Usable field strength (PSM)	
[00] 00321901	[01] SUI	[14] 103.000	[03] SUI	[02] CHASSERAL	[07] H	[11] 4	[61] 100.7	[62] 9.4	[63] 83.4	[64] 89.9
[00] 00359201	[01] SUI	[14] 103.200	[03] SUI	[02] MORON	[65] 80.2	[66] 229	[67] 20	[68] +408	[69] H	[70] 4
00187501	D	103.100	SUI	ST. CHRISCHONA	75.6	224	67	+326	H	4
02318001	F	103.100	F	BELLE GARDE	73.2	036	151	+900	H	4
00339001	SUI	103.100	SUI	GISLIFLUH	71.0	247	87	+334	H	4
00141301	D	103.000	D	GRUENTEN (SCHW. GRAT)	70.4	260	250	+661	H	4
00363601	SUI	102.800	SUI	NEUCHATEL	67.8	009	22	+142	H	4
[00] 00329901	[01] SUI	[14] 102.900	[03] SUI	[02] DELEMONT	[72] 113.1	[73] 043	[00] 00363601	[01] SUI	[14] 102.800	[03] SUI
00348401	SUI	103.100	SUI	JAUN	109.9	164	00359201	SUI	103.200	SUI
00309601	SUI	103.100	SUI	BALSTHAL	103.0	069	00187501	D	103.100	SUI
					Nuisance field	Azimuth	Distance	Percentage over sea	Effective antenna height	ERP (horizontal)
										ERP (vertical)

UNWANTED

[00] 02778901	[01] IRL	[14] 94.400	[03] IRL	[02] MULLAGHINISH	[07] M	[11] 4	[61] 84.6	[62] 10.1	[63] 62.3	[64] 66.5
[00] 04045501	[01] G	[14] 94.300	[03] G	[02] WENVOE	[65] 58.5	[66] 280	[67] 407	[68] 48	[69] +250	[70] M
04056601	G	94.500	G	DIVIS	57.9	217	358		+331	M
02812401	IRL	94.300	IRL	NIRE VALLEY	45.7	240	108		+150	M
02807801	IRL	94.500	IRL	WEXFORD	43.1	259	180		+200	M
04034001	G	94.300	G	BLACK HILL	43.1	220	552	16	+368	M
02740901	IRL	94.200	IRL	CASTLEBAR	39.9	175	215	12	+371	M
[00] 02807801	[01] IRL	[14] 94.500	[03] IRL	[02] WEXFORD	[72] 74.5	[73] 077	[00] 04030801	[01] G	[14] 94.400	[03] G
02807501	IRL	94.600	IRL	YOUGHAL	73.7	093	04045501	G	94.300	G
04089301	G	94.400	G	PORTMADOC	72.7	070	04056601	G	94.500	G
	Admin.	Frequency	Country	Name	Nuisance field	Azimuth	IFRB Serial No.	Total number of stations affected		
								[74] 10		

AFFECTED

## EXAMPLE 2

PROTECTED STATION

Same station in the Requirements File

Station in Reference File

		Frequency	Country	Name	Longitude	Latitude	Heff	Polarization ↓	System	ERP (horizontal)	ERP (vertical)	#001
[00]	[01]	[14]	[03]	[02]	[04]		[69]	[07]	[11]	[70]	[71]	
00752301	YUG	93.700	YUG	KOPAONIK	020E50	43N15	+600	H	1	16.99		
	YUG	93.700	YUG	KOPAONIK	020E50	43N16	+600	H	4	16.98		

TEST POINT				Coordinates of test point		Usable field strength based on Ref. situation			Usable field strength based on draft Plan			
[00]	[01]	[14]	[03]	[02]	[04]	020E03	43N36	[64r]	82.1	[64]	88.3	
00748001	YUG	93.700	YUG	BESNA KOBILA	[65]	[66]	[67]	[69]	[07]	[11]	[70]	[71]
00552501	YUG	93.700	YUG	MAJEVICA	81.4	304	211	+591	M	4	16.02	13.01
00785001	YUG	93.800	YUG	TMOR	81.3	137	137	+501	M	4	13.80	7.78
01874102	BUL	93.600	BUL	KJUSTENDIL	64.5	087	57	+712	H	4	13.01	
03633102	ROU	93.700	ROU	TURNU MAGURELE	63.5	303	270	+531	H	4	18.73	
00788202	YUG	93.700	YUG	KIKINDA	53.6	268	391	+148	H	4	14.77	
					52.6	187	246	+150	H	4	10.00	
				[04] 020E53		44N09		[64r]	78.6	[64]	84.7	
00552501	YUG	93.700	YUG	MAJEVICA	[65]	[66]	[67]	[69]	[07]	[11]	[70]	[71]
00748001	YUG	93.700	YUG	BESNA KOBILA	78.4	103	162	+582	M	4	13.80	7.78
00788202	YUG	93.700	YUG	KIKINDA	77.6	329	208	+598	M	4	16.02	13.01
03810102	ROU	93.800	ROU	MOLDOVA NOUA	58.5	169	186	+150	H	4	10.00	
01874102	BUL	93.600	BUL	KJUSTENDIL	54.6	224	89	+197	H	4	3.01	
03633102	ROU	93.700	ROU	TURNU MAGURELE	51.5	323	261	+376	H	4	19.37	
					49.9	278	325	+158	H	4	14.77	

IFRB Serial No.	Admin.	Frequency	Country	Name	[04]	021E42	43N55	[64r]	71.0	[64]	85.9	
[00]	[01]	[14]	[03]	[02]	[65]	[66]	[67]	[69]	[07]	[11]	[70]	[71]
00748001	YUG	93.700	YUG	BESNA KOBILA	84.1	344	157	+595	M	4	16.02	13.01
00552501	YUG	93.700	YUG	MAJEVICA	70.0	105	232	+579	M	4	13.80	7.78
03809102	ROU	93.700	ROU	EIBENTHAL	56.7	206	78	+150	H	4	7.64	
01874102	BUL	93.600	BUL	KJUSTENDIL	56.4	333	204	+456	H	4	17.36	
03633102	ROU	93.700	ROU	TURNU MAGURELE	56.3	274	258	+154	H	4	14.77	
00788202	YUG	93.700	YUG	KIKINDA	54.1	154	230	+150	H	4	10.00	

POTENTIAL INTERFERERS IN THE DRAFT PLAN

ENI	Azimuth	Distance	Heff	Pol.	System	ERPH	ERPv
-----	---------	----------	------	------	--------	------	------

- 13 -  
CARR-1(2)/32-E

### 9.3 Addendum to the Inventory

9.3.1 According to the Report to the Second Session, an Addendum to the Inventory was to be established, prior to the second preliminary analysis made early in October, on the basis of modifications proposed by administrations and submitted to the IFRB by 30 September 1984.

9.3.2 Modifications were limited to changes to the characteristics of the requirements originally communicated to the IFRB and intended to improve the Plan. Any increase of total e.r.p. to existing assignments, significant changes of geographical coordinates, replacements or additional requirements to the corrected Inventory, as well as all those modifications communicated after 1 October 1984 were excluded from the Addendum and will be submitted to the Conference for further consideration.

9.3.3 The Board has followed the instructions given in the Report to the Second Session, page 68, sub-paragraphs k) and l), referring to footnote 1) on the same page. Consequently, all such modifications, as mentioned above, are kept in separate files and are submitted to the Conference for further consideration.

### 9.4 Second/third analysis

9.4.1 The Board decided to merge the second and third analyses. All modifications, described above, in the Addendum to the Inventory and all low-power stations were included. Calculations were made during the last week in October. Other technical criteria remain unchanged, as required by the Report to the Second Session, and compatibility checks have been made with respect to other services, such as television (BT) and aeronautical radionavigation services (ILS/VOR).

9.4.2 The results of the calculations for the requirements of each administration are printed on paper and will be communicated individually to each administration. The complete results will be published on microfiche, one copy per delegation.

9.4.3 A compatibility check of television stations was repeated, as during the first preliminary analysis. For this purpose, the values of usable field strength (Eu) obtained at test points were compared again with the Eu values at the same test points previously obtained during the Reference Situation calculations. The results are printed on paper and will be communicated individually to each administration. The complete results will be published on microfiche, one copy per delegation.

9.4.4 Compatibility calculations between sound broadcasting and aeronautical radionavigation services (ILS/VOR) were made using the test points previously submitted by Administrations. For some Administrations, in Africa and the Middle East, the data and test points were provided by the International Civil Aviation Organization (ICAO). All ILS/VOR aeronautical radionavigation stations communicated to the IFRB by 30.6.1984 have been included in the calculations. The results are printed on paper and will be communicated individually to each administration. The complete results will be published on microfiche, one copy per delegation.

## 10. PLANNING CONSTRAINTS

10.1 A final check was made with respect to the frequency planning constraints, as required by the Report to the Second Session (Annex G, paragraph 4). A separate incompatibility program was applied on the Inventory in order to identify any inconsistencies.

10.2 Transmitters having identical site coordinates without adequate frequency separation were identified and the results published.

## 11. COMPATIBILITY BETWEEN BROADCASTING STATIONS AND STATIONS OF THE AERONAUTICAL RADIONAVIGATION SERVICE

### 11.1 General

11.1.1 The decision of the World Administrative Radio Conference (Geneva, 1979) to generally extend the FM broadcasting band to 108 MHz put broadcasting and aeronautical radionavigation services in adjacent frequency bands. It was recognised that this might lead to problems of interference and the First Session of the Regional Administrative Radio Conference for the planning of the VHF-FM Broadcasting Service in the band 87.5 - 108 MHz (Geneva, 1982) determined the technical constraints to be used in planning the new band for the broadcasting service.

11.1.2 At the First Session, the potential interactions between FM broadcasting and the aeronautical services were examined in the light of existing CCIR texts and various contributions made by Administrations to the Conference. The Conference adopted certain technical criteria for broadcasting frequency assignment planning purposes which were intended to reduce to a minimum the likely interference to the aeronautical safety services from future FM broadcasting stations.

11.1.3 The methods of calculation were given and the procedure for elimination of incompatibilities for use by Administrations when evaluating sharing conditions between the broadcasting service and the aeronautical services was described. The same report contains the provisions for IFRB calculations of incompatibilities between broadcasting and ILS or VOR stations as well as for the publication of the results of these calculations. A schedule was set up for operations to be carried out by Administrations and the IFRB between the two Sessions and criteria for compatibility calculations and procedure for resolution of incompatibilities were described.

11.1.4 The First Session asked the IFRB to apply the software to be supplied by an Administration. On behalf of the French Administration, Télédiffusion de France (TDF) provided the IFRB with a program for compatibility calculations between the VHF BC stations and the ILS or VOR radionavigation stations. The assistance provided by the Administration of France was highly appreciated by the Board.

11.1.5 The cooperation of ICAO in supplying the data to be used for compatibility calculations in the African and Middle East areas was also very much appreciated by the Board.

11.2 Description of the program provided by TDF\*)

11.2.1 The IFRB carried out the compatibility calculations using the TDF program. The calculation criteria are described in Annex J to the Report to the Second Session.

11.2.2 The test points are given by Administrations and the calculation is limited to the test points in line-of-sight from the broadcasting station.

11.2.3 The IFRB calculated the field strength of every broadcasting station in the band 87.5 - 108 MHz at the test points within the coordination contour of the aeronautical radionavigation station and compared them with given minimum field strength values. The IFRB identified those broadcasting transmitters which cause at the test point an interference exceeding a given limit and those broadcasting stations which are likely to contribute to intermodulation interference.

11.2.4 The IFRB has published the results of calculations in the form which was determined in Annex J to the Report to the Second Session.

11.2.5 For the calculations indicated above, a simple version of the ILS/VOR software was applied in accordance with the Report (Annex J). In addition, at the request of the IFRB, the French Administration also has supplied a detailed version of the same program. Should the Conference accept the results carried out on the basis of Recommendations CC and DD (Report to the Second Session), this detailed version could be used where special considerations arise.

12. COMPATIBILITY BETWEEN BROADCASTING STATIONS AND STATIONS  
OF THE FIXED AND MOBILE SERVICES

12.1 In accordance with the Report to the Second Session (Annex K), the assessment of incompatibilities with the fixed and mobile services shall be made at the boundary between Regions 1 and 3 applying the sharing criteria contained in Chapter 5 of the Report to the Second Session.

12.2 Since no information was received from the Administrations of Afghanistan and the Islamic Republic of Iran with regard to the fixed and mobile services, the IFRB has made no incompatibility tests with respect to these services. Furthermore, no software is available in this regard.

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\*) A detailed description of the ILS/VOR compatibility program is available in the IFRB Secretariat for consultation.

13. FORM FOR PRESENTATION OF MODIFICATIONS TO THE INVENTORY DURING THE SECOND SESSION

13.1 For the purpose of the Conference, the IFRB has prepared a special form (see Annex B) to be used for any further modifications, additional assignments or deletions to the present Inventory.

13.2 This form should be completed according to the instructions given so that the IFRB may make appropriate entry of any modifications required.

14. LIST OF TASKS ACCOMPLISHED BY THE IFRB

The following is a list of documents published, tasks completed and activities performed between the First and Second Sessions:

- 14.1 IFRB Circular-letter No. 529 of 15 December 1982
- Calculation of theoretical lattice distribution and its position over the sphere
  - Forms A, A1, A2 (for submission of requirements), B and C (relating to incompatibilities)
- 14.2 IFRB Circular-letter No. 557 of 30 September 1983
- Calculation of coordination zone and identification of BC and BT stations to be protected according to Resolution No. 510 (WARC-79)
- 14.3 Updating of MIFR and ST61 Plan to 1 December 1983
- 14.4 Data entry with 42,000 requirements (January - April 1984)
- 14.5 Planning and entry with 5000 requirements (24 countries) (April 1984)
- 14.6 Validation of entries, assignment of status (ST61, MIFR) (April 1984)
- 14.7 Reformatting of MIFR and ST61 Plan to the Conference format (April 1984)
- 14.8 Entry of radionavigation stations ILS and VOR (April 1984)
- 14.9 IFRB Circular-letter No. 575 of 18 April 1984
- Establishment of Reference List with BC and BT stations to be protected
- 14.10 Establishment of Reference File (April 1984)



- 14.11 IFRB Circular-letter No. 579 of 30 April 1984
  - Dispatch of Inventory on microfiche and separate printout
- 14.12 Entry of corrections (material errors) to Inventory, as proposed by Administrations (June-July 1984)
- 14.13 Run-off of first preliminary analysis (July 1984)
- 14.14 IFRB Circular-letter No. 586 of 31 July 1984
  - Publication of corrected Inventory as well as results of first preliminary analysis on microfiche and separate printout
- 14.15 Entry of test points (Form D) related to the Reference Situation (August 1984)
- 14.16 Publication of synthesis graphics for 4300 assignments which were either unsatisfactory or without frequency (August/September 1984)
- 14.17 Entry of test points (Form C) related to the aeronautical radio-navigation service as submitted by Administrations or ICAO (September 1984)
- 14.18 Entry of modifications (to an Addendum to the Inventory) as proposed by Administrations by 30 September 1984
- 14.19 Second/third analysis with all corresponding compatibility tests, such as ILS/VOR, BT/BC, planning constraints (October 1984)
- 14.20 Publication of results of second/third analysis (October 1984)
- 14.21 Development and testing of all software, as specified below, needed for execution of the tasks mentioned and which will be made available to the Conference (Administrations) (January-October 1984):
  - analysis on the site
  - analysis at the test points
  - synthesis
  - limited synthesis
  - coverage zone
  - planning constraints
  - compatibility with BT/BC stations
  - compatibility with ILS/VOR (as supplied by an Administration).

15. GENERAL OBSERVATIONS

15.1 The Board has completed all the tasks required by the Report to the Second Session, in accordance with the established time schedule, although the complexity and volume of the work proved to be greater than was foreseen at the time of the First Session.

15.2 Difficulties were encountered by the Board in meeting many of the target dates owing to administrations not adhering to the dates and procedures established by the First Session. Considerable extra correspondence was generated in order to overcome these difficulties.

15.3 A large number of modifications and additions have been received after the first analysis. These changes can only be considered by the Second Session and will be included in a computation run to be made during the first days of the Conference following consideration of the changes by the Conference.

15.4 As a conclusion, in the light of the experience gained with this Conference, the Board considers that it is essential for any planning conference of this size that

- a significant time lag between the two sessions be adopted;
- administrations adhere closely to the procedures and time-scales adopted by a first session.

Annexes: 5

[00] 01554301

#003534

[01] AUT	A304100	[03] AUT	[04] 013E24	47N26	[05] 1340	[11] 4	[15]
[02] EDEN PONGAU		[08] 000.100	000.000	000.000	[06] 045	[13] X	[21]
[14] 089.300		[07] H	[09] D	[10] 00480			

[12] 000.100	170	135-205	00050	[12A] 000	000.000	[12B]
000.030	70	035-105	00000	000	000.000	
000.030	270	235-305	00450	000	000.000	
000.000		000-000	00000	000	000.000	

	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°	150°	160°	170°
[31]	15	14	12	09	07	06	05	05	05	06	07	08	07	04	02	01	00	00
[32]	00400	00350	00350	00100	00000	00000	00000	00000	00075	00150	00100	00125	00200	00150	00350	00050	00300	00050

	180°	190°	200°	210°	220°	230°	240°	250°	260°	270°	280°	290°	300°	310°	320°	330°	340°	350°
[31]	00	01	02	04	07	08	07	06	05	05	05	06	07	09	12	14	15	15
[32]	00480	00125	00050	00200	00125	00250	00300	00400	00480	00450	00350	00300	00000	00000	00000	00000	00150	00200

[00] IFRB Serial No.	[03] Country	[04] Longitude/Latitude	[05] Altitude of site a.s.l.	[11] System	[15] Coordination
[01] Administration	[08] Maximum effective radiated power (e.r.p.)	[06] Height of antenna a.g.l.	[13] Antenna pattern	[21] Supplementary information	
[02] Name of transmitting station	[07] Polarization	[09] Directivity	[10] Max.eff. antenna height		
[14] Desired frequency					

[12] Radiation characteristics for a directive antenna	[12A] Sectors or directions of restricted e.r.p.	[12B] Sectors or directions with restricted effective antenna height
--	--	--

[31] Azimuthal variation of the total effective radiated power in the horizontal plane and of the effective antenna height

[32] Azimuthal variation of the effective radiated power of the horizontal component (HC) and the vertical component (VC) in the horizontal plane

[00] 01554301 (ST61)

[01] AUT	A304100	[03] AUT	[04] 013E24	47N26	[05] 1340	[11] 4	[15]
[02] EBEN PONGAU		[08] 0.100			[06] 45	[13] X	[21]
[14] 89.300		[07] H	[09] D	[10] +480			

[12] 000.100	170	135-205	+50	[12A]	[12B]
000.030	070	035-105	+0		
000.030	270	235-305	+450		

	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°	150°	160°	170°
[31]	15	14	12	9	7	6	5	5	5	6	7	8	7	4	2	1	0	0
[32]	+400	+350	+350	+100	+0	+0	+0	+0	+75	+150	+100	+125	+200	+150	+350	+50	+300	+50

	180°	190°	200°	210°	220°	230°	240°	250°	260°	270°	280°	290°	300°	310°	320°	330°	340°	350°
[31]	0	1	2	4	7	8	7	6	5	5	5	6	7	9	12	14	15	15
[32]	+480	+125	+50	+200	+125	+250	+300	+400	+480	+450	+350	+300	+0	+0	+0	+0	+150	+200

ANNEX A

CARR-1(2)/32-E

A N N E X B

FORM FOR NOTIFYING A MODIFICATION TO THE INVENTORY  
(CARR-1(2))

Admin. Serial No. |\_|\_|\_|\_|\_|\_|\_|\_|\_|

Actual status of requirement:

☐  
NEW

☐  
MOD\*

☐  
SUP\*\*

|\_|\_|\_|\_|\_|\_|\_|\_|\_|  
IFRB Serial No.

|\_|\_|\_|\_|  
Admin.

\_\_\_\_\_  
Signature:  
Head of Delegation

|\_|\_|\_|\_|  
(Box No.)

\_\_\_\_\_  
Date

---

FOR USE BY THE TECHNICAL SECRETARIAT

- Date of receipt . . . . .
- Chairman of Committee 4 . . . . .
- Data Supervisor . . . . .
- Date of processing . . . . .
- Remarks . . . . .
  
- Action      ☐ processed  
              ☐ returned

---

\*) By MOD is meant a change in one or more characteristics.

\*\*) By SUP is meant the complete deletion of a requirement.

[32]

0 10 20 30 40 50 60 70 80 90 100 110

120 130 140 150 160 170 180 190 200 210 220 230

240 250 260 270 280 290 300 310 320 330 340 350

Explanation of numbers appearing in square brackets

- [00] IFRB Serial Number
  - [01] Administration
  - [02] Name of transmitting station
  - [03] Country
  - [04] Coordinates
  - [05] Altitude of site a.s.l. (m)
  - [06] Altitude of antenna a.g.l. (m)
  - [07] Polarization
  - [08] Maximum radiated power (kW) in horizontal and vertical plane
  - [11] System
  - [14] Frequency (MHz)
  - [15] Coordination
  - [31B] Effective antenna height (m)
  - [32] Attenuation with respect to maximum value of ERP in horizontal and vertical plane (in dB)
-

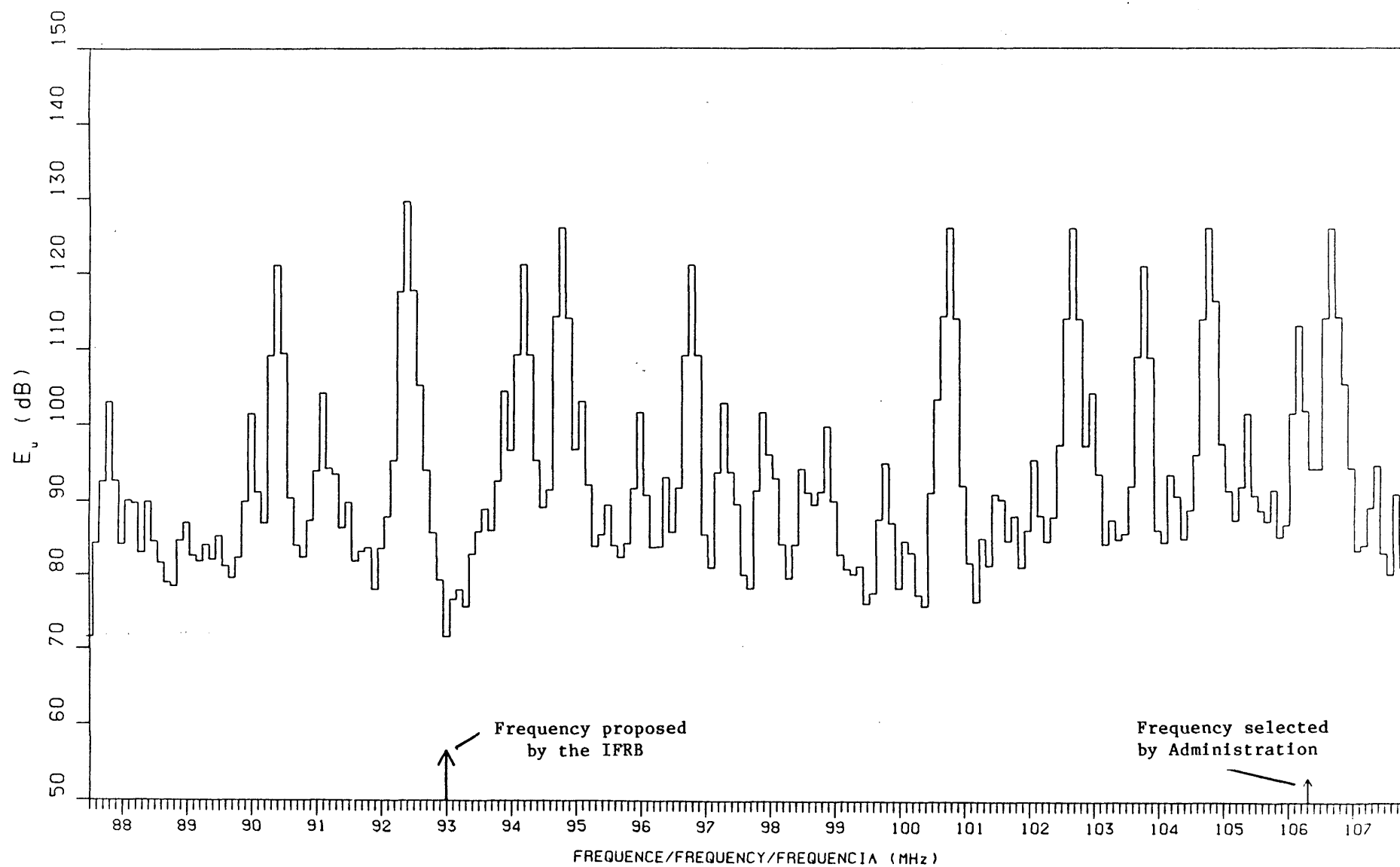
A N N E X C

LIST OF ADMINISTRATIONS WHICH HAVE NOT SUBMITTED REQUIREMENTS

(The IFRB has entered requirements for these  
Administrations in accordance with Chapter 7.2  
of the Report to the Second Session)

- (1) AFG Afghanistan (Democratic Republic of) (no reference data)
  - (2) AGL Angola (People's Republic of)
  - (3) BEN Benin (People's Republic of)
  
  - (4) CAF Central African Republic
  - (5) CME Cameroon (United Republic of)
  - (6) CPV Cape Verde (Republic of)
  
  - (7) DJI Djibouti (Republic of)
  - (8) GAB Gabonese Republic
  - (9) GHA Ghana
  
  - (10) GMB Gambia (Republic of)
  - (11) GNB Guinea-Bissau (Republic of)
  - (12) GNE Equatorial Guinea (Republic of)
  
  - (13) GUI Guinea (Revolutionary People's Republic of)
  - (14) HVO Burkina Faso
  - (15) LBR Liberia (Republic of)
  
  - (16) MAU Mauritius
  - (17) MDG Madagascar (Democratic Republic of)
  - (18) MNG Mongolian People's Republic (no reference data)
  
  - (19) NGR Niger (Republic of the)
  - (20) RRW Rwandese Republic
  - (21) SDN Sudan (Democratic Republic of the)
  
  - (22) SEY Seychelles (Republic of)
  - (23) SOM Somali Democratic Republic
  - (24) SRL Sierra Leone
  
  - (25) STP Sao Tome and Principe (Democratic Republic of)
  - (26) TCD Chad (Republic of)
  - (27) UGA Uganda (Republic of)
  
  - (28) YMS Yemen (People's Democratic Republic of)
  - (29) ZAI Zaire (Republic of)
-

A N N E X D



[00] 00963601 [01] E [02] BERJA

[03] E [07] H [11] 4 [14] 106.300



A N N E X E

DESCRIPTION OF SOFTWARE PACKAGE DEVELOPED BY THE IFRB  
IN ACCORDANCE WITH THE DECISIONS OF THE FIRST SESSION

(to be published as an addendum to this Report)

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 33-E  
23 October 1984  
Original : English

PLENARY MEETING

United Kingdom

PROPOSAL

SUMMATION OF MULTIPLE A1 INTERFERENCE TO AERONAUTICAL RECEIVERS

1. Introduction

The JIWP 8-10 Report states in paragraph 3.5.1.2, with regard to A1 mode interference, 'the second session of the Conference will need to decide on an appropriate method of calculation of the effective total FM broadcasting interference power'. This paper proposes such a method.

2. Multiple Sources of A1 Interference

A1 mode interference is a result of intermodulation between transmitters operating on different frequencies and feeding into a common antenna or closely spaced antennas. At the input to an aeronautical receiver, it is possible to have interference from multiple A1 mode intermodulation products (ips) if:

- a) the same (or a nearby) ip frequency is generated at separate broadcasting sites (see section 2).
- b) the same (or nearby) ip frequency is generated by more than one frequency combination at a single broadcasting site (see Section 3).

G/33/1 3. Summation of Interference Components

As the problem is simply one of summation of interference components at each of the fixed test points appropriate to a particular aeronautical station, the power sum method is the most appropriate. Each component to be included consists of the field strength of the interfering signal modified by the protection ratio appropriate to the frequency difference between that signal and the aeronautical frequency. This component is also known as the nuisance field:

$$NF = FSI + PR$$

where NF = nuisance field in dB(μV/m)

FSI = interfering field strength in dB(μV/m)

PR = appropriate protection ratio in dB

The power sum of N nuisance fields is given in the usual way by

$$NF \text{ Sum} = 10 \log_{10} \left( \sum_{i=1}^N \text{antilog} (NF_i/10) \right)$$

where NF<sub>i</sub> is the i<sup>th</sup> nuisance field in dB(μV/m).

This sum is then compared with the wanted field strength to determine if that particular test point is protected.

An alternative approach, based on the concept of protection margin is given in the Appendix.

G/33/2 4. AI Mode ip Generation at a Single Site

Where more than one frequency combination at a particular broadcasting site can give rise to ips on the same (or a nearby) frequency, the problem is basically one of measurement of the relevant ip levels. In general, it is not possible to determine the individual levels of ips when these have very close frequency spacings, but it is possible to determine the level of the composite resultant signal.

This measurement will provide a close approximation to a power summation of the individual components at a particular transmitter site and this sum should be used when calculating the interference effect of the ips involved. The protection ratio in this case is the one appropriate to the lowest frequency difference between the ips involved and the aeronautical frequency. The resultant nuisance field constitutes one component in the summation process described in Section 2 if interference from multiple sites needs to be taken into account.

Appendix : 1

Appendix

The impact of any single source of interference may be quantified as a protection margin, that is the difference (in dB) between the wanted field strength and the sum of an interference field and the appropriate protection ratio:

$$PM = FSW - (FSI + PR)$$

where PM = protection margin in dB

FSW = wanted field strength in dB( $\mu$ V/m)

FSI = interfering field strength in dB( $\mu$ V/m)

PR = protection ratio in dB

This is a powerful concept as it permits interference to be related to an easily recognised zero level - a positive protection margin represents a protected situation, a negative margin represents an unprotected situation.

Power summation of N protection margins is achieved by

$$PM \text{ Sum} = -10 \log \left( \sum_{i=1}^N \text{antilog} (-PM_i/10) \right)$$

where  $PM_i$  is the  $i$ th protection margin in dB, and

where both negative signs are necessary to preserve the sign convention adopted.

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 34-E  
23 October 1984  
Original : English

PLENARY MEETINGUnited Kingdom

## PROPOSAL

## BROADCASTING/AERONAUTICAL COMPATIBILITY CRITERIA - BI OFFSET CONDITIONS

1. Introduction

The JIWP, in S 4.25, recommended that further investigation be made to produce guidelines for the correction factors on the permissible broadcast signal level to be assumed for Type B1 interference relative to values for an 1/p at frequency coincidence.

2. Tests

The United Kingdom has undertaken a further series of tests using the following ILS/VOR receivers: Marconi 60 series, Collins 51RVIA, Narco 121 and Collins ILS70 (ILS only).

The tests conformed to the test conditions given in S 3.5.3 of the JIWP Report in that coloured noise in accordance with CCIR Recommendation 559-1 was used.

For the off-channel tests a frequency deviation of  $\pm 32\text{kHz}$  was used in accordance with CCIR Report 796-1, but for the on-channel tests the frequency deviation was  $\pm 3.2\text{kHz}$ . The choice of these two deviations was to simulate the worst conditions for on-channel and off-channel interference.

The wanted signal conditions for ILS and VOR were  $-89.5\text{dBm}$  and  $-82.5\text{dBm}$  respectively.

3. Results

The annexed results from the tests at two ILS frequencies (108.1 and 111.9MHz) and at 111.9MHz for VOR tests showed that the ILS and VOR receivers behaved in a similar manner and that their response can be represented by the correction factors applied to each broadcast components as in Table I.

TABLE I

B1 Offset correction factor per broadcast  
component for both ILS and VOR receivers

Offset (kHz)	$\pm 50$	$\pm 100$	$\pm 150$	$\pm 200$
Correction factor (dB)	7	15	21	21.2

G/34/1 4. Conclusions

The United Kingdom has undertaken a further series of measurements to investigate the values of correction factors to be used for the B1 offset conditions.

From these measurements it is recommended that the tentative values given in Annex VI to the JIWP Report for both ILS and VOR be replaced by those values for each broadcast component given in Table 1 above.

Annex : 1

Annex

Results of BI offset frequency measurements

Wanted Signal Characteristics	Frequencies (MHz)			Levels (dBm) of unwanted input signals							
				Rx A		Rx B		Rx C		Rx D	
	f <sub>1</sub>	f <sub>2</sub>	offset	N	W	N	W	N	W	N	W
ILS 108.1MHz Input level -89.5 dBm	105.1	101.9	-0.2		+0.5		+4.5		+5		+10
		101.95	+0.15		-1		+3		+5		+10
		102.0	-0.1		-5.5		-6.5		+10		+10
		102.05	-0.05		-13.5		-13.5		+10		+7.5
		102.1	0	-21.5	-20.5	-23.5	-20	-16	-17	-0.5	+3
		102.15	+0.05		-13.5		-14.5		+10		+7.5
		102.2	+0.1		-6.5		-8		+10		+10
		102.25	+0.15		-2.5		0		+4		+10
		102.3	+0.2		+1		+5.5		+4		+10
ILS 111.9 MHz Input level - 89.5dBm	106.9	101.7	-0.2		+4.5		+5		+10		+2.5
		101.75	-0.15		+4.5		+5		+10		+3.5
		101.8	-0.1		+1.5		-0.5		+10		+3.5
		101.85	-0.05		-7.5		-8.5		+10		-1.5
		101.9	0	-14.5	-12.5	-16.5	-14.5	-11	-12	-14	-9.5
		101.95	+0.05		-7.5		-10.5		+10		-3.5
		102.0	+0.1		+0.5		-2.5		+10		+1.5
		102.05	+0.15		+6.5		+3.5		+10		+2.5
		102.1	+0.2		+5.5		+5.5		+10		+2.5
VOR 111.9 MHz Input level -82.5 dBm	106.9	101.7	-0.2		+7		+9		+10	Receivers tested 1) Marconi 60 2) Collins 51 RV1A 3) Narco 121 4) Collins ILS 70	
		101.75	-0.15		+6.5		+8		+10		
		101.8	-0.1		+2.5		0		+8		
		101.85	-0.05		-6.5		-7.5		-2		
		101.9	0	-14.5	-10.5	-16.5	-13	-10	-11		
		101.95	+0.05		-6		-8		-3		
		102.0	+0.1		+2		-1.5		+6		
		102.05	+0.15		+6.5		+7.5		+10		
		102.1	+0.2		+6.5		+8		+10		

Column N : Coloured noise modulation with set-up deviation of  $\pm 3.2$  kHz  
 Column W : Coloured noise modulation with set-up deviation of  $\pm 32$  kHz

weighted in accordance  
with CCIR Rec. 559-1

Interference criteria determined by:

- i) Reduction of 7.5µA in meter deflection of 90µA - for ILS on receivers A, B, and D
- ii) Meter deflection of 7.5µA - for VOR on receivers A and B
- iii) Appearance of flag - for ILS and VOR on receiver C

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 35-E

23 October 1984

Original : English

## PLENARY MEETING

### United Kingdom

#### PROPOSAL

#### CRITERIA FOR SHARING BETWEEN THE SOUND BROADCASTING SERVICE AND THE LAND MOBILE SERVICE IN THE BAND 105 TO 108 MHz

##### 1. Introduction

The Administrative Council at its 38th session adopted Resolution No 896 which contains the agenda for the second session of the Regional Broadcasting Conference. Decides 2.3 requires that the second session adopt transitional procedures for bringing into service the assignments in the plan to enable normal operation of other services operating in accordance with a number of footnotes pertaining to the band 87.5 to 108 MHz.

This document details recent investigations conducted in the United Kingdom which suggest that the criteria detailed in Chapters 2 and 5 of the report to the second session require amendment, to permit the normal operation of land mobile services in the circumstances described below.

##### 2. Situation within the United Kingdom

The land mobile service in the United Kingdom operates on a permitted basis until 1996 in accordance with the provisions of footnote 587 of the Radio Regulations (Geneva 1982). This footnote applies to the band 104 to 108 MHz, however land mobile services in the United Kingdom are in practice limited to the sub-band 105 to 108 MHz, for base stations receivers which are frequently located at hill-top sites.

The propagation data given in chapter 2 is based on CCIR Recommendation 370-4 and is presented for the case of 50% of locations. Hill-top sites are unlikely to be average (50%) locations and will often be small percentage locations for which a correction factor is required as given by Figure 5 of CCIR Recommendation 370-4.

The criteria developed in Chapter 2 of the Report provide protection criteria adequate for narrow band land mobile receivers located in vehicles using a field strength to be protected of 15 dB ( $\mu\text{V/m}$ ). This same field strength however is required to be protected at the base station receiver in order to maintain symmetry in the performance of the two directions of transmission between base and mobile. Base station receivers are typically 18m above ground as against 3m for receivers in vehicles. Therefore in order to permit normal operation of the land mobile service in the United Kingdom there is a need to protect a field strength of 15 dB ( $\mu\text{V/m}$ ) at the higher heights and low percentage of locations represented by hill-top site base stations.



### 3. Propagation Considerations

A difficulty with using the location correction ratios given in Figure 5 of CCIR Recommendation 370-4 is that the percentage location value for a particular base station is not always known. An alternative approach is thus presented based on effective height which is intended to take into account antenna height above ground, location variability and distance dependence.

The propagation information relating to sharing considerations with the land mobile service is given in paragraph 2.3 of Chapter 2 of the report. Whilst this provides height gain factors applicable for 3m to 10m, no information is given for receiving antenna heights above 10m.

In order to obtain suitable height gain correction factors for such cases, a limited study was conducted using available propagation data for high open sites in the UK. Field strength measurements were compared with those predicted by CCIR Recommendation 370-4 and curves of height gain were produced (Figure 1) relating effective height to a receiving antenna height of 10m.

The curves are seen to exhibit some distance dependence as indicated by the gradual convergence at the longer distances; this will also depend on the nature of the path and the environment local to the receiving antenna. The measurement data do, however, indicate significant values of height gain, even at distances of 300 km, for raised, open sites typical of land mobile base stations. At shorter distances, a doubling of effective height will give a value approaching 6 dB for heights in excess of 10m.

### 4. Land Mobile Service Stations

The statistics of base station antenna heights in the south of the United Kingdom are:

	Above Ground	Effective
Lower Decile	8m	-18m
Lower Quartile	12	7
Median	18	63
Upper Quartile	28	154
Upper Decile	45	193

### G/35/1 5. Conclusions

The factors described in section 3 above indicate that the criteria in Chapters 2 and 5 of the report to the second session require additional material to cover the case of land mobile base stations operating at elevated sites in the band 105 to 108 MHz.

The United Kingdom therefore proposes that the second session should use the information given in Figure 1 when considering the protection of the land mobile base stations in the band 105-108 MHz until 1995.

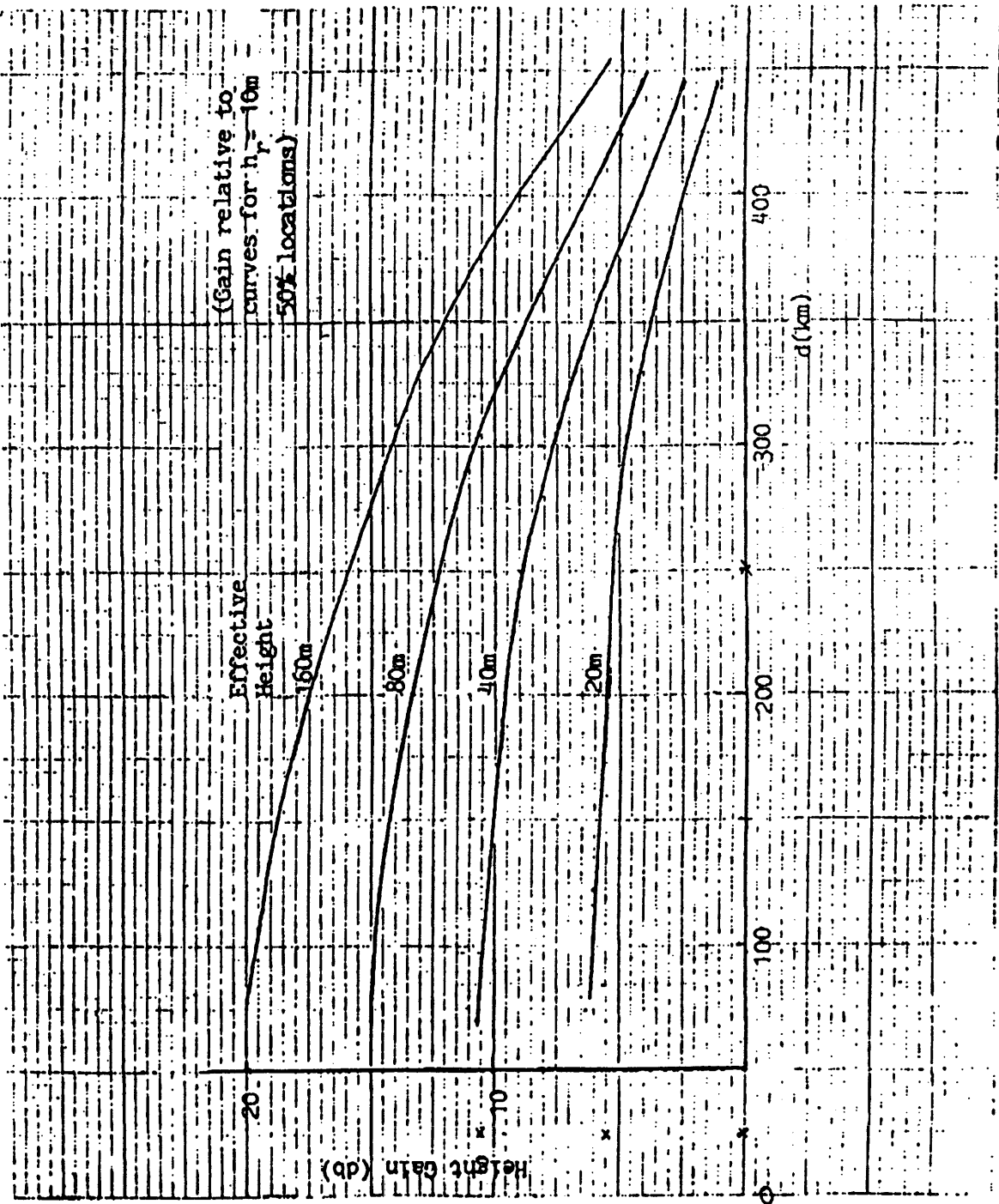


FIGURE 1

Height gain factors : band 87.5 - 108 MHz

Broadcasting transmitter to base station receiver

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 36-E  
26 October 1984  
Original : English

## PLENARY MEETING

United Kingdom

### PROPOSAL

#### THE TECHNICAL BASES FOR MODIFICATION PROCEDURES FOR THE BAND II PLAN

##### 1 INTRODUCTION

- G/36/1 In addition to broadcast-broadcast compatibility the Modification Procedures developed at the Band II Planning Conference should encompass provisions for sharing with the permitted services in the same frequency band and ensure compatibility with the aeronautical radionavigation and other services in the adjacent bands.
- G/36/2 With respect to the permitted services in Band II, it is assumed that the need for their protection will be covered by the transitional procedures to be agreed at the Conference (Agenda Item 2.3).
- G/36/3 Thus the modification procedures adopted must ensure that coordination is initiated for the services in the adjacent bands as well as broadcasting services where there is a possibility of interference.
- G/36/4 If a coordination distance method is used, it can be shown that an indicated need for coordination between broadcasting services is more stringent than an indicated need for coordination between the broadcasting and aeronautical services at the boundary of a country and hence the latter case is covered by the former. The same applies to the mobile services in the lower adjacent band.

This contribution expands on the modification procedures to ensure broadcast - broadcast compatibility. Appropriate methods should be used to ensure compatibility between broadcasting and other services once coordination has been initiated.

##### 2 PROPOSED METHOD

- G/36/5 It is proposed to retain the principle of coordination distance as currently used in the Geneva and Stockholm Plans for Band II and to add guidelines for acceptable limits of interference in relation to the reference situation as determined in §11 of Annex G of the First Session Report.

- G/36/6 i) More detailed tables of coordination distances over land and sea paths should be produced at the Second Session to ensure protection of a field strength of [54]dBuV/m at a country's boundary based on the parameters contained in the Annex.
- G/36/7 ii) If coordination is necessary then an administration must accept an interference contribution which gives a resultant usable field strength of no more than 54dBuV/m. When the usable field strength of a station is already, or becomes, greater than 54dBuV/m an administration must accept an interference contribution which gives no more than 0.5dB increase in usable field strength over that in the reference situation or the value when that station was first included in the Plan.
- The usable field strength is to be calculated [by the method developed at the Second Session.]
- G/36/8 iii) An increase of more than 0.5dB in usable field strength is open to negotiation. Improved calculation methods may then be included
- G/36/9 iv) Reasons should be given for
- a rejection
  - or a request for a modification to the original proposal.

ANNEX

BASIS AND USAGE OF COORDINATION DISTANCE TABLES

Basis:

- G/36/10 (i) To ensure protection of co-channel stereo reception at a field strength of 54 dB ( $\mu\text{V/m}$ ) without any allowance for receiving antenna directivity or polarization discrimination.
- G/36/11 (ii) Protection to be provided such that the distance is the greater of those derived from:
- (a) 1% time propagation curves (as agreed by the Second Session) associated with the protection ratio of Rec. 412 for "tropospheric interference" (between transmissions of systems with  $\pm 75$  kHz maximum deviations).
  - (b) 50% time propagation curves associated with corresponding protection ratios for continuous interference.
- G/36/12 (iii) Separate Tables to be provided for overland paths and those over cold, warm, and hot seas.
- G/36/13 (iv) Distances to be tabulated for:
- (a) Effective heights of 10m, 37.5m, 75m, 150m, 300m, 600m, 1200m and 1800m.
  - (b) Effective radiated powers from 1 MW to 1 W at intervals of 5 dB in the sequence 1 MW, 300 kW, 100 kW, 30 kW etc.

Use:

- G/36/14 (i) Linear interpolation for mixed paths on the basis  
 $d' = d_1 + x(d_2 - d_1)$   
where:  $d'$  = **coordination distance for the mixed path**  
 $d_1$  = " " " propagation path of type 1  
 $d_2$  = " " " " " " " 2  
 $x$  = proportion of total propagation path of type 2  
and where  $d_2 > d_1$
- G/36/15 (ii) For antenna heights and powers not corresponding to those in the table linear interpolation shall be used. Heights and powers (dBW) **lower than the minimum values** shall be treated as if at this minimum.
-

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 37-E  
26 October 1984  
Original : French

PLENARY MEETING

France

COMPATIBILITY BETWEEN THE BROADCASTING AND  
AERONAUTICAL RADIONAVIGATION SERVICES - DESCRIPTION OF A  
METHODOLOGY FOR COMPUTER ANALYSIS OF AERONAUTICAL INCOMPATIBILITIES

1. Introduction

The computer program based on the methodology described below results from close collaboration between TDF and the French Civil Aviation Authority. The main purpose was to automate completely the processing of incompatibilities between FM broadcasting and aeronautical radionavigation.

On the basis of the list of broadcasting stations and the aeronautical list (in accordance with the ICAO lists), the program provides realistic information on interference likely to affect airborne equipment.

This is achieved by maintaining the principle of checking compatibility at several fixed test points, as recommended by the first session; however, there are sufficient points to preclude the need to make special arrangements for broadcasting stations inside the protected volume. Furthermore, the quantity of data obtained provides an almost perfect screen display of the problems liable to arise at any point in the protected volume (ILS or VOR).

2. Methodology

2.1 Identical processing of broadcasting stations irrespective of whether they are located in the protected volume

The method advocated by the first session consisted in applying a hypothetical clearance distance (100 or 300 m) for a broadcasting station located in the ILS or VOR protected volume; this leads to inconsistencies, for the following reasons :

- this method renders the problem acute when the broadcasting station is located in the protected volume. This makes frequency planning impossible when an FM station in the region studied is thus situated;
- it creates practical problems for the assessment of type B1 interference since account must be taken of all test points, including the hypothetical test points located vertically above the stations inside the protection area.

The advantage of a method which uses only fixed test points is that the processing is quite independent of the number and location of FM stations inside the protected volume.

2.2      The ideal solution : the graphical method

A graphical method would be ideal, since it would permit precise display of the incompatibility problems arising at any point of the protected volume. However, this would be a laborious method of studying a large number of broadcasting stations. Furthermore, computer processing would be much too cumbersome, since this type of assessment is unsuited to computerization (calculation time, memory size, etc. ...).

G/37/1 2.3      Proposed method

The method proposed is similar to the graphical method. The test points are sufficiently numerous and well located to enable all interference risks to be detected. Moreover, due to a judicious distribution of test points, it provides valid information on the whole protected volume.

The distribution of test points applies the concept of cut-off value, the level below which a station can no longer contribute to a type B1 intermodulation product likely to cause interference to the aeronautical system.

This cut-off value makes it possible to calculate the maximum distance beyond which a broadcasting station can no longer create type B1 interference. Owing to this distance, the test point distribution can be optimized so as to cover the entire protection volume.

The following results are thus obtained :

a) ILS : 10 test points

The annexed diagram indicates the proposed distribution, illustrating the greater density in the critical landing area. In the case of VORs, the ICAO in FCB Report No. 8 decided to draw a distinction between landing VORs (TVOR) for which the whole area must be protected, and route VORs for which air route protection is sufficient.

b) TVOR : 45 test points distributed equally throughout the service area, which is circular.

c) VOR : from 50 to 100 test points depending on the length and number of routes to be protected in the VOR area.

It should be emphasized that the program provides for automatic generation of the test points, particularly in the case of VORs. In this case, the air routes are determined by linking the relevant VOR to its neighbours and eliminating the most improbable paths.

Additional note on the "cut-off" value

Joint Interim Working Party 8-10/1 adopted the concept of cut-off value in the application of planning criteria for B1 type interference. Document 26 demonstrates that the cut-off phenomenon does not exist in reality but that it is replaced by a value below which the interference created by a desensitization mechanism produces effects which predominate over intermodulation phenomena.

This demonstrates the existence of a limit level beyond which a broadcasting station no longer contributes to detectable type B1 interference due to the predominance of type B2 interference.

However, it makes no difference whether the cut-off value or the "limit level" is used to determine the test points.

### 3. Criteria applied

The software was designed with a view to easy adaption to the three types of criteria defined :

- by the first session of the RABC-FM;
- by Joint Interim Working Party 8-10/1;
- by the contributions submitted by France to the second session.

However, the present software has been optimized (number and position of test points ...) to deal with problems of incompatibility using the following criteria :

#### 3.1 Type A1 interference

The criteria advocated by Joint Interim Working Party 8-10/1 are applied.

#### 3.2 Type A2 interference

TDF laboratory measurements have shown that, for frequency differences greater than 150 kHz, type A2 interference gives way to type B2 interference (desensitization). Since the minimum separation between FM and aeronautical bands is 200 kHz, France has proposed in Document 27 that this type of interference may be disregarded.

#### 3.3 Type B1 interference (intermodulation in airborne receiver)

Measurements have confirmed the frequency dependency as suggested by Joint Interim Working Party 8-10/1 in its Annex V. Document 24 proposes new threshold criteria dependent on the three intermodulation frequencies.

Other experiments have been performed to study cases of non-zero separation between intermodulation product and aeronautical frequencies. (Offset between wanted and interfering frequencies.) New correction factors derived from these measurements are suggested in Document 25.

#### 3.4 Type B2 interference (Desensitization)

The criteria suggested by Joint Interim Working Party 8-10/1 are applied in this case. It may be noted that type B2 interference, which is very localized, often predominates over A2 and B1. This should prompt administrations to pay close attention to the siting of broadcasting stations, in order to avoid the risk of overflights by aircraft.



4. Conclusion

The advantage of software based on the methodology described in this contribution is that it is both simple and very complete. One enormous asset of a methodology based on fixed test points is that it facilitates a sequential examination of stations, thus avoiding the need for repetitive tests, and allows numerous test points without having any marked effect on calculation times.

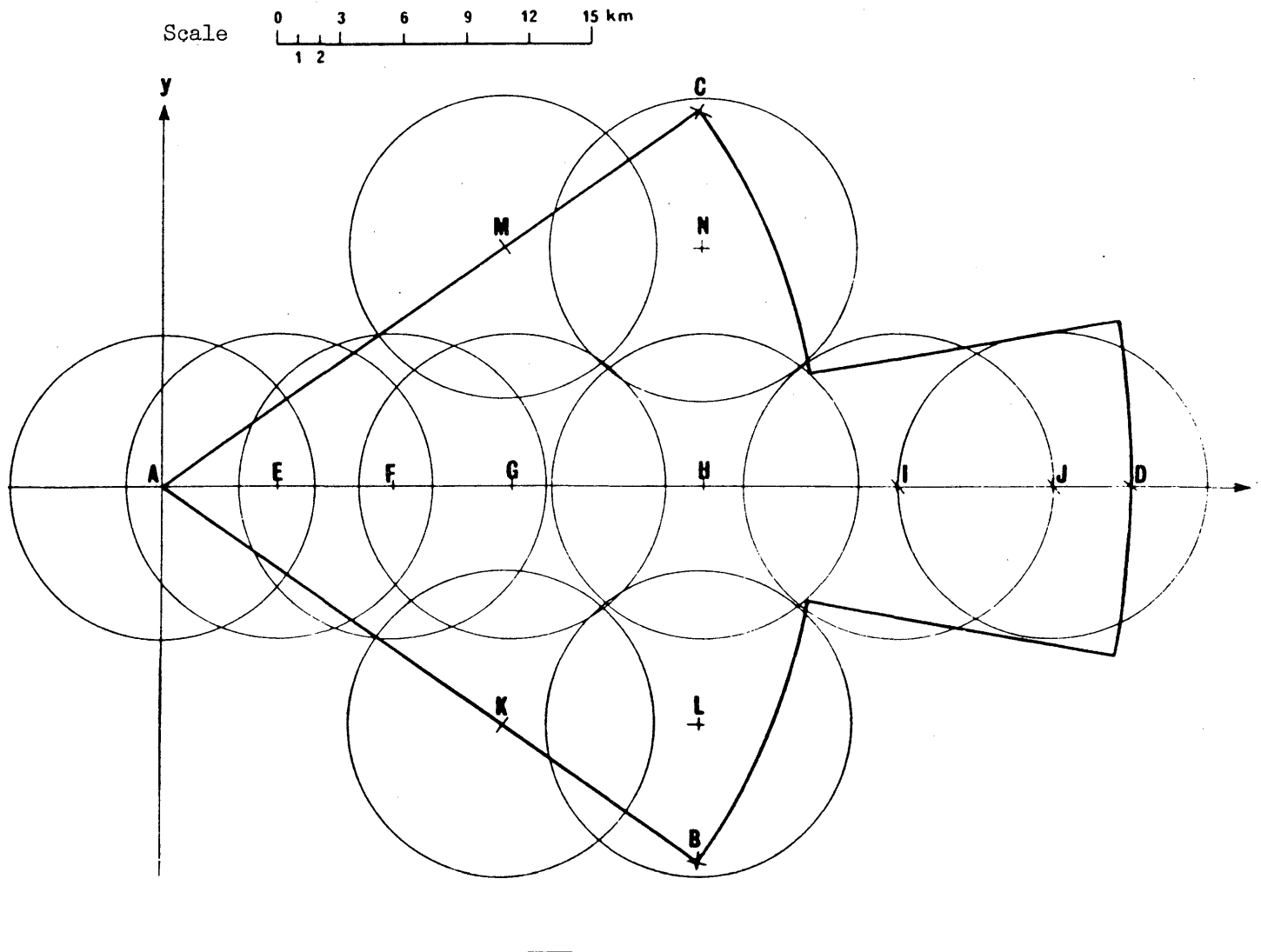
Since all functions are automated, the time required to prepare the analysis is reduced to a minimum, leaving more time to examine results, which are generally easy to interpret. A few special problems require more careful (generally graphic) study, but with this software the number of such cases has been kept as low as possible.

Annex : 1

ANNEX

DISTRIBUTION OF TEST POINTS

Point	A	E	F	G	H	I	J	K	L	M	N	D	B	C
$\rho$ km	0	5,6	11,1	16,7	26	35,2	42,6	20	28,3	20	28,3	46,3	31,5	31,5
$\theta$ deg	0	0	0	0	0	0	0	-35°	-24°	+35°	+24°	0°	-35°	+35°
height m	0	300	300	300	600	600	600	300	600	300	600	600	300	300



INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Addendum 1 to  
Document 38-E  
6 November 1984  
Original : English

PLENARY MEETING

MINUTES  
OF THE  
FIRST PLENARY MEETING

Please add the attached Annex to the minutes of the first Plenary Meeting.

ANNEX 1

ADDRESS BY THE SECRETARY-GENERAL

Madam Chairman,  
Ladies and Gentlemen;

Allow me to congratulate you, Madam Chairman, most sincerely on your outstanding election to guide the work of this second session of the Region 1 Sound Broadcasting Conference. Your competence, wisdom, understanding and contribution to the work of the Union is well known. We know well, too, your long contribution to broadcasting and radio frequency planning for this important public service. The modesty, tact and brilliance for which you are well known, combined with your thorough familiarity with the work before us, will, I am sure, guide this Conference to a successful conclusion. In your election tribute has again been paid to your country which since the early days of broadcasting has been one of the leaders in this field with a very extensive network of stations. Your task as Chairman is by no means going to be an easy one but I am convinced that it will be made lighter by the support you will be receiving from the Vice-Chairman and other members of the Steering Committee, whom I congratulate most cordially on their election.

Madam Chairman, Ladies and Gentlemen, it gives me great pleasure to welcome you once again, on behalf of my colleagues and on my own behalf, to this international city of Geneva. We hope the six weeks you spend here will be filled with rewarding hours of friendship and work that will culminate in the establishment of a new and effective Regional Plan for FM sound broadcasting in the VHF band in Region 1 and certain countries concerned in Region 3. I am sure the establishment at this Conference of a Regional Plan for FM broadcasting in the VHF band will serve to facilitate the accelerated and harmonious development of broadcasting in both continents of Region 1. Radio is the most pervasive of the mass media. For many countries it is virtually the only medium by which most of the population living outside the main cities and particularly in the rural areas can be reached. The development of broadcasting is obviously of prime importance for national socio-economic advancement.

Extensive preparation has been made for the work of this second session. Following the establishment by the first session of the technical bases for the evolution of a plan, the CCIR has made available, as requested, further technical information. This includes for your consideration revised technical parameters and criteria concerning compatibility of the broadcasting service with the aeronautical radionavigation service. In addition, most administrations have notified their frequency requirements in the form established at the first session after verifying their compatibility with the aeronautical radionavigation and aeronautical R mobile service stations already in service. The total number of frequency requirements is about 47,000. The sheer volume of these requirements calls for substantial analytical work. However, as in the case of work connected with past planning conferences, the computer facilities of the ITU have been organized to carry out the various processes involved. The required software had also been developed by the IFRB with the assistance of certain administrations who had undertaken similar work at the national level. The IFRB has finalized an inventory of the requirements for administrations. This inventory takes into account modifications made by administrations to their initially notified requirements with a view to resolving incompatibilities identified by the Board as a result of interference calculations. The Board has submitted a report to the present session which includes information on various actions taken in regard to the inventory of requirements, and several analyses conducted along with findings on incompatibilities that remain. I believe that the intersessional work required of administrations and the permanent organs of the Union has been duly

completed. Taking as a base the technical parameters established by the first session together with the supplementary study reports, what remains to be done is in essence to find the necessary accommodations or indeed adjustments to the proposed frequency requirements and their service characteristics so that all incompatibilities are resolved and a plan thus established, together with the associated procedures.

I am aware that this is certainly not going to be a simple task. The weeks ahead will call for much effort, understanding and cooperation. However, the Union has a distinguished record of international collaboration that extends over a period of nearly 120 years. The spirit of cooperation which has animated the work of the Union in the past will, I am sure, continue to prevail and bring this Conference to a successful conclusion.

Finally, I should add that the Union's computing capacity will be available on a priority basis for carrying out further processing. Published results of the computations could also be made available by the General Secretariat on magnetic tape or other appropriate medium if any participating administration so desires on a cost-reimbursement basis.

Madam Chairman, Ladies and Gentlemen, in closing I should like to assure you that the Secretariat and all of us at the Headquarters are at your disposal and ready to help you in every possible way with the supporting services we are in a position to provide. We wish you every success in your work.

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# CONFÉRENCE RÉGIONALE DE RADIODIFFUSION

(SECONDE SESSION)

GENEVE, 1984

Corrigendum 1 au  
Document 38-F

14 novembre 1983

Original : anglais

## SEANCE PLENIERE

### PROCES-VERBAL DE LA PREMIERE SEANCE PLENIERE

Dans le paragraphe 11.4, remplacer les chiffres "75 - 100 MHz"  
par "87,5 - 100 MHz".

Corrigendum 1 to  
Document 38-E  
14 November 1984  
Original : English

## PLENARY MEETING

### MINUTES OF THE FIRST PLENARY MEETING

In paragraph 11.4, please replace the figures "75 - 100 MHz"  
by "87.5 - 100 MHz".

Corrigendum 1 al  
Documento 38-S  
14 de noviembre de 1984  
Original : inglés

## SESIÓN PLENARIA

### ACTA DE LA PRIMERA SESIÓN PLENARIA

En el párrafo 11.4, sustitúyase las cifras "75 - 100 MHz"  
por "87,5 - 100 MHz".

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 38-E  
5 November 1984  
Original : English

PLENARY MEETING

MINUTES

OF THE

FIRST PLENARY MEETING

Monday, 29 October 1984, at 1450 hrs

Chairmen : Mr. F.R. NEUBAUER (Netherlands)  
Dean of the Conference

later : Miss. M. HUET (France)

Subjects discussed :

Documents

- |   |             |
|---|-------------|
| 1. Opening by the Dean of the Conference                                | -           |
| 2. Election of the Chairman of the Conference                           | -           |
| 3. Election of the Vice-Chairmen of the Conference                      | -           |
| 4. Address by the Secretary-General                                     | -           |
| 5. Conference structure   | DT/1(Rev.1) |
| 6. Election of the Chairmen and Vice-Chairmen of the Committees         | -           |
| 7. Composition of the Conference Secretariat                            | -           |
| 8. Allocation of documents to Committees                                | DT/3(Rev.1) |
| 9. Invitations to the Conference  | 29          |
| 10. Notifications sent to international organizations                   | 30          |
| 11. General organization of the work of the Conference                  | -           |
| 12. Date by which the Credentials Committee must submit its conclusions | -           |
| 13. Working hours of the meetings of the Conference                     | -           |
| 14. Financial responsibilities of administrative conferences            | 28          |

1. Opening by the Dean of the Conference

1.1 Mr. F.R. Neubauer (Netherlands), Dean of the Conference, declared open the second session of the Regional Broadcasting Conference.

The Conference was of the greatest importance to the countries of Region 1 and certain countries concerned in Region 3, since it would determine the possibilities for VHF broadcasting over future decades. It was necessary that the Conference set up a Plan and rules and procedures for as many uses as possible without interference, particularly to the other services still having allocations in the broadcasting bands and allocations adjacent to those bands. Accordingly, a great deal of discussion would be required to find optimum solutions for the years to come.

He thanked the delegates for inviting him to open the Conference and wished it every success in achieving its goals.

2. Election of the Chairman of the Conference

2.1 The Dean of the Conference said that, at the meeting of Heads of Delegations held that morning, it had been decided by general consensus to propose the nomination of Miss. M. Huet (France) to the post of Chairman of the Conference.

Miss. M. Huet (France) was elected Chairman of the Conference by acclamation and took the Chair.

2.2 The Chairman thanked the delegations present for the honour they had done to her and her delegation by electing her to preside over the Conference. She would make every effort to ensure that in six weeks' time delegates would return home with a Plan and Agreement satisfactory to all.

3. Election of the Vice-Chairmen of the Conference

3.1 The Secretary-General said that the Heads of Delegations had decided at their meeting to propose that the following delegates should serve as Vice-Chairmen :

Mr. Herbert GÖTZE (German Democratic Republic)

Mr. Francis IMOUNGA (Gabon)

Mr. Hamad Yahya AL-KINDY (Oman)

A representative of the Mediterranean area of Africa, to be announced at a subsequent Plenary Meeting.

The proposal of the Heads of Delegations was approved unanimously.

4. Address by the Secretary-General

4.1 The Secretary-General delivered the address reproduced in Annex 1.

5. Conference structure (Document DT/1(Rev.1))

The proposed structure was approved with minor amendments.



6. Election of the Chairmen and Vice-Chairmen of the Committees

6.1 The Secretary-General said that the Heads of Delegations had proposed the following nominations for the posts of Committee Chairmen and Vice-Chairmen :

Committee 1 - Steering Committee

Chairman : the Chairman of the Conference  
Vice-Chairmen : the Vice-Chairmen of the Conference

Committee 2 - Credentials

Chairman : Mr. János SZEKELY (Hungary)  
Vice-Chairman : Mr. Mamadou Saliou DIALLO (Guinea)

Committee 3 - Budget control

Chairman : Mr. Francisco MOLINA NEGRO (Spain)  
Vice-Chairman : Mr. Aleksandr ISAEV (USSR)

Committee 4 - Planning

Chairman : Mr. Guila THIAM (Senegal)  
Vice-Chairman : Mr. Habib K. AL SHANKITI (Saudi Arabia)

Committee 5 - Agreement and procedures

Chairman : Mr. Klaus OLMS (Federal Republic of Germany)  
Vice-Chairman : to be announced at a subsequent Plenary Meeting

Committee 6 - Editorial

Chairman : Mr. Henri BERTHOD (France)  
Vice-Chairmen : Mr. Alan MARSHALL (United Kingdom)  
Mr. Lorenzo CHAMORRO SANTA CRUZ (Spain)

Technical Working Group of the Plenary

Chairman : Mr. Jerzy RUTKOWSKI (Poland)  
Vice-Chairman : Mr. J.P. KIMANI (Kenya)

The proposals of the Heads of Delegations were approved unanimously.

7. Composition of the Conference Secretariat

7.1 The Secretary-General suggested that the Conference should be assisted in the performance of its tasks by a Secretariat consisting of the following officials :

Secretary of the Conference : Mr. J. JIPGUEP, Deputy Secretary-General of  
the ITU  
Executive Secretary : Mr. R. MACHERET  
Technical Secretary : Mr. M. HARBI  
Administrative Secretary : Mr. J. ESCUDERO

Plenary Meetings and	
Committee 1	: Mr. J. FRANCIS
Committee 2	: Mr. R. MACHERET
Committee 3	: Mr. V. MUCCIOLI
Committee 4	: Mr. D. SCHUSTER
Committee 5	: Mr. J. FONTEYNE
Committee 6	: Mr. P.A. TRAUB
Technical Working Group of	
the Plenary	: Mr. O. VILLANYI
Computer Services	: Mr. H. ALLEBROECK

The Secretary-General's suggestions were approved.

8. Allocation of documents to Committees (Document DT/3(Rev.1))

Document DT/3(Rev.1) was approved.

The Secretary-General explained that documents presented later would be allocated directly.

9. Invitations to the Conference (Document 29)

Document 29 was noted.

10. Notifications sent to international organizations (Document 30)

10.1 The Secretary-General explained that the Plenary had to decide on the admission of the organizations listed in the document to attend the Conference in an advisory capacity, in pursuance of No. 351 of the International Telecommunication Convention, Nairobi, 1982.

It was decided to admit those organizations.

11. General organization of the work of the Conference

11.1 The Chairman of the IFRB made a statement\* relating to the calculations carried out so far, to the limitations imposed thereon by the large number of requirements received and by the available processing facilities and to the decisions that the Conference would have to take on deadlines for the submission of requirements in order to be able to complete its work in the prescribed period.\*

In reply to the Chairman of the Technical Working Group of the Plenary, the Chairman of the IFRB said that inclusion of the results of that Group's work in the calculations proposed for 2 November would depend on the degree of complexity of the changes they would entail in the software. The Group would be kept informed of the situation during its deliberations; its results would, in any event, be included in the second series of calculations, whose proposed starting date was 17 November.

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\* Reflected in Document 49 subsequently issued.

In reply to a question from the delegate of Iran (Islamic Republic of), he said that the decision on the action to be taken on the items in the suspense file was the prerogative of the Conference. The suspense file contained those modifications submitted up to 30 September 1984 considered not to be an improvement to the Plan, all modifications submitted after 30 September 1984, and any additions or modifications that might be submitted up to a deadline which it was for the present session of the Conference to decide in Plenary Meeting. The date of 1 November 1984 was merely a suggestion on the part of the IFRB.

11.2 The Secretary-General drew the meeting's attention to the fact that the Technical Working Group of the Plenary was expected to complete its work by the end of the first week, and to the fact that what the first session of the Conference, in Chapter 7 of its report, had drawn up was an operational schedule for the inter-session work. It was within the competence of the present session, as a sovereign organ, to fix a deadline for the receipt of modifications and additions to be taken into account in the derivation of the Plan. It should also be remembered that it was usual practice for the Chairman of the Conference to inform ITU Members not attending the Conference of the deadline by telex.

11.3 The delegate of Algeria said that his Administration might not be able to submit its new requirements by 1 November, nor might it have completed its work on Form C by that time.

11.4 The delegate of Iran (Islamic Republic of) said that in view of the large amount of input data required when calculating modifications in regions with propagation problems, or with incompatibilities between television and sound broadcasting in the 75 - 100 MHz band, the countries concerned might not be able to meet the 1 November deadline.

11.5 The Chairman of the IFRB said that any modifications and additions submitted after the deadline set by the Conference would be subject to negotiation in the Planning Groups. However, if approved by the Planning Group concerned and by its Chairman, such submissions would be included in subsequent calculations. For example, modifications and additions affected by the results of the work of the Technical Working Group of the Plenary or by incompatibilities with television broadcasting could be included in the second series of calculations, which it was proposed should be started on 17 November. The same would apply to the submission of information on Form C.

11.6 The delegate of the Federal Republic of Germany said that his delegation had been under the impression that the dates given in the report of the first session of the Conference had been mandatory. However, since it had become clear that it was for the present session to decide the deadline for submissions, delegates would need to have at their disposal an up-to-date list of all modifications and additions on the suspense file in order to make their decision in full knowledge of the facts.

11.7 The delegate of Iran (Islamic Republic of) fully supported that statement and said that the list should if possible be broken down into two parts - one containing submissions made before 30 September 1984 and the other those made after that date.

11.8 The Chairman of the IFRB said that the double list, while possible, would take longer to prepare. The suspense file was on the computer - it could be consulted by any delegate at any time at a terminal in level D, the basement of the Conference building. If delegates were prepared to accept a single list they could be provided with the information on microfiche the following morning.

11.9 The Chairman proposed that provision of a single list should be accepted and that a Plenary Meeting should be held the following morning to decide on the action to be taken on the items in the suspense file and on the deadlines for submission of the data for the various series of calculations to be carried out by the IFRB.

It was so agreed.

11.10 The Chairman of the IFRB drew the meeting's attention to the fact that if the action to be taken on the suspense file were not to be decided until the following morning, the nearest deadline for the submission of requirements could not be earlier than 2359 hours UTC on Friday, 2 November. Countries not represented at the Conference should be allowed a further few days to allow for consultation by telex.

12. Date by which the Credentials Committee must submit its conclusions

On a proposal by the Secretary-General, it was agreed to set the deadline by which the Credentials Committee must reach its conclusions as midday on Tuesday, 4 December 1984.

13. Working hours of the Conference

It was decided to adopt the following timetable for the Conference :

0900-1200 hours

1400-1700 hours

At the request of the delegate of Saudi Arabia, it was decided that on Friday afternoons work should start at 1430 hours.

14. Financial responsibilities of administrative conferences (Document 28)

14.1 The Chairman of the Budget Control Committee reminded delegates that since the Conference was a regional one the financial repercussions of any prolongation of its work would have to be borne by the countries of the regions concerned. In the interests, therefore, of ensuring that expenditure did not exceed the funds allocated to the Conference, he appealed to all participants to keep to the timetables set and to work as efficiently as possible.

The meeting rose at 1700 hours.

The Secretary-General :

R.E. BUTLER

The Chairman :

M. HUET

# CONFÉRENCE RÉGIONALE DE RADIODIFFUSION

(SECONDE SESSION)

GENEVE, 1984

Document 39-F/E/S  
29 octobre 1984

Note du Secrétaire général / Note by the Secretary-General /  
Nota del Secretario General

ATTRIBUTION DES DOCUMENTS / ALLOCATION OF DOCUMENTS / ATRIBUCIÓN DE LOS DOCUMENTOS

(approuvé au cours de la 1ère séance plénière/  
approved during the 1st plenary meeting/  
aprobado durante la primera sesión plenaria)

Séance Plénière : 1, 28, 29, 30, 32  
Plenary Meeting  
Sesión Plenaria

C2 - Pouvoirs : 2  
Credentials  
Credenciales

C3 - Budgétaire : 16, 17  
Budget  
Presupuesto

C4 - Planification : 9, 32, 37  
Planning  
Planificación

C5 - Accord et procédures : 7, 8, 11, 13, 15, 32, 35, 36  
Agreement and Procedures  
Acuerdo y procedimientos

GTT - Groupe de travail technique de la Plénière : 3, 4, 5 + Add.1, 6, 10, 12,  
TWG - Technical Working Group of the Plenary 14, 15, 18, 19, 20, 21, 22,  
GTT - Grupo de trabajo técnico de la Plenaria 23 + Corr.1, 24, 25, 26, 27,  
32, 33, 34, 35, 37

R.E. BUTLER  
Secrétaire général

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 40-E

29 October 1984

Original : English/  
French/  
Spanish

## Note by the Secretary-General

### CONFERENCE STRUCTURE

(approved during the first Plenary Meeting)

#### REGIONAL ADMINISTRATIVE CONFERENCE FOR FM SOUND BROADCASTING IN THE VHF BAND

(REGION 1 AND CERTAIN COUNTRIES CONCERNED IN REGION 3), SECOND SESSION  
Geneva, 1984

The agenda of the Conference appears in Resolution No. 896 which was adopted by the Administrative Council at its 38th Session (Geneva, 1983). This Resolution is reproduced in the annex to Document No. 1 of the Conference.

Bearing in mind Nos. 464 to 479 inclusive of the International Telecommunication Convention, Nairobi, 1982, the following committees with their terms of reference are suggested. These terms of reference have been drawn up within the framework of the Convention, the Conference Agenda and in the light of experience at previous conferences.

#### Committee 1 - Steering Committee

##### Terms of Reference :

To coordinate all matters connected with the smooth execution and scheduling of work and to plan the order and number of meetings, avoiding overlapping wherever possible in view of the limited number of members of some delegations (Nos. 468 and 469 of the International Telecommunication Convention, Nairobi, 1982).

#### Committee 2 - Credentials Committee

##### Terms of Reference :

To verify the credentials of delegations and to report on its conclusions to the Plenary Meeting within the time specified by the latter (Nos. 390 and 471 of the International Telecommunication Convention, Nairobi, 1982).

Committee 3 - Budget Control Committee

Terms of Reference :

To determine the organization and the facilities available to the delegates, to examine and approve the accounts of expenditure incurred throughout the duration of the Second Session of the Conference and to report to the Plenary Meeting the estimated total expenditure of the Second Session as well as the estimated costs entailed by the execution of the decisions of the Conference (Nos. 476 to 479 inclusive of the International Telecommunication Convention, Nairobi, 1982 and Nairobi Resolution No. 48).

Furthermore, to evaluate the financial impact of the Conference's decisions, in accordance with No. 627 and other relevant provisions of the International Telecommunication Convention, Nairobi, 1982 (item 2.4 of the Agenda).

Committee 4 - Planning Committee

Terms of Reference :

To prepare a frequency assignment plan for sound broadcasting stations in the band 87.5 - 108 MHz on the basis of the Report of the First Session as it might be modified in accordance with agenda item 2.1, taking account of the need to ensure adequate protection to stations of the aeronautical radionavigation service in the band 108 - 117.975 MHz (item 2.2 of the Agenda).

Committee 5 - Agreement and Procedures Committee

Terms of Reference :

To prepare an agreement for sound broadcasting stations in the band 87.5 - 108 MHz and adopt the related procedures (items 2.2 and 2.3 of the Agenda).

Committee 6 - Editorial Committee

Terms of Reference :

To perfect the form of the texts prepared in the various committees of the Conference, without altering the sense, for submission to the Plenary Meeting (Nos. 473 and 474 of the International Telecommunication Convention, Nairobi, 1982).

Technical Working Group of the Plenary

Terms of Reference :

To review the relevant parts of the Report of the First Session in the light of the CCIR contributions and of the proposals submitted by Administrations to the Conference concerning :

- propagation in extreme super-refractivity conditions and the relationship between propagation over land and over sea (Recommendation AA);
- propagation in Africa (Recommendation BB);
- the possibility of improving the immunity of receivers in the aeronautical radionavigation service to interference caused by FM broadcasting emissions (Recommendation CC);
- the maximum obtainable suppression of spurious emissions in the band 108 - 137 MHz from broadcasting stations operating in the band 87.5 - 108 MHz (Recommendation DD);

(item 2.1 of the Agenda).

- sharing criteria between broadcasting service and other services to which the band is allocated;
  - consideration of the conclusions of Interim Meetings of CCIR concerning Tables II and III of Chapter 3 of the Report of the first session.
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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 41-E  
29 October 1984  
Original : English

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## PLENARY MEETING

### Note by the Secretary-General

#### REVISED INVENTORY AND RESULTS OF THE SECOND/THIRD ANALYSIS

At the request of the IFRB, I transmit the attached note for the information of the Conference.

R.E. BUTLER  
Secretary-General

Annex : 1

ANNEX

NOTE BY THE IFRB

Revised inventory and results  
of second/third analysis

1. According to the Report to the second session (page 68, paragraph "k"), the IFRB shall publish an addendum to the corrected inventory and the results of the second/third analysis.
2. The addendum to the corrected inventory forms Annex 1 to this document. The corrections to the inventory for each administration are printed on paper and the complete addendum is published on microfiche for all administrations.
3. The second/third analysis is based on the corrected inventory, taking into account all remaining calculations referred to in paragraphs 4, 7, 8 and 9 of Annex G to the Report to the second session.
4. Annex 2 contains the results of this merged analysis; these results are printed on paper for each administration and on microfiche for all administrations.

Annexes : 2 (distributed separately)

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INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Addendum 1 to  
Document 42-E  
1 November 1984  
Original : English

PLENARY MEETING

Note by the Secretary of the Conference

LIST OF DELETIONS IN THE REQUIREMENTS FILE

Deletions allied to the additional requirements and modifications which were kept in suspense (Annex 1 to Document 42) have now been processed and are presented in the Annex to this Addendum.

J. Jipguep  
Secretary of the Conference

Annex : 1

ANNEXE / ANNEX / ANEXO

		Nom de la station Station name			
IFRR-NO	CNT.	Nombre de la estación	FRQ.	LONG.	LAT.
04183902	AFG	AFG0010	090.600	061E30	33N40
04184502	AFG	AFG0020	090.600	066E19	35N21
04185102	AFG	AFG0030	090.600	071E22	36N47
04185702	AFG	AFG0040	090.600	065E39	31N08
04184002	AFG	AFG0010	093.700	061E30	33N40
04184602	AFG	AFG0020	093.700	066E19	35N21
04185202	AFG	AFG0030	093.700	071E22	36N47
04185802	AFG	AFG0040	093.700	065E39	31N08
04184102	AFG	AFG0010	096.900	061E30	33N40
04184702	AFG	AFG0020	096.900	066E19	35N21
04185302	AFG	AFG0030	096.900	071E22	36N47
04185902	AFG	AFG0040	096.900	065E39	31N08
04184202	AFG	AFG0010	100.200	061E30	33N40
04184802	AFG	AFG0020	100.200	066E19	35N21
04185402	AFG	AFG0030	100.200	071E22	36N47
04186002	AFG	AFG0040	100.200	065E39	31N08
04184302	AFG	AFG0010	103.700	061E30	33N40
04184902	AFG	AFG0020	103.700	066E19	35N21
04185502	AFG	AFG0030	103.700	071E22	36N47
04186102	AFG	AFG0040	103.700	065E39	31N08
04184402	AFG	AFG0010	107.300	061E30	33N40
04185002	AFG	AFG0020	107.300	066E19	35N21
04185602	AFG	AFG0030	107.300	071E22	36N47
04186202	AFG	AFG0040	107.300	065E39	31N08
02272402	F	HAZEBROUCK	088.000	002E31	50N45
02317902	F	SALEVE	089.200	006E12	46N09
02207902	F	ROUEN	089.300	001E05	49N27
02297502	F	PARIS	089.400	002E24	48N52
02335802	F	STRASBOURG	091.200	007E45	48N35
02323102	F	BOURGES	091.300	002E24	47N05
02313002	F	S DIE	091.500	006E57	48N17
02105702	F	DINARD	092.000	002W03	48N38
02241802	F	REVEL	092.000	002E02	43N26
02329902	F	NANTES	092.000	001W34	47N13
02244502	F	BORDEAUX PV 5	092.200	000W34	44N55
02321902	F	RUFFEC	092.200	000E12	46N02
02342302	F	VILLEJUIF	092.500	002E22	48N46
02326202	F	CHARTRES	092.900	001E30	48N27
02234202	F	EVREUX	093.200	001E09	49N00
02335202	F	PAU	094.400	000W17	43N20
02339102	F	LE HAVRE	094.700	000E06	49N30
02233502	F	DIE	094.900	005E24	44N49
02244702	F	BORDEAUX PV 2	094.900	000W34	44N50
02256902	F	S ETIENNE	095.000	004E22	45N25
02272002	F	DUNKERQUE	095.200	002E22	51N02
02330002	F	NANTES	095.200	001W33	47N13
02234102	F	EVREUX	095.300	001E08	49N01
02232002	F	BESANCON	095.500	006E02	47N15
02226102	F	MARSEILLE	095.900	005E24	43N18
02318802	F	LIMANS	096.100	005E45	43N58
02259002	F	S ETIENNE	096.200	004E23	45N26
02337902	F	PARIS	096.600	002E17	48N51
02325202	F	BESANCON	096.900	006E02	47N15
02327102	F	QUIMPER	097.300	004W07	48N00
02334402	F	CARROUGES	097.500	000W09	48N34
02243102	F	BORDEAUX PV 4	098.200	000W34	44N50
02342402	F	BEAUMONT SUR OISE	098.600	002E17	49N08
02324702	F	S BRIEUC	098.700	002W59	48N29
02317802	F	GEX	098.900	006E12	46N09
02335902	F	SELLESTAT	099.200	007E27	48N16
02342102	F	PARIS	099.300	002E15	48N46
02060802	F	BORT LESORGUES	100.100	002E29	45N23
02134102	F	CHATEAUGONTIER	100.100	000W42	47N49
02339302	F	MONTEREAU	100.100	002E50	48N23
02341802	F	BEAUMONT VIENN	100.200	000E24	46N44

IFRB-NO	CNT.	Nom de la station Station name Nombre de la estación	FRQ.	LONG.	LAT.
02117902	F	NANTES NTEGOUL	100.300	001W26	47N11
02077102	F	SARLAT	100.400	001E12	44N54
02119302	F	LA BAULE ESCOU	100.400	002W22	47N16
02339702	F	VERSAILLES	100.400	002E09	48N50
02052802	F	MILLAU LEVEZOU	100.500	002E51	44N07
02053502	F	MILLAU LEVEZOU	100.500	002E51	44N07
02165602	F	AUTUN	100.500	004E02	46N59
02181802	F	DIEPPE	100.500	001E05	49N55
02255302	F	BOURGOIN	100.500	005E09	45N33
02087102	F	BREST TREDUDON	100.600	003W53	48N24
02255702	F	VERCORS	100.600	005E29	45N03
02338802	F	DIEPPE	100.600	001E05	49N55
02099202	F	LESPARRE	100.700	000W52	45N18
02100102	F	LESPARRE	100.700	000W52	45N18
02143202	F	LILLE BOUVIGNY	100.700	002E39	50N25
02223502	F	S PIERRE OLERO	100.700	001W18	45N56
02130502	F	GRANVILLE	100.800	001W34	48N50
02143402	F	LILLE BOUVIGNY	100.800	002E39	50N25
02082503	F	MONTELIMAR	100.900	004E46	44N36
02087402	F	BREST TREDUDON	101.000	003W53	48N24
02181702	F	DIEPPE	101.000	001E05	49N55
02078002	F	RIBERAC	101.100	000E17	45N16
02104202	F	RENNES	101.100	001W57	48N17
02114202	F	LABOUHEYRE	101.100	000W54	44N12
02117502	F	LE PUY	101.100	003E40	45N06
02099302	F	LESPARRE	101.200	000W52	45N18
02100202	F	LESPARRE	101.200	000W52	45N18
02104802	F	BAINDEBRETAGNE	101.200	001W38	47N47
02090602	F	BREST	101.300	004W30	48N23
02321102	F	CAEN MT PINCON	101.300	000W36	48N58
02052202	F	RODEZ 2	101.400	002E33	44N20
02089602	F	QUIMPERLE	101.400	003W32	47N52
02101202	F	ARCACHON	101.500	001W09	44N38
02133902	F	CHATEAUGONTIER	101.500	000W42	47N49
02146702	F	LA BOURBOULE 1	101.500	002E35	45N39
02322202	F	S JEAN ANGELY	101.500	000W31	46N00
02332902	F	ALLIGNY	101.500	003E04	47N27
02024002	F	VILLERS COTTER	101.600	003E09	49N16
02104302	F	RENNES	101.600	001W57	48N17
02181202	F	DIEPPE	101.600	001E05	49N55
02084702	F	S DENIS BEHEL	101.700	000E57	48N51
02197102	F	LIMOGES CARS	101.700	001E04	45N39
02319802	F	TROYES RICEYS	101.700	004E24	47N58
02048602	F	AXAT 1	101.800	002E11	42N47
02074802	F	PAIMPOL	101.800	003W03	48N48
02133602	F	PRE EN PAIL	101.800	000W09	48N26
02183402	F	NEUFCHATEL	101.800	001E22	49N47
02333002	F	ALLIGNY	101.800	003E04	47N27
02341702	F	BEAUMONT VIENN	101.800	000E24	46N44
02053602	F	MILLAU LEVEZOU	101.900	002E51	44N07
02075002	F	AUBUSSON	101.900	002E09	45N57
02087202	F	BREST TREDUDON	101.900	003W53	48N24
02106902	F	ARGENTON CREUS	101.900	001E37	46N34
02195602	F	POUZAUGES	101.900	000W47	46N46
02114102	F	LABOUHEYRE	102.000	000W54	44N12
02321702	F	LAROCHEFOUCAUL	102.000	000E30	45N44
02324502	F	GUINGAMP	102.000	003W18	48N34
02331002	F	ANGERS	102.000	000W38	47N20
02332802	F	ALLIGNY	102.000	003E04	47N27
02090902	F	AUDIERNE	102.100	004W31	48N01
02102802	F	CESSERON	102.100	002E55	43N27
02104402	F	RENNES	102.100	001W57	48N17
02123502	F	SAINT SOZY	102.100	001E33	44N51
02129602	F	MORTAIN	102.200	000W55	48N38
02085902	F	CHARTRES	102.300	001E01	48N23
02088702	F	QUIMPER	102.300	004W06	47N59

		Nom de la station Station name				
IFRB-NO	CNT.	Nombre de la estación	FRQ.	LONG.	LAT.	
02188802	F	TONNAC	102.300	001E50	44N05	
02112502	F	CHAMPAGNOLE	102.500	006E02	46N40	
02060202	F	BORT LESORGUES	102.600	002E29	45N23	
02060902	F	BORT LESORGUES	102.600	002E29	45N23	
02069202	F	PT VECCHIO	102.600	009E11	41N40	
02089702	F	QUIMPERLE	102.600	003W32	47N52	
02134202	F	CHATEAUGONTIER	102.600	000W42	47N49	
02328102	F	BELLEGARDE S M	102.600	001E06	43N41	
02337502	F	CUISEAUX	102.600	005E24	46N30	
02338202	F	ROUEN	102.600	001E00	49N20	
02043802	F	PAMBERS	102.700	001E36	43N05	
02093902	F	LE VIGAN	102.700	003E34	43N57	
02133702	F	PRE EN PAIL	102.700	000W09	48N26	
02141602	F	MAUBEUGE	102.800	003E59	50N16	
02320202	F	TROYES RICEYS	102.800	004E24	47N58	
02074902	F	PAIMPOL	102.900	003W03	48N48	
02097002	F	BORDEAUX	102.900	000W30	44N49	
02117802	F	NANTES HTEGOUL	102.900	001W26	47N11	
02046602	F	CARCASSONNE	103.000	002E27	43N25	
02090702	F	BREST	103.000	004W30	48N23	
02321202	F	CAEN MT PINCON	103.100	000W36	48N58	
02338002	F	PARIS	103.100	002E20	48N51	
02056602	F	LISIEUX	103.200	000E12	49N08	
02059802	F	BORGES NEUVY	103.200	002E37	47N17	
02119502	F	LA BAULE ESCOU	103.200	002W22	47N16	
02167302	F	LE CREUSOT	103.200	004E28	46N37	
02328602	F	EAUZE	103.200	000E04	43N51	
02089802	F	QUIMPERLE	103.300	003W32	47N52	
02132602	F	CHAUMONT	103.300	005E24	47N48	
02135302	F	LAVAL	103.300	000W21	48N13	
02051602	F	RODEZ 2	103.400	002E33	44N20	
02052302	F	RODEZ 2	103.400	002E33	44N20	
02055302	F	M DE LACAUME	103.400	004E51	43N45	
02069302	F	PT VECCHIO	103.400	009E11	41N40	
02327602	F	S GAUDENS	103.400	000E44	43N08	
02087302	F	BREST TREDUDON	103.500	003W53	48N24	
02104502	F	RENNES	103.500	001W57	48N17	
02185702	F	NIORTMAISONNAY	103.500	000W03	46N11	
02317502	F	GEX MONTROND	103.600	006E01	46N21	
02122102	F	SQUILLAC	103.700	001E27	44N52	
02151402	F	ARGELES GAZOST	103.700	000W04	43N03	
02319902	F	TROYES RICEYS	103.700	004E24	47N58	
02324902	F	RIRAS	103.700	000E39	45N17	
02333602	F	VILLERS POL	103.700	003E37	50N17	
02188202	F	ABBEVILLE	103.800	001E49	50N00	
02085802	F	CHARTRES	103.900	001E01	48N23	
02101302	F	ARCACHON	103.900	001W09	44N38	
02092602	F	NIMES	104.000	004E21	43N50	
02185502	F	NIORTMAISONNAY	104.000	000W03	46N11	
02097102	F	BORDEAUX	104.100	000W30	44N49	
02102902	F	CESSENON	104.100	002E55	43N27	
02053702	F	MILLAU LEVEZOU	104.200	002E51	44N07	
02114002	F	LABOUHEYRE	104.200	000W54	44N12	
02206602	F	GUERET	104.200	001E52	46N10	
02331202	F	ANGERS	104.200	000W38	47N20	
02053002	F	MILLAU LEVEZOU	104.300	002E51	44N07	
02068302	F	CERVIONE	104.300	009E33	42N17	
02084802	F	S DENIS BEHEL	104.300	000E57	48N51	
02087802	F	QUIMPER	104.300	004W06	47N59	
02118102	F	NANTES HTEGOUL	104.300	001W26	47N11	
02086202	F	BREST TREDUDON	104.400	003W53	48N24	
02098702	F	CAPTIEUX	104.400	000W15	44N12	
02138102	F	VANNES	104.400	002W52	47N49	
02096002	F	TOULOUSE PECH	104.500	001E27	43N42	
02133802	F	PRE EN PAIL	104.500	000W09	48N26	
02325702	F	GUTHGAMP	104.500	003W18	48N34	

IFRE-NO	CHT.	Nom de la station Station name	FREQ.	LONG.	LAT.
02090402	F	BREST	104.600	004W30	48N23
02129202	F	BARNEVILLE CAR	104.600	001W43	49N22
02193702	F	AVIGNON MTVENT	104.600	005E16	44N10
02050902	F	LISIEUX	104.700	000E12	49N08
02068402	F	CERVIONE	104.700	009E33	42N17
02180402	F	PARTHENAY	104.700	000W20	46N45
02051702	F	RODEZ 2	104.800	002E33	44N20
02052402	F	RODEZ 2	104.800	002E33	44N20
02055402	F	M DE LACAUME	104.800	004E51	43N45
02082602	F	S JEAN ROYANS	104.800	005E19	45N00
02084902	F	S DENIS BEHEL	104.800	000E57	48N51
02118402	F	NANTES HTEGOUL	104.800	001W26	47N11
02130702	F	GRANVILLE	104.800	001W34	48N50
02092902	F	S ANDRE MAJENC	104.900	003E41	44N02
02133002	F	VANNES	104.900	002W52	47N49
02188302	F	ABBEVILLE	104.900	001E49	50N00
02330602	F	AGEN	104.900	000E37	44N18
02081802	F	DIE 1	105.000	005E21	44N44
02098602	F	CAPTIEUX	105.000	000W15	44N12
02103402	F	RENNES	105.000	001W57	48N17
02326902	F	CHARTRES MONTL	105.000	001E01	48N23
02087902	F	QUIMPER	105.100	004W06	47N59
02102202	F	GRAISSESSAC	105.100	003E03	43N41
02134302	F	CHATEAUGONTIER	105.100	000W42	47N49
02197402	F	LIMOGES CARS	105.100	001E04	45N39
02056702	F	LISIEUX	105.200	000E12	49N08
02114402	F	TOURS CHISSAY	105.200	001E07	47N21
02170502	F	S J MAURIENNE	105.200	006E22	45N16
02337602	F	CUISEAUX	105.200	005E24	46N30
02046702	F	CARCASSONNE	105.300	002E27	43N25
02083102	F	LA CHAPELLE VR	105.300	005E27	44N58
02080302	F	BREST TREDUDON	105.300	003W53	48N24
02097402	F	BORDEAUX BOUL	105.300	000W30	44N49
02130402	F	GRANVILLE	105.300	001W34	48N50
02138202	F	VANNES	105.300	002W52	47N49
02331102	F	ANGERS	105.300	000W38	47N20
02100902	F	ARCACHON	105.400	001W09	44N38
02119602	F	LA BAULE ESCOU	105.400	002W22	47N16
02185602	F	NIORTHAISONNAY	105.400	000W03	46N11
02330202	F	AGEN	105.400	000E37	44N18
02103502	F	RENNES	105.500	001W57	48N17
02110102	F	MONESTIER CLER	105.500	005E35	44N54
02113802	F	LABOUHEYRE	105.600	000W54	44N12
02134402	F	CHATEAUGONTIER	105.600	000W42	47N49
02091202	F	AUDIERNE	105.700	004W31	48N01
02099402	F	LESPARRE	105.700	000W52	45N18
02099902	F	LESPARRE	105.700	000W52	45N18
02106502	F	ARGENTON CREUS	105.700	001E37	46N34
02163002	F	TARARE	105.700	004E25	45N54
02077202	F	SAPLAT	105.800	001E12	44N54
02094002	F	LE VIGAN	105.800	003E34	43N57
02129702	F	MORTAIN	105.800	000W55	48N38
02097502	F	BORDEAUX BOUL	105.900	000W30	44N49
02105602	F	DINARD	105.900	002W03	48N38
02167502	F	LE MANS MAYET	105.900	000E19	47N45
02188902	F	TONNAC	105.900	001E50	44N05
02338302	F	ROUEN	105.900	001E00	49N20
02059402	F	BOURGES NEUVY	106.000	002E37	47N17
02113902	F	LABOUHEYRE	106.000	000W54	44N12
02134802	F	LAVAL	106.000	000W21	48N13
02322502	F	S JEAN ANGELY	106.000	000W31	46N00
02039202	F	PIERRELATTE	106.100	004E36	44N24
02103302	F	RENNES	106.100	001W57	48N17
02114502	F	TOURS CHISSAY	106.100	001E07	47N21
02122002	F	SQUILLAC	106.100	001E27	44N52
02194702	F	SABLES OLONNIE2	106.100	001W45	46N29

IFRB-NO	CHT.	Nom de la station Station name Nombre de la estación	FRQ.	LONG.	LAT.
02022302	F	RAMASSE	106.200	005E20	46N14
02077902	F	RIBERAC	106.200	000E17	45N16
02087602	F	QUIMPER	106.200	004W06	47N59
02073802	F	PAIMPOL	106.300	003W03	48N48
02093402	F	VALLERAUGUE	106.300	003E39	44N04
02170102	F	S MICHEL MAURI	106.300	006E26	45N12
02086402	F	BREST TREDUDON	106.400	003W53	48N24
02098302	F	CAPTIEUX	106.400	000W15	44N12
02102702	F	CESSENON	106.400	002E55	43N27
02183302	F	NEUFCHATEL	106.400	001E22	49N47
02326802	F	CHARTRES MONTL	106.400	001E01	48N23
02064802	F	BONIFACIO	106.500	009E09	41N23
02127602	F	CHERBOURG	106.500	001W32	49N37
02134002	F	CHATEAUGONTIER	106.500	000W42	47N49
02323902	F	GUINGAMP	106.500	003W18	48N34
02091002	F	AUDIERNE	106.600	004W31	48N01
02114602	F	TOURS CHISSAY	106.600	001E07	47N21
02337702	F	CUISEAUX	106.600	005E24	46N30
02076202	F	PERIGUEUX	106.700	000E42	45N10
02122602	F	SAINT CERE	106.700	001E53	44N49
02207702	F	CALAIS	106.700	001E47	50N55
02321402	F	CAEN MT PINCON	106.700	000W36	48N58
02331302	F	ANGERS	106.700	000W38	47N20
02087702	F	QUIMPER	106.800	004W06	47N59
02092502	F	NIMES	106.800	004E21	43N50
02097602	F	BORDEAUX BOUL	106.800	000W30	44N49
02164502	F	L ARBRESLE	106.800	004E31	45N49
02189002	F	TONNAC	106.800	001E50	44N05
02096102	F	TOULOUSE PECH	107.000	001E27	43N42
02106202	F	DINARD	107.000	002W03	48N38
02167602	F	LE MANS MAYET	107.000	000E19	47N45
02182202	F	DIEPPE	107.000	001E05	49N55
02069102	F	PT VECCHIO	107.100	009E11	41N40
02076402	F	PERIGUEUX	107.100	000E42	45N10
02105002	F	BAINDEBRETAGNE	107.100	001W38	47N47
02129302	F	BARNEVILLE CAR	107.100	001W43	49N22
02322802	F	JONZAC	107.100	000W22	45N26
02337402	F	CUISEAUX	107.100	005E24	46N30
02056802	F	LISIEUX	107.200	000E12	49N08
02074002	F	PAIMPOL	107.200	003W03	48N48
02138302	F	VANNES	107.200	002W52	47N49
02174402	F	S MARTINBELLEV	107.200	006E30	45N17
02051802	F	RODEZ 2	107.300	002E33	44N20
02052502	F	RODEZ 2	107.300	002E33	44N20
02078502	F	BERGERAC	107.300	000E57	44N52
02097202	F	BORDEAUX BOUL	107.300	000W30	44N49
02118002	F	NANTES HTEGOU	107.300	001W26	47N11
02327302	F	S FELIX LAURAG	107.300	001E53	43N26
02030902	F	VARS	107.400	006E41	44N36
02123602	F	SAINT SOZY	107.400	001E33	44N51
02324002	F	GUINGAMP	107.400	003W18	48N34
02324602	F	GUINGAMP	107.400	003W18	48N34
02340702	F	MONTAUBAN	107.400	001E22	43N58
02325502	F	ORIOLE ROYANS	107.500	005E13	44N59
02127702	F	CHERBOURG	107.600	001W32	49N37
02326102	F	S PIERRE IFS	107.600	000E36	49N15
02331402	F	ANGERS	107.600	000W38	47N20
02077302	F	SARLAT	107.700	001E12	44N54
02100002	F	LESPARRE	107.700	000W52	45N18
02123102	F	BIARS SUR CERE	107.700	001E52	44N55
02163102	F	TARARE	107.700	004E25	45N54
02321302	F	CAEN MT PINCON	107.700	000W36	48N58
02053802	F	MILLAU LEVEZOU	107.800	002E51	44N07
02096302	F	BREST	107.800	004W30	48N23
02130902	F	GRANVILLE	107.800	001W34	48N50
02150402	F	TOULOUSE PTC	107.800	000E08	42N56



		Nom de la station Station name				
IFRB-NO	CNT.	Nombre de la estación		FREQ.	LONG.	LAT.
02186502	F	PARTHENAY		107.800	000W20	46N45
02188402	F	ABBEVILLE		107.800	001E49	50N00
02330502	F	AGEN		107.800	000E37	44N18
02330702	F	AGEN		107.800	000E37	44N18
02340202	F	POIGNY		107.800	001E41	48N40
04012002	G	CHESTERFIELD		090.200	001W25	53N15
04012102	G	HUDDERSFIELD		090.200	001W47	53N39
04112202	G	YORK-L	B	090.200	000W47	54N03
04009602	G	CHANNEL ISLANDS		093.950	002W06	49N15
04105602	G	SANDALE		094.700	003W08	54N45
04082403	G	LES PLATONS		100.700	002W06	49N15
04023802	G	WROTHAM		100.800	000E17	51N19
04128002	G	DARVEL	L	104.500	004W17	55N35
04132002	G	LLANGOLLEN	L	104.700	003W11	53N02
04017702	G	MELDRUM		105.100	002W24	57N23
04020102	G	KINGUSSIE		105.200	004W02	57N04
04015402	G	WENSLEYDALE		105.300	002W01	54N19
04018102	G	BATH		105.300	002W20	51N23
04019002	G	MADINGLEY		105.300	000E02	52N13
04015002	G	SUTTON COLDFIELD		105.400	001W50	52N36
04019302	G	ASHKIRK		105.500	002W50	55N31
04020302	G	WROTHAM		105.500	000E17	51N19
04016402	G	PONTOP PIKE		105.700	001W46	54N52
04020502	G	PITLOCHRY		105.700	003W45	56N41
04015502	G	WENSLEYDALE		105.900	002W01	54N19
04019502	G	PERTH		105.900	003W27	56N22
04017802	G	MELDRUM		106.000	002W24	57N23
04018302	G	PETERBOROUGH		106.000	000W20	52N30
04016002	G	PEEBLES		106.100	003W14	55N40
04016502	G	PONTOP PIKE		106.200	001W46	54N52
04018402	G	BELMONT		106.200	000W10	53N20
04014802	G	FORFAR		106.300	002W50	56N33
04015102	G	SUTTON COLDFIELD		106.300	001W50	52N36
04017202	G	ASPLEY HEATH		106.400	000W39	52N00
04019902	G	ASHKIRK		106.600	002W50	55N31
04020202	G	KINGUSSIE		106.600	004W02	57N04
04019102	G	MADINGLEY		106.700	000E02	52N13
04015202	G	SUTTON COLDFIELD		106.800	001W50	52N36
04019602	G	PERTH		106.800	003W27	56N22
04016202	G	WHARFEDALE		106.900	001W42	53N56
04016102	G	PEEBLES		107.000	003W14	55N40
04017302	G	ASPLEY HEATH		107.000	000W39	52N00
04016602	G	PONTOP PIKE		107.100	001W46	54N52
04017902	G	MELDRUM		107.100	002W24	57N23
04018502	G	BELMONT		107.100	000W10	53N20
04020402	G	WROTHAM		107.100	000E17	51N19
04015302	G	SUTTON COLDFIELD		107.200	001W50	52N36
04014902	G	FORFAR		107.300	002W50	56N33
04015602	G	WENSLEYDALE		107.300	002W01	54N19
04019202	G	NORTHAMPTON		107.300	000W53	52N16
04017402	G	ASPLEY HEATH		107.500	000W39	52N00
04020002	G	ASHKIRK		107.500	002W50	55N31
04018602	G	BELMONT		107.600	000W10	53N20
04018902	G	WHITEHAVEN		107.600	003W36	54N29
04020602	G	PITLOCHRY		107.700	003W45	56N41
04015702	G	WENSLEYDALE		107.800	002W01	54N19
04019302	G	NORTHAMPTON		107.900	000W53	52N16
04019702	G	PERTH		107.900	003W27	56N22
00002003	NOZ	CHIGUBO		087.700	033E31	22S50
00002703	NOZ	BEIRA		088.000	034E44	19S36
00001303	NOZ	COBUE		088.300	034E51	12S08
00003603	NOZ	TETE		088.500	033E35	16S11
00000603	NOZ	LUGELA		088.600	036E45	16S22
00005203	NOZ	FINGOE		089.100	031E53	15S10
00002103	NOZ	MOCIMBOA		089.400	040E22	11S50
00004203	NOZ	CHALAU		089.600	039E10	16S05

		Nom de la station Station name			
IFRD-NO	CIT.	Nombre de la estación	FRQ.	LONG.	LAT.
00000703	MOZ	MAPUTO	089.700	032E35	25S58
00002503	MOZ	MARINGUE	089.800	034E17	17S58
00001403	MOZ	X ONE	090.100	038E25	12S32
00005303	MOZ	NAROTE	090.300	034E07	22S03
00000304	MOZ	ULUNGUE	090.600	034E21	14S42
00004603	MOZ	MALEMA	090.700	037E18	14S56
00002403	MOZ	CHIBABAYA	091.600	033E53	20S16
00001803	MOZ	MACALOGUE	091.700	035E24	12S30
00006203	MOZ	PEMBA	092.100	040E31	12S57
00001103	MOZ	MAGUDE	092.300	032E45	24S54
00003803	MOZ	MOLUMBO	092.600	036E27	15S27
00005603	MOZ	QUELIMANE	093.000	036E53	17S52
00001603	MOZ	MARRUPA	093.700	037E13	13S11
00005004	MOZ	MACHANGA	093.900	035E00	20S58
00003503	MOZ	QUIXAXE	094.000	040E07	15S20
00005803	MOZ	ZUMBO	094.200	030E28	15S35
00004403	MOZ	MANDIMBA	094.500	035E59	14S12
00001903	MOZ	INHAMBANE	094.800	035E21	23S52
00005903	MOZ	CATANDICA	094.900	033E11	18S04
00000403	MOZ	MONTEPUEZ	095.000	039E09	13S08
00002603	MOZ	FURACUNGO	095.200	033E31	15S03
00002904	MOZ	ALTO MOLOCUE	095.600	037E41	15S38
00003703	MOZ	MASSANGENA	095.800	032E55	21S35
00004303	MOZ	TIMBARA	096.500	034E15	16S43
00000603	MOZ	X TWO	096.600	036E27	12S44
00003403	MOZ	CHIBUTO	096.700	033E40	24S31
00000703	MOZ	CHIMOIO	097.300	033E25	19S00
00001203	MOZ	NEGOMANO	097.500	038E29	11S25
00005403	MOZ	SONGO	097.800	033E00	15S38
00003203	MOZ	VILANCULOS	098.000	035E15	22S00
00004503	MOZ	ZAMBUE	098.400	030E46	15S09
00003103	MOZ	MUALAMA	098.500	038E18	16S53
00004903	MOZ	MAUA	099.000	036E57	13S57
00001503	MOZ	MABALANE	099.200	032E38	23S51
00001003	MOZ	CAIA	099.700	035E15	17S54
00002203	MOZ	TEMBUE	099.900	032E51	14S51
00003904	MOZ	ESPUNGABERA	100.000	032E48	20S28
00003303	MOZ	NAMPULA	100.100	039E10	14S57
00002303	MOZ	MUNGARI	100.700	033E28	17S19
00000203	MOZ	MUEDA	100.800	039E36	11S50
00004704	MOZ	GURUE	101.200	036E59	15S34
00000803	MOZ	MECULA	101.500	037E38	12S06
00000503	MOZ	GORONGOSA	102.000	034E05	18S41
00005503	MOZ	LICHINGA	102.200	035E08	13S18
00001703	MOZ	FUNHALOURO	102.500	034E23	23S05
00004803	MOZ	MAGUE	102.700	031E46	15S49
00004103	MOZ	MONGUE	103.100	035E38	16S32
00005704	MOZ	NACALA	103.400	040E28	14S26
00003003	MOZ	MANICA	104.400	032E53	19S00
00002804	MOZ	ZOBUE	104.700	034E27	15S36
00006103	MOZ	LALAU	105.000	038E15	14S23
00004003	MOZ	CHICUALACUALA	105.500	031E53	22S27
00005103	MOZ	CUAMBA	105.700	036E33	14S54
00006003	MOZ	CHIOCO	106.600	032E50	16S25
02355302	REU	S BERNARD	088.600	055E24	20S54
02360502	REU	GR BASSIN	089.000	055E31	21S11
02357002	REU	S SUZANNE	089.300	055E35	20S54
02351403	REU	S BENOIT	091.500	055E43	21S01
02346902	REU	S GILLES HAUTS	091.700	055E16	21S02
02355402	REU	S BERNARD	091.700	055E24	20S54
02347402	REU	S DENIS VILLE	093.100	055E27	20S51
02349903	REU	PITON TEXTOR	093.800	055E38	21S10
02360602	REU	GR BASSIN	094.400	055E31	21S11
02355502	REU	S BERNARD	094.900	055E24	20S54
02353003	REU	S ROSE	095.400	055E50	21S10
02356002	REU	S PIERRE	097.100	055E29	21S19

		Nom de la station			
		Station name			
IFRR-NO	CNT.	Nombre de la estación	FRQ.	LONG.	LAT.
02347502	REU	S DENIS VILLE	097.700	055E27	20S51
02360702	REU	GR BASSIN	097.700	055E31	21S11
02354603	REU	CILAOS	098.000	055E26	21S10
02355602	REU	S BERNARD	098.200	055E24	20S54
02346402	REU	LES AVIRONS	098.400	055E22	21S12
02349103	REU	S SUZANNE	098.400	055E36	20S53
02349603	REU	LE PORT	098.700	055E17	20S54
02353103	REU	S ROSE	098.700	055E50	21S10
02359702	REU	SALAZIE 2	099.500	055E35	20S58
02347602	REU	S DENIS VILLE	099.600	055E27	20S51
02357402	REU	S ROSE	099.900	055E49	21S07
02360802	REU	GR BASSIN	101.200	055E31	21S11
02346202	REU	LE TAMPON	102.000	055E28	21S16
02351203	REU	S LEU	103.800	055E16	21S04
02347702	REU	S DENIS VILLE	104.200	055E27	20S51
02359403	REU	MAFATE	104.300	055E24	21S03
02348202	REU	S PIERRE	104.600	055E29	21S18
02360902	REU	GR BASSIN	104.800	055E31	21S11
02352703	REU	S PHILIPPE	104.900	055E42	21S21
02358903	REU	S JOSEPH	105.200	055E37	21S19
02355702	REU	S BERNARD	105.300	055E24	20S54
02355203	REU	ENTREDEUX	105.400	055E28	21S14
02349203	REU	S SUZANNE	105.500	055E36	20S53
02360402	REU	LE TREMBLET	105.500	055E48	21S17
02345403	REU	S LOUIS	105.800	055E24	21S11
02349703	REU	LE PORT	105.800	055E17	20S54
02353203	REU	S ROSE	105.900	055E50	21S10
02352203	REU	S JOSEPH MANAPANY	106.000	055E35	21S19
02353702	REU	LES AVIRONS	106.200	055E20	21S11

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

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Document 42-E

29 October 1984

Original : English

PLENARY MEETING

Note by the Secretary-General

LIST OF MODIFICATIONS SUBMITTED AFTER 31 JULY 1984  
AND ADDITIONAL REQUIREMENTS

At the request of the IFRB, I transmit the attached note for the information of the Conference.

R.E. BUTLER

Secretary-General

Annex : 1

ANNEX

NOTE BY THE IFRB

List of modifications submitted after 31 July 1984  
and additional requirements

1. In reply to its first publication of requirements, the Board received a large number of modifications. Only those modifications which were considered by the Board as possible improvements to the plan were included in the addendum to the inventory which has been published as Annex 1 to Document 41, in accordance with the Report to the second session (page 68, paragraph "1").
2. Modifications not included in the addendum to the inventory were kept in a suspense file.
3. As from 1 May 1984 the Board received a large number of additions which were also entered in a suspense file.
4. These additions and modifications are published separately for consideration by the Conference.

Annex : 1 (distributed separately)

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 43-E  
29 October 1984  
Original : English

## PLENARY MEETING

### Note by the Secretary-General

#### RESULTS OF THE FIRST PRELIMINARY ANALYSIS

At the request of the IFRB, I transmit the attached note for the information of the Conference.

R.E. BUTLER  
Secretary-General

Annex : 1

ANNEX

NOTE FROM THE IFRB

Results of the first preliminary analysis

1. According to the report to the second session (page 67, paragraph "i"), the corrected basic inventory and the results of the first preliminary analysis shall be published as a conference document.
  2. The results of the first preliminary analysis were published on microfiche, for reasons of economy, and circulated to all administrations on 31 July 1984, as Annexes 1, 2, 3A and 3B to IFRB Circular-letter No. 586 which may be considered a conference document.
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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 44-E  
30 October 1984  
Original : English

TECHNICAL WORKING  
GROUP OF THE PLENARY

Italy

COMPATIBILITY BETWEEN THE SOUND BROADCASTING AND THE  
AERONAUTICAL RADIONAVIGATION SERVICES

(correction factors to permissible broadcasting signal levels  
for type B1 interference in the frequency offset case)

With reference to par. 4.2.5 of the JIWP 8-10/1 Report, measurements have been carried out in order to investigate on the behaviour of aeronautical receivers in the presence of B1 interference with frequency offset from the wanted signal frequency.

Tests have been carried out on the following receivers:

- Collins	51 RV 2	B4964
- King	KNR 6030	1559
- Benidx	RNA 34 A	1119

The results of the measurements are contained in Tables 1 and 2 for ILS and VOR receivers.

On the basis of the relevant data the following correction factors, relative to values for frequency coincidence, are proposed both for ILS and VOR receivers, for planning purposes:

+ -	50 KHz	2 dB
+ -	100 KHz	6 dB
+ -	150 KHz	10dB
+ -	200 KHz	16 dB



TABLE 1

ILS 108.1 Mhz

.....  
f1 dev 32 Khz STEREO  
f2 dev 32 Khz STEREO  
.....

f1	f2	A	B	C
107.1	106.1	-25	-42	-21
	+50 Khz	-23	-39	-20
	+100	-19	-36	-18
	+150	-15	-32	-14
	+200	- 9	-23	-9
	+250	- 4	-17	-1
	+300	- 1	-14	
	+350		-12	
	-50		-39	-19
	-100		-36	-17
	-150		-32	-13
	-200		-25	-6
	-250		-16	
	-300		-15	
	-350		-16	
	-400		-14	
104.1	100.1	-15	-17	-12
	+50 Khz	-13	-16	-11
	+100	-11	-13	-10
	+150	- 6	- 8	-9
	+200	- 2	- 4	-4
	+250	- 1	- 3	
	+300	- 0	- 2	
	+350			
	-50	-14	-16	-10
	-100	-10	-13	-7
	-150	- 7	- 6	-3
	-200	- 3	- 4	
	-250	- 1	- 3	
	-300	- 0	- 2	
	-350		- 1	

ILS signal  
level (dBm)

A	Collins	51RV2	B4964	-89.5
B	King	KNR	6030 1559	-89.5
C	Bendix	RNA	34A 1119	-89.5

TABLE 2

VOR 108.2 Mhz

.....  
f1 dev 32 Khz STEREO  
f2 dev 32 Khz STEREO  
.....

f1	f2	A	B	C
107.0	105.8	-21	-40	-19
	+50 Khz	-20	-37	-19
	+100	-17	-33	-17
	+150	-14	-30	-14
	+200	- 8	-24	-8
	+250	- 0	-13	-3
	+300			
	+350			
	-50	-20	-36	-19
	-100	-18	-33	-17
	-150	-14	-30	-14
	-200	- 6	-25	-6
	-250	0	-13	-1
	-300	+ 2	-15	
	-350	+ 3		
	-400	+ 1		
104.0	99.8	-15	-12	-10
	+50 Khz	-13	-10	-10
	+100	-10		-9
	+150			-4
	+200			
	+250			
	+300			
	+350			
	-50	-13		-10
	-100	- 9		-9
	-150	- 4		-5
	-200	+ 2		
	-250	+ 9		
	-300			
	-350			

VOR signal  
level (dBm)

A Collins 51RV2 B4964 -82.5  
B King KNR 6030 1559 -82.5  
C Bendix RNA 34A 1119 -82.5

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 45-E  
30 October 1984  
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TECHNICAL WORKING  
GROUP OF THE PLENARY

Italy

COMPATIBILITY BETWEEN THE SOUND BROADCASTING AND THE AERONAUTICAL  
RADIONAVIGATION SERVICES

(Type B1 interference with three BC transmitters involved)

The JIWP 8-10/1, as further development of the conclusions of the first session of the Conference, has adopted a new formula for the immunity assessment of airborne equipment with respect to B1 interferences.

In fact, in order to take into account the attenuation on the interference signals, due to the RF preselection circuits of radionavigation receivers, a frequency dependent term has been introduced in the 2nd and 3rd signal B1 formulas. In addition, JIWP 8-10/1 indicated, on the basis of theoretical considerations, that such term could be furtherly expanded to associate each broadcasting signal with a frequency-dependent term and invited the administration to make specific investigations about this problem.

To this purpose Italy has carried out a series of measurements on ILS receivers and VOR receivers of the following type:

Collins	51 RV 2	B4964
Kiny	KNR 6030	1559
Kiny	KNR 6030	2416
Bendix	RNA 341	2222
Bendix	RNA 341	1119

The annexed tables 1 and 2 refer to ILS (108,1 MHz) and to VOR (108,2 MHz).

The data of each table have been reported on 4 diagrams together with the values calculated using the formulas contained in par. 4.2.2 and in Annex V of the JIWP 8-10/1 Report.

These diagrams show that the use of formulas taking into account the dependence on the frequency of all the three broadcasting signals seems convenient.

In addition, these diagrams show that, as far as the ILS receivers are concerned their behaviour is very similar to that of the formulas in Annex V; on the contrary, as far as the VOR receivers are concerned, there are considerable discrepancies when the frequency of the interfering signals drops below 10 MHz (fig. 8).

TABLE 1

ILS 108.1 Mhz

.....  
f1 f3 not modulated  
f2 dev 32 Khz MONO  
.....

f1	f2	f3	A	B	C	D	E
107.9	107.8	107.6	-30	-52	-57	-39	-34
	107.6	107.4	-30	-49	-55	-36	-31
	107.4	107.2	-30	-46	-52	-34	-31
	106.9	106.7	-29	-46	-51	-31	-26
	105.9	105.7	-26	-44	-42	-25	-23
	103.9	103.7	-22	-26	-30	-21	-18
	99.9	99.7	-19	-25	-29	-17	-14
107.6	107.4	106.9	-30	-46	-51	-40	-26
	107.2	106.7	-30	-46	-50	-27	-25
	106.5	106.0	-28	-45	-48	-25	-24
	105.5	105.0	-25	-42	-43	-22	-20
	103.5	103.0	-21	-28	-29	-20	-16
	99.5	99.0	-17	-25	-27	-16	-13
107.1	106.9	105.9	-28	-45	-48	-27	-24
	106.7	105.7	-27	-45	-47	-25	-23
	106.0	105.0	-25	-42	-44	-26	-21
	105.0	104.0	-23	-38	-40	-22	-19
	103.0	102.0	-21	-29	-31	-22	-16
	99.0	98.0	-17	-21	-24	-16	-12
104.1	103.9	99.9	-19	-20	-23	-16	-15
	103.7	99.7	-19	-19	-22	-16	-15
	103.0	99.0	-18	-17	-21	-15	-14
	102.0	98.0	-17	-18	-20	-14	-13
	100.0	96.0	-15	-17	-19	-13	-12
	96.0	92.0	-14	-13	-16	-11	-11

ILS signal  
level (dBm)

A	Collins	51RV2	B4964	-89.5
B	Kins	KNR	6030 1559	-89.5
C	Kins	KNR	6030 2416	-89.5
D	Bendix	RNA	34A 2222	-89.5
E	Bendix	RNA	34A 1119	-89.5

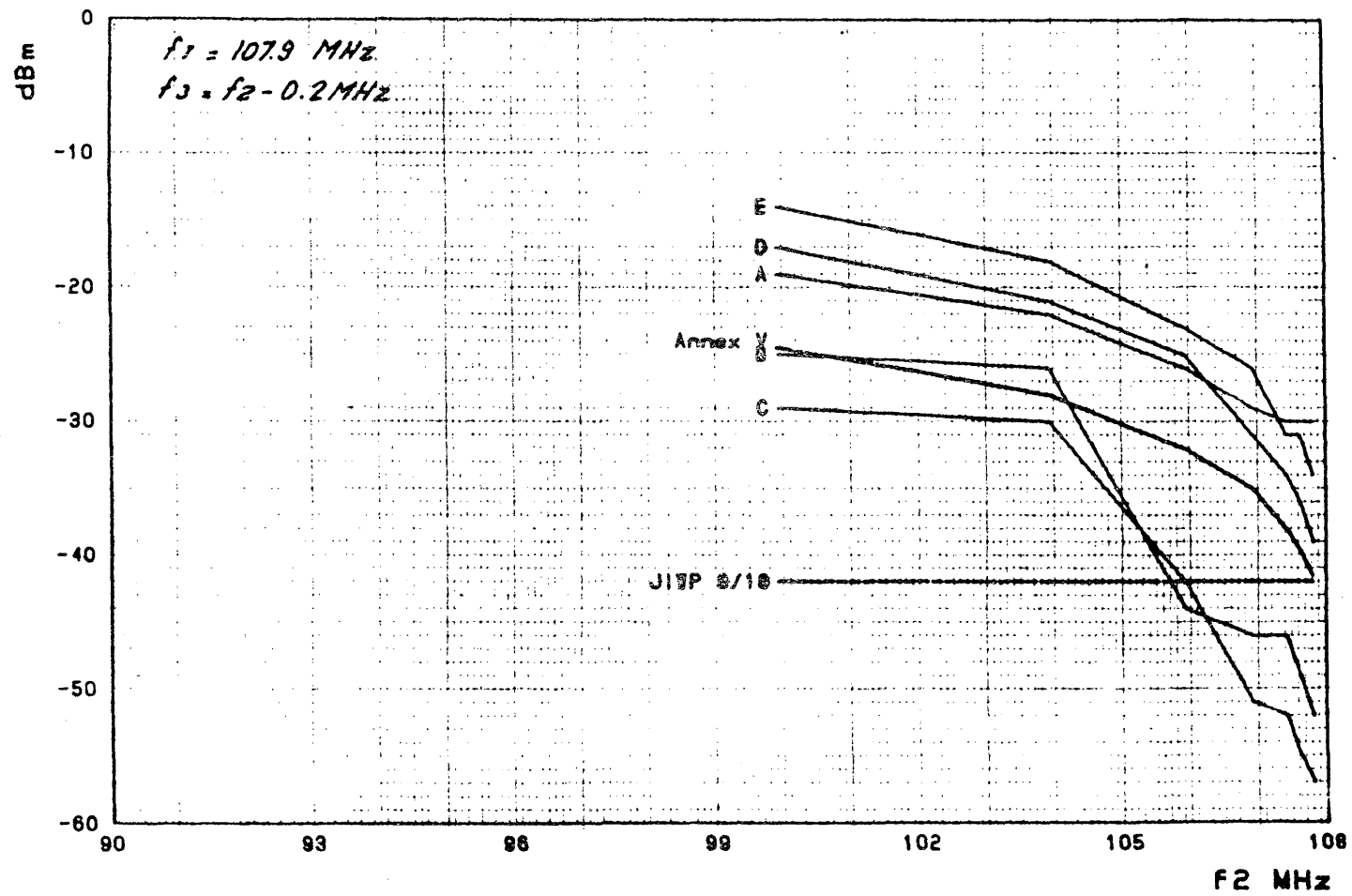


FIGURE 1

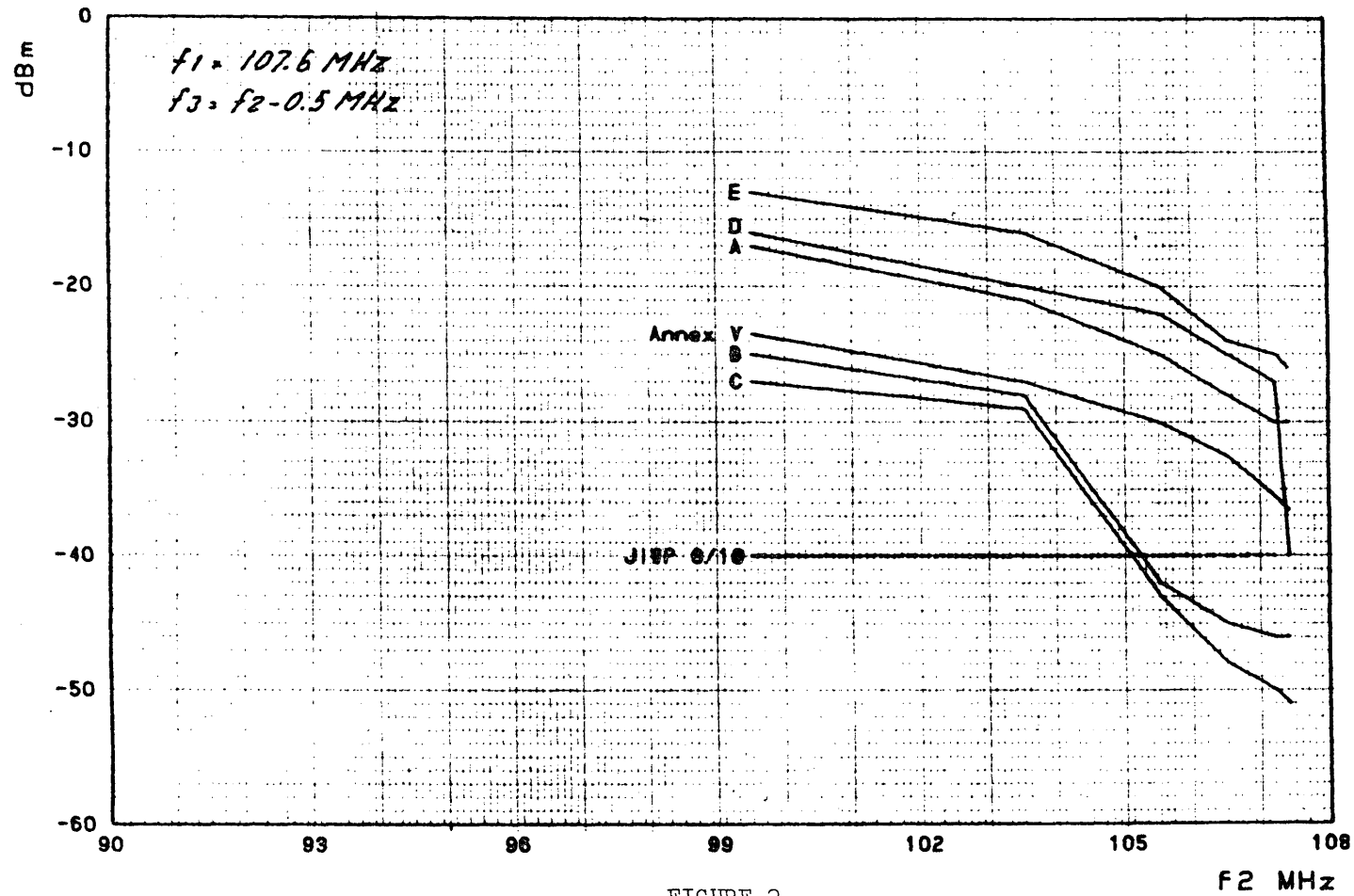


FIGURE 2

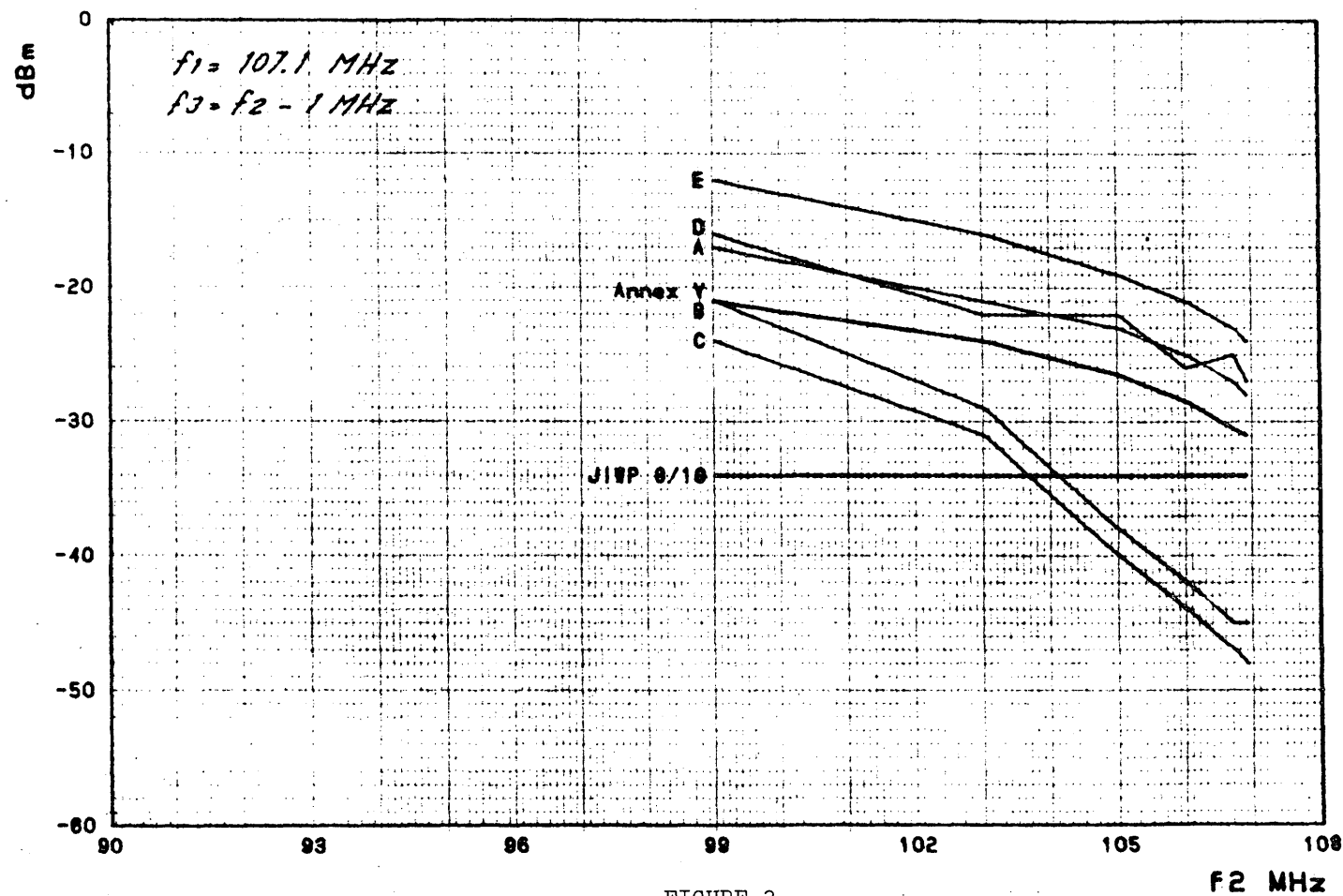


FIGURE 3

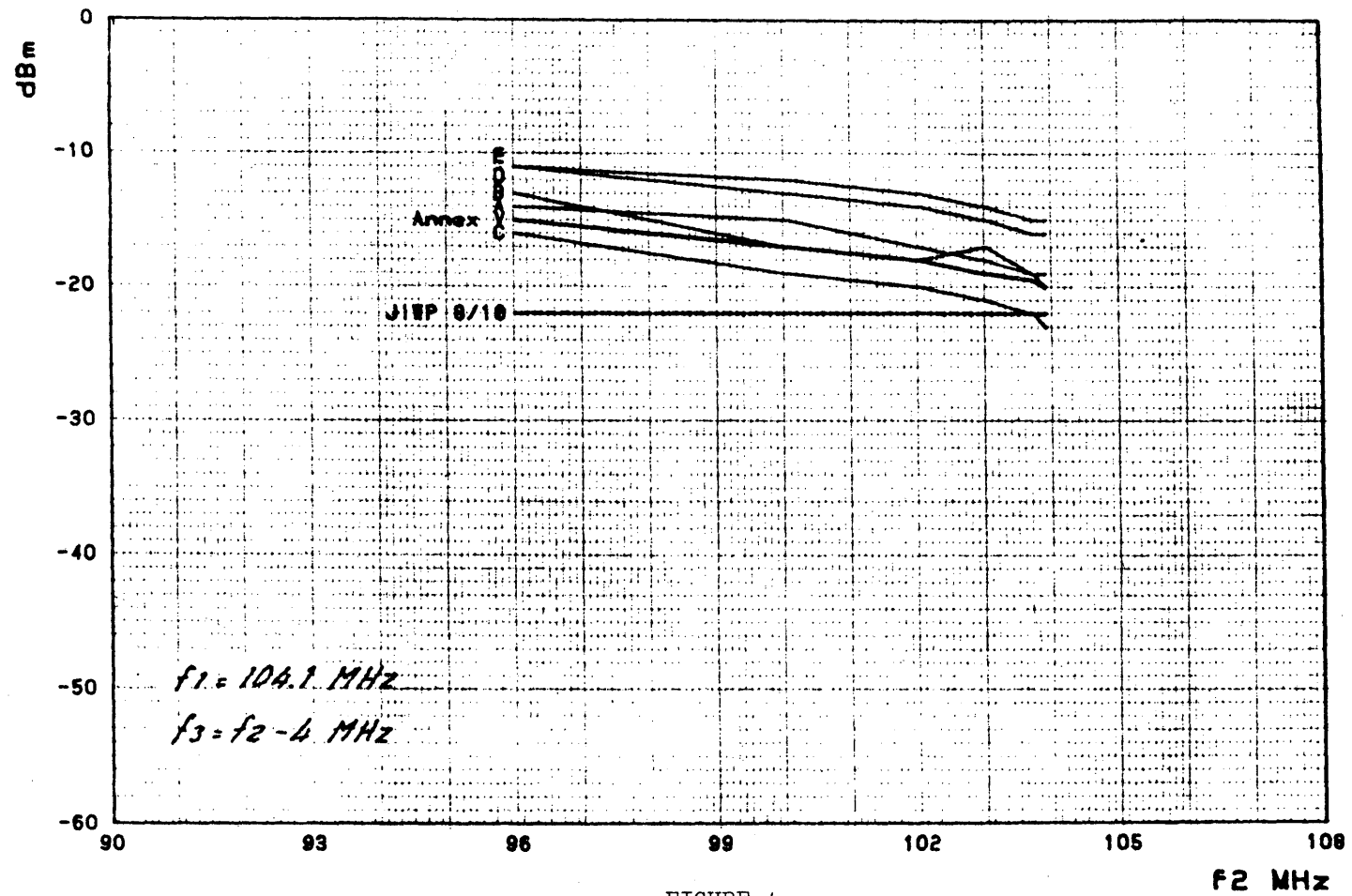


FIGURE 4



TABLE 2

VOR 108.2 Mhz

.....  
f1 f3 not modulated  
f2 dev 32 Khz MONO  
.....

f1	f2	f3	A	B	C	D
107.9	107.8	107.5	-29	-29	-44	-29
	107.6	107.3	-27	-29	-47	-34
	107.4	107.1	-29	-29	-44	-26
	106.9	106.6	-27	-27	-43	-24
	105.9	105.6	-24	-24	-41	-21
	103.9	103.6	-21	-20	-23	-16
107.6	99.9	99.6	-18	-16	-21	-12
	107.4	106.8	-28	-28	-43	-24
	107.2	106.6	-28	-27	-44	-23
	106.5	105.9	-25	-25	-42	-22
	105.5	104.9	-24	-23	-39	-19
	103.5	102.9	-19	-19	-24	-15
107.1	99.5	98.9	-16	-15	-21	-12
	106.9	105.8	-26	-26	-42	-22
	106.7	105.6	-25	-25	-41	-22
	106.0	104.9	-25	-25	-41	-21
	105.0	103.9	-22	-22	-36	-18
	103.0	101.9	-20	-20	-36	-15
104.1	99.0	97.9	-17	-15	-20	-11
	103.9	99.8	-17	-16	-15	-14
	103.7	99.6	-17	-16	-12	-14
	103.0	98.9	-16	-16	-16	-13
	102.0	97.9	-15	-15	-16	-12
	100.0	95.9	-15	-15	-16	-12
	96.0	91.9	-11	-12	-11	-11

VOR signal  
level (dBm)

A	Collins	51RV2	B4964	-79.0
B	Collins	51RV2	B4964	-82.5
C	King	KNR	6030 1559	-82.5
D	Bendix	RNA	34A 1119	-82.5

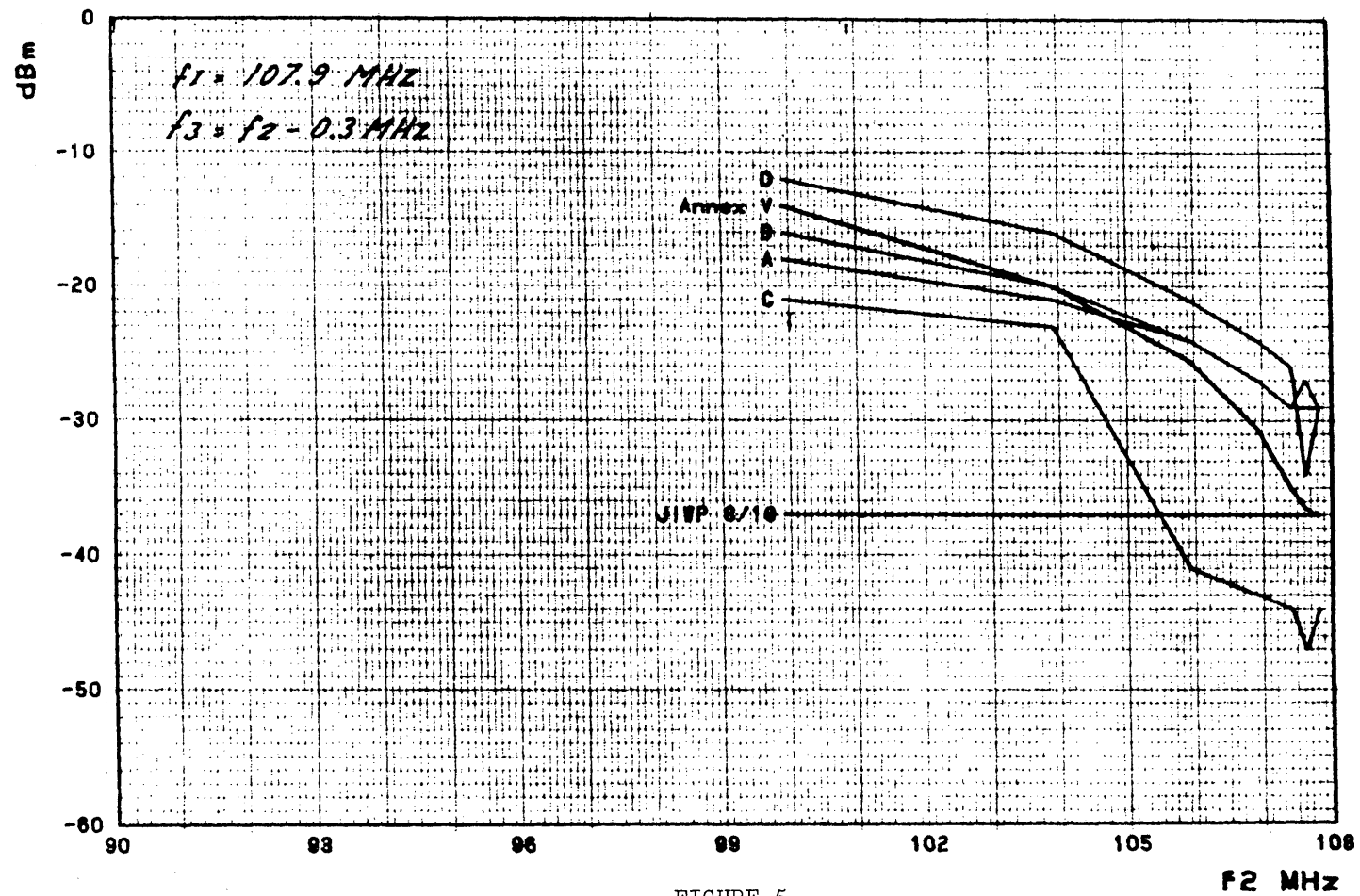


FIGURE 5

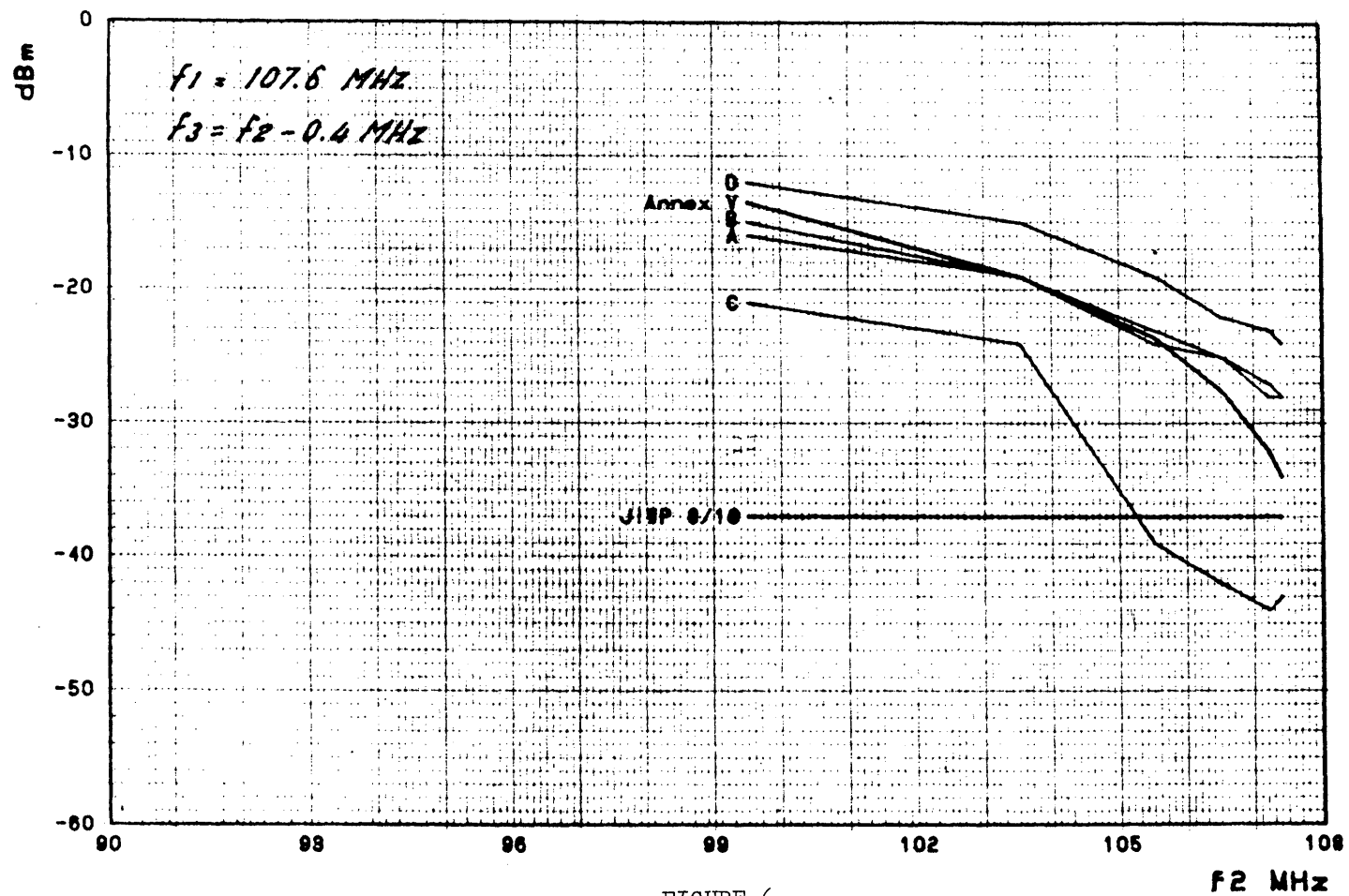
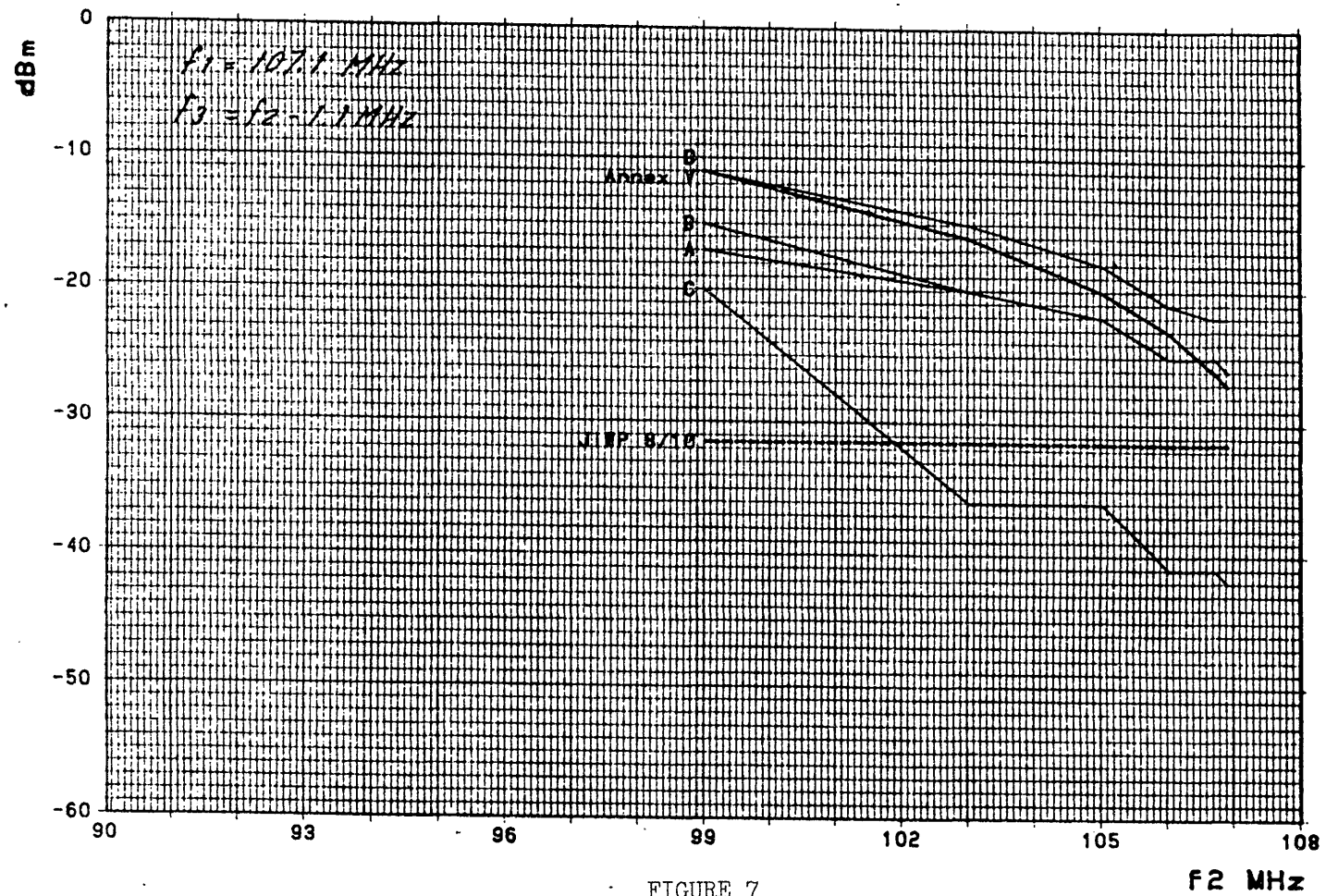


FIGURE 6



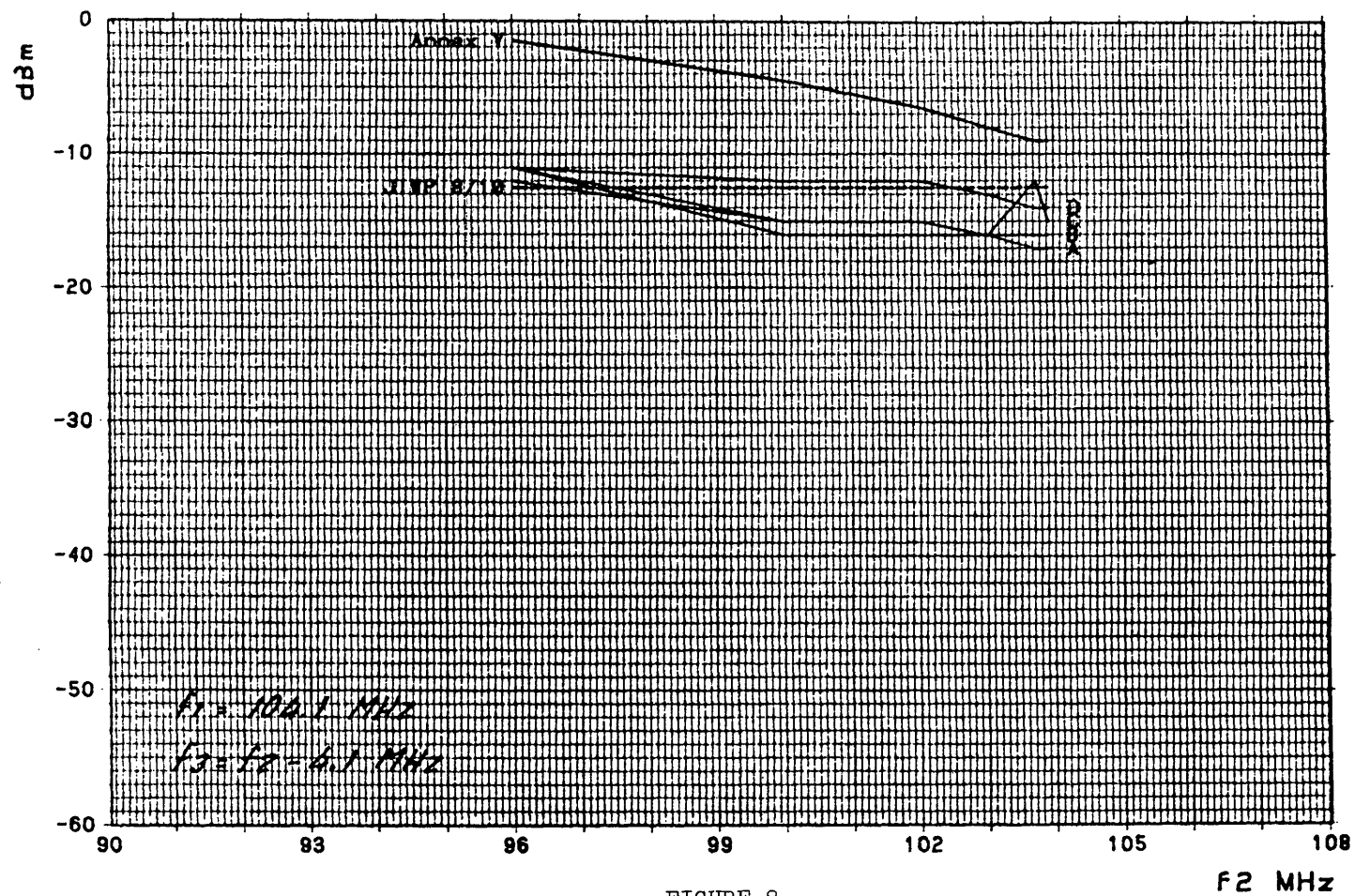


FIGURE 8

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

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TECHNICAL WORKING  
GROUP OF THE PLENARY

## Italy

### COMPATIBILITY BETWEEN THE SOUND BROADCASTING AND THE AERONAUTICAL RADIONAVIGATION SERVICES (Type A2/B2 interference)

With reference to par. 3.5.2.4 of the JIWP 8-10/1 Report, Italy has carried out measurements in order to investigate the behaviour of aeronautical receivers in the presence of A2 interference caused by frequency separations greater than about 400 KHz.

Tests have been carried out on the following receivers:

Collins	51 RV 2	B 4964
King	KNR 6030	1559
Bandix	RNA 34 A	1119

The results of the measurements are contained in Table 1 for ILS and in Table 2 for VOR receivers.

Relevant data show that A2 interference disappears at a frequency separation of about 300 KHz while B2 interference prevails since the disturbing effect is produced with and without modulation.

TABLE 1

ILS 108.1 Mhz

.....  
f1 dev 32 Khz STEREO  
.....

f1	A		B		C	
	mod	not mod	mod	not mod	mod	not mod
107.9	-9	-4	-25	-21	-9	-5
107.85	-2	-1	-22	-21	-8	-7
107.8	-1	-1	-21	-20	-6	-5
107.7	-1	0	-19	-18		
107.6	0	0	-16	-16		
107.3	+1	+1	-13	-12		
107.1	+2	+2	-12	-12		
106.1	+5	+4				
104.1	+5	+5				
100.1	+6	+5				

ILS signal  
level (dBm)

A	Collins	51RV2	B4964	-89.5
B	King	KNR	6030 1559	-89.5
C	Bendix	RNA	34A 1119	-89.5

TABLE 2

VOR 108.2 Mhz

.....  
f1 dev 32 Khz STEREO  
.....

f1	A		B		C	
	mod	not mod	mod	not mod	mod	not mod
107.9	+2	+1	-30	-30	0	+3
107.8	+1	+1	-28	-28	+7	+7
107.7	+2	+3	-25	-25		
107.4	+5	+5	-20	-20		
107.2	+5	+6	-13	-13		
106.2	+9	+9				
104.2	+13	+13				
100.2						

VOR signal  
level (dBm)

A	Collins	51RV2	B4964	-82.5
B	Kins	KNR	6030 1559	-82.5
C	Bendix	RNA	34A 1119	-82.5



# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

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TECHNICAL WORKING GROUP OF  
THE PLENARY MEETING

France

## BROADCASTING/RADIONAVIGATION COMPATIBILITY

### Introduction

Although the broadcasting Plan attempts to take into consideration the protection criteria of present-day aeronautical receivers, the period from 1985 to 1995 (when the new receivers are to be introduced) appears fraught with difficulties for the aeronautical community.

It is clear that at the end of the present planning Conference a number of stations will, if introduced before 1995, almost certainly prove a source of potential interference.

The purpose of this contribution is to propose a special regulatory arrangement in the Plan to cover such stations.

\*\*\*\*\*

The application of protection criteria for the aeronautical service imposes certain additional constraints on the broadcasting Plan.

These constraints arise from the compatibility criteria that have been defined at several meetings of ICAO and particularly at the meeting of CCIR Joint Interim Working Party 8-10, held at Geneva in May 1984.

The European countries have had great difficulty in finalizing the criteria and, even at the above-mentioned CCIR meeting, it was decided that further tests should be conducted to verify the validity of certain assumptions.

The results of the tests in question are to be submitted during the planning Conference and will certainly have repercussions on the Plan itself.

Moreover, in some countries it was not possible, in preparing the Plan, to take fully into account the protection of all aeronautical aids precisely because the protection criteria for the aeronautical service had not been finalized and the broadcasting Plan itself was still in the preparation stage.

For the reasons outlined above, the Plan produced at the end of the Conference will include a number of stations which, if introduced before 1995 when the aeronautical community will be using more selective receivers, would seriously impair the safety of air navigation.

France therefore proposes that stations likely to cause potential interference to the aeronautical service should appear in the Plan with an asterisk (\*).

The asterisk would refer to a note, generally applicable to the entire Plan, explaining that the station in question is not to be introduced before 1995 or, if that date should nevertheless be advanced, may be introduced only after consultation with the aeronautical authorities and after field tests to ensure that aeronautical receivers are free from all interference. Such field tests are of fundamental importance in marginal cases, particularly in respect of computer-predicted low-margin interference, since actual interference sometimes fails to occur even when predicted by calculation.

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

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30 October 1984

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## COMMITTEE 4

### Yugoslavia (Socialist Federal Republic of)

#### PROPOSALS FOR THE WORK OF THE CONFERENCE

##### 1. Introduction

The first session of the Regional Administrative Conference for FM Sound Broadcasting in the VHF band (Geneva, 1982) provided the technical bases for the frequency assignment plan to be established in the band 87.5 to 108 MHz in the second session of the Conference (Geneva, 1984). Although the planning principles, criteria and methods to be applied in making this plan have been defined in the report to the second session, it is possible that different interpretations of these may arise.

The Administration of the Socialist Federal Republic of Yugoslavia was faced with such a situation during the bilateral and multilateral coordinations with its neighbouring countries, when some important items in the report to the second session have been differently interpreted. Therefore, the Administration of the Socialist Federal Republic of Yugoslavia wishes to express its position in respect to these items in order to verify their right meanings.

##### 2. The principle of "equal rights for all countries with regard to the use of the band 87.5 to 108 MHz for broadcasting"

As stated in the report to the second session (page 53), "for the application of the principle of equal rights among countries with regard to the use of the band 87.5 to 108 MHz for broadcasting, the concept of equivalent national coverage will be introduced. Every country will have assured rights to the same number of equivalent national coverages".

When applying this principle to the frequency planning in the area of "Africa and the Middle East", there is no doubt that the equal rights to the same number of "equivalent national coverages" are referred to the FM sound broadcasting.

However, in some parts of the planning area referred to in the report to the second session as "the rest of the planning area", the situation is somewhat different. Particularly, this is the case in the border area between the countries using the band 87.5 to 100 MHz for television and those using the same band for FM sound broadcasting in accordance with the Regional Agreement, Stockholm, 1961.

Otherwise said, the question arises of how to interpret the principle of "equal rights for all countries with regard to the use of the band 87.5 to 108 MHz for broadcasting" in the planning area within which the frequency band 87.5 to 100 MHz is used both for television and sound broadcasting in accordance with the Regional Agreement, Stockholm, 1961.

When looking for the answer, the following facts are to be considered :

- countries, using the band 87.5 to 100 MHz for television assured at WARC-1979 (Resolution 510, f)) the right to protect the existing or planned assignments to television stations in that band according to the Regional Agreement, Stockholm, 1961;
- countries, using the band 87.5 to 100 MHz for sound broadcasting, assured at WARC-1979 (Resolution 510, g)) the right to protect the service areas of those existing sound broadcasting stations operating in accordance with the Regional Agreement, Stockholm, 1961, which are situated in the coordination area with countries using this band for television in accordance with the Regional Agreement, Stockholm, 1961.

Following these facts, it becomes clear that the principle of equal rights for broadcasting (i.e. television and sound) in the coordination areas is equivalent to the principle of equal rights to protect the broadcasting services in these areas in the band 87.5 to 100 MHz.

It might be as well to explain that the principle of equal rights for television broadcasting as well as sound broadcasting was taken into account at the first session (Geneva, 1982) when the planning principles (page 53) were formulated, i.e., the general principle, formulated as "equal right for broadcasting" comprises both television and sound broadcasting. As a consequence, a planning method adopted for the "rest of the planning area" is quite different from that adopted for the "Africa and the Middle East".

YUG/48/1

To overcome the possible difficulties in the interpretation of the guiding principle, when establishing the new frequency assignment plan, the Administration of the Socialist Federal Republic of Yugoslavia submits the following proposal :

The principle of "equal rights for all countries with regard to the use of the band 87.5 to 108 MHz for broadcasting" in the planning area referred to in the report to the second session as "the rest of the planning area" should be formulated by two provisions :

- 1) equal rights for all countries with regard to the use of the band 87.5 to 100 MHz for broadcasting (either television or sound broadcasting);
- 2) equal rights for all countries with regard to the use of the band 100 to 108 MHz for sound broadcasting.

YUG/48/2

While applying the provision 1) in the border area between countries using the band 87.5 to 100 MHz for television at one side and for sound broadcasting at the other side in accordance with the Regional Agreement, Stockholm, 1961, the constraints imposed by WARC-1979 Resolution 510 shall be observed.

It is worthwhile to point out here that this fact has already been taken into account in the report to the second session when saying (page 55) that "countries parties to the Regional Agreement, Stockholm, 1961, which, in the plan annexed to this agreement, in the band 87.5 to 100 MHz, have entries for television stations only, can submit requirements for assignments for FM sound broadcasting stations in this band as provided in Resolution 510 of WARC-1979".

It stems clearly from the above that only the requirements in the band 87.5 to 100 MHz, submitted by the countries using this band for television, which do not affect either existing or planned assignments to television stations or to the existing sound broadcasting stations in the coordination area and which are in accordance with the Regional Agreement, Stockholm, 1961, can be incorporated in the plan.

YUG/48/3

While applying the provision 2) of YUG/48/1, the concept of the same number of equivalent national FM sound broadcasting coverages in the band 100 to 108 MHz can be used to judge whether the principle of equal rights is accomplished.

3. Equal rights for the same number of equivalent national FM sound broadcasting coverages

The fact that some countries are using the band 87.5 to 100 MHz for television in accordance with the Regional Agreement, Stockholm, 1961, implies that these countries may not have the same number of equivalent national FM sound broadcasting coverages in the whole band 87.5 to 108 MHz as the countries which have been oriented to the use of the band 87.5 to 108 MHz for FM sound broadcasting only..

However, it might be mentioned that several countries have the privilege of using the other frequency bands for FM sound broadcasting which are not within the scope of this Conference, thus realizing in general the equal rights principles as far as the sound broadcasting is concerned.

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INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

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PLENARY MEETING

Note by the Secretary-General

NOTE OF THE IFRB TO THE CONFERENCE

At the request of the IFRB, I transmit the attached note for the information of the Conference.

R.E. BUTLER  
Secretary-General

Annexes : 2

ANNEX 1

IFRB NOTE TO THE CONFERENCE

This document has been prepared in response to a request by the first Plenary Meeting of Monday, 29 October and its purpose is to supply information concerning the organization of the work of the Conference in the light of various constraints inherent in :

- the large number of requirements;
- the time required for capture and validation of data;
- the time needed for analyses.

1. Inventory of requirements

1.1 Broadcasting stations

This inventory includes about 47,000 requirements as at 30 September 1984, namely :

- all requirements submitted to the IFRB by 31 January 1984;
- corrections of material errors received by 30 June 1984 (see IFRB Circular-letter No. 586);
- modifications received by 30 September 1984 aimed at improving the Plan (see footnote on page 68 of the Report to the second session).

Additional requirements and modifications (about 5,600), which in the Board's opinion could not improve the Plan, have been put in a separate file and have been published in an addendum to the inventory of requirements. (Document 42)

1.2 Reference situation for the sound broadcasting and television stations concerned

This file includes 2,204 stations (1,890 sound broadcasting and 314 television stations) entitled to a special status (WARC-79 Resolution 510).

1.3 ILS/VOR

This file contains information concerning some 2,000 frequency assignments.

2. Calculation facilities

2.1 The two machines available to the ITU will be used for the Conference. They have the following characteristics :

- machine A (2.7 MIPS) used mainly for the IFRB's new computerized frequency management system. This machine will only be available to the Conference at night and during weekends;

- machine B (1.2 MIPS) used for ITU non-specialized applications, which will be available on a shared basis with other users during the day and which will be available for exclusive use by the Conference at night and at weekends.

Machine A is about 2.5 times faster than machine B.

2.2 The last analysis carried out by the IFRB showed that the following calculation times are necessary. The figures are given with reference to machine A :

- analysis of broadcasting/broadcasting compatibility : 15 h
- checking of the reference situation : 6 h
- broadcasting/aeronautical radionavigation compatibility analysis : 18 h

The overall analysis thus requires about 40 hours of machine time. In view of the time needed for the publication of data on paper and on microfiches, about 70 hours are required between the start of calculations and the distribution of results if the calculations are performed at the weekend.

2.3 In the absence of a planning method which automatically assigns frequencies to stations, the choice of frequencies for some 2,000 stations for which no frequency has been designated will have to be carried out manually. For this purpose, spectrum occupancy diagrams ( $E_{\text{U}}/F$ ) will be used. On the basis of the time required to produce the diagrams sent to administrations, the IFRB considers that two weeks will be needed to draw up these diagrams and choose the frequencies.

### 3. First Conference analysis

In view of the fact that it would be difficult in the first week to introduce changes to software arising from the decisions already taken by the Technical Group of the Plenary Meeting, the Board suggests to the Plenary that a series of analyses be carried out at the end of the first week on the basis of the data which the Conference decides to include using the software already established.

The Conference is therefore invited to take a decision on the modifications or additions in abeyance as published on 30 October 1984. The Conference could also adopt a deadline for the submission of requirements to be included in the planning. If the Conference wishes to have an analysis at the beginning of the second week, this deadline should be Friday, 2 November, at 23.59 hours. In view of the tight deadlines thus laid down, it will be necessary to make an exception for the countries not represented at the Conference so that they have time to reply to the telex to be sent by the Conference.

If this suggestion is accepted, the results of the first analysis will be circulated according to the following timetable :

- Monday, 5 November - results of BC/BC analysis available on terminals installed on Level D;



- Tuesday, 6 November - results of BC/BC analysis available on microfiches and on paper;
- Tuesday, 6 November - results of BC/BT analysis available on paper and on microfiches;
- Wednesday, 7 November - results of ILS/VOR analysis available on paper and on microfiches.

The results of the second and third analyses made on the basis of software modified to take account of the Technical Group's decisions will probably be available on Monday, 19 November, and on Saturday, 1 December.

This timetable would make it possible to print the Plan for a reading at the Plenary Meeting on Tuesday, 4 December or Friday, 5 December. A draft calendar has been annexed to show the different stages.

#### 4. IFRB assistance

The IFRB has taken a number of measures within the framework of the assistance it is able to offer the developing countries.

##### 4.1 Use of the computer

Eight terminals linked to the central computer have been installed on Level D of the CIGG.

These terminals may be used as follows :

- direct access by delegations to consult the requirements inventory file. Such access is possible without difficulty by IFRB serial number, by frequency, by administration and by station name;
- direct access to the broadcasting stations analysis results file. Such access is possible without difficulty by IFRB serial number;
- interactive calculation of usable field strength  $E_u$  for a new site with new characteristics or for an existing site with a different frequency only. The calculation may be made taking account of the nine broadcasting channels and of one or two television channels. The  $E_u$  calculation will be made at the request of administrations through the Technical Secretariat. Two engineers will be available on Level D to assist delegates.

##### 4.2 Microfiche readers

A microfiche reader with a system for reproducing microfiche results on paper has been installed on Level D and is available to delegates.

##### 4.3 $E_u/F$ diagram

The IFRB can supply a limited number of  $E_u/F$  diagrams in exceptional cases. Administrations are asked to make use of this possibility only in critical cases.

ANNEX 2

DRAFT CALENDAR FOR THE CONFERENCE

Wednesday	2	23.59 hours deadline for submitting requirements
Saturday	3	} → Capture - Validation
Sunday	4	
Monday	5	First Conference analysis/deadline for submission of requirements for countries not represented at the Conference
Tuesday	6	Distribution of BC/BC and BC/BT results
Wednesday	7	Distribution of BC/Aero results
Thursday	8	
Friday	9	
Saturday	10	
Sunday	11	
Monday	12	
Tuesday	13	} → Deadline for submission of modifications
Wednesday	14	
Thursday	15	
Friday	16	
Saturday	17	Second Conference analysis
Sunday	18	
Monday	19	Distribution of second analysis results
Tuesday	20	
Wednesday	21	
Thursday	22	
Friday	23	
Saturday	24	} → Capture - Validation
Sunday	25	
Monday	26	
Tuesday	27	} → Third Conference analysis
Wednesday	28	
Thursday	29	
Friday	30	
Saturday	1	Distribution of third analysis results
Sunday	2	
Monday	3	} → Printing of the Plan
Tuesday	4	
Wednesday	5	First reading of Plan
Thursday	6	
Friday	7	

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

 Document 50-E  
 1 November 1984

## LIST OF DOCUMENTS

(1 - 50)

 PL = Plenary  
 C = Committee  
 TWG = Technical Working  
 Group of the  
 Plenary

No.	Origin	Title	Destination
1	SG	Agenda of the Conference	PL
2	SG	Credentials of delegations	C.2
3	SG	Improvement of the immunity of airborne radionavigation equipment to interference from FM broadcasting stations	GTT
4	SG	Report by CCIR Study Group 10	GTT
5 + Add.1	SG	Document 5/196 of Study Group 5 of the CCIR	C.5
6	F	Proposal - Criteria for sharing between the FM Sound Broadcasting service and the land mobile service	GTT
7	F	Proposal - Procedures for the bringing into service of the FM Sound Broadcasting Plan	C.5
8	AFS	Proposal - Procedure for bringing into service the assignments in the Plan	C.5
9	ROU	Proposals	C.4
10	URS	Proposals	GTT
11	F	Proposal - Coordination procedures	C.5
12	SG	Report by the Joint Interim Working Party (JIWP) 8-10/1 of the CCIR	GTT
13	D	Proposal - Procedure for modifications to the Plan	C.5
14	D	Proposal - Extrapolation of field-strength curves for effective transmitting antenna heights below 37.5 M or above 1,200 M, respectively	GTT
15	D	Proposal - Insertion of supplementary modulation signals with different characteristics for Sound Broadcasting at VHF	C.5, GTT



No.	Origin	Title	Destination
16	SG	Budget for the Regional Administrative Conference for FM Sound Broadcasting in the VHF Band	C.3
17	SG	Contributions of non-exempt recognized private operating agencies and international organizations	C.3
18	D	Proposal - Compatibility between the sound Broadcasting and the aeronautical radionavigation services (Type A2/B2 interference - susceptibility of future receivers)	GTT
19	D	Proposal - Correction factors to permissible broadcast signal levels for type B1 interference in the frequency offset case	GTT
20	D	Proposal - Type B1 interference with three BC transmitters involved	GTT
21	D	Proposal - RF-protection ratios against type A1 interference	GTT
22	D	Proposal - In-band selectivity of aeronautical receivers	GTT
23 + Corr.1	IRN	Proposal - Propagation criteria in Persian Gulf area	GTT
24	F	Frequency dependency for three-signal Type B1 interference	GTT
25	F	Type B1 interference - Correction factors to permissible broadcast signal levels relative to values at frequency coincidence	GTT
26	F	Type B1 interference - Determination of a limit level below which a broadcasting station no longer contributes to B1 type interference because of the preponderance of B2 type interference	GTT
27	F	Broadcasting/aeronautical radionavigation compatibility protection ratio for ILS/VOR receivers for Type A2 interference - Distinction between Type A2 interference and Type B2 interference	GTT

No.	Origin	Title	Destination
28	SG	Financial responsibilities of administrative conferences	PL
29	SG	Invitations	PL
30	SG	Notification to international organizations	PL
31	SG	Loss of the right to vote	-
32	SG	Report by the IFRB to the second session of the Conference	C.4, C.5, GTT, PL
33	G	Proposal - Summation of multiple AI interference to aeronautical receivers	GTT
34	G	Proposal - Broadcasting/aeronautical compatibility criteria - BI offset conditions	GTT, PL
35	G	Proposal - Criteria for sharing between the sound broadcasting service and the land mobile service in the band 105 to 108 MHz	C.5, GTT
36	G	Proposal - The technical bases for modification procedures for the Band II Plan	C.5
37	F	Description of a methodology for computer analysis of aeronautical incompatibilities	C.4, GTT
38	PL	Minutes of the first Plenary Meeting	PL
39	SG	Allocation of documents	-
40	SG	Conference structure	-
41	SG	Revised inventory and results of the second/third analysis	PL
42	SG	List of modifications submitted after 31 July 1984 and additional requirements	PL
43	SG	Results of the first preliminary analysis	PL

No.	Origin	Title	Destination
44	I	Correction factors to permissible broadcasting signal levels for Type B1 interference in the frequency offset case	GTT
45	I	Type B1 interference with three BC transmitters involved	GTT
46	I	Type A2/B2 interference	GTT
47	F	Broadcasting/radionavigation compatibility	GTT
48	YUG	Proposal	C.4
49	SG	Note of the IFRB to the Conference	PL
50	SG	List of documents	-

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 51-E  
30 October 1984  
Original : English

PLENARY MEETING

Note by the Secretary-General

RESULTS OF THE COMPATIBILITY BETWEEN AERONAUTICAL  
RADIONAVIGATION SERVICES AND FM BROADCASTING SERVICES

EXPLANATION OF COLUMN HEADINGS

At the request of the IFRB, I transmit the attached explanation of column headings for the results of compatibility between aeronautical radionavigation services and FM broadcasting services for the information of the Conference.

R.E. BUTLER  
Secretary-General

Annexes : 2

ANNEX 1

RESULTS OF THE COMPATIBILITY BETWEEN AERONAUTICAL  
RADIONAVIGATION SERVICES AND FM BROADCASTING SERVICES

Explanation of column headings

The explanation below of column headings for the results of IFRB compatibility calculations between aeronautical radionavigation services and FM broadcasting services is given for information.

Heading

AERONAUTICAL RADIONAVIGATION STATION

Frequency of the aeronautical radionavigation station

Type of aeronautical radionavigation station

Name of aeronautical radionavigation station

Administration (country)

IFRB Serial No. of the aeronautical radionavigation station

Serial No. Azimuth Distance Altitude - of the test point

Coordinates of the aeronautical radionavigation station

Altitude of the aeronautical radionavigation station above sea level

FM BROADCASTING STATION - Results

1. Frequency of the primary BC station. Primary station means that the interference level at the test point caused by the BC station is more than -25 dBm or the interfering field strength at the test point is higher than 100 dB( $\mu$ V/m) for ILS stations and higher than 107 dB( $\mu$ V/m) for VOR stations
2. Country
3. Name of the BC station
4. Frequency of the secondary station(s). Secondary station means a BC station which gives third-order intermodulation product with the primary BC station
5. IFRB Serial No. of the BC station
6. Longitude and latitude of the BC station



7. Distance between the broadcasting station and the test point, the serial number of which is indicated in Column (8) or in Column (13)
8. Serial number of the test point where the interference field strength is higher than 100 dB( $\mu$ V/m) for ILS stations or 107 dB( $\mu$ V/m) for VOR stations. Where asterisks appear, these mean that the FM broadcasting station is situated within the service zone of the aeronautical radionavigation station
9. The interfering field strength of the broadcasting station in dB( $\mu$ V/m). If there is no value in this column, then the field strength is less than 100 dB( $\mu$ V/m) for ILS stations and less than 107 dB( $\mu$ V/m) for VOR stations
10. The interference level in dBm. If there is no value in this column, the interference level is less than -25 dBm
11. Interference level of transmitters causing third-order intermodulation products (in dBm). The transmitters are grouped if three transmitters cause intermodulation. In the blank line, the interference level of the primary transmitter is indicated and is the same as in Column (10)
12. Value of  $1.71 N_1 + N_2 + 60$  if it is greater than 0 in 2-signal cases or value of  $N_1 + N_2 + N_3 + 73$  if it is greater than 0 in 3-signal cases
13. Serial number of the test point for which the third-order intermodulation incompatibility was calculated

If incompatibilities between radionavigation stations and broadcasting stations were not identified during calculations, no results were printed.

For ease of reference, a sample page of the headings is attached. (Annex 2)

## ANNEX 2

### ILS/VOR COMPATIBILITY RESULTS - EXPLANATION OF COLUMN HEADINGS

## AERONAUTICAL RADIONAVIGATION STATION

Frequency	Type	Name	Admin./Cnty.	IFRB Serial No.
* 110.500 MHZ *	* I.L.S. *	* MT DE MARSAN	F ( F ) N.	SERIE : 90051802
		COORDONNEES :	0W32 43N54	
		HAUTEUR A.D.N.M. :	60 M	

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Geogr. coord.	Height above sea level
10° 15' N	1000
10° 30' N	1000
10° 45' N	1000
11° 00' N	1000
11° 15' N	1000
11° 30' N	1000
11° 45' N	1000
12° 00' N	1000
12° 15' N	1000
12° 30' N	1000
12° 45' N	1000
13° 00' N	1000
13° 15' N	1000
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40° 00' N	1000
40° 15' N	1000
40° 30' N	1000
40° 45' N	1000
41° 00' N	1000
41° 15' N	1000
41° 30' N	1000
41° 45' N	1000
42° 00' N	1000
42° 15' N	1000
42° 30' N	1000
42° 45' N	

4 test points as communicated  
by Administration

FM\_BROADCASTING\_STATION

Primary interferers						Intermodulation products						
						INTERFERENCE SIMPLE				INTERMODULATION		
FREQ. (PRI) (1)	PAYS (2)	S T A T I O N F. M. (3)	FREQ. (SEC) (4)	N. SERIE IFRH (5)	COORDONNEES (6)	DIST. ST/PT (7)	PT (8)	IEREF=100 A DH / M (9)	TRG=-25 H DBM (10)	CUT=-50 NIVEAU DBM (11)	MARGE DBM (12)	PT (13)
107.30	F	MT DE MARSAN		02113102	OW23 43N50	14.1	*1*		-24.8			
↓	Cnty.	Name	↓	IFRB Serial No.	Coord.	Distance	Test point	↓	Level of interference (in dBm)	↓	Margin	Test point
Frequency of primary interferers			Frequency of secondary interferers					Value of field strength (in dBμV/m)		Interference level of secondary interferers (in dBm)		

**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 52-E

31 October 1984

Original : EnglishCOMMITTEE 4TECHNICAL WORKING  
GROUP OF THE PLENARYRepublic of Iraq**RESULTS OF COMPUTER ANALYSIS OF INTERFERENCES BETWEEN  
PLANNED FM BROADCASTING STATIONS IN THE ARABIAN GULF AREA****1. Introduction**

The first session of the FM Broadcasting Planning Conference (Geneva, 1982) has requested the CCIR (in Recommendation AA of its Report to the second session) to continue its collaboration in the propagation and radiometeorological measurements and study campaign, then underway in the Arabian Gulf Area, and to prepare a report, based on this collaboration and studies, for the consideration of the second session of the FM Conference. This request was made in view of the extreme super-refractivity and ducting phenomena that are very prevalent in that area and which far exceed the conditions for which the warm sea curves of CCIR Recommendation 370 were found; thus making these curves unreliable for the estimation of interferences there.

However, it was rather unfortunate that the first session of the FM Conference restricted the IFRB by not providing for the use of any conclusions that the CCIR may reach in the meantime between conferences, until these were approved by the second session. This meant that the IFRB could only use the existing Recommendation 370 one-per cent sea curves in its first and second round of interference calculations.

The first of those was to be dispatched to administrations well before the second session of the Conference to facilitate preliminary study and pre-conference coordination between the administrations concerned. These calculations were therefore of no practical value for the Arabian Gulf Area, being very far from depicting the prevailing propagation and interferences conditions within it.

Faced with this difficulty the Iraqi Administration took it upon itself to perform the interference calculation study for the Arabian Gulf Area based on the newly devised one-per cent-of-time-oversea propagation curve (which was devised and approved for the area during the CCIR's Interim Working Party 5/5 meeting in early May 1984) and on another method of calculation that uses the above curve in addition to the ( $\gamma$ ) "land loss coefficient" concept promoted by the Gulfvision Organization propagation study<sup>1</sup>.

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<sup>1</sup> See Document 15, title "Tentative propagation characteristics for coverage and interference analysis in the project area", Seminar on FM broadcasting propagation, Geneva, 26-30 September 1983.

The planned FM stations requirements for all the countries in the area were taken from the first and second FM inventories dispatched to administrations in microfiche form and all stations around the Gulf falling within up to 250-300 km from its coasts were included in this interference study.

## 2. Calculation methods used

### 2.1 IWP 5/5 one-per cent oversea propagation curve

The CCIR IWP 5/5 met in Geneva between 30 April and 4 May 1984 and considered the results of some measurements that were performed in the area, notably the extensive study of the Gulfvision Organization, and after detailed discussions it was decided that the one-per cent of time curve oversea paths should follow the free space curve from zero up to 400 km distance after which it will depart from the free space curve and decay linearly with a rate of 0.06 dB/km from the value at 400 km, i.e. :

$$E_s = E_{f.s}(D) \quad (\text{for } D \leq 400 \text{ km})$$

and 
$$E_s = E_{f.s}(400 \text{ km}) - (D - 400) \times 0.06 \quad (\text{for } D > 400 \text{ km})$$

where :

$E_s$  = Electric field strength in dB( $\mu$ V/m) for a total sea path

$E_{f.s}(D)$  = The electric field value calculated assuming free space propagation for a distance of D km from the transmitter

D = Distance between the interfering and interfered-with stations in km

The rest of the interference calculations for the cases of mixed paths electric field strengths followed the normal one-per cent land curves (of Recommendation 370) and the interpolation formula given in the Report to the second session.

### 2.2 Extended sea concept

It was also decided during the IWP 5/5 meeting, that, for the purpose of interference calculations in the Arabian Gulf Area, oversea paths are considered to include also a coastal strip of 50 km inland. This, in effect, is equivalent to an extension of the sea border by 50 km into the coastal land around it.

The above decision was taken against reservation from some participants who felt, quite rightly in our view, that it may result in a somewhat over pessimistic picture of interferences than the real one. The simplicity of the extended sea approach was its greatest merit.

### 2.3 Land Loss Coefficient ( $\gamma$ ) Concept For Treating Coastal Paths In Interference Calculations

This approach is promoted by the Gulfvision Organization based on its propagation study within the ITU/Gulfvision project<sup>1</sup>. It is assumed here that the effect of super-refractivity and ducting phenomena tapers linearly as one moves

inland from the coast line. A land loss coefficient (called  $\gamma$ ) is used to estimate a land loss value (in dB) that is subtracted from the electric field strength and nuisance field strength found for the coastal path under consideration.

The fields are calculated by first assuming total sea paths and then the subtraction of the land loss is performed to take account of the reduced effect of super-refractivity and ducting as one moves inland. The land loss coefficient is assumed to increase linearly from a value of about 0.05 dB/km right at the sea coast which represents the loss encountered inside the ducts to a value that represents the diffraction loss well inland where ducting ceases to exist.

Linear graphs relating the variation of ( $\gamma$ ) with the perpendicular distance from the sea coast were developed for various parts of the Gulf Area by the Gulfvision study.<sup>1</sup> The land loss for a given coastal path is found by multiplying the path length by the path average value of ( $\gamma$ ); which is the value that corresponds to the average perpendicular distance from the sea coast.

The average ( $\gamma$ ) values were calculated manually and stored in a computer file for the paths with interference possibility; that is, where the two stations use frequencies within 400 kHz apart.

### 3. Calculation of land and sea distances for mixed paths

Land and sea distance portions for all the station-to-station paths connecting the 151 stations included in this study were calculated using a special computer program taking into consideration the 50 km extended sea concept. The calculations were performed by first mapping out the extended Gulf boundaries and feeding information about 288 latitude lines traversing the area starting from latitude 17 degrees to latitude 31.4 degrees (North) with steps of 0.05 degree. For each of these latitudes, up to five longitude values were recorded representing the longitudes at which the first, second, third, fourth and fifth land/sea or sea/land intersections occur as one moves from west to east crossing the modified Gulf boundaries. From these values it was then possible to determine whether any point falls in the land or in sea.

Distances in land and in sea for any path are calculated by moving from the first station, towards the second station, with 5 km steps each time calculating the new point longitude and latitude and the direction angle to the second station following the great circle path. At each of the stepping points a test is made to determine whether it falls in the land or in the sea. This process is repeated for each 5 km step along the path and the sums of land and sea steps are obtained at the end.

The accuracy of this method was found to be of the order of 4-5% (error) for a typical path of 500-600 km length which is considered to be quite satisfactory for interference calculations of this kind.

### 4. Brief Account Of The Results

4.1 The interference calculation results obtained in this study were extremely high and in all cases much higher than those obtained for the same area by the IFRB in its first round of interference calculations.

4.2 The Usable Field Strength values which were calculated using both the power sum and the simplified multiplication methods were of the order of 90 to 100 dB( $\mu$ V/m) in most of the cases. In some particular cases values of up to 140 to 150 dB were encountered when very close stations employed identical frequencies.

4.3 The overall average field strength obtained for all the frequency assignments belonging to the 151 stations involved in the study was 98.2 dB( $\mu$ V/m) with a standard deviation of 14.6 dB. The average nuisance field strength for individual countries varied between 92 and 105 dB but no great significance can be attached to these figures due to the proximity of stations of different countries and the geography of the area.

4.4 Differences of up to about 40 dB( $\mu$ V/m) were encountered between the nuisance fields obtained in this study and the IFRB results for similar paths. The greatest differences were in the total sea paths as expected, with generally lower differences of 0 to 30 dB encountered in mixed paths depending on their land/sea compositions and lengths, whereas the results for total land paths (outside the extended sea area) were in full agreement as to be expected being based on the same calculation method in both cases.

4.5 The values obtained by the Gama method for nuisance fields for coastal paths were generally lower than those obtained by the IWP 5/5 extended sea method.

4.6 The differences between values obtained for the Usable Field Strength by the power sum method on one hand and by the simplified multiplication method on the other hand, were of the order of 1 to 5 dB; the large differences were encountered in the cases where the nuisance fields involved in the calculations were comparable.

## 5. Conclusions and proposals

5.1 The results obtained for the Usable Field Strength and nuisance fields for the Arabian Gulf Area were exceptionally high to the extent that it would be extremely difficult to reduce the interferences to acceptable limits following the envisaged coordination procedure.

5.2 The principal cause of the problem is the severe super-refractivity and ducting effects depicted by the IWP 5/5 one-per cent oversea curve. This curve differs by about 10 to 35 dB from the one-per cent warm sea curve (of Recommendation 370) depending on the distance involved.

5.3 The above situation makes the recommended lattice for the planning in the area by the first session of the FM Conference quite inadequate unless certain measures are taken as will be explained later. For example, the co-channel separation distance of 480 km in the present lattice results in a massive 90 dB( $\mu$ V/m) nuisance field between two 1 kW transmitters; likewise, the adjacent channel distance separation of about 200 km in the present lattice results in about 86 dB( $\mu$ V/m) nuisance fields between similar 1 kW transmitters. These values are applicable for full sea paths but even for typical average Gulf paths of about 500 to 600 km length with an overland distance proportion of about 10% to 20% (assuming the modified Gulf coast), the figures will only be marginally lower.

5.4 Another factor that further complicated the interference problems was the differing planning approaches employed by the Gulf countries where some used the lattice method and others did not. This resulted in very near stations being allocated similar frequencies in some cases.

5.5 In addition, the use of many stations in proximity within small geographical areas and, in some cases, using the full six frequencies per station meant that the lattice had to be severely deformed in these cases by having to pull frequencies from lattice points too far away.

5.6 Even further complexity is created by countries using lattice points which lie outside their borders.

In view of the above and due to the magnitude of the problem, it was felt during two coordination meetings of the Gulf countries held in Baghdad and Geneva in recent months that a partial replanning and a major redistribution of frequencies is required to be performed by a team of representatives of all countries of the Gulf. Some guiding principles were laid down in those meetings concerning the number of programs, power directivity and coverage.

Furthermore, Our Administration is of the opinion that the following proposals will facilitate the work of the proposed team.

- IRQ/52/1 A. That the present lattice recommended by the first session of the FM Conference is retained as the basic tool and guide to frequency allocation.
- IRQ/52/2 B. That each frequency channel group of the lattice be sub-divided into two or three sub-groups, each containing three or two frequencies depending on the sub-division chosen. For example, channel 26 is divided into A26 and B26 if two groups sub-division is chosen or divided into A26, B26 and C26, if three groups sub-division is chosen, and so on.
- IRQ/52/3 C. That the frequency allocation for stations in the area shall follow the lattice distribution on sub-group basis, staggering the sub-groups between stations less than 1,000 km distance apart.
- IRQ/52/4 D. That sub-group allocation is made for stations in round after round fashion so as to ensure first that all stations are allocated at least one sub-group before trying to allocate another sub-group or a single frequency.
- IRQ/52/5 E. That a value of land loss coefficient ( $\gamma$ ) of 0.1 dB/km be used to calculate a land loss value which should be deducted from the nuisance fields obtained by the extended sea approach in order to give a more reasonable picture of interferences in the Arabian Gulf Area. Such an approach should be employed in the detailed treatment of individual cases.
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INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 53-E  
5 November 1984  
Original : English

COMMITTEE 4

SUMMARY RECORD  
OF THE  
FIRST MEETING OF COMMITTEE 4  
(PLANNING)

Tuesday, 30 October 1984, at 0910 hrs

Acting Chairman : Mr. H.K. AL SHANKITI (Saudi Arabia)

Subjects discussed

Documents

- |   |           |
|---|-----------|
| 1. Terms of reference of the Planning Committee       | 40        |
| 2. General discussion on the organization of the work | -         |
| 3. Presentation of documents                          | 9, 32, 37 |



1. Terms of reference of the Planning Committee (Document 40)

The Committee noted the terms of reference of the Planning Committee as contained in the document.

2. General discussion on the organization of the work

2.1 The representative of the IFRB said that the Committee should bear in mind the points raised by the Chairman of the IFRB in the first Plenary Meeting, and which were to be reproduced in document form, concerning the limitations on the work. From the organizational point of view the Committee might consider setting up Working Groups on a geographical basis so that the incompatibilities and difficulties arising in particular regions could be discussed more easily than in the full Committee. If the Committee so agreed, it might first discuss how best the total area might be divided and into how many groups. A coordination or liaison Group might also be required to avoid complex discussions in the full Committee.

2.2 The delegate of the United Kingdom supported the idea of division on a geographical basis. For the sake of efficiency a small ad hoc Group should perhaps be set up, which would then put written proposals to the full Committee at its next meeting.

2.3 The delegates of the German Democratic Republic and Yugoslavia supported those views.

2.4 The delegate of the Federal Republic of Germany supported the idea of division on a geographical basis, but felt that the number of groups should be limited to four. Subsequent coordination work would be facilitated if the problem areas were not divided.

2.5 The delegate of Iran supported those suggestions.

2.6 The Vice-Chairman of the IFRB pointed out that the establishment of an ad hoc Group as suggested by the delegate of the United Kingdom would in effect delay the work of the Committee. As a basis for immediate discussion, and bearing in mind the suggestion to limit the number of groups to four, he suggested that there might be one Group dealing with Western and Eastern Europe, a second Group dealing with Africa, north of the Sahara, a third dealing with Africa, south of the Sahara and a fourth dealing with countries east of the Mediterranean, including the Gulf area. The fourth Group might require a Sub-Group to deal with specific problems as they arose.

2.7 The delegate of Algeria, supported by the delegates of Italy and Spain suggested that there should be one Group dealing specifically with the Mediterranean countries in view of the many incompatibilities among those countries.

2.8 The representative of the IFRB said that wherever the area was divided there would be interface problems and that bearing in mind the history of VHF/FM broadcasting, it might be useful to consider combining the Mediterranean area north of the Sahara with the European area, with delegates in adjoining countries participating in the meeting as liaison delegates, to deal with the interface problems.

2.9 The delegate of Iran insisted that the countries in the Gulf area including countries in Western Asia needed a Group to themselves in view of their specific problems.

2.10 The Vice-Chairman of the IFRB suggested that the Committee first consider the two groups which appeared to cause the least controversy : the Group that would deal with countries south of the Sahara and the second that would deal specifically with the Gulf area.

2.11 The delegate of Italy supported by the delegate of the United Kingdom said that he agreed in principle with the division into four Groups, but felt that each group should be allowed to decide on its own Sub-Groups.

2.12 The delegate of Iran observed that if problems were to be avoided, the Asian parts of the USSR, Turkey and Afghanistan should be included in the Gulf area Group.

2.13 The Chairman said that the footnote on page 55 of the Report to the Second Session of the Conference, stating that the "Middle East" was intended to cover the countries of the Arabian peninsula, Afghanistan, Iran and the Asian part of the European Broadcasting Area excluding Turkey, provided an adequate definition.

2.14 The delegate of Iran said that he could agree to a Middle East Group thus composed, which could be subdivided if necessary.

2.15 The Technical Secretary suggested that as a consensus appeared to have emerged on the four Groups proposed, the Chairman should submit a document to the Committee's second meeting indicating the composition of those Groups as discussed, and with proposals for their Chairmen.

It was so decided.

3. Presentation of documents (Documents 9, 32 and 37)

3.1 Document 9

The Committee took note of the document.

3.2 Document 32

3.2.1 The representative of the IFRB, introducing the document, said that it related to the Board's intersessional work and described in some detail the various approaches taken in processing the requirements, to the Question of incompatibilities and to the calculation of the minimum field strengths. Particular attention was drawn to the general observations on page 19 of the document, and to Annex B, which contained the form for notifying modifications during the Conference.

The Committee took note of the document.

3.3 Document 37

3.3.1 The delegate of France, introducing the document, said that it contained a description of the methodology for computer analysis of aeronautical incompatibilities on which the computer program made available by the French Administration to the IFRB to assist with the compatibility calculations in the intersessional period had been based. When the results of the second analysis had been distributed the previous day, each administration had been given an analysis of the aeronautical incompatibilities based on that computer program.

3.3.2 The representative of the IFRB thanked the French Administration most warmly for its assistance during the intersessional period.

3.3.3 The Committee Secretary replying to a query raised by the delegate of Spain, said that an explanation of the columns in the printout would be distributed later in the day to each delegation.

The Committee took note of the document.

The meeting rose at 1030 hours.

The Secretary :  
D.M. SCHUSTER

The Acting Chairman :  
H.K. AL SHANKITI

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 54-E

5 November 1984

Original : English

## COMMITTEE 5

### SUMMARY RECORD

#### OF THE

#### FIRST MEETING OF COMMITTEE 5

#### (AGREEMENT AND PROCEDURES)

Tuesday, 30 October 1984, at 1050 hrs

Chairman : Mr. K. OLMS (Germany (Federal Republic of))

#### Subjects discussed :

#### Documents

- |  |                              |
|--|------------------------------|
| 1. Terms of reference of Committee 5     | 40                           |
| 2. Organization of work                  | DT/4                         |
| 3. Appointment of Working Group Chairmen | -                            |
| 4. Presentation of documents             | 7, 11, 13, 15,<br>32, 35, 36 |

The Chairman said he was sure that any difficulties the Committee might encounter in its work would be overcome, as in the past, through a spirit of cooperation. The Committee's task would be to create a framework in which the Plan established by Committee 4 would operate, and also to discuss ways in which the decisions taken by the Technical Working Group of the Plenary could be applied. He hoped that the Committee would be able to adhere to its schedule and conclude its discussions by the end of the fourth week, so that work could be completed by the fifth week.

1. Terms of reference of Committee 5 (Document 40)

The terms of reference suggested on page 2 of Document 40 were noted.

2. Organization of work (Document DT/4)

2.1 The Chairman suggested that the Committee establish two Working Groups. The first Group, Working Group 5A, would have as its terms of reference to prepare a draft agreement for sound broadcasting stations in the band 87.5 - 108 MHz, and would deal with Documents 11, 13, 15, 32 and 36. The terms of reference of Working Group 5B would be to prepare transitional procedures for bringing into service the assignments in the Plan in order to enable normal operations of stations of other services to which parts of the band 87.5 - 108 MHz were also allocated, and it would deal with Documents 7, 8, 32 and 35.

2.2 The delegate of Italy said he had no objection to the proposed division of work between the two Working Groups, but wished it to be understood that the establishment of Working Group 5B should not be taken to imply any decision in regard to protection of the permitted services.

2.2.1 The Chairman pointed out that the terms of reference of Working Group 5B had been taken verbatim from the agenda of the Conference. It was not intended that the Group should suggest transitional procedures for the permitted services, but rather that it should suggest transitional procedures for bringing into service the broadcasting assignments in the Plan.

2.2.2 The delegate of Italy said he could accept that explanation.

2.3 The delegate of Angola said he had been somewhat surprised to see that a proposal for the work of the Conference had been submitted by the Republic of South Africa (Document 8). It was well known that the territory of Namibia was illegally occupied by South Africa, and in his view the proposals contained in the document had no validity since they could only properly be discussed with the legitimate government of an independent Namibia, which did not yet exist.

2.3.1 The Chairman pointed out that the allocation of documents to the various committees had already been approved by the Plenary. As far as Document 8 was concerned, while it was true that South Africa was excluded from participating in conferences, it was still a Member of the Union, and was entitled to submit documents.

2.3.2 The Vice-Chairman of the IFRB drew attention to Resolution 14 of the Nairobi Conference, 1982, which provided that the Republic of South Africa should be excluded from all conferences and meetings of the Union. It was up to the Conference to decide how documents submitted by that country should be dealt with.

2.3.3 The delegate of Angola said the question at issue was not South Africa itself, but rather the territory of Namibia, over which South Africa claimed to have jurisdiction. The occupation of the territory by South Africa had been declared by a number of United Nations Resolutions to be illegal.

2.3.4 The delegate of Italy said he could see no reference to Namibia in Document 8, unless it was assumed to be included in the stations using frequencies in accordance with the African VHF/UHF Plan, Geneva, 1963. In any event, the question was outside the Committee's competence.

2.3.5 The delegate of Iran proposed that, in order to save time, Document 8 should be provisionally deleted from the work programme of Working Group 5B, and that a decision be taken after consultations with the General Secretariat and the Chairman of the Conference.

It was so decided.

### 3. Appointment of Working Group Chairmen

3.1 The Chairman suggested that Mr. Challos (Kenya) be appointed Chairman of Working Group 5A, and that Mr. Pettersson (Sweden) be appointed Chairman of Working Group 5B.

It was so decided.

### 4. Presentation of documents (Documents 7, 11, 13, 15, 32, 35, 36)

4.1 The Chairman, in reply to a question from the delegate of Italy, said that after documents had been introduced, delegates could make requests for any necessary clarification which would enable them to take a position on the proposal concerned. It was not the intention to embark on discussion of the proposals themselves at the present stage.

#### 4.2 Document 7

4.2.1 The delegate of France said that the document concerned provisions to be inserted in the Agreement for the protection of permitted services. It was proposed that contracting administrations take all necessary measures to ensure that, within the limits of the notified service area of the stations to be protected, the radiated field strength values of the station were in conformity with the standards given in Chapter 5, section 5.1, of the report of the first session.

#### 4.3 Document 11

4.3.1 The delegate of France said the document concerned coordination procedures to be included in the Agreement. He drew particular attention to two of the general principles which his delegation believed should be embodied in the Agreement. The first was that coordination should be carried out either directly between administrations or through the IFRB, at the choice of the administration concerned. The second was that when such coordination had given rise to reservations on the part of services other than the broadcasting service, the Plan could be modified, so long as the characteristics of the transmitter involved were indicated with a distinctive sign.

Where coordination in relation to the broadcasting service was concerned, France had taken as a basis the Stockholm Agreement, which made use of the concept of consultation distances. Coordination in relation to the aeronautical radionavigation service was based on the same concept, taking into account the characteristics of the VOR or ILS systems to be protected. Finally, regarding coordination with permitted services, Article 12 of the Radio Regulations applied; and it was proposed that the consultation distance be calculated on the basis of the tables given in Chapter 5 of the report of the first session, with any amendments adopted by the second session.

4.3.2 The delegate of Algeria pointed out that the question of what constituted a "permitted service" was a major problem which should not be left to the Working Groups to decide. He suggested that the Committee itself should discuss it.

4.3.3 The Chairman suggested that it might be preferable to ask the IFRB representative to prepare a document for the Committee's consideration on what was to be understood by "permitted service" in this context.

4.3.4 The Vice-Chairman of the IFRB said that IFRB would be willing to undertake the task of preparing a document on the question of permitted service as it related to the band concerned and to the terms of reference of the Conference. The document would be presented to the Committee for its future consideration.

4.3.5 The delegate of Italy pointed out that there was already an IFRB document (Document 26) which had been considered at the first session; he asked that that too should be taken into account.

It would also be useful if the IFRB could give the Committee some information on what would be the practical consequences for the reception of neighbouring countries of the broadcasting assignments made under the Plan.

4.3.6 The Chairman said the IFRB would no doubt take note of those suggestions. The Committee would defer consideration of the question of permitted services until it had before it the document to be prepared by the IFRB.

It was so decided.

#### 4.4 Document 13

4.4.1 The delegate of the Federal Republic of Germany, introducing Document 13, said the procedures of Article 4 of the Stockholm Agreement had proved satisfactory, and his Administration considered that a similar article should be included in a new agreement. The main changes to be made would concern the deadline for comments on a coordination request, and the coordination distances to be specified. There should be a reference situation similar to that of the medium-wave agreement, and provision should be made for a modification procedure for stations of services other than broadcasting (§ 4.3 of the document).

#### 4.5 Document 15

4.5.1 The delegate of the Federal Republic of Germany, introducing the document, said it was considered that while planning was based on stereophonic reception, other modulation signals should not be excluded.

4.6 Document 32

4.6.1 The Vice-Chairman of the IFRB pointed out that Document 32 was primarily intended for Committee 4, but it had been felt that Committee 5 might wish to note some of the information contained in it when looking at the data to be considered for modification and notification purposes.

4.7 Document 35

4.7.1 The delegate of the United Kingdom, introducing Document 35, said it was submitted to the Committee chiefly for information. It described some additional criteria that had been developed since the first session of the Conference for ensuring normal operation of services in the land mobile service operating on a permitted basis until 1995. Studies in the United Kingdom had indicated a need for further thought on problems of the protection of land mobile services, particularly those located on high, open sites. He suggested that the criteria described in the document should be taken into account in order to achieve protection of such services.

4.8 Document 36

4.8.1 The delegate of the United Kingdom, introducing Document 36, said it made suggestions for the technical basis for modification procedures for the forthcoming Broadcasting Plan. Where aeronautical services operating in adjacent bands were concerned, the need for coordination between broadcasting services was more stringent than the need for coordination between broadcasting and aeronautical services at a country's boundary. His delegation's proposal for developing modification procedures to ensure broadcasting-to-broadcasting compatibility retained the principal elements of the current Geneva and Stockholm Plans. He pointed out that the field strength figures quoted in the document had been placed within square brackets, because they might be the subject of discussion in the Technical Working Group of the Plenary.

The Chairman noted that Document 36 should be added to the list of those to be considered by the Technical Working Group of the Plenary.

The meeting rose at 1135 hours.

The Secretary :  
J. FONTEYNE

The Chairman :  
K. OLMS



# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 55-E  
15 November 1984  
Original: French

## COMMITTEE 3

### SUMMARY RECORD

#### OF THE

#### FIRST MEETING OF COMMITTEE 3

#### (BUDGET CONTROL)

Wednesday, 31 October 1984, at 1000 hrs

Chairman: Mr. F. MOLINA NEGRO (Spain)

#### Subjects discussed:

#### Documents

- |  |    |
|--|----|
| 1. Organization of the work of Committee 3   | -  |
| 2. Terms of reference and facilities for delegates   | 40 |
| 3. Budget of the Conference  | 16 |
| 4. Financial responsibilities of administrative conferences  | 28 |
| 5. Contributions of non-exempt recognized private operating agencies and international organizations | 17 |
| 6. Other business  | -  |

1. Organization of the work of Committee 3

1.1 After the agenda had been adopted, the Chairman proposed that the Committee should have three meetings, or more if necessary. The second meeting could be held during the third week of the Conference and the third and last meeting, at which the report to the Plenary Assembly would be approved, during the last week.

2. Terms of reference and facilities for delegates  
(Document 40)

2.1 The Chairman reminded the Budget Control Committee of the terms of reference given to it under the Convention (Nairobi, 1982)

2.2 The Committee took note of its terms of reference.

3. Budget of the Conference (Document 16)

3.1 The Chairman pointed out that the budget had been approved by the Administrative Council at its 38th session. He also confirmed that the expenses of the Conference would be borne by the Members of Region 1 and certain countries concerned in Region 3, in accordance with Article 15 of the Convention (Nairobi, 1982).

3.2 The Chief of the Finance Department stated that the budget presented in Document 16 was as adopted by the Administrative Council at its 38th session, but that additional credits approved at the 39th session in the amount of 223,000 Swiss francs should be added. They were for work to be carried out by the IFRB immediately after the Conference.

3.3 He added that the Conference costs would be allocated at the end of the Conference and that the additional expenditure for 1985 would be charged to the Members of the Regions concerned at the beginning of 1986.

3.4 The Chairman thought it would be helpful to have a document showing the changes made as compared with the basic budget document.

3.5 In the light of comments, the Committee took note of Document 16.

4. Financial responsibilities of administrative conferences  
(Document 28)

4.1 The Chairman reminded the Committee of the decisions taken by the Nairobi Conference in 1982 on the financial responsibilities of administrative conferences and the implications of some of their decisions for the Union budget.

4.2 The delegate of Italy wondered how far the decisions of the Nairobi Conference could be applied if the Administrative Conference took decisions at the last moment. He suggested that the IFRB should provide estimates as the Conference proceeded.

4.3 The Chairman sympathized with the concern of the delegate of Italy and asked the IFRB to estimate as far as possible the financial implications of any proposal made during the Conference. Any decision on the matter would have to be taken by the Administrative Council later.

4.4 The representative of the IFRB suggested that the Chairman should raise the matter with the Chairmen of Committees 4 and 5.

4.5 The Chairman agreed to that proposal. A note would be prepared for the Chairmen of Committees 4 and 5, the Secretary-General, the Chairman of the IFRB and the Director of the CCIR stating that the Budget Control Committee thought it essential to take account of the provisions of the 1982 Nairobi Convention and that the emphasis should be on decisions that might have financial implications.

5. Contributions of non-exempt recognized private operating agencies and international organizations (Document 17)

5.1 The Chairman referred to the provisions of the 1982 Nairobi Convention on the contributions of non-exempt recognized private operating agencies and international organizations and said that the amount of the contributory unit would be adjusted in line with the revised budget.

6. Other business

The meeting rose at 1040 hours.

The Secretary:

V. MUCCIOLI

The Chairman:

F. MOLINA NEGRO

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 56-E  
2 November 1984  
Original : French

COMMITTEE 2

SUMMARY RECORD

OF THE

FIRST MEETING OF COMMITTEE 2

(CREDENTIALS)

Wednesday, 31 October 1984, at 1100 hrs

Chairman : Mr. J. SZEKELY (Hungarian People's Republic)

Subjects discussed :

Document

1. Terms of reference of the Committee
2. Organization of the Committee's work

40

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1. Terms of reference of the Committee (Document 40)

The participants took note of the terms of reference set out in Document 40.

2. Organization of the Committee's work

After recalling that the Committee's report to the Plenary Meeting was to be submitted on Tuesday, 4 December 1984, the Chairman proposed that the Committee set up a small Working Group under his chairmanship to examine the credentials received by the Secretariat and to submit a report on its conclusions to the Committee.

It was decided that the Working Group should comprise the following delegates in addition to the Chairman and the Vice-Chairman of the Committee : one delegate from Austria, one delegate from the People's Democratic Republic of Algeria and one delegate from the Islamic Republic of Iran. It would be convened at the appropriate time.

The meeting rose at 11.20 hours.

The Secretary :

R. MACHERET

The Chairman :

J. SZEKELY

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 57-E  
31 October 1984  
Original : Spanish

## COMMITTEE 5

### Spain

#### TRANSITIONAL PROCEDURES FOR APPLICATION OF THE PLAN IN RELATION TO PERMITTED SERVICES

##### A. Preliminary considerations

1. The Spanish Administration considers that the frequency assignments to stations of permitted services in the band 104 - 108 MHz, mentioned in Nos. 587, 588 and 589 of the Radio Regulations, and recorded in the Master International Frequency Register before the date of signature of the Final Acts of this Conference, should in no way constitute an obstacle to the bringing into service of frequency assignments to stations in the broadcasting service appearing in the Plan associated to the Agreement to be adopted by the Conference.
2. Under the Radio Regulations this band is allocated on a primary basis to the broadcasting service, which therefore has prior choice of frequencies, as compared with the permitted services, when a plan is being prepared (No. 419 of the Radio Regulations).

##### B. Recording of frequency assignments made before the date of signature of the Final Acts of this Conference

1. The Conference should instruct the IFRB, in agreement with affected administrations and within a maximum term to be decided (for example, two years), to select substitute frequencies in the same or other bands for assignments to stations of permitted services notified to the IFRB before the date of signature of the Final Acts of this Conference and affected by the associated Plan adopted by the Conference.
2. These frequency assignments to stations of permitted services should not be taken into account in the planning process, in accordance with considering d) of the agenda of this Conference.
3. Upon expiry of the term set in accordance with paragraph 1 above, the frequencies entered in the Plan may be brought into service without any restrictions in relation to the permitted services, on the understanding that they may be brought into service before the date on which the term expires, if progress of work on the selection of substitute frequencies in the IFRB so permits.

C. Recording of frequency assignments made after the date of signature of the Final Acts of this Conference

1. The Agreement should lay down the conditions and procedures governing the recording of new frequency assignments to stations of permitted services in the band 104 - 108 MHz after the date on which the Final Acts of this Conference are signed, so as to ensure that frequencies in the associated Plan adopted by the Conference are not affected.

2. Furthermore, the Agreement should lay down procedures for coordination between the broadcasting service and the permitted services in respect of future modifications to the Plan, having regard to the frequency assignments to stations of both the broadcasting and the permitted services recorded at the date on which any subsequent modification is made to the Plan.

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# CONFÉRENCE RÉGIONALE DE RADIODIFFUSION

(SECONDE SESSION)

GENEVE, 1984

Corrigendum 1 ✓

Document 58(Rev.2)-F/E/S

19 novembre 1984

COMMISSION 4

COMMITTEE 4

COMISION 4

Ajouter, page 3, au point 4 Groupe de planification 4D :

"Afghanistan"

Add in page 3, under item 4 Planning Group 4D :

"Afghanistan"

Añadir, página 3, bajo el punto 4 Grupo de planificación 4D :

"Afganistán"

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 58(Rev.2)-E

16 November 1984

Original: English/  
French/  
Spanish

## COMMITTEE 4

### REPORT BY THE CHAIRMAN OF COMMITTEE 4

According to the decision taken by Committee 4 at its fourth and fifth meetings, the Planning Groups are composed as follows:

1. Planning Group 4A

Algeria  
Angola  
Saudi Arabia  
Burundi  
Benin  
Botswana  
Central African Republic  
Cameroon  
Congo  
Comoros  
Cape Verde  
Ivory Coast  
Djibouti  
Egypt  
Ethiopia  
France  
Gabon  
Ghana  
Gambia  
Guinea-Bissau  
Equatorial Guinea  
Guinea  
Burkina Faso  
Kenya  
Liberia  
Libya  
Lesotho  
Madagascar  
Mali  
Morocco  
Mozambique  
Mauritania  
Mauritius  
Malawi  
Niger  
Nigeria  
Namibia  
Uganda  
United Kingdom

Rwanda  
Sudan  
Senegal  
Seychelles  
Somalia  
Sierra Leone  
Sao Tome and Principe  
Swaziland  
Tchad  
Togo  
Tanzania  
Yemen Arab Republic  
Yemen (P.D.R.)  
Zaire  
Zambia  
Zimbabwe

2. Planning Group 4B

Algeria  
Saudi Arabia  
Cyprus  
Spain  
Egypt  
France  
Greece  
Iraq  
Italy  
Israel  
Jordan  
Lebanon  
Libya  
Malta  
Monaco  
Morocco  
Portugal  
United Kingdom  
Syria  
Tunisia  
Turkey

3. Planning Group 4C

Saudi Arabia  
Bahrain  
United Arab Emirates  
Iran  
Iraq  
Israel  
Jordan  
Kuwait  
Qatar  
Oman

Yemen Arab Republic  
Yemen (P. Dem. Rep. of)

4. Planning Group 4D

Germany (Fed. Rep. of)  
Albania  
Austria  
Belgium  
Bulgaria  
Denmark  
France  
Finland  
Greece  
Hungary  
Italy  
Iran  
Ireland  
Iceland  
Liechtenstein  
Luxembourg  
Monaco  
Mongolia  
Norway  
Netherlands  
Poland  
German Democratic Republic  
Romania  
United Kingdom  
San Marino  
Sweden  
Switzerland  
Czechoslovakia  
Turkey  
USSR  
Vatican  
Yugoslavia

Dr. I. STOJANOVIC  
Chairman of Committee 4

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 58(Rev.1)-E

2 November 1984

Original : English

## COMMITTEE 4

### REPORT BY THE VICE-CHAIRMAN OF COMMITTEE 4

According to the decision taken by Committee 4 at its first meeting held on 30 October 1984, it is proposed that the Planning Groups should be composed as follows :

1. Planning Group 4A

Algeria  
Angola  
Saudi Arabia  
Burundi  
Benin  
Botswana  
Central African Republic  
Cameroon  
Congo  
Comoros  
Cape Verde  
Ivory Coast  
Djibouti  
Egypt  
Ethiopia  
France  
Gabon  
Ghana  
Gambia  
Guinea-Bissau  
Equatorial Guinea  
Guinea  
Burkina Faso  
Kenya  
Liberia  
Libya  
Lesotho  
Madagascar  
Mali  
Morocco  
Mozambique  
Mauritania  
Malawi  
Niger  
Nigeria  
Namibia  
Uganda  
United Kingdom

Rwanda  
Sudan  
Senegal  
Somalia  
Sierra Leone  
Sao Tome and Principe  
Swaziland  
Tchad  
Togo  
Tanzania  
Zaire  
Zambia  
Zimbabwe

2. Planning Group 4B

Algeria  
Saudi Arabia  
Cyprus  
Spain  
Egypt  
France  
Greece  
Iraq  
Italy  
Israel  
Lebanon  
Libya  
Malta  
Morocco  
Portugal  
United Kingdom  
Syria  
Tunisia  
Turkey

3. Planning Group 4C

Afghanistan  
Saudi Arabia  
Bahrain  
Djibouti  
Egypt  
Ethiopia  
United Arab Emirates  
Iran  
Iraq  
Israel  
Jordan  
Kuwait  
Qatar  
Oman  
Sudan  
Somalia

Turkey  
USSR  
Yemen Arab Republic  
Yemen (P. Dem. Rep. of)

4. Planning Group 4D

Germany (Fed. Rep. of)  
Albania  
Austria  
Belgium  
Bulgaria  
Denmark  
France  
Finland  
Greece  
Hungary  
Italy  
Iran  
Ireland  
Iceland  
Liechtenstein  
Luxembourg  
Malta  
Morocco  
Monaco  
Norway  
Netherlands  
Poland  
Portugal  
German Democratic Republic  
Romania  
United Kingdom  
San Marino  
Sweden  
Switzerland  
Czechoslovakia  
Tunisia  
Turkey  
USSR  
Vatican  
Yugoslavia

H.K. AL SHANKITI  
For the Chairman of Committee 4  
the Vice-Chairman

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 58-E

31 October 1984

Original : English

## COMMITTEE 4

### REPORT BY THE VICE-CHAIRMAN OF COMMITTEE 4

According to the decision taken by Committee 4 at its first meeting held on 30 October 1984, it is proposed that the Planning Groups should be composed as follows :

1. Planning Group 4A

Angola  
Burundi  
Benin  
Botswana  
Central African Republic  
Cameroon  
Congo  
Comoros  
Cape Verde  
Ivory Coast  
Djibouti  
Ethiopia  
Gabon  
Ghana  
Gambia  
Guinea-Bissau  
Equatorial Guinea  
Guinea  
Burkina Faso  
Kenya  
Liberia  
Lesotho  
Madagascar  
Mali  
Mozambique  
Mauritania  
Malawi  
Niger  
Nigeria  
Namibia  
Uganda  
Rwanda  
Sudan  
Senegal  
Somalia  
Sierra Leone  
Sao Tome and Principe  
Swaziland  
Tchad  
Togo  
Tanzania  
Zaire  
Zambia  
Zimbabwe

2. Planning Group 4B

Algeria  
Cyprus  
Spain  
Egypt  
France  
Greece  
Italy  
Israel  
Lebanon  
Libya  
Malta  
Morocco  
Portugal  
Syria  
Tunisia  
Turkey

3. Planning Group 4C

Afghanistan  
Saudi Arabia  
Bahrain  
United Arab Emirates  
Iran  
Iraq  
Jordan  
Kuwait  
Qatar  
Oman  
Yemen Arab Republic  
Yemen (P. Dem. Rep. of)  
[ Djibouti  
Egypt  
Ethiopia  
Sudan  
Somalia  
Turkey  
USSR 7

4. Planning Group 4D

Germany (Fed. Rep. of)  
Albania  
Austria  
Belgium  
Bulgaria  
Denmark  
Spain  
France  
Finland  
Hungary  
Italy  
Ireland  
Iceland  
Liechtenstein  
Luxembourg  
Monaco  
Norway



Netherlands  
Poland  
Portugal  
German Democratic Republic  
Romania  
United Kingdom  
San Marino  
Sweden  
Switzerland  
Czechoslovakia  
USSR  
Vatican  
Yugoslavia  
  
[ Algeria  
Greece  
Libya  
Malta  
Morocco  
Tunisia ]

5. The countries indicated in square brackets are invited to take appropriate decisions with respect to their participation in these Planning Groups.

For the Chairman of Committee 4  
the Vice-Chairman  
H.K. AL SHANKITI

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 59-E  
1 November 1984

Information paper

GENERAL SCHEDULE OF THE WORK OF THE CONFERENCE

1st week (29 October - 2 November)

Organization and commencement of work

2nd week (5 - 9 November)

Continuation of the work in Working Groups and Committees

Friday 9 : end of the work of Technical Working Group of the Plenary

3rd week (12 - 16 November)

Continuation of the work in Working Groups and Committees

4th week (19 - 23 November)

Friday 23 : end of the work of Working Groups of Committee 5  
(Agreement and Procedures)

5th week (26 - 30 November)

Thursday 29 : end of the work of Working Groups of Committee 4 (Planning)

Friday 30 : end of the work of Committee 4 (Planning)

6th week (3 - 7 December)

Monday 3 : end of the work of Committee 5 (Agreement and Procedures)

Tuesday 4 : distribution of the Plan

Report of Committee 2 (Credentials)

Wednesday 5 : first examination of the Plan by the Plenary Meeting

Report of Committee 3 (Budget Control)

Thursday 6 : second examination of the Plan by the Plenary Meeting  
(modifications only)

examination of the last texts of the Final Acts

Friday 7 : signing ceremony and closing.

Note 1 - Plenary Meetings will be scheduled as necessary during each week of the Conference.

Note 2 - This schedule may be changed in the course of the work of the Conference.

# CONFÉRENCE RÉGIONALE DE RADIODIFFUSION

(SECONDE SESSION)

GENEVE, 1984

Corrigendum 1 au  
Document 60-F/E/S  
2 novembre 1984

## Note de l'IFRB

Page 3, remplacer la première partie du paragraphe 7. c) par la suivante :

c) Après la seconde session de la CARR-1+, les assignations de fréquence à des stations de radiodiffusion inscrites dans le plan devraient être protégées contre les brouillages causés par des stations existantes ou futures des services permis, et ces dernières ne devraient pas formuler de plaintes contre les brouillages provenant des stations de radiodiffusion figurant dans le plan. Si tel n'était pas le cas la notion de "la priorité de choix des fréquences" du service primaire serait sans effet.

(le reste inchangé)

\_\_\_\_\_

This corrigendum concerns the French text only.

\_\_\_\_\_

Este corrigendum sólo concierne al texto francés.

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 60-E

1 November 1984

Original : English

COMMITTEE 5

## Note by the Secretary of the Conference

### NOTE BY THE IFRB

At the request of the IFRB, I transmit the attached note for the information of the Conference.

J. JIPGUEP  
Secretary of the Conference

Annex : 1

ANNEX

NOTE BY THE IFRB

1. The first meeting of Committee 5 on 30 October 1984 requested the Board to prepare a document outlining the status of the permitted service in the band 85.5 - 108 MHz in Region 1 and in particular to comment on the practical implementation of broadcasting stations in accordance with the Plan.

2. During the first session of the Conference, the Board presented Document 26 which dealt with a very related question "Primary and permitted services in the band 87.5 - 108 MHz in Region 1". That report was related to a clarification of statements in the CCIR Report to the first session.

Considerations applicable to all services and bands

3. The definition of a permitted service is contained in No. 419 of the Radio Regulations.

"419 (3) Permitted and primary services have equal rights, except that, in the preparation of frequency plans, the primary service, as compared with the permitted service, shall have prior choice of frequencies."

4. RR419 (3) Basically states that "permitted and primary services have equal rights", with one exception, i.e. "in the preparation of frequency plans". However, the use of these words implies that prior to and subsequent to such preparation the two categories of service have equal rights.

5. The preparation of a plan by a Conference is carried out by the Conference during its session. Subsequent additions to, modifications of and deletions from the Plan which generally take place after the entry into force of the Final Acts of the Conference, cannot be considered as part of the "preparation". After the Conference therefore, the two categories of service will have equal rights.

6. It may be argued that because No. 419 refers to "frequency plans" the exception to "equal rights", giving prior choice of frequencies to the primary service, only applies if both primary and permitted service are being planned. This argument can be dismissed since it would mean that when the primary service only is being planned (as in the case of CARR-1+) the exception i.e. "prior choice of frequencies" does not apply and only if both services are being planned at the same time (a situation which has not occurred in the past and is not likely to occur in the future) will the exception apply. Clearly the term "frequency plans", while in the plural, embraces the singular.

Considerations applicable to the band 87.5 - 108 MHz

7. In the light of the above interpretation of No. 419, the position of the primary and the permitted services in the bands 87.5 - 100 and 100 - 108 MHz in Region 1 prior to, during, and after CARR-1+ is as follows :

- a) prior to the second session of CARR-1+ both categories of service have equal rights, i.e. both may be considered as primary services;

- b) during the second session of CARR-1+ (i.e. the period of the preparation of plans) the primary service has "prior choice of frequencies". This means that when assigning frequencies to broadcasting stations to be included in the Plan, the Conference may decide on the protection it will offer to existing or planned stations of the permitted services. The frequency assignments to broadcasting stations to be included in the Plan, can be selected without regard to existing or planned stations of the permitted services;
- c) after the second session of CARR-1+ the frequency assignments to broadcasting stations in the Plan would be protected against interference from existing or future stations of the permitted services, and those stations would have no complaint against interference from broadcasting stations in the Plan. If this were not so, the purpose of giving the primary service "prior choice of frequencies" would be nullified.

However, since the two categories of service, primary and permitted, regain equal rights after the Conference, modifications to the Plan (the introduction of new stations or the modification of the characteristics of stations in the Plan) shall be made, recognizing that the permitted services now have the same rights as the primary service i.e. they may be considered as primary services themselves. Bearing in mind that frequency assignments in bands above 28 MHz are not examined by the Board with respect to the probability of harmful interference, it is for the administrations concerned when proposing a modification to the Plan to take account of the frequency assignments to other services of other administrations.

8. At the notification stage, in accordance with RRL244 frequency assignment notices in bands above 28 MHz are not examined by the Board with respect to probability of harmful interference, the action of the Board is limited to :

- the examination of the conformity of a frequency assignment notified to it with respect to the provisions of the Radio Regulations, other than those relating to probability of harmful interference, in which no station other than the one under consideration is taken into account;
- the examination of frequency assignment notices to stations of the broadcasting service with respect to their conformity with the Plan annexed to the Regional Agreement (RRL245) in which stations of other services are not taken into account.

Any protection that may be given to or claimed from stations of services other than broadcasting, irrespective of their category of allocation, is to be ensured through negotiations between the administrations concerned.

9. Among the footnotes allocating the band 87.5 - 108 MHz to other services, the footnote RR581 allocates the band 87.5 - 88 MHz in some countries on a permitted basis to land mobile service subject to the application of the procedure of Article 14. The Board considered that the assignments notified to the Board before 1 January 1982 (date of entry into force of the Final Acts of WARC 1979) are in conformity with the Radio Regulations without having to apply the procedure of Article 14. The position described in paragraphs 7 and 8 above applies to them as well as to any such assignments which were notified after 1 January 1982 after the successful application of the procedure of Article 14.

10. It is to be noted that for countries of Region 3 participating in the Conference, the band 87 - 100 MHz is allocated to the fixed and mobile services on a primary basis and the provisions of RR346 relating to the principle of equality of right to operate apply.

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INTERNATIONAL TELECOMMUNICATION UNION

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Corrigendum 1 to  
Document 61-E  
7 November 1984  
Original : English

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TECHNICAL WORKING GROUP  
OF THE PLENARY

DRAFT CORRECTIONS TO THE  
FIRST REPORT BY THE CHAIRMAN OF THE  
TECHNICAL WORKING GROUP OF THE PLENARY

J. RUTKOWSKI  
Chairman of the  
Technical Working Group  
of the Plenary



Replace the first paragraph of section 2.1.2.1 by the following text :

"For the application of the 1% time curves, the sea area shall include also a coastal strip extending up to 50 km inland, and it shall also include for the Nile delta region (from 30° E to 32° E) a coastal strip extending up to 200 km inland. In bilateral or multilateral coordination relating to specific cases, the administrations concerned may agree to use different distances or to take account other factors such as terrain height, or other attenuation factors."

Replace section 2.2 by the following text :

"2.2      Propagation for incompatibility calculations between the FM broadcasting service and the aeronautical radionavigation service

In the incompatibility calculations the free space propagation conditions are used. The calculations are limited to the test points of the aeronautical radionavigation station in line-of-sight from the broadcasting station. It being assumed that the effective Earth's radius is  $4/3$  of the actual radius."

Delete Figure 2.9.

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INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

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Document 61-E

2 November 1984

Original : English

PLENARY MEETING

FIRST REPORT BY THE CHAIRMAN OF THE  
TECHNICAL WORKING GROUP OF THE PLENARY

J. RUTKOWSKI  
Chairman of the  
Technical Working Group  
of the Plenary

## CHAPTER [ 2 ]

### Propagation

#### 2.1 Propagation data for VHF broadcasting

##### 2.1.1 General

The propagation data given in this chapter are intended for use in the planning of the broadcast service. They are based on CCIR Recommendation 370-4 with certain subsequent modifications proposed by CCIR Interim Working Party 5/5 in response to Recommendation AA of the first session and, in particular, the differentiation between land and sea propagation data for 50% and 10% of the time. They relate field strength to path length with the equivalent transmitting antenna height as a parameter for various percentages of time from 50% to 1% in various climatic regions. They represent the field strength exceeded at 50% of locations, and apply to both horizontal and vertical polarization.

The data are given for various types of areas and climates, namely, land, cold sea, warm sea and areas subject to extreme super-refractivity. It will be appreciated that the definition of these categories has to be based on statistical data and so is to a certain extent arbitrary, but experience indicates that the following distinctions would be appropriate for the application of the data set out in this chapter.

##### Cold sea

Seas, oceans and other substantial bodies of water at latitudes greater than 23.5 degrees North or South, but excluding the Mediterranean, the Black Sea, the Red Sea and the area extending from the Shatt-al-Arab to and including the Gulf of Oman.

##### Warm sea

Seas, oceans and other substantial bodies of water at latitudes less than 23.5 North or South, including the Mediterranean (West of 30° E) and the Black Sea.

##### Areas of extreme super-refractivity

Seas, oceans and other substantial bodies of water which includes the Mediterranean (East of 30° E), the area extending from the Shatt-al-Arab to and including the Gulf of Oman and possibly the Red Sea.

### 2.1.2 Areas subject to extreme super-refractivity and ducting

Measurement campaigns in the area from the Shatt-al-Arab to the Gulf of Oman and in the Eastern Mediterranean (East of 30° E) have shown that extreme super-refractivity phenomena are very common. Although no measurements have been made in the other similar areas of Region 1, there is a high probability that frequent super-refractivity also occurs in the regions of the Red Sea, the West coast of Africa and the Gulf of Guinea.

#### 2.1.2.1 Oversea paths

For the application of the 1% time curves, the sea area shall include also a coastal strip extending up to 50 km inland. In bilateral negotiations relating to specific cases, the administrations concerned may agree to use different distances or to take account other factors such as terrain height. Thus a 200 km coastal strip has been proposed for the Nile delta region.

For oversea paths in the area from the Shatt-al-Arab to (and including) the Gulf of Oman, calculations for propagation occurring for 1% of the time should be based on the following formulae :

$$\begin{array}{ll} E = 106.9 - 20 \log d & \text{for } 10 \leq d \leq 400 \\ E = 78.9 - 0.06 d & \text{for } d > 400 \text{ km} \end{array} \quad \left. \begin{array}{l} \text{where } d = \text{path length in km} \\ E = \text{field strength in dB}(\mu\text{V/m}) \end{array} \right\}$$

For oversea paths in the Eastern Mediterranean (East of 30° E) calculations for propagation occurring for 1% of the time should be based on the following formulae :

$$\begin{array}{ll} E = 106.9 - 20 \log d - 0.07 d & \text{for } 10 \leq d < 100 \\ E = 99.9 - 20 \log d & \text{for } 100 \leq d \leq 568 \\ E = 78.9 - 0.06 d & \text{for } d > 568 \end{array} \quad \left. \begin{array}{l} \text{where } d = \text{path length} \\ \text{in km} \\ E = \text{field strength in} \\ \text{dB}(\mu\text{V/m}) \end{array} \right\}$$

In cases in which a propagation path crosses the boundary between Eastern and Western Mediterranean (meridian 30° E) it is proposed that the mixed path method explained in section 2.1.3.4 should be adopted.

#### 2.1.2.2 Overland paths

For overland path calculations for 50% of the time, Figure 2.1 should be used. For overland path calculations for 1% of the time, Figure 2.6 should be used, but treating any coastal strip as defined in 2.1.2.1 as sea.

#### 2.1.2.3 Mixed paths

Mixed paths should be appraised for both 1% and 50% of the time according to the procedure set out in section 2.1.3.4.

### 2.1.3 Application of the curves

The values of field strengths given in curves, Figures 2.1 to 2.8, are those exceeded for 50%, 10% and 1% of the time. They are expressed in decibels relative to 1  $\mu\text{V/m}$  and correspond to an effective radiated power of 1 kW.

The 50% time Figure shall be used for determination of coverage areas and the 1% time Figures shall be used for interference calculations. In the case of steady interference the 50% time Figure should be used.

The effective height of the transmitting antenna is defined as its height over the average level of the ground between distances of 3 km and 15 km from the transmitter in the direction of the receiver. The height of the receiving antenna is assumed to be 10 m above local terrain.

The curves given in Figures 2.1 to 2.8 correspond to effective transmitter antenna heights from 37.5 to 1,200 metres. Additional curves for effective antenna heights of 20 m and 10 m may be derived from the 37.5 m curve by applying correction factors of -5 dB and -11 dB for distances up to 25 km and 0 dB in both cases for distances in excess of 250 km, with linear interpolation for intermediate distances. To obtain field strength values corresponding to effective transmitter antenna heights ( $h_1$ ) of less than 10 m the values derived for 10 m shall be used. To obtain field strength values corresponding to effective transmitter antenna heights in excess of 1,200 m, the field strength at a distance of  $x$  km from the transmitter may be taken to be the same as the field strength given by the curve for a transmitting antenna height of 300 m at a distance of  $(x + 70 - 4.1\sqrt{h_1})$  km.

As this extrapolation is only applicable to trans-horizon distances its use shall be limited to distances beyond  $x = (4.1\sqrt{h_1} + 70)$  km. For distances, between 100 km and  $x = (4.1\sqrt{h_1} + 70)$  km it may be assumed that the field strength exceeds that for 1,200 m by the same amount as at  $x = (4.1\sqrt{h_1} + 70)$  km calculated in accordance with the above procedure. For smaller distances this increment shall be determined by linear interpolation between 0 dB at 20 km and the height-dependent value at 100 km distance. This is subject to the condition that the free space field strength is not exceeded.

#### 2.1.3.1 Location variability

The curves given are representative for 50% of locations, the percentage which shall be used for planning purposes. Corrections for other percentages of locations are given for further information in Annex A.

#### 2.1.3.2 Terrain irregularity correction

The curves for propagation over land refer to the kind of irregular rolling terrain found in many parts of Region 1. For planning purposes and interference calculations, no terrain irregularity correction shall be made.

For bilateral and multilateral coordination, actual path profiles may be considered if available (see Annex A).

#### 2.1.3.3 Receiving antenna height correction

The propagation curves are for a receiving antenna height of 10 m above the local terrain. If the receiving antenna height is reduced from 10 m to 3 m, a 9 dB reduction in the field strength shall be applied.

#### 2.1.3.4 Mixed land/sea path calculations

When the propagation path is partially over land and partially over sea, the following method shall be used for interpolation between the appropriate land and sea curves.

Let

$E_{L, t}$  : field strength for land path equal in length to the mixed path for  $t\%$  of the time,

$E_{S, t}$  : field strength for sea path equal in length to the mixed path for  $t\%$  of the time,

$E_{M, t}$  : field strength for mixed path for  $t\%$  of the time,

$d_S$  : length of sea path,

$d_T$  : length of total path.

The field strength for the mixed path ( $E_{M, t}$ ) is then determined by using the formula :

$$E_{M, t} = E_{L, t} + \frac{d_S}{d_T} \left[ E_{S, t} - E_{L, t} \right]$$

#### 2.2 VHF propagation curves for the aeronautical mobile service

The curves in Figures 2.9 represent basic transmission loss as a function of distance for 5%, 50% and 95% of the time for a range of antenna heights at a frequency of 125 MHz. The propagation model used is based on a considerable amount of experimental data and assumes horizontal polarization over a smooth earth with an effective earth-radius factor  $k$  of  $4/3$  with some compensation at high altitudes, and with fading characteristics representative of a temperate continental climate.

The following points are to be noted :

- the antenna heights shown vary from 15 m to 20,000 m covering both ground station and aircraft heights;
- for interpolation the following formula is proposed :

$$L_b = L_{b1} + \left[ (L_{b2} - L_{b1}) \cdot \log(x/x_1) \right] / \log(x_2/x_1)$$

where  $L_b$  is the basic transmission loss to be calculated at the distance considered for height  $x$  and  $L_{b1}$ ,  $L_{b2}$ ,  $x_1$  and  $x_2$  are the corresponding losses and heights at the same distance on the curves between which interpolation is required;

- to conform with the propagation curves for the broadcasting service (Figures 2.1 to 2.8) an ordinate scale in terms of field strength for 1 kW radiated from a half-wave dipole has been added.

### 2.3 VHF propagation curves for the land mobile service

Propagation curves for the land mobile service operating in the VHF bands may be derived from the broadcasting propagation curves of Figures 2.3, 2.4 and 2.5, with the -9 dB correction for a mobile station antenna height of 3 m as indicated in section 2.1.3.3.

### 2.4 Index to propagation data

The following table indicates the curve/formulae applicable in specified cases :

Area \ % Time	50%	10%	1%
LAND	Figure 2.1	Figure 2.3	Figure 2.6
COLD SEA	Figure 2.2	Figure 2.4	Figure 2.7
WARM SEA	Figure 2.2	Figure 2.5	Figure 2.8
EASTERN MEDITERRANEAN AND SHATT-AL- ARAB TO GULF OF OMAN	Figure 2.2		Formulae given in section 2.1.2.1

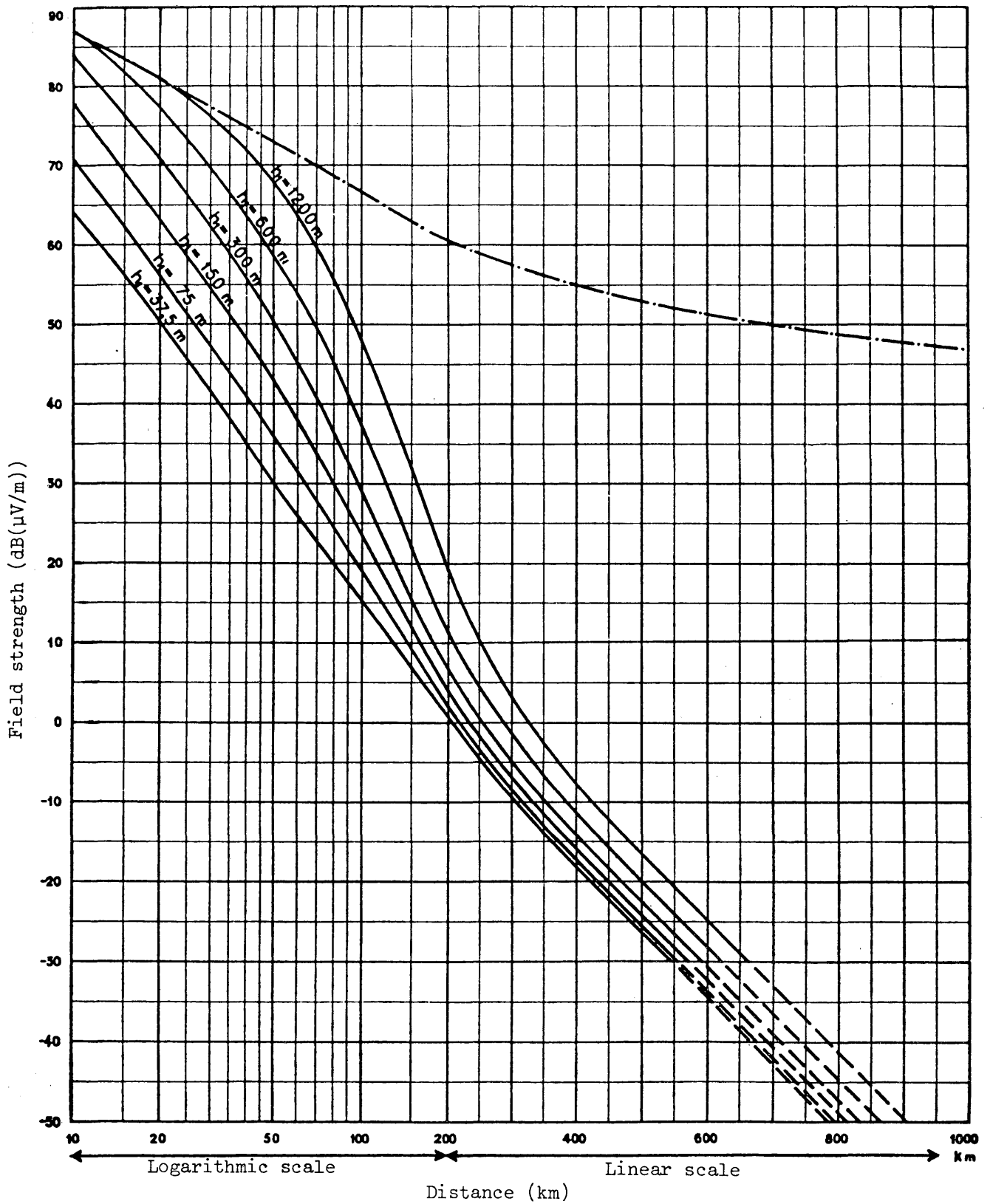


Figure 2.1 - Field strength (dB(μV/m)) for 1 kW e.r.p.

Frequency : 30 to 250 MHz; Land  
50% of the time; 50% of the locations;  $h_2 = 10$  m  
- - - - - Free space



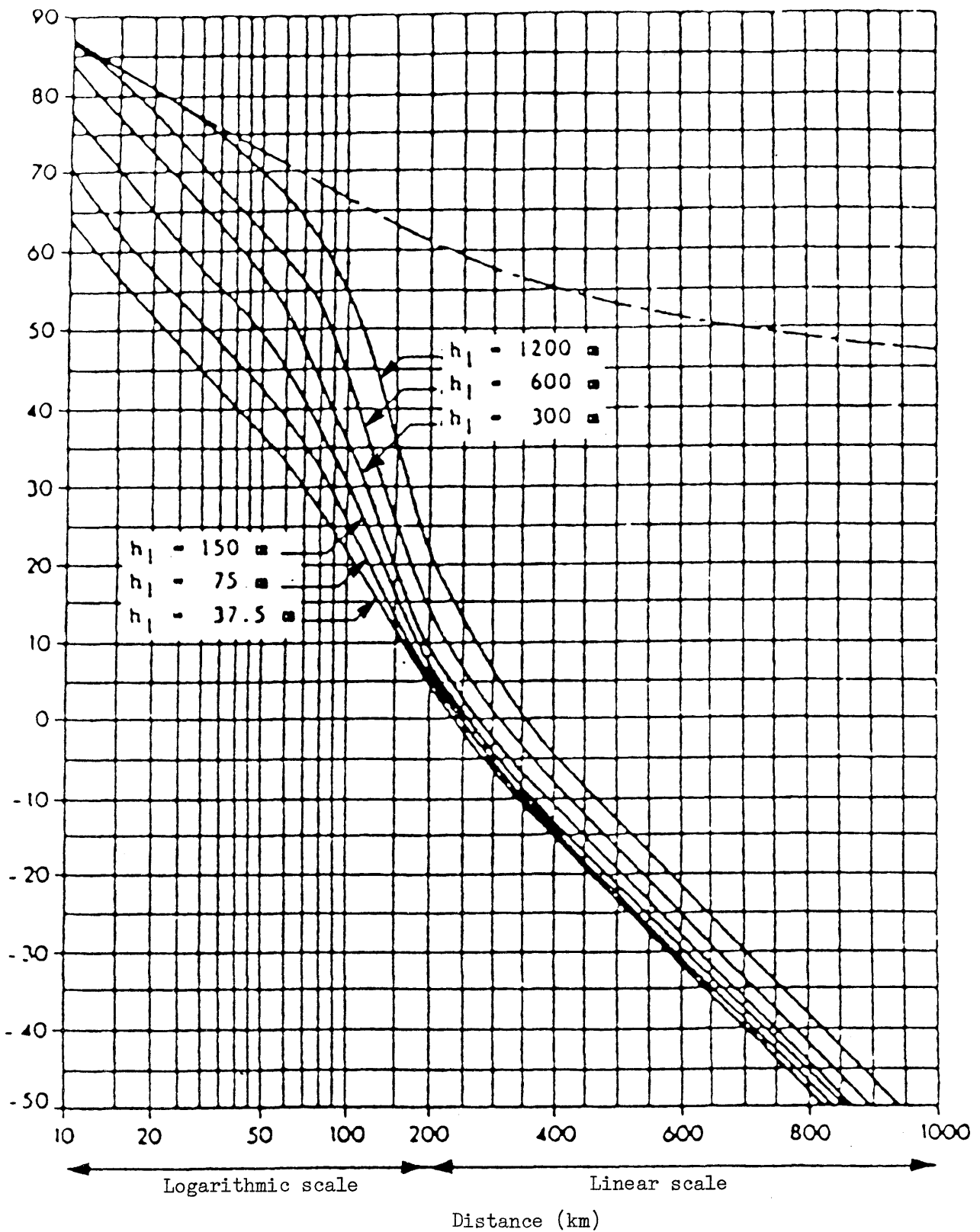


FIGURE 2.2

Field-strength  $\overline{[dB(\mu V/m)]}$  for 1 kW e.r.p.

Frequency : 30 to 250 MHz (Bands I, II and III); Sea

50% of the time; 50% of the locations;  $h_2 = 10$  m

--- Free space

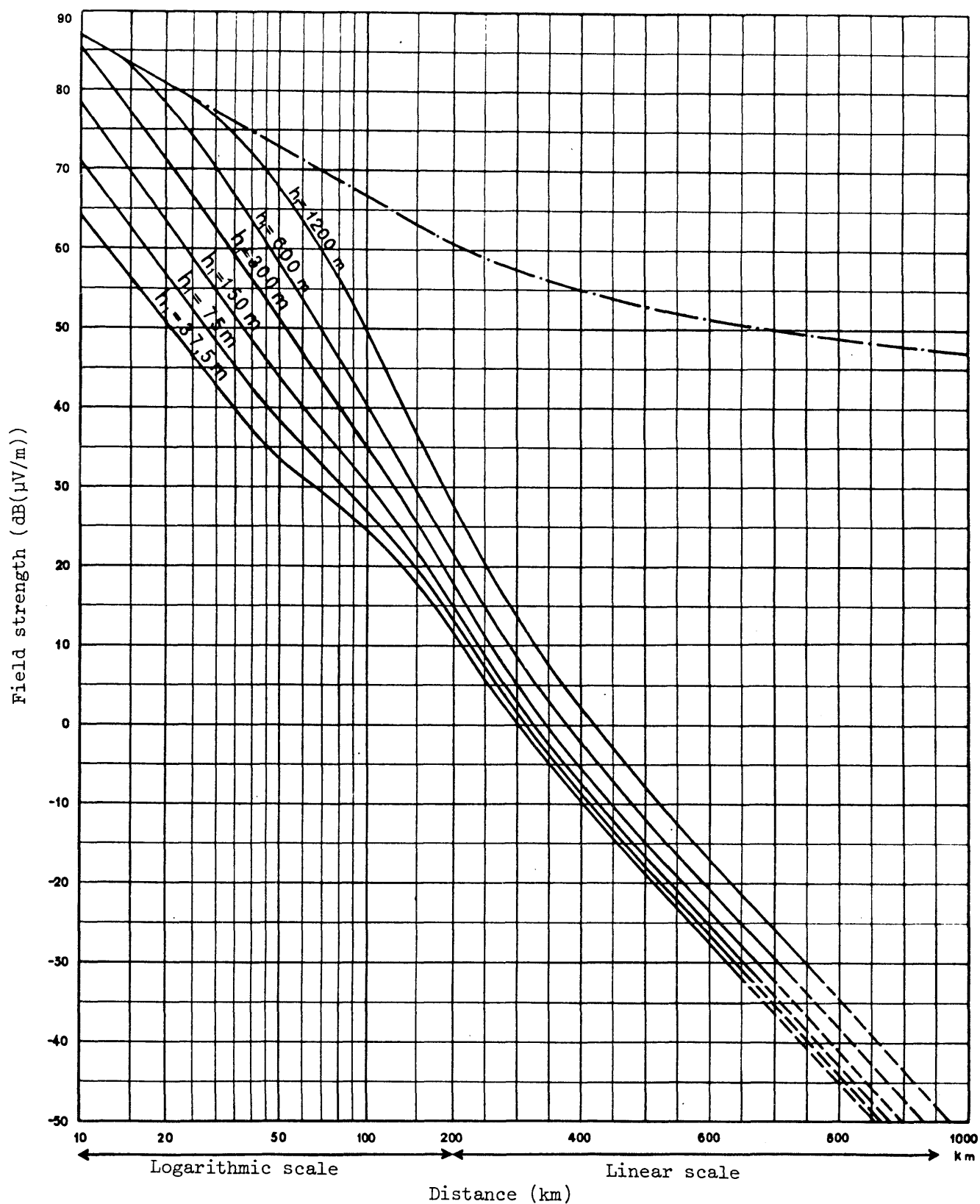


Figure 2.3 - Field strength (dB(μV/m)) for 1 kW e.r.p.

Frequency : 30 to 250 MHz : Land  
 10% of the time; 50% of the locations;  $h_2 = 10$  m  
 - - - - - Free space

PROPAGATION CURVES FOR THE BROADCASTING SERVICE

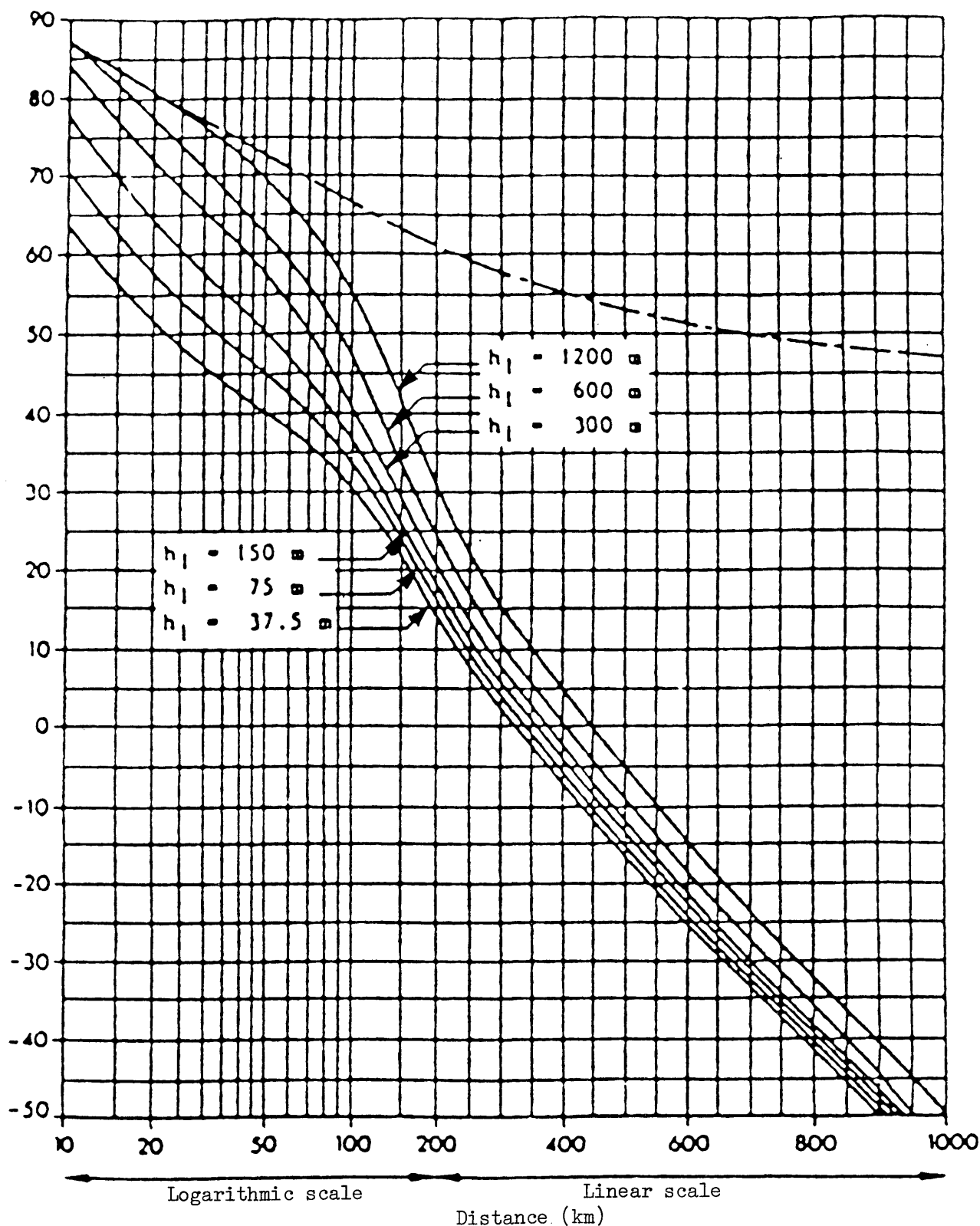


FIGURE 2.4

Field-strength  $\sqrt{\text{dB}(\mu\text{V/m})}$  for 1 kW e.r.p.

Frequency : 30 to 250 MHz (Bands I, II and III); Cold Sea; 10% of the time;  
50% of the locations;  $h_2 = 10$  m

--- Free space

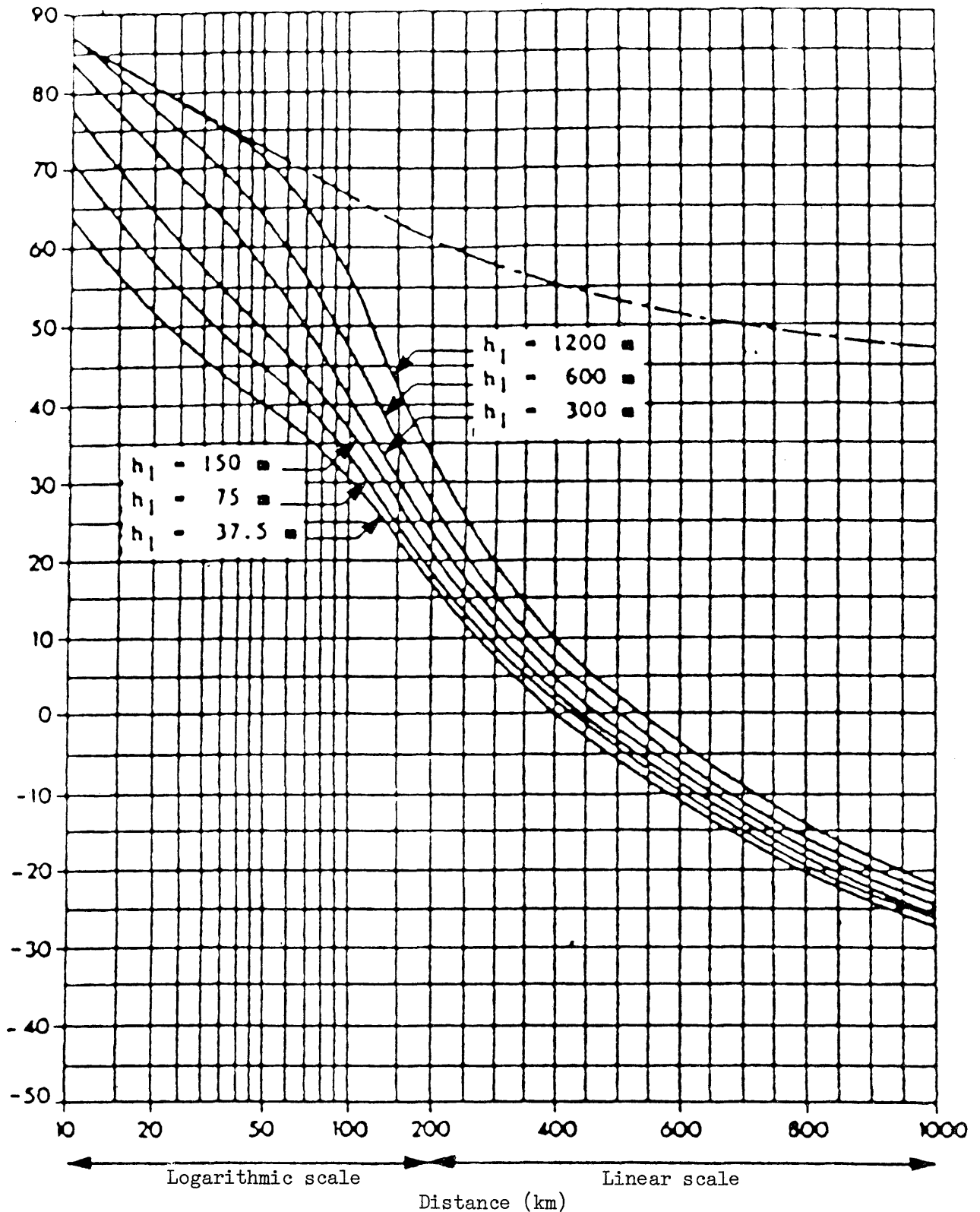


FIGURE 2.5

Field-strength  $\overline{\text{dB}(\mu\text{V/m})}$  for 1 kW e.r.p.

Frequency : 30 to 250 MHz (Bands I, II and III); Warm Sea; 10% of the time; 50% of the locations;  $h_2 = 10$  m

----- Free space

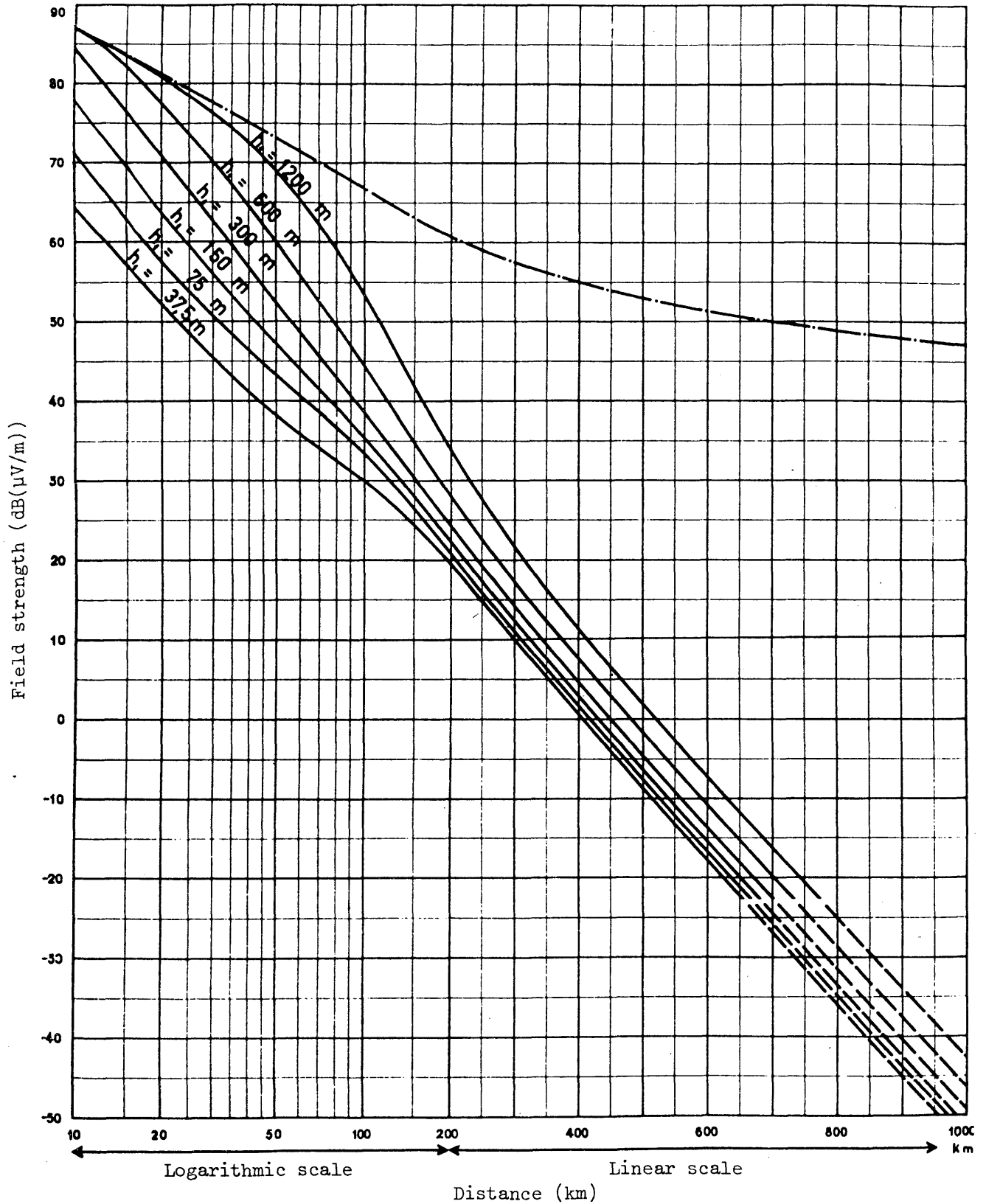


Figure 2.6 - Field strength (dB(μV/m)) for 1 kW e.r.p.

Frequency : 30 to 250 MHz; Land;  
1% of the time; 50% of the locations;  $h_2 = 10$  m  
..... Free space

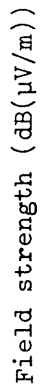


Figure 2.7 - Field strength (dB( $\mu$ V/m)) for 1 kW e.r.p.

1% of the time; 50% of the locations;  $h_2 = 10$  m

## PROPAGATION CURVES FOR THE BROADCASTING SERVICE

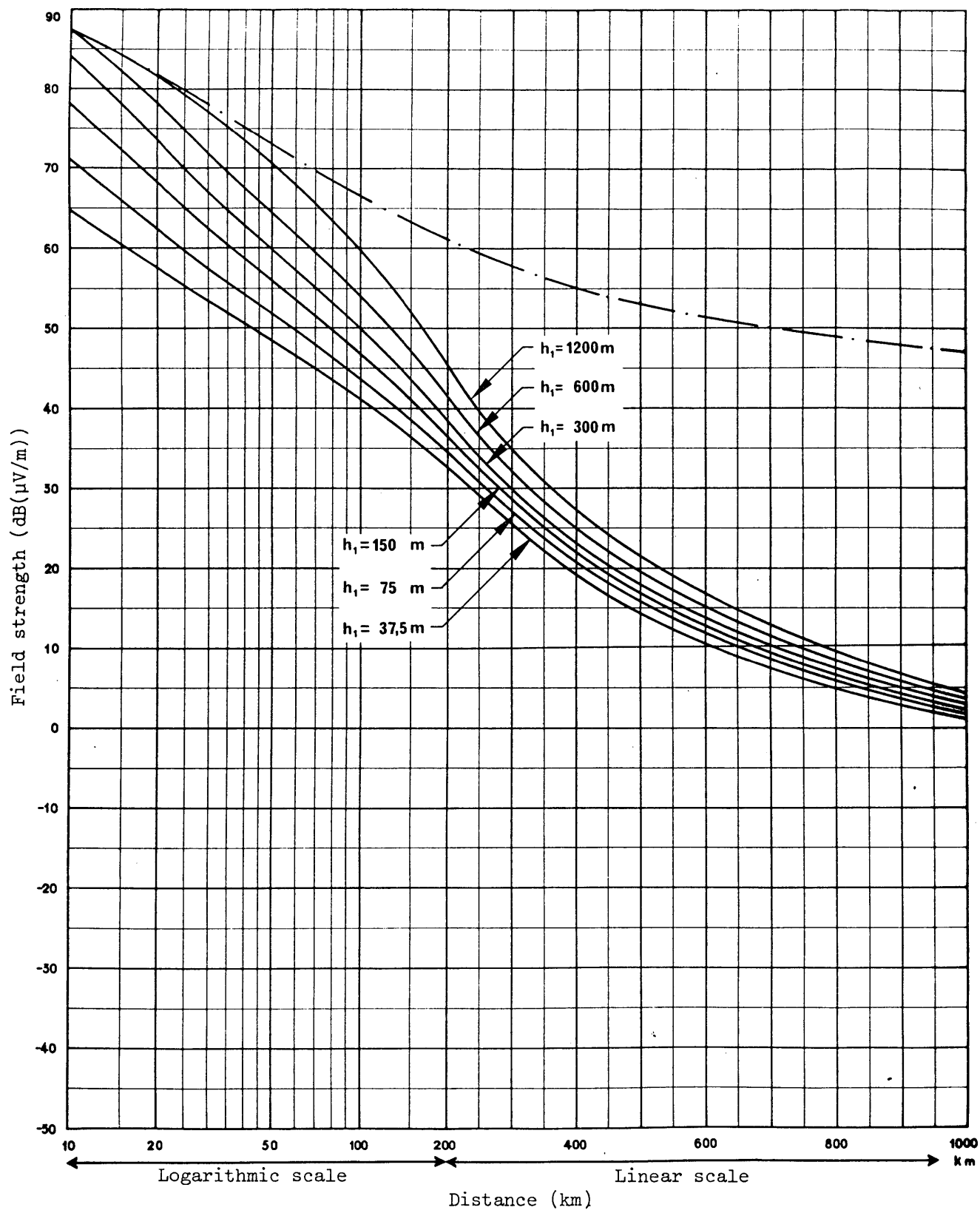


Figure 2.8 - Field strength (dB(μV/m)) for 1 kW e.r.p.

Frequency : 30 to 250 MHz; Warm sea; (excluding  
areas subject to extreme super-refractivity)  
1% of the time; 50% of the locations;  $h_2 = 10$  m  
— — — — — Free space

PROPAGATION CURVES FOR THE BROADCASTING SERVICE

Symbols for antenna heights

Code	$h_1$ (m)	$h_2$ (m)
A	15	1000
B	1000	1000
C	15	10000
D	1000	10000
E	15	20000
F	1000	20000
G	10000	10000
H	10000	20000
I	20000	20000

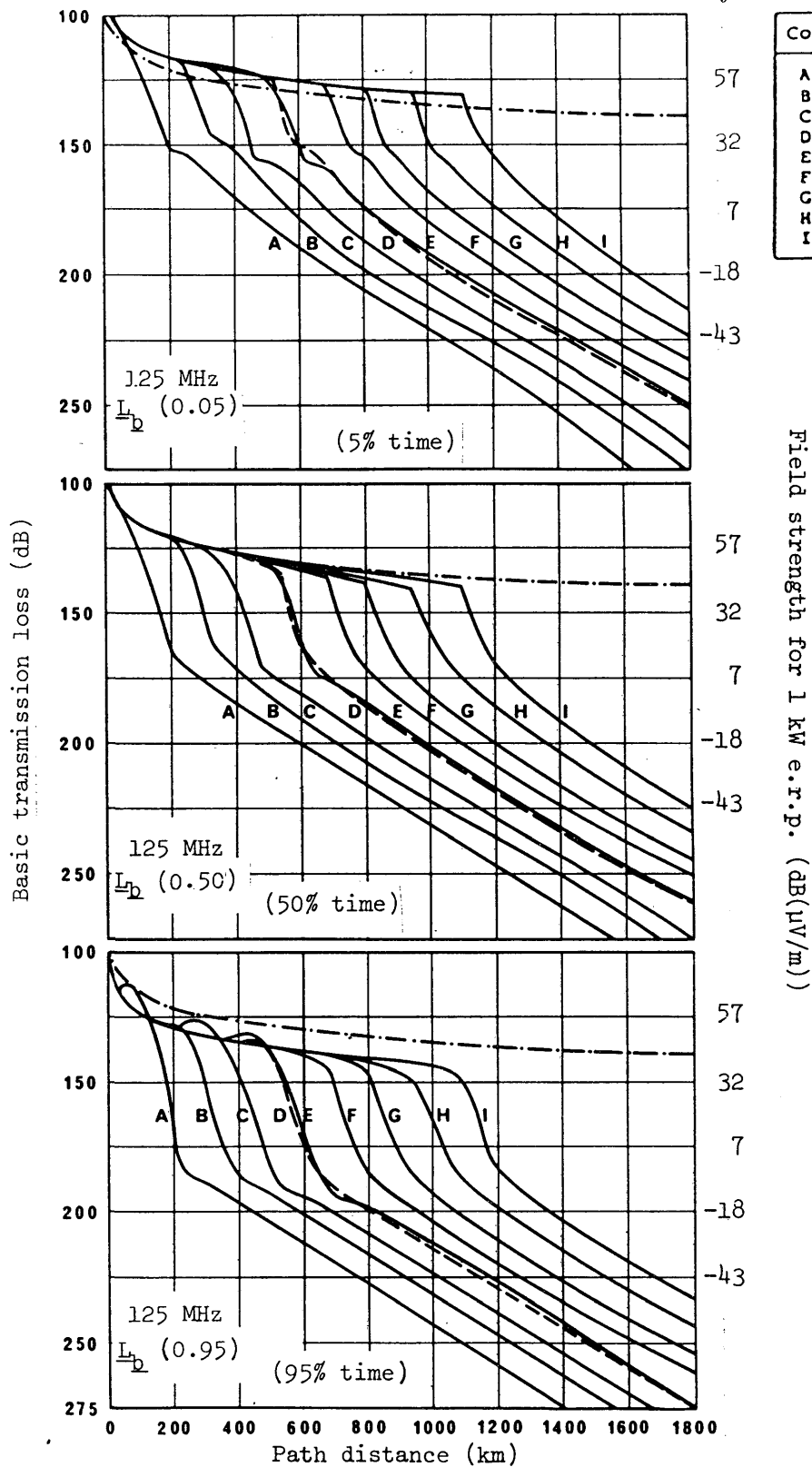


Figure 2.9 - Basic transmission loss at 125 MHz for 5%, 50% and 95% of the time.

— — — — Free space



ANNEX A

SUPPLEMENTARY PROPAGATION DATA

CORRECTION FACTORS

(see Chapter 2)

This annex gives supplementary propagation data as well as the correction factors which can be applied to the basic curves to improve the accuracy of predictions.

For the Second Session of the Conference these various factors should not be used, although some administrations may wish to take them into account in particular cases in order to facilitate bilateral negotiations with the aim of achieving mutually satisfactory solutions.

1. Correction for various location percentages

The curves in Figures 2.1 to 2.9 are representative of 50% of locations. Figure 2.13 shows the correction (in dB) to be applied for other percentages of receiving locations.

2. Receiver terrain correction (terrain clearance angle)

The location correction in paragraph 1 above can be applied only on a statistical basis. If more precision is required for predicting the field strength in a specific small receiving area a correction may be based on a "terrain clearance angle". This angle  $\theta$  is measured at a point chosen to be representative of the reception area; it is defined as the angle between the horizontal plane passing through the receiving antenna and the line from this antenna which clears all obstacles within 16 km in the direction of the transmitter. The example in Figure 2.16 indicates the sign convention, which is negative if the line to the obstacles is above the horizontal. Figure 2.17 indicates the correction, as a function of the angle  $\theta$ , to be applied to the prediction for 50% of locations. If this correction is applied, the location correction of paragraph 1 (Figure 2.13) may no longer be applicable.

Corrections for terrain clearance angles outside the range  $-5^\circ$  to  $0.5^\circ$ , are not given in Figure 2.17, because of the smaller number of paths concerned in the study. However, they may be obtained tentatively by linear extrapolation of the curve in Figure 2.17 and limiting values of 30 dB at  $1.5^\circ$  and -40 dB at  $-15^\circ$ , subject to the condition that the free-space field strength is not exceeded.

CCIR References (Volume V)

- Recommendation 370-4
- Report 239-5
- Recommendation 529
- Report 567-2
- Recommendation 528-1

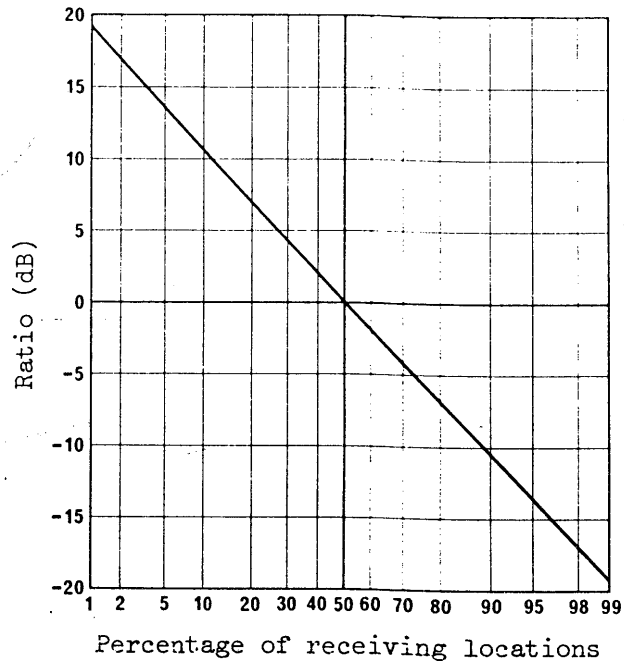


Figure 2.13 - Ratio (dB) of the field strength for a given percentage of the receiving locations to be the field strength for 50% of the receiving locations

Frequency : 30 to 250 MHz

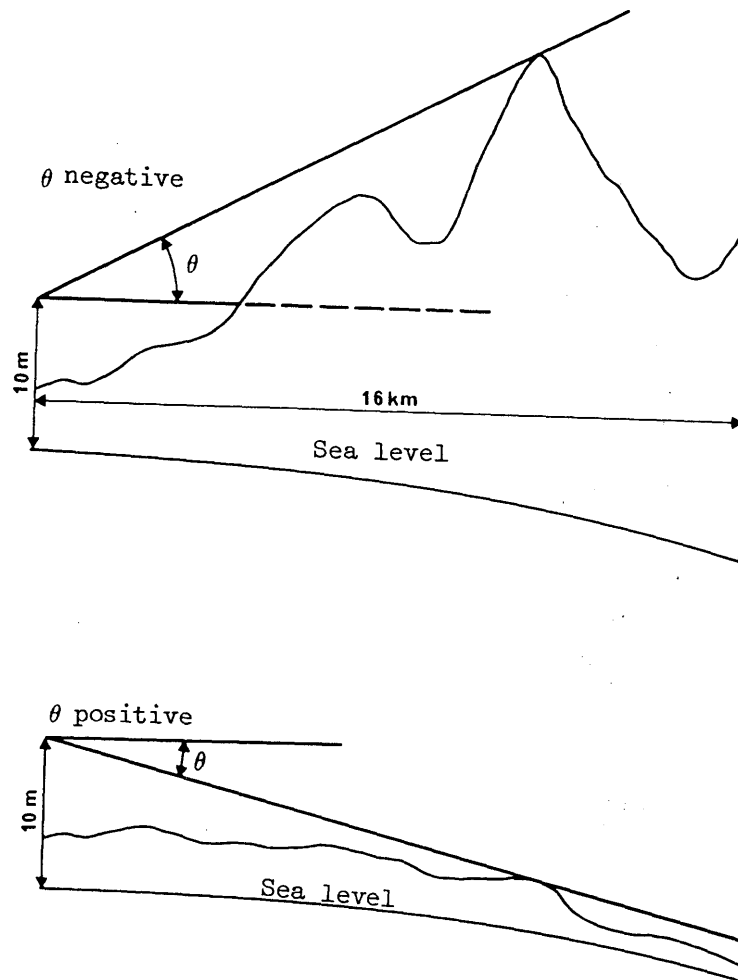


Figure 2.14 - Terrain clearance angle

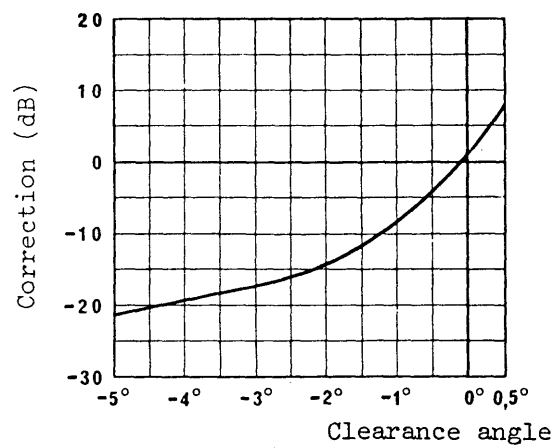


Figure 2.15 - Receiving terrain clearance angle correction (VHF)

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 62-E  
8 November 1984  
Original : English

COMMITTEE 4

SUMMARY RECORD

OF THE

SECOND MEETING OF COMMITTEE 4

(PLANNING)

Thursday, 1 November 1984, at 0905 hrs

Acting Chairman : Mr. H.K. AL SHANKITI (Saudi Arabia)

Subjects discussed :

Documents

- |   |        |
|---|--------|
| 1. Organization of the work                   | 58     |
| 2. Designation of Chairmen of Planning Groups | -      |
| 3. Presentation of documents (continued)      | 48, 49 |

1. Organization of the work (Document 58)

1.1 The Chairman said that the Planning Group composition shown in Document 58 reflected the decision taken by Committee 4 at its first meeting. The composition was not final; administrations wishing to join particular Groups could do so. The Administrations of Algeria and Libya were to be added to Planning Group 4A.

1.2 The delegates of France and Egypt requested that their Administrations should be included in Planning Group 4A.

1.3 The delegates of the United Kingdom and Saudi Arabia requested that their Administrations should participate in Planning Groups 4A and 4B.

1.4 The delegate of the USSR said that, if the Administration of Iran (Islamic Republic of) was to participate in Planning Group 4B, that of the USSR should do so too.

1.5 The delegate of Iraq said that, because of a common border, either the Administration of Syria should be included in the list for Planning Group 4C, within square brackets - in accordance with § 5 of Document 58 - or alternatively the Administration of Iraq should appear also in the list for Planning Group 4B.

1.6 The delegate of Israel requested that his Administration should also participate in Planning Group 4C.

1.7 The delegates of Iran (Islamic Republic of), Morocco, Malta, Tunisia, Turkey and Greece requested inclusion in Planning Group 4D.

1.8 The representative of the IFRB said that, although it could be useful for administrations to participate in more than one Planning Group, any such administration would have to determine, for the Committee's purposes, which Group represented its primary interest. It was important that each Planning Group should know for which countries it had the primary responsibility.

1.9 The delegate of Algeria felt that the composition of the Planning Groups could remain flexible.

1.10 The delegate of Italy felt that, for many administrations, it would be difficult to indicate the primary or secondary interest.

1.11 The delegate of Spain said that Planning Group 4B represented his Administration's primary interest; however, it reserved the right to participate in the work of other Groups which might be of interest to it.

1.12 The delegate of the United Kingdom agreed with the delegate of Italy. The United Kingdom had a primary interest, on account of the territories it represented, in all the Planning Groups. To have separate lists for administrations and the territories they represented might lead to complications; perhaps an accompanying map might be a useful alternative.

1.13 The delegate of Iran (Islamic Republic of) thought that administrations should be free to indicate where their interests lay and should not be restricted to indicating primary and secondary interests. His Administration could not accept the notion of a Planning Group assuming primary responsibility for administrations' needs; that notion was different from the concept of administrations indicating their primary interests.

1.14 The Chairman invited agreement to the IFRB proposal that participation in Planning Groups should be limited as to the number of administrations in a given region, on the understanding that administrations wishing to participate in a Group to which they had not been designated were free to do so.

It was so agreed.

## 2. Designation of Chairmen of Planning Groups

2.1 The Chairman announced that Mr. Witham (United Kingdom) had agreed to act as Chairman of Planning Group 4D. The names of the Chairmen of the three other Groups would be announced when consultations had been completed. The following members of the Secretariat would assist the Planning Groups in their work :

Mr. Christensen	-	for Group 4A
Mr. Giroux	-	for Group 4B
Mr. Tsukada	-	for Group 4C
Mr. Schuster	-	for Group 4D

The Groups should observe the terms of reference contained in Document 40.

2.2 The delegate of Iran (Islamic Republic of) said that the Groups required much more detailed terms of reference than were given in Document 40. They would need to know, for example, how to deal with coordination, modification and other planning procedures.

2.3 The Chairman replied that the Chairmen of the Groups would be authorized to deal with matters of coordination. Further details could be discussed once all the Chairmen had been appointed.

2.4 The delegate of the United Kingdom suggested that the Chairman and the four Group Chairmen should together draft appropriate terms of reference and submit them to the Committee for approval.

It was so agreed.

## 3. Presentation of documents (continued)

### 3.1 Document 48

3.1.1 The delegate of Yugoslavia, introducing the document, said that its purpose was to make clear his Administration's interpretation of the planning principles, criteria and methods to be applied in preparing the Plan, in view of the problems which had arisen in the course of bilateral and multilateral coordination activities among neighbouring countries. The application of the principle of equal rights for all countries with regard to the band 87.5 - 108 MHz for broadcasting was of particular concern. In the context of frequency planning, the concept of "equivalent national coverage" clearly referred to FM sound broadcasting, although in some parts of the planning area, referred to in the report of the second session as "the rest of the planning area", and particularly in the border area between the countries, the sub-band 87.5 to 100 MHz was used for television as well as for FM sound broadcasting in accordance with the Regional Agreement, Stockholm, 1961. The Yugoslav delegation had therefore submitted three proposals, YUG/48/1, YUG/48/2 and YUG/48/3 in an effort to ensure that the principle of equal rights was properly applied.

3.1.2 The delegates of Greece and Iran (Islamic Republic of) fully supported the three proposals, the latter endorsing in particular the last paragraph of the document.

3.1.3 The delegate of Yugoslavia, replying to a question raised by the delegate of Algeria, said that the proposals did not concern the whole of the planning area, only those zones requiring coordination for sound broadcasting and television in the same sub-band.

3.1.4 The Chairman said that in view of the lack of comment he took it that the Committee approved the three Yugoslav proposals.

Document 48 and its proposals were approved.

### 3.2 Document 49

3.2.1 The representative of the IFRB said that, although the document had been noted at the second Plenary Meeting, a few additional points should be made. With regard to the ILS/VOR compatibility calculations referred to in section 1.3, certain administrations had expressed concern at the fact that their ILS/VOR requirements did not appear in the printout : some 900 incompatibilities had been found among the requirements, but those which did not show incompatibility had not been included in the printout.

It should be borne in mind that the number of analyses that could be carried out was limited, mainly because of the computer time required and the time needed for printing on paper and on microfiches.

He also drew attention to the possibility of delays with the first analysis if a large number of additional requirements was submitted before the deadline on Friday, 2 November. There again, there was a limit to the number of requirements that could be handled so that the results could be processed on Monday, 5 November, and distributed on Tuesday and Wednesday, 6 and 7 November; the schedule in Annex 2 to the document might therefore have to be modified accordingly.

3.2.2 The delegate of Iran (Islamic Republic of), referring to the schedule in Annex 2, said that the Technical Working Group of the Plenary had already noted that a difficult situation was likely to arise as the result of the super-refractivity phenomena occurring in a certain group of countries and that the delegations concerned would probably have to consult together for some time in order to replan the requirements of that area. In that event, it would be very hard to meet the deadline of Tuesday, 13 November, for the submission of modifications. He therefore asked whether the countries in question could not be given more time for the replanning exercise.

3.2.3 The delegate of Qatar endorsed those remarks.

3.2.4 The delegate of Iraq also supported those views, particularly since his delegation had submitted some replanning proposals for the eight countries of the Gulf area in Document 52, to be considered at a later meeting of Committee 4. Those delegations would certainly need two or three extra days for reconsideration of their requirements. He asked whether the IFRB could provide additional resources in connection with that particular issue.

3.2.5 The delegate of Saudi Arabia said that he too supported the Iranian delegate's proposal because, apart from the replanning exercise that would be necessary, the experience of other planning conferences has shown that more coordination time was required for the first analysis than for the second. He suggested that the IFRB should consider extending the deadline of Tuesday, 13 November, to Thursday, 15 November or Friday, 16 November.

3.2.6 The representative of the IFRB said that he had had no opportunity to investigate the consequences of allowing for an extension of the deadline in the case of a group of administrations with special coordination difficulties. He would take note of the remarks made and would report back to Committee 4 on the possibility of granting such an extension.

With regard to the Iraqi delegate's question concerning the provision of additional IFRB resources, he assumed that those would comprise assistance and guidance from the Board and the Secretariat and perhaps additional computer facilities for the Group : the IFRB would provide as much assistance as possible, provided the Group's specific requirements were made known.

The meeting rose at 1145 hours.

The Secretary :  
D. SCHUSTER

The Acting Chairman :  
H.K. AL SHANKITI



INTERNATIONAL TELECOMMUNICATION UNION

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Corrigendum 1 to

Document 63-E

14 November 1984

Original : French

PLENARY MEETING

MINUTES

OF THE

SECOND PLENARY MEETING

(Concerns the French text only)

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 63-E  
5 November 1984  
Original : English

PLENARY MEETING

MINUTES

OF THE

SECOND PLENARY MEETING

Wednesday, 31 October 1984, at 1600 hrs

Chairman : Miss M. HUET (France)

Subjects discussed :

1. General organization of the work of the  
Conference (cont'd.)
2. Countries not participating in the Conference

Documents

41, 42, 49

-

1. General organization of the work of the Conference (cont'd.)  
(Documents 41, 42 and 49)

1.1 The Chairman noted that the meeting had before it for consideration, in the form of a microfiche, the list of requirements at present in suspense, namely the additional requirements received since 1 May 1984, the modifications received up to 30 September 1984 that were considered not to improve the plan and all modifications received from 1 October 1984. Documents 41, 42 and 49 provided appropriate background information.

1.2 The delegate of Algeria said that not all administrations had been in a position to evaluate their requirements in the best possible way. In addition, many countries had had occasion to review the requirements they had submitted earlier. Some of those modifications had been considered not to improve the incompatibilities existing in the international plan after the first analysis even though they might improve the country's national plan. However, some modifications not considered to improve the plan had in fact been included in it, thus showing that there was no single criterion for deciding such cases. For those reasons he considered that all requirements, whether additions or modifications, submitted by administrations up to a deadline to be set by the present meeting should be taken into account in the first Conference analysis.

1.3 The delegate of the Federal Republic of Germany conceded that some administrations had lacked the means and opportunity to submit their requirements in time. However, such cases presented no real problem as there was an effective procedure for dealing with them in a manner satisfactory to all. The real difficulty was the case of administrations that sent in new requirements after having submitted their initial requirements in time, especially when such new requirements had not been coordinated in advance. After all, there was nothing to prevent any administration from submitting additional requirements to the Conference at any time up to the signature of the Final Acts provided such requirements had been coordinated and agreed to by all concerned. His delegation, therefore, which had been of the understanding that the dates set by the first session of the Conference had been binding deadlines, considered that the 30 September 1984 deadline for submissions should be maintained.

1.4 The delegate of Iran (Islamic Republic of), supported by the delegate of Turkey, said that the deadlines set by the first session of the Conference had been arrived at after considerable discussion; the instructions of that session should be respected. With the exception of the countries in the position described by the delegate of Algeria, all administrations had had time to prepare their national plans on the basis of the report of the first session. Planning would be complicated if a large number of requirements coming in at a late date were to be included. His delegation was strongly opposed to the acceptance of modifications received after 30 September 1984 that were deemed not to improve the plan, with the exception of submissions from countries not represented at the Conference and countries that had not yet submitted any requirements.

1.5 In reply to a request from the delegate of Ireland for clarification of the position of modifications to requirements submitted before 1 February 1984, which modifications had been proposed before 30 September 1984 but, because they were considered not to improve the plan, were on the suspense file, the Chairman of the IFRB said that if the Conference decided not to take such modifications into account the characteristics of the requirements submitted before 1 February 1984 would be those included in the plan. All modifications submitted subsequently would have to go to the planning groups for consideration, and if accepted by them would be entered in the plan.

1.6 The views that had been expressed by the delegate of Algeria were supported by the delegates of Saudi Arabia, Oman, Tunisia, Afghanistan, Iraq, the USSR, the German Democratic Republic, Portugal, Burkina Faso and Poland.

1.7 The delegate of the United Kingdom, also supporting the views of the delegate of Algeria, said that although the schedules and deadlines given in the report of the first session were binding on the IFRB for its work during the intersessionary period, they could not be considered as binding on the second session, as the first and second sessions were constitutionally the same conference; with the second session in principle deciding matters left over from the first. More specifically, the report of the first session stated that modifications received after 1 October 1984 should be dealt with by the second session.

1.8 The Chairman proposed, in view of the clear majority of speakers in its favour, the adoption of the Algerian proposal that all the submissions on the suspense file before the meeting should be included in the first Conference analysis.

It was so agreed.

1.9 The delegate of the Federal Republic of Germany said that while his delegation accepted the decision of the majority it reserved its right to take appropriate action with regard to the additional requirements in the suspense file and if necessary to submit further additional requirements of its own to the Conference for consideration.

1.10 Similar reservations were expressed by the delegates of Turkey, Spain and Iran (Islamic Republic of).

1.11 The Chairman noted that all those that would be taking part in the Planning Groups would be aware of the dates on which additional requirements had been submitted and could take appropriate action then. The Conference's attention was drawn to the fact that the latest time that submissions could be accepted if the first Conference analysis were to be completed during the coming weekend was Friday, 2 November 1984 at 23.59 hours.

1.12 On a request for clarification from the delegates of the United Kingdom and San Marino, the Secretary-General confirmed that the time specified was UTC.

It was decided that the deadline for the addition of submissions to the suspense file should be 23.59 hours UTC on Friday, 2 November 1984 with an extension to 23.59 hours UTC on Monday, 5 November 1984 for countries not represented at the Conference to allow for their consultation by telex.

1.13 In response to a request by the delegate of Burkina Faso for an extension of the deadline for countries which had not yet been able to submit their requirements, the Chairman of the IFRB said it would be preferable to follow the usual practice of sending submissions received after the deadline to the Planning Groups for approval for acceptance into the plan. The Planning Groups would be aware of, and make allowance for, countries that had found it difficult to submit their requirements in time. Should such countries require technical assistance in preparing their requirements the Secretariat would be pleased to arrange for it to be provided.

In reply to a request for clarification from the delegate of Italy, he said that requests for new requirements could be submitted on the old form whereas modifications should be submitted on a new form to be distributed. With regard to the test points designated in the context of ILS and VOR protection, no test points other than the original four had been included in the baseline data. Administrations that considered other test points more suitable should submit them to the Secretariat on a printed form that would be made available to them. Those forms should also be used to notify any errors found in the inventory of test points.

2. Countries not participating in the Conference

It was agreed that in the planning groups the IFRB should be requested to look after the interests of the countries not represented at the Conference.

The meeting rose at 16.55 hours.

The Secretary-General :

R.E. BUTLER

The Chairman :

M. HUET

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 64-E

2 November 1984

Original : English

Source : DT/7

TECHNICAL WORKING GROUP  
OF THE PLENARY

## FIRST REPORT OF TECHNICAL SUB-WORKING GROUP PL/B

Annex J of the report to the second session of the Conference describes, among others, a method for analyzing incompatibilities between VHF broadcasting stations and stations of the aeronautical radionavigation service before and during this second session of the Conference. The protection criteria contained in § 5.2 of Annex J are based on preliminary and limited data available at that time.

Sub-Working Group PL/B has reconsidered this matter in the light of recent studies as contained in the report of CCIR Joint Interim Working Party 8-10/1 (Document 12) and other relevant contributions to the second session of the Conference. It proposes to replace § 5.2 of Annex J by the text contained in the annex to this report.

Annex : 1

ANNEX

5.2 Protection criteria for the aeronautical radionavigation service

5.2.1 Wanted signal

- ILS : 40  $\mu\text{V/m}$  (32 dB( $\mu\text{V/m}$ ))
- VOR : 90  $\mu\text{V/m}$  (39 dB( $\mu\text{V/m}$ ))

5.2.2 Principles of calculation

The field strength of every broadcasting station in the band 87.5 to 108 MHz within the outer resulting coordination contour of an aeronautical radionavigation station will be calculated at the test points as an interfering signal. For types A1 and A2 interference this field strength will be compared with the minimum wanted field strength indicated in section 5.2.1. For type B1 interference the relevant intermodulation formulae will be applied. For type B2 interference the broadcasting signal level will be compared with the maximum permitted level. The results of the calculations will indicate those cases where the relevant protection criteria are not met and those cases where the criteria are exceeded by less than 3 dB.

Protection criteria given for future equipment will be applied as from  
... \*.

Where applicable, field strength E will be converted to signal power N at the receiver input according to the following formula :

$$E \text{ (dB}(\mu\text{V/m)}) = N \text{ (dBm)} + 118 + L_s + L(f)$$

where :

$L_s$  - system fixed loss of 3.5 dB;

$L(f)$  - system frequency-dependent loss at frequency f of 1 dB per MHz from 108 to 100 MHz and then 0.5 dB per MHz below 100 MHz.

The figures for  $L_s$  and  $L(f)$  apply for both ILS and VOR equipment.

5.2.3 Protection criteria

5.2.3.1 Type A1 interference

A protection ratio of 17 dB for frequency coincidence is applied both for ILS and VOR equipment.

This value includes a small safety margin in order to take account of multiple interference entries resulting from different broadcast transmitters.

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\* The Technical Working Group of the Plenary does not feel competent to establish this date. There is, however, no evidence that the date of 1 January 1998 as indicated by JIWP 8-10/1 is unrealistic, which has been confirmed by ICAO.

In making the calculations there will always be assumed a spurious component exactly at the aeronautical frequency under consideration (frequency coincidence) of the following level :

- 40 dB below the transmitter e.r.p. for transmitter e.r.p.s equal to and below 2.5 W;
- 250 µW e.r.p. for transmitter e.r.p.s below 79 kW;
- 85 dB below the transmitter e.r.p. for transmitter e.r.p.s equal to and above 79 kW.

An antenna gain of 10 dB has been assumed.

No specific investigation will be carried out by the IFRB during the Conference due to lack of input data necessary concerning a possible intermodulation component generated at the transmitter site, e.g. by multiple transmitters feeding the same antenna, coinciding with or near to the aeronautical frequency.

#### 5.2.3.2 Type A2 interference

Frequency difference (kHz)	Protection ratio
150	-41
200	-50
250	-59
300	-68

The values apply both for ILS and VOR equipment. A frequency difference below 150 kHz cannot occur. For frequency differences greater than 300 kHz this type of interference is not considered.

#### 5.2.3.3 Type B1 interference

Under consideration.

#### 5.2.3.4 Type B2 interference

Under consideration.

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 65-E

2 November 1984

Original : English

## COMMITTEE 5

### Republic of South Africa

#### PROPOSAL FOR THE WORK OF THE CONFERENCE

#### PROCEDURE FOR BRINGING INTO SERVICE THE

#### ASSIGNMENTS IN THE PLAN

(Agenda item 2.3)

Reference is made to Document 8 which indicated that further information would be submitted at a later date.

Studies (including studies of the coverage areas of stations according to the new Plan compared with the coverage areas of the existing stations) have indicated that in a number of important cases the coverage according to the new Plan is more limited than the existing coverage. This means that additional stations will have to be built (for which provision has already been made in the relevant requirements submitted) before the frequency changes at the existing stations can be implemented in order to ensure that certain listeners are not deprived of their radio services during the transitional period.

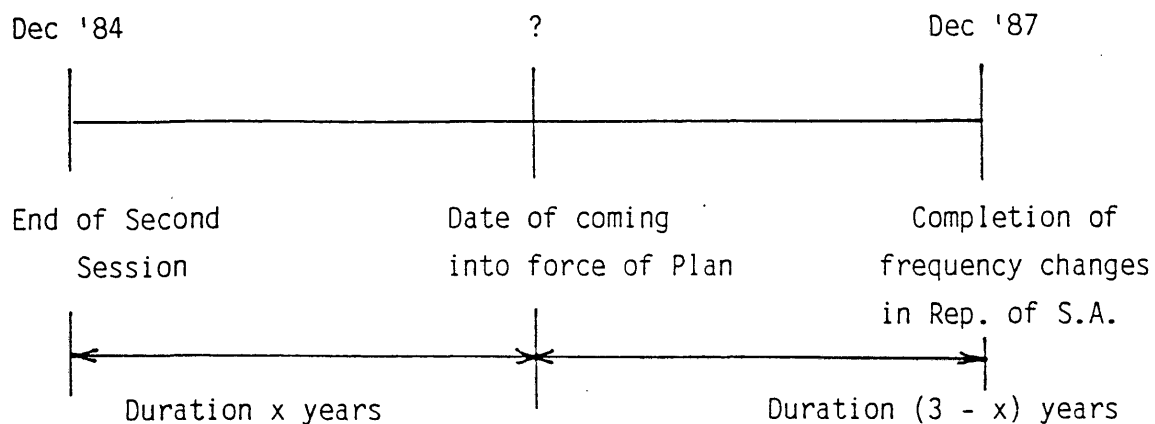
The considerations above lead to the conclusion that an overall transitional period of three years will be necessary during which the frequency changes in the Republic of South Africa could be completed.

It is the intention of this administration to change the frequency assignments of those FM broadcasting stations within coordination distance of stations in operation in other countries, so that those neighbouring countries could implement their new frequency assignments in the most expeditious manner in accordance with the new Plan. Some of these cases may require individual study in coordination with the administrations of the countries concerned.

It follows from the above that during the transitional period South Africa will have a mixture of frequency assignments in operation i.e. some in accordance with the new Plan and some in accordance with the "Geneva 63" Plan. The proportion of "new" frequency assignments in operation will grow steadily from some small value at the date of implementation to 100% at the end of the transitional period.

It is therefore proposed that IFRB should regard assignments within the Republic of South Africa and in accordance with "Geneva 63" as remaining valid until the change of frequency is notified by the South African Administration which must however be before the final date indicated below.

### Illustration of time-scale



Note - The second period indicated above (3 - x) years must not be less than six months. If the Conference decides on a date of coming into force later than July 1987, the final or completion date for the Republic of South Africa will then be six months after such date.

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 66-E  
5 November 1984  
Original : French

BUDGET CONTROL COMMITTEE

Note by the Secretary-General

BUDGET OF THE  
REGIONAL ADMINISTRATIVE CONFERENCE FOR FM SOUND  
BROADCASTING IN THE VHF BAND

The annex hereto contains the budget of the Conference approved by the Administrative Council at its 38th session (1983), revised to take account of the additional credits approved at the 39th session (1984) in Council Resolution 905 and the adjustments made to salaries and daily allowances in accordance with Council Resolution 647.

R.E. BUTLER  
Secretary-General

Annex : 1

<u>Regional Administrative Broadcasting Conference</u> <u>Region 1+</u> Items		Budget 1984	Additional credits under Resolution 905 (AC39)	Additional credits under AC Resolution 647	Revised total budget 1984
		Swiss francs			
<u>Sub-head I</u>	<u>Preparatory work</u>				
20.301	IFRB salaries and related expenses	613,000		43,400	656,400
20.302	Insurance	119,000		12,900	131,900
20.303	Office space, furniture	30,000		-	30,000
20.304	Electronic equipment	50,000		-	50,000
20.311	CCIR preparatory meetings	48,000		-	48,000
		860,000	-	56,300	916,300
<u>Sub-head II</u>	<u>Staff expenses</u>				
20.351	Salaries and related expenses of the Conference Secretariat staff	1,314,000		163,000	1,477,000
20.352	Salaries and related expenses of the translation, typing and reproduction services staff	604,000		72,000	676,000
20.353	Travel (recruitment)	75,000		1,000	76,000
20.354	Insurance	47,000		-	47,000
		2,040,000	-	236,000	2,276,000
<u>Sub-head III</u>	<u>Travel expenses</u>				
20.361	Transport at the conference venue	-		-	
20.362	Travel to and from the conference venue	-		-	
20.363	Shipping of equipment to and from the conference	-		-	
<u>Sub-head IV</u>	<u>Premises and equipment</u>				
20.371	Premises, furniture, machines	55,000			55,000
20.372	Document production	58,000			58,000
20.373	Office supplies and overheads	30,000			30,000
20.374	Postage, telephone calls, telegrams	50,000			50,000
20.375	Technical installations	5,000			5,000
20.376	Sundry and unforeseen	10,000			10,000
20.377	Use of outside computers	90,000			90,000
		298,000	-	-	298,000
<u>Sub-head V</u>	<u>Other expenses</u>				
20.381	Interest credited to the ordinary budget	64,000	-	-	64,000
<u>Sub-head VI</u>	<u>Final Acts</u>				
20.391	Final Acts of the Conference	176,000	-	-	176,000
	Total, Sub-heads I to VI	3,438,000	-	-	
<u>Sub-head VII</u>	<u>Additional credits</u>	-	223,000	-	223,000
		3,438,000	223,000	292,300	3,953,300

**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Addendum 1 to  
Document 67-E  
8 November 1984  
Original : English

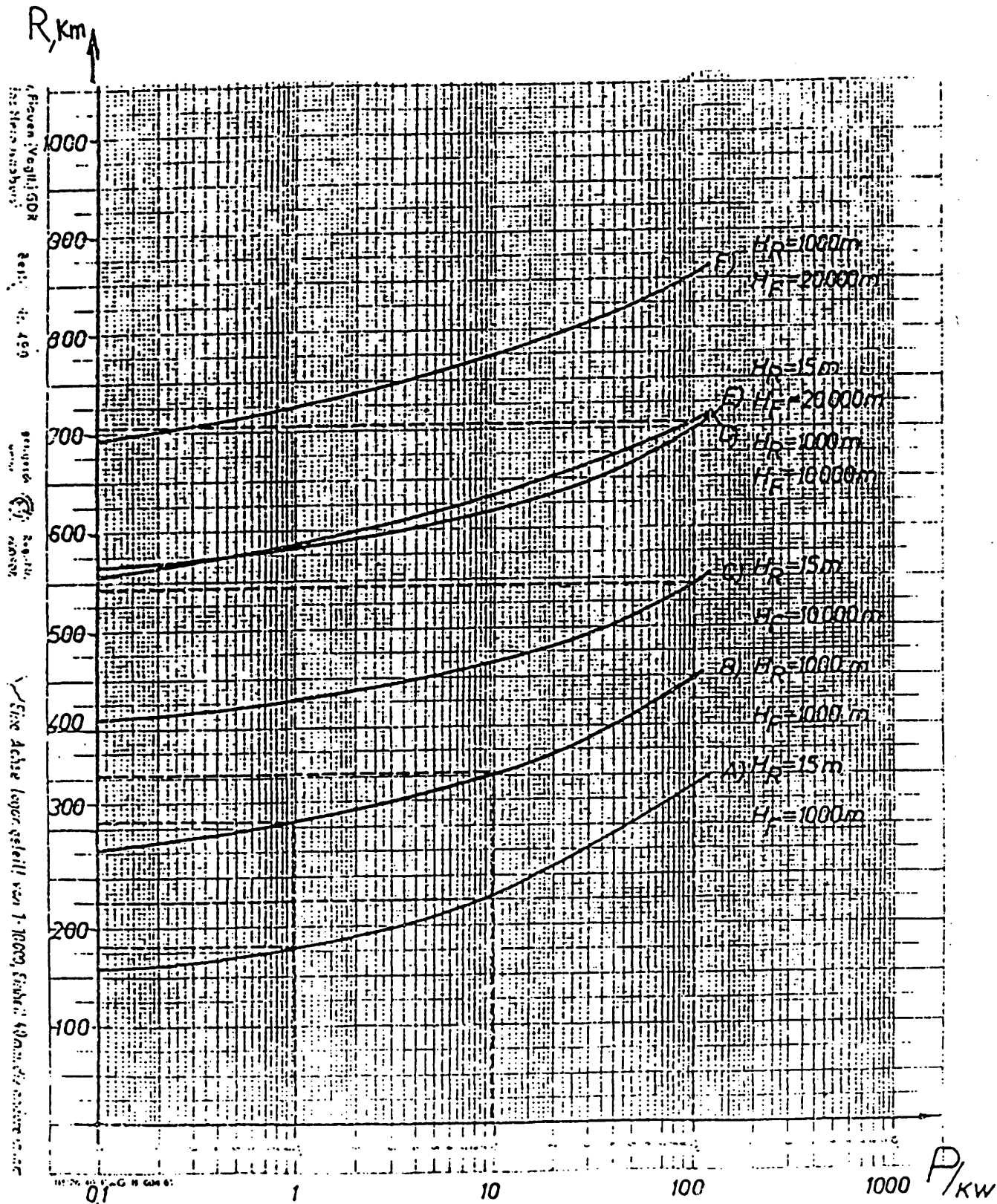
COMMITTEE 5

People's Republic of Bulgaria, Hungarian People's Republic,  
People's Republic of Poland, German Democratic Republic,  
Czechoslovak Socialist Republic, Union of Soviet Socialist Republics

SHARING CRITERIA BETWEEN THE FM SOUND BROADCASTING SERVICE AND  
AM AERONAUTICAL MOBILE (OR) SERVICE IN THE BAND 104 TO 108 MHZ

Frequency separation between carriers of the two services (kHz)	Protection ratio for AM aeronautical mobile service (dB)
0	17
50	3
100	-21
150	-53

Coordination distances ( $R, \text{km}$ ) depending on the power ( $P, \text{kW}$ ),  
height of broadcasting antenna ( $H_R, \text{m}$ ) and altitude of  
flight ( $H_F, \text{m}$ ) (at carrier coincidence)



# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 67-E

5 November 1984

Original : English

COMMITTEE 5

People's Republic of Bulgaria, Hungarian People's Republic,  
People's Republic of Poland, German Democratic Republic,  
Czechoslovak Socialist Republic, Union of Soviet Socialist Republics

## PROCEDURE FOR THE BRINGING INTO SERVICE OF THE FM SOUND BROADCASTING PLAN

The first session of the Regional Administrative Conference for FM Sound Broadcasting in the VHF Band (Region 1 and certain countries concerned in Region 3) prepared, in accordance with its agenda, the technical basis for the frequency assignment plan to be established at the second session and the criteria for sharing between the sound broadcasting service and the permitted services in the band 87.5 - 108 MHz.

The above-mentioned countries, whose mobile services are authorized on a permitted basis in the band 104 - 108 MHz until 31 December 1995 (RR 587), therefore propose that the following provision should be included in the Agreement :

Broadcasting stations in the frequency band 104 - 108 MHz producing a field strength  $\geq 10 \mu\text{V/m}$  up to a height of 20,000 m above sea level at the border of the countries mentioned above are not allowed to be brought into service before 31 December 1995.

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION) GENEVA, 1984

Document 68-E  
13 November 1984  
Original : English

PLENARY MEETING

MINUTES

OF THE

THIRD PLENARY MEETING

Monday, 5 November 1984, at 1405 hrs

Chairman : Miss M. HUET (France)

Subjects discussed :

Document

1. First report of the Technical Working Group
2. Competence of the Conference to consider compatibility between VHF broadcasting and the aeronautical communication services
3. Oral report on the progress of the Technical Working Group
4. Appointment of a new Chairman for Committee 4

61

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1. First report of the Technical Working Group (Document 61)

1.1 The Chairman of the Technical Working Group, introducing the document, explained that the report had been prepared on the basis of the work of the Sub-Group PLEN-A, and was basically the report of the first session. A number of minor modifications had been made, as a result of contributions from administrations. The document had been prepared for inclusion in the Final Acts, subject to review by the Plenary and the Editorial Committee.

1.2 The Chairman suggested that the document be considered section by section.

1.3 Section 2.1 - Propagation data for VHF broadcasting

Title approved.

1.4 Sub-section 2.1.1 - General

Approved with the deletion of the words "Interim Working Party 5/5".

1.5 Sub-section 2.1.2 - Areas subject to extreme super-refractivity and ducting

Approved with the insertion of the words "and including" before "the Gulf of Oman".

1.6 Sub-section 2.1.2.1 - Oversea paths

1.6.1 The Vice-Chairman of the IFRB said that it was not clear whether the third sentence related to the Board's work or to bilateral negotiations and he had no recollection of its having been included in the text in the course of the Group's discussions.

1.6.2 The Chairman of the Technical Working Group said that the sentence had been added at the last minute at the request of the Egyptian Administration. It did, of course, relate to bilateral negotiations and suitable wording could be left to the Editorial Committee.

1.6.3 The delegate of Egypt suggested that the word "proposed" in the third sentence be replaced by "accepted" to ensure that the Board, too, observed the provisions.

It was so agreed.

1.6.4 The delegate of Iraq proposed that the words "and the land-loss coefficient  $\gamma$ " be inserted at the end of the second sentence, since it had been included in the report of Interim Working Party 5/5.

1.6.5 The Chairman of the Technical Working Group said that, as the coefficient  $\gamma$  had not been defined in the past, an explanatory footnote would be required if it were mentioned in the text.

1.6.6 The Chairman of Sub-Group PLEN-A said that the  $\gamma$  coefficient was used particularly by Gulf Vision and referred to attenuation aspects in cases of super-refractivity. It was in fact covered by the expression "other factors" already in the text. It had not been adequately defined in the report of the Interim Working Party 5/5.

1.6.7 The delegate of Iran (Islamic Republic of) proposed that the words "and multilateral" be inserted after "bilateral". The sentence was otherwise quite clear as it stood, and he, in any case, opposed the introduction of the  $\gamma$  coefficient at the second session. Administrations were free to take account of it among themselves but it was not the job of the Conference to define something not yet defined by the CCIR.

The insertion of "and multilateral" was approved.

1.6.8 The delegate of Iraq argued that the Conference had to concern itself with all proposals and suggestions, and the documents before it, and had to achieve a consensus on the present issue and others. The  $\gamma$  coefficient would be used for coordination between administrations; it was therefore important and should be mentioned and defined in the manner earlier suggested by the Chairman of the Technical Working Group.

1.6.9 The Chairman suggested that the Chairmen of the Technical Working Group and Sub-Group PLEN-A, together with the delegates of Iran (Islamic Republic of) and Iraq should draft a text acceptable to all, the second sentence being left in abeyance in the meantime.

It was so agreed.

1.6.10 The Chairman of the IFRB said that in view of the agreed amendment to the third sentence, the Egyptian Administration had to decide whether the 200 km coastal strip would run the length of the Egyptian coast or whether it would only be observed for the Nile Delta.

1.6.11 The Chairman of the Technical Working Group proposed that both the second and third sentences be placed in square brackets and be referred back to the Technical Working Group for a final text. The existing text had been unanimously approved by the Group and he much regretted that it had now become a matter of dispute.

It was so agreed.

Sub-section 2.1.2.1, with the exception of the second and third sentences, was approved with the removal of brackets around "and including" in the second paragraph.

1.7      Sub-sections 2.1.2.2 - Overland paths  
            2.1.2.3 - Mixed paths

Approved.

1.8      Sub-section 2.1.3 - Application of the curves

1.8.1      The Chairman of the Technical Working Group, replying to a question by the delegate of Burkina Faso, said that the 10% curve had been retained in case the need arose to compare the interfering field strengths obtained during 1% and 10% of the time.

Sub-section 2.1.3 was approved.

- 1.9      Sub-sections 2.1.3.1 - Location variability  
            2.1.3.2 - Terrain irregularity correction  
            2.1.3.3 - Receiving antenna height correction  
            2.1.3.4 - Mixed land/sea path calculations

Approved.

- 1.10      Sub-section 2.2 - VHF propagation curves for the aeronautical mobile service

1.10.1    The delegate of Finland said that the title should more accurately refer to the aeronautical radionavigation service both in the present sub-section and in sub-section 2.9.

1.10.2    The Chairman of Sub-Group PLEN-A said that although the Group had studied the protection of the radionavigation service, there might be some confusion if the title were changed, since the title of CCIR Recommendation 528, on which the curves were based, referred to the aeronautical services. The Editorial Committee might usefully consider the matter in greater detail.

1.10.3    The delegate of Sweden proposed that the title of sub-section 2.2 and Figure 2.9 be amended to read either "aeronautical services" or "aeronautical mobile or radionavigation services".

1.10.4    The Chairman of the IFRB said that according to his information, free space propagation values had been used to calculate the propagation for the aeronautical radionavigation services, and the frequency of 125 MHz referred to in the first sentence did not fall within the radionavigation band. Section 5.3.6 of the report of the second session of the Conference also indicated that free space propagation conditions had to be used in propagation studies for the aeronautical services. Furthermore, the data in sub-section 2.2 had not been used in the Board's calculation programmes.

1.10.5    The Chairman wondered whether, as the curves had not been used, sub-section 2.2 was useful to the Conference and should be retained among the technical data. However, since the question was of no significance for the Board's calculations, it could be left in abeyance until the Technical Working Group had time to consider it in greater detail.

It was so agreed.

1.10.6    The Chairman of the IFRB pointed out that all data used in the calculations for the mobile services and aeronautical radionavigation services, if they remained in the same part of the text as those relating to broadcasting, could be interpreted as meaning that countries undertook to use those values for their services which, in the view of the IFRB, was not within the mandate of the Conference. They should perhaps be taken out of the report and indicated separately, with a statement to the effect that the Conference had used them to evaluate the propagation conditions for the mobile service. In any event, a distinction would have to be made between the technical criteria applicable to broadcasting and those applicable to other services.

1.10.7    The Chairman said that that would be taken into account when the Final Acts were prepared.

- 1.11. Sub-sections 2.3 - VHF propagation curves for the land mobile service  
2.4 - Index to propagation data

Approved.

- 1.12. Figures 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7 and 2.8

Approved.

- 1.13. Annex A - including Figures 2.13, 2.14 and 2.15

1.13.1 The delegate of Cyprus said that in Figure 2.14 the height of the receiving antenna was shown as being 10 m above sea level, instead of 10 m above ground level.

1.13.2 The Chairman of the Technical Working Group said that the figures on page 86 of the report to the second session, from which Figure 2.14 had been taken, had to be read in conjunction with the data on page 80 and the explanations on page 82 of the same report, where the height above sea level was referred to. More consideration might be given to the matter later on, however.

Annex A and Figures 2.13, 2.14 and 2.15 were approved subject to some editorial corrections and realignment of texts.

1.14 The Chairman of the Technical Working Group said that every effort had been made to provide the IFRB with the relevant information in the shortest possible time. All details would be checked again, prior to the submission of the document to the Editorial Committee, and the Plenary would have an opportunity to see it again in its blue version.

2. Competence of the Conference to consider compatibility between VHF broadcasting and the aeronautical communication services

2.1 The Chairman of the Technical Working Group said that in the course of the Group's discussions some delegates had asked whether compatibility between VHF broadcasting and the aeronautical communications services should be considered by the Conference. The Group therefore sought the Plenary's guidance on the matter.

2.2 The Chairman replied that, according to its agenda, the Conference was concerned only with the aeronautical radionavigation service. The problem concerning the aeronautical mobile services could, therefore, be referred to a later Conference, such as that on mobile services, for which the present Conference might prepare an appropriate Recommendation.

2.3 The Chairman of the Technical Working Group said that the Group would later submit to the Plenary a draft Recommendation on the subject, and other texts, in particular, concerning parameters for future radionavigation equipment, since the Group considered that CCIR studies on those parameters should continue.

3. Oral report on the progress of the Technical Working Group

3.1 The Chairman of the Technical Working Group said that the Group had completed the most important and urgent topics for the IFRB, and the remaining texts should be approved the following day. A new Sub-Group would also be established to consider problems relating to the mobile services and could be expected to submit its results to the next Plenary Meeting.

3.2 The Chairman expressed the satisfaction of the Board and of all delegates with the progress achieved.

3.3 The delegate of Finland said that the compatibility studies to be carried out by the mobile services Sub-Group should take into account the fact that some countries had fixed services operating on some of the frequencies used by the mobile services. The relevant material was available and could be handled in the same way as for mobile services.

3.4 The Chairman said that the matter would be dealt with appropriately.

3.5 The delegate of Qatar asked when the IFRB would start the calculations for the region extending from Shatt-al-Arab up to and including the Gulf of Oman.

3.6 The Chairman of the IFRB replied that, as already stated in the programme considered by the Plenary, the calculations which took into account the new propagation criteria would be made at the end of the third week of the Conference. About one week was needed between programming and the operations to modify the programme, and there was no provision for partial calculations.

4. Appointment of a new Chairman for Committee 4

4.1 The Chairman said that the Chairman originally appointed for Committee 4 would not be able to attend the Conference. Consultations were in progress and it should be possible to announce the name of the new Chairman at the next Plenary Meeting.

The meeting rose at 1510 hours.

The Secretary of the Conference :

J. JIPGUEP

The Chairman :

M. HUET

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Corrigendum 1 to  
Document 69-E  
21 November 1984  
Original: French

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COMMITTEE 5

SUMMARY RECORD

OF THE

SECOND MEETING OF COMMITTEE 5

1. Please replace paragraph 2.16 by the following:

"The delegate of Italy asked whether, in the case of modifications to the Plan following the Conference, acceptable levels of interference caused by broadcasting stations would continue to be those resulting from the Plan."

2. Delete the word "broadcasting" in the third line of paragraph 2.22.
-

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 69-E  
9 November 1984  
Original : English

COMMITTEE 5

SUMMARY RECORD  
OF THE  
SECOND MEETING OF COMMITTEE 5  
(AGREEMENT AND PROCEDURES)

Monday, 5 November 1984, at 1530 hrs

Chairman : Mr. K. OLMS (Federal Republic of Germany)

Subjects discussed :

1. Oral reports of Working Group Chairmen
2. Categories of service
3. Procedure for bringing into service  
the assignments in the Plan

Documents

-  
60 + Corr.1

8, 65

1. Oral reports of Working Group Chairmen

1.1 The Chairman invited the Chairmen of Working Groups 5A and 5B to present their reports.

1.2 The Chairman of Working Group 5A said his Group had held one meeting on Friday, 2 November 1984. It had approved the draft structure of the Agreement as set out in Annex I to Document DT/6, and had gone on to consider the preamble and draft articles set out in Annex II. Substantial proposals had been put forward in regard to Articles 8 and 9, and it had been decided that the Chairman, in consultation with the Legal Adviser and with IFRB, would prepare a text of those articles for further consideration, taking into account the views expressed.

The Committee took note of the report by the Chairman of Working Group 5A.

1.3 The Chairman of Working Group 5B said that his Group had held two meetings. There had been extensive discussion of whether the transitional procedure should be embodied in a Resolution or in the Agreement itself, and as yet that matter was still unresolved.

The Group had discussed the allocation situation in the band 87.5 - 108 MHz on the understanding that only the Footnotes RR 581, 582, 587, 588 and 589 to the Radio Regulations were of relevance to its work. Regarding Footnote RR 581, the majority view was that no transitional procedure was needed, but the United Kingdom had reserved its position, and it had been decided to return to the question following discussion in Committee 5 itself of the problem of primary and permitted services. It had been agreed not to deal with Footnote RR 582, since an agreement between the countries concerned was already in existence. Regarding Footnote RR 588, Yugoslavia had considered that no transitional procedures were necessary, but Finland's view was that there was scope for such a procedure. A decision would be taken following conclusion of discussions in Committee 5. Finally, in regard to Footnotes RR 587 and 589, some members had supported the position taken by France (Document 7) that transitional procedures should be provided for the services concerned, while others had supported the view of Spain (Document 57) that such procedures were unnecessary. Here, too, no decision could be taken pending that day's discussion in Committee 5.

1.4 The Chairman said that all were aware that due to the complexity of the problems involved and the early stage of the Conference's work, the two Working Groups could make only limited progress for the present. He hoped that discussion in the Committee on Document 60, submitted by IFRB, would assist both Groups in their future work.

The Committee took note of the report by the Chairman of Working Group 5B.

2. Categories of service (Documents 60 + Corr.1)

2.1 The Chairman invited the Chairman of the IFRB to introduce Document 60, which had been prepared in response to a request made by the Committee at its first meeting.



2.2 The Chairman of the IFRB said his paper was essentially the same as one presented at the first session of the Conference on the same subject, amended so as to distinguish between considerations applicable to all services and bands (§§ 3 to 6) and considerations applicable to the band to be dealt with under the Plan (§§ 7 to 10). Before the Conference, the situation had been that IFRB examined proposed allocations solely on the basis of whether they conformed with the Radio Regulations. After the Conference, however, IFRB would make a distinction between allocations to the fixed and mobile services which could immediately be entered in the Master Register, and allocations to broadcasting, which had first to be examined for their conformity with the Plan before being entered in the Register. He pointed out that RR 1244 stated that in bands above 28 MHz the Board would not examine frequency allocations from the point of view of probability of harmful interference. Any protection which the Conference might offer the permitted services would be arrived at through negotiations between administrations. He drew attention to the reference in § 9 to Footnote RR 581, and reminded the Committee that before allocating the band 87.5 - 108 MHz on a permitted basis to land mobile service, it must satisfy itself that the procedure of Article 14 had been applied and that the agreement of all administrations concerned had been obtained.

2.3 The Chairman suggested that the Committee consider Document 60 paragraph by paragraph. He drew attention to Document 60(Corr.1), which contained a corrigendum to § 7 c) relating to the French text only.

2.4 The delegate of France pointed out that Document 60 merely stated the IFRB position on permitted services and did not require the Committee's approval; he saw no purpose in considering it paragraph by paragraph.

2.5 The delegate of Algeria supported that view.

2.6 The Chairman said that while it was true that the Committee was not required to approve Document 60, it should nevertheless express its views on it for the guidance of the two Working Groups. He invited comments on §§ 1 to 6.

§§ 1-6

2.7 The delegate of France said he endorsed what was stated in those paragraphs, notably in § 4, which indicated that subsequent to the preparation of frequency plans the two categories of service had equal rights.

§ 7 a)

2.8 The delegate of Switzerland wished to ask the Chairman of IFRB for clarification on how § 7 a) would be applied in practice. The broadcasting service did not in fact enjoy equal rights, because prior to the second session of the Conference it was subject to the reservations laid down in Footnote RR 584. He wished it to be understood in the case of a permitted service which could be described as a "fading out" service, he could not accept any arrangement which would enlarge the rights of such a service beyond what could fairly be accepted.

2.9 The Chairman of the IFRB said that from IFRB's viewpoint the distinction between a permitted and a primary service was a matter for the Conference; the Board's task was simply to apply the Radio Regulations. It was for that reason that the document stated that before the Conference the two services should be considered as on an equal footing.

2.10 The delegate of the United Kingdom said the point raised by Switzerland was an interesting one. The situation both before the planning exercise and after it would be one of "first come first served", and equal rights meant that both categories of services would have the same right to security of tenure as against other stations that came after them. It should be borne in mind that there was a distinction between the service and the stations that comprised it.

2.11 The Chairman of the IFRB, in reply to a question raised by the delegate of Italy, said that as far as the present Conference was concerned, it was the rights of services, rather than the rights of stations, that were being considered.

§ 7 b)

2.12 The delegate of the German Democratic Republic asked for clarification on how the Conference was to offer protection to the permitted services if assignments were to be selected without regard to stations of such services.

2.13 The Chairman of the IFRB said that the last sentence of sub-paragraph b) was intended to indicate the view of the IFRB.

2.14 The delegate of Switzerland noted that according to § 7 b) the primary service had prior choice of frequencies at the Planning Conference. He asked whether modifications to the Plan after the Conference were still to be considered as part of the planning process, and whether the right to prior choice of frequencies would still apply.

2.15 The Chairman of the IFRB said that the preparation of the Plan was considered as being limited to the Conference itself; any subsequent modifications would be considered as part of the revision process, for which a specific procedure applied.

§ 7 c)

2.16 The delegate of Italy asked whether, in the case of modifications to the Plan following the Conference, acceptable levels of interference to which broadcasting stations could be subjected would continue to be those specified in the Plan.

2.17 The Chairman of the IFRB stressed that if bilateral or multilateral agreements arrived at between administrations through negotiation during the planning process were communicated to IFRB, then the IFRB would ensure that the provisions of that agreement were respected. However, if IFRB was not informed of the results of such negotiations, it would assume that any coordination necessary would be taken care of by the administrations concerned, and would confine itself to verifying that the allocation was in conformity with the Radio Regulations before entering it in the Register.

2.18 The delegate of Switzerland said that as he saw it, once a station of the permitted service had been coordinated, registered and agreed on by administrations, it had the status of a primary service, and could not be ignored when further developing primary service stations. He was basically in agreement with § 7 c), but could not agree that priority should be given to assignments under the Plan in cases where an existing "out fading" permitted service was blocking the use of a new primary service, for example, following a modification to the Plan.

2.19 The delegate of the United Kingdom asked what would be the position if, a year following the Planning Conference, there was a move to bring into use a station appearing in the Plan which conflicted with a pre-existing station of the permitted service. Would the permitted service station be the one to give way?

2.20 The delegate of the German Democratic Republic said he did not see how § 7 c) allowed for coordination, since it stated that the permitted services would not be taken account of in the preparation of the Plan. That meant that if a permitted service was a primary service before the adoption of the Plan, it would be a secondary service afterwards.

2.21 The Chairman of the IFRB said that as was indicated in § 8 of the paper, all that IFRB could do on receipt of a notification was first to ensure its conformity with the Radio Regulations and secondly to publish it in its weekly circular to allow for possible objections from other administrations. In the case of conflict, the station which would have to give way would be the one not in conformity with the agreements reached during the Conference. Basically, the problem was one for negotiation between governments, rather than for IFRB itself.

2.22 The delegate of the United Kingdom thanked the Chairman of the IFRB for that explanation, but said it seemed to him to involve a contradiction. The case could be taken of a mobile broadcasting station notified in 1980, which according to the Radio Regulations enjoyed permitted status until 1995; the United Kingdom had some 200,000 such stations. The IFRB view was that the Plan was deemed to be the outcome of negotiations between administrations as to the precedence of stations; in other words, signature of the Final Act of the Conference by the United Kingdom would amount to endorsement of an agreement negotiated with other countries whose plans might conflict with such stations. He did not see how on the one hand, the permitted services could be ignored in the planning process, and on the other, the completion of an agreement at the Conference could be deemed to constitute the outcome of negotiation between administrations.

2.23 The Chairman of the IFRB said it was important to distinguish between the Conference as such, and the bilateral or multilateral negotiations that might take place in the course of it. The fact that the Conference had decided not to protect permitted services as such did not mean that such protection could not be afforded as a result of negotiations between individual administrations.

2.24 The delegate of Algeria endorsed the position of IFRB as set out in Document 60, and notably § 7 c). However, he believed that the Conference should consider ways of protecting the permitted service from undue interference caused by any modifications to the Plan that might be introduced at a later date.

2.25 The delegate of Iran (Islamic Republic of) fully endorsed the IFRB view that the Conference should not take into account protection of permitted services in the planning process. However, such protection could be provided on the basis of agreements between administrations, provided that such agreements were communicated to IFRB so that it could take them into consideration in any subsequent modifications to the Plan.

2.26 The delegate of the USSR said he too endorsed what was stated in Document 60. However, the primary services shall occupy the frequency bands so densely and at such a high field strength that some provisions have to be made for protection of the permitted services in the post-Conference period.

2.27 The delegate of France said there seemed to be some contradiction between § 7 c) of the document and item 2.3 of the Conference's agenda, which clearly stated that the Conference should adopt procedures permitting the normal functioning of permitted service stations.

2.28 The Chairman of the IFRB said it had perhaps been overlooked but the inclusion of stations in the Plan was both subject to negotiation between administrations concerned and also subject to the formal decision of the Conference when the Plan was being examined. The question of the criteria to be applied where a station of the mobile service was affected by interference caused by a station entered in the Plan was a more complex one, since there was as yet no means of analyzing the effects of such interference, and in any event it was not yet known what criteria were to be developed by the Technical Group of the Plenary.

2.29 The delegate of Iran (Islamic Republic of) said it was already clear that it was not the business of the Conference to take into account the permitted services. Administrations should not be encouraged to object where interference was caused to such stations.

2.30 The delegate of Italy shared that view.

2.31 The delegate of the United Kingdom wondered whether the Committee was not becoming subject to the same misapprehension as during the 1979 Conference, when it had been pointed out that administrations tended to think that permitted services necessarily enjoyed an inferior status to primary services. A major gap in the Radio Regulations was that they dealt only with the planning stage and not with the stage of implementation, although it was clear that implementation was of crucial importance to many delegations. In Document 60, clear inferences were drawn from the Regulations, with the exception of § 7 c), the last sentence of which had no relation to the Regulations but was simply a value judgment. In his view, it was untrue that having to delay implementation of the Plan would nullify the purpose of producing that Plan. On the other hand, to assume that the permitted services would have to be brushed aside once the agreement had come into effect would be to nullify the purpose of the 1979 Conference in conferring permitted status on them.

3. Procedure for bringing into service the assignments in the Plan  
(Documents 8, 65)

3.1 The Chairman recalled that at its last meeting the Committee had deferred discussion of Document 8.

3.2 The delegate of Angola reiterated the view he had already expressed that the proposals made in Document 8 were not acceptable since they included reference to transmitting stations in Namibia, a territory which was illegally occupied by South Africa.

3.3 The Chairman said that the Committee would take note of that statement.

3.4 The delegate of Iran (Islamic Republic of) pointed out that it was the usual practice in the Union that a document should be introduced by the administration which had submitted it. If that were not done, the document could not be considered by any Committee or Sub-Committee.

3.5 The Chairman said it was not his intention to transmit Documents 8 and 65 for further consideration by any Working Group of Committee 5. He invited the Chairman of IFRB to comment on the question of the transitional period.

3.6 The Chairman of the IFRB said the problem of the transition from the two existing Plans to the new Plan was a complex one, which would need to take into account the existence of such services as the radionavigation service. He considered that Working Group 5B was the appropriate body to develop procedures to be applied in the transitional period before the entry into force of the Agreement.

The meeting rose at 1705 hours.

The Secretary :  
J. FONTEYNE

The Chairman :  
K. OLMS

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 70-E  
6 November 1984  
Original : English

## COMMITTEE 4

### Switzerland (Confederation of)

#### SWISS COVERAGE REQUIREMENTS AND PLANNING PHILOSOPHY FOR THE VHF/FM-BAND BETWEEN 87.5 - 108 MHz

In Switzerland, programme requirements are for five national coverages. Three of these five national transmitter networks have to be divided into the linguistic regions, German, French and Italian.

The other two networks should be capable of division into subregional networks, distributing programmes for each canton.

The regional networks are based on stations, such as Säntis, St. Chrischona, Chasseral, Rigi, as well as others, having a rather large coverage range. On the other hand, the subregional networks will use lower sites and transmitters with a lower power.

For a number of reasons, Switzerland has at the present time only two national coverages below 100 MHz, in sharp contrast to all its neighbouring countries operating three networks in this frequency range.

The additional frequency band from 100 - 108 MHz permits, on average, another two coverages. One of them was planned for Switzerland within the Darmstadt Agreement 1971.

As a result, Switzerland would achieve within 88 - 108 MHz a total of four coverages only, unless special consideration is given in order to achieve a comparable situation to that of the neighbouring countries.

Based on the report to the second session of the Conference, there is no reason to doubt that these neighbouring countries will do their best to apply the planning principles as indicated in chapter 6 on page 53, where the most important sentence reads as follows : "Every country will have assured rights to the same number of equivalent national coverages".

In practice, a fifth coverage in Switzerland would have to be composed of frequencies both below and above 100 MHz.

There is nowhere any specific rule or restriction that the existing plans, such as the Regional Agreement, Stockholm, 1961, in the frequency range from 87.5 - 100 MHz may not be modified in order to improve the new plan. Modifications to the existing assignments shall be carried out where necessary, as far as possible, during the planning process without conflicting with Resolution 510 to ensure the equal rights of countries and remedy existing inequalities and incompatibilities. It is implicit that overlapping zones of several transmitters, carrying the same programme as well as coverage areas, significantly exceeding the necessary service-area, should be redimensioned appropriately.

In this sense because of the need to develop the use of frequencies below 100 MHz, Switzerland appeals to its neighbouring countries to recognize these particular problems when calculating the coverage of transmitters, in particular within the border area.

With respect to the new sub-band 100 - 108 MHz, where planning will initially be based on the theoretical lattice network method, it must be noted, that its application is of very limited value in the mountain parts of Switzerland.

Finally, attention is drawn to the intention of Switzerland to make available the sub-band 87.5 - 88 MHz for reportage purposes in accordance with RR 581.

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INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Corrigendum 1 to  
Document 71-E  
21 November 1984  
Original: French

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COMMITTEE 5

SUMMARY RECORD  
OF THE  
THIRD MEETING OF COMMITTEE 5

Please complete paragraph 1.20 as follows:

"... the other way round, since the broadcasting stations appearing in the Plan could be brought into service without taking account of the permitted services."

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INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 71-E  
9 November 1984  
Original : English

COMMITTEE 5

SUMMARY RECORD  
OF THE  
THIRD MEETING OF COMMITTEE 5  
(AGREEMENT AND PROCEDURES)

Tuesday, 6 November 1984, at 0905 hrs

Chairman : Mr. K. OLMS (Federal Republic of Germany)

Subjects discussed :

1. Continuation of the discussion of categories of service

Documents

60 + Corr.1, 67

1. Continuation of the discussion of categories of service  
(Document 60 + Corr.1, 67)

1.1 The Chairman briefly recapitulated the points raised during discussion of Document 60 at the previous meeting. Referring to an observation by the delegate of the German Democratic Republic about sub-paragraph 7b), he agreed that the question of the values to be indicated by countries having permitted services, for the purpose of determining interference, was for the relevant Working Group to consider.

1.2 The delegate of Switzerland said that the text of Document 67, as it stood, was utterly unacceptable; he was shocked at the last paragraph in particular. If the intention was to avoid interference to existing stations of the permitted services, the document should be drafted accordingly, in which case its submission to Working Group 5B could then be considered.

1.3 The delegates of Austria and Italy agreed that the text as it stood was unacceptable.

1.4 The delegate of Denmark said that, according to his calculations, the separation distances consequent upon the proposed provision, even for low-power stations, would be some 500 km. Denmark had already begun work in response to its huge requirement relating to low-power stations, under Footnote 584; it could not be expected to wait over ten years before their entry into service. A compromise must be sought; he felt sure an adequate Plan could be put forward at the Conference, to be subsequently modified as required by means of notification to the IFRB and, where necessary, a set adjustment procedure between neighbouring administrations.

1.5 The delegate of Algeria supported by the delegates of Saudi Arabia and Spain thought that the Committee, before beginning to discuss matters relating to radiated power and field strength, should first settle the prior topic of the status of the two categories of service.

1.6 The delegate of Iran (Islamic Republic of) said that the proposal contained in Document 67 concerned matters to be dealt with only after the Plan had come into force. In any case, the values indicated were surely meant simply as a starting point; they lacked any technical basis, and as they stood were unacceptable.

1.7 The delegate of Sweden said that his country was included in Footnote 589 and did have problems with regard to existing services. However, it could not accept values as conservative as those proposed in Document 67, which would completely block the implementation of new services. He agreed with the delegate of Denmark about the need for a compromise solution.

1.8 The delegate of Norway said that his administration too found Document 67 quite unacceptable. The distinction between primary and permitted services was in any case quite clear from the Radio Regulations and the IFRB documentation. Committee 5's task in the matter was to try to solve problems in the operation of services in the two categories, not to seek changes in the latter.

1.9 The Chairman suggested that Document 67 should be transferred provisionally to Working Group 5B; in response to observations by the delegates of Italy and Switzerland, he said that it was understood that Committee 5 would subsequently convey its views on the matter to Working Group 5B, for the latter's guidance, once the prior question of the status of the categories of service had been fully deliberated.

It was so agreed.

He then invited the Committee to resume consideration of Document 60. It seemed, from the discussion during the second meeting, that existing stations, at least, of the permitted services must in some way be recognized. In response to observations by the delegates of Norway and Denmark, he agreed that no conclusion on the subject had been reached and that there had been no questioning hitherto of the understanding, arrived at during the first session of the Conference, that permitted services should not be taken into account in the planning.

1.10 The delegate of Algeria said that, with the clarification given, he could agree to that summary.

1.11 The delegate of Switzerland agreed that there could be no question of ignoring the stations of the permitted services, which would have to be taken care of within certain limits. The Conference was situated in a borderline situation, where on one side a primary service, the broadcasting service, was coming in, while on the other side working, notified and coordinated stations of primary services were on the way out : it was impossible to disregard totally what was happening on the other side of the border.

There must, however, be some latitude in the way in which the stations of permitted services should be taken care of. The Swiss Administration, for its part, intended to respect the rights of stations in permitted services, because it knew that they existed and knew where they were located, provided that the rights of the primary service were not infringed. That could be done partly on a bilateral basis, but it would be desirable for the general attitude to be stated and incorporated in the transitional procedures to be adopted. He appealed to countries having established permitted services not to adopt a rigid interpretation which might result in blocking the development of an emerging, suitably planned primary service. He was sure that appropriate solutions could only be found by adopting a flexible approach.

1.12 The delegate of France supported the Chairman's summary of the situation, which corresponded to "decides" §§ 2.2 and 2.3 of Administrative Council Resolution 896 and could lead to a satisfactory compromise.

1.13 The delegate of the United Kingdom said that his Administration did not regard the existence of permitted services as in any way inhibiting the planning exercise, but merely as affecting the implementation of the Plan. The Swiss delegate had made a valid point in referring to incoming and outgoing services : that process would not be instantaneous, and there was no point in arguing whether the switchover date would occur in 1986 or in 1995, because in practice the broadcasting assignments would be introduced progressively. Since many of the permitted services would have to be excluded from the band by the end of 1995, the whole process must begin well in advance of that date. Accordingly, at the beginning of the next ten years the permitted services would be there in bulk, while the broadcasting services would only be starting, but the situation would be reversed by the end of the decade, and there would be very few permitted services left in the band. Delegations should therefore envisage a gradual transition from the old to the new services in a manner economically practicable for all concerned.

1.14 The delegate of Algeria endorsed the Swiss delegate's remarks. It would, of course, be most satisfactory if the Conference could find a general procedure acceptable to all, but if that proved impossible, the stations in question could be taken into account through bilateral agreements. Algeria was prepared to follow the Swiss example and hoped that other countries could do the same.

1.15 The delegate of the USSR supported the statements of the Swiss and United Kingdom delegates. Although it had already been decided that the permitted services should not be taken into account in the Plan, there was nothing to prevent the Conference from evolving procedures to ensure the normal operation of those services.

1.16 The delegate of Denmark said that the procedure advocated by the Swiss delegate might be viable for the implementation of the Plan, but hardly for the implementation of a network for national coverage, where all stations must be operated simultaneously. A possible solution would be to change the frequencies for permitted services after the Plan had been adopted, making use of any frequencies that remained unoccupied.

1.17 The delegate of the USSR considered that solution quite impracticable, since an analysis of the situation that would occur if the Plan was implemented forthwith had shown that there were no possibilities whatsoever of allocating frequencies to the permitted services. The correct procedure was to recommend time limits for the bringing into operation of various broadcasting services, particularly in the bands close to 108 MHz.

1.18 The Chairman observed that the Committee could not work out the details of a compromise transitional procedure at the current meeting, but that the procedure advocated by the Swiss delegate, that of allowing the continued operation of the mobile services on a give-and-take basis provided the use of the spectrum by the broadcasting service was not blocked, should be given serious consideration.

1.19 The Chairman of the IFRB said that he and a Member of the Board had drawn up a list of seven points that had emerged from the debate. The list read as follows :

- "1. Stations of permitted services will not be taken into account in the planning process.
2. Modifications to the Plan shall protect stations of permitted services which are in operation at the date of the modification to the Plan.
3. Stations of permitted services to be brought into operation in future shall protect the broadcasting stations appearing in the Plan.
4. The bringing into operation of broadcasting stations that may be incompatible with stations of permitted services in operation at the date of the Conference shall be the subject of consultations between the administrations concerned during and after the Conference.
5. Consultations during the Conference may result in either :
  - 5.1 an agreement concerning the bringing into use of broadcasting stations, or
  - 5.2 an agreement with conditions to be listed in the Plan, or
  - 5.3 the indication in the Plan that the bringing into operation of a given broadcasting station shall be the subject of consultation with a given administration.

6. In order to permit consultation after the Conference, there is a need to identify the stations of the permitted service which are in operation either in a list developed during the Conference or by requesting the administrations to notify, in accordance with Article 12, the stations which are in operation.

7. The Conference shall develop technical criteria and procedures in order to ensure that the bringing into operation of a broadcasting station is not blocked if consultations between administrations have not succeeded."

1.20 The delegate of Italy observed that point 4 as formulated reversed the proper emphasis. The subject of the consultations must be the incompatibility of existing stations of permitted services with broadcasting stations to be brought into operation, not the other way round.

1.21 The delegate of Iran (Islamic Republic of), supported by the delegate of Denmark, endorsed the views of the Italian delegate and pointed out that the existing stations concerned were recorded in the Master Register.

1.22 The delegate of France said that point 7 as now worded did not correspond to the provisions of the Conference agenda with respect to guarantees in the event of failure of consultations.

1.23 The Chairman of the IFRB observed that under Article 12 the notification of assignments above 28 MHz was not mandatory, so that all uses were not necessarily recorded in the Master Register.

With regard to the wording of point 4, it was based on the actual situation : the stations of permitted services concerned were already in operation, while the broadcasting stations in question were to be brought into use. Moreover, the administration most sensitive to interference was that using permitted services; if it wanted its stations to be taken into account, it had to take the initiative in bringing them to the knowledge of another administration or of the IFRB.

1.24 The delegate of Switzerland said that the list of points should lay greater stress on the fact that consultations should as far as possible not block the bringing into operation of broadcasting stations; that was clearly stated only in point 7.

1.25 The delegate of Algeria said he had some doubts about the usefulness of point 4, which seemed to be covered by point 5.

1.26 The delegate of Iran (Islamic Republic of) suggested that it might be useful to add the phrase "based on criteria developed by the Conference" at the end of point 5.3

1.27 The delegate of Algeria said he assumed that the indication referred to in point 5.3 meant a footnote in the Plan, in which case it must be subject to the agreement of all the administrations concerned.

1.28 The Chairman said that a working paper, based on the list read out by the Chairman of the IFRB and the comments made during the debate, would be prepared for consideration by Working Group 5B.

The meeting rose at 1020 hours.

The Secretary :  
J. FONTEYNE

The Chairman :  
K. OLMS

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Corrigendum 1 to

Document 72-E

7 November 1984

Original : English

COMMITTEE 5

TECHNICAL WORKING GROUP

OF THE PLENARY

Republic of Iraq

COORDINATION DISTANCE TO BE EMPLOYED  
IN THE MODIFICATION PROCEDURE OF ASSIGNMENTS  
WITHIN THE ARABIAN GULF AREA

Page 1, IRQ/72/1, replace the first line by :

"The general equations and the table of the annex, which is based on  
a threshold ....."

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 72-E  
6 November 1984  
Original : English

COMMITTEE 5  
TECHNICAL WORKING GROUP  
OF THE PLENARY

Republic of Iraq

COORDINATION DISTANCES TO BE EMPLOYED IN THE MODIFICATION  
PROCEDURES OF ASSIGNMENTS WITHIN THE ARABIAN GULF AREA

Introduction

It is envisaged that the Conference will adopt a procedure for modification and addition of assignments to the Plan with respect to agenda item 2.3 :

"The coordination distance is defined as the limiting distance from a transmitter site for which coordination should be sought with another administration if the nearest border point of that administration from the site falls within that distance."

It is therefore proposed that :

IRQ/72/1            The equations on the table of the annex, which is based on a threshold nuisance field strength ( $E_{TH}$ ) of 54 dB( $\mu$ V/m), shall be employed to determine coordination distances over the sea in the Gulf area from Shatt Al Arab to and including the Gulf of Oman.

IRQ/72/2            The area in IRQ/72/1 shall include coastal areas around the Gulf within 50 km perpendicular distance from its coast, i.e. the extended Gulf boundaries as defined in 2.1.2.1 of Document 61.

IRQ/72/3            For mixed paths, part of which traverses the area defined in IRQ/72/2, the Mixed Path Coordination Distance ( $D_M$ ) is calculated by inserting the corresponding Land Coordination Distance ( $D_L$ ) as found from the 1% land curves of CCIR Recommendation 370 for a threshold field strength of 17 dB( $\mu$ V/m) into the interpolation formula, as given in Document 13, namely :

$$D_M = \frac{d_L}{d_T} \cdot D_L + \frac{d_S}{d_T} D_S$$

where :

- $D_S$  is the coordination distance assuming total sea path found from the annex;
- $d_L$ ,  $d_S$  and  $d_T$  are the land distance, sea distance and total distance between the transmitter site under consideration and the nearest border point of another administration.

Annex : 1

For reasons of economy, this document is printed in a limited number of copies. Participants are therefore kindly asked to bring their copies to the meeting since no others can be made available.

ANNEX

$$D_S = 221359 \sqrt{P} / 10^{0.5E_{TH}} \quad \text{for } D \leq 400$$

$$D_S = 1314.34 + 166.67 \log P - 16.67 E_{TH} \quad \text{for } D > 400$$

TABLE OF  $D_S$  VALUES AS COMPUTED FROM THE EQUATIONS FOR A

Threshold nuisance field strength of 54 dB( $\mu$ V/m)

ERP (kW)	LIMITING DISTANCE (km)	ERP (kW)	LIMITING DISTANCE (km)	ERP (kW)	LIMITING DISTANCE (km)
.001	531	.01	698	.1	864
.002	581	.02	748	.2	915
.003	611	.03	777	.3	944
.004	631	.04	798	.4	965
.005	647	.05	814	.5	981
.006	661	.06	827	.6	994
.007	672	.07	839	.7	1005
.008	682	.08	848	.8	1015
.009	690	.09	857	.9	1023

ERP (kW)	LIMITING DISTANCE (km)	ERP (kW)	LIMITING DISTANCE (km)	ERP (kW)	LIMITING DISTANCE (km)
1	1031	10	1198	100	1364
2	1081	20	1248	150	1394
3	1111	30	1277	200	1415
4	1131	40	1298	250	1431
5	1147	50	1314	300	1444
6	1161	60	1327		
7	1172	70	1339		
8	1182	80	1348		
9	1190	90	1357		



# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 73-E

8 November 1984

Original : English

COMMITTEE 4

SUMMARY RECORD

OF THE

THIRD MEETING OF COMMITTEE 4

(PLANNING)

Monday, 5 November 1984, at 0900 hrs

Acting Chairman : Mr. H.K. AL SHANKITI (Saudi Arabia)

Subjects discussed

Documents

- |  |       |
|--|-------|
| 1. Status of requirements and analysis : oral report by the representative of the IFRB | -     |
| 2. Nomination of the Chairmen of Planning Groups                                       | -     |
| 3. Organization of work  | DT/9  |
| 4. Working methods in the Planning Groups  | DT/10 |

1. Status of requirements and analysis : oral report by the representative of the IFRB

1.1 The representative of the IFRB said that the number of requirements (additions, modifications and suppressions) relating to broadcasting/broadcasting compatibility that had been received by the IFRB and were being held in suspense had risen to a total of 6693 when the list for submissions closed at 2359 hours UTC on Friday, 2 November 1984. That was far in excess of the number that had been anticipated, bearing in mind the 700 entries per day limitation. However, the Secretariat had devoted the weekend to data capture and all submissions had been verified with the exception of 26 stations without geographical coordinates from one African country - those would have to be included in the second analysis. In addition, 2182 requirements were without frequencies. The analysis of broadcasting/broadcasting compatibility had begun at 0255 hours that morning and would be completed at 1800 hours. In view of the delay, the work was being done on the faster machine, at the expense of the IFRB's normal frequency management work, and the relevant microfiches should be available to delegates the following morning. That was only slightly behind schedule; nevertheless the implications for subsequent analyses might entail a further slight delay in the programme as it progressed.

The report of the IFRB was noted.

2. Nomination of the Chairmen of Planning Groups

2.1 The Chairman reminded the meeting that Mr. A.L. Witham (United Kingdom) had already been nominated as Chairman of Planning Group 4D. He announced the nomination of the Chairmen of the remaining Planning Groups as follows :

Planning Group 4A : Mr. J. NGARIUYA (Kenya)

Planning Group 4B : Mr. A. TOUMI (Morocco)

Planning Group 4C : Mr. H.Y. AL-KINDY (Oman)

Those nominations were approved.

3. Organization of work (Document DT/9)

3.1 In order to make the meaning of the text of Document DT/9 clearer, the delegate of Iran (Islamic Republic of) proposed that the words :

"the following terms of reference are proposed for the Planning Groups 4A, 4B, 4C and 4D"

be deleted from § 1 and placed as a separate introductory phrase to which § 1 (as so amended) and §§ 2 and 3 would be appended as sub-paragraphs.

It was so agreed.

3.2 The delegate of the United Kingdom, supported by the delegates of France and Yugoslavia, noted that the Planning Group Chairmen would need to know the precise areas their Groups were responsible for in order the better to coordinate problems that might overlap two or even three areas. The area covered by each Planning Group was not defined in Document 58(Rev.1). In order to indicate that a necessary part of the coordination between Planning Groups was to define their areas, he proposed that the words following "geographical zones" in sub-paragraph 2 be deleted and replaced by :

"for which each Planning Group is responsible. These zones are to be agreed between the Planning Group Chairmen on the basis of the information contained in Document 58(Rev.1)."

It was so agreed.

3.3 The delegate of Yugoslavia said that in order to take account of all provisions of Resolution 510 of WARC-79, especially its paragraphs f) and g), sub-paragraph 3 should be amended to add after "television service" the words :

"and the protection to sound broadcasting stations within the coordination area".

It was so agreed.

3.4 The delegate of Yugoslavia noted that the corresponding references on pages 54 and 115 of the report to the second session of the Conference should also be understood in that sense.

Document DT/9 as so amended was approved.

#### 4. Working methods in the Planning Groups (Document DT/10)

4.1 The representative of the IFRB, introducing Document DT/10, said that the approach it proposed to the difficult subject of planning was to include in the Plan only those requirements not affecting other administrations. Problems resolved as negotiations on incompatibilities proceeded would lead to the inclusion of further stations in the Plan. In that way a coordinated Plan free from incompatibilities would gradually be built up. While it was true that incompatibilities might arise between stations already in the Plan and others subsequently agreed for inclusion, it was expected that such cases would be rare and their resolution ought not to complicate the work unduly. He explained the purpose of Forms 1 and 2 and indicated how they were to be completed. Attention was drawn to an editorial correction to be made to the French text only of the document.

4.2 With regard to § 1 of the document, the delegate of Iran (Islamic Republic of said that the words "which do not affect any other administration" were subjective and open to misinterpretation.

4.3 The representative of the IFRB said that the phrase had been intended to convey the meaning that only those requirements acceptable to all administrations would gain entry into the Plan. It might indeed be advisable to change the wording of the paragraph to make that clear.

4.4 With regard to § 1.2, the delegate of Yugoslavia proposed that the full stop at the end of the last sentence should be replaced by a comma followed by the words :

"starting with the reference list of BC stations as contained in the Annex to IFRB Circular-letter No. 575 as amended in Annex 6 to IFRB Circular-letter No. 586."

4.5 With regard to § 1.3, the delegate of Iraq asked what criteria were to be used to decide when discussions were necessary.

4.6 The representative of the IFRB said that Form 1 was intended to be used by administrations to indicate all stations belonging to other administrations with which incompatibilities had been experienced, with a view to resolving those incompatibilities through discussions with the administrations concerned.

4.7 In reply to a question from the delegate of Tunisia, he said that in the case of discussions involving administrations not represented at the Conference, the Board would coordinate on their behalf.

4.8 The delegate of France proposed that provision should be made on Form 1 for administrations to indicate beside each problem listed on their form the Planning Group they would like to see deal with it.

4.9 § 2.2 gave rise to a lengthy discussion. Attention centred first on the advisability or otherwise of removing the words "and possible additions" (in square brackets in the text), a number of delegates expressing fears that retention of the phrase would open the door to an influx of additions that would further complicate the planning procedure.

4.10 The delegate of Austria pointed out that there was a special case involved with regard to low power stations, requirements for which would have to be submitted during the Conference since their formulation would have to wait until the Plan for high power stations had taken shape. Such additional requirements would normally be coordinated before submission and their acceptance should not cause difficulties for the work of the Conference. If the words "and possible additions" were deleted from § 2.2, he would have to propose the addition of a further paragraph to provide for the submission of additional requirements for low power stations.

4.11 The delegates of Iran (Islamic Republic of), the Federal Republic of Germany, Yugoslavia and Iraq said they could agree to provision being made for the submission of additions in that particular case, as did the delegate of the United Kingdom, who added the proviso that the scope of the term "low power station" should be clearly defined.

4.12 The delegates of Algeria, Italy and the USSR, noting that there were many fears that the wording of § 2.2 would lead to the submission of a large number of modifications that would not improve the Plan, wondered if it were necessary to retain any of § 2.2.

4.13 The delegates of the Federal Republic of Germany, Iran (Islamic Republic of), Iraq and Yugoslavia proposed that the number of modifications and additions other than those specified in 2.1 could be kept to a minimum by specifying that they could only be accepted subject to prior coordination.

4.14 In addition to that specification, the delegates of the United Kingdom, Iran (Islamic Republic of) and Iraq felt that § 2.2 should still indicate that such submissions were subject to the effective control of the Planning Groups in order to cope with problems caused in planning areas other than the one in which the submission had been made.

4.15 The delegate of the Federal Republic of Germany proposed that that eventuality be covered in a separate paragraph.

4.16 The delegate of Switzerland said it was important to respect the principle of equal coverage for countries. Cases could arise where a failure to reach agreement could lead to the rejection of a submission from a country that had not had its proper share of coverage. That was an exceptional case and provision should be made for its consideration.

4.17 The representative of the IFRB noted that so far all submissions received up to 2 November 1984 had been accepted for analysis. The acceptance of large numbers of new proposals and modifications after that date had not been anticipated and the paragraph had been drafted to cover the few exceptional cases deserving of consideration that would perhaps arise. The Committee might thus consider it advisable to retain the qualification that the provisions of the paragraph were restricted to exceptional cases, otherwise the door might be opened to a more general admission of submissions, thus creating problems for the planning process.

4.18 With reference to § 2.3, the delegate of the Federal Republic of Germany said that the first session of the Conference had not designated the fourth possible action listed (changing of polarization) as a general procedure. Hence administrations were under no obligation to use that method unless it had been agreed to by all parties concerned in any particular case. That proviso should be indicated in the document.

4.19 The Chairman proposed that further discussion of Document DT/10 should be adjourned until a revised version of the text reflecting the views expressed in the course of the debate had been prepared for submission to the Committee.

It was so agreed.

The meeting rose at 1045 hours.

The Secretary :  
D. SCHUSTER

The Acting Chairman :  
H.K. AL SHANKITI

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 74-E

7 November 1984

Original : English

## PLENARY MEETING

### SECOND REPORT BY THE CHAIRMAN OF THE TECHNICAL WORKING GROUP OF THE PLENARY

The annex contains modifications to Chapter 3 "Technical Standards and Transmission Characteristics" of the report to the second session of the Conference.

J. RUTKOWSKI  
Chairman of the  
Technical Working Group  
of the Plenary

Annex : 1

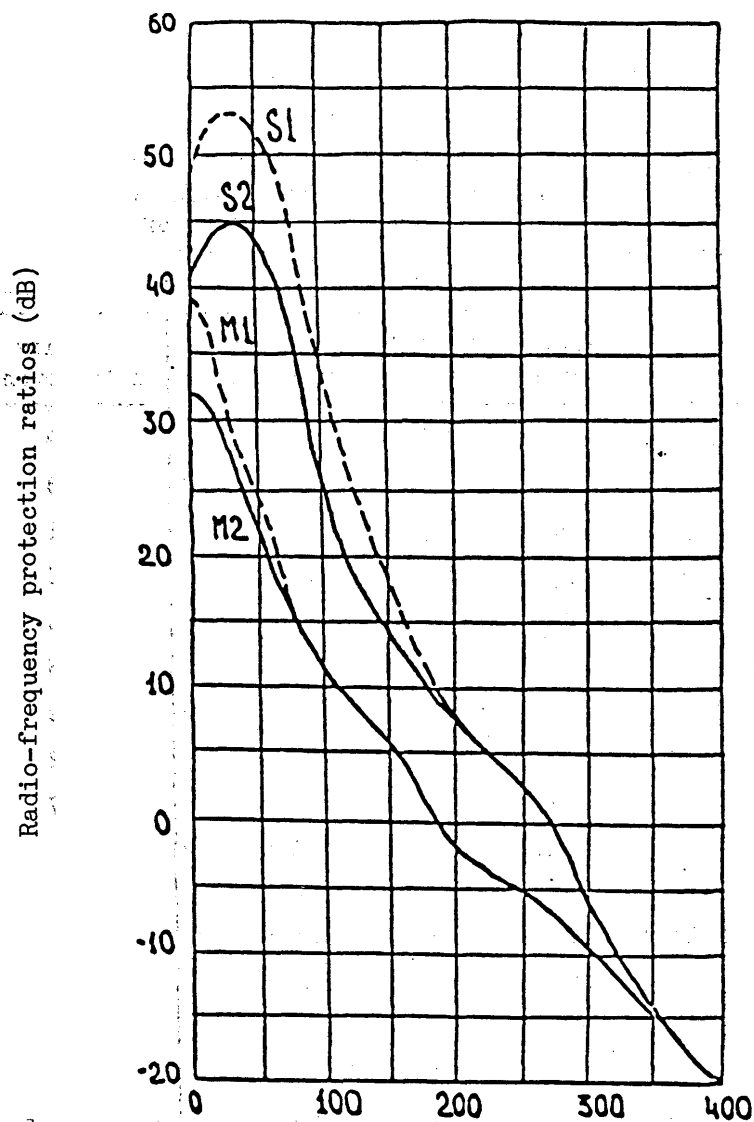
ANNEX

Replace the fifth paragraph of section 3.3 by the following text :

"For planning at the second session of the Conference the radio-frequency protection ratios for satisfactory stereophonic reception in the case of tropospheric interference (99% of time), or for steady interference where the wanted and interfering transmitters use different maximum frequency deviations, are given in Table III."

Replace Figure 3.2 by the following figure :

Reference :  
- 2 -  
CARR-1(2)/10-E



Difference between wanted and interfering carrier frequencies (kHz)

FIGURE 3.2

Radio-frequency protection ratios required by broadcasting  
services in band 8 (VHF) using a maximum  
frequency deviation of  $\pm 50$  kHz

- Curve M1 : Monophonic broadcasting, steady interference  
Curve M2 : Monophonic broadcasting, tropospheric interference  
(99% of the time)
- Curve S1 : Stereophonic broadcasting, steady interference  
Curve S2 : Stereophonic broadcasting, tropospheric interference  
(99% of the time)



Replace Table II by the following table :

Reference :  
- 3 -  
CARR-1(2)/10-E

TABLE II

Frequency spacing (kHz)	Radio-frequency protection ratios (dB) using a maximum frequency deviation of $\pm 50$ kHz			
	Monophonic		Stereophonic	
	Steady interference	Tropospheric interference	Steady interference	Tropospheric interference
0	39	32	49	41
25	32	28	53	45
50	24	22	51	43
75	15	15	45	37
100	12	12	33	25
125	7.5	7.5	25	18
150	6	6	18	14
175	2	2	12	11
200	-2.5	-2.5	7	7
225	-3.5	-3.5	5	5
250	-6	-6	2	2
275	-7.5	-7.5	0	0
300	-10	-10	-7	-7
325	-12	-12	-10	-10
350	-15	-15	-15	-15
375	-17.5	-17.5	-17.5	-17.5
400	-20	-20	-20	-20

TABLE III

Frequency spacing (kHz)	Maximum frequency deviation : wanted transmitter $\pm 50$ kHz interfering transmitter $\pm 75$ kHz		Maximum frequency deviation : wanted transmitter $\pm 75$ kHz interfering transmitter $\pm 50$ kHz	
	Radio-frequency protection ratios (dB) stereophonic		Radio-frequency protection ratios (dB) stereophonic	
	Steady interference	Tropospheric interference	Steady interference	Tropospheric interference
0	49	41	45	37
25	53	45	51	43
50	51	43	51	43
75	45	37	45	37
100	33	25	33	25
125	25	18	24.5	18
150	18	14	18	14
175	12	11	11	10
200	7	7	7	7
225	5	5	4.5	4.5
250	2	2	2	2
275	0	0	-2	-2
300	-7	-7	-7	-7
325	-10	-10	-11.5	-11.5
350	-15	-15	-15	-15
375	-17.5	-17.5	-17.5	-17.5
400	-20	-20	-20	-20

Replace Table III by the following table :

Reference :

- 4 -

CARR-1(2)/10-E

- 5 -  
CARR-1(2)/74-E

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 75-E

7 November 1984

Original : English

TECHNICAL WORKING GROUP  
OF THE PLENARY

## THIRD REPORT OF SUB-WORKING GROUP PL/B

The Annex contains a modification to the text appearing in the Annex to Document 64 of section 5.2.3.1 to Annex J of the report to the second session of the Conference. This modification is not in contradiction to the text already approved but is merely an extension in order to take account of the offset case for type A1 interference. It does not affect the calculations to be carried out by the IFRB during this Conference since these will not take account of the offset case.

However, delegations may wish to consider the offset case when making their own calculations during the Conference.

Special attention is drawn to section 5.2.3.1.7 of the annex.

E. GEORGE  
Chairman of the  
Technical Sub-Working Group PL/B

Annex : 1

ANNEX

5.2.3.1 Type A1 interference

Replace the text contained in the Annex to Document 64 by the following :

5.2.3.1.1

Frequency difference (kHz)	Protection ratio (dB)
0	17
50	10
100	-4
150	-19
200	-38

5.2.3.1.2 These values apply both to existing ILS and VOR equipment. They include a small safety margin in order to take account of multiple interference entries resulting from different broadcast transmitters. Type A1 interference need not be considered for frequency differences greater than 200 kHz.

The field strength of the interfering signal at the test point will be calculated on the basis of the following level of the spurious component (in the case of several transmitters contributing to one spurious component - see category a) below - the most powerful transmitter is taken as the reference) :

- 40 dB below the transmitter e.r.p. for transmitter e.r.p.s below and equal to 2.5 W;
- 250 µW e.r.p. for transmitter e.r.p.s above 2.5 W but below 79 kW;
- 85 dB below the transmitter e.r.p. for transmitter e.r.p.s equal to and above 79 kW;

An antenna gain of 10 dB has been assumed in defining the levels given above.

5.2.3.1.3 For the analysis of type A1 interference the following two categories of spurious emissions will be considered :

- a) spurious emissions resulting from an intermodulation process generated at the transmitter site, e.g. by multiple transmitters feeding the same antenna;
- b) spurious emissions with the exclusion of those covered by a) above.

For category a) the actual frequency of the spurious emission will be considered. For category b) the worst case will be assumed, i.e. a spurious component exactly at the aeronautical frequency under consideration.

5.2.3.1.4 During the Conference no analysis will be made by the IFRB for category a) due to lack of input data required.

5.2.3.1.5 The analysis carried out by the IFRB after the Conference will, however, also take account of category a) provided administrations make available the data required with regard to their co-sited transmitters. The conclusions will then distinguish between both cases and will result in the following three alternatives :

- i) compatibility for category b) (this means automatically compatibility for category a) which need therefore not be considered);
- ii) incompatibility for category b) but compatibility for category a) (this can occur in the frequency offset case of category a));
- iii) incompatibility for both categories a) and b).

Alternative ii) deserves particular attention by administrations concerned because it is not very meaningful to base the indication of an incompatibility alone on the worst case assumption for category b), i.e. a spurious component exactly at the aeronautical frequency. It is very unlikely that this will occur in practice.

5.2.3.1.6 Example for alternative ii) for ILS with a wanted field strength of 32 dB( $\mu$ V/m) :

- field strength of most powerful transmitter at the test point : 110 dB( $\mu$ V/m)
- field strength of spurious component of category b) : 25 dB( $\mu$ V/m)

resulting in a protection ratio of 7 dB (conclusion : incompatible)

- field strength of spurious component of category a) : 25 dB( $\mu$ V/m)
- frequency difference to ILS : 100 kHz

resulting in a protection ratio of 7 dB (conclusion : compatible).

An investigation by the administration operating the broadcasting transmitters may yield that there is no spurious component of category b) at the aeronautical frequency. The final conclusion with regard to type A1 interference will then be : compatible.

5.2.3.1.7 If Committee 5 requires a single limit to indicate in the procedures when coordination is required for type A1 interference, this single limit should be the non-frequency dependent component of type A1 interference (i.e. category b) above).

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 76-E  
7 November 1984  
Original : English

TECHNICAL WORKING  
GROUP OF THE PLENARY

## FOURTH REPORT OF SUB-WORKING GROUP PL/B

The Annex contains a text to replace section 3 of Annex J to the report to the second session of the Conference. It also contains a further modification to section 5.2.2 of Annex J as already modified (see Document 64), consequential to the decisions taken with regard to section 3 of Annex J.

E. GEORGE  
Chairman of the  
Technical Sub-Working Group PL/B

Annex : 1

ANNEX

3. Coordination contour around the test point of an aeronautical radionavigation station

3.1 The coordination contour is defined by a circle of a radius, as specified below, around each test point of the radionavigation station to be protected, as projected on the surface of the Earth. Broadcasting stations outside the coordination contour are considered not being likely to affect the service provided by the aeronautical radionavigation station concerned and need therefore not be considered.

3.2 For types A1, A2 and B2 interference the radius is 125 km.

3.3 For type B1 interference the radius is 500 km.

3.4 Only broadcasting stations which are in line-of-sight to the test point concerned are taken into account (see section 5.1).

5.2.2 Principles of calculation

Modify the first sentence (see Document 64) as follows :

"The field strength of every broadcasting station in the band 87.5 to 108 MHz inside the coordination contour of and within line-of-sight to a test point of an aeronautical radionavigation station will be calculated at this test point as an interfering signal."

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# CONFÉRENCE RÉGIONALE DE RADIODIFFUSION

✓  
Document 77-FES  
7 novembre 1984

(SECONDE SESSION)

GENEVE, 1984

## NOTE DU PRESIDENT DE LA CONFERENCE

Un programme de travail pour la suite de la Conférence est en cours d'élaboration et sera examiné à la prochaine séance plénière. Après accord avec le Président de la Commission 4 et le Président de l'IFRB, il a été décidé de demander aux administrations de remettre le Formulaire 1 (Liste des stations devant faire l'objet d'une consultation) au plus tard le vendredi 9 novembre 1984 à 17 heures. L'IFRB sera alors en mesure de distribuer le Formulaire 2 au plus tard le lundi 12 novembre 1984 à 14 heures. Le programme actuellement en préparation indiquera les dates auxquelles les autres Formulaires 1 et 2 seront traités.

M. HUET  
Président

## NOTE BY THE CHAIRMAN OF THE CONFERENCE

A program of work for the rest of the Conference is under preparation and will be considered in the next Plenary. After consultation with the Chairman of Committee 4 and the Chairman of the IFRB, it was agreed that administrations be requested to hand Form 1 (list of stations requiring consultation) by Friday, 9 November 1984 at 17.00 hours. The IFRB will then be in a position to distribute Form 2 by the following Monday, 12 November 1984 at 14.00 hours. The program under preparation will indicate dates on which other Forms 1 and Forms 2 will be processed.

M. HUET  
Chairman

## NOTA DEL PRESIDENTE DE LA CONFERENCIA

Se está preparando un programa de trabajo para el resto de la Conferencia, que se examinará en la próxima sesión plenaria. Tras consulta con el Presidente de la Comisión 4 y el Presidente de la IFRB, se ha acordado pedir a las Administraciones que entreguen el Formulario 1 (lista de estaciones que requieren consulta) antes del viernes 9 de noviembre de 1984 a las 17.00 horas. La IFRB estará entonces en condiciones de distribuir el Formulario 2 el siguiente lunes, 12 de noviembre de 1984, a las 14.00 horas. En el programa que se prepara se indicarán las fechas en que se procesarán los Formularios 1 y 2.

M. HUET  
Presidente



INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 78-E  
7 November 1984  
Original : French

PLENARY MEETING

Note by the Chairman of the Conference

PROCEDURES FOR PREPARING THE PLAN

The following procedure and the annexed timetable will be followed in preparing the Plan. The Chairmen of the Planning Groups are requested to ensure that participating delegations apply the procedure and observe the dates stated.

1. Forms 1 and 2

1.1 Form 1 must be completed by delegations as soon as possible and returned to the Secretary of the Planning Group not later than 1700 hours on Friday, 9 November.

1.2 The IFRB will produce and distribute Form 2 at 1400 hours on Monday, 12 November.

1.3 By 1800 hours on Thursday, 15 November, delegations must have returned to the Secretary of the Planning Group :

- a) Forms 2 in respect of which the signatures of all delegations concerned have been obtained;
- b) Forms 2 in respect of which only some signatures have been obtained;
- c) if necessary, a second Form 1 confined to stations which were not included in the first Form 1 returned to the Secretariat on Friday, 9 November.

1.4 The IFRB will produce a second version of Form 2 and distribute it at 1400 hours on Monday, 19 November. The second version of Form 2 will contain, in respect of each station :

- the indication "COORD", instead of a signature, for each box for which the signature of the administration concerned has been obtained;
- each box included in the first version but still under negotiation will be included again in the second version;
- if necessary, new boxes corresponding to information transmitted in the second series of Form 1.

1.5 There will be no second version of Form 2 in respect of stations for which all the necessary signatures have been obtained.

Stations on which negotiations have to be conducted should normally appear in Form 1, to be returned to the Secretariat by 1700 hours on Friday, 9 November. Delegations may if necessary use Form 1 to indicate other stations on which they consider negotiations should be conducted. In such cases, the Forms should be transmitted to the Secretariat by 1800 hours on Thursday, 15 November or, if necessary, by 1200 hours on Friday, 23 November.

No Form 1 will be accepted after the last-mentioned date.

1.6 Forms 2 for which all or some signatures have been obtained may be transmitted to the Secretariat by the following dates :

- Thursday, 15 November, at 1800 hours;
- Friday, 23 November, at 1200 hours.

All Forms 2, regardless of their status, must be returned to the Secretariat by 1200 hours on Thursday, 29 November, to enable the final version of Forms 2 for which one or more signatures are missing to be distributed on Monday, 3 December.

## 2. Analyses

The second analysis of requirements, to be made on 17 and 18 November 1984, will take account of decisions relating to the technical criteria to be adopted by 1700 hours on Friday, 9 November. The results will be made known at 1400 hours on Tuesday, 20 November.

The third and final analysis will be made on 1 and 2 December 1984 and the results communicated at 1400 hours on Monday, 3 December.

## 3. Draft Plan

The draft Plan will be distributed on Tuesday, 4 December. It will contain all stations that have not been notified as requiring negotiation and those on which negotiations have been completed. An annexed list will recapitulate all unresolved cases.

In view of its volume, and in agreement with the Chairman of Committee 4, the Plan will receive a first reading by the Conference at the Plenary Meeting on Wednesday, 5 December 1984. Until that date, delegations which have obtained the necessary signatures for Forms 2 must return these Forms to the Secretariat as soon as possible. The results will be communicated during the reading of the Plan at the Plenary Meeting.

Annex : Draft timetable for the preparation of the Plan.

ANNEX

DRAFT TIMETABLE FOR THE PREPARATION OF THE PLAN

Day/local time	Analyses and Forms for modifying requirements	Forms 1 and 2
Tuesday 6		→ Distribution of Forms 1
Wednesday 7	Distribution of (blue) modification Forms	
Thursday 8		
Friday 9 (1700)		→ Deadline for returning Forms 1 to the Secretariat
Saturday 10		
Sunday 11		
Monday 12 (1400)		→ Distribution of Forms 2 (first version)
Tuesday 13		
Wednesday 14		
Thursday 15 (1800)	Deadline for the submission of (blue) modification Forms	Deadline for returning signed Forms 2 and if necessary new Forms 1 to the Secretariat
Friday 16		
Saturday 17		
Sunday 18		
Monday 19 (1400)		→ Distribution of Forms 2 (second version)
Tuesday 20 (1400)	<u>Distribution of the second analysis</u>	
Wednesday 21		
Thursday 22		
Friday 23 (1200)		→ Deadline for returning signed Forms 2 and if necessary new Forms 1 to the Secretariat
Saturday 24		
Sunday 25		
Monday 26 (1400)		→ Distribution of Forms 2 (third version)
Tuesday 27		
Wednesday 28		
Thursday 29 (1200)	Deadline for submission of (green) modification Forms	Deadline for returning Forms 2 for production of final version
Friday 30		
Saturday 1		
Sunday 2		
Monday 3	<u>Distribution of the third and final analysis</u>	Distribution of final Forms 2
Tuesday 4	Distribution of the draft Plan	
Wednesday 5	Consideration of the first draft Plan by the <u>Plenary Meeting</u>	Deadline for submitting Forms 2 for consideration by the <u>Plenary Meeting</u>

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 79-E  
8 November 1984  
Original : French

COMMITTEE 6

SUMMARY RECORD  
OF THE  
FIRST MEETING OF COMMITTEE 6  
(EDITORIAL COMMITTEE)

Tuesday, 6 November 1984, at 1100 hrs

Chairman : Mr. H. BERTHOD (France)

Subjects discussed :

1. Terms of reference of the Editorial Committee (Nos. 473 and 474 of the International Telecommunication Convention, Nairobi, 1982)
2. Membership of the Committee (establishment of the list of participants)
3. Organization of work

1. Terms of reference of the Editorial Committee

1.1 The Chairman drew participants' attention to the provisions of Nos. 473 and 474 of the International Telecommunication Convention (Nairobi, 1982), which constituted the Committee's terms of reference.

2. Membership of the Committee (establishment of the list of participants)

2.1 Participants were invited to appoint members to take part in the work of the Editorial Committee for each of the Union's working languages. A list was drawn up on the basis of information provided by the delegates of France, Spain and the United Kingdom.

2.2 The Chairman said that if any difficulties arose during its discussions, the Committee could, if necessary, call on the specialists responsible for preparing the texts submitted to it.

3. Organization of work

3.1 Information was provided about the proposed working methods.

3.2 The Chairman said that the Committee would hold its second meeting on Thursday, 8 November 1984, at 0900 hours in Room XI. Each Committee member would receive written confirmation of the meeting.

The meeting rose at 1120 hours.

The Secretary :  
P.A. TRAUB

The Chairman :  
H. BERTHOD

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

Document 80-E  
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(SECOND SESSION)

GENEVA, 1984

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Note from the French delegation

Co-Prince of Andorra, the President of the French Republic is responsible for the international representation of Andorra and, in that capacity, is the only person empowered to submit requests for frequencies on behalf of the Principality.

He has, therefore, instructed the competent French authorities to submit four requests for frequencies on behalf of the Principality of Andorra.

He has also instructed the French delegation to inform the other delegations accordingly and to announce at the same time that any other request submitted to the Conference was without any legal foundation.

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# CONFÉRENCE RÉGIONALE DE RADIODIFFUSION

(SECONDE SESSION)

GENEVE, 1984

Corrigendum 1 au  
Document 81-F/E/S  
8 novembre 1984

NOTE DU PRESIDENT DE LA COMMISSION 3 AUX  
PRESIDENTS DES COMMISSIONS 4 ET 5

1er paragraphe, 3ème ligne, remplacer :

"... Document 41." par "... Document 28."

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NOTA DEL PRESIDENTE DE LA COMISIÓN 3 A LOS  
PRESIDENTES DE LAS COMISIONES 4 Y 5

1.<sup>er</sup> párrafo, 2.<sup>a</sup> línea, sustitúyase:

"... Documento 41 ..." por "... Documento 28 ..."

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This corrigendum does not concern the English text.

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 81-E  
7 November 1984  
Original : Spanish

COMMITTEES 4 AND 5

## NOTE BY THE CHAIRMAN OF COMMITTEE 3 TO THE CHAIRMEN OF COMMITTEES 4 AND 5

At its first meeting, Committee 3 took note of Article 80 of the Convention and Resolution 48 of the Nairobi Conference, reproduced in Document 28 by the Secretary-General. The Committee recognized that under these provisions of the Convention, conferences were required inter alia, before adopting Resolutions or taking decisions which are likely to result in additional and unforeseen demands upon the budgets of the Union :

- 1) to prepare and take into account estimates of the additional demands made on the budgets of the Union;
- 2) where two or more proposals are involved, to arrange them in an order of priority;
- 3) to prepare and submit to the Administrative Council a statement of the estimated budgetary impact, together with a summary of the significance and benefit to the Union of financing the implementation of those decisions and an indication of priorities where appropriate.

Consequently, Committee 3 recommends that, in their work and in making proposals to the Plenary, Committees 4 and 5 should :

- 1) take account of paragraphs 1), 2) and 3) above when identifying activities resulting from this Conference which will have a budgetary impact;
- 2) in the event that decisions are taken which may have a budgetary impact, send an information note to Committee 3 at the earliest opportunity describing the nature of the decision and if possible, with the assistance of the permanent organs of the Union concerned, providing an outline of the estimated cost of implementing the decision.

F. MOLINA NEGRO  
Chairman of Committee 3



# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 82-E  
7 November 1984  
Original : English

## COMMITTEE 5

NOTE TO THE CHAIRMAN OF THE COMMITTEE 5  
FROM THE CHAIRMAN OF THE TECHNICAL WORKING GROUP  
OF THE PLENARY

During the work of the Technical Working Group of the Plenary and in connection with the preparation of Recommendations addressed to CCIR concerning its future studies on refinement of compatibility criteria between the VHF broadcasting and aeronautical services, a question was put forward as to how the CCIR Recommendations resulting from the above-mentioned studies may be used in the future for coordination process connected with the modifications of the Plan.

On request of the Group, I would like to draw your attention to this problem and to ask you to take appropriate measures in your Committee, aiming to create a mechanism which could assure that the most recent CCIR Recommendations are taken into account in the future coordination procedures related to the modifications of the Plan.

J. RUTKOWSKI  
Chairman of the Technical Working Group  
of the Plenary

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 83-E  
7 November 1984  
Original : French

COMMITTEE 2

First Report by Working Group C2-A to Committee 2

1. The Working Group of Committee 2 (Credentials) met on 6 November 1984. It examined the credentials of the following delegations \*:

AFGHANISTAN (Democratic Republic of)  
ALBANIA (Socialist People's Republic of)  
GERMANY (Federal Republic of)  
SAUDI ARABIA (Kingdom of)  
BELGIUM  
BENIN (People's Republic of)  
BYELORUSSIAN SOVIET SOCIALIST REPUBLIC  
BOTSWANA (Republic of)  
CYPRUS (Republic of)  
VATICAN CITY STATE  
CONGO (People's Republic of the)  
IVORY COAST (Republic of the)  
DENMARK  
SPAIN  
FINLAND  
FRANCE  
GABONESE REPUBLIC  
GHANA  
GREECE  
GUINEA (Republic of)  
HUNGARIAN PEOPLE'S REPUBLIC  
IRAN (Islamic Republic of)  
IRAQ (Republic of)  
IRELAND  
ITALY  
KUWAIT (State of)  
LESOTHO (Kingdom of)  
LIBYA (Socialist People's Libyan Arab Jamahiriya)  
LIECHTENSTEIN (Principality of)  
LUXEMBOURG  
MALI (Republic of)  
MOROCCO (Kingdom of)  
MONACO  
MONGOLIAN PEOPLE'S REPUBLIC

\*In the alphabetical order of the french version of the country names.

NORWAY  
OMAN (Sultanate of)  
NETHERLANDS (Kingdom of the)  
SYRIAN ARAB REPUBLIC  
GERMAN DEMOCRATIC REPUBLIC  
UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND  
SAN MARINO (Republic of)  
SWEDEN  
SWITZERLAND (Confederation of)  
SWAZILAND (Kingdom of)  
TANZANIA (United Republic of)  
CHAD (Republic of the)  
CZECHOSLOVAK SOCIALIST REPUBLIC  
TURKEY  
UNION OF SOVIET SOCIALIST REPUBLICS  
YUGOSLAVIA (Socialist Federal Republic of)

These credentials are all in order.

2. The working Group noted that 20 delegations present at the Conference have not yet deposited their credentials. These delegations will be contacted by the Committee Secretariat.

J. SZÉKELY  
Chairman of the Working Group C2-A

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 84-E

7 November 1984

Original : English

WORKING GROUP 5B

## NOTE FROM THE CHAIRMAN OF COMMITTEE 5

A. The discussion in Committee 5 relative to the categories of the primary and the permitted service, based on Document 60 from the IFRB, the following principles were identified :

- recognition of existing stations in the permitted services;
- no blocking of the introduction of BC-stations in accordance with the Plan;
- necessity to develop a procedure to achieve implementation of the above.

B. Possible elements for a procedure

1. The stations of the permitted service are not taken into account in the planning process.
2. The modifications to the Plan shall protect the stations of the permitted service in operation at the date of the modification to the Plan.
3. The stations of the permitted service to be brought into operation in the future shall protect the broadcasting stations in the Plan.
4. The bringing into operation of broadcasting stations that may be incompatible with stations of permitted services in operation at the date of the Conference shall be the subject of consultations between the administrations concerned during and after the Conference.
5. Consultation during the Conference may result in either :
  - 5.1 an agreement concerning the bringing into use of the broadcasting station;
  - 5.2 an agreement with conditions to be listed in the Plan;
  - 5.3 the indication in the Plan that the bringing into operation of the broadcasting station shall be the subject of consultation with a given administration / on the basis of criteria decided by the Conference /.
6. In order to permit consultations after the Conference, there is a need to identify the stations of the permitted service which are in operation, either in a list developed during the Conference, or by requesting the administrations to notify in accordance with Article 12 the stations which are in operation.
7. The Conference shall develop technical criteria and procedures in order to avoid that the bringing into operation of a broadcasting station is not blocked if consultations between administrations did not succeed.

C. Preliminary comments have been made with regard to §§ 4, 5.3, 6 and 7 in Section B, indicating problem areas and the special need to align divergent views.

D. Working Group 5B is invited to continue discussion on the basis of the above.

K. OLMS  
Chairman of Committee 5

INTERNATIONAL TELECOMMUNICATION UNION

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 85-E

7 November 1984

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## PLENARY MEETING

### CORRECTIONS TO THE FIRST REPORT BY THE CHAIRMAN OF THE TECHNICAL WORKING GROUP OF THE PLENARY

J. RUTKOWSKI  
Chairman of the  
Technical Working Group  
of the Plenary

Replace the first paragraph of section 2.1.2.1 by the following text :

"For oversea path calculations for 50% of the time, Figure 2.2 should be used. For the application of the 1% time curves, the sea area shall include also a coastal strip extending up to 50 km inland, and it shall also include for the Nile delta region (from 30° E to 32° E) a coastal strip extending up to 200 km inland. In bilateral or multilateral coordination relating to specific cases, the administrations concerned may agree to use different distances or to take account of other factors such as terrain height, or other attenuation factors as appropriate."

Replace section 2.2 by the following text :

"2.2      Propagation for incompatibility calculations between the FM broadcasting service and the aeronautical radionavigation service

In the incompatibility calculations the free space propagation conditions are used. The calculations are limited to the test points of the aeronautical radionavigation station in line-of-sight from the broadcasting station, it being assumed that the effective Earth's radius is  $4/3$  of the actual radius."

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# REGIONAL BROADCASTING CONFERENCE

Document 86-E

7 November 1984

Original : English

(SECOND SESSION)

GENEVA, 1984

PLENARY MEETING

## THIRD REPORT BY THE CHAIRMAN OF THE TECHNICAL WORKING GROUP OF THE PLENARY

The Annex contains modifications to Annex J of the report to the second session of the Conference : "Compatibility between VHF broadcasting stations and stations of the aeronautical radionavigation and aeronautical mobile (R) services".

J. RUTKOWSKI  
Chairman of the  
Technical Working Group  
of the Plenary

Annex : 1



ANNEX

Replace section 3 by the following text :

3. Coordination contour around the test point of an aeronautical radionavigation station

3.1 The coordination contour is defined by a circle of a radius, as specified below, around each test point of the radionavigation station to be protected, as projected on the surface of the Earth. Broadcasting stations outside the coordination contour are considered not being likely to affect the service provided by the aeronautical radionavigation station concerned and need therefore not be considered.

3.2 For types A1, A2 and B2 interference the radius is 125 km.

3.3 For type B1 interference the radius is 500 km.

3.4 Only broadcasting stations which are in line-of-sight to the test point concerned are taken into account (see section 5.1).

Replace section 5.2 by the following text :

5.2 Protection criteria for the aeronautical radionavigation service

5.2.1 Wanted signal

The minimum field strength to be protected :

- ILS : 40  $\mu\text{V/m}$  (32 dB( $\mu\text{V/m}$ ))
- VOR : 90  $\mu\text{V/m}$  (39 dB( $\mu\text{V/m}$ ))

5.2.2 Principles of calculation

5.2.2.1 The field strength of every broadcasting station in the band 87.5 to 108 MHz inside the coordination contour of and within line-of-sight to a test point of an aeronautical radionavigation station will be calculated at this test point as an interfering signal.

5.2.2.1.1 For types A1 and A2 interference this field strength will be compared with the minimum field strength to be protected of the wanted signal, as indicated in section 5.2.1.

5.2.2.1.2 For type B1 interference the relevant intermodulation formulae will be applied.

5.2.2.1.3 For type B2 interference the broadcasting signal level will be compared with the maximum permitted level.

5.2.2.2 The results of the calculations will indicate those cases where the relevant protection criteria are not met and those cases where the criteria are exceeded by less than 3 dB.

5.2.2.3 Protection criteria given for future equipment will be applied as from ... \*.

5.2.2.4 Where applicable, field strength E will be converted to signal power N at the receiver input according to the following formula :

$$E \text{ (dB(}\mu\text{V/m))} = N \text{ (dBm)} + 118 + L_s + L(f)$$

where :

$L_s$  - system fixed loss of 3.5 dB;

$L(f)$  - system frequency-dependent loss at frequency  $f$  of 1 dB per MHz from 108 to 100 MHz and then 0.5 dB per MHz below 100 MHz.

The figures for  $L_s$  and  $L(f)$  apply for ILS and VOR equipment.

### 5.2.3 Protection criteria

#### 5.2.3.1 Type A1 interference

5.2.3.1.1 The values given in Table 5.2.1 apply to existing ILS and VOR equipment. They include a small safety margin in order to take account of multiple interference entries resulting from different broadcast transmitters. Type A1 a) interference need not be considered for frequency differences greater than 200 kHz.

TABLE 5.2.1

Frequency difference (kHz)	Protection ratio (dB)
0	17
50	10
100	-4
150	-19
200	-38

5.2.3.1.2 The field strength of the interfering signal at the test point will be calculated on the basis of the following level of the spurious component (in the case of several transmitters contributing to one spurious component - see category a) below - the most powerful transmitter is taken as the reference) :

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\* The Technical Working Group of the Plenary does not feel competent to establish this date. There is, however, no evidence that the date of 1 January 1998 as indicated by CCIR JIWP 8-10/1 is unrealistic, which has been confirmed by ICAO.

- 40 dB below the transmitter e.r.p. for transmitter e.r.p.s below and equal to 2.5 W;
- 250 µW e.r.p. for transmitter e.r.p.s above 2.5 W and below 79 kW;
- 85 dB below the transmitter e.r.p. for transmitter e.r.p.s equal to and above 79 kW;

above. An antenna gain of 10 dB has been assumed in defining the levels given

The levels of the spurious emission given above are valid in the band 108 - 137 MHz.

5.2.3.1.3 For the analysis of type A1 interference the following two categories of spurious emissions will be considered :

- a) spurious emissions resulting from an intermodulation process generated at the transmitter site, e.g. by multiple transmitters feeding the same antenna;
- b) spurious emissions with the exclusion of those covered by a) above.

For category a) the actual frequency of the spurious emission will be considered. For category b) the worst case will be assumed, i.e. a spurious component exactly at the aeronautical frequency under consideration.

5.2.3.1.4 During the Conference no analysis will be made by the IFRB for category a) due to lack of input data required.

5.2.3.1.5 The analysis carried out by the IFRB after the Conference will, however, also take account of category a) provided administrations make available the data required with regard to their co-sited transmitters. The conclusions will then distinguish between both cases and will result in the following three alternatives :

- i) compatibility for category b) (this means automatically compatibility for category a) which need therefore not be considered);
- ii) incompatibility for category b) but compatibility for category a) (this can occur in the frequency offset case of category a));
- iii) incompatibility for both categories a) and b).

Alternative ii) deserves particular attention by administrations concerned because it is not very meaningful to base the indication of an incompatibility alone on the worst case assumption for category b), i.e. a spurious component exactly at the aeronautical frequency. It is very unlikely that this will occur in practice.

5.2.3.1.6 If Committee 5 requires a single limit to indicate in the procedures when coordination is required for type A1 interference, this single limit should be the non-frequency dependent component of type A1 interference (i.e. category b) above).

5.2.3.2 Type A2 interference

Frequency difference (kHz)	Protection Ratio (dB)
150	-41
200	-50
250	-59
300	-68

The values apply for ILS and VOR equipment. A frequency difference below 150 kHz cannot occur. For frequency differences greater than 300 kHz this type of interference need not be considered.

5.2.3.3 Type B1 interference

Third order intermodulation products of the form :

$$f_{\text{aero}} = 2 f_1 - f_2 \text{ (two-signal case)}$$

or 
$$f_{\text{aero}} = f_1 + f_2 - f_3 \text{ (three-signal case)}$$

$$\text{with } f_1 > f_2 > f_3,$$

generated in the aeronautical receiver will cause an unacceptable degradation of receiver performance, if the inequalities given below are fulfilled subject to the conditions in 5.2.3.3.4.

Intermodulation of the second order is irrelevant and intermodulation of a higher order will not be considered.

$N_1$ ,  $N_2$  and  $N_3$  in the inequalities below have the following meaning :

$N_1$  ... level in dBm of the broadcasting signal of frequency  $f_1$  at the input of the aeronautical radionavigation receiver

$N_2$  ... level in dBm of the broadcasting signal of frequency  $f_2$  at the input of the aeronautical radionavigation receiver

$N_3$  ... level in dBm of the broadcasting signal of frequency  $f_3$  at the input of the aeronautical radionavigation receiver

$\max(0.4; 108.1 - f)$  in the inequalities below have the following meaning : either 0.4 or  $108.1 - f$ , which one is greater.

5.2.3.3.1 Two-signal case

i) Existing ILS and VOR

$$2(N_1 - 20 \log \frac{\max(0.4; 108.1 - f_1)}{0.4}) + N_2 +$$

$$-20 \log \frac{\max(0.4; 108.1 - f_2)}{0.4} + 120 > 0$$

ii) Future ILS and VOR

$$2N_1 + N_2 + 72 - 60 \log \frac{\max(0.4; 108.1 - f_1)}{0.4} > 0$$

5.2.3.3.2 Three-signal case

Existing ILS and VOR

$$N_1 - 20 \log \frac{\max(0.4; 108.1 - f_1)}{0.4} +$$

$$+N_2 - 20 \log \frac{\max(0.4; 108.1 - f_2)}{0.4} +$$

$$+N_3 - 20 \log \frac{\max(0.4; 108.1 - f_3)}{0.4} + 126 > 0$$

5.2.3.3.3 Correction to be applied for existing ILS and VOR equipment to each broadcast signal level before applying the formulae in 5.2.3.3.1 or 5.2.3.3.2.

$N_{1,2,3}$  (corrected) =  $N_{1,2,3}$  - correction factor

Frequency difference between faero and intermodulation product (kHz)	Correction factor (dB)
0	0
±50	2
±100	8
±150	16
±200	26

For frequency differences beyond ±200 kHz, type B1 interference need not be considered.

#### 5.2.3.3.4 Trigger and cut-off values

The trigger value is the minimum power level at the input to the ILS or VOR receiver, considered necessary for a broadcasting signal to initiate the generation of intermodulation products which are of sufficient power to infringe potentially the receiver interference threshold. The trigger value for each contributing broadcasting signal of frequency  $f$  at the ILS or VOR receiver input is derived from the following formulae :

$$N = -42 + 20 \log \frac{\max (0.4; 108.1 - f)}{0.4}$$

for existing receivers

$$N = -26 + 20 \log \frac{\max (0.4; 108.1 - f)}{0.4}$$

for future receivers.

The cut-off value is the minimum power level at the input to the ILS or VOR receiver, considered necessary for a broadcasting signal to be one input to the non-linear process which results in the formation of an intermodulation product of sufficient power to infringe potentially the receiver interference threshold.

For the compatibility analysis a cut-off value of 12 dB below the trigger value is chosen.

An intermodulation analysis is, therefore, only carried out if at least one signal is equal to or above the trigger value provided that the other signal or signals are equal to or above the cut-off value.

#### 5.2.3.4 Type B2 interference

The following maximum permitted levels of broadcasting signals at the input to the ILS or VOR receiver shall not be exceeded :

Frequency of broadcasting signal (MHz)	Level (dBm) for existing equipment	Level (dBm) for future equipment
107.9	-20	-10
106	-5	5
102	5	15
≤ 100	10	15

Between the frequency values given above, the maximum permitted level will be determined by linear interpolation.

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 87-E

7 November 1984

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TECHNICAL WORKING  
GROUP OF THE PLENARY

## FIFTH REPORT OF SUB-WORKING GROUP PL/B

The annex contains a draft Recommendation requesting certain studies to be carried out by CCIR.

The delegations of France and Saudi Arabia reserve their position with regard to "invites the ICAO", where they feel strongly on the additional invitation to ICAO to draw relevant conclusions with regard to airborne equipment.

The procedural mechanism by which the results of the studies should be incorporated in the agreement has been discussed. The Sub-Working Group, however, is of the opinion that this matter is beyond its competence. It therefore suggests to bring this matter to the attention of Committee 5.

E. GEORGE  
Chairman of the  
Technical Sub-Working Group PL/B

Annex : 1

ANNEX

DRAFT RECOMMENDATION GTECH/1

Relating to the Compatibility Between the Aeronautical  
Radionavigation Service Operating in the  
Frequency Band 108 - 117.975 MHz  
and the FM Broadcasting Service Operating  
in the Frequency Band 87.5 - 108 MHz

The Regional Administrative Conference for FM Sound Broadcasting in the  
VHF Band (Region 1 and certain countries concerned in Region 3), Geneva, 1984,

considering

- a) that this Conference has prepared a frequency plan for the broadcasting service taking account of compatibility with the aeronautical radionavigation service in accordance with Recommendation 704 of the World Administrative Radio Conference, Geneva, 1979;
- b) that for these purposes the Conference has established protection criteria based on the report of the first session of this Conference held in 1982, on recent CCIR studies and on proposals made to the second session of this Conference by administrations;
- c) that the ICAO has agreed Standards relating to the immunity performance of future ILS and VOR receivers with an applicability date of 1 January 1998 in which basic performance requirements for intermodulation and desensitization have been incorporated;
- d) that the aeronautical radionavigation service is a safety service, and ILS and VOR facilities provide important guidance to aircraft at critical points in their operation;

noting

that this Conference was unable to arrive at final conclusions on some of the compatibility criteria and that refinements of the criteria will assist in some cases in the implementation and modification of the plan;

requests the CCIR

to continue to study the question of compatibility between the aeronautical radionavigation service and the broadcasting service in the bands concerned, in particular :

- a) protection ratio values for future airborne receivers against spurious emissions from broadcasting stations (referred to as A1 type of interference) for cases where the frequency of the spurious emissions does not coincide with the aeronautical frequency;
- b) protection ratio values for present and future receivers against out-of-band emissions from broadcasting stations (referred to as A2-type of interference);



- c) criteria for prediction of third order intermodulation (referred to as B1-type of interference) generated in airborne receivers by three unwanted signals, when the receiver meets the ICAO Standard for two-signal intermodulation performance for future receivers;
- d) the effect of sinusoidal modulation of the broadcasting transmitters during test and line up and to recommend any precautions or procedures at broadcasting stations necessary to maintain the agreed protection of the aeronautical service;

invites the ICAO

to continue its study of these problems and communicate the results of these studies to the CCIR;

requests the Secretary-General

to communicate this Recommendation to the ICAO;

recommends

that administrations participate actively in these studies and provide the CCIR with expert guidance on this matter.

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 88-E

7 November 1984

Original : English

Source : DT/13

COMMITTEE 4

## FIRST REPORT OF WORKING GROUP 4C

The Working Group 4C held its first meeting on 5 November 1984. As a result of the discussions in this meeting, the following is proposed to Committee 4 for approval.

2.1 At the request of delegates of Afghanistan, Turkey and the USSR, the Group agreed that they may not form part of Working Group 4C. Afghanistan expressed the wish to form part of Working Group 4D.

2.2 The delegate of Israel agreed to form part of the Working Group 4B only, provided Jordan is moved to that Group from the Working Group 4C. Jordan has agreed to move to the Working Group 4B.

2.3 The Group proposes that Djibouti, Egypt, Ethiopia, Sudan and Somalia should not form part of Working Group 4C. All these countries are already included in the Working Group 4A. As a result of this change, Yemem Arab Republic and Yemen (PDR of) should be included in Working Group 4A in addition to being in Working Group 4C.

3. The Group discussed problems relating to the working methods and the procedures for the preparation of the Plan. This discussion also raised some question relating to the Forms 1 and 2 shown in the Document DT/10. The explanations provided by the IFRB representative were helpful in understanding these forms.

H. AL-KINDY  
Chairman of Working Group 4C

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Corrigendum 1 to  
Document 89-E  
14 November 1984  
Original : English

TECHNICAL WORKING GROUP  
OF THE PLENARY

## United Kingdom

### AERONAUTICAL COMPATIBILITY ASPECTS

#### FINAL ACTS MATERIAL

- A. Annex, page 3, § 4.1 i) should be replaced by :
- "i) Standard test points are shown on the service volume diagram given in Figure 1. When the broadcasting station is within, or close to, this service volume, additional test points should be selected to ensure that the service volume is protected;"
- B. § 4.2 i) should be replaced by :
- "i) test points should be selected such as to protect the service volume promulgated in the official aeronautical documents of the country concerned but modified by radio horizon effects at the lower flight levels;"

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 89-E  
8 November 1984  
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TECHNICAL WORKING  
GROUP OF THE PLENARY

## United Kingdom

### AERONAUTICAL COMPATIBILITY ASPECTS

#### FINAL ACTS MATERIAL

#### 1. Introduction

The Final Acts of a planning conference normally define the criteria on which the Plan has been prepared. Further, the modification procedure by which the Plan may be amended at a later date is also a necessary inclusion. In respect of aeronautical compatibility it is therefore necessary to include common agreed standards for protection which can be used by administrations in their internal work and in their negotiations with other administrations.

Further study areas have been identified by the CCIR and ongoing work within CCIR is expected to add refinements and additions to that presently agreed to be mature. Provision should therefore be made for administrations, in later modifications to the Plan, to make use of this work.

#### 2. Proposal

Based on the foregoing, the United Kingdom puts forward the material in the annex as material for inclusion in the Final Acts of this Conference.

Annex : 1

ANNEX

PROPOSAL 1 : PLAN PREPARATION

Compatibility between the broadcasting service in the band  
87.5 to 108 MHz and the aeronautical services in the bands  
108 to 117.975 MHz

1. Procedural basis

1.1 The protection criteria contained in this section have been agreed for use in the assessment of compatibility between the broadcast services in the band 87.5 - 108 MHz, and the aeronautical services in the band 108 - 117.975 MHz.

1.2 Use of the coordination contour method, as specified in section 3, has been made in the determination of a potential conflict between the broadcast stations of one country and the aeronautical services of another country. In such cases resolution has been effected through bilateral and multilateral negotiations between the administrations concerned.

1.3 Where the stations of the broadcast service and the aeronautical service belong to one and the same country, the assessment and resolution of conflicts have been made by the administration concerned.

2. Interference mechanisms

2.1 Type A interference - Due to radiation at frequencies in the aeronautical band

These comprise the following :

- 1) Type A1 : Intermodulation or other spurious products radiated from the broadcast station
- 2) Type A2 : Broadcast sideband interference to the frequencies in the aeronautical band immediately above the band edge of 108 MHz

2.2 Type B interference - Due to radiation at frequencies outside the aeronautical band

These comprise the following :

- 1) Type B1 : Intermodulation generated in the receiver
- 2) Type B2 : Desensitization in the RF section of the receiver

3. Coordination contour

3.1 For types A1, A2 and B2 interference a coordination contour is defined by circles of 125 km radius around all the test points of each radionavigation station. Calculation of the interfering field strength at each test point from all broadcast stations within the contour then permits the identification of those broadcasting stations which need a detailed consideration.

3.2 For type B1 interference the coordination contour is defined by circles of 500 km around all test points of each radionavigation station. Broadcasting stations outside this contour are considered as not being likely to affect the aeronautical service and need not therefore be considered.

4. Aeronautical service parameters to be protected

4.1 Instrument landing systems

- i) the protected service volume is as indicated in Figure 1;
- ii) a field strength of 40  $\mu\text{V/m}$  (32 dB  $\mu\text{V/m}$ ) over the whole of the service volume specified above.

4.2 VHF omnidirectional range (VOR)

- i) the protected service volume should be that volume promulgated in the official aeronautical document of the country, as modified by radio horizon effects at the lower flight levels;
- ii) a field strength of 90  $\mu\text{V/m}$  (39 dB  $\mu\text{V/m}$ ) over the service volume specified above.

5. Protection criteria

Note - The protection criteria specified below relate to the case where the broadcast station location is situated outside the service volume of the aeronautical service as defined above. Special considerations apply in cases where the broadcast station is located within the service volume, where, dependent on operational conditions, higher protection values than those below may be necessary. These will be decided by the administration concerned.

5.1 A1 type interference

		<u>Protection ratio</u>
<u>ILS and VOR</u>	at channel coincidence	17 dB
	at $\pm 50$ kHz	10 dB
	at $\pm 100$ kHz	-4 dB
	at $\pm 150$ kHz	-19 dB
	at $\pm 200$ kHz	-38 dB

5.2 A2 type interference

ILS and VOR

$\Delta f$ (kHz)	Protection ratio (dB)
150	-41
200	-50
250	-59
300	-68

5.3 B1 type interference (existing receivers)

In the formulae quoted below the following conventions apply :

$f_1, f_2$  and  $f_3$  : broadcasting frequencies (MHz) where  $f_1 > f_2 > f_3$

$f_a$  : frequency of aeronautical service

$\Delta f_N$  :  $(108.1 - f_N)$  in MHz

$N_1, N_2, N_3$  : level of  $f_1, f_2$  or  $f_3$  in dBm

ILS and VOR

<u><math>f_1</math></u>	<u>Condition for compatibility</u>
107.7 - 108.0	$2N_1 + N_2 + 120 < 0$ (two signal case)
107.7 - 108.0	$N_1 + N_2 + N_3 + 126 < 0$ (three signal case)
below 107.7	$2(N_1 - 20 \log(\Delta f_1/0.4) + N_2 - 20 \log(\Delta f_2/0.4) + 120 < 0$ (two signal case)
below 107.7	$N_1 - 20 \log(\Delta f_1/0.4) + N_2 - 20 \log(\Delta f_2/0.4) + N_3 - 20 \log(\Delta f_3/0.4) + 126 < 0$ (three signal case)

### B1 offset

In the formula above, where the intermodulation product appears on a frequency offset from that for channel coincidence three times the following additional attenuation is subtracted from the constant (120 or 126).

+50 kHz : 2 dB

+100 kHz : 8 dB

+150 kHz : 16 dB

+200 kHz : 26 dB

### 5.4 B1 type interference (improved receivers)

The conventions used in the formula below are the same as those applying in section 5.3 above.

### ILS and VOR

<u><math>f_1</math></u>	<u>Condition for compatibility, two signal case</u>
-------------------------	---

107.7 - 108	$2N_1 + N_2 + 72 < 0$
-------------	-----------------------

below 107.7	$2N_1 + N_2 + 3 (24 - 20 \log \Delta f_1 / 0.4) < 0$
-------------	--

### 5.5 B2 type interference (existing receivers)

### ILS and VOR

The maximum permitted level of the broadcasting signal at the receiver input is in accordance with the following (falling linearly between successive points).

<u>f(MHz)</u>	<u>Max. Level</u>	(dBm)
107.9	-20	
106.0	-5	
87.5 - 100	+10	

### 5.6 B2 Type Interference (Improved receivers)

<u>f(MHz)</u>	<u>Max. Level</u>	(dBm)
107.9	-10	
106.0	+5	
104.0	+10	
87.5 - 102	+15	



6. Additional airborne system losses

The following additional losses due to antenna, feeders, couplers, etc., is taken into account in assessments for ILS and VOR :

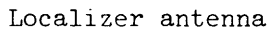
3.5 dB plus 1 dB per MHz from 108 to 100 MHz and then

0.5 dB per MHz below 100 MHz

PROPOSAL 2 : PLAN MODIFICATION PROCEDURES

In addition to broadcast-to-broadcast compatibility, administrations submitting proposals for amendments to the Plan should take account of the compatibility with the aeronautical services within their own country and also those aeronautical services operated by other countries where an incompatibility may exist. The latter case is covered by Article [3] of the Agreement.

As to the former, where the incompatibility exists between the broadcast stations of one country and the aeronautical services of the same country, it will be necessary for that administration to take account of any conflict and the necessary resolution before the submission of their proposal. The administration in so doing is recommended to apply the protection criteria specified at Section [ ] of these Final Acts together with any later refinements and additions recommended by the CCIR. The administration may use the calculation and assessment methods recommended by CCIR, or any other they consider useful in individual conflict cases.



- (A, B, C, D) : test points for the ILS localizer

\* (h) : altitude to be indicated by the Administration (see paragraph, 6.3, Annex J)

FIGURE 1

ILS localizer protection volume

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 90-E  
8 November 1984  
Original : French  
English  
Spanish

Note by the Secretary-General

SECRETARIAT OF THE CONFERENCE

Secretary of the Conference	: Mr. J. Jipguep, Deputy Secretary-General
Executive Secretary	: Mr. R. Macheret
Technical Secretary	: Mr. M. Harbi
Administrative Secretary	: Mr. J. Escudero
Plenary Meeting and Committee 1 (Steering)	: Mr. J. Francis
Committee 2 (Credentials)	: Mr. R. Macheret
Committee 3 (Control Committee)	: Mr. V. Muccioli
Committee 4 (Planning)	: Mr. D. Schuster
Committee 5 (Agreement and Procedures)	: Mr. J. Fonteyne
Committee 6 (Editorial)	: Mr. P.A. Traub
Technical Group of the Plenary	: Mr. O. Villanyi
Operational support for Computer services	: Mr. H. Allebroeck

These officials will be assisted as necessary by others seconded from ITU Headquarters.

R.E. BUTLER  
Secretary-General

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 91-E

8 November 1984

Original : English

## CONFERENCE CHAIRMANSHIP

(as established by the first and fourth Plenary Meetings)

- Chairman of the Conference : Miss M. HUET (France)
- Vice-Chairmen of the Conference : Mr. H. GÖTZE (German Democratic Republic)  
Mr. F. IMOUNGA (Gabon)  
Mr. H.Y. AL-KINDY (Oman)  
Mr. M.S. BCHINI (Tunisia)
- Committee 1  
Steering : (composed by the Chairman and Vice-Chairmen of  
the Conference and of the Chairmen and  
Vice-Chairmen of the other Committees and the  
Technical Working Group of the Plenary)
- Committee 2  
Credentials : Chairman : Mr. J. SZÉKELY (Hungary)  
  
Vice-Chairman : Mr. M.S. DIALLO (Guinea)
- Committee 3  
Budget control : Chairman : Mr. F. MOLINA NEGRO (Spain)  
  
Vice-Chairman : Mr. A. ISAEV (USSR)
- Committee 4  
Planning : Chairman : Dr. I. STOJANOVIĆ (Yugoslavia)  
  
Vice-Chairman : Mr. H.K. AL SHANKITI  
(Saudi Arabia)
- Committee 5  
Agreement and Procedures : Chairman : Mr. K. OLMS  
(Federal Republic of Germany)  
  
Vice-Chairman : Mr. K. YAO (Ivory Coast)
- Committee 6  
Editorial : Chairman : Mr. H. BERTHOD (France)  
  
Vice-Chairmen : Dr. A. MARSHALL (United Kingdom)  
Mr. L. CHAMORRO SANTA CRUZ  
(Spain)
- Technical Working Group  
of the Plenary : Chairman : Mr. J. RUTKOWSKI (Poland)  
  
Vice-Chairman : Mr. J.P. KIMANI (Kenya)

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Corrigendum 1 to  
Document 92-E  
9 November 1984  
Original : English

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COMMITTEE 4

Please replace § 10, page 2, of Document 92 by the following :

"10. Those points which are located in the sea beyond a distance of about 40 km shall not be initially used for assignment of frequencies according to item 8 above. However, they may be used mainly for the cases where a high level of interference exists and, in exceptional cases, for countries not having a sufficient number of lattice points subject to the agreement of other administrations concerned."

H. AL-KINDY  
Chairman of Working Group 4C

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 92-E  
8 November 1984  
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COMMITTEE 4

SECOND REPORT OF WORKING GROUP 4C

The Working Group has adopted guidelines for planning in the area concerned. These guidelines are enclosed as an annex to this document.

Different approaches to planning, as proposed by the participants in the meetings, are presently under examination by the Group. The Group expects to take a definite decision in this respect soon.

The participants feel that special consideration should be given to the needs of the Group by the IFRB. This is justifiable on the basis of the change in the propagation data, which has resulted in considerable delay for the work of the Group. It is, therefore, necessary that the Group should have at its disposal the feasibility of partial analysis as well as the possibility to amend on a trial basis its dedicated inventory file. All possible arrangements by the IFRB, to this effect, would be helpful.

H. AL-KINDY  
Chairman of Working Group 4C

Annex : 1

ANNEX

GUIDELINES FOR PLANNING IN THE FM BAND IN THE AREA  
FROM THE SHATT-AL-ARAB TO AND INCLUDING THE GULF OF OMAN

1. The CCIR has included in its report to the Second Session of the FM Conference a method for calculating interferences in the FM band for the area under consideration. This method was adopted in the meeting of IWP 5/5 held early May 1984 in Geneva.
2. Based on this method, the Administrations of the Republic of Iraq and Iran (Islamic Republic of) have undertaken two studies for interference calculations of FM requirements of the countries concerned. It was found from the results of both calculations that the levels of interference in the area are so high that any coordination criteria would be impossible to implement unless dramatic changes and modifications are made on the requirements.
3. An area should be covered from one site for a specific programme. To begin with, a reference usable field strength of the order of 66 dB( $\mu$ V/m), calculated on the basis of Document 61, may be used for that purpose.
4. A nuisance field strength of the order of 60 dB( $\mu$ V/m) shall be used for coordination.
5. The directivity of transmitting antennas should be such that only the required coverage areas are achieved. The use of non-directional antenna patterns should be kept to a minimum.
6. The topographic factors can be taken into account in the bilateral or multilateral coordination.
7. In order to reduce co-channel interferences, the maximum number of frequencies at each site should be limited to (3) three.
8. With regard to the lattice points which are located around or at the border lines or in the sea, it is concluded that :
  - a) those points which are located within the territory of any administration concerned should be used by that administration only;
  - b) those points which are located right on the border of any administration or a group of administrations should be shared by the administrations concerned;
  - c) those points which are located in the sea within a distance of about 40 km from any administration's territory can be used by that administration(s) only.
9. For all the stations which are located within a distance of 200 km from the sea, § 7 referred in above shall be applied.
10. Those points which are located in the sea beyond a distance of about 40 km and have not been used by the administrations, can be utilized for those stations which are co-channels or adjacent channels, and which suffer high levels of interference.

11. To consider the range at the end of the FM band from 103.8 to 104.2 MHz and 107.4 to 107.9 MHz (11 frequencies) may be used for low-power channels (those whose effective radiated power is less than 100 Watts).

This measure is meant also to protect the aeronautical services. It is imperative that the rest of the band can also be used for low-power channels.

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INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

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20 November 1984  
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PLENARY MEETING

MINUTES

OF THE

FOURTH PLENARY MEETING

Thursday, 8 November 1984, at 1400 hrs

Chairman: Miss M. HUET (France).

Subjects discussed:

Documents

- |   |                   |
|---|-------------------|
| 1. Election of officers of the Conference                                   | -                 |
| 2. Death of Mr. C. Nogbou (Ivory Coast)                                     | -                 |
| 3. Corrections to the first report of the Technical Working Group           | 85                |
| 4. Second report of the Technical Working Group                             | 74                |
| 5. Third report of the Technical Working Group                              | 86                |
| 6. Procedures for preparing the Plan  | 78                |
| 7. Oral reports by Committee Chairmen on the progress of work of Committees | -                 |
| 8. Approval of the Minutes of the first and second Plenary Meetings         | 38 + Add.1,<br>63 |
| 9. Indication of requests by non-participating countries                    | -                 |

1. Election of officers of the Conference

1.1 The Chairman said that the following proposals had been made for the two officers of the Conference still to be elected:

Vice-Chairman of the Conference: Mr. M.S. BCHINI (Tunisia)

Vice-Chairman of Committee 5 : Mr. K. YAO (Ivory Coast)

In addition, Dr. I. STOJANOVIC (Yugoslavia) had agreed to be nominated as Chairman of Committee 4 in replacement of Mr. G. THIAM (Senegal), who had been unable to attend the Conference.

Those proposals were approved.

2. Death of Mr. C. Nogbou (Ivory Coast)

The Chairman announced her regret at having to inform the Conference of the death in the Ivory Coast, following an accident, of Mr. Christophe NOGBOU, Engineer-in-Chief of Telecommunications and Inspector-General of Posts and Telecommunications of the Ivory Coast. Mr. Nogbou had attended the opening of the Conference, and had recently been elected a Vice-Chairman of the World Plan Committee by the Plenary Assembly of the CCITT. She invited the meeting to join her in offering their sincere condolences to the delegation of the Ivory Coast and to the family of Mr. Nogbou.

3. Corrections to the first report of the Technical Working Group (Document 85)

3.1 The Chairman of the Technical Working Group, introducing Document 85, said that the first correction proposed took account of a number of comments made by delegates at an earlier Plenary Meeting. The second had been required because IFRB used free space propagation curves for the relevant calculations.

In reply to the Chairman of the Editorial Committee, he said that despite the proposed change of text for section 2.2, Figure 2.9 on page 15 of the first report (Document 61) should be retained provisionally as there were references to it elsewhere. The case for suppression of the figure would be considered when the Working Group had completed all its other work.

Document 85 was approved.

4. Second report of the Technical Working Group (Document 74)

4.1 The Chairman of the Technical Working Group introduced Document 74 and drew attention to editorial corrections to certain page headings.

4.2 In reply to a query from the Chairman on the need to retain the words "at the second session of the Conference" in the second line of text on page 2, the delegate of Denmark, supported by the delegate of Yugoslavia, said that the restriction of the values concerned to planning at the second session had been a deliberate compromise made to accommodate differing views in the Working Group.

Document 74 was approved as editorially amended.

5. Third report of the Technical Working Group (Document 86)

5.1 Replacement for section 3

5.1.1 The Chairman of the IFRB said that it was the Board's understanding that the coordination contour criteria set out in the new text for section 3 were only to be used for planning during the second session of the Conference. The meeting should note that two problems of substance would arise should it be wished to extend those criteria to future modifications to the Plan as well. Firstly, in the case of interactions between broadcasting stations, the coordination distance or contour would, in line with the results of discussion in Committee 5, take account of country frontiers and not station service zones. Secondly, if the test points for aeronautical radionavigation stations were to be taken into consideration after the Conference they would need to be listed elsewhere.

5.1.2 The Chairman of the Technical Working Group said that those aspects of the matter had not yet been raised in the Working Group.

5.1.3 The Chairman of Committee 5 said that the concept of a modification procedure based on the distance principle had so far only been decided on in Working Group 5A. Further detailed discussion of the matter would obviously still be required.

5.1.4 The Chairman proposed that the Chairmen of the Technical Working Group, Committee 5 and Working Group 5A should jointly work out a common approach to the matter for proposal to the Conference.

It was so agreed.

The replacement text for section 3 was approved on that understanding.

5.2 Replacement text for section 5.2

5.2.1 With regard to section 5.2.2.3, the Chairman of the Technical Working Group drew attention to the footnote and said the Working Group referred the question of the date to be inserted in the text to the Plenary.

5.2.2 The Chairman said it was not yet clear whether the Conference itself, as a regional meeting, was competent to take a decision on a matter that would have world-wide implications. She proposed that, pending consultations, the place for insertion of the date should be placed in square brackets and the decision postponed to a subsequent Plenary.

It was so decided.

5.2.3 With regard to the first line of section 5.2.3.1.1, the Chairman of the IFRB said that the word "existing" was open to misinterpretation. Existing stations could be stations in the Master Frequency Register (which might or might not be in service); stations notified to the Conference (which might or might not be in service); or stations actually in service (which need not necessarily be in the Master Frequency Register or notified to the Conference).

5.2.4 The delegate of France said that the misunderstanding rather arose at the level of the word "equipment". The reference was not to the ground transmitters that had to be notified to the Board for inclusion in the Master Frequency Register but to the receivers carried in aircraft, which were not subject to such notification. To make the point clear, he proposed that the word "equipment" be replaced by "airborne receivers".

5.2.5 The delegate of the United Kingdom in support of that proposal said that the word "existing" was intended to denote all airborne equipment in service up to the date to be inserted in section 5.2.2.3. Equipment coming into use after that date would be denoted by the term "future equipment".

5.2.6 The Chairman of the Technical Working Group said, in further clarification, that recent ICAO work and decisions were expected to lead to improvements in airborne equipment in the future. That was why it was considered necessary to specify that the detailed parameters set out in section 5.2.3.1.1 applied to existing equipment only.

The French proposal was approved.

5.2.7 The Chairman of the Technical Working Group said that the reference "a)" on the third line of section 5.2.3.1.1 had been inserted in error and should be deleted.

5.2.8 The Vice-Chairman of the IFRB queried the advisability of that deletion as it might be misleading. In the case of A1 a) interference, frequency differences over 200 kHz need not be considered. However, for the normal spurious emissions A1 b), it is assumed that there is always a spurious emission on the frequency of the aeronautical station, regardless of the frequency difference between the aeronautical station and the broadcasting station.

5.2.9 The Chairman of the Technical Working Group PL/B said that from the point of view of the airborne receiver the effect of both types of A1 interference (as defined in section 5.2.3.1.3) was the same. However, for convenience, because the frequency of the spurious emission of category b) is usually unknown, the worst case, i.e. a frequency difference of 0 kHz has to be assumed in the calculation. Even if the frequency were known, this spurious emission would not be considered for frequency differences greater than 200 kHz. Therefore, the statement in section 5.2.3.1.1 without the reference to "a)" is correct. Its restriction to category a) would be misleading if not wrong.

On that understanding, it was agreed to delete the reference "a)" in section 5.2.3.1.1.

5.2.10 With reference to section 5.2.3.1.2, the Chairman of the IFRB said that the words "the most powerful transmitter is taken as the reference" on the last line were understood by the Board to mean that it would be the characteristics of the most powerful transmitter that would be used for the calculations.

5.2.11 In agreeing with that interpretation, the Chairman of the Technical Sub-Working Group PL/B said a reference value was needed for applying the attenuation value for the spurious component. In the case of two or three contributing transmitters to the intermodulation component under consideration it was necessary to know the power level that applied. As an editorial improvement he proposed the addition of the words "in paragraph 5.2.3.1.3" between the words "category a)" and "below".

5.2.12 With reference to section 5.2.3.1.4, the representative of the IFRB said that the meaning of the sentence would be made clearer if the words "due to lack of input data required" were replaced by "due to lack of the necessary data".

It was so agreed.

The replacement text for section 5.2, as amended in the course of discussion, was approved.

6. Procedures for preparing the Plan (Document 78)

6.1 The Chairman drew attention to the change in the timing of the distribution of the second analysis from Monday, 19 to Tuesday, 20 November, due to the increase in the number of entries and corresponding calculations.

Replying to a question raised by the delegate of the United Kingdom she explained that the later dates indicated in sub-paragraph 1.6 for the submission of Form 1 had been provided to allow for negotiations on possible late entries or on objections to the inclusion of certain stations. It was highly desirable from the Board's point of view, however, for Form 1 to be filled in and submitted by 1700 hours on Friday, 9 November.

6.2 The delegate of France pointed out that details regarding compatibility problems with aeronautical stations could not be provided by the following day since the relevant IFRB analysis was not yet complete.

6.3 The delegate of the Islamic Republic of Iran asked whether all categories of interference would be included on that print-out or whether administrations would have to work out some categories for themselves.

6.4 The Vice-Chairman of the IFRB said that the analysis included A1, except the intermod part because of lack of data, A2, B1 and B2. Since decisions on technical standards relating to the aeronautical incompatibility had only just been taken, the analysis was based on the standards valid at the beginning of the Conference. The new standards would be included in the next analysis.

6.5 The delegate of the Islamic Republic of Iran asked whether in view of the foregoing statement, aeronautical broadcasting incompatibilities were to be included on the form.

6.6 The Chairman replied that that decision had to be left to each administration, but it would clearly be in the interests of all if cases that could be identified at the present stage were included immediately.

Form 2 would be prepared by the Board on the basis of Form 1, and would indicate those administrations with which coordination was necessary and whose signature was required on agreement. A station would only be considered settled once all the necessary signatures had been obtained. Where signatures were lacking, a second version of the form would be distributed and there would be a final version of the form at the time of the last analysis.

Coordination could continue until the Plan was read, and those cases not settled by then would be listed separately and included with the final print-out. Particular attention was drawn to the 15 November deadline for submission of modification forms, which had to be taken into account for Form 2.

6.7 The delegate of the Islamic Republic of Iran said that in the course of discussions in Committee 4, a proposal had been made and supported that the 15 November deadline for the submission of modifications be extended by 72 hours to enable the eight administrations affected by newly established criteria to revise their requirements for the Plan.

6.8 The Chairman of the IFRB pointed out that the five days between the deadline for modifications and distribution of the second analysis had been very carefully calculated to allow time for all the necessary data input work resulting from the large number of modifications of the first run of calculations. If a 72-hour extension were allowed, the calculations could not be done over the weekend when the two ITU computers were available, and they would consequently take much longer than five days. If the entire process were delayed by a week to 22 November, in order to take advantage of the two ITU computers the following weekend, administrations would have very little time for coordination.

6.9 The Chairman of Planning Group 4C said that the eight countries concerned needed an extension of the deadline and also needed to have a computer at their disposal during the entire period of the calculations, since the new criteria had made their situation very different from that of other countries.

6.10 The delegate of the United Kingdom suggested that the Gulf area calculations be separated from the main body of the Conference calculations, to avoid holding up the main work of the Conference.

6.11 The delegate of Iraq supported the suggestions of the two previous speakers. The Gulf area had been put at a great disadvantage compared with other areas, because the analysis bore no relation to the prevailing facts. As a result, the countries of the area were two weeks behind with their work.

6.12 The delegate of Israel said that eastern Mediterranean countries were facing the same difficulties as the Gulf area on account of the new curve that had been worked out.

6.13 The Chairman of the IFRB explained, as he had at the first Plenary Meeting, that the estimated calculation time for the Plan had been put at some 40 hours on the fastest machine (machine A). That time had been substantially increased on account of the increase in requirements, but exactly by how many hours was not known. Machine A could only be used at night, and had been reserved for calculations for the whole Conference, whereas machine B had to be shared with other ITU users and was only available for two days for partial calculations. A partial calculation for the Gulf area could take from six to eight hours on machine B. Three partial calculations had already been planned because they were essential for the work of the Conference. A partial calculation might be done for the countries in Planning Group 4C, but only after the second analysis and if there was then time available. The Board would nevertheless study the Gulf area's request but could not commit itself until the situation following the second analysis was known. An answer could probably be given when the partial file had been prepared, which would probably take a day after submission of a precise request. It may be very difficult if not impossible to add a further partial calculation for another Planning Group.

6.14 The Chairman suggested that the Chairman of Planning Group 4C should contact the Chairman of the IFRB direct once his Group had decided on the precise requirement.

6.15 The delegate of Spain asked whether the Board intended to publish on microfiche an up-to-date list of requirements, with characteristics of all transmitters, including modifications and additions submitted by 2 November, since those data would be used as a basis for coordination between administrations.

6.16 The Chairman of the IFRB replied that an up-to-date list had already been published, but at the request of some delegations there would also be a separate microfiche publication showing modifications and additions.

6.17 The Chairman, replying to a question put by the delegate of Algeria, said that the status of the recapitulative list referred to in section 3 of the document would be determined by Committee 4.

6.18 The delegate of Italy suggested that instead of a list, a note might be adequate, indicating which countries still had unresolved compatibility questions. He also wondered when the IFRB analysis of the aeronautical service would be distributed, since the information was needed for Form 1.

6.19 The Chairman said that the question of the list would be studied by Committee 4 and section 3 amended accordingly. The IFRB list of aeronautical calculations would probably be distributed the following morning, but as that did not allow enough time to study all cases, statements would have to be added to Form 1 later on.

6.20 The delegate of the Islamic Republic of Iran said that although he appreciated the need for decisions to be taken by the Plenary, it was not appropriate for the Plenary to discuss a document without it first being examined by the appropriate Committee, by Committee 4 in the case of Document 78. He therefore proposed that except where deadlines were absolutely necessary, that procedure be followed in the future.

6.21 The Chairman said that Committee 4 could make additional proposals provided that the deadlines indicated on the document were observed. The calculation times could not be reduced, and Committee 4 would have to take that fact, and the data capture time, properly into account.

## 7. Oral reports by Committee Chairmen on the progress of work of Committees

7.1 The Chairman of Committee 2 said that the Committee, at its first meeting, had formed a small Working Group consisting of the Committee Chairman, Vice-Chairman and the delegates of Algeria, Austria and the Islamic Republic of Iran. That Group had met on 6 November and had verified all credentials deposited with the Secretariat. Some 50 credentials had been examined and all had been found to be in order. The Group had noted that some 20 delegations had not yet deposited their credentials and those delegations would be contacted by the Committee Secretary.

7.2 The Vice-Chairman of Committee 3 said that Committee 3 had examined the Conference budget, and had considered that the situation was in order. However, he drew the attention of the Chairmen of Committees 4 and 5 to the fact that any decisions taken by their Committees should take account of the financial implications for the Union.

7.3 The Vice-Chairman of Committee 4 said that Committee 4 was now divided into four Planning Groups, three of which had been subdivided into smaller Groups. All the Groups had held three meetings. It had been decided that the field strength to be used for Form 1 should be 60 dB( $\mu$ V/m). Coordination between administrations was in progress and some positive results had already been obtained.

7.4 The Chairman thanked the Vice-Chairman of Committee 4 for undertaking the chairmanship of that Committee and so capably organizing the Working Groups, a task which had not been envisaged for him as Vice-Chairman.

7.5 The Chairman of Committee 5 said that each of the two Working Groups had met twice. Group 5A had discussed the Agreement and in particular the modification procedures for the Plan. Group 5B was discussing the interim procedures, using a document outlining the discussions on the relationship between primary and permitted services, and it was to be hoped that satisfactory procedures would be developed. Committee 5 would coordinate with the Technical Working Group on certain aspects regarding the technical bases necessary for the development of those procedures.

7.6 The Chairman of Committee 6 said that so far his Committee had not received any document from the Committees or from the Plenary but had considered it wise to start its work unofficially on certain documents so as not to lose time. It had accordingly worked on the text on propagation which was to be annexed to the Final Acts. That text might require further modification, particularly in the light of technical decisions. Once texts were fairly advanced, even if not officially submitted, the Editorial Committee would work on drafting aspects and leave other parts until later.

7.7 The Chairman of the Technical Working Group said that his Group was on the point of concluding its work on the most urgent problems concerning the IFRB. Sub-Group A had virtually finished and was to be thanked for the document presented and adopted in the Plenary. Sub-Group B had also finished most of its work, part of which had just been adopted by the Plenary. One recommendation was outstanding, and that would be examined and approved the following day. Sub-Group C working on the fixed and mobile services was still discussing matters, but its work had no direct impact on planning. Its work should nevertheless be completed early the following week and the results submitted for approval by the main Group prior to presentation to the Plenary. Certain technical problems might have to be settled with Committee 5, however, and the Technical Group would be available for coordination if required.

8. Approval of the Minutes of the first and second Plenary Meetings  
(Documents 38 + Add.1 and 63)

The Minutes of the first Plenary Meeting (Documents 38 + Add.1) were approved, as amended (see Corrigendum 1 to Document 38).

The Minutes of the second Plenary Meeting (Document 63) were approved as amended (see Corrigendum 1 to Document 83).

9. Indication of requests by non-participating countries

9.1 The Chairman said that telegrams had been sent to countries not represented asking for an indication of their requests by 2300 hours on Monday, 5 November. Replies had been received from four countries: Bahrain had indicated 11 stations and frequencies, Niger had indicated 24 stations, Burundi had indicated six frequencies, and Mauritius had indicated nine stations with 54 frequencies, i.e. six frequencies for each station. Those additional requirements would be included in the second analysis.



9.2 The delegate of Algeria said that due to a number of slight frequency changes which had not been taken into account because of an error in the IFRB's first analysis of his Administration's requirements, the IFRB had made a partial analysis which would probably have some effect on the plans of other administrations in the western and central Mediterranean areas. The countries concerned should therefore be provided with that partial analysis, and he wondered when it might be available.

9.3 The Chairman of the IFRB suggested that the results of the partial analysis could be published soon on microfiche.

It was so agreed.

9.4 The delegate of the Islamic Republic of Iran said that his Administration had found 13 material errors which had been brought to the attention of the IFRB for appropriate action.

9.5 The Chairman assured the delegate of the Islamic Republic of Iran that appropriate action had been taken.

9.6 The delegate of Italy, supported by the delegate of Tunisia, said that a certain number of modifications submitted by 2 November had not been taken into account. He wondered whether all modifications would be on the microfiche that would be distributed the following day.

9.7 The Chairman of the IFRB requested all delegations who had found errors to contact the Technical Secretary to make sure that they were taken into account for publication the following day. The Board wished to apologize for those errors. Some 3,000 additions and modifications had been dealt with in a very short space of time, and it was hardly surprising that errors had crept in. In addition, since Niger was now participating in the work of the Conference, the Board should be given a proper indication of its requirements.

The meeting rose at 1555 hours.

The Secretary:

J. JIPGUEP

The Chairman:

M. HUET

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 94-E  
8 November 1984  
Original : English

TECHNICAL WORKING  
GROUP OF THE PLENARY

SIXTH REPORT OF SUB-WORKING GROUP PL/B

The annex contains a draft Recommendation requesting certain studies from  
CCIR.

E. GEORGE  
Chairman of the  
Technical Sub-Working Group PL/B

Annex : 1

Source : DT/15

ANNEX

DRAFT RECOMMENDATION GTECH/2

Relating to the Compatibility Between the Aeronautical  
Mobile (R) Service in the Band 117.975 to 137 MHz and  
the FM Broadcasting Service in the Band 87.5 to 108 MHz

The Regional Administrative Conference for FM Sound Broadcasting in the VHF  
Band (Region 1 and certain countries concerned in Region 3), Geneva, 1982/1984,

considering

- a) that VHF air/ground communications perform a vital role in the operation and safety of aircraft which could be prejudiced by interference;
- b) that compatibility problems between the aeronautical mobile (R) service in the band 117.975 to 137 MHz and the FM broadcasting service in the band 87.5 to 108 MHz have arisen in various parts of the world;
- c) that the second session of this Conference did not consider all aspects of compatibility between these two services in the preparation of the broadcasting Plan;
- d) that the CCIR and the ICAO have made studies of the problem and the CCIR has recommended technical criteria which can be used by administrations for coordination between the services concerned;
- e) that the ICAO has agreed Standards relating to the immunity performance of future aeronautical VHF communication receivers with an applicability date of 1 January 1998 in which basic performance requirements for intermodulation and desensitization have been incorporated;

requests the CCIR

to continue the study of the compatibility between these two services from the aspect of possible interference to the aeronautical service;

invites the ICAO

to continue its study of these problems and communicate the results of these studies to the CCIR;

requests the Secretary-General

to communicate this Recommendation to the ICAO;

recommends

that administrations participate actively in these studies and provide the CCIR with expert guidance on this matter.

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INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 95-E  
9 November 1984  
Original : Spanish

NOTE BY THE SPANISH DELEGATION

With regard to the Note by the French delegation in Document 80 of 7 November 1984 concerning the international representation of Andorra, the Spanish delegation feels it necessary to recall that Andorra is a principality under the sovereignty of two co-princes, one of whom is the Bishop of Urgel, Spain. For this reason, the statement that France alone is responsible for the international representation of the principality is not acceptable. In accordance with the facts, the Bishop of Urgel has today empowered the Spanish Government, through its authorities and representatives, to represent him at the second session of the Regional Broadcasting Conference convened in Geneva by the International Telecommunication Union.

In this connection, the Spanish delegation draws attention to the Note which, for the same reason, it submitted to the Broadcasting-Satellite Conference held in Geneva in 1977 (Document 205 dated 2 February 1977), recalling that sovereignty in Andorra is exercised jointly by two co-princes (the Bishop of Urgel and the President of the French Republic) having equal competence both for internal and external affairs and, consequently, entering a formal reservation to the statement by France claiming exclusive representation of the principality of Andorra.

The Spanish delegation requests that this Note should receive identical treatment with that accorded to the French Note.

L. CHAMORRO  
Deputy Head of the Spanish Delegation

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 96-E

9 November 1984

Original : FrenchSource : DT/19COMMITTEE 4

## FIRST REPORT OF PLANNING GROUP 4B TO COMMITTEE 4

Planning Group 4B has held one formal and one informal meeting, during which the following decisions were taken :

- 1) The Group was divided into three Sub-Groups with the following membership :

<u>Sub-Group</u>	<u>Participants</u>	<u>Coordinator</u>
Western Med. (4B1)	ALG, E, F, I, MRC, POR, UK	Mr. J.R. CAMBLOR (E)
Central Med. (4B2)	ALG, F, GRC, I, LBY, MLT, MCO, TUN	Mr. S.A. SALEM (LBY)
Eastern Med. (4B3)	ARS, CYP, EGY, GRC, IRQ, ISR, JOR, LBN, LBY, SYR, TUR, UK	Mr. M.F. YASSIN (EGY)

- 2) The Planning Group also decided to apply as a nuisance field strength reference value of 60 dB( $\mu$ V/m) below which delegations will not enter reservations (Form 1).

A. TOUMI  
Chairman of Planning Group 4B

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 97-E  
9 November 1984  
Original : English

## COMMITTEE 4

### FIRST REPORT OF PLANNING GROUP 4D TO COMMITTEE 4

1. Planning Group 4D has held three meetings and has set up three Coordinating Groups dealing respectively with the north-eastern, western and south-eastern parts of the planning area. These Groups are working informally under the guidance of three coordinators, namely,

4DN Mr. S. Hess (Denmark)

4DW Mr. J. Doeven (Netherlands)

4DS Mr. L. Orešković (Yugoslavia)

The countries mainly involved in each Group are as follows :

4DN - D, DNK, FNL, NOR, POL, DDR, S, URS

4DW - D, BEL, CVA, F, IRL, I, LIE, LUX, MCO, HOL, G, SMR, SUI

4DS - AFG, ALB, D, AUT, BUL, GRC, HNG, I, IRN, MNG, ROU, TCH, TUR, URS, YUG

2. Since certain countries are also involved in other Planning Groups, it has been decided to establish a limit to the planning area on the southern side in the following way.

The boundary line crosses France along the line Bordeaux-Avignon-Toulon. It then passes between the Islands of Corsica and Sardinia and crosses Italy along the line Naples-Taranto. From that point it passes to the south of Greece and Crete and crosses Turkey along the line of the Toros mountains from Antalya to the point where Turkey meets both Iraq and Iran (Islamic Republic of). Finally it crosses Iran (Islamic Republic of) to the corresponding point where it meets both Afghanistan and Pakistan.

### 3. Amendment of Document 58(Rev.1)

At the request of the administrations concerned, it is proposed to delete the names of Malta, Morocco, Tunisia and Portugal from the list of countries concerned with Planning Group 4D as listed in Document 58(Rev.1).

It is also proposed to add the names of Afghanistan and Mongolia to the list of countries for which Planning Group 4D is responsible.

4. In accordance with the terms of reference contained in Document DT/9(Rev.2), coordination will be necessary with Planning Groups 4C and 4B if unresolved problems overlap the line described above. This matter has been discussed and agreed with the Chairmen of the other two Groups concerned. The line has been drawn in such a way as to minimize the number of such problems.

5. The requirements of the Mongolian People's Republic were presented as detailed in Document DT/23. In view of the special circumstances which apply to this case and the fact that the only other administrations which could be affected had indicated support, it was agreed to accept the requirements for inclusion in the Requirements File.

6. Coordination is proceeding between many delegations on a bilateral or multilateral basis and useful results are already being obtained.

A.L. WITHAM  
Chairman

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 98-E  
9 November 1984  
Original : English

COMMITTEE 5

People's Republic of Bulgaria, Hungarian People's Republic,  
People's Republic of Poland, German Democratic Republic,  
Czechoslovak Socialist Republic, Union of Soviet Socialist Republics

## PROCEDURE FOR THE BRINGING INTO SERVICE OF THE FM SOUND BROADCASTING PLAN

In accordance with item 2.3 of the agenda of the second session of the Regional Administrative Conference for FM-VHF sound broadcasting in the band 87.5 - 108 MHz for countries of Region 1 (and certain countries concerned in Region 3), transitional procedures for bringing into service the broadcasting assignments in the Plan should be adopted in order to provide the normal operation of stations of other services using the band 87.5 - 108 MHz according to provisions of the Radio Regulations.

The analysis of requirements on frequency assignments for broadcasting shows, that it is difficult to enable normal operation of stations of permitted services based on accepted regulations, set up for permitted services and described, in particular, in Document 60 of the IFRB (for example, by changing the frequency of permitted service station). This difficulty is caused, on one hand, by high density of station locations and, on the other, by high values of applied field strengths (85 dB and more) of future broadcasting stations.

It is necessary to note, that for the same reasons, some problems arise also in planning of broadcasting itself.

Therefore, below is given the draft Resolution which should be considered by this Conference and included, annexed to its Final Acts.

Annex : 1



ANNEX

RESOLUTION ...

Transitional procedures for bringing  
into service the frequency assignments  
for sound broadcasting in the  
band 104 - 108 MHz, intended to enable normal  
operation of the stations of other services,  
using this band in accordance with  
Radio Regulation 587

The Regional Administrative Conference for FM Sound Broadcasting in the VHF Band  
(Region 1 and certain countries concerned in Region 3),

considering

- a) a great number of planned stations of sound broadcasting in the band 104 - 108 MHz, and high levels of field strength of these stations;
- b) that the frequencies used by the stations of permitted services in the band 104 - 108 MHz are not taken into account in the planning process;
- c) that it is necessary, nevertheless, to establish procedures for implementation of frequency assignments in the Plan for broadcasting in order to ensure normal operation of the stations of permitted services, using the band 104 - 108 MHz in accordance with Radio Regulation 587, as provided in item 2.3 of the agenda of this Conference;
- d) that the service dates of planned broadcasting stations will be determined by administrations taking into account technical and economic considerations;
- e) that it is necessary to ensure rational application of the frequency band 104 - 108 MHz during the whole period of realization of the Plan for broadcasting, and, particularly, in the period up to 31 December 1995;
- f) that high levels of field strength of the broadcasting stations in the band 104 - 108 MHz make it also difficult to enable compatibility between the broadcasting service and aeronautical radionavigation service in the adjacent frequency bands;

resolves

- 1. that during realization of the Plan for broadcasting adopted by this Conference, administrations should take measures in order that the planned stations of the broadcasting service, creating on boundaries of the countries, indicated in Radio Regulation 587, field strengths which do not enable protection of the stations of permitted services according to the protection criteria adopted by this Conference, should be brought into service preferably after 31 December 1995;
  - 2. that in the case, when administrations think it necessary to bring into service the broadcasting station, indicated above in item 1, earlier than 31 December 1995, then the bringing into service of such stations should be subject to the agreement between the administrations concerned.
-

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Corrigendum 1 to

Document 99-E

27 November 1984

Original: English/

French

## COMMITTEE 4

### SUMMARY RECORD

#### OF THE

#### FOURTH MEETING OF COMMITTEE 4

Please replace paragraphs 2.1.2 and 2.1.3 by the following:

"2.1.2 The delegate of Romania agreed to the removal of the square brackets on condition that the characteristics of the stations in question remained strictly in conformity with the Stockholm Agreement 1961 or those to which the procedures of that Agreement had been applied successfully up to the date established by the first session of the Conference.

He also expressed his agreement with the remark by the delegate of the Federal Republic of Germany to the effect that the date, as agreed, was that of 1 December 1983.

2.1.3 The delegate of the USSR agreed to the deletion of square brackets, since low power TV stations which were not included in the Stockholm Plan but were now operating and registered in the IFRB had Stockholm Plan status and, according to Resolution 510, were entitled to protection by means of bilateral or multilateral negotiation."

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 99-E  
13 November 1984  
Original : English

COMMITTEE 4

SUMMARY RECORD  
OF THE  
FOURTH MEETING OF COMMITTEE 4  
(PLANNING)

Monday, 12 November 1984, at 0905 hrs

Chairman : Dr. I. STOJANOVIĆ (Yugoslavia)

Subjects discussed :

Documents

- |  |                            |
|--|----------------------------|
| 1. Summary record of the third meeting of Committee 4                            | 73                         |
| 2. Working methods in the Planning Groups  | DT/10(Rev.1)               |
| 3. Possible clarifications related to the procedures for preparation of the Plan | 78                         |
| 4. Introduction of documents   | 52, 70                     |
| 5. Reports by the Chairmen of Planning Groups                                    | 88, 92 + Corr.1,<br>96, 97 |
| 6. Note from the Chairman of Committee 3   | 81                         |
| 7. Use of new symbol for Burkina Faso  | -                          |

1. Summary record of the third meeting of Committee 4 (Document 73)

1.1 The delegate of Spain said that his country's delegate should be included in those mentioned in § 4.12 of Document 73.

On that understanding, Document 73 was approved.

2. Working methods in the Planning Groups (Document DT/10(Rev.1))

2.1 Paragraph 1.2

2.1.1 The delegate of Yugoslavia, supported by the delegate of Greece, proposed that the square brackets should be removed.

2.1.2 The delegate of Romania agreed, subject to the reservation that station characteristics should remain strictly in conformity with the Stockholm Agreement. In response to an observation by the delegate of the Federal Republic of Germany, he could agree that the deadline for modifications should not be the first session of the Conference, but, as agreed, 1 December 1983.

2.1.3 The delegate of the USSR agreed to the deletion of square brackets, since low-power stations hitherto excluded from the Plan had now acquired the Plan status, according to Resolution 510, and were now entitled to protection by means of bilateral or multilateral negotiation.

2.1.4 The delegate of Algeria said that, although the proposals contained in the IFRB Circular-letter and Annex were to be examined, he had no objection in principle to deleting the square brackets, since the text related to a specific planning area and did not, in principle, apply to others. There was also the reservation to be made that no other planning area should be adversely affected.

2.1.5 The Chairman said he took it that the Committee wished to delete the square brackets from the text of § 1.2.

It was so agreed.

2.2 Paragraph 2.2

2.2.1 The delegates of Italy, Spain and Greece proposed that the entire paragraph should be deleted.

2.2.2 The delegates of Austria, Romania, Switzerland, Portugal, Sweden, Ireland, Syria, Kenya, Tanzania, Iran (Islamic Republic of) and the USSR supported retention, without square brackets, of the first sentence of § 2.2, beginning "Modifications and additions" and ending "on other Planning Groups".

2.2.3 The delegate of the German Democratic Republic agreed, but thought it should be clarified that modifications and additions not settled by 11 November 1984 could be submitted, subject to prior agreement among the administrations concerned - a point which should be stipulated in the final Agreement.

2.2.4 The delegate of Algeria said he had no objection to retention of that sentence but felt that the requisite coordination machinery would be required to determine the administration's concern. Perhaps the Planning Sub-Groups could deal with the matter; the important thing was that small administrations should not have to consult IFRB analyses on every occasion.

2.2.5 The delegate of Italy agreed; he wondered whether the modification concerned would be published by the IFRB, and who would ensure that all administrations had been consulted.

2.2.6 The delegate of Tunisia said that, since there was a difference between modifications submitted before 11 November 1984 and those submitted later, his delegation could agree that the sentence in question should be retained. It also thought that modifications could be accepted even after the Plan had been coordinated.

2.2.7 The delegate of Spain, supported by the delegates of Italy and Greece, said that, since the proposals now being made seemed to conflict with the deadline decision taken at the second Plenary Meeting, the matter should perhaps be referred back to the Plenary Meeting for consideration.

2.2.8 The representative of the IFRB said that a separate publication of modifications could be provided if the Committee so desired.

2.2.9 The delegate of Iran (Islamic Republic of) said that since the deadline mentioned related to uncoordinated submissions, he saw no need to have the matter in question referred back to the Plenary Meeting. He thought that the IFRB should publish not only the list of modifications but also the incompatibility list. With regard to the point raised by the delegate of Algeria, one method would be for administrations concerned in a particular submission to discuss it with a view to signing an agreement among themselves, whereupon the submission could be deemed coordinated.

2.2.10 The delegate of the USSR said he took it that, although the remainder of the draft § 2.2 was to be deleted, its substance, relating to additional requirement for low-powered stations, was understood to be reflected in the text to be retained.

2.2.11 The Chairman said that was so. The observations raised by the delegates of Spain, Italy and Greece in regard to the deadline would be included in his report to the Plenary Meeting.

On that understanding, it was agreed that § 2.2 should consist of 'the sentence beginning "Modifications and additions" and ending "on other Planning Groups".'

### 3. Possible clarifications related to the procedures for preparation of the Plan (Document 78)

3.1 The Chairman said that since Document 78 had been adopted at the previous Plenary Meeting the dates stipulated therein were not subject to alteration. There were five points, in particular, which the Committee should perhaps bear in mind. Firstly, 1200 hours on 23 November 1984 was the ultimate deadline for submission of objections in respect of other countries' stations. Secondly, as from that date, only stations appearing in one of the three versions of Form 1 could be the subject of subsequent negotiations. Thirdly, from 1400 hours on 26 November 1984 it would be possible for a station given in the third version of Form 2 to modify, in principle, the frequency, e.r.p., radiation-pattern diagram and station location, up to the time when the Plan was read out; it would be appreciated, of course, that modifications to frequencies and locations at such a late stage would cause serious difficulties and it was hoped that such changes would be the least possible. Fourthly, if the countries in the third version of Form 2 signed the stations concerned would be approved;

the deadline for signature was the Plenary Meeting of 5 December 1984. Fifthly, in the event - which, it was hoped, would be rare - of a desire to withdraw a signature on account of new, unforeseen circumstances, perhaps the procedure should be to notify the Chairman of the Planning Group in writing, in order that he could so notify the IFRB.

3.2 The delegate of Iran (Islamic Republic of) said he was not clear what was meant by a withdrawal of signatures. As he saw it, once a station had been coordinated and an administration had given its signature, there could be no going back.

3.3 The Chairman explained that the case might arise where there had been agreement between several countries to coordinate frequency plans, but where because of a change in the situation, one of them later decided to withdraw from the agreement.

3.4 The delegate of Iran (Islamic Republic of) said he could see that such a situation might arise in rare cases. However, there was also the possibility that an administration might initially give its agreement and then withdraw it at the end of the Conference, without giving any reason.

3.5 The delegate of the United Kingdom said he was not happy with the proposal; if it were built into the procedures, there was a risk that it could undermine much of the work being carried out by the Conference. He felt strongly that once signatures had been given they should not be withdrawn except in cases of emergency, and suggested that such cases, if they arose, should be referred to the Chairman of the Conference for a decision.

3.6 The delegate of Norway supported that suggestion.

3.7 The delegate of the USSR shared the concern of the United Kingdom delegate. The matter involved was one of principle; once a signature had been put to a document it was impossible to withdraw it. He was not clear as to which part of Document 78 the proposal referred.

3.8 The Chairman explained that the proposal did not refer specifically to Document 78, but rather to certain considerations that needed to be borne in mind in relation to the procedure that was being discussed. He suggested that the solution suggested by the United Kingdom should be approved.

It was so decided.

3.9 The delegate of Iran (Islamic Republic of) said that his delegation had not received the results of the incompatibility analysis for the aeronautical service vis-à-vis broadcasting until late on 9 November and had therefore been unable to complete Form 1 by the deadline given. In addition, he had understood that Form 1 was to be completed in relation to a criterion of 60 dB, but it now appeared that lower values had been decided on at the level of the Planning Groups in respect of a particular area. He would like confirmation of the position.

3.10 The Vice-Chairman of Committee 4 confirmed that it was his understanding that the criterion of 60 dB had been agreed on in connection with the completion of Form 1.

3.11 The delegate of the United Kingdom said that on the contrary he had no recollection of agreeing to a 60 dB figure in Committee 4 itself.

3.12 The delegate of Romania asked that the list of considerations given by the Chairman should be put in written form, since they had a bearing on the interpretation of Document 78, which had already been adopted by the Plenary.

3.13 The Chairman suggested that further discussion of the point should be deferred until the Chairmen of the different Planning Groups had made their reports.

It was so agreed.

#### 4. Introduction of Documents

4.1 The delegate of Iraq, introducing Document 52, said that the document showed that calculations sent by IFRB to administrations in the Gulf area were based on a propagation curve which was not really appropriate to that area. It described calculations made by the Iraqi Administration of interference for about 151 stations around the Gulf. Those calculations were based on two methods, the IWP 5/5 extended sea method, and the  $\gamma$  method, based on the study made within the ITU/Gulfvision project. They showed very high levels for usable field-strength and nuisance fields for the Gulf area, figures so high that it would be extremely difficult to reduce them through the proposed coordination procedure.

The document made proposals for remedying that situation, some of which had already been discussed in Working Group 4C. One proposal was that the present lattice be retained, but that each frequency channel group in it should be divided into Sub-Groups. A further proposal was to use the land loss coefficient to alleviate some of the adverse effects of the extended sea concept.

4.1.1 The delegate of Egypt supported the proposals contained in the document. The present lattice had been designed before much was known about propagation conditions over hot sea and desert areas, and urgently needed modification. In making such modifications the region concerned could be divided into three parts : the sea itself, the region deep inland, and the transitional region between the two.

4.1.2 The Chairman of the Technical Working Group of the Plenary pointed out that the problems referred to in Document 52 had already been thoroughly discussed in the Technical Working Group of the Plenary, and the Plenary itself had taken a decision on them.

The Committee took note of that statement.

4.2 The delegate of Switzerland, introducing Document 70, said that for his country five national coverages were required, three of which had to cover separate linguistic regions and two of which had to be divided subregionally to cover separate cantons. However, it now possessed only two national coverages below 100 MHz, in contrast with its neighbours, who operated three networks in the same frequency range. The additional frequency band from 100 - 108 MHz would permit Switzerland to achieve a total of only four coverages unless special action was taken. As he saw it, there was no reason why existing plans in the frequency range 87.5 - 100 MHz should not be modified in order to ensure the equal rights of countries, and to remedy existing inequalities and incompatibilities. He urged countries neighbouring Switzerland to recognize such problems when calculating the coverage of transmitters, in particular within the border area.

The Committee took note of Document 70.

5. Reports by the Chairmen of Planning Groups (Documents 88, 92 + Corr.1, 96, 97)

5.1 The Chairman of Planning Group 4C, introducing his report (Document 88), said his Group had held four official and five unofficial meetings. It had been decided that the Administrations of Afghanistan, Turkey and the USSR should form part of Group 4D, and that Israel and Jordan would join Group 4B. Working Group 4C thus now consisted of the Administrations of Iran (Islamic Republic of), Iraq, Saudi Arabia, Kuwait, Bahrain, United Arab Emirates, Qatar and Oman, as well as the Yemen Arab Republic and Yemen PDR, which were also included in Group 4A.

In the course of discussion the Group had requested the IFRB to provide extra facilities to deal with the special propagation difficulties of the area in question and the IFRB representative had indicated what could be offered in that regard. There had been agreement on criteria to be used as a basis for coordination in the area concerned.

It had been agreed to replace No. 10 of the list of guidelines set out in the Annex to Document 92 by the formula given in Corrigendum 1 to that document. Two values had been adopted for nuisance field-strength, 40 dB( $\mu$ V/m) for administrations in the Gulf area 200 km from the sea boundaries, suffering from special propagation problems, and 60 dB( $\mu$ V/m) for administrations outside that area.

5.1.1 The delegate of Iran (Islamic Republic of) said that since it was the value of 60 dB that had been adopted in Plenary, whereas the value of 40 dB had only been agreed on between administrations in Planning Group 4C, he had assumed that it was the former that was the general value. He requested that in order to avoid misunderstanding, the lower value should be taken into account in Form 2 for that particular region.

5.1.2 The delegate of France proposed that where Form 2 was concerned, it would facilitate agreement between countries if a clear indication was given of the power limitation values to be agreed on within a given sector.

5.1.3 The representative of the IFRB said there would be no difficulty in taking that point into account.

The Committee took note of the report of the Chairman of Planning Group 4C.

5.2 The Chairman of Planning Group 4B, introducing his report (Document 96), said that his Group had held three meetings, two formal and one informal. It had been decided to set up three Sub-Groups for the western, central and eastern Mediterranean respectively, and to appoint coordinators for each Sub-Group. It had been agreed to adopt a value of 60 dB for nuisance field-strength, below which delegates would not enter reservations in Form 1.

The Committee took note of the report of the Chairman of Planning Group 4B.

5.3 The Chairman of Planning Group 4D, introducing his report (Document 97), said the first section of his report described the way in which the Group's work had been organized. The second section referred to the boundaries of the planning area, which had been agreed on a working basis with the Chairmen of the two other Planning Groups. The third section concerned proposals for changes in the Group's membership, and he drew particular attention to § 5 which concerned the requirements of the Mongolian People's Republic. Since those requirements had affected only one other administration, which had not objected to them, the Group had agreed to accept them.

The Committee took note of the report of the Chairman of Planning Group 4D.



5.4 The Chairman noted that the report of Planning Group 4A would be submitted at the next meeting.

6. Note from the Chairman of Committee 3 (Document 81)

6.1 The Chairman said that the document drew attention to the possible additional costs that might be incurred by decisions taken by the Committee. Committee 4 was required to inform Committee 3 of any such decisions, together with an estimate of any additional costs that might be involved.

The Committee took note of the recommendation contained in Document 81.

7. Use of new symbol for Burkina Faso

7.1 The representative of the IFRB, in reply to a question raised by the delegate of Burkina Faso, said that he would notify that delegation as soon as possible of the date on which it was to begin using the symbol indicating its new name.

The meeting rose at 1100 hours.

The Secretary :  
D. SCHUSTER

The Chairman :  
Dr. I. STOJANOVIC

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 100-E  
12 November 1984

LIST OF DOCUMENTS

(51 - 100)

PL = Plenary  
C = Committee  
TWG = Technical Working  
Group of the  
Plenary

No.	Origin	Title	Destination
51	SG	Results of the compatibility between aeronautical radionavigation services and FM broadcasting services - Explanation of column headings	PL
52	IRQ	Results of computer analysis of interferences between planned FM broadcasting stations in the Arabian Gulf area	C.4, TWG
53	C.4	Summary Record of the 1st meeting of Committee 4	C.4
54	C.5	Summary Record of the 1st meeting of Committee 5	C.5
55	C.3	Summary Record of the 1st meeting of Committee 3	C.3
56	C.2	Summary Record of the 1st meeting of Committee 2	C.2
57	E	Transitional procedures for application of the Plan in relation to permitted services	C.5
58(Rev.1)	C.4	Report by the Vice-Chairman of Committee 4	C.4
59	-	General schedule of the work of the Conference (Information paper)	-
60 + Corr.1	SG	Note by the IFRB	C.5
61 + Corr.1	TWG	First Report by the Chairman of the Technical Working Group of the Plenary	PL
62	C.4	Summary Record of the 2nd meeting of Committee 4	C.4
63	PL	Minutes of the 2nd Plenary Meeting	PL
64	PL/B	First Report of Technical Sub-Working Group PL/B	TWG

For reasons of economy, this document is printed in a limited number of copies. Participants are therefore kindly asked to bring their copies to the meeting since no others can be made available.



No.	Origin	Title	Destination
65	AFS	Procedure for bringing into service the assignments in the Plan	C.5
66	SG	Budget of the Conference	C.3
67 + Add.1	BUL, HNG, POL, DDR, TCH, URS	Procedure for the bringing into service of the FM Sound Broadcasting Plan	C.5
68	PL	Minutes of the 3rd Plenary Meeting	PL
69	C.5	Summary Record of the 2nd meeting of Committee 5	C.5
70	SUI	Swiss coverage requirements and planning philosophy for the VHF/FM-Band between 87.5 - 108 MHz	C.4
71	C.5	Summary Record of the third meeting of Committee 5	C.5
72 + Corr.1	IRQ	Coordination distances to be employed in the modification procedures of assignments within the Arabian Gulf area	C.5, TWG
73	C.4	Summary Record of the third meeting of Committee 4 (Planning)	C.4
74	TWG	Second Report by the Chairman of the Technical Working Group of the Plenary	PL
75	PL/B	Third Report of Sub-Working Group PL/B	TWG
76	PL/B	Fourth Report of Sub-Working Group PL/B	TWG
77	Chairman	Note by the Chairman of the Conference	-
78	Chairman	Note by the Chairman of the Conference - Procedures for preparing the Plan	PL
79	C.6	Summary Record of the first meeting of Committee 6 (Editorial Committee)	C.6
80	F	Note from the French delegation - Representation of the Principality of Andorra	-

No.	Origin	Title	Destination
81 + Corr.1	C.3	Note by the Chairman of Committee 3 to the Chairmen of Committees 4 and 5	C.4, C.5
82	TWG	Note to the Chairman of the Committee 5 from the Chairman of the TWG of the Plenary	C.5
83	C2-A	First Report by Working Group C2-A to Committee 2	C.2
84	C.5	Note from the Chairman of Committee 5	WG/5B
85	TWG	Corrections to the First Report by the Chairman of the Technical Working Group of the Plenary	PL
86	TWG	Third Report by the Chairman of the Technical Working Group of the Plenary	PL
87	PL/B	Fifth Report of Sub-Working Group PL/B	TWG
88	WG/4C	First Report of Working Group 4C	C.4
89	G	Aeronautical compatibility aspects - Final Acts material	TWG
90	SG	Note by the Secretary-General - Secretariat of the Conference	-
91	-	Conference Chairmanship	-
92 + Corr.1	WG/4C	Second Report of Working Group 4C	C.4
93	PL	Minutes of the fourth Plenary Meeting	PL
94	PL/B	Sixth Report of Sub-Working Group PL/B	TWG
95	E	Note by the Spanish Delegation relating to the representation of the Principality of Andorra	-
96	WG/4B	First Report of Planning Group 4B to Committee 4	C.4
97	WG/4D	First Report of Planning Group 4D to Committee 4	C.4

No.	Origin	Title	Destination
98	BUL, HNG, POL, DDR, TCH, URS	Procedure for the bringing into service of the FM-Sound Broadcasting Plan	C.5
99	C.4	Summary Record of the 4th meeting of Committee 4	C.4
100	SG	List of documents	-

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 101-E  
12 November 1984  
Original : English

NOTE BY THE SECRETARY OF THE CONFERENCE

At the request of the IFRB, I transmit the following note for the information of the Conference.

J. JIPGUEP  
Secretary of the Conference

INFORMATION NOTICE BY THE IFRB

Subject : Errors in the calculation of Interference Broadcasting versus  
Aeronautical Radionavigation

Calculations of the Interference Broadcasting to Aeronautical Radionavigation in the first Conference analysis indicated clear errors in the case of three countries. These errors are under investigation in close cooperation between the administrations who furnished the program and the IFRB. At this stage of the investigation there is no evidence that these errors affect the results of other administrations. However, these calculations should be treated with caution while waiting for the second analysis.

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 102-E

12 November 1984

Original: French

TECHNICAL WORKING GROUP  
OF THE PLENARY

France

## DRAFT RESOLUTION

concerning a proposal for modification of Appendix 8  
to the Radio Regulations : maximum spurious  
emission power levels in the band 108 - 136 MHz

The Regional Administrative Conference for FM Sound Broadcasting in the  
VHF Band (Region 1 and certain countries concerned in Region 3) (Geneva, 1984),

### considering

- a) that in the agenda for the second session (Resolution No. 896) the Conference is requested to review some of the technical criteria used for planning of the band 87.5 - 108 MHz, and in particular the maximum obtainable suppression of spurious emissions in the band 108 - 137 MHz from broadcasting stations, in the light of the relevant CCIR contributions;
- b) that on the basis of the CCIR's proposals, the second session of the Conference has adopted spurious emission power levels in the band 108 - 137 MHz which are lower than those given for that band in Appendix 8 to the Radio Regulations;
- c) that the lower values mentioned in b) above have been used in the planning process to ensure protection of the aeronautical radionavigation service in the band 108 - 117.975 MHz;
- d) that the CCIR and ICAO are requested to continue studying the compatibility between the aeronautical mobile service in the band 118 - 137 MHz and the FM broadcasting service in the band 87.5 - 108 MHz (Recommendation ...) and that in doing so they will take into account the spurious emission power levels mentioned in b) above;

### requests

the Administrative Council to place on the agenda of the next competent Conference the question of modifying Appendix 8 to the Radio Regulations to include lower spurious emission power levels for the band 108 - 137 MHz.

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 103-E  
13 November 1984  
Original : English

TECHNICAL WORKING GROUP  
OF THE PLENARY

FIRST AND FINAL REPORT  
OF SUB-WORKING GROUP PL/C

The Sub-Working Group PL/C held five meetings to discuss Documents 6, 35 and 67 + Add.1, in which some additions were proposed to the report of the first session, with the following results :

1. Proposal concerning wideband transmissions (Document 6)

In a spirit of compromise, the French delegation accepted that column 4 of Table 2 shown in the above-mentioned document will not appear in the Final Acts of this Conference on the understanding that the figures contained in that column should be used in bilateral or multilateral discussions between France and other European administrations concerned in order to enable the normal operation of the wideband transmissions in the land mobile service.

The delegation of the Federal Republic of Germany reserved its position concerning the use of the figures contained in column 4 of Document 6.

2. Proposal concerning antenna height factors (Document 35)

The method and criteria concerning antenna height factors, to be used for coordination between administrations between the broadcasting and land mobile and fixed services, are to be agreed by the administrations concerned and should be based where possible on the latest relevant CCIR Recommendations.

The United Kingdom delegation reserved its position on this conclusion.

3. Document 67 and Addendum 1

The Sub-Working Group considered the values in the above-mentioned document and agreed on the following :

The field strengths of the interfering broadcasting station shall not be greater than those given in the table below.

Frequency separation between BC station and aeronautical mobile (OR) station	dBuV/m at an altitude of 10,000 metres
0	20
50	34
100	58
150	90

The delegations of Denmark and Norway reserved their position.



4. Resulting from a suggestion of the IFRB to state some values above which coordination may be necessary, if the Conference decides that such a procedure would be desirable, the Sub-Working Group established the technical limits which might be taken into consideration when coordination is required in the case of a proposed modification to the Plan (see Annex 1).

To show the consequences resulting from the application of the technical limits as mentioned in Annex 1, examples are given in Annex 2 for information purposes.

The delegations of Denmark and Norway reserved their position on the technical limits for the aeronautical mobile (OR) service (Annex 1, point 3) and also on the column relating to the distances concerning the aeronautical mobile (OR) service of Annex 2.

The delegation of Italy reserved its position on Annex 1 and Annex 2.

5. Noting that no other proposals were made for additions or corrections to Chapter 5, §§ 1 and 2 of the report to the second session, the Sub-Working Group did assume that these paragraphs can be used in the further work of the Conference for the purpose of coordination between administrations.

G.H. VAN DER SCHOOT  
Chairman of the  
Technical Sub-Working Group PL/C

Annexes : 2

ANNEX 1

TECHNICAL FIELD STRENGTHS LIMITS WHICH MIGHT BE TAKEN INTO CONSIDERATION  
FOR DETERMINING WHEN COORDINATION IS REQUIRED IN THE  
CASE OF A PROPOSED MODIFICATION TO THE PLAN

1. Limits relating to the land mobile service

For broadcasting stations using only horizontal polarization : 18 dB( $\mu$ V/m) and for broadcasting stations using vertical or mixed polarization : 0 dB( $\mu$ V/m), both calculated at an antenna height of 10 m above ground and assuming that the land mobile service is vertically polarized.

These field strengths will be based on the curves appearing in Annex 2, (50% of locations and 10% of time). (See Figures 2.3, 2.4 and 2.5 of Document 61.)

For mixed paths the calculation method as described in § 2.1.3.4 of Document 61 will be applied.

2. Limits relating to the fixed service

For broadcasting stations : 0 dB( $\mu$ V/m), calculated at an antenna height of 10 m above ground.

This field strength will be based on the curves appearing in Annex 2, (50% of location, 10% of time). (See Figures 2.3, 2.4 and 2.5 of Document 61.)

For mixed paths the calculation method as described in § 2.1.3.4 of Document 61 will be applied.

3. Limits relating to the aeronautical mobile (OR) service

20 dB( $\mu$ V/m) at an altitude of 10,000 metres. This field strength is based on free space propagation. Coordination beyond line-of-sight distance is not required.

# ANNEX 2

e.r.p. of broadcasting station/ antenna height  1	Distance (km) between a broadcasting station and a station in the			
	Land Mobile service		Fixed service	Aeronautical mobile (OR) service
	2		3	4
	BC vertically polarized 2.1	BC horizontally polarized 2.2		4.1 4.2
100 kW/1,200 m	630*	430*	630*	550** 750***
1 kW/ 150 m	330*	160*	330*	460** 600***
100 W/ 75 m	230*	90*	230*	445** 550***

\* Based on the technical limits of Annex 1 to this document

\*\* Line-of-sight distance  
(effective Earth's radius is 4/3 of the actual radius)

\*\*\* Based on the propagation curve shown in Figure 2.9 of Document 61

Note : Columns 2 and 3 are based on the propagation curve shown in Figure 2.3 of Document 61.

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Addendum 1 to  
Document 104-E  
22 November 1984  
Original: English

COMMITTEE 5  
PLENARY MEETING

Note by the Secretary-General

ADDITIONAL INFORMATION RELATING TO DOCUMENT 104\*

1. During the discussions on the matter dealt with by Document 104 at the eighth meeting of Working Group 5A on Friday, 16 November 1984, a number of questions were raised. The Secretariat was asked to provide the Conference in due course with replies related thereto. The present addendum to Document 104 contains such additional information, which is supplementary to the explanations already given orally during the aforementioned meeting.
2. One question in essence related to the applicability of Articles 30 and 59 of the Vienna Convention, as the present Conference would not be faced and have to deal with "treaties relating to the same subject" (see paragraphs 39 to 42 of Document 104). In this respect, it has to be noted that undoubtedly both the 1961 Stockholm Regional Agreement and the 1963 Geneva Regional Agreement deal with provisions and, in particular, plans concerning sound broadcasting stations as well as television stations, whereas the present Conference is only concerned with the establishment of an agreement and an associated frequency assignment plan for sound broadcasting stations.
3. However, it has also to be taken into account that, as far as sound broadcasting stations in the band 87.5 - 108 MHz are concerned, the Agreement and associated plan to be adopted by the present Conference will, at least in part, be "relating to the same subject matter", which up to now has been governed by one of the plans annexed to the 1961 Stockholm Regional Agreement and the 1963 Geneva Regional Agreement respectively. Therefore, the more general question needs to be replied in the sense of whether or not both Articles 30 and 59 of the Vienna Convention deal only with treaties as a whole or also with parts of treaties "relating to the same subject matter".

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\* "Legal analysis, opinion and advice concerning the partial abrogation of the 1961 Stockholm and the 1963 Geneva Regional Agreements and their annexed Plans by the new Agreement and Associated Plan and other, possible alternative solutions".

4. In this connection, it is to be noted that Article 59 of the Vienna Convention itself, in its sub-paragraph (b) of its paragraph 1, embodies already its applicability to only certain parts of a treaty in question, as it clearly distinguishes between provisions of the earlier treaty remaining compatible with the provisions of the later treaty and those being incompatible therewith and to which sub-paragraph (b) of paragraph 1 of Article 59 of the Vienna Convention applies (see paragraph 41 of Document 104). Paragraph 3 of Article 30 of the Vienna Convention goes in the same direction, as it provides that "the earlier treaty applies only to the extent that its provisions are compatible with those of the later treaty" (see paragraph 39 of Document 104). Furthermore, and quite generally, it can be stated that the Vienna Convention in several instances deals not only with treaties as a whole but also with parts and separable provisions thereof, like in its Article 17 on "consent to be bound by part of a treaty and choice of differing provisions", Article 25 on "provisional application", Article 44 on "separability of treaty provisions" etc.; the summary records of the Vienna Conference dealing with the discussion of these articles also testify, to a wide support of the approach adopted in this respect by the Vienna Convention.

5. It can therefore be reconfirmed, in respect of the issue of "relating to the same subject matter" and of the issue of "treaty as a whole vs. part of a treaty", which are both interrelated, that the provisions of Articles 30 and 59 of the Vienna Convention can be applied to the problem the present Conference is faced with. Consequently, in line with what is stated in paragraphs 42 and 43 of Document 104, the intention can be expressed by the present Conference that, with respect to those - to be specified - parts relating to sound broadcasting, which have been governed in the past by the respective provisions and plan of the 1961 Stockholm Regional Agreement and the 1963 Geneva Regional Agreement and which are in future to be governed by the new agreement and associated plan, the respective provisions of, and the pertinent plan annexed to, both these earlier Agreements "shall be considered as terminated".

6. Another question raised was whether all the Parties to the 1961 Stockholm Regional Agreement and the 1963 Geneva Regional Agreement would have to become "signatories" to the new agreement and associated plan and whether those Parties to these earlier Agreements were attending the present Conference.

7. In the context of the foregoing question, it is important to recall that not the notion of "signatory", but the status of a "party" is the essential point of reference. In accordance with the term defined in sub-paragraph (g) of paragraph 1 of Article 2 of the Vienna Convention, a "party" means "a State which has consented to be bound by the treaty and for which the treaty is in force". In accordance with Article 12 of the 1961 Stockholm Regional Agreement and with Article 10 of the 1963 Geneva Regional Agreement, such consent to be bound has to be given by the "approval of this Agreement" to be notified by administrations to the Secretary-General or by accession (see Article 6 of the 1961 Stockholm Regional Agreement and Article 5 of the 1963 Geneva Regional Agreement), both "approval" and "accession" meaning "in each case the international act so named whereby a State establishes on the intentional plane its consent to be bound by a treaty" (sub-paragraph (b) of paragraph 1 of Article 2 of the Vienna Convention refers).

8. In the foregoing meaning of the term "party", the following Members of the Union have, by approval or accession, become Parties to:

- a) the 1961 Stockholm Regional Agreement (20 Parties): Germany (Federal Republic of), Austria, Belgium, Byelorussian Soviet Socialist Republic, Cyprus (Republic of), Spain, Finland, France, Ireland, Italy, Morocco (Kingdom of), Norway, Netherlands (Kingdom of the), Portugal, German Democratic Republic, Ukrainian Soviet Socialist Republic, United Kingdom of Great Britain and Northern Ireland, Switzerland (Confederation of), Union of Soviet Socialist Republics and Yugoslavia (Socialist Federal Republic of);
- b) the 1963 Geneva Regional Agreement (11 Parties): Egypt (Arab Republic of), Spain (with respect to the Canaries), Ethiopia, France (with respect to the Department of Reunion), Kenya (Republic of), Nigeria (Federal Republic of), Uganda (Republic of), Senegal (Republic of), Sierra Leone, South Africa (Republic of) and Tanzania (United Republic of).

(The above lists are taken from Annex 1 entitled "Position of Members in relation to the Acts of the Union on 31st December 1983" to the "Report on the Activities of the International Telecommunication Union in 1983", pages 166 and 167; the position reflected therein has not changed since 31 December 1983.)

9. As already pointed out by the Legal Adviser orally during the discussions, all Parties to the earlier Agreements referred to in the preceding paragraph would, in the context of Article 59 of the Vienna Convention (see paragraph 41 of Document 104), have to become Parties to the new agreement and associated plan to be adopted by the present Conference, whereas their actual attendance or non-attendance at the present Conference as such is not required. The Conference is, however, informed that, as of date, all the 20 Parties to the 1961 Stockholm Regional Agreement are represented at the present Conference, whereas out of the 11 Parties to the 1963 Geneva Regional Agreement the following five Parties are not represented by a delegation to the present Conference: Nigeria (Federal Republic of), Uganda (Republic of), Sierra Leone, South Africa (Republic of) and Tanzania (United Republic of).

10. A question was also raised whether the provisions contained in paragraph 4 of Article 30 of the Vienna Convention (see the text thereof contained in paragraph 39 of Document 104) could not solve the problem the present Conference is faced with.

11. The paragraph in question starts from the premise that "the Parties to the later treaty do not include all the Parties to the earlier one". On that basis, paragraph 4 of Article 30 of the Vienna Convention provides for two situations:

- a) "As between States parties to both treaties", "the earlier treaty applies only to the extent that its provisions are compatible with those of the latter treaty" (see paragraph 3 of Article 30 of the Vienna Convention to which reference is made in sub-paragraph (a) of paragraph 4 of that Article, reproduced in paragraph 39 of Document 104); and

- b) "As between a State party to both treaties and a State party to only one of the treaties, the treaty to which both States are Parties governs their mutual rights and obligations" (see paragraph 39 of Document 104).

Whereas provision (a) could indeed be considered as solving in part the problem the present Conference is faced with, justified doubts could arise as to the practical value of provision (b) referred to above. That second solution, perfectly sound from a legal point of view, would, in practical terms in the present context, mean that, for example, between a State party both to the 1961 Stockholm Regional Agreement and to the new agreement and associated plan to be adopted by the present Conference and another State party only to the 1961 Stockholm Regional Agreement, the 1961 Stockholm Regional Agreement "to which both States are Parties governs their mutual rights and obligations". It needs to be considered by the present Conference whether or not such an arrangement from the technical and operational point of view, would be acceptable taking into account the overall planning exercise the present Conference is engaged in and the new agreement and associated plan it is to adopt, the implementation of which could encounter difficulties if the second provision (b) referred to above were to be applied.

12. Closely related to the preceding issue is an idea presented during the discussions of the future "co-existence" of both the new agreement and associated plan to be adopted by the present Conference and the two earlier Regional Agreements and their annexed Plans, an idea which was advanced as one that could perhaps provide the most simple solution. For the same reasoning given in the preceding paragraph, the issue of "co-existence" is a matter for the present Conference to consider and decide upon.

13. A question was also raised whether the mandate of the present Conference could not be considered as implicitly including also the revision and/or abrogation of the 1961 Stockholm Regional Agreement and the 1963 Geneva Regional Agreement.

14. For the reasons already stated in detail in paragraphs 5 to 29 of Document 104, it appears, in the absence of any indication in that direction, hardly possible to assume such an implicit mandate as given to the present Conference, in particular against the legislative background and practice of the Union, which in the past has always relied upon an explicit mandate only.

15. During the discussions a number of observations were also made which require some comments from the legal point of view.

16. Referring to the practice of the Union in force, it was observed that the Union has never settled a problem similar to the one the present Conference is faced with by way of "consultation". In this respect reference is to be made to the 1975 Conference and Regional Agreement (see paragraphs 5 to 10 of Document 104) and to the Additional Protocol I to that Agreement (see Annex 3 to Document 104). Although the provisions of the latter Protocol did not make the abrogation of the European Broadcasting Convention (Copenhagen, 1948) and the annexed Copenhagen Plan dependent

on a "consultation" between the Parties to that Convention, it made their abrogation conditional on the deposit by each Party to that Convention of the declaration of acceptance of the abrogation of that Convention and its annexed Plan (see paragraphs 2 to 5 of Additional Protocol I reproduced in Annex 3 to Document 104).

17. With reference to Article 8 of the 1961 Stockholm Regional Agreement, it was also observed that the Administrative Council had legally not been in a position to include a revision of that Agreement in the agenda of the present Conference. In this respect, reference has to be made to a precedent, which exists with regard to the agenda adopted by the Administrative Council for the 1975 Regional Conference (see paragraph 5 of Document 104). In that agenda, the Administrative Council gave to the Conference the explicit mandate "to replace, as appropriate, existing plans for those bands", although Article 7 of both the 1948 Copenhagen Convention and the 1966 Geneva Regional Agreement contain provisions in essence similar to the ones contained in Article 8 of the 1961 Stockholm Regional Agreement. In this context, it is essential to keep in mind that any agenda of an administrative conference is established by the Administrative Council only with the concurrence of a majority of the Members of the Union concerned (see No. 207 of the Nairobi Convention).

18. It was furthermore observed that the Administrative Council started from the idea that there could be no contradictory agreements and it was evident that supplementary provisions would have to be introduced in the 1961 Stockholm Agreement and Plan for television stations in the frequency band 87.5 - 100 MHz. As the present Conference had not the mandate to do so by way of revision of that Agreement and Plan, a possible solution was suggested consisting in the elaboration by the present Conference of a separate protocol to be submitted for signature to the Parties to the 1961 Stockholm Regional Agreement, all the delegations of which would be present at the Conference and could ask their respective Governments to provide them with appropriate credentials to do so.

19. If the present Conference being a sound broadcasting Conference, agrees on the necessity to introduce supplementary provisions concerning television broadcasting in the 1961 Stockholm Regional Agreement and annexed Plan in question, it has to be left to the appreciation and decision of the Parties thereto whether or not they would wish to follow the suggested solution referred to in the preceding paragraph, to elaborate such a separate protocol containing such supplementary provisions and to sign such a separate protocol at the end of the present Conference.

20. However, such a separate protocol constituting indeed and in essence a revision of the 1961 Stockholm Regional Agreement would, from the legal point of view, in principle, have to be adopted by a conference, which might be convened in accordance with what has been pointed out, under the "first alternative solution", in paragraphs 32 and 33 of Document 104 and would, in order to become effective with respect to the Parties of the 1961 Stockholm Regional Agreement, at any rate have to be approved by all the Parties to that Agreement. In order to avoid any conflict with regard to the implementation of the new agreement and associated plan to be adopted by the present Conference, it would appear advisable that the Parties to the 1961 Stockholm Regional Agreement notify their approval of such a separate protocol to the Secretary-General of the Union prior to the entry into force of the new agreement and associated plan to be adopted by the present Conference.

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 104-E  
13 November 1984  
Original : English

PLENARY MEETING  
COMMITTEE 5

## Note by the Secretary-General

LEGAL ANALYSIS, OPINION AND ADVICE  
CONCERNING  
THE PARTIAL ABROGATION OF THE 1961 STOCKHOLM  
AND THE 1963 GENEVA REGIONAL AGREEMENTS AND  
THEIR ANNEXED PLANS BY THE NEW AGREEMENT AND  
ASSOCIATED PLAN  
AND  
OTHER, POSSIBLE ALTERNATIVE SOLUTIONS

1. At its first meeting, on Friday, 2 November 1984, Working Group 5A considered Document DT/6, a note from its Chairman. Annex I to that document contains a "Draft Structure of the Regional Agreement" and Annex II thereto contains texts for the provision of the "Draft Regional Agreement", both annexes having been submitted for the Working Group's consideration.
2. Both Annexes provide for a draft Article 8 entitled "Partial abrogation of the Regional Agreement for the European Broadcasting Area (Stockholm, 1961)" and a draft Article 9 entitled "Partial abrogation of the Regional Agreement for the African Broadcasting Area (Geneva, 1963)".
3. During the Working Group's discussion on both draft Articles, one delegation raised the issue of the present Conference's competence to decide upon such a "partial abrogation" of both the aforementioned Regional Agreements, taking into account that the agenda of the present Conference did not provide for taking such course of action. In view of the statement on the cover page of Document DT/6 that Annex II was "based on the Stockholm (1961) and the Geneva Agreements (1963)", it was also observed that it would be desirable to take into account, as basis, more recent Agreements adopted since 1963, which might serve as useful precedents in that context. Finally, the Working Group requested legal advice from the Secretariat in that respect.
4. As the approach taken in the draft Articles 8 and 9 of Annex II of Document DT/6 appears to be based not so much on the Stockholm Agreement (1961) and not at all on the Geneva Agreement (1963), but rather on the "Regional Agreement Concerning the Use by the Broadcasting Service of Frequencies in the Medium Frequency Bands in Regions 1 and 3 and in the Low Frequency Bands in Region 1, Geneva, 1975" (hereinafter referred to as "the 1975 Regional Agreement"), the matter of abrogation of earlier agreements and plans is, for the sake of legal comparison, first presented on the basis of the latter Agreement. Thereafter, the matter will be studied on the basis of the two earlier Agreements referred to above. In the light thereof, the situation the present Conference is faced with will then be analyzed and possible solutions will be presented, from the legal point of view.

The 1975 Regional Agreement

5. The agenda of the second session of that Conference, contained in Administrative Council Resolution 743, stipulated in its § 2 b) "on the basis on these technical and operational criteria and planning methods, to draw up an agreement and an associated frequency plan of assignments in the LF/MF broadcasting bands in Regions 1 and 3 to replace, as appropriate, existing plans for those bands" (emphasis added). Thus, the agenda of the second session of that Conference clearly contained the mandate to draw up an agreement and an associated frequency plan of assignments destined to replace, as appropriate, existing plans in force.

6. There were indeed two existing Agreements and associated Plans in force at the time :

- a) the "European Broadcasting Convention, Copenhagen, 1948" and the "Copenhagen Plan", annexed to that Convention, and
- b) the "Regional Agreement for the African Broadcasting Area, Geneva, 1966" and the Plan contained in Annex I thereto.

7. Both these Agreements contained different provisions as to their revision and/or abrogation and have, therefore, been dealt with differently and separately by the 1975 Regional Agreement. Consequently, they have also to be distinguished in the present legal analysis.

8. The European Broadcasting Convention, Copenhagen, 1948 (hereinafter referred to as the 1948 Copenhagen Convention), contained, on the one hand, in its Article 7, provisions concerning the revision of that Convention, itself and of the Copenhagen Plan. The most important provision thereof in the present context read as follows : "The revision of the Convention and of the Plan shall be undertaken by a Conference of Plenipotentiaries of the Governments of the countries of the European Broadcasting Area." (See § 1 of Article 7 of the 1948 Copenhagen Convention.) On the other hand, that Convention contained also, in its Article 6, specific, interesting provisions concerning the "abrogation of the Convention and of the Plan". The provisions in the two paragraphs of that Article read as follows :

"1. This Convention and Plan shall be abrogated between all the contracting Governments as from the entry into force of a new Convention. The Plan shall be abrogated as from the entry into force of a new Plan.

2. In the event of a contracting Government not approving a new Plan, the Convention shall be abrogated in relation to such Government as from the entry into force of the new Plan."

9. During the 1975 Conference, which adopted the 1975 Regional Agreement, the Chairman of its Committee 5 published in the Annex to Conference Document 125 "Explanatory Information about the abrogation of the European Broadcasting Convention, Copenhagen, 1948, and the annexed Copenhagen Plan" (see copy thereof reproduced in Annex 1 to the present document), which dealt with the matter on the basis of the agenda of that Conference and of Article 6 of the 1948 Copenhagen Convention, and from which it becomes clear that the matter under consideration at that time was also only a partial abrogation of the 1948 Copenhagen Convention and the Copenhagen Plan annexed thereto (see § 6 in Annex 1 to the present document). As a result, the 1975 Regional Agreement contains an Article 11 on the "Abrogation of the European Broadcasting Convention (Copenhagen, 1948) and annexed Copenhagen Plan", the text of which is indeed, in essence, similar to the one proposed for

draft Article 8 in the Annex II to Document DT/6 of the present Conference. It reads : "Additional Protocol I to the Final Acts of the Conference provides for the abrogation of the European Broadcasting Convention (Copenhagen, 1948) and the annexed Copenhagen Plan." (See Annex 2 to the present document.)

10. From the above-mentioned Additional Protocol I (reproduced in Annex 3 to the present document), it is important to note that "the delegates of the following Members of the International Telecommunication Union : ... [the list of countries enumerated] ... parties to the European Broadcasting Convention (Copenhagen, 1948) and meeting in Geneva for the Regional Administrative LF/MF Broadcasting Conference (Regions 1 and 3), Geneva, 1975, convened in accordance with the provisions of the International Telecommunication Convention (Malaga-Torremolinos, 1973), agree that :

1. the Regional Agreement Concerning the Use by the Broadcasting Service of Frequencies in the Medium Frequency Bands in Regions 1 and 3 and in the Low Frequency Bands in Region 1 and the annexed Plan shall replace the European Broadcasting Convention and annexed Copenhagen Plan which shall be abrogated save that the rights and obligations in respect of the coast stations listed in Chapter II of the Copenhagen Plan shall continue until modified by the agreement of the parties concerned or by a competent conference;" (emphasis added).

The following §§ 2 to 5 of the aforementioned Additional Protocol I contain a detailed procedure concerning the taking effect of that abrogation and the actions to be undertaken by the Governments concerned in that respect.

11. In contrast to the 1948 Copenhagen Convention, the "Regional Agreement for the African Broadcasting Area (Geneva, 1966)" (hereinafter referred to as the "1966 Regional Agreement") did not contain any Article concerning the abrogation of the Agreement itself or of the Plan annexed thereto, but contained only, in its Article 7 entitled "Revision of the Agreement", a provision reading "no revision of the Agreement will be undertaken except by an administrative conference of the Members and Associate Members of the Union in the African Broadcasting Area convened in accordance with the procedure layed down in the Convention in force" (emphasis added).

12. However, in conformity with its mandate contained in its agenda (see § 5 above), the 1975 Conference, which adopted the 1975 Regional Agreement inserted therein the Article 12 on the "Abrogation of the Regional Agreement for the African Broadcasting Area (Geneva, 1966) and the Plan annexed thereto", the text of which reads as follows : "Additional Protocol II to the Final Acts of the Conference provides for the abrogation of the Regional Agreement for the African Broadcasting Area (Geneva, 1966) and the Plan annexed thereto" (see Annex 2 to the present document).

13. The aforementioned Additional Protocol II, after an entry-part worded similar to the one used for Additional Protocol I (see quoted parts in § 10 above), contains, in contrast to the contents of Additional Protocol I, under "agree" only one operative paragraph providing for the abrogation of the 1966 Geneva Regional Agreement and Plan to be replaced by the 1975 Regional Agreement and Associated Plan on the date of the entry into force of the later agreement (for the text, see Annex 4 to the present document). The result is thus not a partial, but a complete abrogation of the 1966 Geneva Regional Agreement and Plan and their complete replacement by the 1975 Regional Agreement and Associated Plan.

#### 1961 Stockholm Regional Agreement

14. For the sake of completeness, reference has also to be made to the "Regional Agreement for the European Broadcasting Area, Stockholm, 1961" (hereinafter referred to as the "1961 Stockholm Regional Agreement"), which in its Article 10 stipulates that "The present Agreement shall abrogate and replace the European Broadcasting Agreement, Stockholm, 1952, and the Plans annexed thereto". With regard to that abrogation and replacement, it has to be recalled that Article 5 of the 1952 Stockholm Agreement provided that "The Agreement and the Plans shall be revised only by a Conference of the Administrations of the Members of the Union within the European Broadcasting Area". In its letter of invitation for the holding of the 1961 Conference in Stockholm, the Swedish Administration, expressly referring to Article 5 of the 1952 Stockholm Agreement, communicated its intention "to be host country of a special conference of the European area with a view to the revision of assignments in broadcasting bands I, II and III and the elaboration of new plans for broadcasting bands IV and V" (see § 1 of Document 1 of the 1961 Stockholm Conference). The agenda of that conference, for which the governments of the countries, Members of the Union, in the European Broadcasting Area were invited to be represented, was worded in very broad terms inasmuch as, with regard to VHF broadcasting, the conference was given the mandate "to examine the present situation in the European Broadcasting Area" and "to take any steps which, in the light of such examination, prove to be essential, or which are necessary as a result of the entry into force of the Radio Regulations, Geneva, 1959" and, furthermore with regard to UHF broadcasting, "to establish agreements and associated plans for the use of UHF broadcasting in the European Area" (ibid., § 2).

15. By virtue of Article 5 of the 1952 Stockholm Agreement and of the very broad terms of its agenda quoted above, the 1961 Conference could, from a legal point of view, simply abrogate the 1952 Stockholm Agreement and replace it by the 1961 Stockholm Regional Agreement, in the sense of abrogation and replacement being considered as the broadest form of a revision of an agreement.

#### Situation before the present Conference

16. With regard to the matters to be dealt with and solved by the present Conference, there are again two Regional Agreements in force, which at present regulate, at least, partially the same matters. These are the aforementioned 1961 Stockholm Regional Agreement and the Plans contained in Annex 2 thereto and the 1963 Geneva "Regional Agreement for the African Broadcasting Area" and the Plans contained in Annex 2 thereto.

17. Each of these Agreements contain an article dealing with the revision of the Agreement. Article 8 of the 1961 Stockholm Regional Agreement reads : "No revision of the Agreement shall be undertaken except by an Administrative Conference of the Members of the Union in the European Broadcasting Area, convened in accordance with the procedure laid in the International Telecommunication Convention" (emphasis added). The provision in Article 7 of the 1963 Geneva Regional Agreement is identical with the one quoted before, except that after the word "Members" it contains the words "and Associate Members of the Union in the African Broadcasting Area". The Final Acts of the 1961 Stockholm Conference, but not the Final Acts of the 1963 Geneva Regional Conference, contain also a Recommendation 5 of the Conference to the extent "that the Secretary-General should, seven years after the effective date of the Agreement, consult Members of the Union in the European Broadcasting Area regarding the advisability of revising the present Agreement and report to the Administrative Council of the Union on the result of such consultation" (emphasis added).

18. From the preceding provisions of both these Agreements it can, legally speaking, only be concluded that, in principle, any revision thereof can only be undertaken by an Administrative Conference of the Members of the Union in the European Broadcasting Area and by a similar conference of the Members of the Union in the African Broadcasting Area, respectively. Besides this first conclusion, there are other elements which need to be taken into account.

19. Resolution 510 of the the World Administrative Radio Conference, Geneva, 1979, which can be considered as being the basis of the present conference, does not in any way mention the 1963 Geneva Regional Agreement, but contains under paragraphs f) and g) of its "considering" paragraph, special safeguard provisions concerning certain stations in accordance with the 1961 Stockholm Regional Agreement. It stipulates in its "resolves" paragraph "that a regional conference shall be convened ... to draw up an agreement for Region 1 and the countries concerned in Region 3 and an associated plan for sound broadcasting in the band 87.5 - 108 MHz for Region 1 and for parts of Afghanistan and the Islamic Republic of Iran which are contiguous with Region 1" (emphasis added) and that "the second session ... will draw up the agreement and associated plan". No mention is made in that Resolution of the revision of either the 1961 Stockholm Regional Agreement or the 1963 Geneva Regional Agreement.

20. When the Administrative Council, at its 35th session (1980), fixed in its Resolution 852 for the first session of the present Conference the agenda, in which it did not make any reference to either of the aforementioned Regional Agreements in force, it adopted at the same time its Resolution 850 on the "Recommendation 5 on the European VHF/UHF Broadcasting Conference (Stockholm, 1961)" (referred to and quoted in § 17 above. Therein, the Administrative Council instructed the Secretary-General "to carry out in 1985 a consultation in regard to parts of the Stockholm Agreement (1961) which would not have been in the mandate of the Regional Administrative Conference to be convened for the planning of sound broadcasting in the band 87.5 - 108 MHz for Region 1 and certain countries concerned in Region 3 (Resolution 510 of the WARC-79)" (emphasis added).

21. As far as the 1963 Geneva Regional Agreement is concerned, the present Conference's attention is drawn to both Resolution 509 of the World Administrative Radio Conference, Geneva, 1979, and the subsequent action undertaken in that respect by both the Plenipotentiary Conference, Nairobi, 1982, and the Administrative Council.

22. Although the title of Resolution 509 speaks, in quite general and broad terms, of "Convening of a Regional Broadcasting Conference to Review and Revise the Provisions of the Final Acts" (emphasis added) of the 1963 Geneva Regional Conference, the WARC, Geneva, 1979, made, in the "considering" paragraph, subparagraph a) a distinction between the part of the "African VHF/UHF Plan" "for Sound Broadcasting in Band II (87.5 - 100 MHz)" and the parts thereof "for Television Broadcasting in Band I (47 - 68 MHz), Band III (174 - 223 MHz), Band IV (470 - 582 MHz) and Band V (582 - 960 MHz)". After "noting a) that for the band 87.5 - 108 MHz an FM sound broadcasting planning conference is foreseen for Region 1 (see Resolution 510)" and "realizing that there is a need to update the existing Plan", it resolved "that a regional conference be convened ..... to review and revise the provisions of the existing Television Broadcasting VHF/UHF Plan (Geneva, 1963) for the African Broadcasting Area, taking into account the assignments contained in the Stockholm Plan, 1961" (emphasis added).

23. In its Resolution 1, entitled "Future Conferences of the Union", the Plenipotentiary Conference, Nairobi, 1982, - using the same, broad title as in Resolution 509 of the WARC-79 - included, in § 1 of the "decides" paragraph, under sub-paragraph 1.8, a "First Session of the Regional Administrative Conference to Review and Revise the Provisions of the Final Acts of the African VHF/UHF Broadcasting Conference (Geneva, 1963) (first half of 1987, for 3 weeks)" and, under sub-paragraph 1.15 thereof, a "Second Session" of that same Conference in "September 1989, for 4 weeks".
24. At its 39th Session (1984), the Administrative Council adopted its Resolution 914 concerning the aforementioned "First Session", using again the same, broad title as in Resolution 509 of the WARC-79 and in Resolution 1 of the Plenipotentiary Conference, Nairobi, 1982. After "noting that a broadcasting plan for the African Broadcasting Area : - should take account of uses already existing and planned in the bordering areas;" and "- should consider the relevant propagation data applicable in those areas;", the Administrative Council, however, resolved "that the first session of the Regional Administrative Radio Conference to review and revise the provisions of the Final Acts of the African VHF/UHF Broadcasting Conference (Geneva, 1963) for Bands I (47 - 68 MHz), III (174 - 230 MHz), IV (470 - 582 MHz) and V (582 - 960 MHz) will be held in Geneva from 22 September 1986, for three weeks, with the following agenda : 1. preparation of the technical bases for the establishment of the frequency assignment plans for the television broadcasting service at the second session, ..." (emphasis added).
25. Through this restrictive precision by the Administrative Council, the matters related to the "Plan for Sound Broadcasting Stations in the Frequency Band 87.5 - 100 Mc/s", which are dealt with by the present Conference, in conformity with its mandate, have been excluded from the agenda and the mandate of the 1986 Regional Administrative Conference, which will deal exclusively with television broadcasting in view of the establishment by the second session of that Conference "of the frequency assignment plans for the television broadcasting service".
26. The report of the first to the second session of the present Conference, dated 17 September 1982, refers, at several places, to both the 1961 Stockholm Regional Agreement and the 1963 Geneva Regional Agreement, but does not speak of any revision of either of the Agreements.
27. The mandate of the present, second session of the Conference is contained in Resolution 896, adopted by the Administrative Council at its 38th session (1983). The agenda of the present session, contained in § 2 under the "decides" paragraph of Council Resolution 896, does, in its sub-paragraphs 2.1 to 2.4, not refer to, or mention in any way, the 1961 Stockholm Regional Agreement and the 1963 Geneva Regional Agreement and does, in particular, not provide for any revision or even abrogation, including only partial abrogation, of either of these Agreements in force by the present Conference.
28. In the light of the legislative history and practice followed by the Union in similar and comparable cases referred to earlier above and the more recent developments related to the mandate of the present Conference, the Conference will realize the difference which exists between the situations, with which both the 1961 Stockholm Conference and the 1975 Geneva Conference, on the one hand, were faced with, and the situation, with which the present Conference is faced with, on the other hand. The main and basic difference consists in the fact that both the 1961 Stockholm Conference and the 1975 Geneva Conference had the mandate to revise and/or abrogate the earlier Agreements on the subjects in question, whereas, in contrast thereto, the present Conference has no mandate to do so with respect to the 1961 Stockholm Regional Agreement and the 1963 Geneva Regional Agreement.

29. In the absence of such a mandate not being included in its agenda, the second conclusion from the legal point of view is that the present Conference is not in a position to proceed in the manner suggested in the draft Articles 8 and 9 of Document DT/6, which provide for the partial abrogation of both the Agreements in question by way of adopting by the Conference Additional Protocols in that respect.

Possible alternative solutions

30. On the other hand, it appears that the Agreement and the associated frequency assignment Plan to be adopted by the present Conference are indeed intended to supersede, as far as the matters regulated therein are concerned, those parts of the earlier Agreements and Plans of Stockholm (1961) and Geneva (1963) dealing with the same matters and that it is not in the interest of the Members of the Union concerned that, after the entry into force of the new Agreement and associated frequency assignment Plan, those earlier Agreements and Plans remain concurrently in force, as this would inevitably lead to technical, practical as well as legal incompatibilities and conflicts.

31. Other ways or means need to be explored in order to find an appropriate solution to the situation with which the present Conference appears to be faced.

- First alternative solution

32. The present Conference could evidently by way of a Resolution to be addressed to the Administrative Council request the latter to convene, in accordance with Article 8 of the 1961 Stockholm Regional Agreement and Article 7 of the 1963 Geneva Regional Agreement, respectively, an administrative conference of the Members of the Union in the European Broadcasting Area and an administrative conference of the Members of the Union in the African Broadcasting Area with a mandate given to both of them to revise respectively the two Agreements in question in the light of the Agreement and the associated frequency assignment Plan adopted by the present Conference; such conferences could, with that mandate, then certainly decide respectively upon a partial abrogation or any other revision of the two Agreements in question.

33. However, this way of proceeding would certainly be a complex one and might create difficulties with the already established calendar of conferences of the Union and could risk not to solve the problem, depending on the date the present Conference envisages to fix for the entry into force of the Agreement and Plan adopted by it. Therefore, this solution appears not to be recommendable, unless the Conference considers that such a complex procedure could be afforded.

- Second alternative solution

34. Remaining within the framework given by the provisions of the two Regional Agreements in force, the attention of the present Conference has to be also drawn to Article 7 of the 1961 Stockholm Regional Agreement and the corresponding Article 6 of the 1963 Geneva Regional Agreement both of which deal with the matter of "Termination of participation in the Agreement" and read as follows (text taken from Article 7 of the 1961 Stockholm Regional Agreement) :

"1. Any contracting administration shall have the right at any time to terminate its participation in the Agreement by a communication sent to the Secretary-General, who shall inform the other Members of Union in the European Broadcasting Area.

2. Such termination of participation shall take effect after the period of one year from the date of receipt, by the Secretary-General, of the said communication."

Although the wording of the above-quoted provisions seems to envisage rather the termination by a contracting administration of its total participation in the Agreement, it might also be interpreted as covering also the termination of its participation in respect of only certain parts of the Agreement. As, however, the second paragraph of the provision in question and quoted above is strict and does hardly lend itself to any extensive interpretation, such termination of participation in part would only "take effect after a period of one year from the date of receipt, by the Secretary-General of the said communication". This might lead to different dates of termination in respect of different contracting administrations and would barely coincide with the precise date to be fixed by the present Conference for the entry into force of the new Agreement and associated Plan. Therefore, this solution appears equally not to be recommendable.

- Third alternative solution

35. As neither of the two possible alternative solutions referred to above appears to be recommendable, the Conference might wish to resort to general principles of international law as contained in the Vienna Convention on the Law of Treaties of 23 May 1969, entered into force on 27 January 1980 (hereinafter referred to as the Vienna Convention).

36. In this respect the Conference's attention is drawn to Article 57 of the Vienna Convention dealing with the "suspension of the operation of a treaty under its provisions or by consent of the parties". The text of this Article reads as follows :

"The operation of a treaty in regard to all the parties or to a particular party may be suspended :

(a) in conformity with the provisions of the treaty; or

(b) at any time by consent of all the parties after consultation with the other contracting States."

37. If a partial suspension of the operation of the 1961 Stockholm Regional Agreement and of the 1963 Geneva Regional Agreement would serve the purposes of the Conference, the Conference might envisage a solution in line with paragraph (b) quoted above of Article 57 of the Vienna Convention. Such a solution would, in accordance with that provision, require a consultation between the contracting States parties to the respective Agreements and the "consent of all the parties" to the respective Agreement to suspend the operations thereof with regard to those parts, which in future should be governed by the new Agreement and associated Plan adopted by the present Conference. In that case, it would appear to be advisable to specify precisely those parts referred to in the preceding paragraph and to fix the date, as of which such suspension should become effective, probably the date of the entry into force of the Agreement and the associated Plan adopted by the present Conference. The means, by which this could be achieved, could be a Resolution to be adopted by the Conference in that respect, the modalities of which would have to be worked out once the Conference itself has made its decision as to the solution of the problem it wants to adopt.

- Fourth alternative solution

38. Another solution could be found by the present Conference in referring itself to Articles 30 and 59 of the Vienna Convention.



39. On the understanding that the new Agreement and associated Plan to be adopted by the present Conference are destined to supersede and to succeed to, at least in part, the 1961 Stockholm Regional Agreement and the 1963 Geneva Regional Agreement and the Plans annexed thereto respectively, the Conference's attention is first drawn to Article 30 of the Vienna Convention dealing with the "application of successive treaties relating to the same subject matter". The pertinent provisions of that Article read as follows :

"1. Subject to Article 103 of the Charter of the United Nations, the rights and obligations of States parties to successive treaties relating to the same subject-matter shall be determined in accordance with the following paragraphs.

2. When a treaty specifies that it is subject to, or that it is not to be considered as incompatible with, an earlier or later treaty, the provisions of that other treaty prevail.

3. When all the parties to the earlier treaty are parties also to the later treaty but the earlier treaty is not terminated or suspended in operation under Article 59, the earlier treaty applies only to the extent that its provisions are compatible with those of the later treaty.

4. When the parties to the later treaty do not include all the parties to the earlier one:

(a) as between States parties to both treaties the same rule applies as in paragraph 3;

(b) as between a State party to both treaties and a State party to only one of the treaties, the treaty to which both States are parties governs their mutual rights and obligations.

...".

40. Out of the provisions of Article 30 of the Vienna Convention quoted in the preceding paragraph, it is, in particular, § 3 thereof which needs to be looked into in the present context. According to that provision, "the earlier treaty applies only to the extent that its provisions are compatible with those of the later treaty" under two conditions :

a) that "all the parties to the earlier treaty are parties also to the later treaty", and

b) that "the earlier treaty is not terminated or suspended in operation under Article 59".

In view of the latter condition it might be useful to the Conference to take also Article 59 of the Vienna Convention into consideration.

41. Article 59 of the Vienna Convention deals with the "termination or suspension of the operation of a treaty implied by conclusion of a later treaty" :

"1. A treaty shall be considered as terminated if all the parties to it conclude a later treaty relating to the same subject-matter and :

(a) it appears from the later treaty or is otherwise established that the parties intended that the matter should be governed by that treaty; or

(b) the provisions of the later treaty are so far incompatible with those of the earlier one that the two treaties are not capable of being applied at the same time.

2. The earlier treaty shall be considered as only suspended in operation if it appears from the later treaty or is otherwise established that such was the intention of the parties."

42. It is, in particular, § 1 of Article 59 of the Vienna Convention and its sub-paragraph (a), which the present Conference might wish to consider. These provisions could have the following bearing on the work of the present Conference : if all the respective parties to the 1961 Stockholm Regional Agreement and to the 1963 Geneva Regional Agreement conclude the new Agreement and associated Plan, which relate "to the same subject matter" covered by these earlier treaties and if it appears from the new Agreement and associated Plan or "is otherwise established" that the parties to the new Agreement and associated Plan "intended that the matter should be governed by that treaty", then the 1961 Stockholm Regional Agreement and the 1963 Geneva Regional Agreement "shall be considered as terminated". Certainly, this would only apply to those parts - which would need to be specified, - which have been governed in the past by the two earlier Agreements and should in future be governed by the new Agreement and associated Plan.

43. The intention to which reference is made in sub-paragraph (a) of § 1 of Article 59 of the Vienna Convention could be established by the present Conference, if it wishes to do so, in two ways :

- either by including in the new Agreement an Article expressing that intention, or
- by adopting to that extent a Resolution specifying therein that intention, or
- by combining both means, the latter solution making it possible to specify in detail, in the Resolution, the precise date of the termination and giving details on actions to be taken by the Members of the Union concerned in that respect.

The latter could be mutatis mutandis, and perhaps somewhat simpler, worded similar to the steps provided for in Additional Protocol I of the Final Acts of the 1975 Conference (see § 10 above and Annex 3 to the present document). Any detailed wording as to the contents of the aforementioned special Article in the new Agreement and/or the Resolution to be adopted by the Conference would have to be worked out at a later stage once the Conference itself has made a decision on which solution it wishes to choose.

#### Concluding remark and additional observation

44. The foregoing legal analysis, together with the alternative solutions contained therein, started from the envisaged "partial abrogation" of the 1961 Stockholm Agreement and the 1963 Geneva Regional Agreement as contained in the draft Articles 8 and 9 in Document DT/6, on which a legal opinion has been given. It tried also to advise further by elaborating possible solutions to the problem the Conference is faced with and to submit them for the consideration of the Conference, which might study them and might also wish to explore other solutions, before taking a decision on the subject.

45. If, however, the present Conference would wish not only to partially terminate the 1961 Stockholm Regional Agreement and the 1963 Geneva Regional Agreement, but also to revise other parts of both these Agreements, which should, as amended by the present Conference, remain in force, then the situation would become even more difficult, as the mandate of the present Conference does not provide either for such a revision of one or both of these Agreements. However, up to now the Secretariat has not been informed of such an intention of the present Conference.

Annexes : 4

ANNEX 1

EXPLANATORY INFORMATION ABOUT THE ABROGATION OF THE  
EUROPEAN BROADCASTING CONVENTION, COPENHAGEN, 1948,  
AND THE ANNEXED COPENHAGEN PLAN

In reaching agreement on the procedure to be adopted for abrogating the European Broadcasting Convention and its annexed Copenhagen Plan, the parties to the Additional Protocol took account of the following points :

1. that the Agenda of the Regional Administrative LF/MF Broadcasting Conference held in Geneva during the period 6 October to 22 November 1975 was established by the Administrative Council of the I.T.U. with the agreement of the Members of the Union in Regions 1 and 3;
2. that the Agenda provided for the Conference to draw up an agreement and an associated plan of frequency assignments for broadcasting stations in the LF/MF broadcasting bands in Regions 1 and 3 to replace, as appropriate, the existing plan for those frequency bands;
3. that the European Broadcasting Convention and Copenhagen Plan annexed thereto was established by plenipotentiaries and subject to ratification by the respective governments;
4. that Article 6 of the European Broadcasting Convention provides for the abrogation of the European Broadcasting Convention and annexed Copenhagen Plan between all the contracting Governments at the entry into force of a new Convention and also that the Copenhagen Plan shall be abrogated as from the entry into force of a new Plan;
5. that the Copenhagen Plan annexed to the European Broadcasting Convention contains assignments and related characteristics to broadcasting stations and stations of other radio services;
6. that as No. 47 of the Malaga-Torremolinos Convention stipulates that :

"The agenda of a regional administrative conference may provide only for specific telecommunication questions of a regional nature, including instructions to the International Frequency Registration Board regarding its activities in respect of the region concerned, provided such instructions do not conflict with the interests of other regions ....."

it was recognized that the status of the coast stations listed in Chapter II of the Copenhagen Plan remained unaffected until such time as the assignments to these stations were modified by the agreement of the parties concerned or by a competent conference.

ANNEX 2

I.T.U.  
F.A. BC

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AG  
1975

ARTICLE 9

Accession to the Agreement

1. Any Member of the Union in Regions 1 and 3 which has not signed this Agreement may accede thereto at any time. Such accession shall extend to the Plan as amended at the time of the accession and shall be made without reservation. The Secretary-General shall be notified thereof and he shall inform the other Members of the Union.
2. Accession to the Agreement shall take effect on the date on which the notification of accession is received by the Secretary-General.
3. Any Member of the Union party to the Regional Agreement for the African Broadcasting Area (Geneva, 1966) which accedes to the present Agreement in conformity with paragraphs 1 and 2 of this Article, shall by this act of accession terminate its participation in the Regional Agreement for the African Broadcasting Area and the Plan annexed thereto.

ARTICLE 10

Termination of Participation in the Agreement

1. Any Contracting Member shall have the right at any time to terminate its participation in the Agreement by a notification sent to the Secretary-General who shall inform the other Members of the Union.
2. Such termination of participation shall take effect after a period of one year from the date of receipt, by the Secretary-General, of the said notification.

ARTICLE 11

Abrogation of the European Broadcasting Convention  
(Copenhagen, 1948) and annexed Copenhagen Plan

Additional Protocol I to the Final Acts of the Conference provides for the abrogation of the European Broadcasting Convention (Copenhagen, 1948) and the annexed Copenhagen Plan.

ARTICLE 12

Abrogation of the Regional Agreement for the  
African Broadcasting Area (Geneva, 1966)  
and the Plan annexed thereto

Additional Protocol II to the Final Acts of the Conference provides for the abrogation of the Regional Agreement for the African Broadcasting Area (Geneva, 1966) and the Plan annexed thereto.

ARTICLE 13

Effective Date of the Agreement

The Agreement shall enter into force on twenty-three November, one thousand nine hundred and seventy-eight at 0001 hours GMT.

ANNEX 3

I.T.U.  
F.A. BC

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AP-I  
1975

**ADDITIONAL PROTOCOL I**

**Relating to the Abrogation of the European Broadcasting Convention  
(Copenhagen, 1948) and the annexed Copenhagen Plan**

The delegates of the following Members of the International Telecommunication Union:

*Belgium, Byelorussian Soviet Socialist Republic, People's Republic of Bulgaria, Republic of Burundi, Vatican City State, Denmark, Finland, France, Greece, Hungarian People's Republic, Ireland, Italy, Kingdom of Morocco, Monaco, Norway, Kingdom of the Netherlands, People's Republic of Poland, Ukrainian Soviet Socialist Republic, Socialist Republic of Roumania, United Kingdom of Great Britain and Northern Ireland, Confederation of Switzerland, Czechoslovak Socialist Republic, Tunisia, Union of Soviet Socialist Republics, Socialist Federal Republic of Yugoslavia*

parties to the European Broadcasting Convention (Copenhagen, 1948) and meeting in Geneva for the Regional Administrative LF/MF Broadcasting Conference (Regions 1 and 3), Geneva, 1975, convened in accordance with the provisions of the International Telecommunication Convention (Malaga-Torremolinos, 1973),

agree that

1. the Regional Agreement Concerning the Use by the Broadcasting Service of Frequencies in the Medium Frequency Bands in Regions 1 and 3 and in the Low Frequency Bands in Region 1 and the annexed Plan shall replace the European Broadcasting Convention and annexed Copenhagen Plan which shall be abrogated\* save that the rights and obligations in respect of the coast stations listed in Chapter II of the Copenhagen Plan shall continue until modified by the agreement of the parties concerned or by a competent conference;
2. the abrogation of the European Broadcasting Convention and Copenhagen Plan in accordance with 1. above shall take effect on the coming into force of the Regional Agreement Concerning the Use by the Broadcasting Service of Frequencies in the Medium Frequency Bands in Regions 1 and 3 and in the Low Frequency Bands in Region 1 and of the annexed Plan provided that each of the contracting governments to the European Broadcasting Convention shall have deposited with the Government of the Kingdom of Denmark (the depository of the aforesaid Convention) a declaration of acceptance of the abrogation of the European Broadcasting Convention and the annexed Copenhagen Plan;
3. the aforesaid members shall take action to inform the Government of the Kingdom of Denmark that they formally agree to the abrogation of the European Broadcasting Convention and the Copenhagen Plan annexed thereto;
4. the aforesaid notification procedure shall be taken as soon as practicable before entry into force of the Regional Agreement Concerning the Use by the Broadcasting Service of Frequencies in the Medium Frequency Bands in Regions 1 and 3 and in the Low Frequency Bands in Region 1 and of the annexed Plan;
5. the Government of the Kingdom of Denmark should be asked to inform the governments who are parties to the European Broadcasting Convention and the Secretary-General of the International Telecommunication Union of the notifications received in accordance with 3. above.

*(The delegations of the above-mentioned countries have signed the Additional Protocol I)*

\* Explanatory information about the abrogation of the European Broadcasting Convention and annexed Copenhagen Plan is recorded in Document No. 125 of this Conference.

ANNEX 4

I.T.U.  
F.A. BC

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AP-II  
1975

**ADDITIONAL PROTOCOL II**

**Abrogating the Regional Agreement Concerning the Use  
by the Broadcasting Service of Frequencies in the  
Medium Frequency Band in the African Broadcasting Area  
(Geneva, 1966), and the Plan annexed thereto**

The delegates of the following countries Members of the International Telecommunication Union:

*Algeria (Algerian Democratic and Popular Republic), United Republic of Cameroon, Central African Republic, People's Republic of the Congo, Republic of the Ivory Coast, Republic of Dahomey, Arab Republic of Egypt, Spain, Ethiopia, France, Gabon Republic, Ghana, Republic of Guinea, Republic of Upper Volta, Republic of Kenya, Republic of Liberia, Malawi, Malagasy Republic, Republic of Mali, Kingdom of Morocco, Mauritius, Islamic Republic of Mauritania, Republic of the Niger, Federal Republic of Nigeria, Republic of Uganda, United Kingdom of Great Britain and Northern Ireland, Republic of the Senegal, United Republic of Tanzania, Republic of the Chad, Togolese Republic, Republic of Zaire, Republic of Zambia*

parties to the Regional Agreement Concerning the Use by the Broadcasting Service of Frequencies in the Medium Frequency Band in the African Broadcasting Area (Geneva, 1966), and meeting in Geneva for the Regional Administrative LF/MF Broadcasting Conference (Regions 1 and 3), convened in accordance with the provisions of the International Telecommunication Convention (Malaga-Torremolinos, 1973),

*agree*

that the Regional Agreement Concerning the Use by the Broadcasting Service of Frequencies in the Medium Frequency Band in the African Broadcasting Area (Geneva, 1966) and the Plan annexed thereto shall be abrogated and replaced by the Regional Agreement Concerning the Use by the Broadcasting Service of Frequencies in the Medium Frequency Bands in Regions 1 and 3 and in the Low Frequency Bands in Region 1 on the date of entry into force of this Agreement.

*(The delegations of the above-mentioned countries have signed the Additional Protocol II)*

**ADDITIONAL PROTOCOL III**

**Relating to the Use of the Frequency 522 kHz  
by the Broadcasting Service in Austria**

The delegates of the following Members of the International Telecommunication Union:

*Republic of Afghanistan, Algeria (Algerian Democratic and Popular Republic), Federal Republic of Germany, Austria, People's Republic of Bangladesh, Belgium, Byelorussian Soviet Socialist Republic, People's Republic of Bulgaria, Republic of Burundi, Republic of Cyprus, Vatican City State, Denmark, Finland, France, Republic of Upper Volta, Hungarian People's Republic, Iran, Ireland, Iceland, Italy, Hashemite Kingdom of Jordan, State of Kuwait, Kingdom of Lesotho, Lebanon, Republic of Liberia, Principality of Liechtenstein, Luxembourg, Malawi, Monaco, Federal Republic of Nigeria, Norway, Kingdom of the Netherlands, People's Republic of Poland, Portugal, German Democratic Republic, Ukrainian Soviet Socialist Republic, Socialist Republic of Roumania, United Kingdom of Great Britain and Northern Ireland, Sweden, Confederation of Switzerland, Czechoslovak Socialist Republic, Togolese Republic, Tunisia, Turkey, Union of Soviet Socialist Republics, People's Democratic Republic of Yemen*

meeting in Geneva for the Regional Administrative LF/MF Broadcasting Conference (Regions 1 and 3), Geneva, 1975, convened in accordance with the provisions of the International Telecommunication Convention (Malaga-Torremolinos, 1973),

# CONFÉRENCE RÉGIONALE DE RADIODIFFUSION

(SECONDE SESSION)

GENEVE, 1984

Corrigendum 1 au  
Document 105-F/E/S  
16 novembre 1984

## COMMISSION 4

### PREMIER RAPPORT DU GROUPE DE PLANIFICATION 4A A LA COMMISSION 4

Dans le sous-groupe 4A1 ajouter : MRC

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## COMMITTEE 4

### FIRST REPORT OF PLANNING GROUP 4A TO COMMITTEE 4

In Sub-Group 4A1 add : MRC

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## COMISIÓN 4

### PRIMER INFORME DEL GRUPO DE PLANIFICACIÓN 4A A LA COMISIÓN 4

En el Subgrupo 4A1 añádase: MRC

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INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 105-E  
14 November 1984  
Original : French

Source : DT/25(Rev.1)

COMMITTEE 4

FIRST REPORT OF PLANNING GROUP 4A  
TO COMMITTEE 4

The Working Group 4A has held three formal meetings during which the following action was taken :

- 1) the Group noted the organization of work outlined in Document DT/9;
- 2) the procedure of work outlined in Document DT/10 was discussed and after an exchange of views the Group agreed to complete Form 1 for all cases where negotiations were necessary;
- 3) the Group was then divided into three Sub-Groups with the following membership :

<u>Sub-Group</u>	<u>Participants and countries involved</u>							<u>Coordinator</u>
4A1	ALG	ARS	DJI	EGY	ETH	LBY	MLI	} Mr. AL-ABDUL HADI (ARS)
	MTN	NGR	SDN	TCD	YEM	YMS		
4A2	MTN	MLI	NGR	TCD	SEN	GMB	GNB	} Mr. Y. KABA (HVO) (BFA)
	GUI	SRL	ASC	HVO	LBR	GHA	TGO	
	BEN	NIG	STP	GNE	CME	CPV	GAB	
	COG	ZAI	RRW	BDI	AGL	SHN	CTI	
	CAF							
4A3	SDN	ETH	DJI	UGA	KEN	SOM	ZAI	} Mr. H. SOSOME (BOT)
	RRW	BDI	TZA	ZMB	MWI	NMB	BOT	
	SWZ	MOZ	LSO	SWZ	COM	MYT	MDG	
	MAU	SEY	REU	ZWE				

- 4) the Group also agreed that a minimum nuisance field strength of 60 dB( $\mu$ V/m) should be applied as the minimum figure below which delegations would not enter objections in Form 1. Nevertheless, for the purpose of Form 1, the countries were left free to agree on higher values which they deemed suitable for their areas.

J. NGARUIYA  
Chairman of Working Group 4A

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 106-E  
14 November 1984  
Original: English

Source: Documents 87, 94 and 102

PLENARY MEETING

## FOURTH REPORT BY THE CHAIRMAN OF THE TECHNICAL WORKING GROUP OF THE PLENARY

Annex 1 contains a draft Recommendation relating to continuation of studies relevant to the compatibility between the aeronautical radionavigation service operating in the frequency band 108 - 117.975 MHz and the FM broadcasting service operating in the frequency band 87.5 - 108 MHz.

Annex 2 contains a draft Recommendation relating to continuation of studies relevant to the compatibility between the aeronautical mobile (R) service in the band 117.975 - 137 MHz and the FM broadcasting service in the band 87.5 - 108 MHz.

Annex 3 contains a draft Resolution relating to a proposal for modification of Appendix 8 to the Radio Regulations: Maximum spurious emission power levels of broadcasting stations operating in the band 87.5 - 108 MHz, radiated in the band 108 - 137 MHz.

J. RUTKOWSKI  
Chairman of the  
Technical Working Group  
of the Plenary

Annexes: 3

ANNEX 1

DRAFT RECOMMENDATION GTECH/1

Relating to Continuation of Studies Relevant to the  
Compatibility Between the Aeronautical Radionavigation Service  
Operating in the Frequency Band 108 - 117.975 MHz and the  
FM Broadcasting Service Operating in the  
Frequency Band 87.5 - 108 MHz

The Regional Administrative Conference for FM Sound Broadcasting in the  
VHF Band (Region 1 and certain countries concerned in Region 3), Geneva, 1982/1984,

considering

- a) that this Conference has prepared a frequency plan for the broadcasting service taking account of compatibility with the aeronautical radionavigation service in accordance with Recommendation 704 of the World Administrative Radio Conference, Geneva, 1979;
- b) that for these purposes the Conference has established protection criteria based on the report of the first session of this Conference held in 1982, on recent CCIR studies and on proposals made to the second session of this Conference by administrations;
- c) that the ICAO has agreed Standards relating to the immunity performance of future ILS and VOR receivers with an applicability date of 1 January 1998 in which basic performance requirements for intermodulation and desensitization have been incorporated;
- d) that the aeronautical radionavigation service is a safety service, and ILS and VOR facilities provide important guidance to aircraft at critical points in their operation;

noting

that this Conference was unable to arrive at final conclusions on some of the compatibility criteria and that refinements of the criteria will assist in some cases in the implementation and modification of the plan;

requests the CCIR

to continue to study the question of compatibility between the aeronautical radionavigation service and the broadcasting service in the bands concerned, in particular :

- a) protection ratio values for future airborne receivers against spurious emissions from broadcasting stations (referred to as A1 type of interference) for cases where the frequency of the spurious emissions does not coincide with the aeronautical frequency;
- b) protection ratio values for present and future receivers against out-of-band emissions from broadcasting stations (referred to as A2-type of interference);

- c) criteria for prediction of third order intermodulation (referred to as BI-type of interference) generated in airborne receivers by three unwanted signals, when the receiver meets the ICAO Standard for two-signal intermodulation performance for future receivers;
- d) the effect of sinusoidal modulation of the broadcasting transmitters during test and line up and to recommend any precautions or procedures at broadcasting stations necessary to maintain the agreed protection of the aeronautical service;

invites the ICAO

to continue its study of these problems and communicate the results of these studies to the CCIR;

requests the Secretary-General

to communicate this Recommendation to the ICAO;

recommends

that administrations participate actively in these studies and provide the CCIR with expert guidance on this matter.

ANNEX 2

DRAFT RECOMMENDATION GTECH/2

Relating to Continuation of Studies Relevant to the  
Compatibility Between the Aeronautical Mobile (R) Service  
in the Band 117.975 - 137 MHz and the FM Broadcasting  
Service in the Band 87.5 - 108 MHz

The Regional Administrative Conference for FM Sound Broadcasting in the VHF  
Band (Region 1 and certain countries concerned in Region 3), Geneva, 1982/1984,

considering

- a) that VHF air/ground communications perform a vital role in the operation and safety of aircraft which could be prejudiced by interference;
- b) that compatibility problems between the aeronautical mobile (R) service in the band 117.975 to 137 MHz and the FM broadcasting service in the band 87.5 to 108 MHz have arisen in various parts of the world;
- c) that the second session of this Conference did not consider all aspects of compatibility between these two services in the preparation of the broadcasting Plan;
- d) that the CCIR and the ICAO have made studies of the problem and the CCIR has recommended technical criteria which can be used by administrations for coordination between the services concerned;
- e) that the ICAO has agreed Standards relating to the immunity performance of future aeronautical VHF communication receivers with an applicability date of 1 January 1998 in which basic performance requirements for intermodulation and desensitization have been incorporated;

requests the CCIR

to continue the study of the compatibility between these two services from the aspect of possible interference to the aeronautical service;

invites the ICAO

to continue its study of these problems and communicate the results of these studies to the CCIR;

requests the Secretary-General

to communicate this Recommendation to the ICAO;

recommends

that administrations participate actively in these studies and provide the CCIR with expert guidance on this matter.

ANNEX 3

DRAFT RESOLUTION GTECH/1

Relating to a proposal for modification of Appendix 8  
to the Radio Regulations: maximum spurious emission power  
levels of broadcasting stations operating in the  
band 87.5 - 108 MHz, radiated in the  
band 108 - 137 MHz

The Regional Administrative Conference for FM Sound Broadcasting in the  
VHF Band (Region 1 and certain countries concerned in Region 3), Geneva, 1982/1984,

considering

- a) that in the agenda for the second session (Resolution No. 896) the Conference is requested to review some of the technical criteria used for planning of the band 87.5 - 108 MHz, and in particular the maximum obtainable suppression of spurious emissions in the band 108 - 137 MHz from broadcasting stations, in the light of the relevant CCIR contributions;
- b) that on the basis of the CCIR's proposals, the second session of the Conference has adopted spurious emission power levels in the band 108 - 137 MHz which are lower than those given for that band in Appendix 8 to the Radio Regulations;
- c) that the lower values mentioned in b) above have been used in the planning process to ensure protection of the aeronautical radionavigation service in the band 108 - 117.975 MHz;
- d) that the CCIR and ICAO are requested to continue studying the compatibility between the aeronautical mobile (R) service in the band 118 - 137 MHz and the FM broadcasting service in the band 87.5 - 108 MHz (Recommendation GTECH/2) and that in doing so they will take into account the spurious emission power levels mentioned in b) above;

requests

the Administrative Council to place on the agenda of the next competent Conference the question of modifying Appendix 8 to the Radio Regulations to include lower spurious emission power levels for the band 108 - 137 MHz.

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 107-E

14 November 1984

Original : French

## BUDGET CONTROL COMMITTEE

### Note by the Secretary of the Conference

#### FINAL ACTS OF THE CONFERENCE

Resolution 83 (amended) of the Administrative Council lays down the following with regard to publication of the Final Acts of the conferences or meetings:

- E. Publication of the Final Acts of conferences or meetings
- 18. In principle, the Final Acts of conferences or meetings, whatever their method of reproduction, shall be published by the General Secretariat in their usual place of publication and with the minimum of cost;
- 19. however, this rule may be disregarded in recognized cases of urgency and at the special request of the conference or meeting;
- 20. in this connection:
  - 20.1 if a conference or meeting prints, for its own use, documents of which typographical composition can subsequently be used, in whole or in part, for the printing of the Final Acts, it must bear a percentage of the composition costs and the whole of the printing costs of the said document;
  - 20.2 when this is not so, the printing costs of the Final Acts shall, in principle, be posted to the printed matter account, but the conference or meeting may decide, in special circumstances, to subsidize these costs;
  - 20.3 the percentage of the composition cost mentioned in 20.1 above, or the subsidy mentioned in 20.2 above, shall be decided by the Plenary Meeting of the conference or meeting;
- 21. apart from the Final Acts distributed to the persons concerned as a conference document, no copy shall be supplied free of charge to participants in the conference or meeting.

It will be possible to use for final printing some of the texts constituting the Final Acts of the Conference which will be submitted for signature by Delegations.

It is up to the Plenary Meeting of the Conference to determine the percentage of the cost of preparing these texts to be charged respectively to the budget of the Conference and the supplementary publications budget.

The budget of the Conference makes provision in item 20.391 for one-third, i.e. 40,000 Swiss francs, to be charged to the Conference accounts.

The Budget Control Committee is requested to submit a proposal to the Plenary Meeting on this matter.

J. JIPGUEP  
Secretary of the Conference



INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Corrigendum 1 to  
Document 108-E  
21 November 1984  
Original: English

PLENARY MEETING  
COMMITTEE 5

FIFTH REPORT BY THE CHAIRMAN  
OF THE TECHNICAL WORKING GROUP OF THE PLENARY

Replace in Appendix 1, section 1: "Limits relating to the land mobile service", the first paragraph by the following text:

"For broadcasting stations using only horizontal polarization: 18 dB( $\mu$ V/m) and for broadcasting stations using vertical or mixed polarization only the vertical component of the total e.r.p. of the broadcasting station should be taken into account: 0 dB( $\mu$ V/m). Both values shall be calculated at an antenna height of 10 m above ground. It is assumed that the land mobile service is vertically polarized and that in case of mixed polarization of the broadcasting station at least one-tenth of the total e.r.p. of the broadcasting station is radiated in the vertical component.".

J. RUTKOWSKI  
Chairman of the  
Technical Working Group of the Plenary

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**  
(SECOND SESSION) GENEVA, 1984

Document 108-E  
14 November 1984  
Original: English

Source: Document 103

PLENARY MEETING

FIFTH REPORT BY THE CHAIRMAN  
OF THE TECHNICAL WORKING GROUP OF THE PLENARY

The Technical Working Group of the Plenary has considered the proposals prepared by the Sub-Working Group PL/C concerning the technical aspects of the compatibility between the FM broadcasting service and other services using the frequency band 87.5 - 108 MHz i.e., land mobile service, fixed service and aeronautical mobile (OR) service and adopted conclusions which are included in the annex. This annex is presented to the Plenary Meeting to take note of it and to the Committee 5 to take the appropriate actions when establishing the procedures concerning this problem.

The particular attention of the Conference is drawn to the coordination distances as shown in the Appendix 2 to the Annex.

J. RUTKOWSKI  
Chairman of the  
Technical Working Group of the Plenary

Annex: 1

ANNEX

1. Proposal concerning wideband transmissions in the land mobile service

In a spirit of compromise, the French delegation accepted that column 4 of Table 2 of Document 6 will not appear in the Final Acts of this Conference on the understanding that the figures contained in that column could be used in bilateral or multilateral discussions between France and other European administrations concerned in order to enable the normal operation of the wideband transmissions in the land mobile service.

2. Proposal concerning antenna height factors

The method and criteria concerning antenna height factors, to be used for coordination between administrations between the broadcasting and land mobile and fixed services, are to be agreed by the administrations concerned and should be based where possible on the latest relevant CCIR Recommendations.

The United Kingdom delegation reserved its position on this conclusion..

3. Proposal concerning sharing criteria between the broadcasting and the aeronautical mobile (OR) services

It is recommended that the field strengths of the interfering broadcasting station shown in the table below may be used as sharing criteria between the broadcasting and the aeronautical mobile (OR) services.

Frequency separation between BC station and aeronautical mobile (OR) station	dB( $\mu$ V/m) at an altitude of 10,000 metres
0	20
50	34
100	58
150	90

The delegations of Denmark, Italy and the Islamic Republic of Iran reserved their position.

4. Coordination distances

Resulting from a suggestion of the IFRB to state some values above which coordination may be necessary, if the Conference decides that such a procedure would be desirable, the Working Group established the field strength limits which might be taken into consideration when coordination is required in the case of a proposed modification to the Plan (see Appendix 1).

To show the consequences resulting from the application of the limits as mentioned in Appendix 1, examples are given in Appendix 2 for information purposes.

The delegations of Denmark and Norway reserved their position on the field strength limits for the aeronautical mobile (OR) service (Appendix 1, point 3) and also on the column relating to the distances concerning the aeronautical mobile (OR) service of Appendix 2.

The delegation of the Islamic Republic of Iran reserved provisionally its position on paragraphs 1 and 3 in Appendix 1.

5. Noting that no other proposals were made for additions or corrections to Chapter 5, paragraphs 1 and 2 of the report to the second session, the Working Group did assume that these paragraphs can be used in the further work of the Conference.

Appendices: 2

APPENDIX 1

FIELD STRENGTHS LIMITS WHICH MIGHT BE TAKEN INTO CONSIDERATION  
FOR DETERMINING WHEN COORDINATION IS REQUIRED BY THE  
CASE OF A PROPOSED MODIFICATION TO THE PLAN

1. Limits relating to the land mobile service

For broadcasting stations using only horizontal polarization : 18 dB( $\mu$ V/m) and for broadcasting stations using vertical or mixed polarization : 0 dB( $\mu$ V/m), both calculated at an antenna height of 10 m above ground and assuming that the land mobile service is vertically polarized.

These field strengths will be based on the curves appearing in Annex 2, (50% of locations and 10% of time). (See Figures 2.3, 2.4 and 2.5 of Document 61.)

For mixed paths the calculation method as described in § 2.1.3.4 of Document 61 will be applied.

2. Limits relating to the fixed service

For broadcasting stations : 0 dB( $\mu$ V/m), calculated at an antenna height of 10 m above ground.

This field strength will be based on the curves appearing in Annex 2, (50% of location, 10% of time). (See Figures 2.3, 2.4 and 2.5 of Document 61.)

For mixed paths the calculation method as described in § 2.1.3.4 of Document 61 will be applied.

3. Limits relating to the aeronautical mobile (OR) service

20 dB( $\mu$ V/m) at an altitude of 10,000 metres. This field strength is based on free space propagation. Coordination beyond line-of-sight distance is not required.

# APPENDIX 2

e.r.p. of broadcasting station/ antenna height  1	Distance (km) between a broadcasting station and a station in the			
	Land Mobile service		Fixed service	Aeronautical mobile (OR) service
	2	3	4	
	BC horizontally polarized 2.1	BC vertically or mixed polarized 2.2		4.1 4.2
100 kW/1,200 m	430*	630*	630*	550** 750***
1 kW/ 150 m	160*	330*	330*	460** 600***
100 W/ 75 m	90*	230*	230*	445** 550***

\* Based on the technical limits of Annex 1 to this document

\*\* Line-of-sight distance (effective Earth's radius is 4/3 of the actual radius)

\*\*\* Based on the propagation curve shown in Figure 2.9 of Document 61

Note : Columns 2 and 3 are based on the propogation curve shown in Figure 2.3 of Document 61.

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 109-E  
14 November 1984  
Original: English

## COMMITTEE 4

### Note by the Secretary of the Conference

#### REFERENCE LIST OF SOUND BROADCASTING (BC) AND TELEVISION (BT) STATIONS

At the request of the IFRB, I transmit the attached note for the information of Committee 4.

J. JIPGUEP  
Secretary of the Conference

Annex: 1

ANNEX

NOTE BY THE IFRB

Reference list of sound broadcasting (BC)  
and television (BT) stations

According to the report to the second session (Annex 1), the IFRB established a Reference List of BC and BT stations which are situated in the coordination area with countries using the band 87.5 to 100 MHz and operating in accordance with the Regional Agreement, Stockholm, 1961. The IFRB established the first list in August 1983 which was sent to administrations under IFRB Circular-letter No. 557 of 30 September 1983 and subsequently the IFRB published a revised list in IFRB Circular-letter No. 575 of 10 April 1984.

In September 1984 the IFRB published a corrigendum to the revised Reference List in IFRB Circular-letter No. 586 and in Annex 6 of this Circular-letter drew attention to a number of stations (BT) from one administration which had not been included in the Reference List owing to the fact that the Board had not been notified before the closing date that the procedure of the Regional Agreement, Stockholm, 1961, had been successfully applied before 1 December 1983 as requested by the first session (report to the second session, Annex 1, paragraph 6). The Board was subsequently informed that the procedure of the Regional Agreement, Stockholm, 1961, had been successfully applied in respect of these stations.

As mentioned in the IFRB Report to the second session (Document 32, paragraph 8.1.5) the Board did not consider itself authorized to modify the Reference List. These BT assignments, given at annex to this document, are therefore submitted to the second session of the Conference for consideration of their possible formal inclusion in the Reference List before starting the second Analysis.



LIST OF TELEVISION STATIONS NOT INCLUDED IN THE REFERENCE LIST

Admin./ Country	Frequency (Channel)	Name of station	Coordinates	
BLR	Ch 4	BREST	23E42	52N06
UKR	Ch 4	BOLEKHOV	23E51	49N03
UKR	Ch 4	FEODOSIA	35E20	45N02
UKR	Ch 4	KRASNOILOV	24E48	48N05
UKR	Ch 4	NOVAYA USHITSA	27E16	48N49
UKR	Ch 4	RAKETA VELIKAYA	24E26	48N28
UKR	Ch 4	ZELENAYA	24E13	48N01
URS	Ch 4	FLORESHTI	28E17	47N53
URS	Ch 4	LACHDENPOCHJA	30E10	61N30
URS	Ch 4	LEOVO	28E15	46N30
URS	Ch 4	LOUKNI	33E04	66N04
URS	Ch 4	MAZHEIKIAI	22E19	56N21
URS	Ch 4	MUEZERSKIY	32E00	63N58
URS	Ch 4	NARVA	28E12	59N22
URS	Ch 4	PETCHENGA	31E17	69N30
URS	Ch 4	TARTU	26E41	58N22
URS	Ch 4	VIBORG	28E46	60N42
UKR	Ch 5	KRASNA	23E54	48N16
UKR	Ch 5	LUGI ZAKARPAT.	24E26	48N04
UKR	Ch 5	MOGILEV PODOLSK.	27E47	48N30
UKR	Ch 5	ONUT	26E00	48N34
UKR	Ch 5	TERNOPOL	25E37	50N21
UKR	Ch 5	TURKA	23E04	49N10
UKR	Ch 5	VERKHN. PETROVOTSI	25E44	48N04
UKR	Ch 5	VIZHNITSA	25E12	48N14
URS	Ch 5	ENSKIY	31E10	67N35
URS	Ch 5	HAAPSALU	23E21	58N34
URS	Ch 5	KALARASH	28E19	47N16
URS	Ch 5	KLAIPEDA	21E06	55N44
URS	Ch 5	KOKHTLA-JARVE	27E15	59N24
URS	Ch 5	LIEPAJA	21E02	56N33
URS	Ch 5	NAISTENIARVE	32E40	62N17
URS	Ch 5	NIKEL	30E12	69N28
URS	Ch 5	NISPORENI	28E12	47N05
URS	Ch 5	PANEVEZHIS	24E20	55N43
URS	Ch 5	PITKIARANTA	31E29	61N35
URS	Ch 5	POROSZERO	32E44	62N45
URS	Ch 5	PRIOZERSK	30E10	61N02
URS	Ch 5	TUNGOZERO	31E20	65N42
URS	Ch 5	VENTSPILS	21E30	57N20
URS	Ch 5	VIARTSILA	30E46	62N10

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 110-E  
14 November 1984  
Original : French

COMMITTEE 2

SECOND REPORT OF THE WORKING GROUP

OF COMMITTEE 2

(CREDENTIALS)

The Working Group of Committee 2 held a second meeting on  
14 November 1984 to examine the Credentials of the following delegations :

ANGOLA (People's Republic of)  
BULGARIA (People's Republic of)  
EGYPT (Arab Republic of)  
MALTA (Republic of)  
NIGER (Republic of the)  
POLAND (People's Republic of)  
PORTUGAL  
TOGOLESE REPUBLIC  
TUNISIA  
YEMEN ARAB REPUBLIC  
YEMEN (People's Democratic Republic of)

The Credentials of these delegations were all found to be in order.

J. SZÉKELY  
Chairman of the Working Group C2-A

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 111-E  
20 November 1984  
Original: English

PLENARY MEETING

MINUTES

OF THE

FIFTH PLENARY MEETING

Thursday, 15 November 1984, at 1400 hrs

Chairman: Miss M. HUET (France)

Subjects discussed:

Documents

- |  |     |
|--|-----|
| 1. Fourth report of the Technical Working Group                      | 106 |
| 2. Fifth report of the Technical Working Group                       | 108 |
| 3. Assignment of additional work to the Technical Working Group      | 113 |
| 4. Approval of the Minutes of the third Plenary Meeting              | 68  |
| 5. Oral report on the progress of the work in Committee 4            | -   |
| 6. Extension of deadline for submission of (blue) modification forms | -   |

1. Fourth report of the Technical Working Group (Document 106)

1.1 The Chairman of the Technical Working Group, introducing the report, said that two of the annexes into which it was divided contained draft Recommendations relating to the continuation of certain CCIR studies in order that coordination between administrations should in future be based on more thorough analyses. The third annex contained a draft Resolution inviting the Administrative Council to entrust a future Administrative Conference with the modification of Appendix 8 of the Radio Regulations.

For greater clarity, the Chairman of Technical Sub-Working Group PL/B had proposed, with the approval of the French delegation that had drafted the original text, that the last paragraph of Annex 3 be amended to reflect the wording in the title.

That amendment was approved.

1.2 The Chairman of the IFRB suggested that since the draft Resolution in Annex 3 contained no decision, it might more appropriately be called a draft Recommendation. He also suggested that the text would be more positive if the first part of considering a) were amended to read:

"a) that the second session, of the Conference, having taken into account the relevant contributions of the CCIR, considered that some of the technical criteria ... spurious emissions in the band 108 - 137 MHz from broadcasting stations should be revised",

and that in considering b) the word "proposals" be replaced by "conclusions".

Those suggestions were approved.

Annexes 1 and 2, and Annex 3, as amended, were approved.

2. Fifth report of the Technical Working Group (Document 108)

2.1 The Chairman of the Technical Working Group, introducing the report, pointed out that it was the result of a good deal of compromise achieved after lengthy discussion. Particular attention was drawn to the last sentence on page 1 of the report, relating to the coordination distances in Appendix 2; they had been inserted at the request of the Italian delegation, which would otherwise have had to maintain its reservation, considering that coordination distances ran up to very high figures. The Italian delegation had also requested that the sentence should state in addition that the coordination distance could go up to 750 km, but its request had not been complied with because it had been made after the Working Group's meeting.

2.2 The delegate of Austria, supported by the delegate of Italy, proposed that in paragraph 1 of Appendix 1, the value of the vertical power component only should be used in calculations applicable for mixed polarization.

2.3 The Chairman of the Technical Working Group explained that when the Austrian delegation had made that proposal during the Group's discussions, it had also agreed to submit a figure for mixed polarization either to the Plenary or to Committee 5. The present wording of paragraph 1 was the result of a compromise and of the view of the IFRB that the matter should not be unduly complicated either for the purposes of the Conference or for post-Conference procedures.

2.4 At the request of the Chairman, the delegates of Austria and Italy agreed that the document should be submitted as drafted to Committee 5, where the matter could be further examined if necessary.

The Plenary noted the report which was to be submitted to Committee 5 for appropriate action.

3. Assignment of additional work to the Technical Working Group (Document 113)

3.1 The Chairman of the Technical Working Group said that since his Group had completed the most important tasks assigned to it, it was in a position to take on additional work. In Document 113 from Working Group 5A, the Group was requested to provide certain information, and the Plenary's authorization was sought in that connection. Attention was drawn to the fact that the additional work did not go beyond the Group's terms of reference.

It was agreed that the Technical Working Group should carry out the work requested, and the Group was thanked for the work it had accomplished to date.

4. Approval of the Minutes of the third Plenary Meeting (Document 68)

The Minutes of the third Plenary Meeting were approved.

5. Oral report on the progress of work in Committee 4

5.1 The Chairman of Committee 4 said that in spite of the complexities of the problems of planning, the work was progressing satisfactorily, due in large part to the excellent working conditions. A special partial analysis had been carried out for Planning Group 4C, based on the new propagation software. The modification of the software for the BC/BC analysis, taking into account the new criteria adopted for propagation, had been completed on 13 November. An error in the BC/ILS/VOR compatibility calculations had been detected and corrected, as Document 101 indicated. The software modification needed for the second analysis had been completed on 14 November.

A total of 16,800 assignments had been submitted on Form 1 in accordance with the 9 November deadline and Form 2 had duly been distributed on 12 November. Delegates were reminded of the 1800 hours deadline on 15 November for the submission of (blue) modification forms. Committee 4 would be examining the draft Plan format later in the day and expected to be in a position to submit the definite Plan format shortly thereafter. In view of the Committee's recent achievements, he felt more optimistic about the final outcome of its work.

6. Extension of deadline for submission of (blue) modification forms

6.1 The delegate of Tunisia requested that the deadline of 1800 hours for the submission of (blue) modification forms be extended by some two hours for the small delegations.

6.2 The Chairman of the IFRB said that while he would prefer not to change the deadline, the small delegations might as an exception, be allowed a further two hours. Such delegations should contact the Technical Secretary of the Conference to make the necessary arrangements. All other delegations would be expected to submit their forms on time.

6.3 The Chairman asked delegates to bear in mind that a short extension of the deadline could only be considered in exceptional cases.

6.4 The delegate of Algeria stated that all delegations were experiencing considerable difficulties as a result of the constraints of the Conference and the bureaucracy involved.

6.5 The Chairman replied that the heavy workload was inevitable: delegates had to complete their work on time to enable the IFRB to play its part. The second analysis would be made on the basis of the data available at the time, and it would be regrettable if all modifications were not provided for and approved.

6.6 The Chairman of the IFRB added that while he regretted the impact of the procedure on small delegations, he knew from past experience that the forms they were now completing provided the only way of clarifying cases after the Conference.

The meeting rose at 1455 hours.

The Secretary of the Conference:

J. JIPGUEP

The Chairman:

M. HUET

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Corrigendum 1 to

Document 112-E

26 November 1984

Original: English/

French/

Spanish

COMMITTEE 4

SUMMARY RECORD OF THE  
FIFTH MEETING OF COMMITTEE 4

(Concerns the French text only.)

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INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 112-E  
21 November 1984  
Original: English

COMMITTEE 4

SUMMARY RECORD  
OF THE  
FIFTH MEETING OF COMMITTEE 4  
(PLANNING)

Thursday, 15 November 1984, at 1535 hrs

Chairman: Dr. I. STOJANOVIC (Yugoslavia)

Subjects discussed:

Documents

- |  |            |
|--|------------|
| 1. Approval of summary records   | 99, 53, 62 |
| 2. Introduction of documents (continued)                                     | 9          |
| 3. Draft format of the Plan  | DT/29      |
| 4. First report of the Chairman of Planning Group 4A<br>to Committee 4       | 105        |
| 5. Reference list of sound broadcasting (BC)<br>and television (BT) stations | 109        |



1. Approval of summary records (Documents 99, 53, 62)

1.1 The summary record of the fourth meeting of Committee 4 was approved subject to amplification of paragraph 2.1.2 by the delegation of Romania and of paragraph 2.1.3 by the delegation of the USSR (see Corrigendum 1 to Document 99).

1.2 The summary record of the first meeting of Committee 4 (Document 53) was approved.

1.3 The Chairman said that Document 9 should be added to the documents listed under item 3 on the cover page of the summary record of the second meeting (Document 62) and that a new section 3.1 should be inserted (see Corrigendum 1 to Document 62).

The summary record of the second meeting was approved, as amended.

2. Introduction of documents (continued) (Document 9)

2.1 The delegate of Romania introduced Document 9, containing proposals ROU/9/1, ROU/9/2, ROU/9/3, ROU/9/4, ROU/9/5 and ROU/9/6.

2.2 The delegate of Algeria, observing that the document referred entirely to section 6.1.3 of the report of the first session, said he assumed that the proposals related exclusively to the sub-region in which Romania was situated. If that understanding was correct, he had no comments to make on the document, but if it was held to relate to the Conference as a whole, he would have serious objections to it.

2.3 The delegate of Romania confirmed that the Algerian delegate's interpretation of the scope of the document was correct.

The Committee took note of Document 9.

3. Draft format of the Plan (Document DT/29)

3.1 The Technical Secretary introducing the document, said that the Plan would be submitted in printed form for reading and adoption by the Plenary, as was the usual practice at planning conferences. The basic characteristics of each station, as shown in Annex 1 to the document, would be set out on one line, together with information on the sectors of restricted e.r.p. on which agreement had been reached during the negotiations, particularly information submitted on Form 2. The remarks entered in column 16 would constitute notes to the Plan, taking account of agreements reached during the Conference or to be reached after the Conference. It was proposed to publish the characteristics relating to antenna height and the antenna characteristics, contained in boxes 31B and 32 of the inventory of requirements, in microfiche form, since their publication in printed form would increase the volume of the Plan by some 1,000 pages, whereas with the proposed format the Plan would comprise about 500 pages printed on both sides.

He pointed out that, in all the language versions, the words in parentheses against column 5 should read "(see Table 1 of the Preface to the International Frequency List)".

3.2 In reply to a question by the delegate of Poland, the Technical Secretary said that administrations have received standard microfiche readers to enable them to use the microfiches in their own countries. As in the case of the Region 2 Broadcasting Conference, the readers would become the property of the administrations concerned.

3.3 In reply to a question by the delegate of Denmark, the Chairman confirmed that the information on microfiches would constitute an integral part of the Plan.

3.4 The delegate of Spain, supported by the delegates of Yugoslavia and Iraq, proposed that a column relating to the height of the station above sea level should be inserted between columns 6 and 7.

3.5 The proposal to use the kW as a reference unit was endorsed by the delegates of Algeria, Iraq and Yugoslavia since the kW had been taken as the reference unit throughout the negotiations, and much time would be wasted by converting kW values into dBW three times in each line.

3.6 The delegates of Poland and Portugal considered that the reference to dBW in those columns was more correct. The delegate of the Federal Republic of Germany agreed that the use of dBW was preferable, since otherwise minus signs would have to be inserted before dB values, making the results ambiguous.

3.7 The delegate of Italy suggested that the problem might be solved by using both reference units in the Plan; the delegate of Poland said that that course could lead to serious misunderstandings and should in any case be avoided.

3.8 The Technical Secretary said that the adoption of the kW as the reference unit would cause considerable difficulties for the IFRB since the FMS computer system was based on the dBW reference unit. The Plan being drawn up by the present Conference would have to be integrated in the FAS. Moreover, the use of minus signs in case of (dB/kW) would probably necessitate allocating two additional characters to columns 8, 9 and 10, which would require more than one line per assignment, thus doubling the number of pages.

3.9 The delegate of the United Kingdom said that whereas use of the kW unit would facilitate reading of the Plan by comparison with the input data, use of dBW would make it easier to apply the data to calculations. In addition, conversion of dBW to dBkW would give negative indications in the printout. He therefore formally proposed that the dBW reference unit be retained.

3.10 The delegates of Sweden, Denmark and Austria supported that proposal.

3.11 The delegate of Algeria said he could withdraw his objections in the light of the Technical Secretary's explanations, on the understanding that the final analysis to be approved by the Conference would use the same reference units as used during the second analysis.

3.12 The delegate of the Federal Republic of Germany drew attention to the second item of the list of information to be accommodated on the same line (Document DT/29) which referred to "... data ... obtained from box 32 of the inventory of requirements". He had some doubts on whether it would be possible for the IFRB to extract unambiguous information on sectors of restricted radiation from the directional patterns contained in box 32. He therefore proposed deletion of the phrase "... or obtained from box 32 of the inventory of requirements".

3.13 The delegate of Algeria asked what would be the position, if the phrase were deleted, regarding data which had already been notified but on which agreement between administrations had not yet been reached.

3.14 The Technical Secretary said he was grateful to the delegate of the Federal Republic of Germany for raising the point. It should be difficult, because of complex structure of polar diagram, to extract information from box 32. All that could be done was to place in the four boxes concerned data representing agreements arrived at during the Conference and included in Form 2.

In reply to the question raised by the delegate of Algeria, he explained that such data would remain in box 32, and would thus remain valid and be published in microfiche form.

3.15 The delegate of Austria thought it would be useful if agreement could be reached on the minimum value of power restriction which should be indicated in the four boxes concerned; a minimum value of 6 dB or 10 dB would be very instructive. It was important that such information should be shown in the Plan, and not only in the microfiches.

3.16 The delegate of Poland said that on the one hand it was proposed to delete the phrase "... or obtained from box 32 ...", and on the other, the IFRB had explained that that data was contained in the inventory and could be extracted from it. He would like clarification on the final version of paragraph 2 of Document DT/29.

3.17 The delegate of Belgium warned that care should be taken before making any changes to the paragraph. It was difficult for a computer to take into account data resulting from agreements between administrations, since in some cases such data was included in Form 2, and in others, it was not.

3.18 The Technical Secretary explained that when, during the Conference, administrations agreed to limitation of power in one or several sectors, no problem arose because the data concerned would simply be extracted from Form 2 and included in the same format in the Plan. For simple diagrams with up to a maximum of four sectors of restricted radiation, there would be no difficulty; the difficulties would only arise in the case of very complex diagrams.

3.19 The delegate of the United Kingdom agreed there would be no problem in entering in columns 14 and 15 of the proposed layout of the Plan details of agreed restrictions which had been entered in Form 2. On the other hand, some delegates had agreed specific restrictions between them without resorting to the use of Form 2 and had entered in box 32 an appropriate diagram respecting those agreements. The precise nature and extent of the restrictions agreed was thus not always clear from the content of box 32. What was needed was perhaps a small additional mechanism allowing for such agreements to be entered in boxes 14 and 15 of the Plan.

3.20 The delegates of Belgium and the Federal Republic of Germany supported that proposal.

3.21 The Chairman suggested that the problem be studied further and a new wording submitted for consideration at a later stage.

It was so agreed.

4. First report of the Chairman of Planning Group 4A to Committee 4  
(Document 105)

4.1 The Chairman of Planning Group 4A, introducing his report (Document 105), said that his Group had held three formal meetings. The procedure of work outlined in Document DT/10 had been discussed and it had been agreed to complete Form 1 for all cases where negotiations were necessary. The Group had then been divided into three Sub-Groups, the membership of which was indicated in paragraph (3) of the document. The Group had agreed that a minimum nuisance field strength of 60 dB( $\mu$ V/m) should be applied as the minimum figure below which delegations would not enter objections in Form 1. Nevertheless, for the purpose of Form 1, countries were left free to agree on higher values deemed suitable for their areas.

4.2 The delegate of Morocco pointed out that his country should be included in the membership of Sub-Group 4A-1.

The Committee took note of the Report of the Chairman of Planning Group 4A.

5. Reference list of sound broadcasting (BC) and television (BT) stations  
(Document 109)

5.1 The Secretary of the Committee, in reply to a question raised by the delegate of Sweden, said that the problem that had arisen in the course of the first analysis in regard to figures for certain TV stations coming out too high had now been overcome.

5.2 The delegate of Romania stated that he could accept those stations listed on which agreement had been obtained with his administration, and for which the characteristics had been coordinated.

The Committee took note of the information contained in Document 109.

5.3 The Secretary of the Committee, in reply to a question from the delegate of Romania, said that data concerning test points to be communicated for purposes of calculations of compatibility between ILS, VOR and BC stations could be submitted to the IFRB by 1800 hours that afternoon.

5.4 The Technical Secretary, in reply to a question from the delegate of Spain, said that in cases where agreement was obtained with an administration without any change of characteristics, there was no need to fill in the blue modification form. However, in cases where agreement was obtained involving changes of characteristics (reduction of radiated power in a sector, or frequency changes) it was compulsory to fill in the blue form, which would be the only reference document taken into account for modification of the data base.

The meeting rose at 1655 hours.

The Secretary:

D. SCHUSTER

The Chairman:

Dr. I. STOJANOVIC

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 113-E  
15 November 1984  
Original: English

TECHNICAL WORKING  
GROUP OF THE PLENARY

NOTE FROM THE CHAIRMAN OF WORKING GROUP 5A TO THE  
CHAIRMAN OF THE TECHNICAL WORKING GROUP OF THE PLENARY

1. Working Group 5A has decided that:

Any administration proposing a change in the characteristics of an assignment or the bringing into use of a new assignment shall seek the agreement of any other administration, if the distance from the station under consideration to the nearest point of the boundary of the country of that administration is less than predetermined distances.

The Technical Working Group of the Plenary is requested to provide tables for these distances.

2. Working Group 5A also considered that it may be desirable to adopt a predetermined value of increase of the usable field strength, below which administrations would give their agreement without necessarily carrying out detailed calculations.

The Technical Working Group of the Plenary is requested to provide the predetermined value to be used in the procedure.

Note - It is to be noted that, proposal G/36/7 foresees the adoption of a limit for the resulting usable field strength; while this matter was not yet considered by Working Group 5A, the Technical Working Group of the Plenary may give some consideration to it.

S.M. CHALLO  
Chairman of Working Group 5A

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 114-E  
15 November 1984  
Original: English

Note by the Chairman of the Conference

I hereby transmit to the Conference the attached letter from the Head of the delegation of the Union of Soviet Socialist Republics.

Marie HUET  
Chairman of the Conference

Annex: 1



ANNEX

Постоянное Представительство СССР  
при Отделении ООН и других  
международных организациях в Женеве

Mission permanente de l'URSS  
auprès de l'Office des Nations Unies  
et des autres organisations internationales  
ayant leur siège à Genève

15, avenue de la Paix  
Téléphone: 33 18 70  
GENÈVE

Nº 489

Geneva, "15 " November 1984


Dear Madam,

I would like to draw your attention to the list of participants of the Regional Broadcasting Conference (issued on October 30, 1984) and to the fact that Mr. Thomas Rotkegel and Mr. Dieter Stahl are included in the delegation of the Federal Republic of Germany. In this context, I feel compelled to reiterate my country's view that under the Quadripartite Agreement of 3 September 1971 Berlin (West) continues not to be a constituent part of the Federal Republic of Germany and not to be governed by it. Hence, the above-mentioned persons have no right to take part in this session in their present capacity.

The USSR delegation expects any registrations for Berlin (West) to be made in accordance with the Quadripartite Agreement.

Please accept, Madam, the assurances of my highest consideration.

Miss M.Huet  
Chairman  
Second session  
of the Regional  
Broadcasting Conference  
Geneva

 A. ISAEV  
Head of Delegation

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 115-E  
16 November 1984  
Original: French

## BUDGET CONTROL COMMITTEE

### Note by the Secretary of the Conference

#### POSITION OF THE CONFERENCE ACCOUNTS AT

15 NOVEMBER 1984

I hereby submit an estimate of the Conference expenses at 15 November 1984 for the consideration of the Budget Control Committee.

The statement shows a surplus of 44,300 Swiss francs over the budget approved by the Administrative Council and revised to take account of additional credits approved by the Council at its 39th session in 1984 (Resolution 905) and adjustments to salaries and daily subsistence allowances (Resolution 647).

J. JIPGUEP  
Secretary of the Conference

Annex: 1



ANNEX

Item No.	Heading	Adjusted budget 1)	Credit transfers		Available credits	Expenditure as at 15 November 1984			
			item to item	chapter to chapter 2)		actual	committed	estimated	total
1	2	3	4	5	6	7	8	9	10
	<u>I. Preparatory work</u>								
20.301	IFRB salaries and related expenses	656,400		-36,000	620,400	541,977	55,000	23,023	620,000
20.302	Insurance	131,900		-21,000	110,900	92,589	10,000	7,411	110,000
20.303	Premises, furniture	30,000	+25,000 <sup>3)</sup>	-	55,000	35,603	13,841	556	50,000
20.304	Electronic equipment	50,000	+ 5,000 <sup>3)</sup>	-	55,000	47,425	2,900	675	51,000
20.311	CCIR preparatory work	48,000	-30,000 <sup>3)</sup>	-18,000	-	-	-	-	-
		916,300	-	-75,000 <sup>4)</sup>	841,300	717,594	81,741	31,665	831,000
	<u>II. Staff expenses</u>								
20.351	Salaries and related expenses of the Conference Secretariat staff	1,477,000		-98,000	1,379,000	130,113	1,127,000	117,887	1,375,000
20.352	Salaries and related expenses of the translation, typing and reproduction services staff	676,000		-6,000	670,000	107,317	485,000	67,683	660,000
20.353	Travel (recruitment)	76,000		-36,000	40,000	10,714	22,776	6,510	40,000
20.354	Insurance	47,000		-17,000	30,000	3,565	11,000	15,435	30,000
		2,276,000		-157,000 <sup>4)</sup>	2,119,000	251,709	1,645,776	207,515	2,105,000
	<u>III. Travel expenses</u>								
20.361	Subsistence costs at Conference venue	-							
20.362	Travel to Conference venue and back	-							
20.363	Transport of material to Conference venue and back	-							
		-	-	-	-	-	-	-	-

1	2	3	4	5	6	7	8	9	10
	<u>IV. Premises and equipment</u>								
20.371	Premises, furniture, machines	55,000		+5,000	60,000	3,300	21,500	35,200	60,000
20.372	Document production	58,000		+217,000	275,000	179,639	60,000	35,361	275,000
20.373	Office supplies and overheads	30,000		+20,000	50,000	19,939	7,823	22,238	50,000
20.374	Postage, telephone calls, telegrams	50,000		+10,000	60,000	43,754	-	16,246	60,000
20.375	Technical installations	5,000		-	5,000		600	4,400	5,000
20.376	Sundry and unforeseen	10,000		-10,000	-	-20,280	-	10,280	-10,000
20.377	Use of outside computers	90,000		+25,000	115,000	56,972	34,161	23,867	115,000
		298,000	-	+267,000 <sup>4)</sup>	565,000	283,324	124,084	147,592	555,000
	<u>V. Other expenses</u>								
20.381	Interest credited to the ordinary budget	64,000	-	+21,000 <sup>4)</sup>	85,000	25,283	-	59,717	85,000
	<u>VI. Final Acts</u>								
20.391	Final Acts of the Conference	176,000	-	-56,000 <sup>4)</sup>	120,000	-	-	110,000	110,000
		3,730,300	-	-	3,730,300	1,277,910	1,851,601	556,489	3,686,000
	<u>VII. Additional credits</u>								
20.395	Expenditure in 1985	223,000	-	-	223,000	-	-	223,000	223,000
		3,953,300	-	-	3,953,300	1,277,910	1,851,601	779,489	3,909,000
Total contributory shares 239 7/8 or : per contributory unit for 1984 per contributory unit for 1985		15,550 930	Surplus = 44,300 Sw. fr.						15,367 930

Note 1 - Budget approved by the Administrative Council and adjusted to take account of changes in the common system of staff salaries and allowances of the United Nations and the specialized agencies and of the additional credits approved by the Administrative Council at its 39th session (see Document 66).

Note 2 - In accordance with Article 15, paragraph 3, of the Financial Regulations of the Union.

Note 3 - Transfer of credits from item 20.311 30,000  
to items 20.303 25,000  
20.304 5,000  
30,000  
30,000

Note 4 - Transfer of credits from subheads 20.300 75,000  
20.350 157,000  
20.390 56,000  
to subheads 20.370 267,000  
20.380 21,000  
288,000  
288,000

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 116-E

16 November 1984

Original : English

French

Spanish

Source : Document DT/29

COMMITTEE 6

## FIRST SERIES OF TEXTS FROM COMMITTEE 4 TO THE EDITORIAL COMMITTEE

The Annex to this document, relating to the format of the Plan, was adopted by Committee 4 and is hereby submitted to the Editorial Committee.

Dr. I. STOJANOVIC  
Chairman of Committee 4

Annex : 1

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ANNEX

DRAFT FORMAT OF THE PLAN

Information included in the columns of the Plan

Column

1. IFRB serial number
  2. Assigned frequency (MHz)
  3. Country symbol
  4. Name of station
  5. Symbol of the geographical area in which the station is located  
(see Table No. 1 of the Preface of the International Frequency List)
  6. Geographical coordinates, in degrees and minutes, of the antenna site
    - 6.1 Longitude (in degrees and minutes)
    - 6.2 Latitude (in degrees and minutes)
  7. Altitude above sea level (m)
  8. Polarization
  9. Total effective radiated power (dBW)
  10. Maximum effective radiated power in the horizontal plane (dBW)
  11. Maximum effective radiated power in the vertical plane (dBW)
  12. Directivity (ND or D)
  13. Maximum effective antenna height (m)
  14. System
  15. Sectors or directions of restricted e.r.p. (in degrees)
    - 15.1 Sector No. 1
    - 15.2 Sector No. 2
    - 15.3 Sector No. 3
    - 15.4 Sector No. 4
  16. Attenuation in the sector concerned (dB)
    - 16.1 Attenuation for sector No. 1
    - 16.2 Attenuation for sector No. 2
    - 16.3 Attenuation for sector No. 3
    - 16.4 Attenuation for sector No. 4
  17. Remarks
-

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 117-E  
16 November 1984  
Original: French

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Note by the Chairman of the Conference

I hereby transmit to the Conference the attached letter from the Head of the Delegation of the German Democratic Republic.

Marie HUET  
Chairman of the Conference

Annex: 1

ANNEX

DELEGATION OF THE GERMAN DEMOCRATIC REPUBLIC  
TO THE SECOND SESSION OF THE REGIONAL  
BROADCASTING CONFERENCE

16 November 1984

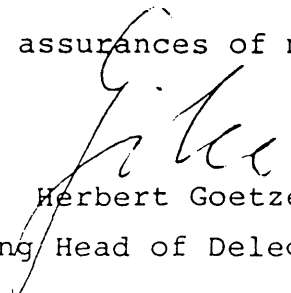
Miss M. Huet  
Chairman  
Second Session of the  
Regional Broadcasting  
Conference  
Geneva

Madam,

I wish to invite your attention to the list of participants of the Regional Broadcasting Conference (issued on 30 October 1984) and to the fact that Mr. Thomas Rotkegel and Mr. Dieter Stahl are members of the delegation of the Federal Republic of Germany. In this connection, I feel compelled to reiterate the view of the German Democratic Republic that under the Quadripartite Agreement of 3 September 1971 Berlin (West) continues not to be constituent part of the Federal Republic of Germany and not to be governed by it. For that reason, the persons referred to above have no right to take part in the session in their present capacity.

The GDR delegation expects that any registrations for Berlin (West) are made in conformity with the Quadripartite Agreement.

Please accept, Madam, the assurances of my highest consideration.

  
Herbert Goetze

Acting Head of Delegation

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 118-E

16 November 1984

Original: English

## COMMITTEE 5

### Austria

FIELD STRENGTH LIMITS, WHICH MIGHT BE  
TAKEN INTO CONSIDERATION FOR DETERMINING WHEN  
COORDINATION IS REQUIRED BY THE CASE OF A PROPOSED  
MODIFICATION TO THE PLAN ARE GIVEN  
(Reference Document 108)

In case of mixed polarization of the broadcasting station for which at least one-tenth of the total e.r.p. is radiated in the vertical component the impact of the horizontal component is negligible compared to that of the vertical component assuming that the land mobile service is vertically polarized.

Therefore, with the assumptions given in the previous paragraph, the limits relating to the land mobile service should be:

- for broadcasting stations using only horizontal polarization: 18 dB( $\mu$ V/m);
- for broadcasting stations using vertical or mixed polarization only the vertical component of the total e.r.p. of the broadcasting station should be taken into account: 0 dB( $\mu$ V/m);

Both values shall be calculated at an antenna height of 10 m above ground. It is assumed that the land mobile service is vertically polarized and that in case of mixed polarization of the broadcasting station at least one-tenth of the total e.r.p. of the broadcasting station is radiated in the vertical component.



**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 119-E

16 November 1984

Original: EnglishSource: Document DT/10(Rev.1)COMMITTEE 4

## WORKING METHODS IN THE PLANNING GROUPS

Having considered the large number of requirements and the limited time available to prepare a plan for consideration by the Plenary of the Conference, the Committee 4 adopted the following methods of work to be applied by the Planning Groups.

1. Progressive building up of the Plan

1.1 The Plan constitutes the requirements which have been coordinated before the Conference and those which have been coordinated or accepted by the administrations concerned as a result of negotiations carried out during the Conference. Should any cases remain unresolved at the end of the planning process, the Conference will have to consider the action to be taken in this respect.

1.2 In order to build up the Plan the IFRB has created a file which contains cases already coordinated or agreed upon during the negotiations between administrations, starting with the Reference List of sound broadcasting stations as contained in the IFRB Circular-letter No. 575 and amended in Annex 6 to IFRB Circular-letter No. 586. To this effect two forms have been prepared to be filled by the delegations.

1.3 Form 1 (Annex 1)

Delegations shall use Form 1 in order to list all stations pertaining to other administrations with which discussions are necessary. The IFRB processes this information and sort it out in a form usable by the Chairmen of the Planning Groups. Administrations having a large number of stations may communicate this information on a magnetic tape with a copy on paper as a reference document.

1.4 The Chairmen of the Planning Groups can then set up Sub-Planning Groups that they may consider necessary to resolve the problems between countries participating in their Planning Groups.

1.5 Form 2 (Annex 2)

On the basis of the Form 1 filled in, in accordance with 1.3 above, the IFRB prints Form 2. This contains for each station subject to negotiation between administrations, the identification of the stations and an indication of the administrations with which agreement is required. When for a given station the agreement of all administrations concerned is obtained, the Form 2 is handed to the Chairman of the Planning Group concerned for the inclusion of the station in the file referred to in 1.2 above. The remarks column should indicate the action agreed by the administrations concerned.

2. Improvement of the Plan

2.1 After the date 2 November 1984 (23h59 UTC) adopted by the Plenary for the latest submission of requirements, modifications intended to improve the Plan which result from the negotiations between the delegations shall be handled by the Chairman of the Planning Group without necessarily consulting the Group using the standard form adopted to this effect (Annex B, Document 32). The Chairman of the Planning Group shall then assess that the modifications actually improve the Plan; he will then communicate them to the IFRB for processing.

2.2 Modifications and additions other than those referred to in 2.1 may be submitted subject to prior coordination between administrations concerned and if accepted, the Chairman shall review them from the point of view of their effect on other Planning Groups.

2.3 In cases of diverging views between two Planning Groups, the matter shall be submitted to Committee 4.

2.4 Among the possible actions for improving the Plan, the following may be considered by the delegations :

- reducing the radiation in a given direction;
- reducing the power of the station;
- changing the frequency;
- changing of polarization (discrimination of 10 dB) with agreement of affected administrations;
- reducing the number of requirements.

I. STOJANOVIC  
Chairman of Committee 4

Annexes: 2

FORMULAIRE 1\* - FORM 1\* - FORMULARIO 1\*

Lista de estaciones objeto de negociaciones entre administraciones interesadas

ADM	Date/Fecha	Signature/Firma

[illegible]

\* Stations already coordinated or agreed should not appear on this list.

ANNEXE 2 - ANNEX 2 - ANEXO 2

FORMULAIRE 2 - FORM 2 - FORMULARIO 2

Station pour laquelle un accord est nécessaire Station for which an agreement is necessary Estación para la que un acuerdo es necesario			
N° de série IFRB IFRB Serial No. N.° de serie IFRB	ADM	Station/Estación	Fréquence Frequency Frecuencia
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

		ACCORD AGREEMENT ACUERDO		Remarques** Remarks** Observaciones**
ADM.	SIGN/FIRMA	DATE/FECHA	AZIM 1      AZIM 2 (dB)*	
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="—"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="—"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="—"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="—"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="—"/>	<input type="text"/>

\* Affaiblissement/Attenuation/Atenuación

\*\* Indicate the conditions upon which the agreement was reached

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

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Document 120-E

19 November 1984

Original : French

## NOTE BY THE FRENCH DELEGATION

With reference to its note of 7 November (Document 80) and that of 9 November by the Spanish delegation (Document 95), the French delegation wishes to state that the applications for transmitting station frequencies and sites submitted by France on behalf of Andorra are made at the request of the Andorran Government, which is responsible for transmissions inside the Principality.

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INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

Document 121-E  
23 November 1984  
Original: English

(SECOND SESSION)

GENEVA, 1984

COMMITTEE 5

SUMMARY RECORD  
OF THE  
FOURTH MEETING OF COMMITTEE 5  
(AGREEMENT AND PROCEDURES)

Monday, 19 November 1984, at 1055 hrs

Chairman: Mr. K. OLMS (Federal Republic of Germany)

<u>Subjects discussed:</u>	<u>Documents</u>
1. Approval of summary records	54, 69, 71
2. Organization of work	DT/33
3. Oral reports by the Chairmen of Working Groups 5A and 5B	-
4. Note from the Chairman of Committee 3	81
5. Note from Technical Group PL "Use of most recent CCIR Recommendations"	82
6. Field strength limits which might be taken into consideration for determining when coordination is required by the case of a proposed modification to the Plan	118
7. Continuation of the discussion of categories of service	84

1. Approval of summary records (Documents 54, 69 and 71)

1.1 Summary record of the first meeting of Committee 5 (Document 54)

Approved.

1.2 Summary record of the second meeting of Committee 5 (Document 69)

1.2.1 The delegate of Italy read out a proposed amendment to paragraph 2.16, the written text of which he would submit to the Secretariat for issue as a corrigendum.

1.2.2 In reply to a query from the delegate of the USSR, the delegate of the United Kingdom said that the word "broadcasting" on the third line of paragraph 2.22 had been inserted in error and should be deleted.

With those two amendments, Document 69 was approved.

1.3 Summary record of the third meeting of Committee 5 (Document 71)

1.3.1 The delegate of Italy read out a proposed addition to paragraph 1.20, the written text of which he would submit to the Secretariat for issue as a corrigendum.

With that amendment, Document 71 was approved.

1.3.2 The delegate of the United Kingdom noted that although the issues debated at the second and third meetings of Committee 5 had been very complex, only three small errors had been found in the summary records of those discussions. The Secretariat were to be commended for the high standard of the records.

2. Organization of work (Document DT/33)

2.1 The Chairman said that, as proposed in Document DT/33, an additional Working Group 5C was needed to prepare the two or more draft annexes required to complete the work of Committee 5. The third line of the proposed terms of reference for the Working Group should be amended to add the words "the substance of" after "altering or modifying".

The establishment of a Working Group 5C with the amended terms of reference proposed was approved.

2.2 The Chairman said that in view of the need to coordinate the work of Working Group 5C with that of the Technical Working Group of the Plenary, it would be useful if the two Groups were chaired by the same person. The Chairman of the Technical Working Group, Mr. J. Rutkowski (Poland), had kindly agreed to let his name be proposed for that additional responsibility.

That nomination was approved.

3. Oral reports by the Chairmen of Working Groups 5A and 5B

3.1 The Chairman invited the Chairmen of Working Groups 5A and 5B to present their reports.

3.2 The Chairman of Working Group 5A said that since its first report to the Committee, Working Group 5A had had six further meetings, all of which had been concerned with the preparation of Article 3 of the draft Regional Agreement (Procedures for modification of the Plan). The types of modification procedure it was the Group's task to develop were set out in Document DT/12, which had been discussed at its second meeting along with the related Documents 11, 13 and parts of 36. The progress made since then had been as follows.

With regard to broadcasting/broadcasting, the Group had decided that the determination of the countries to be consulted should be based on the principle of a table of consultation distances. It also considered that it might be desirable to adopt a predetermined value of increase of the usable field strength below which administrations would give their agreement for a modification to the Plan. The Technical Working Group of the Plenary had been requested (through Document 113) to provide the tables and usable field strength value concerned. The Group had next considered the detailed modification procedures for broadcasting/broadcasting compatibility set out in Document DT/18. Agreement had not been reached on those procedures and an ad hoc Group had been set up under the chairmanship of Mr. M.J. Bates (United Kingdom) to review them in the light of the discussions that had taken place in the Working Group. The results of the ad hoc Group's work were embodied in Document DT/30, which was at present under discussion in the Working Group.

With regard to broadcasting/aeronautical radionavigation, the Group had given some preliminary consideration to the relevant modification procedures. Following its discussion of Document DT/27, it had prepared a draft note (Document DT/28) for possible submission to the Technical Working Group but had not yet reached a final decision and would continue its discussion of the issue.

Modification procedures with respect to television stations and broadcasting/fixed and mobile services in Region 3 had still to be determined; the Group would take up those issues once the outstanding matters on broadcasting/broadcasting and broadcasting/aeronautical radionavigation had been settled.

In addition, the Group had had preliminary discussions on Document 104 but had decided, in view of the limited services provided to the Group, that the document should be returned to Committee 5 for consideration there.

3.3 The Chairman of the Technical Working Group of the Plenary said that his Group had already started work on Document 113. It had reached agreement on the predetermined value of the usable field strength. However, the preparation of tables of consultation distances required a good deal of work; a Sub-Working Group under the chairmanship of Mr. H. Eden (Federal Republic of Germany) had been set up to carry out the task and was expected to produce its results by the middle of the week.

3.4 The Chairman said that preliminary discussions had been held the previous week with a view to arranging for assistance to be given to delegates to enable them to prepare for a more substantive discussion of Document 104 later in the present week.

The Committee took note of the report by the Chairman of Working Group 5A.

3.5 The Chairman of Working Group 5B said his Group had had five meetings on the preparation of transitional procedures. Two informal discussion Groups had been set up, one under the direction of Mr. C. Terzani (Italy) to consider fixed and mobile services and the other under the direction of Mr. L. Bergman (Sweden) to consider the aeronautical mobile (OR) service.



Mr. Terzani's Group had been unable to find any basis for agreement on a general procedure. However, negotiations were continuing with respect to the mobile services in France and the United Kingdom and there appeared to be scope for multilateral agreement between the countries concerned. No solution had been found in the case of the other mobile and fixed services covered in footnotes 587 and 589.

Mr. Bergman's Group had arrived at the compromise solution contained in Document DT/34, which had been discussed by Working Group 5B that morning. The proposal left the problems for solution by bilateral and multilateral negotiation between the countries concerned, but would entail the IFRB publishing notifications of entry into service by broadcasting stations. Working Group 5B had made an attempt to draft an additional text on the coordination procedures to be carried out before a broadcasting station entered into service, but fundamental differences within the Group had prevented any agreement being reached on whether a more developed coordination procedure involving some contribution by the IFRB should be incorporated in the Final Acts of the Conference or whether a simpler procedure leaving most of the initiative to the administrations concerned should be drawn up for insertion either in the Final Acts or as an additional protocol. The question of principle was one which should perhaps be discussed in Committee 5 itself.

Working Group 5B had also discussed the draft Resolution contained in Document DT/32 relating to the provisional application of Article 3 of the Agreement. Some provisions of the draft Resolution still remained in suspense; their solution depended on the outcome of work in progress in Working Groups 5A and 5B. However, the Committee might like to discuss the draft Resolution as it stood in order to give further guidance to Working Group 5B.

3.6 The Chairman of the Technical Working Group of the Plenary, supported by the delegate of the USSR, who pointed out that agreement still had to be reached on the provision of protection for the land mobile service, proposed that the discussion in Committee 5 of the two points raised by the Chairman of Working Group 5B should be postponed until a decision on the relevant coordination procedures had been arrived at and a document on the subject was before the Committee.

It was so agreed.

The Committee took note of the report by the Chairman of Working Group 5B.

4. Note from the Chairman of Committee 3 (Document 81)

4.1 The delegate of Italy proposed that the IFRB should be requested to inform Committee 3 whether the coordination procedures now under discussion in Working Group 5A (Document DT/30) were likely to have any financial implications for the budgets of the Union.

It was so agreed.

The Committee took note of Document 81.

5. Note from Technical Group PL "Use of most recent CCIR Recommendations"  
(Document 82)

5.1 The Chairman of the Technical Working Group of the Plenary, introducing Document 82, said that two Recommendations had been addressed to the CCIR so far concerning its future studies on refinement of compatibility criteria between the VHF broadcasting and aeronautical services. It was felt that coordination work should be conducted on the basis of the most recent CCIR Recommendations. No ideas had yet been agreed upon as to how that should be done; certain current procedures - for example, relating to space services - provided possible examples. The IFRB had already noted certain difficulties which could arise, for example, whenever the Secretary-General circulated to administrations the latest Recommendations notified to him by the CCIR but failed to obtain administrations' unanimous agreement. Since the problem was procedural, the Technical Working Group of the Plenary felt that it was for Committee 5 to deal with the question of ensuring that the most recent CCIR Recommendations were taken into account in the future coordination procedures related to the modifications of the Plan.

5.2 The representative of the IFRB said that, with regard to space services, Resolution 65 of WARC-79 had been applied only once. A table existed, which showed how the Recommendations applied to the administrations concerned. In general, although application of a procedure might in itself give rise to no difficulties, implementation of Conference findings could create problems for the IFRB, which had to take into account the differing criteria stemming from administrations' replies. In the case of sound broadcasting, however, he doubted the need for a procedure as complex as that covered by Resolution 65, since normally a case required the agreement of only two administrations, which applied the CCIR Recommendations accepted by them - thus greatly easing the IFRB's work and achieving greater economy for the Union.

5.3 The Chairman said that Working Group 5A had the task of identifying areas where recent CCIR Recommendations were to be applied. Since, however, it was too early to establish what the requisite procedure should be, he suggested that Working Group 5A should be allowed to continue its consideration of the matter for the time being.

5.4 The Chairman of the Technical Working Group of the Plenary endorsed that view, and added that one possible solution might be simply for the Conference to produce a Recommendation to the effect that, in bilateral and multilateral negotiations, the most recent CCIR Recommendations should be used - a possibility which Working Group 5A could perhaps consider.

It was so agreed.

6. Field strength limits which might be taken into consideration for determining when coordination is required by the case of a proposed modification to the Plan (Document 118)

6.1 The Chairman of the Technical Working Group of the Plenary said that, since the substance of Document 118 concerned Appendix I to the annex to his fifth report (Document 108), perhaps he should hold informal consultations with the delegate of Austria, who had submitted Document 118 before a decision was taken on the latter document.

It was so agreed.

7. Continuation of the discussion of categories of service (Document 84)

7.1 The delegate of Italy pointed out that, as stated in paragraph 1.28 of the summary record of the Committee's third meeting (Document 71), a working paper would be prepared, based on the list read out by the Chairman of the IFRB and the comments made during the debate on categories of service, for consideration by Working Group 5B; the Chairman of Committee 5 had subsequently provided a note (Document 84) as a basis for Working Group 5B's continued discussion. Since Document 84 had not yet been examined by Working Group 5B, he wished to state, for the record, that the document had not been submitted for the Committee's approval and that differences of opinion on the subject might appear during Working Group 5B's deliberations.

7.2 The Chairman said that was so but those deliberations were only at an informal stage. As soon as the need to consider detailed procedures arose, the matter would be referred back to Committee 5.

The meeting rose at 1155 hours.

The Secretary:

J. FONTEYNE

The Chairman:

K. OLMS

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 122-E  
19 November 1984  
Original: English

COMMITTEE 5

Sweden

PROCEDURE TO PROTECT STATIONS OF THE  
AERONAUTICAL RADIONAVIGATION SERVICE IN THE BAND 108 - 117.975 MHz

Taking into consideration the discussions in Working Group 5A in relation to Document DT/31 it is proposed that the following six items should constitute the base for a possible procedure:

1. The calculations made during this Conference for the protection of aeronautical services will serve as a basis for the adoption of the BC Plan.
2. The protection of the aeronautical services is based upon the compatibility criteria adopted at this Conference and upon data provided to the IFRB.
3. When the coordination procedure for the modification of the BC Plan is applied, protection of the aeronautical services should be ensured using the compatibility criteria developed at this Conference.
4. It should be recommended that the coordination procedure for future frequency assignments to aeronautical radionavigation services should take account of the operation and planned BC stations using the compatibility criteria developed at this Conference.
5. The coordination process relating to the protection of aeronautical radionavigation services under paragraphs 3 and 4 may be undertaken by administrations multi-laterally, if appropriate, noting that the participating administrations will have up-to-date lists of both BC and aeronautical stations.
6. Administrations may request the IFRB to carry out this coordination on their behalf, including any necessary calculations for the protection of the aeronautical services, provided they supply the necessary information to the IFRB.

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 123-E  
19 November 1984  
Original: English

WORKING GROUP 5A

NOTE FROM THE CHAIRMAN OF THE TECHNICAL WORKING GROUP  
OF THE PLENARY TO THE CHAIRMAN OF WORKING GROUP 5A

The Technical Working Group proposes the following predetermined values for the increase in the usable field strength below which administrations would give their agreement without necessarily carrying out detailed calculations. The usable field strength is calculated at the transmitter site to include the effect of the proposed modification. The increase can be accepted for this purpose if:

- the resulting usable field strength is not greater than 54 dB( $\mu$ V/m), or
- the resulting usable field strength is greater than 54 dB( $\mu$ V/m), but it is increased by less than 0.5 dB compared with the usable field strength resulting from the Plan adopted by the Conference (reference situation), or with the usable field strength resulting from the situation when the station was first included in the Plan.

The delegations of Finland and the Netherlands reserved their position on the conclusion that the usable field strength is to be calculated at the transmitter site.

J. RUTKOWSKI  
Chairman of the  
Technical Working Group of the Plenary

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 124-E  
26 November 1984  
Original: French

## COMMITTEE 3

SUMMARY RECORD  
OF THE  
SECOND MEETING OF COMMITTEE 3  
(BUDGET CONTROL)

Tuesday, 20 November 1984, at 1100 hrs

Chairman: Mr. F. MOLINA NEGRO (Spain)

### Subjects discussed:

### Documents

- |   |     |
|---|-----|
| 1. Approval of the agenda   | -   |
| 2. Approval of the summary record of the first meeting of Committee 3 | 55  |
| 3. Revised Conference budget  | 66  |
| 4. Position of the Conference accounts at 15 November 1984            | 115 |
| 5. Other business   | -   |

1. Approval of the agenda

The agenda as given in Document C3-2 was adopted.

2. Approval of the summary record of the first meeting of Committee 3 (Document 55)

In the absence of any comments, Document 55 was adopted.

3. Revised Conference budget (Document 66)

The Secretary said that a correction should be made on page 2 of Document 66 (Annex). In the second column, Res. 305 CA/39 should be replaced by Res. 905 CA/39 (French version).

The Committee took note of the document with that amendment.

4. Position of the Conference accounts at 15 November 1984 (Document 115)

The Chairman said that, in relation to the budget approved by the Administrative Council and then adjusted, the position showed a surplus of 44,300.- Swiss francs. The figures given were provisional and would be modified in the light of the total effective expenditure of the Conference.

The delegate of Hungary wondered why the amount of the contributory unit shown in the "budget" column of the document, namely, 15,550.- Swiss francs, was different from the amount submitted to the Administrative Council, as it appeared in Document 16, namely, 14,332.- Swiss francs. Under "total expenditure as at 15 November 1984", moreover, the amount of the contributory unit was 15,367.- Swiss francs.

The Chairman replied that the amount of the budget had been adjusted to take account of changes in the United Nations common system of staff salaries and allowances.

The exact amount of the contributory unit for the Members in Regions 1 and 3 concerned would be calculated once the Conference was over on the basis of the final analysis of conference expenditure.

5. Other business

The Chairman proposed that the last meeting of Committee 3 should be held on 3 or 4 December 1984, in order to prepare and adopt the final report for submission to the Plenary.

Owing to the timetable of the Conference, certain decisions with budgetary implications might be taken by the Plenary after the report had been adopted by Committee 3. If so, the financial impact of those decisions would be submitted separately in the form of annexes.

The Chairman said that a note had been addressed to the Chairmen of Committees 4 and 5, as well as to the Secretary-General, the Director of the CCIR and the Chairman of the IFRB, asking them to estimate any budgetary impact of the decisions taken and to inform the Plenary (Document 81).

In reply to a question by the delegate of Hungary concerning the need to consider immediately how many copies of the Final Acts would be required, referring to a document which had already been prepared to that effect (Document 107), the Deputy Secretary-General replied that the question of the publication would be dealt with by the Plenary. The Final Acts would be distributed in accordance with the usual procedure, that is, one copy for each delegation.

The Chairman said that the question, as well as Document 107, would of course be considered at the last meeting of Committee 3.

The meeting rose at 1125 hours.

The Secretary:

V. MUCCIOLI

The Chairman:

F. MOLINA NEGRO



**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document No. 125-E  
20 November 1984

B.1

PLENARY MEETINGFirst series of texts submitted by the  
Editorial Committee to the Plenary Meeting

The following texts are submitted to the Plenary Meeting for first reading:

<u>Source</u>	<u>Document No.</u>	<u>Contents</u>
WG TECH/PLEN	106	Recommendation No. GTECH/1
		Recommendation No. GTECH/2
		Recommendation No. GTECH/3

H. BERTHOD  
Chairman of Committee 6

Annex: 4 pages

## RECOMMENDATION No. GTECH/1

**Relating to the Continuation of Studies on Compatibility  
Between the Aeronautical Radionavigation Service  
in the Band 108 - 117.975 MHz and the  
FM Broadcasting Service in the  
Band 87.5 - 108 MHz**

The Regional Administrative Conference for the Planning of VHF Sound Broadcasting (Region 1 and part of Region 3) (Geneva, 1984).

considering

- a) that this Conference has prepared a frequency plan for the broadcasting service taking account of compatibility with the aeronautical radionavigation service in accordance with Recommendation No. 704 of the World Administrative Radio Conference (Geneva, 1979);
- b) that for these purposes the Conference has established protection criteria based on the report of its first session held in 1982, on recent CCIR studies and on proposals submitted by administrations to its second session;
- c) that the ICAO has agreed standards, to come into effect on 1 January 1998, relating to the immunity characteristics of future ILS and VOR receivers and incorporating the basic requirements for intermodulation and desensitization;
- d) that the aeronautical radionavigation service is a safety service, and ILS and VOR facilities provide guidance to aircraft at critical points in their operation;

noting

that the Conference was unable to reach final conclusions on some of the compatibility criteria and that refinements of these criteria would in some cases facilitate the implementation and modification of the Plan;

B.1/2

requests the CCIR

to continue to study compatibility between the aeronautical radionavigation service and the broadcasting service in the bands concerned, and in particular:

- a) protection ratio values for future airborne receivers against spurious emissions from broadcasting stations (referred to as A1 type of interference) in cases where the frequency of the spurious emissions does not coincide with the aeronautical frequency;
- b) protection ratio values for present and future receivers against out-of-band emissions from broadcasting stations (referred to as A2 type of interference);
- c) criteria for prediction of third order intermodulation (referred to as B1 type of interference) generated in airborne receivers by three unwanted signals, for receivers meeting the ICAO standard for two-signal intermodulation for future receivers;
- d) the effect of sinusoidal modulation of the broadcasting transmitters during test and line-up and any precautions or procedures to be adopted at broadcasting stations in order to maintain the agreed protection of the aeronautical service;

invites the ICAO

to continue to study these problems and communicate the results of its studies to the CCIR;

invites the Secretary-General

to communicate this Recommendation to the ICAO;

recommends administrations

to participate actively in these studies and provide the CCIR with expert guidance on this matter.

B.1/3

## RECOMMENDATION No. GTECH/2

**Relating to the Continuation of Studies on  
Compatibility Between the Aeronautical Mobile (R) Service  
in the Band 117.975 - 137 MHz and the FM Broadcasting  
Service in the Band 87.5 - 108 MHz**

The Regional Administrative Conference for the Planning of VHF Sound Broadcasting (Region 1 and part of Region 3) (Geneva, 1984).

considering

- a) that VHF air/ground communications perform a vital role in the operation and safety of aircraft, which could be prejudiced by interference;
- b) that compatibility problems have arisen in various parts of the world between the aeronautical mobile (R) service in the band 117.975 - 137 MHz and the FM broadcasting service in the band 87.5 - 108 MHz;
- c) that this Conference did not consider all aspects of compatibility between these two services in the preparation of the broadcasting Plan;
- d) that the CCIR and the ICAO have studied the problem and the CCIR has recommended technical criteria which can be used by administrations for coordination between the services concerned;
- e) that the ICAO has agreed standards, to come into effect on 1 January 1998, relating to the immunity characteristics of future aeronautical VHF communication receivers and incorporating the basic requirements for intermodulation and desensitization;

requests the CCIR

to continue to study compatibility between these two services from the standpoint of possible interference to the aeronautical mobile service;

invites the ICAO

to continue to study these problems and communicate the results of its studies to the CCIR;

invites the Secretary-General

to communicate this Recommendation to the ICAO;

recommends administrations

to participate actively in these studies and provide the CCIR with expert guidance on this matter.

## RECOMMENDATION No. GTECH/3

**Relating to a Proposal for the Modification of Appendix 8  
to the Radio Regulations.****Maximum Permitted Spurious Emission Power Levels  
Radiated in the Band 108 - 137 MHz by Broadcasting Stations  
Operating in the Band 87.5 - 108 MHz**

The Regional Administrative Conference for the Planning of VHF Sound Broadcasting (Region 1 and part of Region 3) (Geneva, 1984).

considering

- a) that, the Conference having taken into account the relevant CCIR contributions, has reviewed some of the technical criteria used for planning the band 87.5 - 108 MHz, and in particular the maximum obtainable suppression of spurious emissions in the band 108 - 137 MHz from broadcasting stations;
- b) that, on the basis of the CCIR's conclusions, the Conference has adopted maximum permitted spurious emission power levels in the band 108 - 137 MHz which are lower than those specified for that band in Appendix 8 to the Radio Regulations;
- c) that the lower values mentioned in b) above have been used in the planning process to ensure protection of the aeronautical radionavigation service in the band 108 - 117.975 MHz;
- d) that the CCIR and ICAO have been requested to continue to study compatibility between the aeronautical mobile (R) service in the band 118 - 137 MHz and the FM broadcasting service in the band 87.5 - 108 MHz (Recommendation GTECH/2) and in doing so to take into account the spurious emission power levels mentioned in b) above;

requests the Administrative Council

to place on the agenda of the next competent conference the question of modifying Appendix 8 to the Radio Regulations with a view to reducing the maximum permitted spurious emission power levels radiated in the band 108 - 137 MHz by broadcasting stations operating in the band 87.5 - 108 MHz.

**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 126-E

20 November 1984

Original: EnglishCOMMITTEE 4EgyptPLANNING FM TRANSMITTERS ON THE  
BORDERS OF WARM SEASIntroduction

This paper is to be presented to the second session of the FM Transmitters Planning Conference, in order to illustrate the idea of possible improved planning of FM transmitters at the borders of warm seas. The idea of this paper was developed after estimation of interferences in the Gulf area. This estimation was carried out by two administrations and was based on requirements of Gulf countries and according to realistic wave propagation characteristics prevailing in the area.

The resultant average usable field strength and its standard deviation indicated that it is very difficult, if not impossible, to realize required service areas under such a situation. This fact was also predicted in earlier reports of the ITU/GULFVISION project.

A short paper was presented to the coordination meeting between Gulf countries held in Geneva from 24-28 September 1984, which indicated the possibility of an alternative planning method. In the following, this alternative planning method is presented, together with an example concerning planning assignments in the Gulf. This paper shows, first, the extent of the problem in a quantitative way. Second, it presents the demerits of the use of the regular lattice planning method, proposed in the first session of the FM Planning Conference to carry out assignments on the borders of warm seas. Third, it presents a detailed method of planning close to warm seas.

PART I - Planning FM transmitters on the borders of warm seas1. Extent of the problem

The extent of the problem can be presented by introducing a short summary of the propagation characteristics of band II signals over warm seas and the neighbouring coastal land, together with an example showing the levels of interferences and required transmitter powers, in order to realize reasonable service areas.

1.1 Wave propagation characteristics of band II signals over warm seas

The long range interference of band II signals over warm seas is mainly due to ducting. Thus it can be described by the same expression used for ducting, namely:

$$L_b - L_{bf} = -10 \log d + A_c + \gamma_d d$$

where:

$L_b$  is the transmission loss

$L_{bf}$  free space loss

$d$  distance between transmitter and receiver

$A_c$  factor describing coupling into the duct

$\gamma_d$  coefficient representing the loss/km in the duct,

for values of  $\gamma_d$  and  $A_c$  prevailing over the Gulf and Eastern Mediterranean the 1% of time, 50% of locations interference levels can be considered approximately as close to free space up to distances of the order of 400 km, and decreasing below free space at a rate of 5 dB/100 km for distances greater than 400 km. A curve of this nature has been adapted by the Interim Working Party of the CCIR (IWP 5/5) as describing the Gulf and the Eastern Mediterranean, and is presented to the second session of the Planning Conference for consideration.

For other warm seas e.g., the Red Sea, the same characteristics may be used for approximate estimations of interferences.

#### 1.2 Wave propagation characteristics of band II signals over coastal land

The wave propagation characteristics over coastal land on the borders of warm seas, for long distances, are also determined by ducting. Therefore, they can be described by the same expression used above but with a varying value of  $\gamma_d$ . According to the studies carried out within the ITU/GULFVISION projects,  $\gamma_d$  can be seen to rise gradually from the sea value according to the perpendicular distance from the shore up to a value determined by the mechanism of diffraction. The rate of increase depends on the meteorological and topographical characteristics of the coastal land area. For further details, reference could be made to the ITU/GULFVISION projects documents.

#### 1.3 Example for the estimation of interferences and required transmitter powers

In order to show the level of interference, consider as an example, a transmitter of 100 kW placed at a distance of 480 km from another transmitter and causing co-channel interference with it. (The figure of 480 km was chosen since it is the same distance used for co-channel separation in the regular lattice proposed by the first session.) The resulting interfering field will be about 76 dB( $\mu$ V/m) in open sites. If this is the only interferer, then a usable field strength of 113 dB( $\mu$ V/m) is to be expected.

According to interference estimations carried out in the Gulf area, the average usable field strength is 100 dB( $\mu$ V/m) with a standard deviation of 15 dB. Considering that in a typical case the usable field strength corresponds to the average, and considering also a reasonable height of the transmitting antenna, then the required transmitter power to realize reasonable service area i.e. of the order of 40 km from the transmitter, will be very high (greater than  $10^4$  kW). This is the average condition in the Gulf and for 50% of the cases it shall be even worse.

Only values of  $E_{\gamma}$  below 70 dB( $\mu$ V/m) would yield reasonable required transmitter powers for 40 km service areas. Alternatively, one may suggest acceptance of a deterioration in quality i.e. accepting interference for a percentage of time larger than 1%. However, this proposition contradicts the fact that the FM service is intended to be a high quality service.

2. Demerits of the use of the regular lattice, as proposed by the first session for planning assignments close to warm seas

The regular lattice planning as proposed by the first session is most favourable in cases of wide uniform areas, which are likely to be covered by transmitters of equal power and using omnidirectional antennas. Demerits of the use of the regular lattice planning close to the boundaries of warm seas can be stated as follows.

2.1 Although there is a large difference between propagation characteristics oversea and propagation characteristics overland, the same lattice geometry is used overland and sea.

2.2 Asked-for transmitters are mostly located overland. Only a few transmitters are to be located over islands inside the sea. The lattice indicates positions of transmitters overland and oversea. This urges countries to use some of the lattice points that exist oversea, to cover land. This will make the boundaries of warm seas densely occupied by transmitters which give rise to strong numerous interferences. For example, in the Gulf area, the number of significant interferers may reach up to 26 in the service areas of some transmitters.

2.3 Distances that are used to describe the lattice geometry oversea are likely to cause high levels of interferences (see the example in 1.3 describing co-channel interference).

2.4 Since warm seas extend generally more than 480 km, a number of unit cells of the lattice is likely to be used (in the Gulf area about 3). This will allow repetition of frequencies causing strong interferences.

2.5 Generally, the unit cells of the lattice are not optimized according to the sea geometry. This will limit the efficiency of the use of the regular lattice.

2.6 The topography close to the sea is generally differing from one location to the other, such that the geometries of the service areas of transmitters may differ widely. This results in large differences regarding antenna directivity and/or effective radiated power, which again limits the use of the regular lattice.

2.7 The use of the regular lattice for land areas which are randomly populated close to warm seas is insignificant, since then assignments according to the lattice are very close to being random.

3. Suggested method for planning assignments close to warm seas

The suggested method for planning classifies the areas in which assignments are carried out into three areas:

- 1) the boundary area close to the sea;
- 2) deep inland area;
- 3) the transition zone i.e. the area which lies between the boundary area and the deep inland area.



In the following, we shall present detailed considerations for planning in the three areas.

### 3.1 Planning in the area close to the sea

Planning in this area is the most critical part. Therefore, it may be carried out first and then considered as a restriction for the whole planning process. In the following, the details of this method are presented.

#### 3.1.1 Boundaries of the area

The inner boundary of this area is the sea coast, while the outer boundary is limited by the line-of-sight distance of the transmitters plus the distance from the coast at which the value of  $\gamma_d$  is relatively high. The summation of both distances is generally varying but considering a reasonable height of transmitting antennas, together with average inland propagation characteristics, will allow the estimation of a representative value.

Therefore, this area can be seen as a narrow strip around the coast (Figure 1), in addition to islands inside the sea.

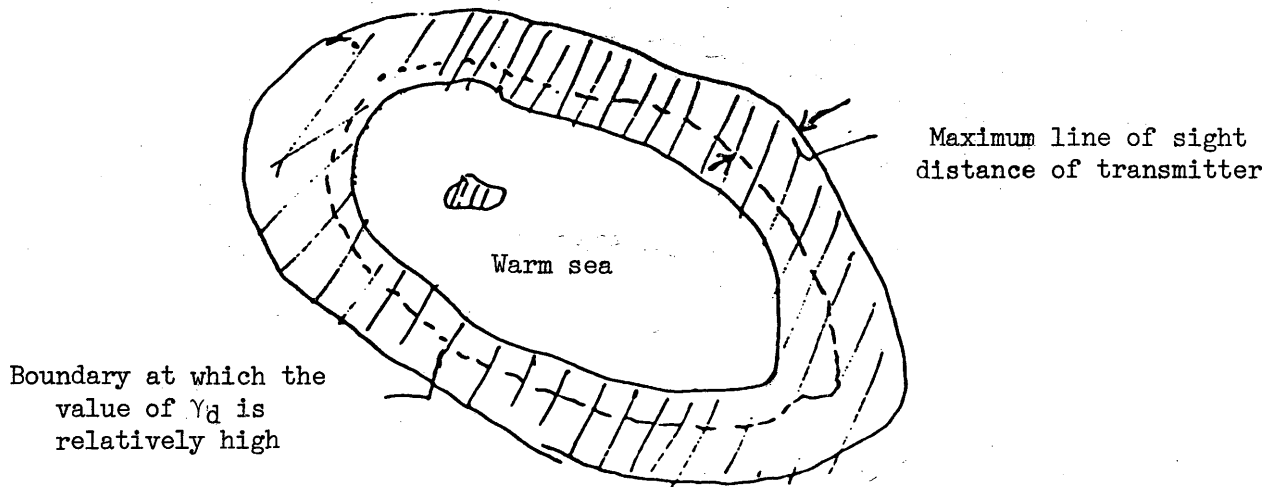


FIGURE 1

#### 3.1.2 Determination of the area in which frequencies cannot be repeated

Within the boundary of the above-described area another area can be defined such that within this area co-channel interference is not allowed, since it usually causes a significant increase in the usable field strength. This area is bounded by locations over which paths of interference are mostly sea paths, or if the dimensions of the sea are large, then it may be bounded by the distance after which co-channel interference is allowed without significant increase in the usable field strength.

#### 3.1.3 Determination of the maximum number of programmes/site

In order to obtain the maximum number of programmes to be transmitted from any site i.e. the maximum number of transmitters at each site, the total number of channels is divided by the number of sites in the area defined in 3.1.2. However, if some countries' requirements are below this maximum, then the maximum number of programmes/site may be increased.

### 3.1.4 Arranging frequencies within the area defined in 3.2

#### 3.1.4.1 Determination of channel groups

The available number of channels (204 in the case of the Middle East and Africa) is to be arranged in groups according to the maximum number of programmes/site. This grouping of channels is subject to some constraints according to the report of the first session of the FM Planning Conference. In case that any site requires a number of channels less than that specified by the maximum, then two or more sites may share one group.

#### 3.1.4.2 Determination of coordination distances

Assuming a reasonable value of the nuisance field (resulting from a reasonable value of the used field strength) a set of allowed interfering fields can be obtained in terms of the allowed protection ratios.

These values of interfering field strengths can be used to obtain a set of coordination distances according to the sea propagation curves and assuming a reasonable value of interfering power, say 10 kW.

#### 3.1.4.3 Linear lattice planning

The new hypothetical distribution may be referred to as the linear lattice distribution, which is different from the regular lattice distribution already presented in the first session.

The linear lattice distribution derives its name from the fact that it suits the distribution of sites along a line which is likely to be encountered along the area defined in 3.1.2. The width of this area is likely to be covered by one transmitter site, such that the sites can be seen to be arranged along a line.

The shape of the line, although it may not be regular in the actual case, can be fitted into the nearest regular shapes, allowing regularity in the distribution of channels.

The most fitted regular shapes are the straight line, the circle or a part of a circle. For example, in the Gulf area the most fitted regular shape is a circle, in the Red Sea a straight line, and in the East Mediterranean a part of a circle. See Figure 2.

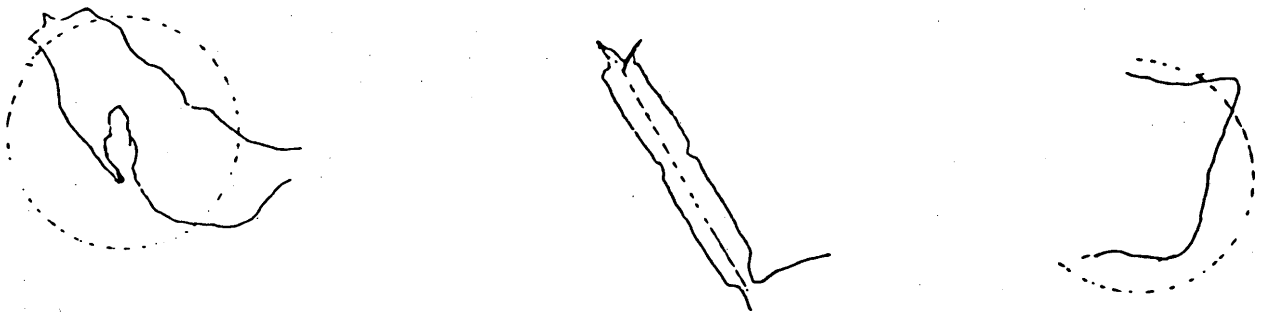


FIGURE 2

The idea of the linear lattice planning is completed by considering the coordination distances estimated before, and arranging the groups of channels such that channels which may cause specific types of interferences are separated according to the coordination distances. In the following, an example is given for illustration.

Considering a case in which the maximum number of programmes/site is four, then the number of groups will be 51. Among the possible sequence of channels will be the following sequence:

1	6	11	16	21	26	31	36	41	46	51
4	9	14	19	24	29	34	39	44	49	
2	7	12	17	22	27	32	37	42	47	
5	10	15	20	25	30	35	40	45	50	
3	8	13	18	23	28	33	38	43	48	

According to the above sequence the distances between groups which are spaced 200 kHz is less than distances between groups spaced 100 kHz.

The advantages of such a sequence of channels are numerous, among which is the full utilization of channels and low level interference.

#### 3.1.5 Use of topography to minimize interferences

Within the area defined in 3.1.2 the topography of the area could be used to minimize interferences. This could be carried out by arranging the paths in which interferences are expected to be such that a significant portion lies overland. The best arrangement can be obtained through several trials.

#### 3.1.6 Use of topography to carry out assignments outside the area defined in 3.1.2

Assignments outside the area defined in 3.1.2 are generally a repetition of some frequencies used within that area. A schematic method is explained later when dealing with assignments in the transition zone.

#### 3.1.7 Considerations to low power assignments

If a specific number of groups of channels are devoted to low power, then advantage may be taken from this fact to build a special lattice for such frequencies, or at least to consider the suitable coordination distances which are generally smaller than the high power coordination distances.

#### 3.2 Planning assignments deep inland

Assignments which are deep inland could be carried out, independent of those at the boundary of the warm sea, if a spacing between assignments equal to the coordinating distance of co-channel interference is considered.

Therefore, we can state that following the planning at the boundary of the warm seas, the assignments deep inland have to be considered. This later planning is only of national interest since such assignments are not likely to cause interferences, except those tolerated by the plan, on assignments on the borders of warm seas and/or assignments of other countries as well.

### 3.3 Planning assignments within the transition zone

The transition zone is the zone between the linear lattice planning carried out at the boundary of warm seas, and the deep inland planning which may be carried out by any rule satisfying the national needs, including that of the regular lattice. Usually, the assignments in these areas are limited in number, but they have to avoid interferences with assignments at the boundaries of warm seas and deep inland, since assignment in the transition zone is the last step in the planning process.

The suggested method of planning in the transition zone depends on pointing out the frequencies that can be used in each site, i.e. not interfering with assignments deep inland or at the boundaries of warm seas. The steps that are to be followed can be stated as follows. See also Figure 3.

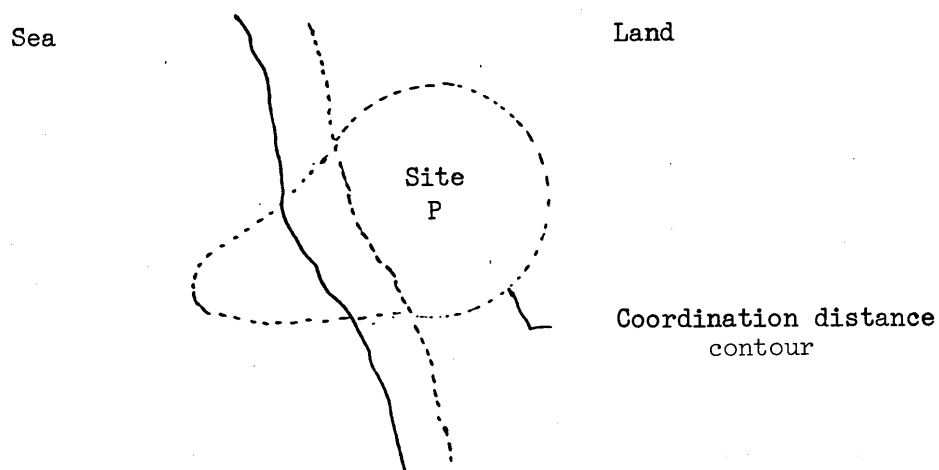


FIGURE 3

#### Planning in the transition zone

- 1) Draw a circle whose centre is the transition site and whose radius is the coordinating distance for co-channel interference.
- 2) Find the intersection of this circle with the warm sea boundary area.
- 3) Extend the coordinating distance on sea according to the laws of mixed paths, hence obtain the boundary of the area which includes all frequencies which cannot be repeated at that site.
- 4) Point out the assignments within the area obtained in "3", hence obtain the list of frequencies not to be used at that site.
- 5) Repeat steps 1, 2, 3 and 4 for other types of interferences (100 kHz, 200 kHz, 300 kHz, 400 kHz spacing) and determine for each type of interference the frequencies to be avoided.

- 6) Obtain the list of frequencies that can be used at that site.
- 7) Repeat for other sites within the transition zone which may have mutual interferences.
- 8) Select a proper set of frequencies at each site.

It has been noted that it will be very helpful in carrying out the assignments if the same channel grouping could be used over the whole area.

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

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6 December 1984

Original: English

## PLENARY MEETING

### Note by the Secretary-General

#### RESULTS OF THE COMPATIBILITY BETWEEN AERONAUTICAL RADIONAVIGATION SERVICES AND FM BROADCASTING SERVICES

#### EXPLANATION OF COLUMN HEADINGS

At the request of the IFRB, I transmit the attached explanation of column headings for the results of compatibility between aeronautical radionavigation services and FM broadcasting services for the information of the Conference. The calculations are based on the criteria approved by the fourth Plenary Meeting of the second session of the Conference, which are included in Annex 2 of the Agreement.

R.E. BUTLER

Secretary-General

Annex : 1

ANNEX

RESULTS OF THE COMPATIBILITY BETWEEN AERONAUTICAL  
RADIONAVIGATION SERVICES AND FM BROADCASTING SERVICES

Explanation of column headings

The explanation below of column headings for the results of IFRB compatibility calculations (third run) between aeronautical radionavigation services and FM broadcasting services is given for information. The calculations are based on the criteria approved by the second session of the Conference, contained in Annex 2 to the Agreement /Document 208/, Chapter 7.

Heading

AERONAUTICAL RADIONAVIGATION STATION

Frequency of the aeronautical radionavigation station in MHz

Type of aeronautical radionavigation station, ILS or VOR

Name of aeronautical radionavigation station

Administration (country) of the aeronautical radionavigation station

IFRB Serial number of the aeronautical radionavigation station

Serial number, Azimuth in degrees, Distance in kilometres, Altitude in metres - of the test point of the aeronautical radionavigation station

Coordinates of the aeronautical radionavigation station in degrees and minutes

Altitude of the aeronautical radionavigation station above sea level in metres

Results

FM BROADCASTING STATION

The broadcasting stations for which one or more of the protection criteria given in Annex 2 to the Agreement, Chapter 7 are not met or they are met, but are exceeded by not more than 3 dB, are given in the table. If there are no values in columns 10 or 11 or 12 or 13 or 14, the protection criteria are exceeded by more than 3 dB.

1. Frequency of the broadcasting station in MHz, which can cause interference. In case of B1 interference, the interference level at the test point caused by the broadcasting station is more than the trigger value considered necessary to initiate the generation of intermodulation products, defined in Annex 2 to the Agreement, Chapter 7, section 7.6.5.4, (primary station).
2. Country of the broadcasting station.
3. Name of the broadcasting station.
4. Frequency of the broadcasting station in MHz, which can contribute to the formation of third-order intermodulation products together with the broadcasting station indicated in the line(s) above, because its interference level is above the cut-off value, defined in Annex 2, Chapter 7, section 7.6.5.4, and the frequencies satisfy the condition in Annex 2 to the Agreement, Chapter 7, section 7.6.5. The broadcasting transmitters contributing to third-order intermodulation products are grouped together.

In the example in the Appendix to this explanation the combination frequency is:

107.7 MHz	(DUDELANGE)
+107.8 MHz	(SAENTIS)
<u>-106.8 MHz</u>	(METZ LUTTANGE)
108.7 MHz = combination frequency	
108.7 MHz	(ILS SAARBRUECKEN-ENSHEIM)

5. IFRB Serial number of the broadcasting station.
6. Longitude and latitude of the broadcasting station.
7. Distance between the broadcasting station and the nearest test point of the aeronautical radionavigation station; the serial number of the test point is indicated in column (8).
8. Serial number of the nearest test point of the aeronautical radionavigation station to the broadcasting station.
9. The field strength of the broadcasting station at the test point in dB( $\mu$ V/m), at the broadcasting frequency which is indicated in column 1, assuming free-space propagation.
10. The margin which results from the calculations for A1 type interference, as described in Annex 2 to the Agreement, Chapter 7, section 7.6.3. If the value in this column is positive, the protection criteria is not met; if the value in this column is zero or negative, the protection criteria is met but it is exceeded by not more than 3 dB. The value is given in dB( $\mu$ V/m).
11. The margin which results from the calculations for A2 type interference, as described in Annex 2 to the Agreement, Chapter 7, section 7.6.4. If the value in this column is positive, the protection criteria is not met; if the value in this column is zero or negative, the protection criteria is met but it is exceeded by not more than 3 dB. The value is given in dB( $\mu$ V/m).



12. The margin which results from the calculations for B2 type interference, as described in Annex 2 to the Agreement, Chapter 7, section 7.6.6. If the value in this column is positive, the protection criteria is not met; if the value in this column is zero or negative, the protection criteria is met but it is exceeded by not more than 3 dB. The value is given in dBm.

13. The interference level in dBm. The interference levels are grouped together the first value indicates the interference level of the broadcasting station which initiates the generation of intermodulation products, the second and eventually the third values indicate the levels of the broadcasting stations which contribute to the intermodulation products. In case of B2 interference, the interference level at the test point is indicated.

In the example in the Appendix to this explanation the interference levels are as follows:

-32.7 dBm (DUDELANGE)  
-31.1 dBm (METZ LUTTANGE)  
-47.1 dBm (SAENTIS)

14. The margin of the intermodulation products according to the conditions defined in Annex 2 to the Agreement, Chapter 7, section 7.6.5:

In two-signal case:

$$\text{margin} = 2(N_1 - 20 \log \frac{\max(0.4; 108.1 - f_1)}{0.4}) + \\ N_2 - 20 \log \frac{\max(0.4; 108.1 - f_2)}{0.4} + 120$$

In the three-signal case:

$$\text{margin} = N_1 - 20 \log \frac{\max(0.4; 108.1 - f_1)}{0.4} + \\ N_2 - 20 \log \frac{\max(0.4; 108.1 - f_2)}{0.4} + \\ N_3 - 20 \log \frac{\max(0.4; 108.1 - f_3)}{0.4} + 126$$

If the value in this column is positive, the protection criteria is not met; if the value in this column is zero or negative, the protection criteria is met but it is exceeded by not more than 3 dB. The value is given in dBm.

In the example in the appendix to this explanation, the margin 4.8 dB for the intermodulation product of three transmitters: DUDELANGE, METZ LUTTANGE, SAENTIS, was calculated as follows:

$$\begin{aligned}
 \text{margin} &= N_1 - 20 \log \frac{\max(0.4; 108.1 - f_1)}{0.4} + \\
 &N_2 - 20 \log \frac{\max(0.4; 108.1 - f_2)}{0.4} + \\
 &N_3 - 20 \log \frac{\max(0.4; 108.1 - f_3)}{0.4} + 126 = \\
 &-32.7 - 20 \log \frac{108.1 - 107.7}{0.4} + \\
 &-31.1 - 20 \log \frac{108.1 - 106.8}{0.4} + \\
 &-47.1 - 20 \log \frac{0.4}{0.4} + 126 = 4.8
 \end{aligned}$$

15. Serial number of the test point for which the third-order intermodulation incompatibility was calculated.

For ease of reference, sample pages of the headings are given in the appendix to this explanation.

Appendix: 1

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aeronautical radionavigation station

test points of the  
aeronautical radionavigation station

page number

552

frequency	type	name	admin.	IFRB number	serial number	azimuth	distance	altitude
*****								
* 108.700 MHZ *	* I.L.S. *	* SAARBRUECKEN-ENSHEIM D	( D )	N. SERIE : 90018102	* PT-TEST *	AZIM( DEG )	DIST(KM)	ALT (M) *
*					* 1 *	86	0.0	921 *
*		COORDONNEES :	7E06	49N13	* 2 *	121	31.5	921 *
*		HAUTEUR A.D.N.M. :	321	M	* 3 *	51	31.5	921 *
*					* 4 *	86	44.3	921 *
*****								

FREQ. (PRI) (1)	PAYS (2)	S T A T I O N F. M. (3)	FREQ. (SEC) (4)	N. SERIE IFRB (5)	COORDONNEES (6)	DIST. ST/PT (7)	PT (8)	INTERFERENCE SIMPLE				INTERMODULATION				
								A DR UV/M (9)	MARGE A1 DBUV/M (10)	MARGE A2 DRUV/M (11)	MARGE B2 DBM (12)	NIVEAU DBM (13)	MARGE DBM (14)	PT (15)		
107.700	LUX	DUDELANGE		02488201	6E06 49N28	77.5	1									
	F	METZ LUTTANGE	106.800	02139401	6E18 49N16								32.7			
	SUI	SAENTIS	107.800	00374102	9E21 47N15								31.1	4.8	1	
													47.1	4.8	1	

frequency  
(primary station)

country

name

frequency  
(secondary station)

IFRB number

Longitude

latitude

```

-----
distance between
the BC station and
the test point

```

serial number of  
the nearest test point

interference level of }  
DUDELANGE station

interference level of }  
METZ LUTTANGE station }

interference level of }  
SAENTIS station

margin of the  
intermodulation products

broadcasting stations

results of calculations

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**PAGE LAISSEE EN BLANC INTENTIONNELLEMENT**

aeronautical radionavigation station

test points of the  
aeronautical radionavigation station

586

```
*****
* 109.100 MHZ ** I.L.S. ** KOELN-BONN          D (D ) N. SERIE : 90019202 * PT-TEST * AZIM(DEG)*DIST(KM)* ALT (M) *
*
*          COORDONNEES      : 7E07 50N52      * 1 * 64 * 0.0 * 682 *
*          HAUTEUR A.D.N.M. : 82 M             * 2 * 99 * 31.5 * 682 *
*                                          * 3 * 29 * 31.5 * 682 *
*                                          * 4 * 64 * 44.3 * 682 *
*****
```

						INTERFERENCE SIMPLE				INTERMODULATION				
FREQ.	PAYS	S T A T I O N F. M.	FREQ.	N. SERIE	COORDONNEES	DIST.	PT	A	MARGE	MARGE	MARGE	NIVEAU	MARGE	PT
(PRI)			(SEC)	IFRU		ST/PT		DB UV/M	DBUV/M	DBUV/M	DBM	DBM	DBM	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
104.700	D	NORDHELLE		00166904	7E45 51N09	13.0	4	100.0	3.6					
95.700	D	REMSCHIED		00167001	7E06 51N07	16.2	3	82.7	1.7					
107.400	D	WUPPERTAL		00170101	7E09 51N17	22.7	3	79.8	-1.2					

broadcasting station

field strength

margin for A1 type  
interference

the protection criteria for  
A1 type interference is not met  
  
the protection criteria for  
A1 type interference is  
exceeded by 1.2 dB

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 127-E  
20 November 1984  
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PLENARY MEETING

Note by the Secretary of the Conference

RESULTS OF THE COMPATIBILITY BETWEEN AERONAUTICAL  
RADIONAVIGATION SERVICES AND FM BROADCASTING SERVICES

EXPLANATION OF COLUMN HEADINGS

At the request of the IFRB, I transmit the attached explanation of column headings for the results of compatibility between aeronautical radionavigation services and FM broadcasting services for the information of the Conference. The calculations are based on the criteria approved by the fourth Plenary Meeting of the second session of the Conference, which are included in Document 86.

J. JIPGUEP  
Secretary of the Conference

Annexes: 2

ANNEX 1

RESULTS OF THE COMPATIBILITY BETWEEN AERONAUTICAL  
RADIONAVIGATION SERVICES AND FM BROADCASTING SERVICES

Explanation of column headings

The explanation below of column headings for the results of IFRB compatibility calculations (second run) between aeronautical radionavigation services and FM broadcasting services is given for information. The calculations are based on the criteria approved by the Plenary Meeting of the second session of the Conference, contained in Document 86.

Heading

AERONAUTICAL RADIONAVIGATION STATION

Frequency of the aeronautical radionavigation station in MHz

Type of aeronautical radionavigation station, ILS or VOR

Name of aeronautical radionavigation station

Administration (country) of the aeronautical radionavigation station

IFRB Serial number of the aeronautical radionavigation station

Serial number, Azimuth in degrees, Distance in kilometres, Altitude in metres - of the test point of the aeronautical radionavigation station

Coordinates of the aeronautical radionavigation station in degrees and minutes

Altitude of the aeronautical radionavigation station above sea level in metres

Results

FM BROADCASTING STATION

The broadcasting stations for which one or more of the protection criteria given in Document 86 are not met or they are met, but are exceeded by not more than 3 dB, are given in the table. If there are no values in columns 10 or 11 or 12 or 13 or 14, the protection criteria are exceeded by more than 3 dB.



1. Frequency of the broadcasting station in MHz, which can cause interference. In case of B1 interference, the interference level at the test point caused by the broadcasting station is more than the trigger value considered necessary to initiate the generation of intermodulation products (primary station).
2. Country of the broadcasting station.
3. Name of the broadcasting station.
4. Frequency of the broadcasting station in MHz, which can contribute to the formation of third-order intermodulation products together with the broadcasting station indicated in the line(s) above (secondary station). The broadcasting transmitters contributing to third-order intermodulation products are grouped together.
5. IFRB Serial number of the broadcasting station.
6. Longitude and latitude of the broadcasting station.
7. Distance between the broadcasting station and the nearest test point of the aeronautical radionavigation station; the serial number of the test point is indicated in column (8).
8. Serial number of the nearest test point of the aeronautical radionavigation station to the broadcasting station.
9. The field strength of the broadcasting station at the test point in dB( $\mu$ V/m).
10. The margin which results from the calculations for A1 type interference. If the value in this column is positive, the protection criteria is not met; if the value in this column is zero or negative, the protection criteria is met but it is exceeded by not more than 3 dB. The value is given in dB( $\mu$ V/m).
11. The margin which results from the calculations for A2 type interference. If the value in this column is positive, the protection criteria is not met; if the value in this column is zero or negative, the protection criteria is met but it is exceeded by not more than 3 dB. The value is given in dB( $\mu$ V/m).
12. The margin which results from the calculations for B2 type interference. If the value in this column is positive, the protection criteria is not met; if the value in this column is zero or negative, the protection criteria is met but it is exceeded by not more than 3 dB. The value is given in dBm.
13. The interference level in dBm. The interference levels are grouped together: the first value indicates the interference level of the broadcasting station which initiates the generation of intermodulation products, the second and eventually the third values indicate the levels of the broadcasting stations which contribute to the intermodulation products. In case of B2 interference, the interference level at the test point is indicated.
14. The margin of the intermodulation products according to the conditions defined in Document 86.
15. Serial number of the test point for which the third-order intermodulation incompatibility was calculated.

For ease of reference, sample pages of the headings are given in Annex 2.

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aeronautical radionavigation station

test points of the  
aeronautical radionavigation station

\*\*\*\*\*  
\* 109.100 MHZ \*\* I.L.S. \*\* KOELN-BONN D (D ) N. SERIE : 90019202 \* PT-TEST \* AZIM(DEG)\*DIST(KM)\* ALT (M) \*  
\* COORDONNEES : 7E07 50N52 \* 1 \* 64 \* 0.0 \* 682 \*  
\* HAUTEUR A.D.N.M. : 82 M \* 2 \* 99 \* 31.5 \* 682 \*  
\* 3 \* 29 \* 31.5 \* 682 \*  
\* 4 \* 64 \* 44.3 \* 682 \*  
\*\*\*\*\*

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								INTERFERENCE SIMPLE				INTERMODULATION		
FREQ.	PAYS	S T A T I O N F. M.	FREQ.	N. SERIE	COORDONNEES	DIST.	PT	A	MARGE	MARGE	MARGE	NIVEAU	MARGE	PT
(PRI)			(SEC)	IFRB		ST/PT		DB UV/M	DBUV/M	DBUV/M	DBM	DBM	DBM	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
104.700	D	NORDHELLE		00166904	7E45 51N09	13.0	4	100.0	3.6					
95.700	D	REMSCHIED		00167001	7E06 51N07	16.2	3	82.7	1.7					
107.400	D	WUPPERTAL		00170101	7E09 51N17	22.7	3	79.8	-1.2					

broadcasting station

field strength

margin for A1 type  
interference

the protection criteria for  
A1 type interference is not met  
  
the protection criteria for  
A1 type interference is  
exceeded by 1.2 dB

# CONFÉRENCE RÉGIONALE DE RADIODIFFUSION

(SECONDE SESSION)

GENEVE, 1984

Document 128/F/E/S  
21 novembre 1984

## Note d'information du Secrétaire de la Conférence

Il y a lieu de noter que les inscriptions au nom de Burkina Faso dans le projet de Plan ainsi que dans toutes les publications futures de l'UIT figureront sous le symbole BFA (au lieu du symbole HVO utilisé dans les documents publiés jusqu'à ce jour).

## Information Note by the Secretary of the Conference

Note should be taken that entries on behalf of Burkina Faso in the draft Plan as well as in all future Publications of the ITU will appear under symbol BFA (instead of HVO used in all documents published to date).

## Nota de Información del Secretario de la Conferencia

Conviene tomar nota de que las inscripciones a nombre de Burkina Faso en el proyecto de Plan y en todas las futuras publicaciones de la UIT figurarán con el símbolo BFA (en lugar de HVO como en los documentos publicados hasta la fecha).

J. JIPGUEP

Secrétaire de la Conférence

**REGIONAL BROADCASTING  
CONFERENCE**

Document No. 129-E(Rev.)

21 November 1984

(SECOND SESSION)

GENEVA, 1984

B.2(Rev.)

PLENARY MEETINGSecond series of texts submitted by the  
Editorial Committee to the Plenary Meeting

The following texts are submitted to the Plenary Meeting for first reading:

<u>Source</u>	<u>Document No.</u>	<u>Contents</u>
COM.4	116	Information included in the columns of the Plan (Annex 1)

H. BERTHOD  
Chairman of the Editorial Committee

Annex: 1 page

B.2/1(Rev.)

## ANNEX 1

**Frequency Assignment Plan for FM Broadcasting Stations  
in Region 1 and Part of Region 3 in the Band 87.5-108 MHz**

Information included in the columns of the Plan

Column

1. IFRB serial number
2. Assigned frequency (MHz)
3. Country symbol
4. Name of transmitting station
5. Symbol of the geographical area in which the station is located  
(see Table No. 1 of the Preface to the International Frequency List)
6. Geographical coordinates, in degrees and minutes, of the transmitting antenna site
  - 6.1 Longitude (in degrees and minutes)
  - 6.2 Latitude (in degrees and minutes)
7. Altitude of site of transmitting antenna above sea level (m)
8. Polarization (H, V or M)
9. System (1, 2, 3, 4 or 5) \*
10. Total effective radiated power (dBW)
11. Maximum effective radiated power in the horizontal plane (dBW)
12. Maximum effective radiated power in the vertical plane (dBW)
13. Directivity of antenna (ND or D)
14. Maximum effective antenna height (m)
15. Sectors or directions of restricted e.r.p. (in degrees)
  - 15.1 Sector No. 1
  - 15.2 Sector No. 2
  - 15.3 Sector No. 3
  - 15.4 Sector No. 4
16. Attenuation in the sector concerned (dB)
  - 16.1 Attenuation in sector No. 1
  - 16.2 Attenuation in sector No. 2
  - 16.3 Attenuation in sector No. 3
  - 16.4 Attenuation in sector No. 4
17. Remarks

---

\* See [No. ....] of [Annex No. ....] of the Agreement



**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document No. 129  
21 November 1984

B.2

PLENARY MEETINGSecond series of texts submitted by the  
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B.2/1

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B.2/2

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- 15.4 Sector No. 4
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  - 16.1 Attenuation in sector No. 1
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  - 16.3 Attenuation in sector No. 3
  - 16.4 Attenuation in sector No. 4
- 17. Remarks

---

\* See [No. ...] of [Annex No. ...] of the Agreement

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 130-E  
21 November 1984  
Original: English

COMMITTEE 5

Italy

PROCEDURE TO PROTECT STATIONS  
OF THE AERONAUTICAL RADIONAVIGATION SERVICE  
IN THE BAND 108 - 117.975 MHz

The calculations made by IFRB for the compatibility between BC stations of one country and aeronautical stations of another country are on the assumption that broadcasting stations are, in general, outside the area below the aeronautical service of another country. It must be considered that the service volume is that required volume promulgated in the aeronautical document and it is not limited to the boundary and can contain BC stations of another country.

The base for a possible procedure should, therefore, take into account the above-mentioned situation and foreseen for the stations in the Plan further case-by-case analysis and special considerations including a larger amount of test points whenever BC stations of one country are located within the service volume of another country.

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 131-E

21 November 1984

Original: English

Source: DT/37

WORKING GROUP 5A

## NOTE FROM THE CHAIRMAN OF THE TECHNICAL WORKING GROUP OF THE PLENARY TO THE CHAIRMAN OF WORKING GROUP 5A

Tables of coordination distances together with an explanation of the way in which they were derived and with instructions concerning interpolation and mixed propagation paths are given in the annex formulated in Document 113.

The asterisks in Tables 1 - 3 and the related footnotes are given for information.

No decision was taken as to whether the coordination distances should apply to the distance from the transmitter concerned to the nearest point of the border of the country concerned or to that point of the border suffering the highest amount of interference, e.g. in directions of higher effective radiated power or greater effective antenna height. It was felt that this decision should be prepared by Working Group 5A.

J. RUTKOWSKI  
Chairman of the  
Technical Working Group of the Plenary

Annex: 1

ANNEX

COORDINATION DISTANCES

The coordination distances of Tables 1 - 4 are given for use in the coordination procedure of Article / 3 / and apply to cases where the propagation path is over land (index L), over cold sea (SC), over warm sea (SW), or in an area of super-refractivity and ducting (SS), respectively. To simplify coordination the distances that would be adequate for the various FM sound-broadcasting systems were unified by starting from a unique value of 54 dB( $\mu$ V/m) for the nuisance field and by taking mean values for the protection ratio (39 dB for tropospheric, 47 dB for steady interference). The larger of the two distance values resulting from tropospheric and steady interference was retained and rounded to the nearest multiple of 10 km or 5 km for coordination distances above or below 100 km, respectively.

Tables 1 - 3 are based on the propagation curves of Figures 2.1, 2.2, 2.6, 2.7 and 2.8 of Document 61 and were obtained by using their tabular form / CCIR, 1982-1986 /, whilst Table 4 is based on the equations given in section 2.1.2.1 of Document 61 for over-sea paths in the Mediterranean East of 30° E. The equation for the area from the Shatt-al-Arab to the Gulf of Oman would yield identical results except for 1 W, where the difference is negligible.

Linear interpolation shall be used for effective radiated powers, in dBW, differing from those given in the tables and also for effective antenna heights other than those in Tables 1 - 3. Antenna heights of 10 m or 1,800 m, respectively, shall be used when the actual height is below the former or above the latter value.

For mixed paths the coordination distance,  $D_M$ , shall be the sum of the pertinent fractions of the coordination distances,  $D_i$ , applicable to every type of propagation path involved.

$$D_M = \sum_i \frac{d_i}{d_T} D_i \quad (i = L, SC, SW, SS)$$

where

$d_T$  is the total path length from the transmitter to / the nearest point of / the border of the country concerned; and

$d_i$  are the total lengths of those parts of the path which are over land, over cold sea, over warm sea or in areas of super-refractivity and ducting, as the case may be.

REFERENCES

/ CCIR, 1982-1986 / Document 5/2 (IWP 5/5)

TABLE 1

Coordination distances  $D_r$ , in km, for propagation paths over land

EFFECTIVE RADIATED POWER		EFFECTIVE ANTENNA HEIGHT (m)							
		10	37.5	75	150	300	600	1200	1800
dBW	W								
55	300k	520	520	530	540	560	600	630	670
50	100k	460	460	470	490	510	540	580	610
45	30k	410	410	420	430	450	480	520	560
40	10k	350	350	370	380	400	430	470	500
35	3k	300	300	310	330	340	380	420	450
30	1k	250	250	260	270	290	320	360	400
25	300	140	190	210	220	240	280	320	350
20	100	70	140	160	180	190	230	270	300
15	30	45*	100	130	140	150	190	230	260
10	10	35*	65	90	100	120	150	190	220
5	3	30*	45*	65	75	95	120	160	180
0	1	20*	35*	50*	60*	80*	100*	140	150

\* Steady interference

TABLE 2

Coordination distances  $D_{SC}$ , in km, for propagation paths over cold sea

EFFECTIVE RADIATED POWER dBW                  W		EFFECTIVE ANTENNA HEIGHT (m)							
		10	37.5	75	150	300	600	1200	1800
55	300k	790	790	800	820	850	880	910	950
50	100k	680	680	700	720	740	770	810	850
45	30k	590	590	610	630	650	670	730	750
40	10k	510	510	530	540	560	590	640	670
35	3k	440	440	460	470	490	530	570	600
30	1k	380	380	390	400	430	460	500	530
25	300	320	320	330	350	370	400	440	470
20	100	260	260	280	290	310	350	380	420
15	30	150	210	220	240	260	300	340	360
10	10	75	150	170	180	200	250	290	300
5	3	40	100	120	130	150	200	240	260
0	1	25*	65	80	95	120	150	200	210

\* Steady interference



TABLE 3

Coordination distances  $D_{SW}$ , in km, for propagation paths over warm sea

EFFECTIVE RADIATED POWER dBW          W		EFFECTIVE ANTENNA HEIGHT (m)							
		10	37.5	75	150	300	600	1200	1800
55	300k	1300	1300	1300	1300	1300	1300	1300	1300
50	100k	1300	1300	1300	1300	1300	1300	1300	1300
45	30k	1100	1100	1130	1150	1170	1200	1230	1280
40	10k	800	800	840	870	900	940	970	1010
35	3k	610	610	650	680	700	740	780	800
30	1k	490	490	520	550	560	600	650	670
25	300	390	390	410	440	460	490	540	560
20	100	310	310	330	360	370	400	440	480
15	30	210	240	260	290	300	330	360	400
10	10	85	170	200	220	240	270	300	340
5	3	40	110	140	160	190	220	250	290
0	1	25*	70	90	120	140	170	200	240

\* Steady interference

TABLE 4

Coordination distances  $D_{SS}$ , in km, for  
propagation paths in areas of super-  
refractivity and ducting

EFFECTIVE RADIATED POWER		$D_{SS}$ (km)*
dBW	W	
55	300k	1480
50	100k	1400
45	30k	1320
40	10k	1230
35	3k	1150
30	1k	1070
25	300	980
20	100	900
15	30	820
10	10	730
5	3	650
0	1	560

\* No dependency on effective  
antenna height.

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

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Document 132-E  
21 November 1984  
Original: French

## NOTE BY THE CHAIRMAN OF THE CONFERENCE

I hereby transmit to the Conference the attached letter from the Head of the French delegation.

Marie HUET  
Chairman of the Conference

Annex: 1

ANNEX

FRENCH DELEGATION TO THE SECOND SESSION  
OF THE REGIONAL BROADCASTING CONFERENCE

Geneva, 16 November 1984

Miss M. HUET  
Chairman of the second session of the  
Regional Broadcasting Conference

Dear Madam,

I refer to the letter which the Head of the Delegation of the Union of Soviet Socialist Republics sent to you on 15 November (Document 114) and in which, referring to the Quadripartite Agreement dated 3 September 1971, he contests the inclusion of two residents of the western sectors of Berlin in the Delegation of the Federal Republic of Germany.

In this connection, I wish to state on behalf of the United States of America, of France and of the United Kingdom of Great Britain that the Quadripartite Agreement contains no provision that may be used to support the assertion that residents of the western sectors of Berlin may not be included in the delegations of the Federal Republic of Germany to international conferences. Annex IV to the Quadripartite Agreement stipulates that, provided questions of security and status are not affected, the Federal Republic of Germany may represent the interests of the western sectors of Berlin in international organizations and conferences and that the permanent residents of the western sectors of Berlin may take part in international discussions together with the participants of the Federal Republic of Germany. Only the Federal Republic of Germany, moreover, has the power to draw up the list of its delegates.

With regard to the other communications made on this subject, I must point out that States which are not parties to the Quadripartite Agreement have no competence or authority to interpret its provisions.

I would ask you to be good enough to ensure that this letter is published in the same form as the letter from the Head of the USSR Delegation.

Please accept, Madam, the assurances of my highest consideration.

P.H. GASCHIGNARD  
Head of the French Delegation

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 133-E  
22 November 1984  
Original: French

COMMITTEE 4

NOTE BY THE CHAIRMAN OF PLANNING GROUP 4B  
TO COMMITTEE 4

Planning Group 4B held its seventh meeting on Wednesday, 21 November 1984, to consider the results of the second Conference analysis. For the eastern Mediterranean region, where new propagation criteria have been applied, a strong increase has been observed in the level of interference between stations. This increase proved to be unjustified in many cases.

In view of the sufficiently advanced state of negotiations and the arrangements already concluded among administrations, and given the very limited time available to the Conference, the administrations members of Sub-Group 4B-3 decided unanimously:

1. that negotiations should be continued on the basis of the first analysis (ANAL III);
2. that a second analysis based on the software used for the first analysis and taking account of modifications submitted by 1800 hours on Thursday, 15 November 1984, should be carried out as soon as possible;
3. where there are line-of-sight conditions from transmitter to sea for maritime paths of up to 700 km east of the 30° meridian, the new propagation curves on which the second analysis is based should be used;
4. that subsequent analyses should be based on the software mentioned in point 2.

A. TOUMI  
Chairman of Planning Group 4B

INTERNATIONAL TELECOMMUNICATION UNION

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 134-E

22 November 1984

Original: English

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## NOTE BY THE CHAIRMAN OF THE CONFERENCE

I hereby transmit to the Conference the attached letter from the Head of the Delegation of the Federal Republic of Germany.

Marie HUET  
Chairman of the Conference

Annex: 1

ANNEX

DELEGATION OF THE FEDERAL REPUBLIC OF GERMANY TO THE  
SECOND SESSION OF THE REGIONAL BROADCASTING CONFERENCE

Geneva, 22 November 1984

To the  
Chairman of the Second Session  
of the Regional Broadcasting Conference  
Miss Marie Huet

Geneva

Dear Madam,

I refer to Document 114 which contains a letter dated 15 November 1984 addressed to you by the Head of the delegation of the Union of Soviet Socialist Republics and to Document 117 which contains a letter dated 16 November 1984 addressed to you by the Head of the delegation of the German Democratic Republic.

I also refer to Document 132 which contains a letter dated 16 November 1984 addressed to you on this matter by the Head of the delegation of France also on behalf of the United States of America and the United Kingdom of Great Britain and Northern Ireland.

I am authorized to declare that the Government of the Federal Republic of Germany shares the positions set out in this letter addressed to you by the Head of the delegation of France on behalf of the Three Powers.

I should be grateful if you would treat this letter in the same way as the correspondence mentioned above.

Please accept, Madam, the assurances of my highest consideration.



E. Sauermann

Head of the delegation of the  
Federal Republic of Germany

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 135-E  
3 December 1984  
Original: French

COMMITTEE 5

## SUMMARY RECORD

OF THE

FIFTH MEETING OF COMMITTEE 5

(AGREEMENT AND PROCEDURES)

Thursday, 22 November 1984, at 0905 hrs

Chairman: Mr. K. OLMS (Federal Republic of Germany)

### Subjects discussed:

### Documents

- |   |            |
|---|------------|
| 1. Oral reports by the Chairmen of Working Groups 5A and 5B | -          |
| 2. Final decision with respect to the abrogation problem    | 104, DT/39 |
| 3. Allocation of documents                                  | -          |



1. Oral reports by the Chairmen of Working Groups 5A and 5B

1.1 The Chairman of Working Group 5A said that his Group had held three meetings at which it had examined Document DT/30 (Procedure for modifications to the Plan) and resumed its examination of Documents DT/31 and 30. It had also studied Document DT/38 concerning the relationship between sound broadcasting and television, mobile and fixed services. It had set up two ad hoc Groups, one presided over by the delegate of the German Democratic Republic and the other by the Islamic Republic of Iran. Work was progressing satisfactorily and it was to be hoped that two further meetings would suffice to complete it.

The Committee noted the report by the Chairman of Working Group 5A.

1.2 The Chairman of Working Group 5B said that his Group had met once to consider the provisional application of Article 3 of the Agreement. Since then, unofficial discussions had led to the preparation of Document DT/32, which would be submitted at the next meeting of the Working Group and, it was hoped, serve as a basis for compromise and perhaps for a procedure for the mobile services. The Working Group might be able to complete its work during the coming week.

The Committee noted the report by the Chairman of Working Group 5B.

2. Final decision with respect to the abrogation problem (Documents 104, DT/39)

2.1 The Chairman of Committee 5 recalled that Document 104 had been given preliminary consideration by Working Group 5A and that, as a result, a summary of solutions available to the Conference had been drawn up, with the Chairman's views on the possibility of applying them.

2.2 The Secretary of the Conference made the following statement concerning Document 104:

"On 16 November 1984 I introduced to Working Group 5A Document 104. Most of the delegations present at today's meeting of Committee 5 participated in that earlier meeting. However, for those delegations which were not then present, I wish to recapitulate briefly the salient points dealt with in Document 104.

"The first fifteen paragraphs of the document present background information on the question including certain pertinent points relating to the abrogations effected by the 1975 and 1961 Regional Agreements.

"Paragraphs 30-43 present four possible alternative solutions to the situation the present Conference appears to be faced with.

"The first alternative solution is presented in paragraph 32. Basically this calls for a resolution to be adopted by this Conference which would request the Administrative Council to take the necessary steps to convene administrative conferences of the European and African Broadcasting Areas to abrogate partially or revise the earlier agreements. Paragraph 33 draws attention to the complexities of such a process and comes to the conclusion that this solution does not appear to be recommendable.

"The second alternative solution is presented in paragraph 34. This essentially involves the termination of the earlier agreements, in accordance with the pertinent provisions of the agreements by means of a communication sent by the contracting administrations concerned to the Secretary-General. For the reasons stated in the paragraph, this solution also does not appear to be recommendable.

"As no practical solution could be recommended within the legal framework of the two Agreements, and the mandate of this second session of the Conference, reference has in the following paragraphs been made to the Vienna Convention on the Law of Treaties.

"Paragraphs 35 to 37 thus contain a third alternative solution and envisage a possible partial suspension of the operation of the earlier agreements under Article 57 of the Vienna Convention. Such partial suspension would require a consultation between and consent of all the contracting parties concerned. Such a process could be provided for through a resolution to be adopted by the Conference.

"The fourth alternative solution is presented in paragraphs 38 to 43 and is based on the application of the relevant provisions of Article 59 of the Vienna Convention. This would require the statement of intent of the parties concerned that part of the matter governed by the earlier agreements is to be governed by the new agreement. This could be done as stated in paragraph 43 by an Article in the Agreement or through a resolution or through a combination of both.

"Finally, in line with what is stated in paragraph 45 of the document, it does not appear to be legally possible through any of the last three alternative solutions to revise or amend provisions in the Stockholm Agreement concerning television broadcasting. If this is, however, required to be done, the matter might indeed be solved only in line with the first alternative solution, contained in paragraph 32 of the document, or a variant thereof.

"During the discussion of the document in Working Group 5A, a number of questions were raised, to some of which certain preliminary replies were given. I should now like to supplement those replies with a few additional remarks.

"The question was raised whether Articles 30 and 59 of the Vienna Convention deal only with treaties as a whole or also with parts of treaties. In the light of other provisions of the Vienna Convention, it can be said that these Articles do apply also to parts of treaties covering the same subject matter. Consequently, the intention can be expressed by the present Conference that, with respect to those parts which cover the same matter in the earlier as well as in the new agreements, the respective provisions of the earlier agreements should be considered as terminated.

"Another question raised in the context of the application of Article 59 of the Vienna Convention was whether all the parties to the earlier agreements would have to be "Signatories" to the new agreement. In this connection it is important to recall that it is the notion of a party and not that of a Signatory which is the point of reference. It is indeed necessary, if Article 59 of the Vienna Convention is to apply, that all parties to the earlier agreements become parties to the new agreement as well. However, as a non-signatory can accede to an agreement and thereby become a party to it, attendance at the present conference by all the parties to the earlier agreements is not required.

"In reply to a related question, I should like to inform the Conference that all twenty parties to the 1961 Stockholm Agreement are represented at the present Conference and that out of the eleven parties to the 1963 Geneva Agreement, six are here represented.

"Another question related to the possibility of applying paragraph 4 of Article 30 of the Vienna Convention to solve the question facing this Conference. In this regard, it has to be explained that in practical terms it may present no problems as far as parties to both the new and earlier agreements are concerned; it could, however, lead to difficulties if this is not the case. For example, as between a party to both the new as well as the Stockholm Agreements and a party only to the Stockholm Agreement, the Stockholm Agreement would govern their mutual rights and obligations. It would need to be considered by the present Conference if such a position would be acceptable from the operational and technical point of view.

"A final question was whether the agenda of the Conference could not be considered as implicitly including the mandate also to revise and/or abrogate the 1961 Stockholm and the 1963 Geneva Agreements. Considering the legislative background and practice of the Union, which has in the past always relied on an explicit mandate, it would be hardly possible to proceed on the basis of such an implicit mandate.

"An addendum to Document 104, which gives more complete information on the questions raised in the meeting of Working Group 5A, is under preparation and will be issued shortly."

2.3 The Chairman outlined the six possible solutions, the first four of which were those set out in Document 104 and the fifth a proposal by the IFRB, while the sixth was based on a statement by the delegate of the USSR.

He proposed that the first three solutions mentioned in Document DT/39 should be abandoned in view of the difficulty of applying them.

It was so decided.

In the case of the sixth solution, i.e. continued coexistence of Plans, if abrogation of the Regional Agreements of Stockholm and Geneva were left to another conference at a later date, it would be tantamount to applying solution No. 1. He therefore proposed that solution No. 6 should be discarded.

2.4 The delegate of the USSR pointed out that the Committee had not yet examined Document DT/38 concerning the relationship between sound broadcasting and television, mobile and fixed services and that if a solution was found on the basis of the proposal submitted, the problem would be simplified since, if the coordination procedure drawn up by the Conference was adopted, it could be applied until the Agreement came into force. That would remove the need to revise the Stockholm and Geneva Agreements in the immediate future. With reference to paragraph 20 of Document 104 mentioning Administrative Council Resolution 850, he recalled that the Secretary-General was instructed "to carry out in 1985 a consultation in regard to parts of the Stockholm Agreement (1961) which would not have been in the mandate of the Regional Administrative Conference ...". The Administrative Council could determine whether it was essential to revise the Agreements. In any event, the Conference should continue its consideration of the matter in the light of Document DT/38.

2.5 The Chairman recalled that the Committee could not consider Document DT/38 until Working Group 5A had done so. He was certain that the principle set out in that document would be accepted. However, if the Administrative Council had to review the matter as the delegate of the USSR had suggested, a new conference would have to be called to abrogate the Stockholm Agreement and to deal with the Geneva Agreement in the same way.

2.6 The delegate of Poland supported the USSR proposal and suggested that the Broadcasting Conference for Africa, scheduled for 1987, might be instructed to abrogate the Geneva Agreement of 1963.

2.7 The Chairman of the IFRB said he had only just learned that the Administrative Council had had to deal with such problems. While there was nothing to prevent it from doing so, it was perhaps not the best body to deal with the abrogation of a regional agreement, although it might well examine the date and agenda of a conference convened for the purpose. However, the schedule of conferences and meetings had been drawn up by the Plenipotentiary Conference in 1982 and it would be difficult to find time by 1989 to hold two conferences, however short. In addition, if solution No. 6 was taken into consideration, the Plan now being prepared could not come into force - at least so far as the band 87.5 - 100 MHz was concerned - until the date of abrogation of the Stockholm and Geneva Agreements, if that date were established by a body other than the present Conference.

2.8 The Chairman pointed out that the Committee still had to consider solutions 4, 5 and 6 and requested delegates to submit their comments.

2.9 The delegate of the USSR considered that the entry into force of a Plan for the band 87.5 - 100 MHz presented no difficulty and that the Plan being prepared was fully compatible with the Stockholm Plan.

2.10 The Chairman of the IFRB assured the Committee that, at least so far as Africa and the Middle East were concerned, the Stockholm Plan had been thoroughly revised.

2.11 The Secretary of the Conference, referring to solution No. 6 in Document DT/39, said that the Union had never solved similar problems through consultation. Mention should be made of the 1975 Conference and Agreement (paragraphs 5-10 of Document 104) and the Additional Protocol to that Agreement. The provisions of the 1948 European Broadcasting Convention made the abrogation of that Convention and of the annexed Plan conditional, not on consultation between the parties to the Convention, but on the deposit of a declaration by the parties thereto.

With regard to Article 8 of the Stockholm Agreement of 1961, it had been said that the Administrative Council was not legally competent to place revision of that Agreement on the agenda of the present Conference. Yet there was a precedent in that the agenda of the second session of the 1975 Conference (paragraph 5 of Document 104), contained in Administrative Council Resolution 743, gave the Conference an explicit mandate to establish an agreement and a frequency plan to replace the Plans in force on that date. While admittedly Article 7 of the Copenhagen Convention of 1948 and the Geneva Agreement of 1966 contained provisions essentially similar to Article 8 of the 1961 Stockholm Agreement, the agenda of an administrative conference was determined by the Administrative Council provided it was agreed by the majority of Union Members (No. 207 of the Convention).

Furthermore, the Council had acted on the assumption that contradictory agreements could not exist, although clearly provisions would have to be introduced in the 1961 Stockholm Agreement to cover television stations broadcasting in the band 87.5 - 100 MHz.

Since the present Conference was not empowered to revise the Stockholm and Geneva Agreements, it had been thought that it could perhaps prepare a protocol and submit it for signature by the parties to the 1961 Stockholm Agreement, as all the delegations concerned were present and could request the necessary authority from their governments. If the present Conference on sound broadcasting decided to introduce additional provisions concerning television broadcasting in the Stockholm Regional Agreement of 1961 and the Plan annexed thereto, it would be for the parties to decide whether they could sign a protocol at the end of the Conference. As a revision of the 1961 Agreement, however, that protocol could be adopted only by a conference convened in accordance with the solutions set out in paragraphs 32-34 of Document 104. As for

the implementation of the Agreement, the parties to the 1961 Stockholm Agreement would have to notify the Secretary-General of their approval of the protocol before the new Agreement came into force.

2.12 The delegate of Poland pointed out that a regional conference to be held in February 1985 would be attended by the delegates to the present Conference and that the question could be placed on its agenda.

2.13 The Secretary of the Conference said that the agenda of that Conference had already been adopted by the Administrative Council and could not therefore be amended.

2.14 The delegate of France expressed concern about the practical implications of adopting a new plan which might conflict with another that was still valid.

2.15 The Chairman of the IFRB said that, under the Convention, a conference for the European Broadcasting Area and one for the African Area would have to be convened, as indicated in Article 8 of the Stockholm Agreement. If the present Conference adopted an additional protocol, those provisions would not be observed, although the Conference could adopt a resolution for submission to the Administrative Council explaining the departure from the Convention.

Being empowered to deal with all matters that might arise between two conferences, the Administrative Council might either agree to the procedure used or decide that it was irregular. In any case, no solution could be in accordance with both the Convention and the Stockholm Agreement.

2.16 The Chairman therefore suggested that an appropriate resolution should be drafted for consideration at the next meeting of Committee 5.

2.17 Supported by the delegate of France, the delegate of Poland said that he had no objection to the proposal which, however, should be regarded as provisional to allow delegations to seek another solution before the next meeting of Committee 5.

### 3. Allocation of documents

3.1 Document 130, submitted by Italy, was allocated to Working Group 5A and Document 89 + Corrigendum, submitted by the United Kingdom, to Working Group 5C.

The meeting rose at 1020 hours.

The Secretary:  
J. FONTEYNE

The Chairman:  
K. OLMS

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Corrigendum 1 to  
Document 136-E  
5 December 1984  
Original: English/  
French

COMMITTEE 4

SUMMARY RECORD

OF THE

SIXTH MEETING OF COMMITTEE 4

1. Paragraph 2.2

(Affects the French text only.)

2. Paragraph 4.3

Replace the fourth sub-paragraph by the following:

"The Planning Group had decided on the following principles:

- "additional channels" in the range 93.8 to 100.6 MHz might be used by stations having an e.r.p. > 100 W;
- "additional channels" in the range 103.8 to 104.2 MHz might be used by stations having an e.r.p. > 100 W and in congested areas where resolving of incompatibilities would be difficult otherwise; apart from that exception, which was allowed only on condition that interference was not caused to low-power stations in the same range, the e.r.p. of stations in those channels should not exceed 100 W; and
- "additional channels" in the range 107.4 to 107.9 MHz should be reserved exclusively for stations with an e.r.p. of 100 W or less."

3. Paragraph 4.12

Amend the last part of the first sub-paragraph as follows:

"The discussions had progressed satisfactorily until the evening of 21 November when, unfortunately, some difficulties had arisen. However, he was confident that the misunderstanding which had arisen could be resolved with patience and given enough time."

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 136-E  
28 November 1984  
Original: English

## COMMITTEE 4

### SUMMARY RECORD OF THE SIXTH MEETING OF COMMITTEE 4 (PLANNING)

Thursday, 22 November 1984 at 1405 hrs

Chairman: Dr. I. STOJANOVIC (Yugoslavia)

#### Subjects discussed:

#### Documents

- |   |       |
|---|-------|
| 1. Approval of the summary record of the fifth meeting              | 112   |
| 2. Note from the Chairman of Planning Group 4D to Committee 4       | DT/36 |
| 3. Note from the Chairman of Planning Group 4B to Committee 4       | 133   |
| 4. Oral reports by the Chairmen of the Planning Groups              | -     |
| 5. General discussion on the status to be given to unresolved cases | -     |

1. Approval of the summary record of the fifth meeting (Document 112)

The summary record of the fifth meeting was approved with a typographical amendment in paragraph 3.15 of the French text (see Corrigendum 1 to Document 112).

2. Note from the Chairman of Planning Group 4D to Committee 4 (Document DT/36)

2.1 The Chairman of Planning Group 4D said that Document DT/36 was a direct response to a request made at the previous meeting of Committee 4 for some additional mechanism whereby administrations could request that additional information be inserted in the printed pages of the Plan to reflect agreements regarding the limitation of radiation over certain sectors. There was a provision on Form 2 for the insertion of details of restricted radiation where that formed part of the coordination agreement, but to deal with cases where no Form 2 existed, it was proposed that a Form 3 be issued, which could be completed by administrations if they so wished, in order to signify the acceptance of certain restrictions, as detailed in Annex 1 of Document DT/36. The existence of that procedure would not detract in any way from the importance of box 32, which described the antenna polar diagram. Administrations wishing to rely on the detailed information in box 32 would not be obliged to complete the proposed Form 3, which had been conceived as an optional procedure.

2.2 The delegate of Belgium said that while the proposed Form 3 provided an opportunity for countries to introduce a consistent and up-to-date set of restrictions in the areas provided for in the printed version of the Plan, his Administration had worked mainly on the basis of box 32. He therefore proposed that an additional box be provided at the bottom of Form 3 with the legend "see box 32". Thus, fields 15/16 of the printed parts of the Plan would be replaced by the reference to box 32, so avoiding any ambiguity that might result from a difference of interpretation between fields 15 and 16, the restriction in certain sectors and the actual radiation pattern, respectively. The Board's calculations were in any event based on the characteristics of box 32.

2.3 The delegates of Greece and Luxembourg supported that proposal.

2.4 The Chairman of Planning Group 4D, replying to a question by the delegate of the Islamic Republic of Iran, explained that the numbers listed in the annex to the document had asterisks beside them referring the reader to Document 116, the annex to which contained the draft format of the Plan which had already been discussed in Committee 4. The numbers themselves referred to the numbers of the columns in the format in which the information would be printed: 15.1 would have two azimuths; 16.1 would show the number of decibels representing the restrictions between those two azimuths, etc. Four different restrictions over four different sectors could be entered in that way.

2.5 The delegate of Italy said that the additional reference to box 32 on Form 3 did not solve the problem of the antenna radiation pattern which would not be published by the IFRB. Since it showed a power limitation in certain directions, corresponding to agreements between administrations, it should be annexed somewhere.

2.6 The Chairman said that his understanding was that it would be published on microfiche as an integral part of the Plan.



2.7 The delegate of the Islamic Republic of Iran said that his delegation had observed that for the restricted sectors, some administrations had inserted totally unrealistic decibel values ranging from maximum radiation to -20 dB. He requested some indication of what the practical values should be.

2.8 The Chairman said that those figures had been put forward by delegations in the course of coordination, and would be published as negotiated.

Document DT/36, containing Form 3 as amended by the delegate of Belgium, was approved.

3. Note from the Chairman of Planning Group 4B to Committee 4  
(Document 133)

3.1 The Chairman of Planning 4B said that Document 133 contained the four decisions unanimously agreed upon by the Eastern Mediterranean countries in view of the unjustified increase in the level of interference between stations that had resulted from the second analysis and the new criteria on which that analysis had been based.

3.2 The delegate of Egypt said that, as he had understood the agreement reached earlier in the day, Decision No. 3 meant that for the analysis of the propagation conditions along the Mediterranean Sea, the "abnormal" propagation conditions should be used. He also understood that the 700 km limit did not impede the use of mixed paths to estimate attenuation between locations in the Eastern Mediterranean and locations west of the 30° meridian.

3.3 The delegate of Israel endorsed that interpretation.

3.4 The delegate of Greece said that as he had understood it administrations could, in bilateral negotiations, use the propagation curves on which the fourth analysis was based, but those same curves would not be used for any future analysis.

3.5 The Technical Secretary said that the question had been studied by the technical secretariat and two problems had been identified, the first being a question of principle which had to be solved by Committee 4, the second being the second analysis which had been made on the basis of the new technical criteria adopted by the Plenary and requiring changes in the software. It was possible for the IFRB to make a partial analysis as referred to in Decision No. 2 of the document, but that analysis could not take into account Decision No. 3, because it related only to bilateral discussions, which were the sole responsibility of the administrations concerned.

3.6 The delegate of Egypt thought that if the second analysis was based on the software used for the first analysis, the identification of cases of interference would be very difficult and entail considerable administrative work. He suggested that it might be based on the third analysis, in which there was no mention of bilateral negotiations.

3.7 The Chairman recalled that the decision to use the new software had been made in Plenary and he foresaw some procedural difficulties if it were now to be changed.

3.8 The representative of the IFRB confirmed that a decision regarding the use of the new propagation criteria would require the agreement of the Plenary. The question of the proper criteria in relation to the subsequent analyses would need to be referred back to the Plenary if they were to be changed, but there would be no problem in performing another analysis using the original criteria for the second analysis.

3.9 The delegate of Turkey noted that difficulties regarding the coordination of frequencies had stemmed from the fact that the parameters given by the administrations to the IFRB did not take all factors into account. In most cases requirements had been submitted without proper coordination of frequencies with neighbouring countries.

3.10 The Chairman suggested that the question of whether to work on the basis of the old or the new software might be referred to the Steering Committee.

3.11 The delegate of Greece said that the deadline of midday, 23 November, for resubmissions of Form 1 as mentioned in Document 78 would depend on the decision taken regarding the analysis on which the subsequent negotiations were to be based. If the basis was to be the fourth analysis, it would be necessary to resubmit Form 1: if, however, the basis remained the third analysis, Greece would not find it necessary to make any changes other than corrections to Form 1. He therefore suggested that the deadline be extended.

3.12 The Chairman suggested that the question of the deadline be discussed later. The points relating to the Note from the Chairmen of Planning Groups 4D and 4B should be referred to the Steering Committee.

It was so agreed.

#### 4. Oral reports by the Chairmen of the Planning Groups

4.1 The Chairman of Planning Group 4A said that the Group had dealt with the completion of the modification forms as well as Forms 1 and 2. Additional requirements had been submitted in respect of Cameroon, Gabon, Yemen, Poland, the Congo and Rwanda. They had been allowed with the proviso that nuisance field strengths were reduced to acceptable levels. Agreement had also been reached on many frequencies that were causing interference and Form 1 had been completed to that effect. Less than 5% of the requirements remained to be coordinated.

4.2 The Chairman of Planning Group 4B said that negotiations were proceeding satisfactorily for the western and central areas of the Mediterranean. The issue of the second analysis had delayed negotiations for the eastern area, although eventually the conclusion set out in Document 33 had been reached. He called on all the administrations to show a maximum of flexibility in solving the problems of incompatibilities.

4.3 The Chairman of Planning Group 4C said that the Group had adopted the approach of limiting the maximum effective radiated power to 20 kW in the Gulf area and to 100 kW inland. The delegations were accepting the use of directional antennas. A nuisance field of approximately 66 dB/ $\mu$ V/m was being used as a guideline for the coordination. An attempt was being made to provide at least two programmes for allocations in the part of the planning area characterized by long-range propagation conditions. He was pleased to report that permanent computer facilities had been provided by the IFRB.

In view of the density of international airport traffic in the United Arab Emirates, difficulties had been experienced with the plan used by the national stations in the frequencies of the F series of channels. The Group had therefore agreed to two frequencies from the additional channels as referred to in Annex L of the Report of the first session. Channels below 103.8 MHz could be used by the United Arab Emirates in exchange for the F channel subject to coordination with all the countries concerned.

To break the deadlock in the negotiations between Saudi Arabia, the Islamic Republic of Iran, Iraq and Kuwait in a specific lattice AD, some of the frequencies corresponding to the additional channels within the range 103.8 to 104.2 MHz might be considered for resolving the problems of interference.

The Planning Group had decided that the principle of additional channels in the range 93.8 to 100.6 MHz might be used by stations having an e.r.p. above 100 W. Additional channels in the range 103.8 to 104.2 MHz might be used by stations having an e.r.p. above 100 W and in congested areas where it would be difficult to resolve incompatibilities. Otherwise, the e.r.p. of stations in those channels should not exceed 100 W. Additional channels in the range 107.4 to 107.9 MHz should be reserved for stations with an e.r.p. of 100 W or less.

In general, progress was being made and he was sure that the third analysis would be of value to the countries in the Group.

4.4 The Chairman of Planning Group 4D recalled that the countries had been divided into Northern, Western and Southern groups. Problems relating to the Northern group had been resolved to a great extent and many copies of Form 2 had been signed and returned to the IFRB. Although some difficulties were outstanding with regard to the Western group, the work was proceeding satisfactorily. The main problem in terms of large numbers of outstanding Form 2 related to the Southern group, and administrations in that area were urged to reach agreement as soon as possible.

He referred also to a problem of transition in that some of the administrations considered eventually replacing the television stations in the band by sound broadcasting stations. Both types of station could not exist simultaneously. A procedure for the changeover might have to be agreed, but no specific suggestions could be made at present. A decision should be made the following week as to whether the question might be resolved using a standardized approach.

4.5 The delegate of Turkey noted that following the fourth analysis the results of the calculations showed that the coordination procedures were improving. The Greek delegation, however, had not sought such coordination with his delegation and there were problems of coordination regarding frequency assignments for most localities in the islands near the western part of Turkey. His delegation therefore was obliged to express reservations in respect of the modifications relating to new assignments for Greece under the fourth analysis.

4.6 The delegate of Greece pointed out that his Administration had submitted its low-power channel requirements well before the beginning of the Conference. As there had been no time to choose the appropriate frequencies, his Administration had requested the IFRB to fill in the blanks in accordance with the provisions of paragraph 8 of Annex G to the Report of the first session. The IFRB could comment on the legality of such a procedure, which had not been intended to jeopardize the progress of coordination already undertaken with the Turkish delegation, which had been informed that Greece was prepared to reduce or delete assignments that might affect it. He requested a list of the low-power Greek stations for which Turkey required protection, with an indication of the requisite reductions so that the green papers could be filled in immediately.

4.7 The delegate of Turkey observed that the problem was more complicated than just indicated. The Turkish delegation had submitted its requirements in accordance with the procedures established by the Conference and had sought to coordinate them with neighbouring countries in conformity with the methods and deadline set out in

Document 119. Difficulties had arisen because the Greek delegation had submitted its requirements after expiry of the deadline. He wished to know from the Chairman of Planning Group 4D whether or not all documents submitted to the IFRB had to be coordinated and whether requirements presented after 2 November should be deleted.

4.8 The delegate of the Islamic Republic of Iran expressed doubt about an early solution to the problem of the new propagation curve faced by Planning Group 4C. The re-arrangement of planning frequencies had not yet been settled. Some calculations had indicated the broadcasting/broadcasting position but no calculations at all had been made for part of the planning area or for the broadcasting/aeronautical position. All the calculations related to the partial sub-file established by the IFRB, so the countries in the Group had missed the calculations of the first and second analyses. His country had very long borders with all seven countries and was therefore in a difficult situation. Even the solution of one frequency per station was not in sight, and immediate action was called for on the part of the Committee. The only progress achieved in Group 4C consisted of another re-arrangement, which was a step taken by the other countries two years earlier.

While appreciating the progress made regarding the southern group of countries in Planning Group 4D, he noted that one country had filled in the whole of Form 1 in respect of the entire requirement of the Islamic Republic of Iran in the band 87.5 - 100 MHz, in complete disregard of any criteria or principles. Moreover, the administration in question had no broadcasting stations in that band and its TV stations were outside the Stockholm Plan.

According to the discussions at the first session and Resolution 510, television stations not covered by the Regional Agreement (Stockholm, 1961) were not within the mandate of the present Conference but were subject to bilateral negotiations as stipulated in paragraph 6.3.8 of the report of the second session. He therefore wholly opposed all Form 1 entries against the Iranian assignments in the band in question.

4.9 The delegate of Saudi Arabia emphasized that considerable progress had been made by Planning Group 4C. The IFRB had made a substantial contribution and the necessary corrections had been introduced in working out an effective planning method which consisted of establishing three new lattices crossing the sea. The other repeated lattices were outside the area and were divided into AD, BE and CF. Progress had already been made in respect of BE and would shortly, it was hoped, be made in respect of AD, subject to cooperation by the four countries concerned. CF would be settled as soon as the question of AD and BE was resolved.

4.10 The Chairman having observed that the deletion of certain Form 1 entries was a matter for bilateral negotiation, the delegate of the Islamic Republic of Iran contested that view.

4.11 The representative of the IFRB said that under the Stockholm Agreement and Resolution 510, the protection of television stations in Region 1 only applied within the European Broadcasting Area as defined in Article 8 of the Radio Regulations. The present Conference had to produce a Plan for FM sound broadcasting stations while protecting certain other services.

As for the request to delete some Form 1 entries, the IFRB had no authority to do so or to delete any other material submitted to it at the request of an administration: such a decision must lie with the Plenary. Any administration was free to submit Form 1.

4.12 The delegate of the USSR recalled that the report of the first session stipulated that the protection of television and broadcasting services should be treated on an equal footing. Since 25 October his delegation had been negotiating with the delegation of the Islamic Republic of Iran about the planning of stations in both services and had modified certain parameters by agreement with the latter. Modified requirements had then been submitted on Form 1. The discussions had progressed satisfactorily until the evening of 21 November when, unfortunately, technical difficulties had arisen connected with the topographical features of the regions in which the services were being developed. However, he was confident that the misunderstanding which had arisen could be resolved with patience and given enough time.

His delegation reserved its position on the question of the deletion of some Form 1 entries, which could not be discussed at the present stage if the Committee were to adhere to the procedure established by the Conference.

4.13 The delegate of the Islamic Republic of Iran, thanking the representative of the IFRB for his explanation, stated that his delegation had spent much time and effort on replanning the entire 87.5 - 108 MHz band leaving the door as wide open as possible for the USSR to meet its requirements. In the long run, however, advantage had been taken of the spirit of collaboration demonstrated by his delegation. It could not accept any Form 1 entries against its assignments in the band 87.5 - 100 MHz within the Plan. However, if the USSR were prepared to cooperate he hoped agreement might be reached.

Referring to the statement by the representative of the IFRB that any administration was free to submit Form 1, he thought that that faculty must be based on some agreed principles, criteria and procedures. In the meantime, he was obliged to reserve the position of his delegation on the issue.

4.14 The Chairman offered his good offices to try and resolve the difficulties which had arisen between the delegations of the Islamic Republic of Iran and the USSR.

## 5. General discussion on the status to be given to unresolved cases

5.1 The Chairman drew attention to the last sentence in paragraph 1.1 of Document 119 (Working methods in the Planning Groups) and invited the Committee to consider what action should be taken in respect of cases that remained unresolved at the end of the planning process. Informal discussions with some delegations and officials of the ITU revealed that the matter was more complex than had been appreciated at the outset. Among problems to consider was that of whether stations that had not been coordinated should be entered in the Plan or whether the Conference should draw up separate lists of coordinated stations and unresolved cases and in that event, what would happen to the latter. One possibility would be to coordinate the unresolved cases during a transitional period, say, between the final day of the Conference and the date of entry into force of the Final Acts. Any outstanding unresolved cases could be dealt with subsequently under the appropriate Article of the Agreement applying to modifications of the Plan. Once the Committee had decided on the way of handling such cases, Committee 5 might be asked to work out the procedure.

5.2 The delegate of Italy said that the discussion should not be confined to coordination between broadcasting stations but should also cover coordination between them and aeronautical radionavigation services because the IFRB had not carried out the necessary calculations of interference caused by broadcasting stations within the service area of aeronautical stations.

5.3 The representative of the IFRB said that the Board had carried out its instructions as far as it could with the analysis of ILS/VOR incompatibilities. The problem raised by the delegate of Italy concerned to co-siting of transmissions and in the absence of information the IFRB could not carry out those calculations. Only administrations themselves could do so, particularly in the case of stations being planned. He drew attention to paragraph 5.3.2.2.5 in Chapter 5 of the report of the first session which reads:

"In situations where the broadcasting site is located within an area below the protected volume as specified at 5.3.2.1 above, no general rules can be stated since each situation will differ in respect of the interference threat, the point at which the interference is most serious and the pattern and density of air operations within the service area."

It would be difficult for the Board to carry out further calculations.

5.4 The delegate of Italy pointed out that the VOR service areas extended well beyond national frontiers and therefore the volume could not be calculated by individual administrations because of the stations of other countries situated within the area. He was not asking the Board for more calculations but only stressing that those already made were insufficient to ensure against interference to an aeronautical radionavigation station. If individual administrations could make the calculations and they revealed that interference might arise to aeronautical services, they should be examined case-by-case.

5.5 The delegate of the Islamic Republic of Iran agreed that the discussion should not be confined to coordination between broadcasting stations alone and the possibility of interference with aeronautical stations must be dealt with. Misleading guidelines had been established at the outset, when the Conference ought to have decided on specific dB values below which all stations were automatically entered in the Plan, as had been done at the 1975 Conference. Any values above those fixed would then have to be made the subject of negotiation. The calculations made did not clearly indicate the magnitude of interference by broadcasting stations to aeronautical services and it was not clear how assignments likely to affect the latter which had been in operation for a long time would be handled. He repeated that it was the duty of the Conference to protect aeronautical services.

5.6 The delegate of Spain said that when no agreement could be reached regarding the transmitter, or when coordination had not been completed, the request should be entered in an annex indicating the country with which agreement had not been reached.

5.7 The delegate of Egypt said that the presentation in general terms of his delegation's Document 126 on the planning of FM transmitters on the borders of warm seas might assist the discussion, as it set out a method of systematic planning between neighbouring countries.

5.8 The Chairman pointed out that that document had only recently been circulated and would require preliminary study. He therefore proposed that it be put on the agenda of the following meeting of the Committee.

The problems raised by the delegate of the Islamic Republic of Iran might more suitably be dealt with by the Technical Working Group of the Plenary, since they did not fall within the competence of Committee 4.

5.9 The delegate of Iraq considered that uncoordinated assignments should have precedence over new modifications to the Plan and in fact be treated as if they had been coordinated, in order to avoid serious problems later on. The transitional period could be used for bilateral and multilateral coordination, and the deadline should be set as far ahead as practicable.

5.10 The representative of the IFRB said that it was important to reach agreement at Committee 4 level on what was meant by an unresolved case. The problem had in fact been recognized at the first session of the Conference (paragraph 3.3 of Annex G to its report to the second session). It caused particular difficulties in the aeronautical radionavigation service because of its particularly sensitive safety aspects, and any incompatibility in that area should be noted for detailed calculations before the Final Acts came into force.

5.11 The delegate of the Federal Republic of Germany supported the view expressed by the delegate of Iraq. However, any such priority should be subject to a time limit: the establishment of a reference situation at the time of entry into force would enable a distinction to be made between unresolved cases and later requests for modifications under Article 3.

5.12 The delegate of Algeria also supported the Iraqi view. If an administration seeking coordination from several administrations had succeeded with all but one, then it should be given the benefit of the agreement. However, that same administration could have its entire plan upset if a deadline were established for such priorities.

5.13 The delegate of Israel wondered whether the general provisions of the Radio Regulations should not be applied to unresolved cases.

5.14 The delegate of France suggested that the Committee might usefully consider the possible reasons why many stations presented theoretical incompatibilities vis-à-vis the aeronautical services, according to the lists recently produced by the IFRB. Among those incompatibilities were stations which had been broadcasting for years without problems. One possible solution would be to make a difference between BC/BC incompatibilities and broadcasting/radionavigation incompatibilities.

5.15 The delegate of the United Kingdom endorsed the remarks of the delegate of the Federal Republic of Germany concerning the need for a reference against which to assess the future development of the Plan.

He did, however, have reservations about the suggestion that the aeronautical incompatibilities be treated in a different way from the broadcasting ones. The Committee should give further thought to that idea before reaching any decision.

5.16 The delegate of the Islamic Republic of Iran said it might be useful to establish an  $E_u$  value below which broadcasting stations could be regarded as coordinated and above which they would be subject to coordination. A distinction should also be made between assignments requiring only one signature and those requiring several. Administrations in the first category would not need to go back for reconfirmation to the other administrations which had given their agreement during the Conference. After establishing the  $E_u$  value, the uncoordinated assignments could then be divided into different categories according to the number of signatures required.

5.17 The Chairman suggested that a Group (Group 4 - Ad Hoc) be set up under the chairmanship of the delegate of Algeria to study the question of the status to be given to unresolved cases. The Group might comprise of the delegates of the Federal Republic of Germany, Iraq, Libya, Tunisia and Yugoslavia and the Chairman of Working Group 5B.

It was so agreed.

The meeting rose at 1700 hours.

The Secretary:

D. SCHUSTER

The Chairman:

Dr. I. STOJANOVIC



# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 137-E

23 November 1984

Original: English

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PLENARY MEETING

NOTE BY THE SECRETARY OF THE CONFERENCE

At the request of the IFRB, I transmit the attached note, entitled:

"Time periods for the modifications to the Plan".

J. JIPGUEP  
Secretary of the Conference

Annex: 1

ANNEX

NOTE FROM THE CHAIRMAN OF THE IFRB

Time periods for the modifications to the Plan

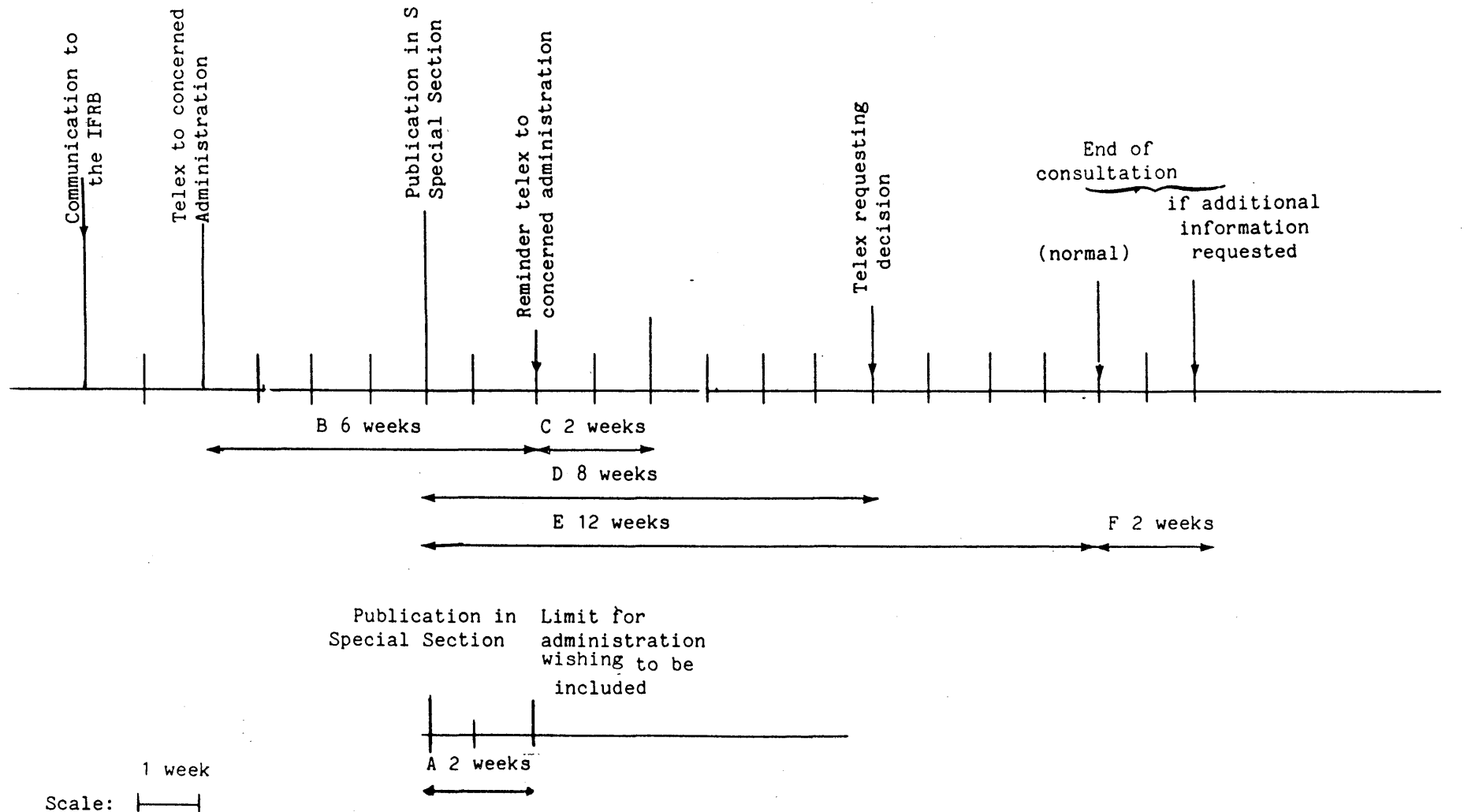
At the request of Working Group 5A, the Board is proposing, based on its experience, the time periods for the various stages of the modification procedure, presented in the Annex.

This Annex is based on the assumption that the system in the IFRB will be fully computerized and that the number of modifications to be processed each week is not very large.

The periods are indicated in weeks for practical reasons; they will be converted in days after decision by Committee 5.

# TIME PERIODS FOR THE MODIFICATIONS TO THE PLAN

CARR-1(2)/137-E



# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 138-E

23 November 1984

Original : English

La version française de ce document suivra.  
La versión española de este documento seguirá.

PLENARY MEETING

## Note from the Chairman of the Conference

### COMMENTS ON PROBLEMS RELATING TO INCOMPATIBILITIES

#### WITH AERONAUTICAL RADIONAVIGATION SERVICE

In the light of the number of incompatibilities with aeronautical radionavigation service, the following action is recommended by the IFRB in consultation with the Chairman of Committee 5.

- 1) The date limit for submission of form 1 when a radionavigation station is involved will be decided by the Conference in its Plenary to be held on Monday, 26 November.
- 2) Administrations may continue to coordinate their incompatibilities during the Conference, however, as the number of unresolved cases by the end of the Conference may be high the following action is recommended.
- 3) Administrations may agree to resolve the incompatibilities directly among themselves before the coming into force of the Final Acts.
- 4) Committee 5 should develop a Resolution to cover the coordination to be carried out before the coming into force of the Final Acts. The following information should be attached to this Resolution:
  - a) a list of countries wishing to carry out the coordination directly without indicating the BC stations concerned,
  - b) for the other countries, the list of BC stations which are subjected to coordination with aeronautical radionavigation. In order to identify these stations special forms will be developed to be filled before the end of the Conference.
- 5) Committee 5 should be requested to consider solutions to the following problems:
  - 5.1 the identification of radionavigation stations which are being protected in the planning process;
  - 5.2 modifications to a BC station intended to resolve an incompatibility with radionavigation;
  - 5.3 unresolved incompatibilities with radionavigations at the entry into force.

5.4 what information should be entered in the Plan in such cases?

- 6) This refers only to the Plan adopted at the Conference. Modifications to the Plan are governed by separate procedures.

Marie HUET  
Chairman of the Conference

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 139-E  
23 November 1984  
Original: English

## COMMITTEE 5

### FIRST REPORT OF WORKING GROUP 5A

The Working Group 5A has adopted the draft regional Agreement presented in Annex I to Committee 5 for consideration.

The parts of the procedure for modification to the Plan relating to services other than sound broadcasting are still under consideration in the Working Group, and may require additions to Article 4.

It should be noted that the delegation of Finland reserved their position concerning the final part of point 3.6 in Article 4, where they maintain their preference for the following text:

- b) the nuisance field at the transmitter site is lower than [45 dB( $\mu$ V/m)] or lower than the fourth highest nuisance field resulting from the Plan adopted by the Conference.

However, when the station to be modified already appears among the four highest nuisance fields, its nuisance field resulting from the Plan adopted by the Conference or from its first entry in the Plan following the application of this procedure may be increased by no more than [0.5 dB].

S.M. CHALLO  
Chairman of Working Group 5A

ANNEX I

DRAFT REGIONAL AGREEMENT

**PREAMBLE**

The delegates of the following Members of the International Telecommunication Union:

[ meeting in Geneva for a Regional Administrative Radio Conference convened under the terms of Articles 7 and 54 of the International Telecommunication Convention, Nairobi 1982 to establish an Agreement incorporating a Plan for sound broadcasting in the band 87.5 to 108 MHz in accordance with Resolution No. 510 of the World Administrative Radio Conference (Geneva, 1979), and in order to comply with provision number 584 of the Radio Regulations have adopted, subject to the approval of the competent authorities of their respective countries the following provisions and the related Plan concerning the broadcasting service in the band 87.5 to 108 MHz in the planning area as defined in Article 1. ]

ARTICLE 1

**Definitions**

For the purposes of this Agreement, the following terms shall have the meanings defined below:

Union: The International Telecommunication Union.

Secretary-General: The Secretary-General of the Union.

IFRB: The International Frequency Registration Board.

CCIR: The International Radio Consultative Committee.

Convention: The International Telecommunication Convention.

Radio Regulations: The Radio Regulations, (Geneva, 1979) annexed to the Convention.

Planning area: The countries of Region 1 as defined in number 393 of the Radio Regulations together with Afghanistan and Iran.

Agreement: This Agreement and its Annexes.

Plan: The Plan forming Annex 1 to this Agreement.

Contracting Member: Any Member of the Union [in the planning area] which has approved or acceded to this Agreement.

Assignment in conformity with this Agreement: Any assignment appearing in the Plan, or for which the procedure of Article 4 has been successfully applied.

## ARTICLE 2

### Execution of the Agreement

1. The Contracting Members shall adopt for their broadcasting stations in the planning area in the band 87.5-108 MHz the characteristics specified in the Plan.
2. The Contracting Members shall not use characteristics exceeding those specified in the Plan or establish new stations, except under the conditions provided for in Article 4 of this Agreement.
3. The Contracting Members undertake to study and, in common agreement and to the extent possible, to put into practice the measures necessary to avoid or to reduce any harmful interference that might result from the application of this Agreement.
4. Should agreement, as envisaged in paragraph 3 above, prove impossible, the dissenting Members may resort to the procedure laid down in Article 22 of the Radio Regulations and, if necessary, to that laid down in Article 35 of the Convention.

## ARTICLE 3

### Content of the Plan

1. The Plan contains frequency assignments and associated characteristics of sound broadcasting stations in the band 87.5-108 MHz and is composed of two parts.
2. The first part, containing frequency assignments in the band 87.5-100 MHz, is intended to replace the corresponding sound broadcasting plans appearing in the Regional Agreements Stockholm 1961 and Geneva 1963. The provisions of this Agreement are applicable to these assignments in the relations between all Contracting Members in the planning area.



3. The second part contains frequency assignments in the band 100-108 MHz prepared in accordance with No. 584 of the Radio Regulations in order to permit all countries of Region 1 to use this band for sound broadcasting. The provisions of this agreement are applicable to these assignments in the relations between all Contracting Members in the planning area. In the absence of provisions applicable to all countries in Region 1, to be adopted by a competent Administrative Radio Conference, non-Contracting members will be recommended to apply these provisions until a competent Administrative Radio Conference adopts provisions applicable to them (see Resolution No. ....).

#### ARTICLE 4

##### **Procedure for Modifications to the Plan**

1. When a Contracting Member proposes to make a modification to the Plan, i.e. either:

- to change the characteristics of a frequency assignment to a broadcasting station shown in the Plan, whether or not the station has been brought into use, or
- to bring into use an assignment to a broadcasting station not appearing in the Plan, or
- to change the characteristics of a frequency assignment to a broadcasting station for which the procedure in this Article has been successfully applied, whether or not the station has been brought into use, or
- to cancel a frequency assignment to a broadcasting station,

the following procedure shall be applied before any notification is made under the provisions of Article 12 of the Radio Regulations (see Article 5 of this Agreement).

##### **2. Proposed Changes in the Characteristics of an Assignment or the Bringing into Use of a new Assignment**

2.1 Any administration proposing to change the characteristics of an assignment appearing in the plan or to add a new assignment in the Plan shall obtain the Agreement of any other administration whose [services] are likely to be affected.

2.2 The [services] of an administration are likely to be affected by a proposed modification to the Plan if the distance from the station under consideration to the nearest point of the boundary of the country of that administration is less than the limit indicated in [ ]

2.3 Administrations should preferably seek the agreement of other administrations directly or if not possible by applying the procedure contained in this article.

2.4 The Agreement mentioned in 2.1 is not required if:

- a) the proposed modification relates to a reduction in e.r.p. or to other changes which would reduce the level of interference to [services] of other countries;
- b) the distances from the station under consideration to the nearest points of the boundaries of other countries, the Administrations of which are Contracting Administrations, are equal to or greater than the limits indicated in [ ].
- [c) site tolerance to be eventually introduced.]

2.5 An administration proposing to modify the Plan shall communicate to the IFRB the information listed in [ ] and shall indicate:

- a) that the Agreement referred to in 2.1 is not required with any administration, or otherwise,
- b) the name of any administration which has already agreed to a proposed modification to the Plan on the basis of the characteristics communicated.

2.6 At the receipt of the information referred to in 2.5 above, the IFRB shall:

- a) identify the administrations which are likely to be affected in accordance with 2.2 and 2.5;
- b) send immediately a telex to those administrations identified in point a) above which have not yet given their agreement, drawing their attention to the information contained in the special section of the weekly-circular to be published, and indicating the nature of the modification to the Plan;
- c) publish, in a Special Section of the weekly-circular, the information received, together with the names of the administrations identified, indicating those, whose agreement has been obtained.

### 3. Consultation of the administrations whose stations may be affected

3.1 The Special Section of the IFRB weekly-circular, referred to in § 2.6 c), shall be considered as the formal request for agreement to those administrations whose agreement is still to be obtained.

3.2 Any administration which considers that it should have been included in the list of administrations whose frequency assignments are likely to be affected may, within [A] days from the date of publication of the weekly-circular, request the IFRB by telex to include its name. A copy of the request shall be sent to the administration proposing the modification to the Plan. On receipt of the telex, the IFRB shall consider the matter and, if it finds that the name of this administration should have been included in the list, it shall:

- inform by telex the administrations concerned of its finding;
- publish the name of the administration in an addendum to the Special Section.

For such an administration, the overall period [E] specified in 3.9 will run from the date of publication of the addendum to the Special Section.

3.3 An administration having received a telex from the IFRB sent in accordance with 2.6 or 3.2 above shall acknowledge receipt within [B] days.

3.4 If at the expiry of [B] days, the IFRB has not received an acknowledgement, it shall send a reminder telex and inform the administration that if no reply is received within [C] days, this administration is deemed to have received the request for agreement.

3.5 On receipt of the Special Section of the IFRB weekly-circular referred to in sections 2.6 c) and 3.2 any administration listed therein shall calculate the nuisance field resulting from the proposed modification to the Plan. The administration proposing to modify the Plan and the administration consulted should agree on the increase in usable field strength which would be acceptable. To this end they may use either the method contained in [ ] or any method and criteria they may agree upon.

3.6 If no agreement can be obtained on the method and criteria to be used, the administration consulted should normally accept an increase in the usable field strength at the transmitter site, calculated by the method contained in [ ], provided that:

- the resulting usable field strength is not greater than 54 dB( $\mu$ V/m), or
- the resulting usable field strength is greater than 54 dB( $\mu$ V/m), but is increased by 0.5 dB or less compared with the usable field strength resulting from the Plan adopted by the Conference or from its first entry in the Plan, following the application of this procedure. An increase of more than 0.5 dB is open to negotiations, in which more detailed calculation methods may be used.

3.7 An administration receiving a telex from the IFRB sent in accordance with 2.6 or 3.2 may request it to calculate the increase in the usable field strength resulting from the proposed modification as indicated in 3.6 above.

3.8 An administration may ask the administration proposing the modification for the additional information it considers necessary to calculate the increase of the usable field strength. Similarly, the administration proposing the modification may ask any administration whose agreement it seeks for the additional information it considers necessary. The administrations shall inform the IFRB of such requests.

3.9 An administration which is not in a position to give its agreement to the proposed modification shall give its reasons within [E] days.

3.10 [D] days after the publication of the weekly-circular, the IFRB shall request by telex any administration which has not yet given its decision in the matter to do so and shall inform it that, if no reply is received within an overall period of [E] days following the date of publication of the weekly-circular, it is deemed to have agreed to the proposed modification to the Plan. This time limit may be extended by [F] in the case of an administration which has requested additional information or which has asked the Board to carry out technical studies.

3.11 If at the end of [E] there is continuing disagreement, the IFRB shall make any study that may be requested by these administrations; the Board shall inform them of the result of the study and shall make such recommendations it may be able to offer for the solution of the problem.

3.12 An administration may request the assistance of the IFRB in the following cases:

- in seeking the agreement of another administration;
- in applying any stage of the procedures described in this Article;
- in carrying out technical studies in relation to this procedure;
- in applying the procedure with respect to other administrations.

#### **4. Comments of other administrations**

4.1 On receipt of the Special Section of the weekly-circular published pursuant to 2.6, administrations may send their comments to the administration proposing the modification either directly or through the IFRB. In any event the IFRB shall be informed that comments have been made.

4.2 An administration which has not notified its comments either to the administration concerned or to the IFRB within a period of [E] following the date of the weekly-circular referred to in 2.6 c) shall be understood to have no objection to the proposed change. This time limit may be extended by [F] in the case of an administration which has requested additional information.

## **5. Cancellation of Assignments**

When an assignment in conformity with this Agreement is released, whether or not as a result of a modification (for instance a change of frequency), the administration concerned shall immediately so inform the IFRB. The IFRB shall publish this information in a special section of its weekly-circular.

## **6. Updating of the Plan**

6.1 An administration which has obtained the agreement of the administrations whose names were published in the Special Section referred to in paragraphs 2.6 and 3.2, may bring the assignment under consideration into use and shall inform the IFRB, indicating the final agreed characteristics of the assignment together with the names of the administrations with which agreement has been reached.

6.2 The IFRB shall publish in a special section of its weekly-circular the information received under 2.5 or 6.1 together with the names of any administrations with which the provisions of this article have been successfully applied. With respect to Contracting Members, the assignment concerned shall enjoy the same status as those appearing in the Plan.

6.3 The IFRB shall maintain an up-to-date master copy of the Plan, taking account of any modification, addition and deletion made in accordance with the procedure of this Article.

6.4 The Secretary-General shall publish an up-to-date version of the Plan in an appropriate form as and when the circumstances justify and in any case every three years.

## **7. Settlement of disputes**

If, after application of the procedure described in this Article, the administrations concerned have been unable to reach agreement, they may resort to the procedure described in Article 50 of the Convention. Administrations may also agree to apply the Optional Additional Protocol to the Convention.

# **ARTICLE 5**

## **Notification of Frequency Assignments**

When an administration of a Contracting Member proposes to bring into use an assignment in conformity with this Agreement, it shall notify it to the IFRB in accordance with the provisions of Article 12 of the Radio Regulations.

## ARTICLE 6

### **Accession to the Agreement**

1. Any Member of the Union [in the planning area] which has not signed the Agreement may at any time deposit an instrument of accession with the Secretary-General, who shall immediately inform the other Members of the Union. Accession shall apply to the Plan as it stands at the time of accession and shall be made without reservations.
2. Accession to the Agreement shall become effective on the date on which the instrument of accession is received by the Secretary-General.

## ARTICLE 7

### **Scope of Application of the Agreement**

1. This Agreement shall bind Contracting Members in their relations with one another but shall not bind those Members in their relations with non-Contracting Members.\*
2. If a Contracting Member makes reservations with regard to any provision of this Agreement, other Contracting Members shall be free to disregard the said provision in their relations with the Member which has made such reservations.

## ARTICLE 8

### **Approval of the Agreement**

Members shall notify their approval of this Agreement, as promptly as possible, to the Secretary-General, who shall at once inform the other Members of the Union.

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\* For relations with non-Contracting Members with respect to the band 100-108 MHz, see Article 3.

ARTICLE 9

**Denunciation of the Agreement**

1. Any Contracting Member may denounce this Agreement at any time by a notification sent to the Secretary-General, who shall inform the other members of the Union.
2. Denunciation shall become effective one year after the date on which the Secretary-General receives the notification of denunciation.
3. On the date on which the denunciation becomes effective, the IFRB shall delete from the Plan the assignments appearing in the name of the Member that has denounced the Agreement.

ARTICLE 10

**Revision of the Agreement**

No revision of this Agreement will be undertaken except by a Regional Administrative Radio Conference convened in accordance with the procedure laid down in the International Telecommunication Convention, to which shall be invited at least all the Members of the Union in the planning area.

ARTICLE 11

**Partial abrogation of the Regional Agreement  
for the European Broadcasting Area  
(Stockholm, 1961)**

ARTICLE 12

**Partial abrogation of the Regional Agreement  
for the African Broadcasting Area  
(Geneva, 1963)**

ARTICLE 13

**Duration and Entry into force of the Agreement**

1. This Agreement and the annexed Plan have been established with a view to meeting the requirements of the broadcasting services in the band 87.5-108 MHz for a period of [ ] years from the date of entry into force of the Agreement.
2. This Agreement shall enter into force on [1 January 1987, at 0001 hours UTC].
3. This agreement shall remain in force until it is revised by a Regional Administration Radio Conference convened in accordance with the procedure laid down in the International Telecommunication Convention, to which shall be invited at least all the Members of the Union in the planning area.

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In witness whereof, the undersigned Delegates of the Members of the Union mentioned above have, on behalf of the competent authorities of their respective countries, signed this Agreement in a single copy in the French, English and Spanish languages, in which, in case of dispute, the French text shall be authentic. This copy shall remain deposited in the archives of the Union. The Secretary-General shall forward one certified true copy to each Member of the Union in the planning area.

Done at Geneva,        December 1984



# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 140(Rev.1)-E

26 November 1984

Original: EnglishCOMMITTEE 4State of Israel

## PROPOSAL FOR THE WORK OF THE CONFERENCE

SCALES FOR THE QUICK EVALUATION OF  $E_{\mu}$  FOR  
MARITIME PATHS IN THE EASTERN MEDITERRANEAN\*  
(for use with a 1:5 000 000 map)

60	57.5	55	54	53	52	51	50	49	48	47	46	45	43	41	39	37	$E_{\mu}$
105	102.5	100	99	98	97	96	95	94	93	92	91	90	88	86	84	82	Co-channel
93	90.5	88	87	86	85	84	83	82	81	80	79	78	76	74	72	70	+ 100 kHz
67	64.5	62	61	60	59	58	57	56	55	54	53	52	50	48	46	44	+ 200 kHz
53	50.5	48	47	46	45	44	43	42	41	40	39	38	36	34	32	30	+ 300 kHz

## Power correction factor

kW

2	+3
5	+7
10	+10
20	+13
50	+17
100	+20

---

\* Similar scales can be easily prepared for other areas.

**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 140-E  
26 November 1984  
Original: EnglishCOMMITTEE 4State of Israel

## PROPOSAL FOR THE WORK OF THE CONFERENCE

SCALES FOR THE QUICK EVALUATION OF  $E_n$  FOR  
MARITIME PATHS IN THE EASTERN MEDITERRANEAN  
(for use with a 1:5 000 000 map)\*

60	57.5	55	54	53	52	51	50	49	48	47	46	45	43	41	39	37	$E_n$
105	102.5	100	99	98	97	96	95	94	93	92	91	90	88	86	84	82	Co-channel
93	90.5	88	87	86	85	84	83	82	81	80	79	78	76	74	72	70	+ 100 kHz
67	64.5	62	61	60	59	58	57	56	55	54	53	52	50	48	46	44	+ 200 kHz
53	50.5	48	47	46	45	44	43	42	41	40	39	38	36	34	32	30	+ 300 kHz

## Power correction factor

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\* Similar scales can be easily prepared for other areas.

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 141-E  
3 December 1984  
Original: English/  
French

COMMITTEE 5

SUMMARY RECORD

OF THE

SIXTH MEETING OF COMMITTEE 5

(AGREEMENT AND PROCEDURES)

Tuesday, 27 November 1984, at 0900 hrs and 1930 hrs

Chairman: Mr. K. OLMS (Federal Republic of Germany)

Subjects discussed

Documents

- |   |       |
|---|-------|
| 1. Compatibility between broadcasting service stations and aeronautical radionavigation service stations: settlement of unresolved cases of type A1 incompatibility | DT/48 |
| 2. Report of the ad hoc Group of the Plenary on the settlement of type B1 incompatibilities   | DT/49 |
| 3. First report of Working Group 5A   | 139   |

1. Compatibility between broadcasting service stations and aeronautical radionavigation service stations: settlement of unresolved cases of type A1 incompatibility (Document DT/48)

1.1 The Chairman, introducing the document, suggested that the principles should be considered, leaving the preparation of an appropriate text and the drafting of possible modifications to the Editorial Committee.

1.2 Title and introduction

1.2.1 The delegate of the United Kingdom requested that the title and, if necessary, an introductory paragraph should specify that the document dealt only with type A1 interference.

1.2.2 The delegate of Poland observed that type B1 interference constituted the basic problem and that the document should cover both types of interference.

1.2.3 The delegate of France suggested that the introductory paragraph should establish a parallel between A1 and B1 interference, noting however that since the two types were different, they should be handled separately.

1.3 Paragraph 1.1

1.3.1 The Chairman of the IFRB proposed that paragraph 1.1 should be amended as follows:

"The Plan prepared by the Conference has identified A1 and B1 interference to the aeronautical radionavigation stations. Cases of B1 interference have been resolved during the Conference or will be resolved before the entry into force of the final texts (see Resolution ...). Cases of A1 interference are to be resolved by applying the following provisions."

1.3.2 The delegate of Poland requested that the second sentence be placed between square brackets pending the decisions to be taken in respect of Document DT/49.

1.3.3 The delegate of the Netherlands considered that more thorough calculations should be made in each case of interference and that pre-established test points should not be used.

1.3.4 In reply to a question by the delegate of Italy concerning the desirability of referring to A2 and B2 interference, the Chairman of the IFRB said that cases of A2 interference would not be identified at the present Conference but that some cases of B2 interference might perhaps need to be settled.

1.4 Paragraph 1.4

1.4.1 The delegate of the Netherlands, supported by the delegate of the United Kingdom, said that paragraph 1.4 should perhaps include a statement to the effect that an administration was entitled to use the method and test points it regarded as appropriate in order to protect a station of the aeronautical service.

1.4.2 The delegate of the Federal Republic of Germany considered that it was necessary to abide by the decisions taken by the Plenary and the test points adopted; the use of other test points would involve other administrations, particularly in the case of VOR stations, which were not to be identified in the Plan.

1.4.3 The delegate of France, supported by the delegates of Switzerland and Portugal, said that although administrations should be entitled to select other test points, particularly in the case of VOR, those which appeared in the Agreement should be taken as the basic minimum if a conflict arose.

1.5 Paragraph 1.5

1.5.1 The delegate of the Federal Republic of Germany having observed that the word "eliminate" in paragraph 1.5 was too broad in scope, the Chairman stated that the acceptable limits might perhaps be set out in an annex.

1.6 Paragraph 2.2

1.6.1 The delegate of France requested that the paragraph be amended, since the test points were often located outside the frontiers of the country to which reference was made in the text.

1.7 Paragraph 2.3

1.7.1 The delegate of the United Kingdom, supported by the delegate of the USSR, considered that specific reference should be made to the fact that the criteria used would be those laid down by the present Conference.

1.8 The delegate of Poland having requested that a Resolution be prepared drawing the Administrative Council's attention to the problem of aeronautical radionavigation stations which might be brought into service in the future, particularly by the developing countries, the delegate of the United Kingdom suggested that a text along the lines of paragraph 4 of Document 122 (Sweden) would be appropriate.

It was so agreed.

2. Report of the ad hoc Group of the Plenary on the settlement of type B1 incompatibilities (Document DT/49)

2.1 The Chairman of ad hoc Group 2 of the Plenary said that the Group had met the previous day with eight delegations attending. The annex to its report contained the rules which it was proposed to apply during the Conference in order to settle type B1 interference incompatibilities between broadcasting stations and aeronautical radionavigation stations involving non-European countries. The European countries too could use those rules either during or after the Conference. With regard to the fourth rule, he observed that the ad hoc Group had considered it appropriate to refer to the concept of service area rather than coverage area.

2.2 Report

2.2.1 The delegate of Saudi Arabia having asked why a distinction was made between non-European and European countries in paragraphs 1 and 2 of the introduction, the Chairman replied that the rules were in fact applicable to all countries.

2.2.2 The delegate of Algeria observed that all countries were affected by the rules, which should be applicable to all cases of type B1 interference, irrespective of whether the countries involved were European or non-European. Since it must be possible after the Conference to settle cases which had not been resolved during the Conference, paragraphs 1 and 2 would have to be amended.

2.2.3 The Chairman of ad hoc Group 2 of the Plenary explained that the European countries were prepared to settle cases of interference after the Conference, whereas the non-European countries wanted their problems to be solved during the Conference since it would be too difficult for them to find solutions through bilateral negotiation.

2.2.4 The delegate of Poland, supported by the delegate of Algeria, observed that the second sentence of the third paragraph of the introduction to the document should appear in the actual text of the rules to be applied to cases of type B1 interference.

2.2.5 The Chairman said that the provision in question would be incorporated in the rules.

2.2.6 Referring to the third paragraph of the introduction, the delegate of the German Democratic Republic, supported by the delegate of Switzerland, considered that no distinction should be made between stations in service and planned stations.

2.2.7 In that connection, the Chairman asked how many stations below 100 MHz were affected by unresolved cases of incompatibility. The solution adopted would depend on the extent of the problem.

2.2.8 The Chairman of the IFRB having stated that the data available to the Board did not enable stations in service to be distinguished from planned stations, the Chairman suggested that the matter should be taken up again when the draft was considered in second reading.

2.2.9 Referring to the fourth paragraph of the introduction and to the desirability or otherwise of indicating cases of type A1 incompatibility in the Plan, the delegate of Algeria observed that the solution was perhaps to be found in paragraph 1.2 of Document DT/48. That interpretation was confirmed by the Chairman.

### 2.3 Annex to Document DT/49

2.3.1 The Chairman proposed that the second sentence of each of the two definitions should become footnotes.

It was so agreed.

#### 2.3.2 Paragraph 3

2.3.2.1 The Chairman of the IFRB requested administrations wishing to resolve problems of type B1 interference during the Conference to announce before the end of the week whether they wanted to hold direct consultations with one another. The IFRB needed to know immediately whether its assistance would be required.

Furthermore, paragraph 3 b) did not specify which station should change frequency. In order to apply that provision, the IFRB would need objective rules stating which station should be moved to another frequency. Application of the frequency modification procedure could result in greater interference both being suffered and caused to other stations by the station concerned. As a result of the frequency change, therefore, other administrations would have to accept a higher level of interference for their stations in the Plan.

2.3.2.2 The Chairman observed that such changes could only be made if the administrations concerned agreed, thus implying that they accepted the consequences.

2.3.2.3 The delegate of Poland observed that if the affected station was a radio-navigation station, it would not be able to accept an increase in interference which might have an adverse effect on service operation.

2.3.2.4 The Chairman of the IFRB emphasized that if an administration moved a station from one channel to another in order to eliminate interference to an aeronautical radionavigation station, that station would enter a new environment and the usable field strength of the stations operating in the channel in question would be increased. If the rules of Article 4, which permitted only a very limited increase of interference to another station, were applied to that field strength, no frequency change would be possible. The problem to which such situations gave rise could only be solved if the Conference adopted interference thresholds higher than those given in Article 4.

2.3.2.5 The delegate of France doubted that all cases would involve serious incompatibility. In fact, a judicious change might entirely eliminate a case of type B1 interference.

2.3.2.6 The Chairman observed that administrations were not willing to review the limits set in Article 4 and that they believed they would be able to solve their problems; otherwise, they would have to accept the consequences.

2.3.2.7 The Chairman of the IFRB said that, in the light of the discussions, he interpreted paragraph 3 b) to mean that when an administration changed a frequency pursuant to paragraph 3 b), it was to apply Article 4 of the Agreement. The delegate of France added that if the usable field strength had to be increased over and above the criteria established, operation of the station would have to cease. The Chairman said that those conclusions were correct.

2.3.2.8 The delegate of the USSR, referring to paragraph 3 c), observed that modification of the frequencies assigned to aeronautical radionavigation stations was bound up with a series of measures within the purview of bodies responsible for radionavigation and of ICAO. Accordingly, he proposed to include a statement to the effect that the agreement of those bodies should be sought, so that exceptional cases of the type under consideration did not become too frequent, thus having a detrimental effect on radionavigation.

2.3.2.9 The Chairman said that the text would be amended so as to make it clear that the measures in question could not be applied without the agreement of the administrations concerned.

### 2.3.3 Paragraph 4

2.3.3.1 The delegate of the USSR proposed that the words "where this is possible" towards the end of paragraph 4 should be replaced by "preferably". The delegate of France opposed that proposal, which ran counter to the intent behind paragraph 4.

2.3.3.2 The Chairman proposed that paragraph 4 should be retained as it stood.

It was so agreed.

2.4 The delegate of Poland asked whether the IFRB could add a cover page to the technical analysis, explaining how the calculations had been made. The Chairman stated that the IFRB would provide the additional explanations requested.

2.5 The Chairman said that a procedure would be drawn up on the basis of Documents DT/48 and DT/49 and published as a white document. Furthermore, the IFRB would prepare a special form for application of the procedure.

2.6 The delegate of France asked what course should be followed in respect of type A1 interference. The Chairman of the IFRB explained that such interference could be identified automatically by the Board, without administrations being obliged to complete lengthy forms. However, he requested administrations which had reached agreement on cases of type A1 interference to hand in a written note to that effect to the Secretary of the Technical Working Group.

### 3. First report of Working Group 5A (Document 139)

3.1 The Chairman of Working Group 5A introduced the report, drawing attention to the fact that the Libyan delegation had entered a reservation which it would explain when the Committee took up the point in question.

3.2 The Chairman suggested that the text be considered article by article.

#### 3.3 Preamble

3.3.1 The delegate of Saudi Arabia proposed, in order to avoid any ambiguity, that the words "of this Agreement" should be added at the end of the Preamble.

#### 3.4 Article 1 - Definitions

3.4.1 The delegate of Algeria, referring to the definition of "planning area", proposed changes affecting the French language version only.

3.4.2 The delegate of France proposed that the list should be expanded to include a definition of the term "Conference", using the wording which appeared at the head of the three Recommendations in Document 125.

3.4.3 The delegate of the United Kingdom proposed that the words between square brackets should be deleted from the definition of the term "Contracting Member".

It was so decided.

Article 1, as amended, was approved.

The meeting was suspended at 1200 hours and resumed at 1930 hours.

### 3.5 Article 2 - Execution of the Agreement

#### Paragraph 2.1

3.5.1 In order to avoid any possible misinterpretation, the delegate of Finland proposed that the word "sound" should be added in the first line of the paragraph before "broadcasting".

3.5.2 The delegate of Algeria noted that the French text should be aligned on the English by deleting the words "des Services" on the first line.

3.5.3 The delegate of Belgium drew attention to an editorial correction in the French text only: the figure 104 MHz should be replaced by 108 MHz.

Those amendments were approved.



3.5.4 The Secretary of the Plenary Meeting, noting that the Committee by its amendment to the definition of Contracting Member had made clear its wish to leave open the possibility of ITU Members outside the planning area acceding to the Agreement, said the Committee, in furtherance of that wish, might consider that the words "in the planning area" should also be removed from paragraph 2.1.

3.5.5 The delegate of Poland said those words would have to be retained in paragraph 2.1 since the Plan was concerned only with the geographical zone specifically designated as the planning area in the Preamble. He was now starting to doubt whether it was wise to allow for the rather unlikely possibility of an ITU Member outside the planning area wishing to accede to the Plan. That might lead to serious complications and he reserved his delegation's right to revert in the Plenary to the question of retaining the words "in the planning areas" everywhere they appeared in the original draft of the Agreement.

3.5.6 The delegate of Finland, supported by the delegate of the Islamic Republic of Iran, said the point in removing the reference to the planning area in the definition of Contracting Member was not to enlarge the planning area but to provide a legal basis for accession to the Agreement by ITU Members which, although their countries lay outside the planning area, nevertheless had one or more stations within it.

3.5.7 The delegate of the United Kingdom, supporting those views, said further that reference to the planning area was indispensable in paragraph 2.1 in order to exclude from the provisions of the Plan any stations Contracting Members might have outside the planning area (as was the case for a number of the countries represented at the Conference).

In the light of the discussion, it was agreed to retain the words "in the planning area" in paragraph 2.1.

Paragraph 2.1, as amended in the discussion, was approved.

#### Paragraph 2.2

3.5.8 In reply to the delegate of Libya, who said that he had an amendment to propose to Article 4, the Chairman proposed that the Committee should adopt the paragraph as it stood with the proviso that that approval was subject to agreement being reached on a satisfactory text for Article 4.

On that understanding, paragraph 2.2 was approved.

#### Paragraph 2.3

3.5.9 In reply to a query from the delegate of Algeria on the use of the term "harmful interference", the Chairman of the IFRB said that as defined in the Radio Regulations such interference implied the deterioration or interruption of a service. The use of the term might cause difficulties of interpretation in the sound broadcasting field, as a broadcasting station always had a service area, with the result that the service could never be said to be completely interrupted. Perhaps the word "harmful" should be deleted from the paragraph.

3.5.10 The delegate of Poland said the present Conference was the first in the ITU's history to have to deal with incompatibilities between two different services. Since the aeronautical navigation service was one to which any interference could be extremely dangerous he was strongly opposed to deletion of the word "harmful".

It was agreed to retain the word "harmful" in the paragraph to qualify "interference".

3.5.11 The delegate of the Islamic Republic of Iran said that reduction was not a solution to harmful interference; it had to be dealt with by avoidance or elimination. He therefore proposed, with the support of the delegate of Qatar, to delete the words "or to reduce" in the third line.

It was so agreed.

3.5.12 The delegate of Italy, supported by the delegates of Norway and France, said further that the concept of avoidance of interference was already in the spirit of the Agreement. The question was thus rather to eliminate such interference if found to occur upon the entry of a station into service. The word "avoid" on the third line should therefore be replaced by "eliminate".

It was so agreed.

3.5.13 The Chairman of the IFRB, without wishing to call the Committee's decision into question, said that the Committee might like to bear in mind the important nuance of meaning between the words "avoid" and "eliminate". What was to be avoided was any interference that might result from the application of the Agreement and what was to be eliminated was any interference resulting from the implementation of the Plan.

Paragraph 2.3, as amended in the discussion, was approved.

#### Paragraph 2.4

Approved.

### 3.6 Article 3 - Content of the Plan

3.6.1 The delegate of Algeria drew the Committee's attention to the recently distributed Document 151, in which Committee 4 requested Committee 5 to take a decision on the status of unresolved cases. That decision might well have an impact on Article 3.

3.6.2 The delegate of Poland, supported by the delegate of Algeria, proposed that the whole of Article 3 should be placed in square brackets and its discussion postponed until the Committee had had an opportunity at its next meeting to discuss Document 151.

It was so agreed.

### 3.7 Article 4 - Procedure for modifications to the Plan

3.7.1 The Chairman noted that the word "services" had been placed in square brackets wherever it appeared in Article 4 pending the decision as to whether the provisions of that Article were to apply to the broadcasting service alone or to other services as well. Since it was now apparent from the work of Working Group 5A that other services would also be covered, he proposed that those square brackets should be removed throughout the Article.

It was so agreed.

3.7.2 Title of paragraph 4.2

3.7.2.1 The delegate of the United Kingdom, noting that the title had originally headed a longer, more general text that had since been split into sections, proposed that it should be changed to read, more briefly and appropriately, "Initiation of the modification procedure".

It was so agreed.

3.7.3 Paragraph 4.2.2

The Chairman, recalling that the paragraph was to apply to other services as well as the broadcasting service, proposed that the whole of it should be placed in square brackets and its discussion postponed until the relevant limits for the various services involved had been decided on.

It was so agreed.

3.7.4 Paragraph 4.2.3

The Chairman of the IFRB drew attention to an editorial correction: the word "preferably" should be moved to a position immediately preceding "directly" in the second line.

3.7.5 Paragraph 4.2.4 a)

3.7.5.1 The delegate of the Federal Republic of Germany said that the penultimate paragraph on page 22 of the Report to the second session had been discussed in Working Group 5C that morning and the decision had been that it would be useful to keep the door open for the introduction of data systems and other systems. That end would be achieved by replacing the word "reduce" on the second line by "not increase".

3.7.5.2 That proposal was supported by the delegates of Finland and Poland.

3.7.5.3 The delegate of Algeria considered that it was important to retain the idea of reducing interference whenever possible. He therefore proposed that the word "reduce" be replaced instead by "reduce or not increase".

The Algerian proposal was approved.

3.7.5.4 The Chairman of the IFRB suggested that as the abbreviation e.r.p. was not explained in Article 1, it would be preferable to replace it by the term "effective radiated power" in full in order to avoid misunderstanding.

It was so agreed.

3.7.6 Paragraph 4.2.4 b)

3.7.6.1 The delegate of Saudi Arabia asked whether the words "Contracting Administrations" was a misprint for "Contracting Members", the term defined in Article 1.

3.7.6.2 The delegate of Poland, noting that it would not be correct to refer to administrations as Contracting Members, proposed that the words "Contracting Administrations" be placed in square brackets and the problem submitted to the Editorial Committee for solution.

It was so agreed.

3.7.6.3 The delegate of the USSR said that in services other than broadcasting, criteria other than distance (e.g. increasing field strength level) were under consideration. For that reason he proposed that the whole of paragraph 4.2.4 b) should be placed in square brackets until the procedures for services other than broadcasting had been decided on.

3.7.6.4 In reply to a question from the delegate of Italy, the Chairman of Working Group 5A said that the draft provisions in the document should be read as applicable to broadcasting/broadcasting only on the understanding that the modifications applicable to other services would be inserted later.

On that understanding the USSR proposal was approved.

3.7.7 Paragraph 4.2.4 c)

3.7.7.1 The Chairman of the Technical Working Group said the question of site tolerance was still under discussion in his Group. He proposed that the paragraph remain in square brackets for the time being.

It was so agreed.

3.7.7.2 The delegate of the United Kingdom, in order to make it clear that fulfilment of any one of the conditions in paragraph 4.2.4 was sufficient to make the agreement in paragraph 4.2.1 unnecessary, proposed that the word "or" be added after the semi-colons at the end of paragraphs 4.2.4 a) and b).

It was so agreed.

3.7.8 Paragraph 4.2.5

3.7.8.1 The delegate of Poland, supported by the delegates of the German Democratic Republic and the Islamic Republic of Iran, felt that, in order to avoid losing time and the opportunity of adopting Article 4 in principle, the various paragraphs should be approved as having a general application, without attempting to discuss how particular services should be reflected in the text; any references felt desirable could be effected by means of later additions to the provisions, or even in a Resolution separate from the Agreement itself.

3.7.8.2 The delegate of Algeria said that the text before the Committee related to the broadcasting/broadcasting service. To enable the Committee to deal with that aspect, perhaps a generally applicable preambular reservation could be inserted to cover the relationship to other services.

3.7.8.3 The delegate of the USSR said that the text should be deemed general in nature and that no attempt should be made in it to refer to the various specific services.

3.7.8.4 The Chairman said that the provisions of paragraphs 4.2.2, 4.2.4 b) and 4.3.6 would need appropriate revisions in respect of other services, except for the aeronautical radionavigation service which would probably be the subject of a separate Article. He invited the Committee to proceed accordingly, on the understanding that the provisions would remain untouched.

It was so agreed.

3.7.9 Paragraph 4.2.6 a)

3.7.9.1 The delegate of Saudi Arabia proposed that the words "administrations which" should be replaced by "administrations the services of which".

It was so agreed.

3.7.9.2 The Chairman of the Editorial Committee pointed out that the IFRB could identify administrations only in accordance with 4.2.2 and 4.2.4, but not with 4.2.5.

3.7.9.3 The delegate of Switzerland, supported by the delegate of the Netherlands, said he was uneasy about adding a reference to services, since he understood that, for the time being, only the broadcasting/broadcasting service was being considered. He also had misgivings about the decision to remove the square brackets from 4.2.1 and 4.2.2 and proposed that those square brackets should be reinserted.

It was so agreed.

3.7.9.4 The delegate of Poland, supported by the delegate of the German Democratic Republic, said that the reinsertion of the square brackets, and the implicit reference to broadcasting/broadcasting stations only, would imply the need for a similar separate Article for other services, thus delaying progress in deliberations.

3.7.9.5 The delegates of France and the USSR shared that view.

3.7.9.6 The Chairman, in response to a request by the delegate of Italy, said that the other services concerned were the television and the fixed and mobile services in Region 1, as well as the fixed and mobile services in Region 3; in other words, three additional articles would be required - not counting the aeronautical radionavigation service and the permitted services to be treated in a separate text.

3.7.9.7 The delegate of Finland said he thought that the term "services", in the plural, had been used in the Stockholm Agreement and could be taken to mean not merely radio-communication services, whose meaning was already defined by RR 20, but a general term including broadcasting/broadcasting stations; he saw no difficulty in using the term and no need to retain the square brackets.

3.7.9.8 The delegate of Poland said that his delegation would sign no agreement in which the interests of other services were excluded.

It was agreed that the paragraphs of Article 4 would be considered, for the time being, on the basis of broadcasting to broadcasting, the term "services" remaining in the plural.

3.7.9.9 The delegates of Poland, the German Democratic Republic and the USSR expressed their administrations' reservations concerning the adopted procedure for considering the provisions of Article 4.

3.7.10 Paragraph 4.3.1

3.7.10.1 The Chairman of the IFRB, in response to an observation by the delegate of France concerning the words "whose agreement is still to be obtained", said he understood the intention to be that 4.3.1 applied both to cases where no request had been made and to those where agreement had been requested but not received; in such cases, the Weekly Circular acted as the request.

3.7.11 Paragraphs 4.3.2, 4.3.3 and 4.3.4

It was agreed that the number of days to be indicated in the text at /A / and /E / in paragraph 4.3.2 should be 28 and 100 respectively, that the number at /B / in paragraph 4.3.3 should be 50, and that the numbers at /B / and /C / in paragraph 4.3.4 should be 50 and 10 respectively. It was also agreed to remove the square brackets.

3.7.11.1 The delegate of the Islamic Republic of Iran, referring to the first indented sub-paragraph of paragraph 4.3.2, said that the words "of its finding" should be replaced by "of the above".

3.7.11.2 The Chairman of the Editorial Committee said that such a phrase was imprecise.

3.7.11.3 The delegate of the United Kingdom proposed that the wording should read simply "inform by telex the administrations concerned;".

It was so agreed.

3.7.12 Paragraphs 4.3.5 and 4.3.6

3.7.12.1 The delegate of Finland drew attention to his delegation's reservations concerning the final part of paragraph 4.3.6. The positive results of the traditions and procedures long established among the European administrations surely made it pointless to seek further common rules. He felt sure that many other European administrations agreed, and that the provisions of paragraph 2.2 of Article 4 sufficed. His delegation would prefer to delete both 4.3.5 and 4.3.6, which it deemed unnecessary; if that could not be agreed to, the purpose and basis of such provisions would have to be studied in detail. Their entire concept was a departure from the principles of the Stockholm Agreement, in that the right of refusal would depend solely on having in the Plan stations which could suffer severe interference from the modifications concerned - a matter of fundamental importance, given the propagation characteristics of the frequency band concerned. The situation was wholly different from LF/MF broadcasting governed by the 1975 Agreement. The long-term effect of 4.3.5 and 4.3.6 would be harmful to many countries, particularly developing nations; many countries, moreover, were absent from the current Conference, which must take care not to impose on them the sort of principles envisaged.

3.7.12.2 The Chairman of Working Group 5A said that although Finland had made the reservation referred to, the Working Group had considered that the criteria in question were fundamental and should be reflected in Article 4, and that any administration making a refusal must show cause for doing so.

3.7.12.3 The delegate of Poland pointed out that the provisions now appearing in paragraph 3.6 of Document 139 were entirely different from the corresponding original provisions in paragraph 4.5 of Document DT/30(Rev.1). Two important changes had been introduced which practically destroyed the original intention and he was most concerned at their implications.

3.7.12.4 The deletion of paragraph 3.5 and 3.6 as recommended by the delegate of Finland was supported by the delegates of Norway and of the Netherlands because the new wording made things more complicated than was necessary and they were not sure that everyone really understood the consequences.

3.7.12.5 The delegate of Italy observed that for countries with mountainous areas the usable field strength did not correspond to the real situation and they were thus penalized. For that reason he could agree to the deletion of the paragraphs in question.

3.7.12.6 The delegates of Sweden and Belgium also supported that proposal.

3.7.12.7 The delegate of Algeria noted that initially the delegation of Finland had been alone in expressing a reservation, but that his views had just been widely supported. For his part, he thought that the principle of determining limit values had been adopted in the first meeting of Working Group 5A and that the ad hoc Group had worked on that basis. The concept of distance had been accepted in a spirit of compromise, on the understanding that there would be additional criteria to determine to what extent an administration might be affected.

He wished to know from the IFRB whether any other conference had accepted the concept of an increase in usable field strength and whether reservations had been entered.

3.7.12.8 Those remarks were endorsed by the delegate of Saudi Arabia.

3.7.12.9 The delegate of France observed that the delegate of Finland had not questioned the value of the technical work but a principle, to which perhaps not enough attention had been paid. The wording had been taken from an earlier text covering a situation in which the spectrum was saturated, but in the present case there were still some frequencies available and possibilities for installing transmitters. If the criteria proposed were retained the frequencies available might be taken up by a richer or more developed country presenting many requests which could not be refused; if the criteria were deleted, some administrations might systematically raise objections to requests for modification without having to produce any justification.

3.7.12.10 The delegate of Iraq thanked the delegate of France for his explanation. He felt that no administration should be allowed a complete veto with respect to another. At the same time he shared some of the concern about developed countries being able to reserve all the available space in a band. He suggested that one solution might be to put a low limit for accepting a modification by another administration and that any reference to usable field strength be abandoned in favour of reference to the nuisance field, to which a low limit should be given in order to protect administrations from excessive requirements.

3.7.12.11 The Chairman of the IFRB said that the situation of the ITU had evolved considerably since the 1961 Stockholm Agreement had come into force shortly after the 1959 Radio Conference. As he understood the procedure in the document, the first phase was identification of the country concerned and the second was identification of the station concerned. Neither the Geneva 1975 Agreement nor Appendix 30 of the Radio Regulations (governing satellite broadcasting) contained two separate stages; they both contained a single criterion, which was the amount of interference which a station in the Plan had to accept as a result of modification to the Plan (less than 0.5 dB was considered as not affected in the 1975 Plan, and in Appendix 30 three different limits had been set depending on the nature of the station affected).

His own view was that every country was sovereign to use the radio frequency spectrum as it wished, within the framework of the Radio Regulations and to the extent that no harmful interference was caused to another country's emissions. Unless some limit value were introduced, however, modifications to the Plan would be virtually impossible in certain parts of the world. The division was not so much between developed and developing countries as between those parts of the world where relations between countries were such that agreement could be obtained without necessarily imposing a limit, and others where unfortunately, international limits had to be imposed.

3.7.12.12 The delegate of Algeria thanked the Chairman of the IFRB for his reply which made it clear that such limits had been accepted in other conferences. With respect to the intervention by the delegate of France, he thought it should be emphasized that the meeting was discussing modifications to stations vis-à-vis "appearing in the Plan"; the formulation must be very precise.

3.7.12.13 The delegate of Finland said that the distance approach had been accepted unanimously in 1962. The LF/MF Conference was a case in which the frequency resources were overloaded and the Eu values were roughly equal and some kind of rule had had to be found to meet that situation. It was not the same at the present Conference where differences were as much as 50 dB and some frequencies might be left over after the planning process. He also wished to state that Finland had never experienced difficulty in its discussions with neighbouring countries. Finally, he drew attention to the fact that the tables on which the limitation distances were based contained values of 52 to 54 dB at the border and that should also be taken into account in seeking a solution.

3.7.12.14 The delegate of the United Kingdom recalled that the original proposal was to produce guidelines on an acceptable increase for all transmitters at test points around the coverage area and that reasons must be given for any refusal. Since then, other methods had been proposed, for application also at the transmitter site. Three questions remained : how the IFRB would judge or arbitrate, without any guidelines; what the guidelines should be; and how the Conference could ensure that administrations had to give a valid reason for refusal.

3.7.12.15 The Chairman suggested that an ad hoc Group be set up to consider paragraphs 3.5 and 3.6 and other relevant texts bearing on the earlier version of the provisions in paragraph 4.5 of Document DT/30(Rev.1).

3.7.12.16 That suggestion was supported by the delegate of the Islamic Republic of Iran who found the second sub-paragraph of paragraph 3.6 difficult to accept.

It was so agreed.

3.7.12.17 The Chairman further suggested that the delegate of Belgium should act as convenor and that the Group should comprise members of the delegations of Finland, Algeria, France, Poland, the United Kingdom, Iraq, Qatar, the Islamic Republic of Iran and the Federal Republic of Germany.

He hoped that the ad hoc Group could submit a report to Committee 5 at its meeting on Thursday morning, 28 November.

The meeting rose at 22.45 hours.

The Secretary:

J. FONTEYNE

The Chairman:

K. OLMS



# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

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Original: English

## PLENARY MEETING

### MINUTES

### OF THE

### SIXTH PLENARY MEETING

Friday, 23 November 1984, at 1430 hrs

Chairman: Miss M. HUET (France)

#### Subjects discussed:

1. Treatment of incompatibilities between the sound broadcasting service and the aeronautical radionavigation service
2. Software to be used for analyses applicable to the countries of Planning Group 4B

#### Documents

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1. Treatment of incompatibilities between the sound broadcasting service and the aeronautical radionavigation service

1.1 The Chairman said that the previous day delegates would have received the results of calculations concerning incompatibility between the sound broadcasting service and the aeronautical radionavigation service. Those calculations showed that such incompatibilities would cause difficulties for many administrations in completing Form 1, as well as difficulties for the IFRB in dealing with the large number of cases involved. It was not possible for the IFRB, when receiving the forms concerned, to distinguish between incompatibility due to a sound broadcasting station, and incompatibility due to an aeronautical radionavigation station. It was therefore suggested that the problem should not be dealt with in the course of the Conference itself, but should be covered by procedures which would be inserted in the Agreement at a later stage.

1.2 The Chairman of the IFRB said it had become apparent that the number of incompatibilities with the aeronautical radionavigation services was such that it would probably not be possible to deal with them in the course of the week. In addition, in the absence of precise information regarding the stations that were sources of objections, it would not be possible to distinguish between radionavigation stations coordinated with broadcasting stations, and those not so coordinated. The IFRB, in consultation with the Chairman of Committee 5, therefore recommended that a number of measures be taken. A date limit should be set beyond which Form 1 should not be submitted in regard to radionavigation stations. Administrations could continue to coordinate their incompatibilities during the Conference, and could deal with any unresolved cases between themselves before the coming into force of the Final Acts. Committee 5 should be asked to prepare a Resolution to cover coordination to be carried out before the coming into force of the Final Acts: that Resolution should contain a list of countries wishing to carry out coordination directly without indicating the BC stations concerned, and also, for other countries, a list of BC stations which were subject to coordination with aeronautical radionavigation. Committee 5 should also be asked to consider solutions to three problems: the identification of radionavigation stations which were being protected in the planning process; modifications to a BC station intended to resolve an incompatibility with radionavigation; and unresolved incompatibilities with radionavigation at the date of entry into force of the Final Acts.

He pointed out that the measures suggested related only to the Plan to be adopted at the Conference. Any modifications to the Plan involving the radionavigation service would be considered in accordance with a separate procedure, to be decided on by Committee 5.

1.3 The delegate of Poland said he was somewhat surprised that such a serious problem should have arisen so unexpectedly. As he saw it, the chief reason for such an avalanche of incompatibilities was the latitude allowed in the choice of VOR test points. With test points that were 100 - 150 km apart, there were fewer difficulties, but when those distances were as great as 500 or 600 km, protection could not be ensured. He urged that a solution to the problem should be found during the Conference, since it would be very difficult for administrations to deal with it by themselves afterwards. However, if that had to be done, he wished to know whether it would be possible for administrations to be supplied with IFRB control programmes and documentation to use as a basis for their own analyses.

The matter was one of great importance, and he suggested that the measures just proposed by the Chairman of the IFRB should be circulated to all delegates in written form so that they could be studied before a decision was taken.

1.4 The Chairman of the IFRB, in reply to the question raised by the delegate of Poland, said that the relevant programmes and documentation would be made available to administrations on request.

1.5 The delegate of the Islamic Republic of Iran said he appreciated the suggestions made by the Chairman of the IFRB for possible measures to solve the problem of incompatibility. However, an important question of principle was involved. The proposal that the problem should be solved outside the Conference seemed to him to be in contradiction with the mandate laid upon the Conference by item 2.2 of its agenda, which required it to take account of the need to ensure adequate protection to stations of the aeronautical radionavigation service. He did not see how the Conference could prepare a Plan which did not give due regard to the needs of that service.

1.6 The Chairman pointed out that the problem for administrations in dealing with cases of incompatibility during the Conference was to determine whether there was real incompatibility, or merely a risk of it. If it was found that the incompatibility was a real one, then it would perhaps be better to deal with it in the course of the Conference, but it was doubtful whether all administrations would be able to carry out such a study at the present stage.

1.7 The delegate of Poland proposed that in order to simplify the work, cases of internal incompatibility within the territory of a country should be excluded from the discussion.

1.8 The delegate of Italy pointed out that one of the difficulties in ensuring protection of the aeronautical service was that only four test points could be selected, whereas a larger number were needed. He agreed that the problem would be better dealt with after the Conference, and suggested that the procedure to be established should specify that more than four test points were required.

1.9 The delegate of Tunisia agreed with the delegates of Poland and the Islamic Republic of Iran that the problem was a vital one, which should be settled during the Conference itself, rather than after it.

1.10 The delegate of Saudi Arabia pointed out that if, as suggested by the delegate of Poland, internal incompatibilities were not to be taken into account, the situation might arise where the resolution of such incompatibilities might call for modifications having a direct impact on neighbouring countries. Such modifications would need to be given special consideration. In any case he too wished to see the proposed measures in written form.

1.11 The delegate of Kenya said that for his part he could support the suggestion that cases of internal incompatibility should be excluded. If that were done, only a small proportion of such cases would remain, which could be dealt with in a short time. He shared the view that the Conference could not ignore the question of compatibility with the aeronautical radionavigation service.

1.12 The delegate of the United Kingdom felt the scale of the problem had been somewhat exaggerated. The computer programme on which the results were based had been a simple one, listing transmitters which could exceed a certain field strength at the test points; a more sophisticated programme might have resulted in a more realistic picture.

As far as the Conference's agenda was concerned, he agreed that it would be unfortunate if coordination could not be carried out within the framework of the Conference, since many countries might have difficulty in achieving it outside it.

However, he did not think that the Conference would be in breach of its instructions if it adopted the measures proposed. If it was found that the Plan could not take account of the incompatibility problem, then it would be quite in order to have it taken care of in the Agreement, by means of procedures to be invoked between the present time and entry into force of the Final Acts. He fully supported the measures proposed.

1.13 The delegate of Switzerland said that while he agreed with the delegate of Poland that the situation was a very serious one, the Conference no longer had the time available to it to solve the problem. He therefore supported the United Kingdom's view of the matter.

1.14 The delegate of Sweden said he supported the Polish proposal for dealing with incompatibilities arising internally within a given country. However, in the case of incompatibilities between two or more countries he would accept the procedures suggested by the IFRB for elaboration by Committee 5.

1.15 The delegate of the Islamic Republic of Iran could not agree with the United Kingdom's interpretation of item 2.2 of the Conference agenda. Furthermore, he drew attention to the fact that many countries with small delegations would not have the manpower to divert from BC/aeronautical radionavigation coordination to attend the discussion in Committee 5, whose decision would therefore not reflect their views. Such countries would find it a sufficient strain on their capabilities to deal with BC/BC coordination without having to undertake an extra procedural burden.

1.16 The delegate of Turkey supported the views expressed by the delegate of the Islamic Republic of Iran.

1.17 The delegate of the Federal Republic of Germany agreed that the problem was a very serious one; he shared the United Kingdom's view on the best way of dealing with it. Nevertheless he remained aware of the difficulties smaller delegations would face in any solution based on a procedural approach. To ensure that due care was taken in making the decision, he proposed that the suggestions made by the IFRB should be submitted in writing to delegates, at the latest by 1730 hours that evening, to enable them to be studied thoroughly over the weekend and that any decision on the subject should be adjourned to another Plenary Meeting to be held on Monday morning. He proposed further, in order to maintain delegations' rights, that the deadline for submission of Form 1 should be postponed to a date to be set by that Plenary Meeting.

The proposals of the Federal Republic of Germany were approved.

1.18 In support of those proposals, the Secretary of the Conference said the problem had come up very suddenly and had been unexpected by a large number of delegations. Although some delegations did have a wide understanding of all the implications, lack of time had prevented consultation among delegations from being as extensive as could have been wished. It would therefore be wiser to postpone the decision to another Plenary Meeting.

1.19 The delegate of Poland reiterated his conviction that the core of the problem lay in the choice by some administrations of excessively large coordination distances (not justified by technical criteria) as a result of being allowed a free choice of test points. Discussions among the administrations concerned together with the IFRB could help to eliminate many incompatibilities.

1.20 The Chairman of the IFRB said it was a fact that the first session of the Conference had not set any limit to the distance separating test points from radio-navigation stations and that the service areas of VOR stations had been left to the discretion of administrations. The problem of whether a limit should be set for coordination distances was an important one which only the Plenary could decide. The IFRB could not assist in that decision or in any discussions on the subject among administrations; any assistance it could give would necessarily be restricted to the technical follow-up to be given to such a decision once it had been made.

1.21 The delegate of France agreed that the number of test points and their positioning could give rise to problems. However, he doubted whether a further review of test points was feasible in view of the software changes it would entail and the extra work it would lay on the IFRB. Moreover, the problem arose not so much with regard to the test points selected for ILS or VOR approach operations as with regard to DOR en-route operations, where the service volume requiring protection was greater. Even in that case, however, the test points taken at the four cardinal points by his administration had in no case exceeded a coordination distance of 200 km. To reduce that distance further would compromise the safety of aeronavigation and would not in his view reduce the number of incompatibilities.

1.22 The delegate of Poland said that a coordination distance of 200 km was reasonable. However, he feared that in some cases administrations had misunderstood the principle of selecting test points, as distances in Europe of 500 to 600 km had been reported to him. That was why he considered that negotiations between the administrations concerned would significantly reduce the incompatibilities observed.

1.23 The Chairman proposed that the discussion on that subject be adjourned until the next Plenary Meeting.

It was so agreed.

2. Software to be used for analyses applicable to the countries of Planning Group 4B (Document 133)

2.1 The Chairman of Committee 4, introducing Document 133, said it was the unanimous wish of the countries of Planning Group 4B that further analyses applicable to their Group should be carried out with the software used for the first Conference analysis, except where there were line-of-sight conditions from transmitter to sea for maritime paths of up to 700 km east of the 30° meridian, when the new propagation curves used in the second analysis should be employed.

2.2 The Chairman of the IFRB said that that proposal would be acceptable provided that the terms of paragraph 3 of Document 133 applied to bilateral negotiations only.

On that understanding, it was decided that in the case of the countries of Planning Group 4B the IFRB should carry out a second analysis on the basis on the software used for the first analysis and that subsequent analyses should also be based on that software.

The meeting rose at 1540 hrs.

The Secretary of the Conference:

J. JIPGUEP

The Chairman:

M. HUET

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 143-E  
3 December 1984  
Original: English

## PLENARY MEETING

### MINUTES

### OF THE

### SEVENTH PLENARY MEETING

Monday, 26 November 1984, at 0905 hrs

Chairman: Miss. M. HUET (France)

#### Subjects discussed:

#### Document

1. Treatment of incompatibilities between the  
sound broadcasting service and the aeronautical  
radionavigation service (continued)

138

1. Treatment of incompatibilities between the sound broadcasting service and the aeronautical radionavigation service (continued) (Document 138)

1.1 The Chairman noted that Document 138 summarized the IFRB's Recommendations, in consultation with the Chairman of Committee 5, with regard to incompatibilities with the aeronautical radionavigation service. In view of the observations made at the previous Plenary Meeting, it should perhaps be left to administrations themselves to continue to coordinate their incompatibilities either during the Conference or after it; perhaps Committee 5 should prepare a Resolution to cover the coordination to be carried out before the coming into force of the Final Acts, as recommended in paragraph 4) of Document 138.

It was so agreed.

1.2 The Chairman asked whether it was agreed not to attempt to solve problems of type A interference at the current Conference.

1.3 The delegate of Poland recalled that type A interference problems were numerous, as many delegations had already pointed out. In his view, the problem could be solved in a fairly easy manner, through technical measures such as output filters at transmitting stations, without resorting to an amendment to the Plan.

1.4 The delegate of the Islamic Republic of Iran said that all types of interference must be considered at the current Conference, and that discussion of type A interference problems, which called for careful measures, should not be left to Committee 5.

1.5 The delegate of the Federal Republic of Germany said that the problem should not be exaggerated. The recent IFRB analysis, which had included a theoretical appraisal of the worst possible conditions regarding the effect of spurious emissions on the aeronautical service, as reflected in Document 86, had shown that all problems would virtually disappear in practice and that those which persisted would stem chiefly from intermodulation caused by several transmitters multiplexed on one antenna.

1.6 The delegate of France endorsed that observation, but type A interference, whether generated by transmitters with single or separate antennas, required coordination between the aeronautical and broadcasting services.

Although the problems would probably have limited consequences, they could not be foreseen, and the phenomenon, therefore, required careful study case by case.

1.7 The delegate of the Islamic Republic of Iran said that the occurrence of the phenomenon between several transmitters using the same antenna was indeed one of the problems to be faced.

1.8 The delegate of Poland said that the notion had already been accepted of a general obligatory rule for all transmitters in regard to harmful emissions, based on deliberations by the CCIR and the Joint Interim Working Party. During the latter, moreover, a number of manufacturers had pointed out how harmful interference could be further reduced by means of relatively inexpensive additional equipment. It was clear from the discussions that further improvements could be made. Perhaps, therefore, a Resolution could be adopted by the Conference to the effect that, where such interference might occur, administrations would have recourse to suitable supplementary measures.

1.9 The Chairman thought that many delegations would agree. It seemed that the Final Acts ought to include some specific provision to deal with type A interference.

1.10 The delegate of the United Kingdom thought that type A interference problems stemmed from two areas: spurious emissions and intermodulation. The Conference had already found a way to deal with the first, by means of Recommendation No. GTECH/3, set forth in Document 125. With regard to the second, to expect a solution by the current Conference would impose an impossible task of analysis on the IFRB; only a bilateral approach was feasible. In his view, therefore, the Chairman's suggestion should be adopted. The IFRB could indeed be of help in that connection if it had the requisite time.

1.11 The delegate of the USSR said that the intermodulation difficulties represented a serious international problem whose solution could not be left to administrations alone. In the absence of a thorough international approach on a theoretical and technical basis, bilateral agreements could be hazardous, particularly to air transport. The search for a solution should be continued within the framework of the CCIR, and the current Conference should produce a suitable proposal for the IFRB.

1.12 The delegate of the Islamic Republic of Iran agreed that intermodulation problems were of international concern. Administrations should be required to provide information on antenna feeding, for the purpose of IFRB study, which should provide a basis for international negotiation; bilateral negotiation, however, was the wrong approach.

1.13 The Chairman suggested that the discussion pointed to the need for special provisions on the topic in the Final Acts - a matter which could be taken into consideration by Committee 5.

It was so agreed.

1.14 The Chairman, referring to type B interference, said that the subject was one for the Conference to consider insofar as it related to frequencies assigned to stations. With regard to situations involving stations of one and the same country, perhaps administrations could seek to resolve the matter during the current Conference. With regard to frequencies of different administrations, however, there was a clearly expressed need for special provisions in the Final Acts. The IFRB had been carrying out some computations, and perhaps a small Group could be established to discuss the subject, under the auspices of Committee 5 or the Technical Working Group.

1.15 The Chairman of the Technical Working Group said that the matter was much more complex than might appear at first sight, because an attempt to solve the problem by changing a station's frequency could set off a chain reaction. The matter should be considered by a small Group of Experts on intermodulation interference, with the assistance of IFRB specialists.



1.16 The Chairman of the IFRB said that his suggestion, at the previous Plenary Meeting, that administrations should try to settle among themselves their interference problems before conclusion of the Final Acts, had related to type A interference; cases of type B interference, of course, could involve more than two administrations, which made solutions even more difficult. For the latter type, it was absolutely essential for the Conference to draw up some rules. A Working Group for that purpose could indeed be set up, but the task must be completed within the week. The IFRB could help by carrying out a limited number of computations, but to do so for all the 550 identified cases of type B interference was impossible. Some 90% of cases related to Europe. Therefore, if European administrations could agree to the resolving of such cases after the Conference, by means of a procedure to be drawn up by Committee 5, it would reduce the number of outstanding cases to under 100 and the IFRB's task to manageable proportions. It was imperative, however, to adopt objective rules that day.

It was agreed that the European administrations would seek to resolve the cases concerning their countries after the Conference, and that an ad hoc Working Group consisting of the delegates of Algeria, France, the Federal Republic of Germany, the German Democratic Republic, the Islamic Republic of Iran, Italy and the Ivory Coast, together with the Chairman of the Technical Working Group and a representative of the IFRB, would be convened and would report to the Plenary. The representative of the Federal Republic of Germany would serve as the Chairman of the ad hoc Group.

1.17 The Chairman said that, since calculations were available, it seemed unnecessary for administrations to fill in Form 1 again; perhaps they should be invited to withdraw those submitted at the beginning of the Conference if they wished because the form represented an opposition to a station which would so appear in the Plan without any indication of whether it was an aeronautical radionavigation or a broadcasting station that was opposed. It would be possible to mark, in the Plan edition drawn up after the Conference, the stations for which there was an interference risk vis-à-vis aeronautical stations as well as whether type A or type B interference was involved.

1.18 The delegate of the United Kingdom said that if Form 1 was currently completed virtually every assignment in the Plan would have an asterisk against it without any indication of what the objection was. Moreover, it seemed that most European administrations had no wish to submit Forms 1 against each other. Further time should therefore be allowed, even if only one day, for due appraisal.

1.19 The Chairman said she took it there was no general desire to complete Forms 1. Some administrations, however, had completed Forms 1 in regard to an aeronautical radionavigation station receiving interference from a broadcasting station; in such cases the broadcasting station concerned would be shown as uncoordinated in the Plan edition drawn up at the end of the Conference. For the purpose of referring solely to broadcasting stations, it could be indicated, by means of Form 2, that there was no objection against such a broadcasting station; to do so would not prevent the marking, in the Plan edition to be drawn up after the Conference, of type A and type B interferences against each station - whatever other means of resolving the cases concerned might be decided upon. No immediate decision, therefore, was required.

In response to a question by the delegate of the Islamic Republic of Iran regarding the status of Forms 1 completed in respect of radionavigation stations against broadcasting stations, she pointed out that, for the time being, the IFRB was unable to differentiate. If the grounds for an objection lodged against a broadcasting station related to the effects on a radionavigation station but not on another broadcasting station, it would be desirable for the objecting administration to complete Form 2 and approach the administration concerned with a view to showing that the station had been coordinated. The position would then be clarified as between the broadcasting stations; likewise the type of interference, A or B, would be shown. However, no clear distinction was currently made in the forms. It would perhaps be as well, therefore, to withdraw Form 1; the best way to deal with the situation would be through Form 2.

1.20 The Chairman of the IFRB requested that, when Forms 2 were completed, the fact that a radionavigation station was concerned should be so indicated, so as to facilitate differentiation. With regard to an earlier question about the distances in respect of VOR test points, statistics showed that, of 1,294 VOR stations, 13 attained a distance exceeding 500 km, 139 exceeded 300 km, 231 exceeded 200 km and 661 exceeded 100 km.

1.21 The Chairman, in reply to a question raised by the delegate of the USSR in regard to ILS stations, said the case appeared to be a special one and could perhaps be resolved with the Secretariat.

The meeting rose at 1005 hours.

The Secretary of the Conference:

J. JIPGUEP

The Chairman:

M. HUET

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

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COMMITTEE 4

Note by the Chairman of Working Group 4A

## ADDITIONAL REQUIREMENTS

The requirements listed in the annexes have been accepted by Working Group 4A subject to the following provisos:

- i) The IFRB is requested to generate an Euf diagram for each requirement without a frequency specified.
- ii) An administration is considered to be affected if, at its site, a requirement listed in the following gives rise to a nuisance field greater than 60 dB( $\mu$ V/m). Such requirements must be coordinated with the administrations affected.

The following administrations submit additional requirements for consideration:

1. Cameroon (Republic of)
  - 1.1 Five additional channels for each of the sites given in Annex 1. (Originally a requirement for one channel for each of the sites in Annex 1 was submitted.)
  - 1.2 Six channels for each of the sites given in Annex 2.
2. Gabonese Republic
  - 2.1 The additional channels of Annex 3 are required.
3. Yemen Arab Republic
  - 3.1 One additional channel is required for each of the sites listed in Annex 4.
4. Congo (People's Republic of the)
  - 4.1 Two additional channels are required for the site given in Annex 5.
5. Rwandese Republic
  - 5.1 Six additional channels are required for each of the sites listed in Annex 6.


J. NGARUIYA  
Chairman of Planning Group 4A

Annexes: 6

ANNEX 1

CAMEROON (REPUBLIC OF)

Sites for which five additional channels are required:

<u>Station name</u>	<u>Coordinates</u>		<u>e.r.p. (kW)</u>	<u>Heff. (m)</u>
	<u>Long.</u>	<u>Lat.</u>		
MFOU	011E40	00E00	100.0	+0300
WUM	010E02	06N13		+0300
LOUM	009E43	04N42		+0300
KAELE	014E21	10N06		+0300
FIGUIL	013E56	09N47		+0300
GUIDER	013E54	09N56		+0300
MBANGA	009E34	04N32		+0300
MANJO	009E48	04N54		+0300
FOUMBOT	010E36	04N30		+0300
MELON	009E58	05N10		+0300
MUNDEBA	008E53	05N01		+0300
LIMBE	009E22	04N02		+0300
AKOM 2	010E34	02N38		+0300
BELABO	011E08	04N50		+0300
TONGA	010E40	04N55		+0300
NGAOUNDAL	013E10	06N26		+0300
MBANDJOCK	011E50	04N25		+0300
WAZA	014E32	11N28		+0300
TOUBORO	015E40	07N46		+0300
MAGA	014E50	10N50		+0300
MAGBA	011E08	06N00		+0300
EKONDO TITI	009E02	04N38		+0300
NGUTI	009E20	05N06		+0300
TIKA	009E20	04N00		+0300

Station name	Coordinates		e.r.p. (kW)	Heff. (m)
	Long.	Lat.		
MUYUKA	009E20	04N20	100.0	+0300
NGOULEMEKONG	011E42	03N04		+0300
BANDJOUN	010E20	05N20		+0300
DOUALA	009E43	04N02		+0300
GAROUA BOULAI	014E08	05N54		+0300
TCHOLLIRE	014E04	08N26		+0300
MOKOLO	013E46	10N40		+0300
MBENGWI	009E10	05N58		+0300
YABASSI	009E59	04N25		+0300
OBALA	011E30	04N04		+0300
DJOUN	012E38	02N38		+0300
YAGOUA	015E04	10N20		+0300
BATOURI	014E20	04N24		+0300
CAMPO	009E56	02N22		+0300
AMBAM	011E06	02N22		+0300
KUMBO	010E34	06N10		+0300
MBOUDA	010E09	05N42		+0300
FOUMBAN	010E51	05N45		+0300
MANFE	009E20	05N43		+0300
BANGANGTE	010E18	05N10		+0300
BAFANG	010E08	05N11		+0300
AKONOLINGA	012E13	13N47		+0300
DSCHANG	010E02	05N25		+0300
RADIO EBOLOWA	011E18	02N54		+0300
MORA	014E01	11N01		+0300
MFOU	011E40	11N07		+0300
GAROUA BOULAI	014E28	05N54		+0300
MUNDEMBA	008E53	05N01		+0300
LIMBE	009E22	04N02		+0300
TIKO	009E20	04N00		+0300

ANNEX 2

CAMEROON (REPUBLIC OF)

Sites for which six additional channels are required:

<u>Station name</u>	<u>Coordinates</u>		<u>e.r.p.</u> <u>(kW)</u>	<u>Heff.</u> <u>(m)</u>
	<u>Long.</u>	<u>Lat.</u>		
MADINGRIN	014E55	08N25	20.0	300
KETTE	014E32	04N48	100.0	300
NGOILA	014E02	02N36	100.0	300
MINTOM 2	013E28	02N39	20.0	300
MVANGAN	011E52	02N35	100.0	300
BOURRAH	013E28	10N11	100.0	300
FOTOKOL	016E12	12N16	100.0	300
MAYO DJOI	014E19	09N00	100.0	300
MAKARI	014E27	12N33	100.0	300
GOULFEY	014E90	12N04	20.0	300
AYOS	012E31	03N51	100.0	300
EYUMOJOK	008E47	05N44	20.0	300
KENZOU	015E00	04N10	20.0	300

ANNEX 3

GABONESE REPUBLIC

Additional channels required:

Frequency (MHz)	Station name	Coordinates		e.r.p. (kW)	Heff (m)
		Long.	Lat.		
91.3, 100.1, 107.2	BITAM	11E30	2N00	50.0	300.0
89.3, 97.4, 100.4	FOUGAMOU	10E30	1S20	50.0	300.0
93.8, 95.2	FRANCEVILLE	13E27	1S10	100.0	300.0
94.2, 95.1, 104.1	GAMBA	9E40	3S45	50.0	300.0
98.7	KOULAMOUTOU	12E30	1S00	100.0	300.0
107.4	LAMBARENE	10E13	0S12	100.0	300.0
94.5, 97.4, 100.5 104.0, 107.7	LIBREVILLE	9E28	0N25	100.0	300.0
107.8	MAKOKOU	12E50	0N34	100.0	300.0
91.4, 104.2	MALINGA	12E20	2S30	50.0	300.0
91.0, 101.0	MANDJI	10E00	1S45	50.0	300.0
107.9	MOUILA	11E02	1S51	100.0	300.0
91.0, 98.5, 106.0	NDEDE	11E25	2S30	50.0	300.0
104.8	PORT GENTIL	8E20	0S35	100.0	300.0
88.0, 104.5	TCHIBANGA	11E03	2S52	100.0	300.0

ANNEX 4

YEMEN ARAB REPUBLIC

Sites for which additional channels are required:

No. of additional channels required	Station name	Coordinates		e.r.p. (kW)	Heff (m)
		Long.	Lat.		
1	SUMARA	044E17	14N17	001.000	+0330
1	HYLAN	045E50	15N30	005.000	+0250
1	ALFARDHA	044E40	15N45	010.000	+0200
1	AL-TAAKER	044E07	13N52	005.000	+0140
1	MASAR	043E37	15N04	005.000	+0250
1	YESLEH	044E15	14N55	002.000	+0350
2	KOTAF	044E26	17N08	002.000	+0250
1	RYAM	044E42	14N18	010.000	+0300
1	DYN	040E05	15N40	001.000	+0270
2	AIBAN	044E05	15N15	005.000	+0400
1	ALJABAL AL AHMAR	043E43	16N45	005.000	+0500
2	AL-DARB	043E18	15N00	010.000	+0600
1	MAREB	045E20	15N35	002.000	+0200
1	BAB AL MANDAB	043E30	12N45	010.000	+0090
1	THAABAT	044E05	13N02	000.001	+1000
1	AL ASHMOUR	030E47	15N08	005.000	+0330
1	DARWA	044E07	15N57	001.000	+0300
1	ALLESSI	044E27	14N27	004.000	+0400
1	HAID ATHEMA	045E40	13N55	002.000	+0300
1	MERA'A	043E23	17N22	005.000	+0500
1	AL-AROUS	044E10	13N02	010.000	+0600
1	BANI KAITH	043E57	16N05	001.000	+0350
1	RAZEH	043E30	17N25	010.000	+0520
1	ALGOFL	043E47	16N55	000.500	+0270



ANNEX 5

CONGO (PEOPLE'S REPUBLIC OF THE)

Site for which two additional channels are required:

Frequency (MHz)	Station name	Coordinates		e.r.p. (kW)	Heff (m)
		Long.	Lat.		
87.8, 94.8	KAKAMOEKA	11E12	04S05	.5	300.0

ANNEX 6

RWANDESE REPUBLIC

Sites for which six additional channels are required:

Station name	Coordinates Long. Lat.	e.r.p. (kW)	Heff (m)
HUYE	29E41 02S34	10.0	300
KIBUNGO	30E32 02S12	10.0	300
MUTARA	30E28 01S31	5.0	300

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

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COMMITTEE 5

FIRST REPORT OF WORKING GROUP 5B

1. To answer to agenda item 2.3, Working Group 5B agreed to put forward the draft resolution to be found in the annex. This resolution makes obsolete detailed procedures.
2. On the basis of the resolution in the annex, Working Group 5B was informed that several countries in the western part of Europe tend to agree on a solution concerning the land mobile service in France and the United Kingdom.
3. The delegations of Spain, Ireland, Italy and Switzerland have reserved their right to come back to their proposal, in resolves 4, to change the word "shall" into "should".

P. PETTERSSON  
Chairman of Working Group 5B

Annex: 1 page

ANNEX

DRAFT RESOLUTION No. ...

**Procedure relating to fixed and mobile services  
in the band 104-108 MHz**

The Regional Administrative Conference for the Planning of VHF Sound Broadcasting (Region 1 and part of Region 3) (Geneva, 1984).

noting

that the Conference was requested to adopt transitional procedures for bringing into service the assignments in the plan in order to enable normal operation of stations of other services to which the band 104-108 MHz are also allocated in accordance with Radio Regulations Nos. 587, 588 and 589, under the conditions specified therein;

considering

- a) that the planning of sound broadcasting stations was made without taking account of existing and planned stations of the permitted services, to which the band 104-108 MHz is also allocated;
- b) that the bringing into use of broadcasting stations may cause interference to stations pertaining to the permitted service and vice-versa;

resolves

1. The FM Broadcasting Plan, Geneva 1984, shall be implemented in the frequency band 104-108 MHz in such a way that normal operation of the existing fixed and mobile services in this band is enabled on the conditions specified in the Radio Regulations.
2. Protection of the fixed and mobile services in the band 104-108 MHz shall not hinder a gradual implementation of the FM Broadcasting Plan in the period from the coming into force of the Agreement, Geneva 1984, until 31 December 1995 when full implementation of the broadcasting service is expected.
3. The gradual implementation of the band for FM broadcasting service should take place through the implementation of different frequency segments of the band 104-108 MHz at different stages in time during the period [1986] - 31 December 1995, or on the basis of any method agreed between administrations concerned;
4. This gradual implementation shall be based on bilateral or multilateral agreements between administrations concerned during or after this Conference and if possible before the entry into force of the Broadcasting Plan, but not later than one year after this date.

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

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## COMMITTEE 4

### NOTE FROM THE CHAIRMAN OF PLANNING GROUP 4D TO THE CHAIRMAN OF COMMITTEE 4

1. As noted in Chapter 4 of the Report to the second session, several countries are operating television transmitters in the band 87.5 to 100 MHz. At least one country intends to continue using this band for television indefinitely. Other countries have indicated that they may cease to use the band for television at some future date and are therefore planning sound broadcasting stations to cover that eventuality.

2. It may be assumed that the Plan for sound broadcasting which is concluded by the Conference will be compatible with those television assignments which are to remain in use indefinitely. However the timing of the transition from television to sound broadcasting in the various countries concerned is uncertain and will probably not be coincident. It may well be progressive over a number of years.

3. The relationship between existing television and planned sound broadcasting assignments in the countries concerned is complex and it is clear that a degree of coordination will be required in the implementation of many of the planned sound broadcasting assignments.

4. Planning Group 4D has considered possible ways of dealing with this transition and recommends that where the implementation of a particular planned sound broadcasting assignment depends on the cessation of one or more television assignments in another country or countries, a statement to that effect should be noted in column /17/ of the Plan as follows:

"The implementation of this assignment is contingent on the cessation of certain television assignments in /countries X, Y/ and may not take place until a date to be agreed with that/those administration(s).".

A.L. WITHAM  
Chairman of Planning Group 4D

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 147-E  
26 November 1984  
Original: French

## COMMITTEE 4

### Note by the Chairman of Committee 4

#### ADDITIONAL COLUMNS FOR THE PLAN

Committee 4 has adopted (Document 116) columns 1 to 17 of the Plan, which is to be printed, and has decided that the information given in (present) boxes 31B and 32 should be published in microfiche form.

For practical reasons, it is proposed:

- to publish in microfiche form all the information given in columns 1 to 17;
- to add two columns, numbered 18 and 19, as follows:

Col. 18: Azimuthal variation of the effective antenna height.

Col. 19: Azimuthal variation of the effective radiated power of the horizontal component and the vertical component in the horizontal plane.

In this way, all the information relating to an assignment will be contained in the microfiches.

Dr. I. STOJANOVIC  
Chairman of Committee 4

**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 148-E  
26 November 1984  
Original: French

Source: DL/18, DL/22COMMITTEE 4

REPORT BY THE CHAIRMAN OF AD HOC GROUP 4  
TO COMMITTEE 4

Ad hoc Group 4 held two working sessions and asked its Chairman to prepare this report for direct submission to Committee 4. Paragraphs 1, 2 and 3 below were adopted unanimously by the Group.

1. Definition of an unresolved case

An unresolved case concerns an assignment which causes a level of interference higher than a limit to be defined by the Conference and which has not secured all the necessary agreements during the Conference; this limit might be:

- a usable field strength level of the assignment concerned;
- a nuisance field strength level;
- the average usable field strength level, increased by a value to be defined by the Conference.

This value will be established by the Technical Working Group of the Plenary and will be used to settle unresolved cases during and after the Conference. It may vary according to the planning area.

2. The Plan will contain the following assignments:

- a) those to which no objection has been raised during the Conference;
- b) those to which objections have been raised but which have been agreed upon by all the administrations concerned during the Conference;
- c) those to which objections have been raised but which do not cause interference in excess of the limit referred to in paragraph 1 above.

3. Cases unresolved during the Conference will be entered in an appendix to the Plan with a reference to administrations with which coordination is still required.

4. Status of unresolved cases

Unresolved cases should be protected by the modification procedure (Article 4 of the Agreement):

- [ a) until they are resolved, without any time-limit; ]
- [ b) until a date subsequent to the date of entry into force of the Final Acts of the Conference; in special cases, an extension of this time-limit may be allowed to administrations; ]

[ c) until the date of entry into force of the Final Acts of the Conference;  
in special cases, an extension of this time-limit may be allowed to  
administrations. ]

[ After that date, the appendix will be deleted from the Agreement and the  
cancelled assignments will be considered as modifications or additions to the Plan,  
in accordance with Article 4 of the Agreement. ]

5. Two draft notes, to the Technical Working Group of the Plenary and to Committee 5, were prepared by the Chairman of the Group. They are annexed to this report.

N. BOUHIRED  
Chairman of ad hoc Group 4

Annexes: 2



ANNEX 1

NOTE FROM COMMITTEE 4  
TO COMMITTEE 5

Committee 5 is asked to establish appropriate procedures reflecting the principles contained in Document [ ... ] adopted by Committee 4.

ANNEX 2

NOTE FROM COMMITTEE 4 TO  
THE TECHNICAL WORKING GROUP OF THE PLENARY

The Technical Working Group of the Plenary is asked to establish the limit value or values to be used to settle unresolved cases in accordance with the principle contained in paragraph 1 of Document ∟ ... ∟ adopted by Committee 4.

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INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 149-E  
27 November 1984  
Original: French

TECHNICAL WORKING GROUP  
OF THE PLENARY

NOTE FROM COMMITTEE 4  
TO THE TECHNICAL WORKING GROUP OF THE PLENARY

At its seventh meeting on Tuesday, 27 November 1984, Committee 4 adopted the following definition of an unresolved case:

"An unresolved case concerns an assignment which causes a level of interference higher than a limit to be defined by the Conference and which has not secured all the necessary agreements during the Conference; this limit might be:

- a) a usable field strength level of the assignment concerned;
- b) a nuisance field strength level;
- c) the average usable field strength level, increased by a value to be defined by the Conference."

The Technical Working Group of the Plenary is requested to establish the type of level (a, b or c) and the corresponding limit value to be used to settle unresolved cases during and after the Conference.

This value may vary according to the planning area.

Dr. I. STOJANOVIĆ  
Chairman of Committee 4

# REGIONAL BROADCASTING CONFERENCE

Document 150-E

27 November 1984

(SECOND SESSION)

GENEVA, 1984

LIST OF DOCUMENTS

(101 - 150)

PL = Plenary  
C = Committee  
TWG = Technical Working  
Group of the  
Plenary

No.	Origin	Title	Destination
101	SG	Information Notice by the IFRB - errors in the calculation of Interference Broadcasting versus Aeronautical Radionavigation	-
102	F	Draft Resolution concerning a proposal for modification of Appendix 8 to the Radio Regulations : maximum spurious emission power levels in the band 108 - 136 MHz	TWG
103	PL/C	First and final Report of Sub-Working Group PL/C	TWG
104 + Add.1	SG	Legal analysis, opinion and advice concerning the partial abrogation of the 1961 Stockholm and the 1963 Geneva Regional Agreements and their annexed Plans by the New Agreement and Associated Plan and other, possible alternative solutions	PL, C.5
105 + Corr.1	WG/4A	First Report of Planning Group 4A to Committee 4	C.4
106	TWG	Fourth Report by the Chairman of the Technical Working Group of the Plenary	PL
107	SG	Final Acts of the Conference	C.3
108 + Corr.1	TWG	Fifth Report by the Chairman of the Technical Working Group of the Plenary	PL
109	SG	Reference List of Sound Broadcasting (BC) and Television (BT) Stations	C.4
110	WG/C.2	Second Report of the Working Group of Committee 2	C.2
111	PL	Minutes of the fifth Plenary Meeting	PL

For reasons of economy, this document is printed in a limited number of copies. Participants are therefore kindly asked to bring their copies to the meeting since no others can be made available.



No.	Origin	Title	Destination
112 + Corr.1	C.4	Summary Record of the fifth meeting of Committee 4	C.4
113	WG/5A	Note from the Chairman of Working Group 5A to the Chairman of the Technical Working Group of the Plenary	TWG
114	Chairman	Note by the Chairman of the Conference (letter from the USSR Mission concerning delegates from West Berlin)	-
115	SG	Position of the conference accounts at 15 November 1984	C.3
116	C.4	First series of texts from Committee 4 to the Editorial Committee	C.6
117	Chairman	Note by the Chairman of the Conference (letter from the Delegation of the GDR concerning delegates from West Berlin)	-
118	AUT	Field strength limits which might be taken into consideration for determining when coordination is required in the case of a proposed modification to the Plan	C.5
119	C.4	Working methods in the Planning Groups	C.4
120	F	Note by the French Delegation concerning the representation of the Principality of Andorra	-
121	C.5	Summary Record of the fourth meeting of Committee 5	C.5
122	S	Procedure to protect stations of the aeronautical radionavigation service in the band 108 - 117.975 MHz	C.5
123	TWG	Note from the Chairman of the Technical Working Group of the Plenary to the Chairman of Working Group 5A	WG/5A
124	C.3	Summary Record of the second meeting of Committee 3	C.3
125	C.6	B.1	PL

No.	Origin	Title	Destination
126	EGY	Planning FM transmitters on the borders of warm seas	C.4
127	SG	Results of the compatibility between aeronautical radionavigation services and FM broadcasting services - Explanation of column headings	PL
128	SG	Information Note concerning the symbol for Burkina Faso	-
129(Rev.1)	C.6	B.2	PL
130	I	Procedure to protect stations of the aeronautical radionavigation service in the band 108 - 117.975 MHz	C.5
131	TWG	Note from the Chairman of the Technical Working Group of the Plenary to the Chairman of Working Group 5A	WG/5A
132	Chairman	Note by the Chairman of the Conference (letter from the French Delegation concerning delegates from West Berlin)	-
133	WG/4B	Note by the Chairman of Planning Group 4B to Committee 4	C.4
134	Chairman	Note by the Chairman of the Conference (letter from the Delegation of the Federal Republic of Germany concerning delegates from West Berlin)	-
135	C.5	Summary Record of the fifth meeting of Committee 5	C.5
136	C.4	Summary Record of the sixth meeting of Committee 4	C.4
137	SG	Note by the IFRB concerning "Time periods for the modifications to the Plan"	PL
138	Chairman	Comments on problems relating to incompatibilities with aeronautical radionavigation service	PL

No.	Origin	Title	Destination
139	WG/5A	First Report of Working Group 5A	C.5
140(Rov.1)	ISR	Scales for the quick evaluation of E <sub>u</sub> for maritime paths in the eastern Mediterranean	C.4
141	C.5	Summary Record of the sixth meeting of Committee 5	C.5
142	PL	Minutes of the sixth Plenary Meeting	PL
143	PL	Minutes of the seventh Plenary Meeting	PL
144	WG/4A	Note by the Chairman of Working Group 4a - Additional requirements	C.4
145	WG/5B	First Report of Working Group 5B	C.5
146	WG/4D	Note from the Chairman of Planning Group 4D to the Chairman of Committee 4	C.4
147	C.4	Note by the Chairman of Committee 4 - Additional columns for the Plan	C.4
148	4 ad hoc	Report by the Chairman of ad hoc Group 4 to Committee 4	C.4
149	C.4	Note from Committee 4 to the Technical Working Group of the Plenary	TWG
150	SG	List of documents	-

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 151-E  
27 November 1984  
Original: French

COMMITTEE 5

NOTE FROM COMMITTEE 4

TO COMMITTEE 5

At its seventh meeting on Tuesday, 27 November 1984, Committee 4 took the following decisions on points 1 and 2 below:

1. The Plan will contain the following assignments:
  - a) those to which no objection has been raised during the Conference;
  - b) those to which objections have been raised but which have been agreed upon by all the administrations concerned during the Conference;
  - c) those to which objections have been raised but which do not cause interference in excess of the limit to be defined by the Technical Group of the Plenary (see Document 149);
  - d) those to sound broadcasting stations, contained in the reference list, as published in IFRB Circular-letter No. 575 and amended in Annex 6 to IFRB Circular-letter No. 506 with characteristics in accordance with those given in the reference list.
2. Cases unresolved during the Conference will be entered in an Appendix to or list separate from the Plan with a reference to the administrations with which coordination is still required and mention of the type of station concerned, namely:
  - broadcasting station;
  - aeronautical radionavigation station;
  - television station in accordance with the Stockholm Plan of 1961.
3. Status of unresolved cases

Unresolved cases should have the same status as assignments in the Plan and should be protected during implementation of the Plan modification procedure (Article 4 of the Agreement):

- a) until they are resolved, without any time limit;
- b) until a date subsequent to the date of entry into force of the Final Acts of the Conference; in special cases, an extension of this time limit may be allowed to administrations;
- c) until the date of entry into force of the Final Acts of the Conference; an extension of this time limit may be allowed to administrations in special cases.



[ After that date, the [Appendix] [separate list] will be deleted from the Agreement and any assignments thus cancelled will be treated as amendments or additions to the Plan in accordance with Article 4 of the Agreement. ]

5. Opinions were divided between a) and c) in point 3. Committee 5 is requested to take a decision in this connection and to establish appropriate procedures to reflect the principles set out in this document.

Dr. I. STOJANOVIĆ  
Chairman of Committee 4

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 152-E  
27 November 1984  
Original: English

COMMITTEE 5

United Kingdom

PROCEDURE RELATING TO MOBILE SERVICES  
IN THE BAND 87.5 - 88 MHz

The Regional Administrative Conference for the Planning of VHF Sound Broadcasting (Region 1 and part of Region 3) (Geneva, 1984),

noting

that the Conference was requested to adopt transitional procedures for bringing into service the assignments in the Plan in order to enable normal operation of stations of another service to which the band 87.5 - 88 MHz is also allocated in accordance with Radio Regulation 581, under the conditions specified therein;

considering

- a) that the planning of sound broadcasting stations was made without taking account of existing and planned stations of the permitted services, to which the band 87.5 - 88 MHz is also allocated;
- b) that the bringing into use of broadcasting stations may cause interference to stations pertaining to the permitted service and vice versa;

resolves

- 1. that those existing broadcasting stations previously coordinated and operating in accordance with the Stockholm Agreement (1961) shall take no account of permitted land mobile services operating in the band 87.5 - 88 MHz;
- 2. except as provided in resolves 1 above, the FM Broadcasting Plan, Geneva 1984, shall be implemented in the frequency band 87.5 - 88 MHz in such a way that any necessary adjustments to the existing mobile stations in this band can be made without detriment to their continuing normal provision of an operational service;
- 3. protection of the mobile services in the band 87.5 - 88 MHz shall not hinder the full implementation of the FM Broadcasting Plan at a date to be agreed between affected administrations, but not later than 31 December 1990;
- 4. the implementation of the band for the FM broadcasting service shall be based on bilateral or multilateral agreements between administrations concerned.

# REGIONAL BROADCASTING CONFERENCE

Document No. 153-E

27 November 1984

(SECOND SESSION)

GENEVA, 1984

R.1

PLENARY MEETING

First series of texts submitted by the  
Editorial Committee to the Plenary Meeting

The following texts are submitted to the Plenary Meeting for second reading:

<u>Source</u>	<u>Document No.</u>	<u>Contents</u>
B.1	125	Recommendation No. GTECH/1
		Recommendation No. GTECH/2
		Recommendation No. GTECH/3

H. BERTHOD  
Chairman of Committee 6

Annex: 4 pages

## RECOMMENDATION No. GTECH/1

Relating to the Continuation of Studies on Compatibility  
Between the Aeronautical Radionavigation Service  
in the Band 108 - 117.975 MHz and the  
FM Sound Broadcasting Stations in the  
Band 87.5 - 108 MHz

The Regional Administrative Conference for the Planning of VHF Sound Broadcasting (Region 1 and part of Region 3) (Geneva, 1984).

considering

- a) that this Conference has prepared a frequency plan for sound broadcasting stations, taking account of compatibility with the aeronautical radionavigation service, in accordance with Recommendation No. 704 of the World Administrative Radio Conference (Geneva, 1979);
- b) that for these purposes the Conference has established protection criteria based on the report of its first session held in 1982, on recent CCIR studies and on proposals submitted by administrations to its second session;
- c) that the ICAO has agreed standards, to come into effect on 1 January 1998, relating to the immunity characteristics of future ILS and VOR receivers and incorporating the basic requirements for intermodulation and desensitization;
- d) that the aeronautical radionavigation service is a safety service, and ILS and VOR facilities provide guidance to aircraft at critical points in their operation;

noting

that the Conference was unable to reach final conclusions on some of the compatibility criteria and that refinements of these criteria would in some cases facilitate the implementation and modification of the Plan;

invites the CCIR

to continue to study compatibility between the aeronautical radionavigation service and the sound broadcasting stations in the bands concerned, and in particular:

- a) protection ratio values for future airborne receivers against spurious emissions from broadcasting stations (referred to as A1 type of interference) in cases where the frequency of the spurious emissions does not coincide with the aeronautical frequency;
- b) protection ratio values for present and future aeronautical receivers against out-of-band emissions from broadcasting stations (referred to as A2 type of interference);
- c) criteria for prediction of third-order intermodulation (referred to as B1 type of interference) generated in airborne receivers by three unwanted signals, for receivers meeting the ICAO standard for two-signal intermodulation for future receivers;
- d) the effect of sinusoidal modulation of the broadcasting transmitters during test and line-up and any precautions or procedures to be adopted at broadcasting stations in order to maintain the agreed protection of the aeronautical radionavigation service;

requests the ICAO

to continue to study these problems and communicate the results of its studies to the CCIR;

instructs the Secretary-General

to communicate this Recommendation to the ICAO;

recommends administrations

to participate actively in these studies and provide the CCIR with expert guidance on this matter.

## RECOMMENDATION No. GTECH/2

**Relating to the Continuation of Studies on  
Compatibility Between the Aeronautical Mobile (R) Service  
in the Band 117.975 - 137 MHz and the FM Sound Broadcasting  
Stations in the Band 87.5 - 108 MHz**

The Regional Administrative Conference for the Planning of VHF Sound Broadcasting (Region 1 and part of Region 3) (Geneva, 1984).

considering

- a) that VHF air/ground communications perform a vital rôle in the operation and safety of aircraft, which could be prejudiced by interference;
- b) that compatibility problems have arisen in various parts of the world between the aeronautical mobile (R) service in the band 117.975 - 137 MHz and the FM sound broadcasting stations in the band 87.5 - 108 MHz;
- c) that this Conference did not consider all aspects of compatibility between these two services in the preparation of the broadcasting Plan;
- d) that the CCIR and the ICAO have studied the problem and the CCIR has recommended technical criteria which can be used by administrations for coordination between the services concerned;
- e) that the ICAO has agreed standards, to come into effect on 1 January 1998, relating to the immunity characteristics of future aeronautical VHF receivers and incorporating the basic requirements for intermodulation and desensitization;

invites the CCIR

to continue to study compatibility between these two services from the standpoint of possible interference to the aeronautical mobile service;

requests the ICAO

to continue to study these problems and communicate the results of its studies to the CCIR;

instructs the Secretary-General

to communicate this Recommendation to the ICAO;

recommends administrations

to participate actively in these studies and provide the CCIR with expert guidance on this matter.

## RECOMMENDATION No. GTECH/3

Relating to a Proposal for the Modification of Appendix 8  
to the Radio Regulations.Maximum Permitted Spurious Emission Power Levels  
Radiated in the Band 108 - 137 MHz by Sound Broadcasting Stations  
Operating in the Band 87.5 - 108 MHz

The Regional Administrative Conference for the Planning of VHF Sound Broadcasting (Region 1 and part of Region 3) (Geneva, 1984).

considering

- a) that the Conference, having taken into account the relevant CCIR contributions, has reviewed some of the technical criteria used for planning the band 87.5 - 108 MHz, and in particular the maximum obtainable suppression of spurious emissions in the band 108 - 137 MHz from broadcasting stations;
- b) that, on the basis of the CCIR's conclusions, the Conference has adopted maximum permitted spurious emission power levels in the band 108 - 137 MHz which are lower than those specified for that band in Appendix 8 to the Radio Regulations;
- c) that the lower values mentioned in b) above have been used in the planning process to ensure protection of the aeronautical radionavigation service in the band 108 - 117.975 MHz;
- d) that the CCIR and ICAO have been requested to continue to study compatibility between the aeronautical mobile (R) service in the band 117.975 - 137 MHz and the FM sound broadcasting stations in the band 87.5 - 108 MHz (Recommendation GTECH/2) taking into account the spurious emission power levels mentioned in b) above;

requests the Administrative Council

to place on the agenda of the next competent conference the question of modifying Appendix 8 to the Radio Regulations with a view to reducing the maximum permitted spurious emission power levels radiated in the band 108 - 137 MHz by broadcasting stations operating in the band 87.5 - 108 MHz.

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document No. 154-E  
27 November 1984  
original: French

PLENARY MEETING

Note by the Secretary of the Conference

At the request of the IFRB, I transmit herewith the Annex entitled:

"Information included in the columns of the version of the Plan which  
will be distributed on 4 December 1984"

J. JIPGUEP  
Secretary of the Conference

Annexe: 1



ANNEX 1

**Frequency Assignment Plan for FM Sound Broadcasting Stations  
in Region 1 and Part of Region 3 in the Band 87.5-108 MHz**

Information included in the columns of the version of the Plan  
which will be published on Tuesday, 4 December 1984

Column

1. IFRB serial number
2. Assigned frequency (MHz)
3. Country symbol
4. Name of transmitting station
5. Symbol of the geographical area in which the station is located  
(see Table No. 1 of the Preface to the International Frequency List)
6. Geographical coordinates, in degrees and minutes, of the transmitting antenna site
  - 6.1. Longitude (in degrees and minutes)
  - 6.2. Latitude (in degrees and minutes)
7. Altitude of site of transmitting antenna above sea level (m)
8. Polarization (H, V or M)
9. System (1, 2, 3, 4 or 5)\*
10. Total effective radiated power (dBW)
11. Maximum effective radiated power of the horizontally polarized component (dBW)
12. Maximum effective radiated power of the vertically polarized component (dBW)
13. Directivity of antenna (ND or D)
14. Maximum effective antenna height (m)
15. Sectors or directions of restricted e.r.p. (in degrees)
  - 15.1. Sector No. 1
  - 15.2. Sector No. 2
  - 15.3. Sector No. 3
  - 15.4. Sector No. 4
16. Attenuation in the sector concerned (dB)
  - 16.1. Attenuation in sector No. 1
  - 16.2. Attenuation in sector No. 2
  - 16.3. Attenuation in sector No. 3
  - 16.4. Attenuation in sector No. 4
17. Remarks

- 18.\*\* Azimuthal variation of the effective antenna height
- 19.\*\* Azimuthal variation of the effective radiated power of  
the horizontal component and the vertical component in the  
horizontal plane

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\* See [No. ....] of [Annex No. ....] of the Agreement

\*\* These columns will be published as microfiches to be distributed with  
the printed Plan comprising columns 1 to 17.

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 155(Rev.1)-E

30 November 1984

Original: English

Source: Report to the second session  
Documents 61, 74 and DT/50

COMMITTEE 5

## FIRST REPORT OF WORKING GROUP 5C

The annex contains texts proposed for Chapters 1 to 4 of Annex 2 to the Final Acts.

The attention of Committee 5 should be drawn to the fact that the Note 1 on page 13 of Document DT/50, according to the opinion of Working Group 5C, should be inserted in an appropriate place in the Article of the Agreement concerning the modifications of the Plan.

J. RUTKOWSKI

Chairman of the Working Group

Annex: 1

ANNEX

ANNEX 2 TO THE FINAL ACTS

Technical data used for the preparation of the Plan

CHAPTER 1

DEFINITIONS

The following definitions supplement those contained in the Convention and in the Radio Regulations.

1.1 Coverage area

The area within which the field strength of the wanted transmitter is equal to or greater than the usable field strength.

In this area the protection against interference is provided for 99% of time.

Note: The field strength of the wanted transmitter is derived from the propagation curve relating to 50% of locations and for 50% of time.

1.2 Service area

The part of the coverage area in which the administration has the right to demand that the agreed protection conditions be provided.

1.3 Usable field strength ( $E_u$ )

**Minimum value of the field strength necessary to permit a desired reception quality, under specified receiving conditions, in the presence of natural and man-made noise and interference, either in an existing situation or as determined by agreements or frequency plans.**

*Note 1.* — The desired quality is determined in particular by the protection ratios against noise and interference and, in the case of fluctuating noise or interference, by the percentage of time during which the required quality must be ensured.

*Note 2.* — The receiving conditions include, amongst others:

- the type of transmission and frequency band used;
- the receiving equipment characteristics (antenna gain, receiver characteristics, siting);
- receiver operating conditions, particularly the geographical zone, the time and the season, or if the receiver is mobile, the local variations of the field strength due to propagation effects.

"Note 3: The usable field strength can be calculated by the simplified multiplication method<sup>1</sup>, or the power sum method<sup>2</sup>. For the application of the Article 4 procedure, the simplified multiplication method is used.

1.4      Nuisance field

The field strength of the interfering transmitter (at its pertinent e.r.p.) modified by the relevant protection ratio.

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<sup>1</sup> See Chapter 3, section 3.5.

<sup>2</sup> See CCIR Recommendation 499."

## CHAPTER 2

### PROPAGATION

#### 2.1 Propagation data for VHF broadcasting

##### 2.1.1 General

The propagation data given in this chapter were used for the planning of the broadcast service. They are based on CCIR Recommendation 370-4. They relate field strength to path length and the effective transmitting antenna height. They represent the field strength exceeded at 50% of locations for 50% and 1% of the time and apply to both horizontal and vertical polarization of the transmitting antenna.

The data are given for various types of areas and climates, namely, land, cold sea, warm sea and areas subject to extreme super-refractivity. The definition of these categories has to be based on statistical data and so is to a certain extent arbitrary, but experience indicates that the following distinctions are appropriate for the application of the data set out in this chapter.

##### Cold sea

Seas, oceans and other substantial bodies of water at latitudes greater than 23.5° North or South, but excluding the Mediterranean; the Black Sea, the Red Sea and the area extending from the Shatt-al-Arab to and including the Gulf of Oman.

##### Warm sea

Seas, oceans and other substantial bodies of water at latitudes less than 23.5° North or South, including the Mediterranean and the Black Sea.

##### Area of extreme super-refractivity

Seas, oceans and other substantial bodies of water in the area extending from the Shatt-al-Arab to and including the Gulf of Oman.

Note: During the Conference in bilateral and multilateral negotiations some administrations in the Eastern Mediterranean (East of 30°E) used the criteria described in section 2.3, and for the application of the 1% time curves, the sea area included also a coastal strip extending up to 50 km inland and for the Nile delta region (from 30°E to 32°E) a coastal strip extending up to 200 km inland.

## 2.1.2 Area subject to extreme super-refractivity

### 2.1.2.1 Oversea paths

For oversea path calculations for 50% of the time, Figure 2.2 has been used. For the application of the 1% time curves, the sea area included also a coastal strip extending up to 50 km inland.

For oversea paths in the area from the Shatt-al-Arab to and including the Gulf of Oman, calculations for propagation occurring for 1% of the time have been based on the following formulae :

$$\begin{array}{ll} E = 106.9 - 20 \log d & \text{for } 10 \leq d \leq 400 \\ E = 78.9 - 0.06 d & \text{for } d > 400 \end{array} \quad \left\{ \begin{array}{l} \text{where } d = \text{path length in km} \\ E = \text{field strength in dB}(\mu\text{V/m}) \end{array} \right.$$

### 2.1.2.2 Overland paths

For overland path calculations for 50% of the time, Figure 2.1 has been used. For overland path calculations for 1% of the time, Figure 2.3 has been used, but any coastal strip as defined in 2.1.2.1 has been treated as sea.

### 2.1.2.3 Mixed paths

For both 1% and 50% of the time mixed paths have been appraised according to the procedure set out in section 2.1.3.5.

## 2.1.3 Application of the curves

### 2.1.3.1 Time variability

The values of field strengths given in Figures 2.1 to 2.5, are those exceeded for 50% and 1% of the time. They are expressed in decibels relative to 1  $\mu\text{V/m}$  and correspond to an effective radiated power of 1 kW.

The 50% time curves have been used for the determination of coverage areas. The 50% and 1% time curves have been used for interference calculations for steady and tropospheric interference respectively.

### 2.1.3.2 Effective transmitter antenna height

The effective height of the transmitting antenna,  $h_1$ , is defined as its height over the average level of the ground between distances of 3 km and 15 km from the transmitter in the direction to the receiver. The height of the receiving antenna,  $h_2$ , has been assumed to be 10 m above local terrain.

The curves given in Figures 2.1 to 2.5 correspond to effective transmitter antenna heights,  $h_1$ , from 37.5 to 1,200 metres. For effective antenna heights,  $h_1$ , of 20 m and 10 m,  $h_1$ , additional curves can be derived from the 37.5 m curve by applying correction factors of -5 dB and -11 dB for distances up to 25 km, and 0 dB in both cases for distances in excess of 250 km, with linear interpolation for intermediate distances. For effective transmitter antenna heights,  $h_1$ , of less than 10 m, the values derived for 10 m have been used. For effective transmitter antenna heights,  $h_1$ , in excess of 1,200 m, the field strength at a distance of  $x$  km from the transmitter has been taken to be the same as the field strength given by the curve for an effective height of 300 m at a distance of  $(x + 70 - 4.1\sqrt{h_1})$  km.

As this extrapolation is only applicable to trans-horizon distances its use is limited to distances beyond  $x = (4.1\sqrt{h_1} + 70)$  km. For distances, between 100 km and  $x = (4.1\sqrt{h_1} + 70)$  km it is assumed that the field strength exceeds that for 1,200 m by the same amount as at  $x = (4.1\sqrt{h_1} + 70)$  km calculated in accordance with the above procedure. For smaller distances this increment has been determined by linear interpolation between 0 dB at 20 km and the height-dependent value at 100 km distance. This is subject to the condition that the free space field strength is not exceeded.

#### 2.1.3.3 Location variability

The curves given are representative for 50% of locations, the percentage which has been used for planning purposes.

#### 2.1.3.4 Terrain irregularity correction

The curves for propagation overland refer to the kind of irregular rolling terrain found in many parts of Region 1. No terrain irregularity correction has been taken into account in the analysis of the Plan.

Note: Some administrations, in bilateral or multilateral coordinations during the Conference, have taken account of actual path profiles.



### 2.1.3.5 Mixed land/sea path calculations

When the propagation path is partially over land and partially over sea, the following method has been used for interpolation between the appropriate land and sea curves.

Let

$E_{L, t}$  : field strength for land path equal in length to the mixed path for  $t\%$  of the time,

$E_{S, t}$  : field strength for sea path equal in length to the mixed path for  $t\%$  of the time,

$E_{M, t}$  : field strength for mixed path for  $t\%$  of the time,

$d_S$  : length of sea path,

$d_T$  : length of total path.

The field strength for the mixed path ( $E_{M, t}$ ) is then determined by using the formula :

$$E_{M, t} = E_{L, t} + \frac{d_S}{d_T} \left( E_{S, t} - E_{L, t} \right)$$

In the calculations of mixed paths a computerized approximation of the coastline has been employed. [It should be borne in mind that in some cases this gives rise to certain inaccuracies when compared to calculations done on the basis of the actual coastline.]

## 2.2 Propagation data for the aeronautical radionavigation service

In the compatibility calculations the free space propagation conditions have been used. The calculations have been limited to the test points of the aeronautical radionavigation station in line-of-sight from the broadcasting station, it being assumed that the effective Earth's radius is  $4/3$  of the actual radius.

2.3 During the Conference in bilateral and multilateral negotiations some administrations in the Eastern Mediterranean (East of 30°E) calculated the field strength for 1% of the time for oversea paths using the following formulae:

$$E = 106.9 - 20 \log d - 0.07 d \quad \text{for } 10 \leq d < 100$$

$$E = 99.9 - 20 \log d \quad \text{for } 100 \leq d \leq 568$$

$$E = 78.9 - 0.06 d \quad \text{for } d > 568$$

where  $d$  = path length  
in km

$E$  = field strength in  
dB( $\mu$ V/m)

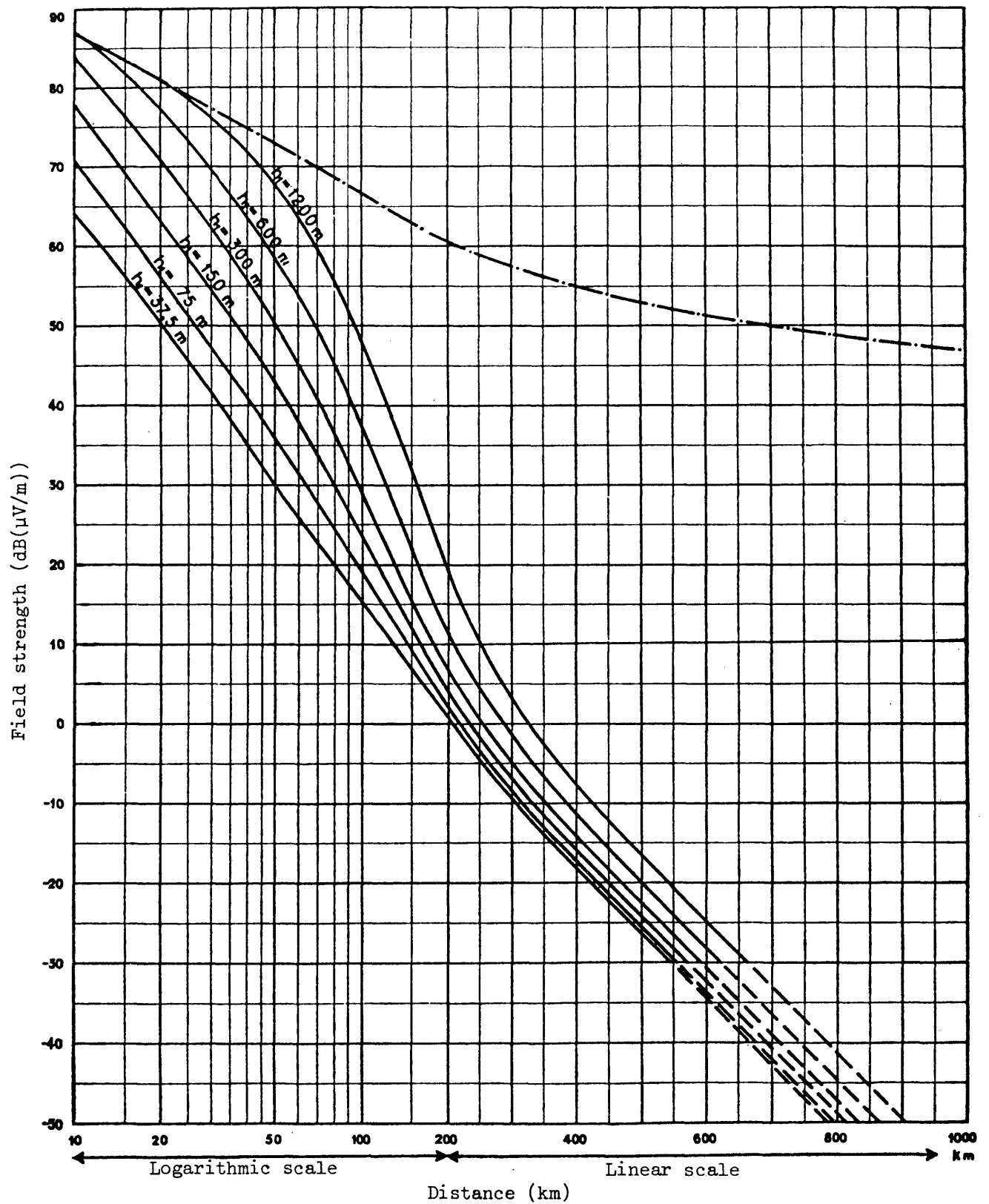


FIGURE 2.1

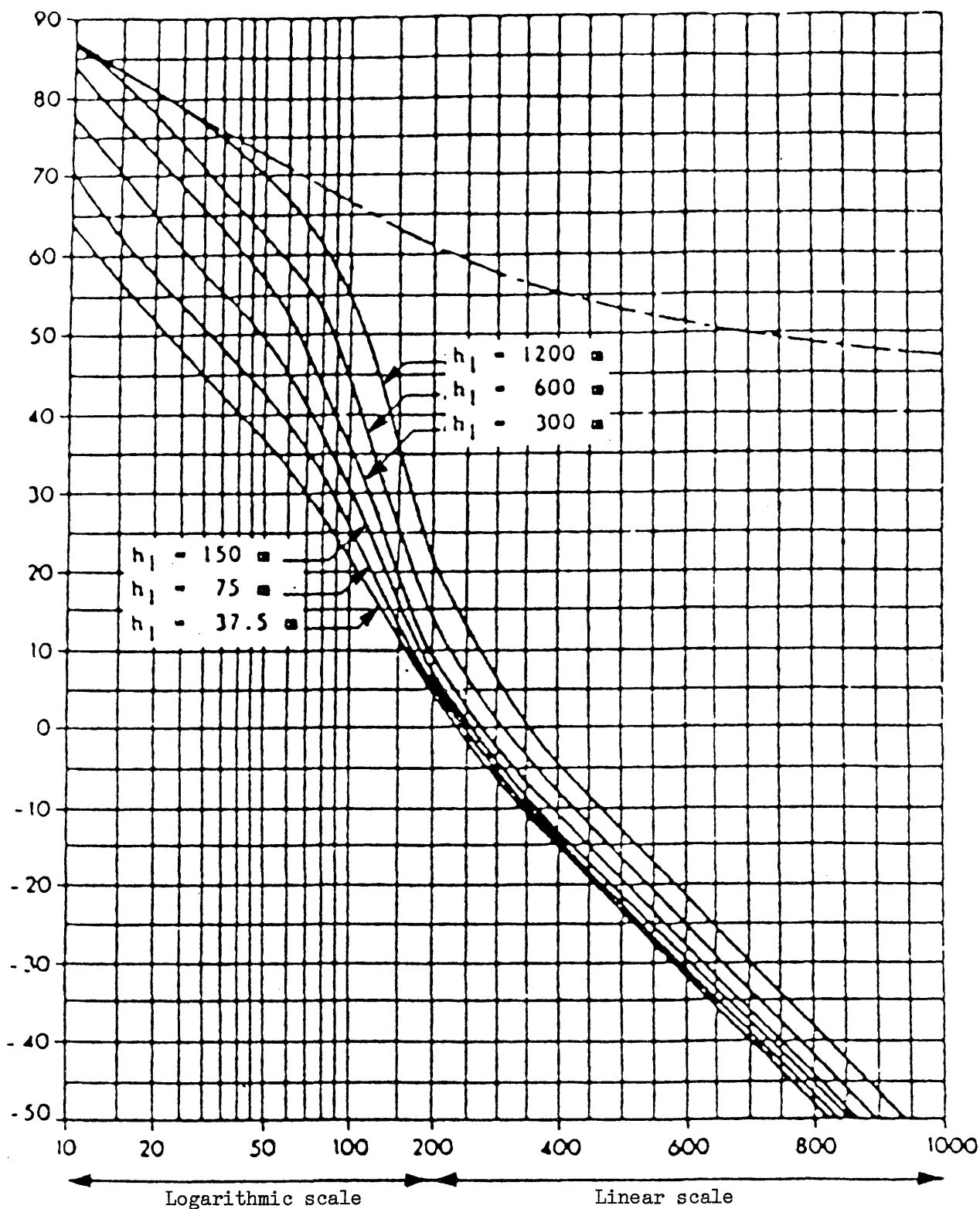
Field strength (dB(μV/m)) for 1 kW e.r.p.

Propagation over land

50% of the time; 50% of the locations;  $h_2 = 10$  m

--- Free space

PROPAGATION CURVES FOR THE BROADCASTING SERVICE



Distance (km)

FIGURE 2.2

Field strength (dB(μV/m)) for 1 kW e.r.p.

Propagation over sea

50% of the time; 50% of the locations;  $h_2 = 10$  m

--- Free space

PROPAGATION CURVES FOR THE BROADCASTING SERVICE

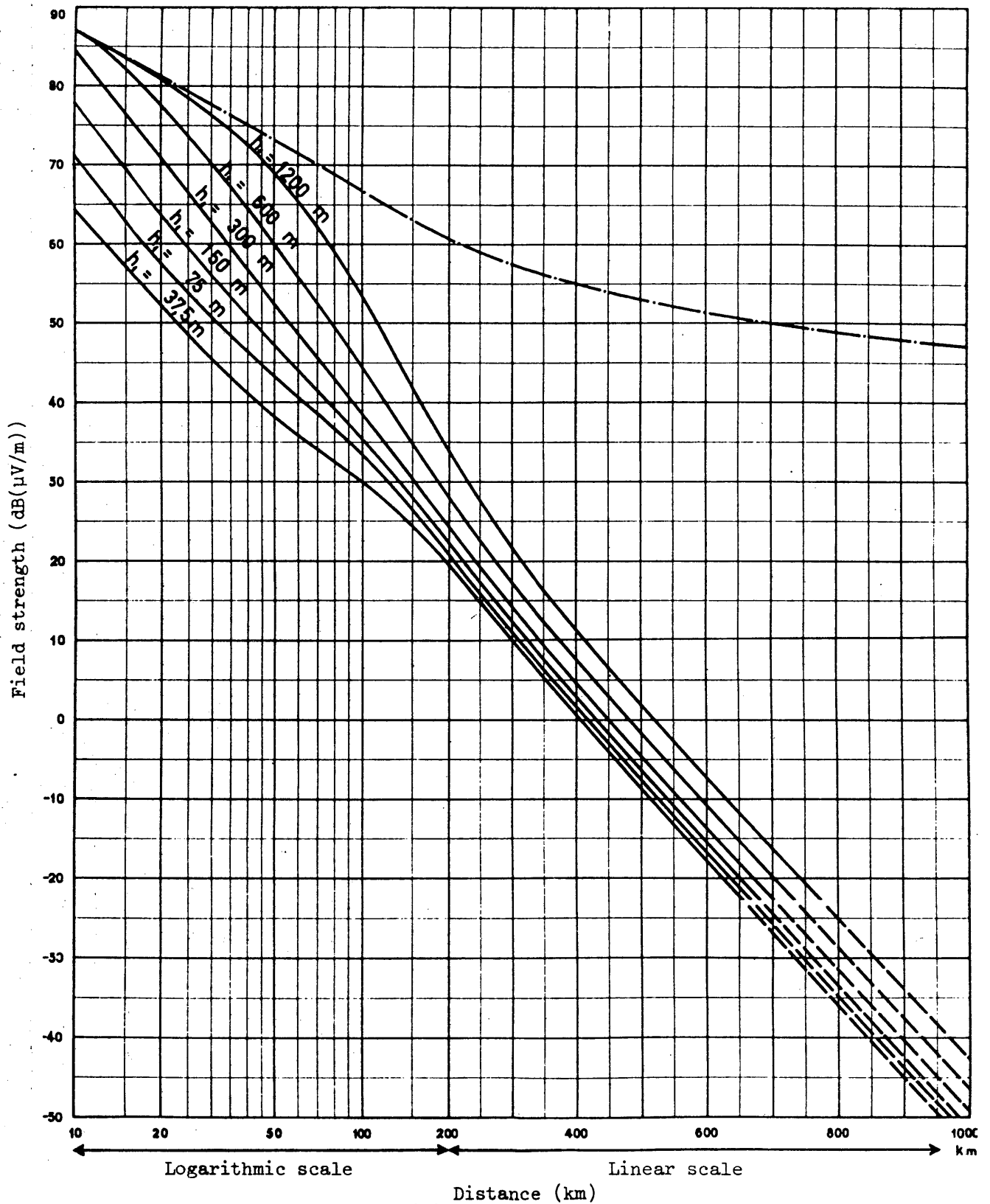


FIGURE 2.3

Field strength (dB(μV/m)) for 1 kW e.r.p.

Propagation over land  
1% of the time; 50% of the locations;  $h_2 = 10$  m  
-.-.-.- Free space

PROPAGATION CURVES FOR THE BROADCASTING SERVICE

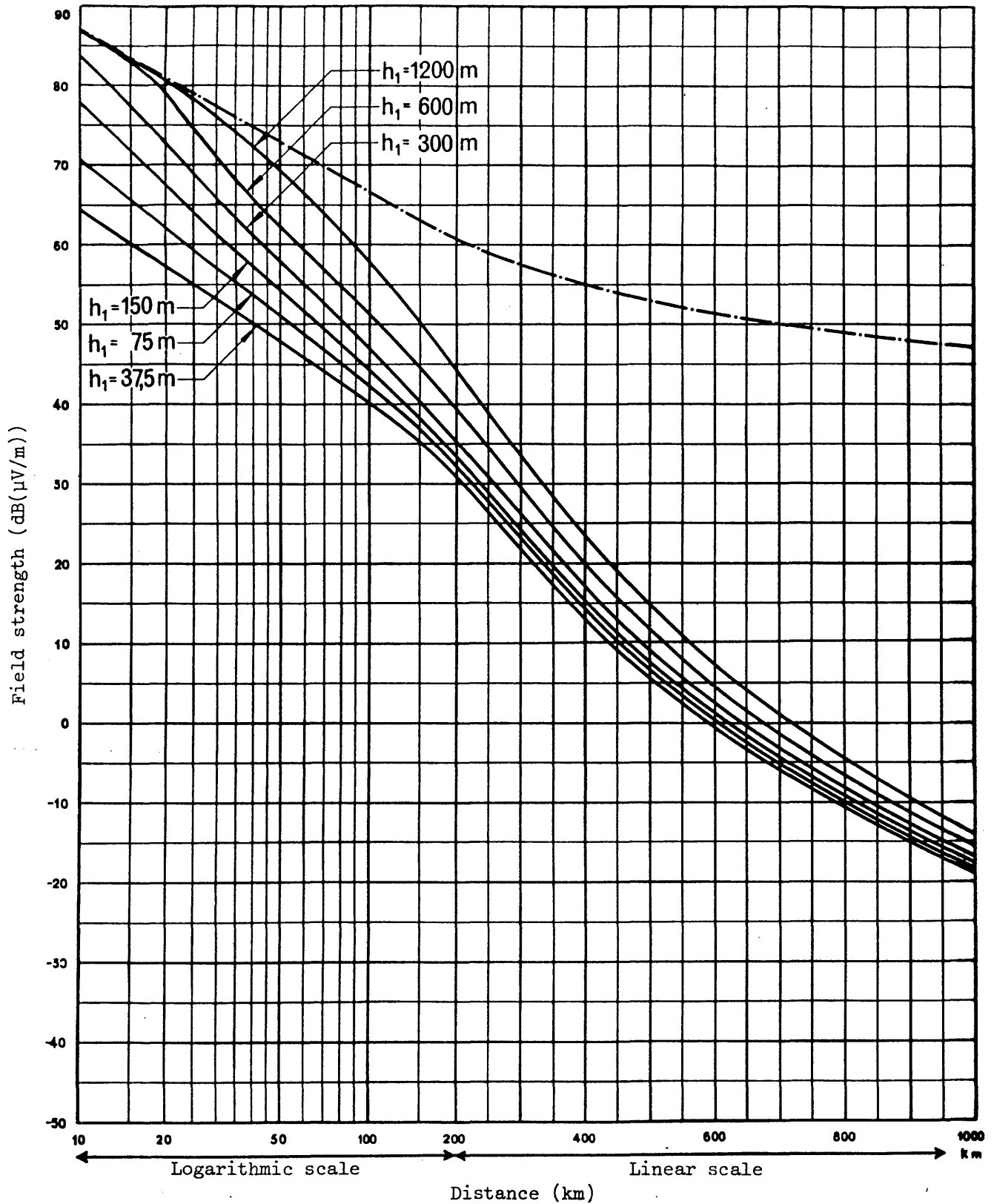


FIGURE 2.4

Field strength (dB( $\mu$ V/m)) for 1 kW e.r.p.

Propagation over cold sea  
1% of the time; 50% of the locations; h<sub>2</sub> = 10 m  
- - - - - Free space

PROPAGATION CURVES FOR THE BROADCASTING SERVICE

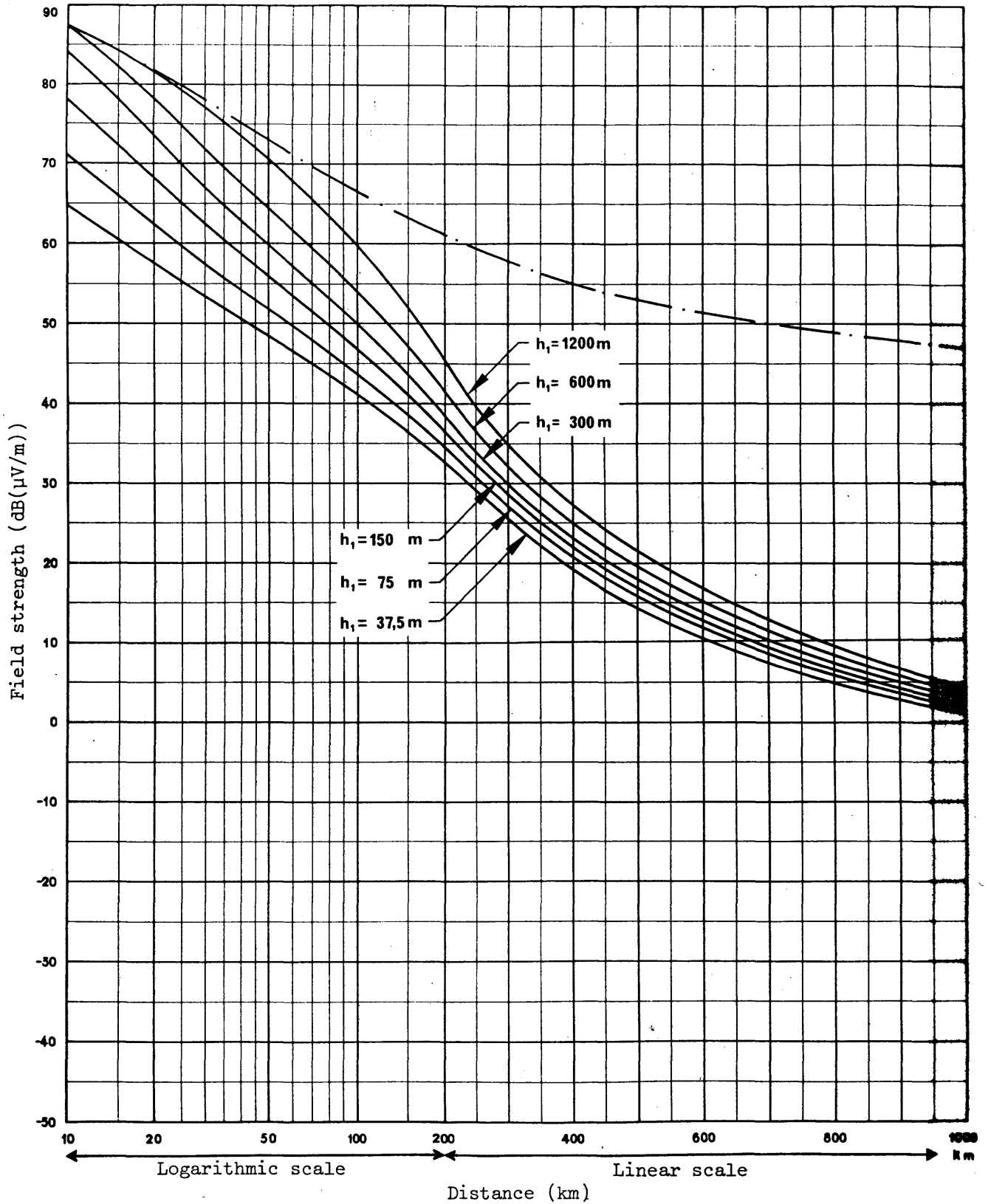


FIGURE 2.5

Field strength (dB(μV/m)) for 1 kW e.r.p.

Propagation over warm sea (excluding areas  
subject to extreme super-refractivity)  
1% of the time; 50% of the locations;  $h_2 = 10$  m  
-.-.- Free space

PROPAGATION CURVES FOR THE BROADCASTING SERVICE

CHAPTER 3

TECHNICAL STANDARDS AND TRANSMISSION CHARACTERISTICS  
FOR THE SOUND BROADCASTING SERVICE

3.1 Transmission systems

In planning, the following transmission systems have been used, as specified by the administrations when notifying their requirements:

System 1: Monophonic (maximum frequency deviation  $\pm 75$  kHz)

System 2: Monophonic (maximum frequency deviation  $\pm 50$  kHz)

System 3: Stereophonic, polar modulation system (maximum frequency deviation  $\pm 50$  kHz)

System 4: Stereophonic, pilot-tone system (maximum frequency deviation  $\pm 75$  kHz)

System 5: Stereophonic, pilot-tone system (maximum frequency deviation  $\pm 50$  kHz)

The system used is indicated in the Plan, Column 9, according to the above classification.

The addition of sub-carriers for the transmission of supplementary information<sup>1</sup> has been considered as being included in any of the five systems given above, provided that the maximum carrier frequency deviation is not exceeded and the protection required is not increased.

As an alternative, other systems having different characteristics (e.g. other pre-emphasis characteristics, digital modulation) may be used, provided that such use does neither cause greater interference nor demand higher protection than the reference system indicated in the Plan.

3.2 Channel spacing

A uniform channel spacing of 100 kHz has been adopted in principle for both monophonic and stereophonic emissions.

The nominal carrier frequencies are, in principle, integral multiples of 100 kHz.

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<sup>1</sup> See CCIR Recommendation 450.



### 3.3 Modulation standards

#### 3.3.1 Monophonic transmissions

The radio-frequency signal consists of a carrier, frequency modulated by the sound signal to be transmitted, with a maximum frequency deviation of  $\pm 75$  kHz or  $\pm 50$  kHz after pre-emphasis.

The pre-emphasis characteristic of the sound signal is identical to the admittance-frequency curve of a parallel resistance-capacitance circuit having a time constant of 50  $\mu$ s.

#### 3.3.2 Stereophonic transmissions

The radio-frequency signal consists of a carrier, frequency modulated by a baseband signal according to the specifications of the polar-modulation system or of the pilot-tone system. The maximum frequency deviation is  $\pm 50$  kHz for the polar-modulation system and  $\pm 75$  kHz or  $\pm 50$  kHz for the pilot-tone system.

The pre-emphasis characteristics of the sound signals M and S<sup>1</sup> are identical to the admittance-frequency curve of a parallel resistance-capacitance circuit having a time constant of 50  $\mu$ s.

### 3.4 Protection ratios

#### 3.4.1 Monophonic transmissions

The radio-frequency protection ratios required to give satisfactory monophonic reception for 99% of the time, in systems using a maximum frequency deviation of  $\pm 75$  kHz, are those given by the curve M2 in Figure 3.1. For steady interference a higher degree of protection is required; this is shown by the curve M1 in Figure 3.1. The protection ratios at important frequency spacing values are also given in Table 3.1.

The corresponding values for monophonic systems using a maximum frequency deviation of  $\pm 50$  kHz are given in Figure 3.2 and Table 3.2.

#### 3.4.2 Stereophonic transmissions

The radio-frequency protection ratios required to give satisfactory stereophonic reception for 99% of the time, for transmissions using the pilot-tone system and a maximum frequency deviation of  $\pm 75$  kHz, are given by curve S2 in Figure 3.1. For steady interference, a higher degree of protection is required; this is shown by curve S1 in Figure 3.1. The protection ratios at important frequency spacing values are also given in Table 3.1.

The radio-frequency protection ratios for satisfactory reception in the case of tropospheric interference (99% of time), or for steady interference for stereophonic transmissions using the pilot-tone system, or the polar modulation system with a maximum frequency deviation of  $\pm 50$  kHz are given by Table 3.2 and Figure 3.2.

---

<sup>1</sup> M and S are the sum and difference signals, respectively; for further information see CCIR Recommendation 450.

The radio-frequency protection ratios for satisfactory stereophonic reception in the case of tropospheric interference (99% of time), or for steady interference where the wanted and interfering transmitters use different maximum frequency deviations, are given in Table 3.3.

The protection ratios for stereophonic broadcasting assume the use of a low-pass filter following the frequency-modulation demodulator in the receiver designed to reduce interference and noise at frequencies greater than 53 kHz in the pilot-tone system and greater than 46.25 kHz in the polar-modulation system. Without such a filter or an equivalent arrangement in the receiver, the protection-ratio curves for stereophonic broadcasting cannot be met, and significant interference from transmissions in adjacent or nearby channels is possible.

Note: The protection ratios for steady interference provide approximately 50 dB signal-to-noise ratio. (Weighted quasi-peak measurement according to Recommendation 468 of the CCIR, with a reference signal at maximum frequency deviation.)<sup>1</sup>

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<sup>1</sup> For further information see CCIR Report 796.

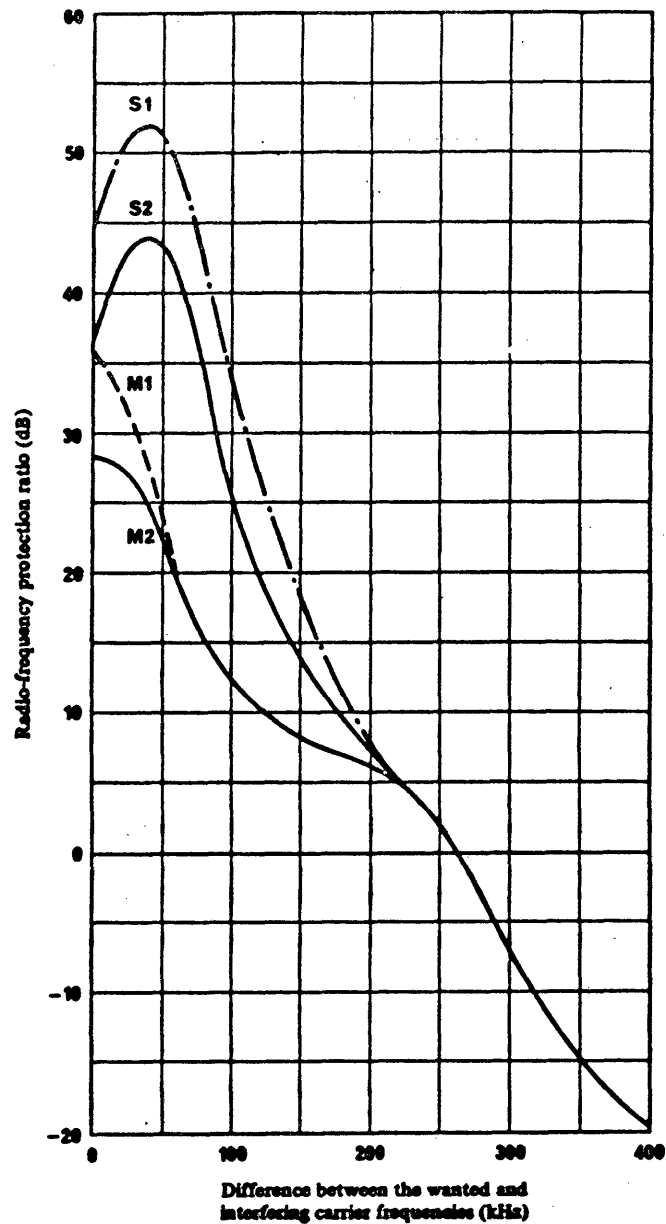


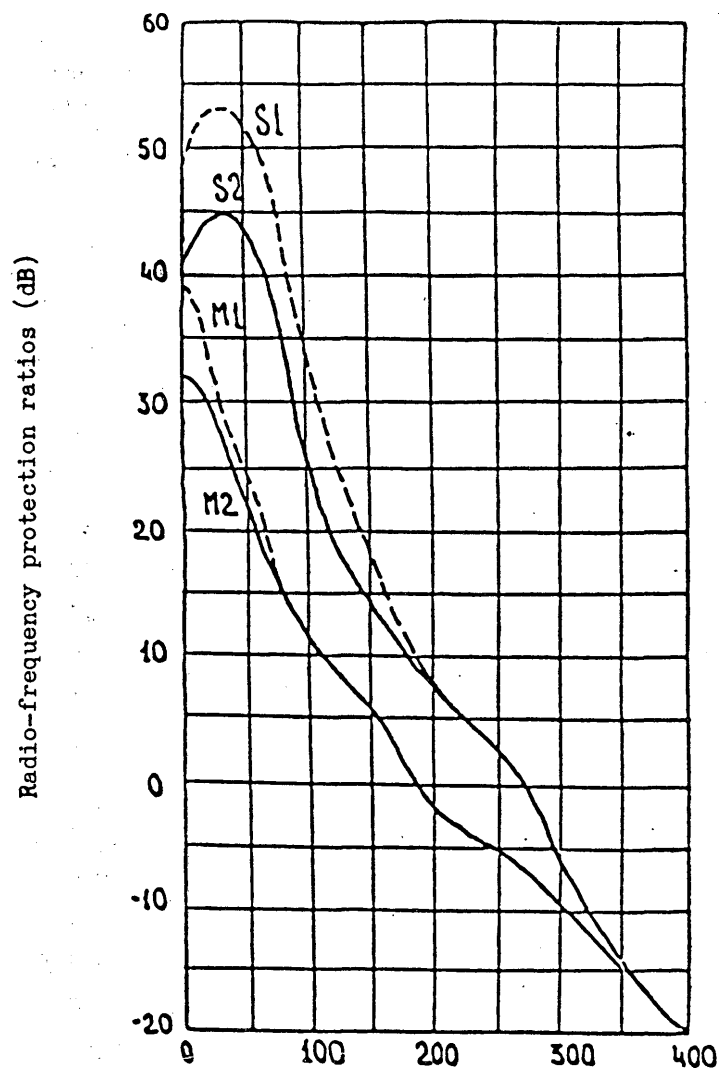
FIGURE 3.1

Radio-frequency protection ratio required by broadcasting services  
in band 8 (VHF) at frequencies between 87.5 MHz and 108 MHz  
using a maximum frequency deviation of  $\pm 75$  kHz

- Curve M1 : monophonic broadcasting; steady interference
- Curve M2 : monophonic broadcasting; tropospheric interference  
(protection for 99% of the time)
- Curve S1 : stereophonic broadcasting; steady interference
- Curve S2 : stereophonic broadcasting; tropospheric interference  
(protection for 99% of the time)

TABLE 3.1

Frequency spacing, (kHz)	Radio-frequency protection ratio (dB) using a maximum frequency deviation $\pm 75$ kHz			
	Monophonic		Stereophonic	
	Steady interference	Tropospheric interference	Steady interference	Tropospheric interference
0	36	28	45	37
25	31	27	51	43
50	24	22	51	43
75	16	16	45	37
100	12	12	33	25
150	8	8	18	14
200	6	6	7	7
250	2	2	2	2
300	- 7	- 7	- 7	- 7
350	-15	-15	-15	-15
400	-20	-20	-20	-20



Difference between wanted and interfering carrier frequencies (kHz)

FIGURE 3.2

Radio-frequency protection ratios required by broadcasting  
services in band 8 (VHF) using a maximum  
frequency deviation of  $\pm 50$  kHz

Curve M1 : Monophonic broadcasting, steady interference

Curve M2 : Monophonic broadcasting, tropospheric interference  
(99% of the time)

Curve S1 : Stereophonic broadcasting, steady interference

Curve S2 : Stereophonic broadcasting, tropospheric interference  
(99% of the time)

TABLE 3.2

Frequency spacing (kHz)	Radio-frequency protection ratios (dB) using a maximum frequency deviation of $\pm 50$ kHz			
	Monophonic		Stereophonic	
	Steady interference	Tropospheric interference	Steady interference	Tropospheric interference
0	39	32	49	41
25	32	28	53	45
50	24	22	51	43
75	15	15	45	37
100	12	12	33	25
125	7.5	7.5	25	18
150	6	6	18	14
175	2	2	12	11
200	-2.5	-2.5	7	7
225	-3.5	-3.5	5	5
250	-6	-6	2	2
275	-7.5	-7.5	0	0
300	-10	-10	-7	-7
325	-12	-12	-10	-10
350	-15	-15	-15	-15
375	-17.5	-17.5	-17.5	-17.5
400	-20	-20	-20	-20

TABLE 3.3

Frequency spacing (kHz)	Maximum frequency deviation : wanted transmitter $\pm 50$ kHz interfering transmitter $\pm 75$ kHz		Maximum frequency deviation : wanted transmitter $\pm 75$ kHz interfering transmitter $\pm 50$ kHz	
	Radio-frequency protection ratios (dB) stereophonic		Radio-frequency protection ratios (dB) stereophonic	
	Steady interference	Tropospheric interference	Steady interference	Tropospheric interference
0	49	41	45	37
25	53	45	51	43
50	51	43	51	43
75	45	37	45	37
100	33	25	33	25
125	25	18	24.5	18
150	18	14	18	14
175	12	11	11	10
200	7	7	7	7
225	5	5	4.5	4.5
250	2	2	2	2
275	0	0	-2	-2
300	-7	-7	-7	-7
325	-10	-10	-11.5	-11.5
350	-15	-15	-15	-15
375	-17.5	-17.5	-17.5	-17.5
400	-20	-20	-20	-20

### 3.5 Calculation of nuisance field

To apply the protection-ratio curves of Figure 3.1 it is necessary to determine whether, in the particular circumstances, the interference is to be regarded as steady or tropospheric<sup>1</sup>. A suitable criterion for this is provided by the concept of "nuisance field" which is the field strength of the interfering transmitter (at its pertinent e.r.p.) modified by the relevant protection ratio.

Thus, the nuisance field for steady interference is given by the formula

$$E_t = P + E(50,50) + A_s$$

and the nuisance field for tropospheric interference is given by the formula

$$E_t = P + E(50,T) + A_t$$

where

- P : e.r.p. (dB(1 kW)) of the interfering transmitter;  
A : radio-frequency protection ratio (dB);  
E(50,T) : field strength (dB(μV/m)) of the interfering transmitter, normalized to 1 kW, and exceeded during T% of the time,

and where indices s and t indicate steady or tropospheric interference respectively.

The protection-ratio curve for steady interference is applicable when the resulting nuisance field is stronger than that resulting from tropospheric interference.

i.e.  $E_s \geq E_t$

This means that  $A_s$  should be used in all cases when :

$$E(50,50) + A_s \geq E(50,T) + A_t.$$

### 3.6 Minimum usable field strength

The planning has been based on the following median values of the minimum usable field strength (measured 10 m above ground level):

- stereophonic service: 54 dB(μV/m) in rural areas;
- monophonic service: 48 dB(μV/m) in rural areas.

These values apply for systems with a maximum frequency deviation of  $\pm 50$  kHz or  $\pm 75$  kHz.

### 3.7 Maximum radiated power

No values for maximum power limits have been specified.

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<sup>1</sup> For further information see CCIR Recommendation 412.



### 3.8 Characteristics of transmitting and receiving antennas - polarization

#### 3.8.1 Transmitting antennas

The maximum effective radiated power and, in the case of directional antennas, the azimuth(s) relative to true north together with the azimuths of the -3 dB points anti-clockwise and clockwise respectively from the azimuth of the maximum, have been indicated in accordance with Appendix 1 of the Radio Regulations (section D, column 9).

The attenuation (dB) with respect to the maximum value of the effective radiated power has been specified at  $10^\circ$  intervals in a clockwise direction starting at true north. Where it has not been possible to provide information in this detail, administrations have provided, if possible, the values at  $30^\circ$  intervals in a clockwise direction starting at true north.

In the case of mixed polarized transmissions the effective radiated powers and radiation patterns of the horizontally and vertically polarized components have been specified separately.

#### 3.8.2 Receiving antennas

For monophonic services an omnidirectional receiving antenna was assumed. The directivity curve of Figure 3.3<sup>1</sup> has been used for compatibility calculations between sound and television broadcasting stations. In the computer analysis of the Plan, during the conference, no account was taken of receiving antenna directivity; since the usable field strength was calculated at the transmitter site. The antenna has been assumed to be at a height of 10 m above ground.

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<sup>1</sup> For further information see CCIR Recommendation 599.

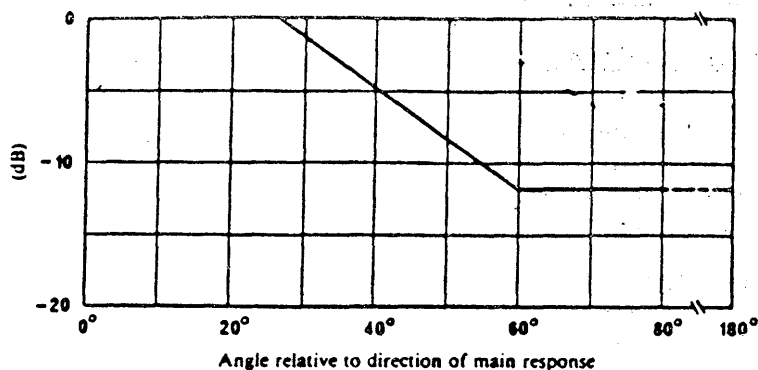


FIGURE 3.3

Discrimination obtained by the use of  
directional receiving antennas

Note 1 : It is considered that the discrimination shown will be available at the majority of antenna locations in built-up areas. At clear sites in open country, slightly higher values will be obtained.

Note 2 : The curve in Figure 3.3 is valid for signals of vertical or horizontal polarization, when both the wanted and the unwanted signals have the same polarization.

### 3.8.3 Polarization

Administrations have been free to choose which polarizations are to be used in their countries<sup>1</sup>.

Polarization discrimination has not been taken into account in the planning procedure except in specific cases with the agreement of affected administrations. In such cases a value of 10 dB for orthogonal polarization discrimination has been used.

### 3.9 Receiver sensitivity and selectivity

Receiver sensitivity and selectivity have been taken into account when specifying the values of the minimum usable field strength and the protection ratios.

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<sup>1</sup> For further information see CCIR Report 464.

## CHAPTER 4

### DETERMINATION OF THE USABLE FIELD STRENGTH BY THE SIMPLIFIED MULTIPLICATION METHOD

#### 4.1 Principle of calculation

The usable field strength is determined for a specified coverage probability (with respect to time and location) and depends on the values of the nuisance fields.

$$E_{si} = P_i + E_{ni}(50, T) + A_i + B_i$$

where :  $E_{si}$  : the nuisance field of the  $i^{th}$  transmitter corrected by the discrimination factor of the receiving antenna.

$P_i$  : the e.r.p. in dB(kW), of the  $i$ -th unwanted transmitter;

$E_{ni}(50, T)$  : the field strength, in dB( $\mu$ V/m), normalized to an e.r.p. of 1 kW, of the  $i$ -th unwanted transmitter. The field strength is exceeded at 50 % of the locations during at least T % (e.g. 1 %) of the time;

$A_i$  : the radio-frequency protection ratio associated with the  $i$ -th unwanted transmitter, expressed in dB;

$B_i$  : the receiving antenna discrimination, expressed in dB.

Appropriate account of the effect of multiple interference can be taken by the use of statistical computation methods among which the simplified multiplication method is the least complex. With this method the usable field-strength  $E_u$  can be calculated by way of iteration from :

$$p_c = \prod_{i=1}^n L(E_u - E_{si})$$

where :  $p_c$  : the coverage probability (e.g. 50 % of locations, (100 - T) % of time);

$L(x)$  : the probability integral for a normal distribution.

#### 4.2 Calculation by computer

The calculation of the usable field strength with the simplified multiplication method is based on the probability integral for a normal distribution :

$$L(x) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^x e^{-\frac{t^2}{2}} dt$$

This integration however can be avoided in the practical calculation in replacing it by a polynomial approximation as follows :

$$L(x) = 1 - \frac{1}{2}(1 + a_1x + a_2x^2 + a_3x^3 + a_4x^4)^{-4} + \varepsilon(x)$$

with

$$\begin{aligned}a_1 &= 0.196854 \\a_2 &= 0.115194 \\a_3 &= 0.000344 \\a_4 &= 0.019527\end{aligned}$$

$\varepsilon(x)$  represents the error between the approximation and the exact value, received by the probability integral. Since  $|\varepsilon(x)|$  is less than  $2.5 \cdot 10^{-4}$  this error can be neglected.

The above approximation was used to calculate the multiple interference with the simplified multiplication method,

#### 4.3 Manual calculation

In the following the basic material for the manual calculation of the usable field strength in applying the simplified multiplication method is given.<sup>1</sup>

The manual calculation needs only additions, subtractions, multiplications, divisions and the reading of a value from Table 4.1.

An example with five interfering transmitters is given in Table 4.2.

Experience has shown that it is expedient to begin with a value for  $E_u$ , which is 6 dB larger than the largest of the  $E_{si}$  values. If the difference between  $0.5^2$  and the result (product of the 5 values of  $L(x_i)$ ) equals  $\Delta$ , it is appropriate to modify the value of  $E_u$  by  $\frac{\Delta}{0.05}$  to obtain a better approximation. The whole process can be repeated to receive better accuracy.

Table 4.2 shows, that even after the second step the difference to the precise value is in the order of 0.2 dB.

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<sup>1</sup> For further details see CCIR Report 945.

<sup>2</sup> 0.5 represents the coverage probability for 50% of locations.

TABLE 4.1

Probability integral

$$\varphi(x) = \frac{2}{\sqrt{2\pi}} \int_0^x [\exp(-t^2/2)] dt$$

x	φ(x)	x	φ(x)	x	φ(x)	x	φ(x)
0.00	0.0000	0.60	0.4515	1.20	0.7699	1.80	0.9281
01	0.0080	61	0.4581	21	0.7737	81	0.9297
02	0.0160	62	0.4647	22	0.7775	82	0.9312
03	0.0239	63	0.4713	23	0.7813	83	0.9328
04	0.0319	64	0.4778	24	0.7850	84	0.9342
0.05	0.0399	0.65	0.4843	1.25	0.7887	1.85	0.9357
06	0.0478	66	0.4907	26	0.7923	86	0.9371
07	0.0558	67	0.4971	27	0.7959	87	0.9385
08	0.0638	68	0.5035	28	0.7995	88	0.9399
09	0.0717	69	0.5098	29	0.8029	89	0.9412
0.10	0.0797	0.70	0.5161	1.30	0.8064	1.90	0.9426
11	0.0876	71	0.5223	31	0.8098	91	0.9439
12	0.0955	72	0.5285	32	0.8132	92	0.9451
13	0.1034	73	0.5346	33	0.8165	93	0.9464
14	0.1113	74	0.5407	34	0.8198	94	0.9476
0.15	0.1192	0.75	0.5467	1.35	0.8230	1.95	0.9488
16	0.1271	76	0.5527	36	0.8262	96	0.9500
17	0.1350	77	0.5587	37	0.8293	97	0.9512
18	0.1428	78	0.5646	38	0.8324	98	0.9523
19	0.1507	79	0.5705	39	0.8355	99	0.9534
0.20	0.1585	0.80	0.5763	1.40	0.8385	2.00	0.9545
21	0.1663	81	0.5821	41	0.8415	05	0.9596
22	0.1741	82	0.5878	42	0.8444	10	0.9643
23	0.1819	83	0.5935	43	0.8473	15	0.9684
24	0.1897	84	0.5991	44	0.8501	20	0.9722
0.25	0.1974	0.85	0.6047	1.45	0.8529	2.25	0.9756
26	0.2041	86	0.6102	46	0.8557	30	0.9786
27	0.2128	87	0.6157	47	0.8584	35	0.9812
28	0.2205	88	0.6211	48	0.8611	40	0.9836
29	0.2282	89	0.6265	49	0.8638	45	0.9857
0.30	0.2358	0.90	0.6319	1.50	0.8664	2.50	0.9876
31	0.2434	91	0.6372	51	0.8690	55	0.9892
32	0.2510	92	0.6424	52	0.8715	60	0.9907
33	0.2586	93	0.6476	53	0.8740	65	0.9920
34	0.2661	94	0.6528	54	0.8764	70	0.9931
0.35	0.2737	0.95	0.6579	1.55	0.8789	2.75	0.9940
36	0.2812	96	0.6629	56	0.8812	80	0.9949
37	0.2886	97	0.6680	57	0.8836	85	0.9956
38	0.2961	98	0.6729	58	0.8859	90	0.9963
39	0.3035	99	0.6778	59	0.8882	95	0.9968
0.40	0.3108	1.00	0.6827	1.60	0.8904	3.00	0.99730
41	0.3182	01	0.6875	61	0.8926	10	0.99806
42	0.3255	02	0.6923	62	0.8948	20	0.99863
43	0.3328	03	0.6970	63	0.8969	30	0.99903
44	0.3401	04	0.7017	64	0.8990	40	0.99933
0.45	0.3473	1.05	0.7063	1.65	0.9011	3.50	0.99953
46	0.3545	06	0.7109	66	0.9031	60	0.99968
47	0.3616	07	0.7154	67	0.9051	70	0.99978
48	0.3688	08	0.7199	68	0.9070	80	0.99986
49	0.3759	09	0.7243	69	0.9090	90	0.99990
0.50	0.3829	1.10	0.7287	1.70	0.9109	4.00	0.99994
51	0.3899	11	0.7330	71	0.9127	4.417	1 - 10 <sup>-5</sup>
52	0.3969	12	0.7373	72	0.9146		
53	0.4039	13	0.7415	73	0.9164		
54	0.4108	14	0.7457	74	0.9181	4.892	1 - 10 <sup>-6</sup>
0.55	0.4177	1.15	0.7499	1.75	0.9199	5.327	1 - 10 <sup>-7</sup>
56	0.4245	16	0.7540	76	0.9216		
57	0.4313	17	0.7580	77	0.9233		
58	0.4381	18	0.7620	78	0.9249		
59	0.4448	19	0.7660	79	0.9265		
0.60	0.4515	1.20	0.7699	1.80	0.9281		

TABLE 4.2

1. Approximation $E_u = 78$ dB					$\sigma_n = 8.3$ dB
$i$	$E_{si}$ (dB)	$z_i = E_u - E_{si}$ (dB)	$x_i = \frac{z_i}{\sigma_n \sqrt{2}}$	$\phi(x_i)$ (from Table 1)	$L(x_i) = \frac{\phi(x_i)}{2} + \frac{1}{2}$
1	64	14	1.19	0.7660	0.8830
2	72	6	0.51	0.3899	0.6950
3	60	18	1.53	0.8740	0.9370
4	50	28	2.39	0.9831	0.9916
5	45	33	2.81	0.9950	0.9975
$\sum_{i=1}^5 L(x_i) = 0.5688$ $\frac{\Delta}{0.05} = \frac{0.5 - 0.5688}{0.05} = -1.38 \text{ dB}$					
2. Approximation $E_u = 76.62$ dB					
1	64	12.62	1.08	0.7199	0.8600
2	72	4.62	0.39	0.3035	0.6518
3	60	16.62	1.42	0.8444	0.9222
4	50	26.62	2.26	0.9762	0.9881
5	45	31.62	2.69	0.9929	0.9965
$\sum_{i=1}^5 L(x_i) = 0.5090$ $\frac{\Delta}{0.05} = \frac{0.5 - 0.5090}{0.05} = -0.18 \text{ dB}$					
3. Approximation $E_u = 76.44$ dB					
1	64	12.44	1.06	0.7109	0.8555
2	72	4.44	0.38	0.2961	0.6481
3	60	16.44	1.40	0.8385	0.9193
4	50	26.44	2.25	0.9756	0.9878
5	45	31.44	2.68	0.9927	0.9964
$\sum_{i=1}^5 L(x_i) = 0.5016$ $\frac{\Delta}{0.05} = \frac{0.5 - 0.5016}{0.05} = -0.03 \text{ dB}$					

The 4th approximation yields  $E_u = 76.44 - 0.03 = 76.41$  dB.  
This value can be considered as sufficiently exact.

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

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COMMITTEE 5

## FIRST REPORT OF WORKING GROUP 5C

The annex contains texts proposed for Chapters 1 to 4 of Annex 2 to the Final Acts.

The attention of Committee 5 should be drawn to the fact that the Note 1 on page 13 of Document DT/50, according to the opinion of Working Group 5C, should be inserted in an appropriate place in the Article of the Agreement concerning the modifications of the Plan.

J. RUTKOWSKI  
Chairman of the Working Group

Annex: 1

ANNEX

ANNEX 2 TO THE FINAL ACTS

Technical data used for the preparation of the Plan

CHAPTER 1

DEFINITIONS

The following definitions supplement those contained in the Convention and in the Radio Regulations.

1.1 Coverage area

The area within which the field strength of the wanted transmitter is equal to or greater than the usable field strength.

In this area the protection against interference is provided for 99% of time.

Note: The field strength of the wanted transmitter is derived from the propagation curve relating to 50% of locations and for 50% of time.

1.2 Service area

The part of the coverage area in which the administration has the right to demand that the agreed protection conditions be provided.

1.3 Usable field strength ( $E_u$ )

Minimum value of the field strength necessary to permit a desired reception quality, under specified receiving conditions, in the presence of natural and man-made noise and interference, either in an existing situation or as determined by agreements or frequency plans.

*Note 1.* — The desired quality is determined in particular by the protection ratios against noise and interference and, in the case of fluctuating noise or interference, by the percentage of time during which the required quality must be ensured.

*Note 2.* — The receiving conditions include, amongst others:

- the type of transmission and frequency band used;
- the receiving equipment characteristics (antenna gain, receiver characteristics, siting);
- receiver operating conditions, particularly the geographical zone, the time and the season, or if the receiver is mobile, the local variations of the field strength due to propagation effects.



Note 3: The usable field strength is calculated by the simplified multiplication method, tropospheric interference being derived from the propagation curves relating to 50% of locations and for 1% of time, and steady interference being derived from propagation curves relating to 50% of locations and for 50% of the time. However, for comparison purposes, the power sum method<sup>1</sup> will be used, in the area from the Shatt-al-Arab to the Gulf of Oman, at the request of administrations concerned.

#### 1.4 Nuisance field

The field strength of the interfering transmitter (at its pertinent e.r.p.) modified by the relevant protection ratio.

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<sup>1</sup> See CCIR Recommendation 499.

## CHAPTER 2

### PROPAGATION

#### 2.1 Propagation data for VHF broadcasting

##### 2.1.1 General

The propagation data given in this chapter were used for the planning of the broadcast service. They are based on CCIR Recommendation 370-4. They relate field strength to path length and the effective transmitting antenna height. They represent the field strength exceeded at 50% of locations for 50% and 1% of the time and apply to both horizontal and vertical polarization of the transmitting antenna.

The data are given for various types of areas and climates, namely, land, cold sea, warm sea and areas subject to extreme super-refractivity. The definition of these categories has to be based on statistical data and so is to a certain extent arbitrary, but experience indicates that the following distinctions are appropriate for the application of the data set out in this chapter.

##### Cold sea

Seas, oceans and other substantial bodies of water at latitudes greater than 23.5° North or South, but excluding the Mediterranean, the Black Sea, the Red Sea and the area extending from the Shatt-al-Arab to and including the Gulf of Oman.

##### Warm sea

Seas, oceans and other substantial bodies of water at latitudes less than 23.5° North or South, including the Mediterranean and the Black Sea.

##### Area of extreme super-refractivity

Seas, oceans and other substantial bodies of water in the area extending from the Shatt-al-Arab to and including the Gulf of Oman.

Note: During the Conference in bilateral and multilateral negotiations some administrations in the Eastern Mediterranean (East of 30°E) used the criteria described in section 2.3, and for the application of the 1% time curves, the sea area included also a coastal strip extending up to 50 km inland and for the Nile delta region (from 30°E to 32°E) a coastal strip extending up to 200 km inland.

## 2.1.2 Area subject to extreme super-refractivity

### 2.1.2.1 Oversea paths

For oversea path calculations for 50% of the time, Figure 2.2 has been used. For the application of the 1% time curves, the sea area included also a coastal strip extending up to 50 km inland.

For oversea paths in the area from the Shatt-al-Arab to (and including) the Gulf of Oman, calculations for propagation occurring for 1% of the time have been based on the following formulae :

$$\begin{array}{ll} E = 106.9 - 20 \log d & \text{for } 10 \leq d \leq 400 \\ E = 78.9 - 0.06 d & \text{for } d > 400 \end{array} \quad \left. \begin{array}{l} \text{where } d = \text{path length in km} \\ E = \text{field strength in dB}(\mu\text{V/m}) \end{array} \right\}$$

### 2.1.2.2 Overland paths

For overland path calculations for 50% of the time, Figure 2.1 has been used. For overland path calculations for 1% of the time, Figure 2.3 has been used, but any coastal strip as defined in 2.1.2.1 has been treated as sea.

### 2.1.2.3 Mixed paths

For both 1% and 50% of the time mixed paths have been appraised according to the procedure set out in section 2.1.3.5.

## 2.1.3 Application of the curves

### 2.1.3.1 Time variability

The values of field strengths given in Figures 2.1 to 2.5, are those exceeded for 50% and 1% of the time. They are expressed in decibels relative to 1  $\mu\text{V/m}$  and correspond to an effective radiated power of 1 kW.

The 50% time curves have been used for the determination of coverage areas. The 50% and 1% time curves have been used for interference calculations for steady and tropospheric interference respectively.

### 2.1.3.2 Effective transmitter antenna height

The effective height of the transmitting antenna,  $h_1$ , is defined as its height over the average level of the ground between distances of 3 km and 15 km from the transmitter in the direction to the receiver. The height of the receiving antenna,  $h_2$ , has been assumed to be 10 m above local terrain.

The curves given in Figures 2.1 to 2.5 correspond to effective transmitter antenna heights,  $h_1$ , from 37.5 to 1,200 metres. For effective antenna heights,  $h_1$ , of 20 m and 10 m,  $h_1$ , additional curves can be derived from the 37.5 m curve by applying correction factors of -5 dB and -11 dB for distances up to 25 km, and 0 dB in both cases for distances in excess of 250 km, with linear interpolation for intermediate distances. For effective transmitter antenna heights,  $h_1$ , of less than 10 m, the values derived for 10 m have been used. For effective transmitter antenna heights,  $h_1$ , in excess of 1,200 m, the field strength at a distance of  $x$  km from the transmitter has been taken to be the same as the field strength given by the curve for an effective height of 300 m at a distance of  $(x + 70 - 4.1\sqrt{h_1})$  km.

As this extrapolation is only applicable to trans-horizon distances its use is limited to distances beyond  $x = (4.1\sqrt{h_1} + 70)$  km. For distances, between 100 km and  $x = (4.1\sqrt{h_1} + 70)$  km it is assumed that the field strength exceeds that for 1,200 m by the same amount as at  $x = (4.1\sqrt{h_1} + 70)$  km calculated in accordance with the above procedure. For smaller distances this increment has been determined by linear interpolation between 0 dB at 20 km and the height-dependent value at 100 km distance. This is subject to the condition that the free space field strength is not exceeded.

#### 2.1.3.3 Location variability

The curves given are representative for 50% of locations, the percentage which has been used for planning purposes.

#### 2.1.3.4 Terrain irregularity correction

The curves for propagation overland refer to the kind of irregular rolling terrain found in many parts of Region 1. No terrain irregularity correction has been taken into account in the analysis of the Plan.

Note: Some administrations have used corrections in bilateral or multilateral coordinations during the Conference in order to take account of actual path profiles.

### 2.1.3.5 Mixed land/sea path calculations

When the propagation path is partially over land and partially over sea, the following method has been used for interpolation between the appropriate land and sea curves.

Let

$E_{L, t}$  : field strength for land path equal in length to the mixed path for  $t\%$  of the time,

$E_{S, t}$  : field strength for sea path equal in length to the mixed path for  $t\%$  of the time,

$E_{M, t}$  : field strength for mixed path for  $t\%$  of the time,

$d_S$  : length of sea path,

$d_T$  : length of total path.

The field strength for the mixed path ( $E_{M, t}$ ) is then determined by using the formula :

$$E_{M, t} = E_{L, t} + \frac{d_S}{d_T} (E_{S, t} - E_{L, t})$$

### 2.2 Propagation data for the aeronautical radionavigation service

In the compatibility calculations the free space propagation conditions have been used. The calculations have been limited to the test points of the aeronautical radionavigation station in line-of-sight from the broadcasting station, it being assumed that the effective Earth's radius is  $4/3$  of the actual radius.

2.3 During the Conference in bilateral and multilateral negotiations some administrations in the Eastern Mediterranean (East of  $30^\circ\text{E}$ ) calculated the field strength for 1% of the time for oversea paths using the following formulae:

$E = 106.9 - 20 \log d - 0.07 d$	for $10 \leq d < 100$	$\left\{ \begin{array}{l} \text{where } d = \text{path length} \\ \text{in km} \\ \\ E = \text{field strength in} \\ \text{dB}(\mu\text{V/m}) \end{array} \right.$
$E = 99.9 - 20 \log d$	for $100 \leq d \leq 568$	
$E = 78.9 - 0.06 d$	for $d > 568$	

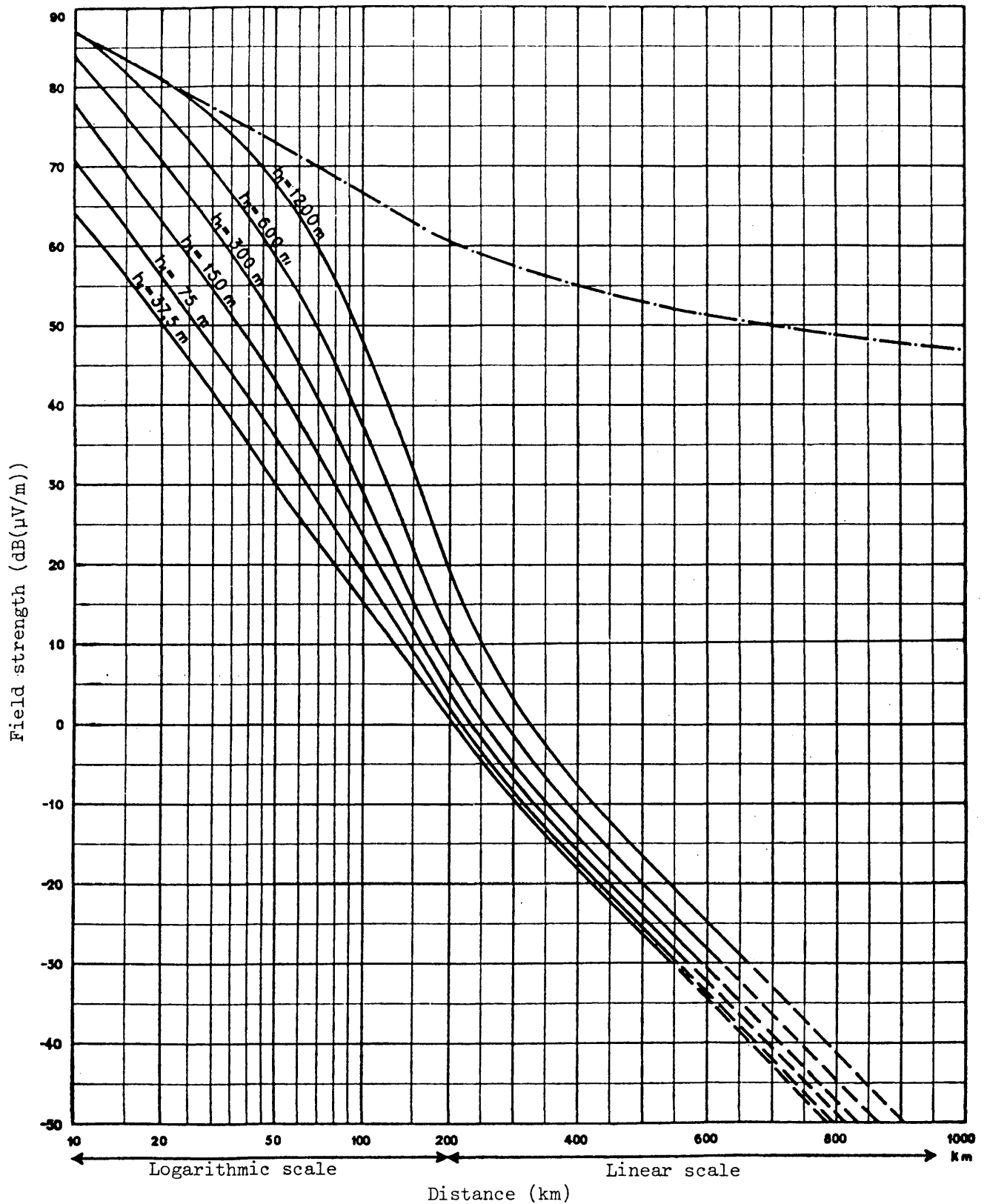


FIGURE 2.1  
Field strength (dB(μV/m)) for 1 kW e.r.p.  
Propagation over land  
50% of the time; 50% of the locations;  $h_2 = 10$  m  
-.-.-.- Free space  
PROPAGATION CURVES FOR THE BROADCASTING SERVICE

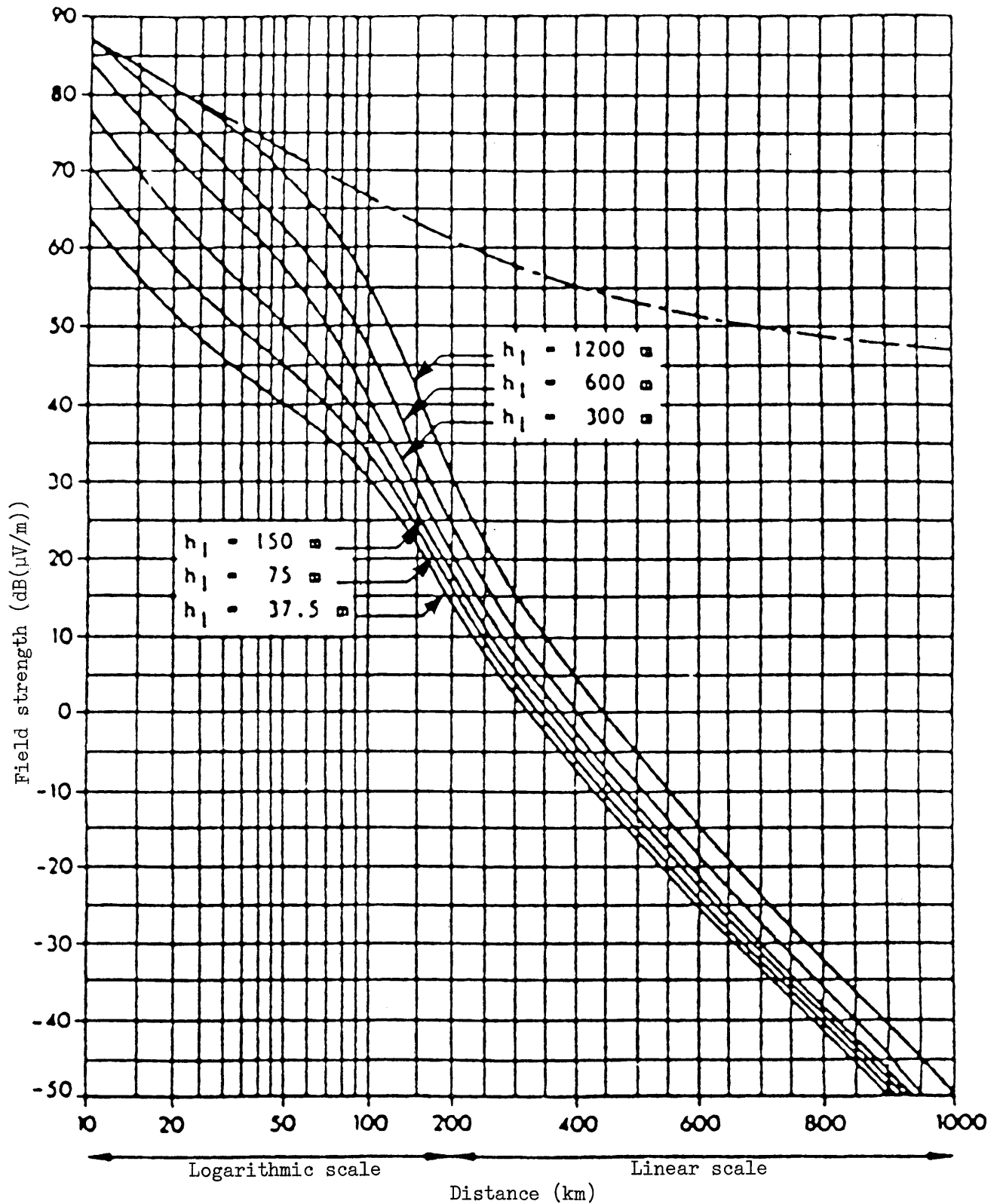


FIGURE 2.2

Field strength (dB( $\mu$ V/m)) for 1 kW e.r.p.

Propagation over sea  
 50% of the time; 50% of the locations;  $h_2 = 10$  m  
 -.-.-.- Free space

PROPAGATION CURVES FOR THE BROADCASTING SERVICE

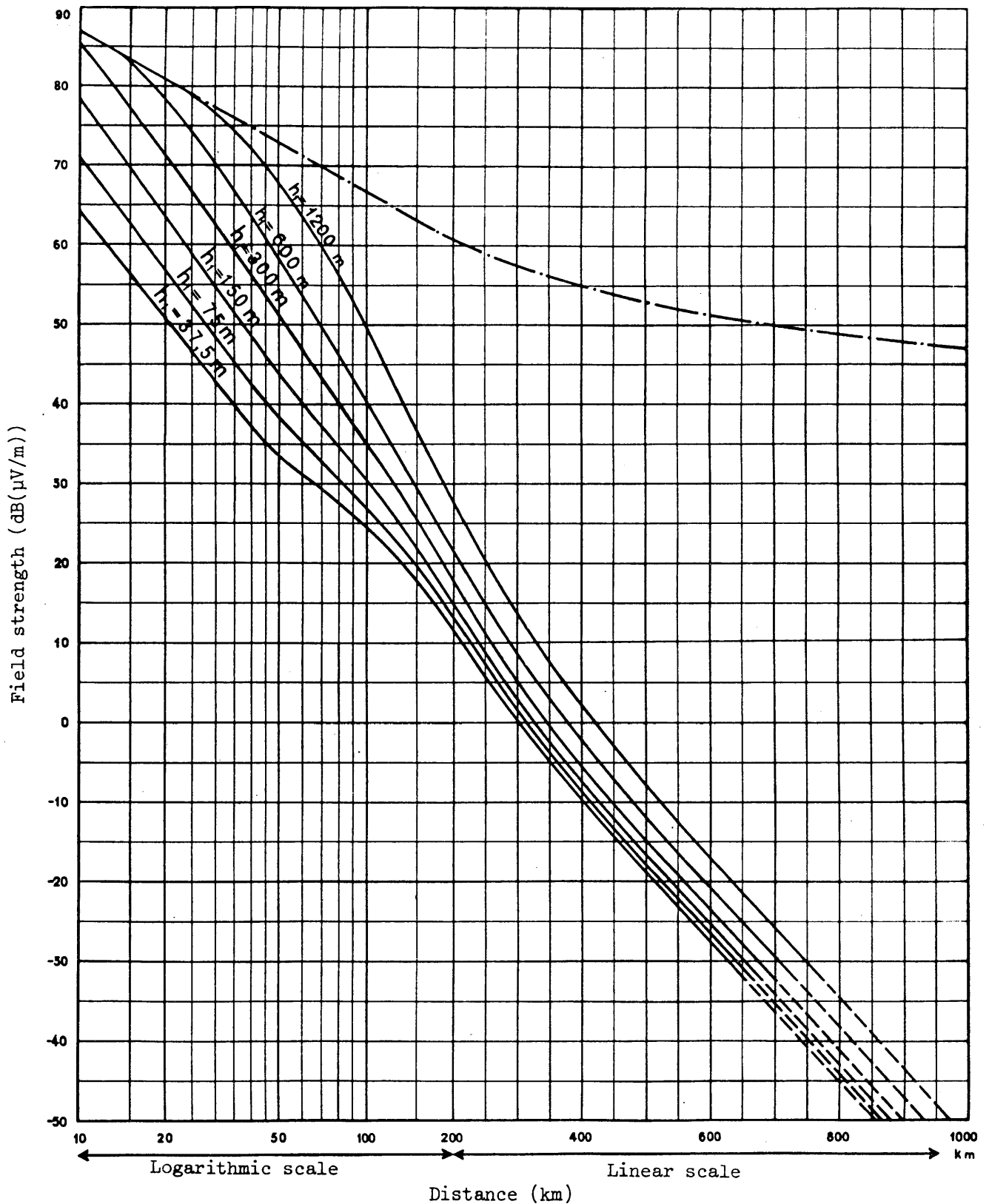


FIGURE 2.3

Field strength (dB(μV/m)) for 1 kW e.r.p.

Propagation over land  
1% of the time; 50% of the locations;  $h_2 = 10$  m

----- Free space

PROPAGATION CURVES FOR THE BROADCASTING SERVICE



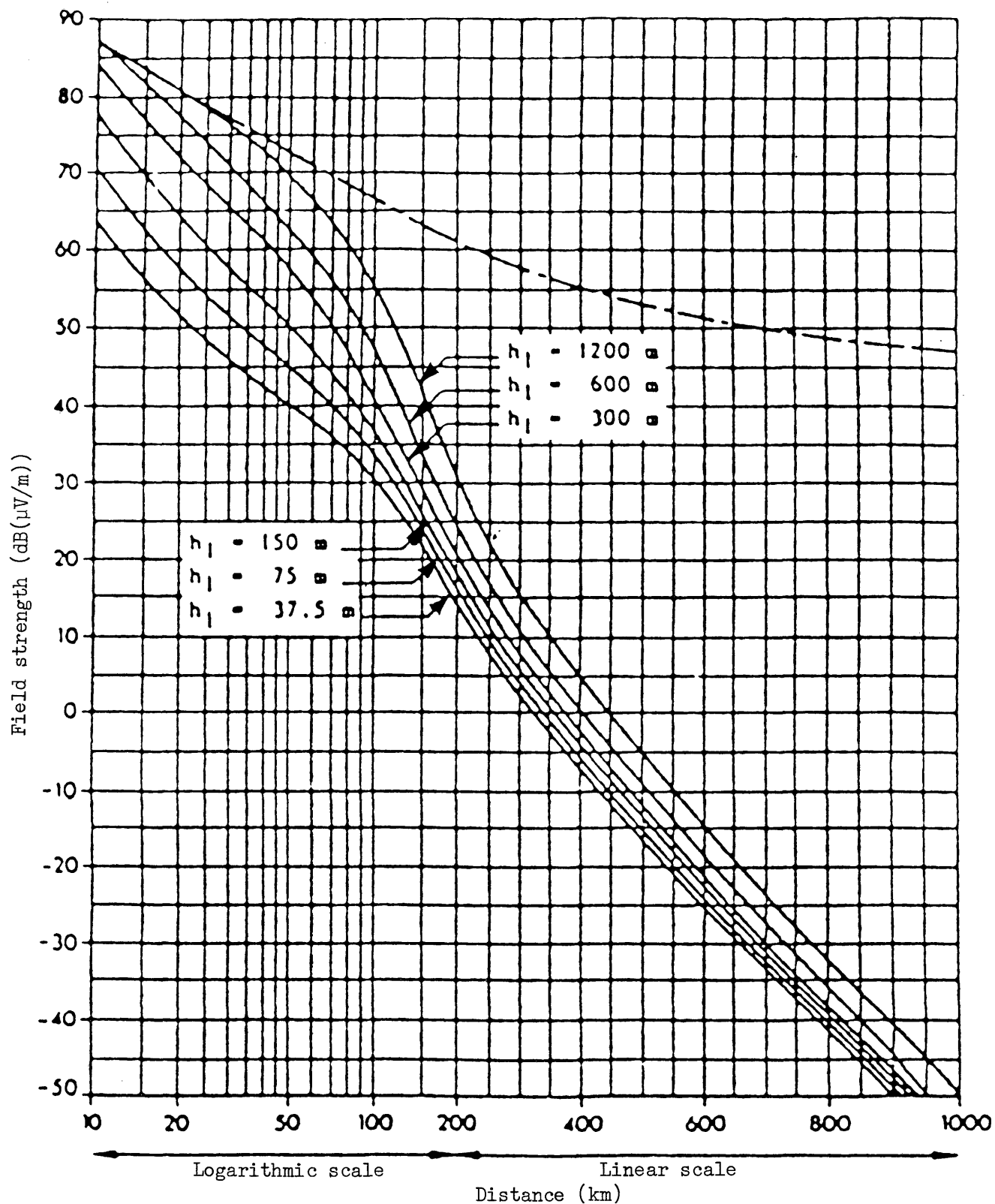


FIGURE 2.4

Field strength (dB( $\mu$ V/m)) for 1 kW e.r.p.

Propagation over cold sea  
 1% of the time; 50% of the locations;  $h_2 = 10$  m  
 -.-.-.- Free space

PROPAGATION CURVES FOR THE BROADCASTING SERVICE

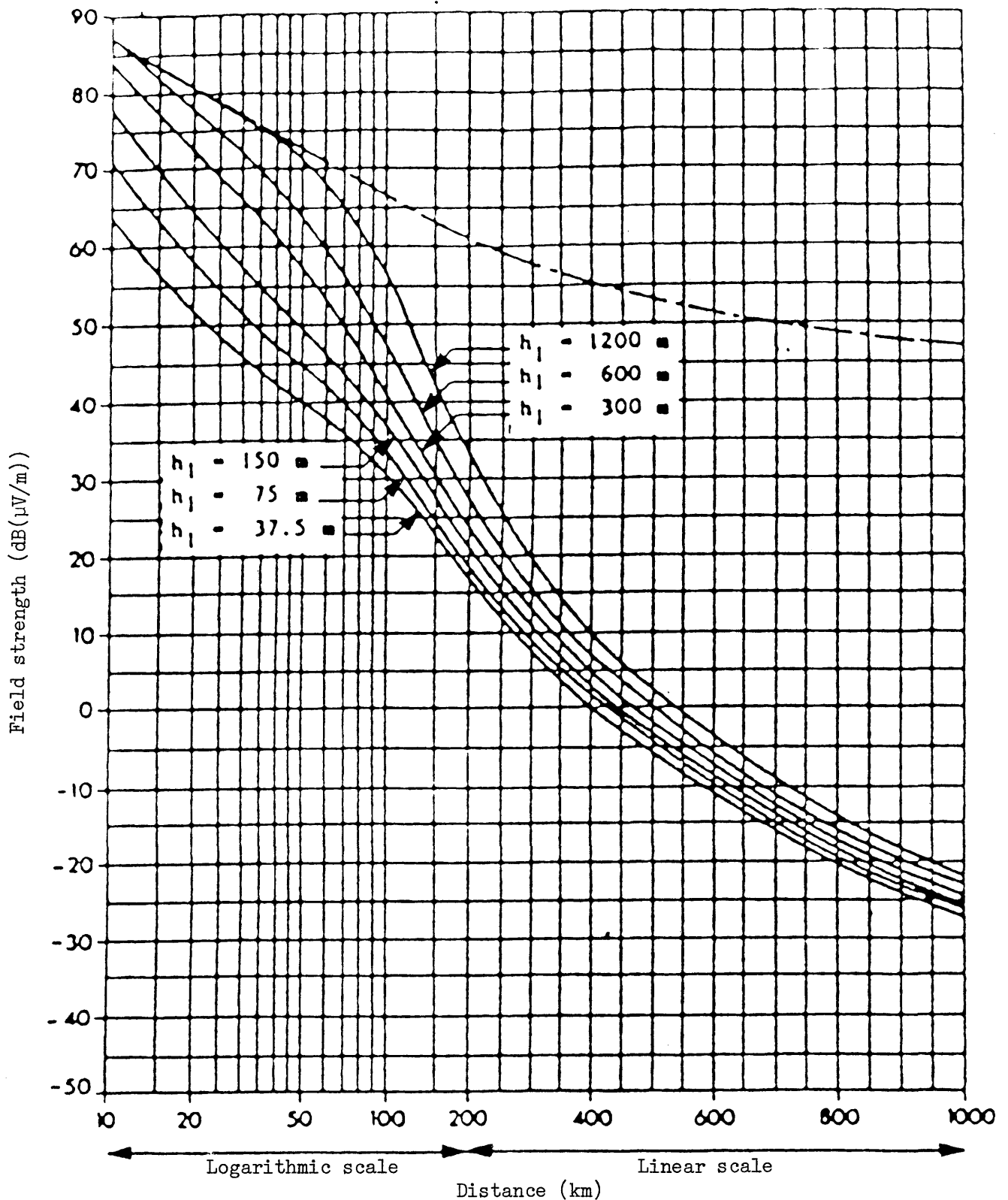


FIGURE 2.5

Field strength (dB(μV/m)) for 1 kW e.r.p.

Propagation over warm sea (excluding areas  
subject to extreme super-refractivity)  
1% of the time; 50% of the locations;  $h_2 = 10$  m  
-.-.-.- Free space

PROPAGATION CURVES FOR THE BROADCASTING SERVICE

CHAPTER 3

TECHNICAL STANDARDS AND TRANSMISSION CHARACTERISTICS  
FOR THE SOUND BROADCASTING SERVICE

3.1 General

Planning has been based on the following transmission systems, as specified by the administrations when notifying their requirements:

System 1: Monophonic (maximum frequency deviation  $\pm 75$  kHz)

System 2: Monophonic (maximum frequency deviation  $\pm 50$  kHz)

System 3: Stereophonic, polar modulation system (maximum frequency deviation  $\pm 50$  kHz)

System 4: Stereophonic, pilot-tone system (maximum frequency deviation  $\pm 75$  kHz)

System 5: Stereophonic, pilot-tone system (maximum frequency deviation  $\pm 50$  kHz)

The system used is indicated in the Plan, Column 9, according to the above classification.

3.2 Channel spacing

A uniform channel spacing of 100 kHz has been adopted in principle for both monophonic and stereophonic emissions.

The nominal carrier frequencies are, in principle, integral multiples of 100 kHz.

3.3 Modulation standards

3.3.1 Monophonic transmissions

The radio-frequency signal consists of a carrier, frequency modulated by the sound signal to be transmitted, with a maximum frequency deviation of  $\pm 75$  kHz or  $\pm 50$  kHz after pre-emphasis.

The pre-emphasis characteristic of the sound signal is identical to the admittance-frequency curve of a parallel resistance-capacitance circuit having a time constant of 50  $\mu$ s.

### 3.3.2 Stereophonic transmissions

The radio-frequency signal consists of a carrier, frequency modulated by a baseband signal according to the specifications of the polar-modulation system or of the pilot-tone system. The maximum frequency deviation is  $\pm 50$  kHz for the polar-modulation system and  $\pm 75$  kHz or  $\pm 50$  kHz for the pilot-tone system.

The pre-emphasis characteristics of the sound signals M and S<sup>1</sup> are identical to the admittance-frequency curve of a parallel resistance-capacitance circuit having a time constant of 50  $\mu$ s.

### 3.4 Protection ratios

#### 3.4.1 Monophonic transmissions

The radio-frequency protection ratios required to give satisfactory monophonic reception for 99% of the time, in systems using a maximum frequency deviation of  $\pm 75$  kHz, are those given by the curve M2 in Figure 3.1. For steady interference a higher degree of protection is required; this is shown by the curve M1 in Figure 3.1. The protection ratios at important frequency spacing values are also given in Table 3.1.

The corresponding values for monophonic systems using a maximum frequency deviation of  $\pm 50$  kHz are given in Figure 3.2 and Table 3.2.

#### 3.4.2 Stereophonic transmissions

The radio-frequency protection ratios required to give satisfactory stereophonic reception for 99% of the time, for transmissions using the pilot-tone system and a maximum frequency deviation of  $\pm 75$  kHz, are given by curve S2 in Figure 3.1. For steady interference, a higher degree of protection is required; this is shown by curve S1 in Figure 3.1. The protection ratios at important frequency spacing values are also given in Table 3.1.

The radio-frequency protection ratios for satisfactory reception in the case of tropospheric interference (99% of time), or for steady interference for stereophonic transmissions using the pilot-tone system, or the polar modulation system with a maximum frequency deviation of  $\pm 50$  kHz are given by Table 3.2 and Figure 3.2.

---

<sup>1</sup> M and S are the sum and difference signals, respectively; for further information see CCIR Recommendation 450.

The radio-frequency protection ratios for satisfactory stereophonic reception in the case of tropospheric interference (99% of time), or for steady interference where the wanted and interfering transmitters use different maximum frequency deviations, are given in Table 3.3.

The protection ratios for stereophonic broadcasting assume the use of a low-pass filter following the frequency-modulation demodulator in the receiver designed to reduce interference and noise at frequencies greater than 53 kHz in the pilot-tone system and greater than 46.25 kHz in the polar-modulation system. Without such a filter or an equivalent arrangement in the receiver, the protection-ratio curves for stereophonic broadcasting cannot be met, and significant interference from transmissions in adjacent or nearby channels is possible.

Note: The protection ratios for steady interference provide approximately 50 dB signal-to-noise ratio. (Weighted quasi-peak measurement according to Recommendation 468 of the CCIR, with a reference signal at maximum frequency deviation.)<sup>1</sup>

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<sup>1</sup> For further information see CCIR Report 796.

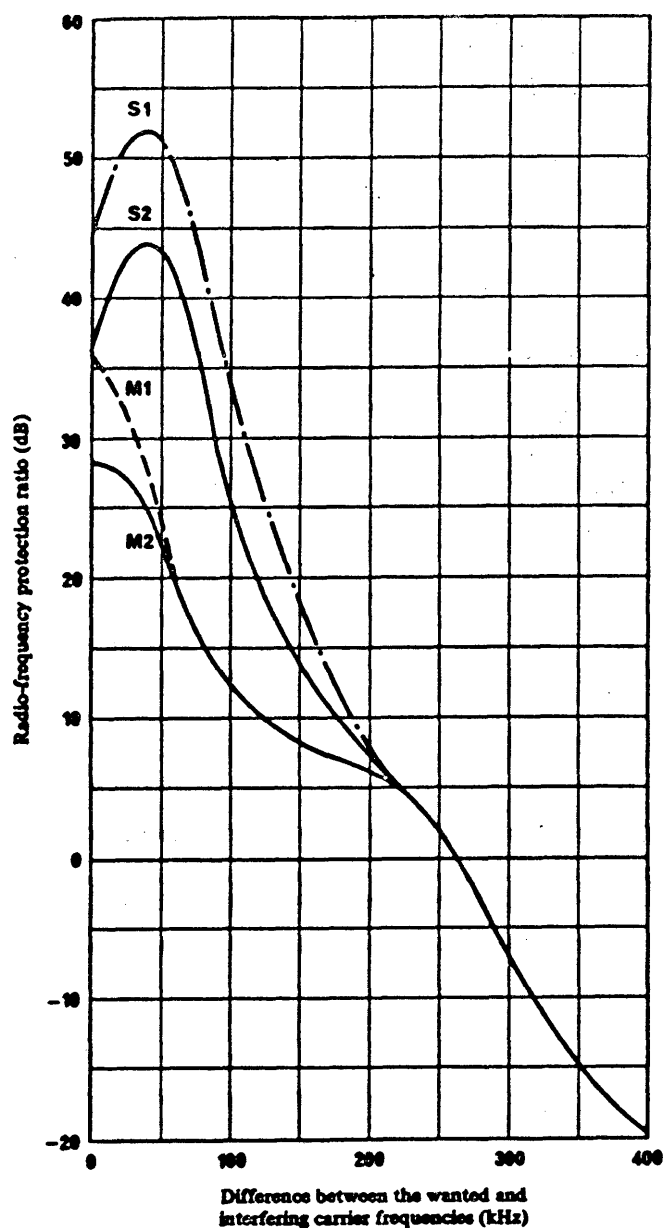


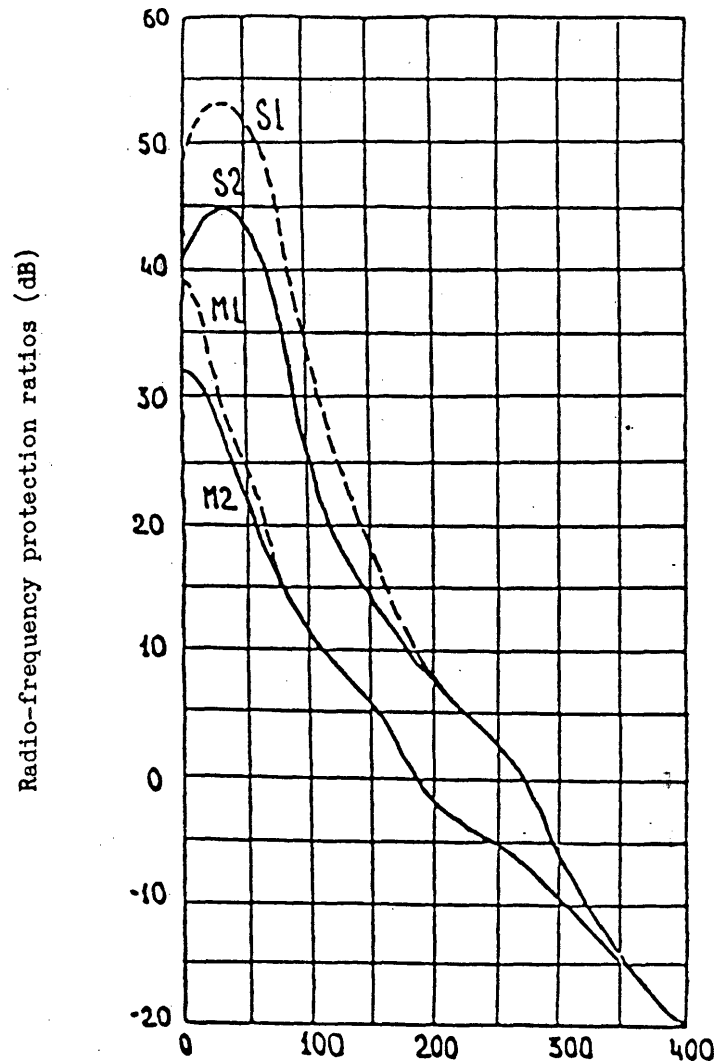
FIGURE 3.1

Radio-frequency protection ratio required by broadcasting services  
in band 8 (VHF) at frequencies between 87.5 MHz and 108 MHz  
using a maximum frequency deviation of  $\pm 75$  kHz

- Curve M1 : monophonic broadcasting; steady interference
- Curve M2 : monophonic broadcasting; tropospheric interference  
(protection for 99% of the time)
- Curve S1 : stereophonic broadcasting; steady interference
- Curve S2 : stereophonic broadcasting; tropospheric interference  
(protection for 99% of the time)

TABLE 3.1

Frequency spacing, (kHz)	Radio-frequency protection ratio (dB) using a maximum frequency deviation $\pm 75$ kHz			
	Monophonic		Stereophonic	
	Steady interference	Tropospheric interference	Steady interference	Tropospheric interference
0	36	28	45	37
25	31	27	51	43
50	24	22	51	43
75	16	16	45	37
100	12	12	33	25
150	8	8	18	14
200	6	6	7	7
250	2	2	2	2
300	- 7	- 7	- 7	- 7
350	-15	-15	-15	-15
400	-20	-20	-20	-20



Difference between wanted and interfering carrier frequencies (kHz)

FIGURE 3.2

Radio-frequency protection ratios required by broadcasting  
services in band 8 (VHF) using a maximum  
frequency deviation of  $\pm 50$  kHz

Curve M1 : Monophonic broadcasting, steady interference

Curve M2 : Monophonic broadcasting, tropospheric interference  
(99% of the time)

Curve S1 : Stereophonic broadcasting, steady interference

Curve S2 : Stereophonic broadcasting, tropospheric interference  
(99% of the time)



TABLE 3.2

Frequency spacing (kHz)	Radio-frequency protection ratios (dB) using a maximum frequency deviation of $\pm 50$ kHz			
	Monophonic		Stereophonic	
	Steady interference	Tropospheric interference	Steady interference	Tropospheric interference
0	39	32	49	41
25	32	28	53	45
50	24	22	51	43
75	15	15	45	37
100	12	12	33	25
125	7.5	7.5	25	18
150	6	6	18	14
175	2	2	12	11
200	-2.5	-2.5	7	7
225	-3.5	-3.5	5	5
250	-6	-6	2	2
275	-7.5	-7.5	0	0
300	-10	-10	-7	-7
325	-12	-12	-10	-10
350	-15	-15	-15	-15
375	-17.5	-17.5	-17.5	-17.5
400	-20	-20	-20	-20

TABLE 3.3

Frequency spacing (kHz)	Maximum frequency deviation : wanted transmitter $\pm 50$ kHz interfering transmitter $\pm 75$ kHz		Maximum frequency deviation : wanted transmitter $\pm 75$ kHz interfering transmitter $\pm 50$ kHz	
	Radio-frequency protection ratios (dB) stereophonic		Radio-frequency protection ratios (dB) stereophonic	
	Steady interference	Tropospheric interference	Steady interference	Tropospheric interference
0	49	41	45	37
25	53	45	51	43
50	51	43	51	43
75	45	37	45	37
100	33	25	33	25
125	25	18	24.5	18
150	18	14	18	14
175	12	11	11	10
200	7	7	7	7
225	5	5	4.5	4.5
250	2	2	2	2
275	0	0	-2	-2
300	-7	-7	-7	-7
325	-10	-10	-11.5	-11.5
350	-15	-15	-15	-15
375	-17.5	-17.5	-17.5	-17.5
400	-20	-20	-20	-20

### 3.5 Calculation of nuisance field

To apply the protection-ratio curves of Figure 3.1 it is necessary to determine whether, in the particular circumstances, the interference is to be regarded as steady or tropospheric<sup>1</sup>. A suitable criterion for this is provided by the concept of "nuisance field" which is the field strength of the interfering transmitter (at its pertinent e.r.p.) modified by the relevant protection ratio.

Thus, the nuisance field for steady interference is given by the formula

$$E_t = P + E(50,50) + A_s$$

and the nuisance field for tropospheric interference is given by the formula

$$E_t = P + E(50,T) + A_t$$

where

- P : e.r.p. (dB(1 kW)) of the interfering transmitter;  
A : radio-frequency protection ratio (dB);  
E(50,T) : field strength (dB(μV/m)) of the interfering transmitter, normalized to 1 kW, and exceeded during T% of the time,

and where indices s and t indicate steady or tropospheric interference respectively.

The protection-ratio curve for steady interference is applicable when the resulting nuisance field is stronger than that resulting from tropospheric interference.

i.e.  $E_s > E_t$

This means that  $A_s$  should be used in all cases when :  
 $E(50,50) + A_s > E(50,T) + A_t$ .

### 3.6 Minimum usable field strength

The planning has been based on the following median values of the minimum usable field strength (measured 10 m above ground level):

- stereophonic service: 54 dB(μV/m) in rural areas;
- monophonic service: 48 dB(μV/m) in rural areas.

These values apply for systems with a maximum frequency deviation of  $\pm 50$  kHz or  $\pm 75$  kHz.

### 3.7 Maximum radiated power

No values for maximum power limits have been specified.

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<sup>1</sup> For further information see CCIR Recommendation 412.

### 3.8 Characteristics of transmitting and receiving antennas - polarization

#### 3.8.1 Transmitting antennas

The maximum effective radiated power and, in the case of directional antennas, the azimuth(s) relative to true north together with the azimuths of the -3 dB points anti-clockwise and clockwise respectively from the azimuth of the maximum, have been indicated in accordance with Appendix 1 of the Radio Regulations (section D, column 9).

The attenuation (dB) with respect to the maximum value of the effective radiated power has been specified at 10° intervals in a clockwise direction starting at true north. Where it has not been possible to provide information in this detail, administrations have provided, if possible, the values at 30° intervals in a clockwise direction starting at true north.

In the case of mixed polarized transmissions the effective radiated powers and radiation patterns of the horizontally and vertically polarized components have been specified separately.

#### 3.8.2 Receiving antennas

For monophonic services an omnidirectional receiving antenna was assumed. The directivity curve of Figure 3.3<sup>1</sup> has been used for the planning of stereophonic sound services. The antenna has been assumed to be at a height of 10 m above ground.

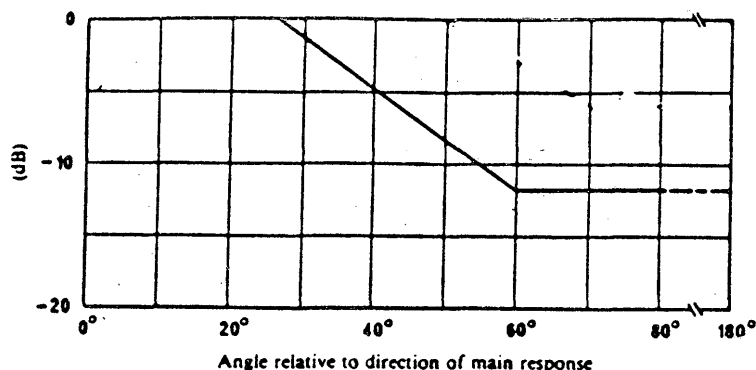


FIGURE 3.3

#### Discrimination obtained by the use of directional receiving antennas

Note 1 : It is considered that the discrimination shown will be available at the majority of antenna locations in built-up areas. At clear sites in open country, slightly higher values will be obtained.

Note 2 : The curve in Figure 3.3 is valid for signals of vertical or horizontal polarization, when both the wanted and the unwanted signals have the same polarization.

<sup>1</sup> For further information see CCIR Recommendation 599.

### 3.8.3 Polarization

Administrations have been free to choose which polarizations are to be used in their countries<sup>1</sup>.

Polarization discrimination has not been taken into account in the planning procedure except in specific cases with the agreement of affected administrations. In such cases a value of 10 dB for orthogonal polarization discrimination has been used.

### 3.9 Receiver sensitivity and selectivity

Receiver sensitivity and selectivity have been taken into account when specifying the values of the minimum usable field strength and the protection ratios.

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<sup>1</sup> For further information see CCIR Report 464.

## CHAPTER 4

### DETERMINATION OF THE USABLE FIELD STRENGTH BY THE SIMPLIFIED MULTIPLICATION METHOD

#### 4.1 Principle of calculation

The usable field strength is determined for a specified coverage probability (with respect to time and location) and depends on the values of the nuisance fields.

$$E_{si} = P_i + E_{ni}(50, T) + A_i + B_i$$

where :  $E_{si}$  : the nuisance field of the  $i^{th}$  transmitter corrected by the discrimination factor of the receiving antenna.

$P_i$  : the e.r.p. in dB(kW), of the  $i$ -th unwanted transmitter;

$E_{ni}(50, T)$  : the field strength, in dB( $\mu$ V/m), normalized to an e.r.p. of 1 kW, of the  $i$ -th unwanted transmitter. The field strength is exceeded at 50 % of the locations during at least T % (e.g. 1 %) of the time;

$A_i$  : the radio-frequency protection ratio associated with the  $i$ -th unwanted transmitter, expressed in dB;

$B_i$  : the receiving antenna discrimination, expressed in dB.

Appropriate account of the effect of multiple interference can be taken by the use of statistical computation methods among which the simplified multiplication method is the least complex. With this method the usable field-strength  $E_u$  can be calculated by way of iteration from :

$$p_c = \prod_{i=1}^n L(E_u - E_{si})$$

where :  $p_c$  : the coverage probability (e.g. 50 % of locations, (100 - T) % of time);

$L(x)$  : the probability integral for a normal distribution.

#### 4.2 Calculation by computer

The calculation of the usable field strength with the simplified multiplication method is based on the probability integral for a normal distribution :

$$L(x) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^x e^{-\frac{t^2}{2}} dt$$

This integration however can be avoided in the practical calculation in replacing it by a polynomial approximation as follows :

$$L(x) = 1 - \frac{1}{2}(1 + a_1x + a_2x^2 + a_3x^3 + a_4x^4)^{-4} + \varepsilon(x)$$

with

$$\begin{aligned}a_1 &= 0.196854 \\a_2 &= 0.115194 \\a_3 &= 0.000344 \\a_4 &= 0.019527\end{aligned}$$

$\varepsilon(x)$  represents the error between the approximation and the exact value, received by the probability integral. Since  $|\varepsilon(x)|$  is less than  $2.5 \cdot 10^{-4}$  this error can be neglected.

The above approximation was used to calculate the multiple interference with the simplified multiplication method.

#### 4.3 Manual calculation

In the following the basic material for the manual calculation of the usable field strength in applying the simplified multiplication method is given.<sup>1</sup>

The manual calculation needs only additions, subtractions, multiplications, divisions and the reading of a value from Table 4.1.

An example with five interfering transmitters is given in Table 4.2.

Experience has shown that it is expedient to begin with a value for  $E_u$ , which is 6 dB larger than the largest of the  $E_{si}$  values. If the difference between  $0.5^2$  and the result (product of the 5 values of  $L(x_i)$ ) equals  $\Delta$ , it is appropriate to modify the value of  $E_u$  by  $\frac{\Delta}{0.05}$  to obtain a better approximation. The whole process can be repeated to receive better accuracy.

Table 4.2 shows, that even after the first step the difference to the precise value is in the order of 0.2 dB.

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<sup>1</sup> For further details see CCIR Report 945.

<sup>2</sup> 0.5 represents the coverage probability for 50% of locations.

TABLE 4.1  
Probability integral

$$\varphi(x) = \frac{2}{\sqrt{2\pi}} \int_0^x [\exp(-t^2/2)] dt$$

x	$\varphi(x)$	x	$\varphi(x)$	x	$\varphi(x)$	x	$\varphi(x)$	
0.00	0.0000	0.60	0.4515	1.20	0.7699	1.80	0.9281	
01	0.0080	61	0.4581	21	0.7737	81	0.9297	
02	0.0160	62	0.4647	22	0.7775	82	0.9312	
03	0.0239	63	0.4713	23	0.7813	83	0.9328	
04	0.0319	64	0.4778	24	0.7850	84	0.9342	
0.05	0.0399	0.65	0.4843	1.25	0.7887	1.85	0.9357	
06	0.0478	66	0.4907	26	0.7923	86	0.9371	
07	0.0558	67	0.4971	27	0.7959	87	0.9385	
08	0.0638	68	0.5035	28	0.7995	88	0.9399	
09	0.0717	69	0.5098	29	0.8029	89	0.9412	
0.10	0.0797	0.70	0.5161	1.30	0.8064	1.90	0.9426	
11	0.0876	71	0.5223	31	0.8098	91	0.9439	
12	0.0955	72	0.5285	32	0.8132	92	0.9451	
13	0.1034	73	0.5346	33	0.8165	93	0.9464	
14	0.1113	74	0.5407	34	0.8198	94	0.9476	
0.15	0.1192	0.75	0.5467	1.35	0.8230	1.95	0.9488	
16	0.1271	76	0.5527	36	0.8262	96	0.9500	
17	0.1350	77	0.5587	37	0.8293	97	0.9512	
18	0.1428	78	0.5646	38	0.8324	98	0.9523	
19	0.1507	79	0.5705	39	0.8355	99	0.9534	
0.20	0.1585	0.80	0.5763	1.40	0.8385	2.00	0.9545	
21	0.1663	81	0.5821	41	0.8415	05	0.9596	
22	0.1741	82	0.5878	42	0.8444	10	0.9643	
23	0.1819	83	0.5935	43	0.8473	15	0.9684	
24	0.1897	84	0.5991	44	0.8501	20	0.9722	
0.25	0.1974	0.85	0.6047	1.45	0.8529	2.25	0.9756	
26	0.2041	86	0.6102	46	0.8557	30	0.9786	
27	0.2128	87	0.6157	47	0.8584	35	0.9812	
28	0.2205	88	0.6211	48	0.8611	40	0.9836	
29	0.2282	89	0.6265	49	0.8638	45	0.9857	
0.30	0.2358	0.90	0.6319	1.50	0.8664	2.50	0.9876	
31	0.2434	91	0.6372	51	0.8690	55	0.9892	
32	0.2510	92	0.6424	52	0.8715	60	0.9907	
33	0.2586	93	0.6476	53	0.8740	65	0.9920	
34	0.2661	94	0.6528	54	0.8764	70	0.9931	
0.35	0.2737	0.95	0.6579	1.55	0.8789	2.75	0.9940	
36	0.2812	96	0.6629	56	0.8812	80	0.9949	
37	0.2886	97	0.6680	57	0.8836	85	0.9956	
38	0.2961	98	0.6729	58	0.8859	90	0.9963	
39	0.3035	99	0.6778	59	0.8882	95	0.9968	
0.40	0.3108	1.00	0.6827	1.60	0.8904	3.00	0.99730	
41	0.3182	01	0.6875	61	0.8926	10	0.99806	
42	0.3255	02	0.6923	62	0.8948	20	0.99863	
43	0.3328	03	0.6970	63	0.8969	30	0.99903	
44	0.3401	04	0.7017	64	0.8990	40	0.99933	
0.45	0.3473	1.05	0.7063	1.65	0.9011	3.50	0.99953	
46	0.3545	06	0.7109	66	0.9031	60	0.99968	
47	0.3616	07	0.7154	67	0.9051	70	0.99978	
48	0.3688	08	0.7199	68	0.9070	80	0.99986	
49	0.3759	09	0.7243	69	0.9090	90	0.99990	
0.50	0.3829	1.10	0.7287	1.70	0.9109	4.00	0.99994	
51	0.3899	11	0.7330	71	0.9127	4.417	$1 - 10^{-5}$	
52	0.3969	12	0.7373	72	0.9146		$1 - 10^{-6}$	
53	0.4039	13	0.7415	73	0.9164			
54	0.4108	14	0.7457	74	0.9181		$1 - 10^{-7}$	
0.55	0.4177	1.15	0.7499	1.75	0.9199	5.327		
56	0.4245	16	0.7540	76	0.9216			
57	0.4313	17	0.7580	77	0.9233			
58	0.4381	18	0.7620	78	0.9249			
59	0.4448	19	0.7660	79	0.9265			
0.60	0.4515	1.20	0.7699	1.80	0.9281			



TABLE 4.2

1. Approximation $E_U = 78$ dB					$\sigma_n = 8.3$ dB
$i$	$E_{Si}$ (dB)	$z_i = E_U - E_{Si}$ (dB)	$x_i = \frac{z_i}{\sigma_n \sqrt{2}}$	$\phi(x_i)$ (from Table 1)	$L(x_i) = \frac{\phi(x_i)}{2} + \frac{1}{2}$
1	64	14	1.19	0.7660	0.8830
2	72	6	0.51	0.3899	0.6950
3	60	18	1.53	0.8740	0.9370
4	50	28	2.39	0.9831	0.9916
5	45	33	2.81	0.9950	0.9975
$\sum_{i=1}^5 L(x_i) = 0.5688$ $\frac{\Delta}{0.05} = \frac{0.5 - 0.5688}{0.05} = -1.38 \text{ dB}$					
2. Approximation $E_U = 76.62$ dB					
1	64	12.62	1.08	0.7199	0.8600
2	72	4.62	0.39	0.3035	0.6518
3	60	16.62	1.42	0.8444	0.9222
4	50	26.62	2.26	0.9762	0.9881
5	45	31.62	2.69	0.9929	0.9965
$\sum_{i=1}^5 L(x_i) = 0.5090$ $\frac{\Delta}{0.05} = \frac{0.5 - 0.5090}{0.05} = -0.18 \text{ dB}$					
3. Approximation $E_U = 76.44$ dB					
1	64	12.44	1.06	0.7109	0.8555
2	72	4.44	0.38	0.2961	0.6481
3	60	16.44	1.40	0.8385	0.9193
4	50	26.44	2.25	0.9756	0.9878
5	45	31.44	2.68	0.9927	0.9964
$\sum_{i=1}^5 L(x_i) = 0.5016$ $\frac{\Delta}{0.05} = \frac{0.5 - 0.5016}{0.05} = -0.03 \text{ dB}$					

The 4th approximation yields  $E_U = 76.44 - 0.03 = 76.41$  dB.  
This value can be considered as sufficiently exact.

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 156-E

3 December 1984

Original: English

## PLENARY MEETING

### MINUTES

### OF THE

### EIGHTH PLENARY MEETING

Tuesday, 27 November 1984, at 1405 hrs

Chairman: Miss M. HUET (France)

#### Subjects discussed

#### Document

1. First series of texts submitted by the Editorial Committee to the Plenary Meeting (B.1)
2. Second series of texts submitted by the Editorial Committee to the Plenary meeting (B.2(Rev.))
3. Oral reports by Chairmen of the Technical Working Group and Committees
4. Approval of the Minutes of the Fourth and Fifth Plenary Meetings

125

129(Rev.)

-

93, 111

1. First series of texts submitted by the Editorial Committee to the Plenary meeting (B.1) (Document 125)

1.1 The Chairman of Committee 6, introducing the document, suggested that square brackets be placed around the introductory phrase of each Recommendation for the time being, in view of suggestions in Committee 5 that the title of the Conference be defined in Article 1 to emphasize its planning aspect, and the subsequent need to reflect that definition throughout. The original name of the Conference approved by the Administrative Council, had contained no reference to planning.

1.2 Recommendation No. GTECH/1

1.2.1 The Chairman of the IFRB suggested that in the title of the French text, "la poursuite des études" was more appropriate than "la suite des études".

It was so agreed.

1.2.2 The delegate of Finland pointed out that as the reference to FM broadcasting in the title was not repeated in the body of the text, it might be thought that television was also covered.

1.2.3 The Chairman of the Technical Working Group suggested that, although television did not use the higher frequencies, a reference to sound broadcasting would remove any ambiguity.

1.2.4 The delegate of the Islamic Republic of Iran suggested that the expression "sound broadcasting stations" be used, since it appeared in the agenda and did not conflict with the Radio Regulations.

It was agreed that that expression be used in the title and texts of all three Recommendations.

1.2.5 The Chairman suggested that the words "this Conference" be replaced by "it" in considering a).

It was so agreed.

1.2.6 The delegate of the Islamic Republic of Iran, replying to a query by the Chairman of the IFRB regarding the phrase "unable to reach final conclusions", said that the phrase accurately described the situation that had been acknowledged both by Working Group PL-B and the Technical Working Group: that further studies by the CCIR were required before certain difficulties could be resolved.

1.2.7 The Chairman of the Technical Working Group endorsed that statement.

Recommendation No. GTECH/1, as amended, was approved.

1.3 Recommendation No. GTECH/2

Approved as amended.

1.4 Recommendation No. GTECH/3

1.4.1 The Chairman of Committee 6 drew attention to the last paragraph (requests the Administrative Council) from which the phrase "in the band 108 - 137 MHz" had been omitted from the French text.

Recommendation No. GTECH/3, as amended, was approved.

Document 125, (series B.1) as amended, was approved on first reading.

2. Second series of texts submitted by the Editorial Committee to the Plenary Meeting (B.2(Rev.)) (Document 129(Rev.))

2.1 The Chairman of the IFRB pointed out that column 1 would contain the IFRB serial number in the Plan that would be distributed and read during the Conference; that number would not, however, appear in the final version of the Plan to be sent to administrations on microfiche after the Conference.

2.2 The delegate of Italy said that Committee 4, at its meeting earlier in the day, had agreed that two further columns, 18 and 19, each showing antenna characteristics, should be added. The Committee would be reporting to the Chairman accordingly.

2.3 The Chairman explained that the Plan distributed during the Conference (one copy per delegation) would be in the form of a printout, but for technical reasons, could only include columns 1 to 17, the new columns 18 and 19 would therefore have to be distributed on microfiche. The edited version of the Plan which would be available to order after the Conference would be entirely on microfiche. As the document before the Plenary referred to the Final Acts and the edited Plan that would be available after the Conference, the Plenary should consider column 1 as deleted, and columns 18 and 19 added.

2.4 The Chairman of the Technical Working Group suggested that those two additional columns might more logically be inserted as 13a) and 14a).

2.5 The Chairman replied that that suggestion could only be incorporated in the edited version of the Plan, available after the Conference.

2.6 The delegate of Italy asked whether, with the disappearance of the IFRB serial number, the columns would be renumbered in the edited version of the Plan, or whether they would start with column 2. He also wondered whether the final version could be made available on magnetic tape.

2.7 The Chairman of the IFRB said that the Board would renumber the columns completely for the edited version, which would also be available on magnetic tape.

2.8 The delegate of the United Kingdom said he understood that the new column 14a) would refer to effective antenna height, thus tying in with the present column 14.

2.9 The representative of the IFRB, in reply to a query by the delegate of Poland, said that it would not be possible to use the same column numbering in the Conference version of the Plan and the final microfiche version as there was no time to alter the software. However, the necessary changes would be made in the final version in consultation with the Editorial Committee.

2.10 The Chairman said that to avoid confusion it should be possible to issue a Conference document giving the column numbering for use in reading the Plan as well as a revised blue document giving the numbering that would appear in the final version.

2.11 The delegate of the United Kingdom proposed that columns 11 and 12 be reworded to read: "Maximum effective radiated power of the horizontally polarized component (dBW)" and "Maximum effective radiated power of the vertically polarized component (dBW)" respectively.

It was so agreed.

2.12 The delegate of Belgium, supported by the delegate of the Netherlands, said it was clear from contacts with administrations that there was no real need for columns 15 and 16 since all that information could be included in the new columns in the final version.

2.13 The representative of the IFRB explained that two different types of information were involved, relating respectively to the directivity of antenna and to variations of effective antenna height.

It should be remembered that in some cases limitations on radiation in a given sector had been placed on other administrations during the negotiations at the Conference, and columns 15 and 16 would be used to give the limitations on which an agreement had been based. Then, at the stage of bringing the station into service, the precise information of columns 13a) and 14a) would have to be communicated to the IFRB with reference to the  $10^0$  intervals.

2.14 The delegate of Belgium felt there might have been a misunderstanding. All his delegation's work at the Conference had been based on column 13a). All agreements with neighbouring countries related to restrictions or other modifications to particular assignments. If a modification involved an attenuation in a certain sector, that attenuation had been translated into the relevant column information which in turn was used to reach agreement. Thus any information of that nature published in the Plan should be sufficient. He could not understand why it had also to be recapitulated in columns 15 and 16.

2.15 The Chairman noted that the recapitulation would be of value in reminding administrations of the limitations they had placed on neighbouring countries.

2.16 The delegate of Italy stated that his delegation had not yet completed the optional Form 3, on the understanding that the limitations would be given in columns 13a and 14a. If the aim was now to review the limitations, completion of the Form should be made compulsory and delegates be given the necessary time.

2.17 The Chairman of the Technical Working Group pointed out that the information of columns 13, 13a), 14 and 14a) did not refer only to incompatibilities. For example, in the case of a station close to a frontier, the administration should use a directional antenna that radiated inside rather than outside the country. Although that was not necessarily a matter for bilateral agreement, the information would be given in columns 13 and 13a). The same applied to the effective height of antenna. In hundreds of such cases the approach in negotiations with neighbouring countries had been to agree on certain limitations on radiation in particular sectors. He considered that columns 15 and 16 would help avoid misunderstandings in a number of cases and that they should be retained.

2.18 The Chairman noted that some administrations requesting limitations on radiated power might feel that it was not sufficient to indicate them in the radiation diagram but also wanted them to be given in columns 15 and 16.

2.19 The representative of the IFRB said that the Board had considered the case of administrations that had given their agreement subject to limitations on radiation in a particular sector being included in the Plan. Similarly, it had emerged from the discussions of Committee 4 that some administrations which had coordinated their requirements before the Conference also wanted their limitations to be stated in the Plan. It was only in cases such as those that the delegations needed to complete Form 3.

2.20 The delegate of Italy said that in his view it was the optional nature of the completion of the Form that posed a problem, since administrations other than the one concerned might be interested in the information. Moreover, it would be very difficult to request completion of the Form during the reading of the Plan.

2.21 The Chairman said that if a limitation had been noted in Form 2 following negotiations, the sector or direction of the limitation would automatically be recorded in the Plan, without it being necessary to complete Form 3.

2.22 The delegate of Switzerland wondered what type of remarks were envisaged in column 17 and whether that column was similar to the Remarks column in the existing Stockholm Agreement.

2.23 The representative of the IFRB explained that the remarks would be in the form of numbers to which there would be a key at the beginning of the Plan. The numbering system would probably be comparable to that of the Geneva Agreement of 1975 rather than to the Stockholm Agreement.

2.24 The representative of the Islamic Republic of Iran considered that column 17 was not applicable to the version of the Plan that would be reviewed the following week, since all pending coordinations or unresolved cases would appear in an appendix.

2.25 The representative of the IFRB said that a number of remarks would still be required. Committee 5 had already decided that reference should be made to entries in the Plan for which there were problems of interference of types A1 and B1. The implementation of assignments being contingent on the cessation of certain television assignments by an agreed date, as mentioned in the final paragraph of Document 146, was another example of a case that should be referred to in the remarks.

With regard to column 7, it should be noted that the title referred to the altitude above sea level of the base of the supporting structure of transmitting antenna.

2.26 The delegate of the United Kingdom wondered whether the reference should not be to the height of antenna above sea level, rather than the altitude of the site.

2.27 The Chairman of Committee 6 said that at the drafting stage it had been established with the IFRB that the information required concerned the altitude not of the antenna but of the site, i.e. its longitude, latitude and altitude. One solution envisaged to avoid ambiguity would be to have another column 6.3 referring to the altitude of the site.

2.28 The Chairman said that giving the altitude of the site would be helpful for other delegations in establishing the location of stations.

2.29 The delegate of the United Kingdom pointed out that the Conference instructions would call on administrations to carry out more detailed calculations in instances where modifications were proposed. For that purpose it would be desirable to know the actual height of antenna above sea level, yet that information would not be available through the present column listing.

2.30 The delegate of Finland, supporting that view, also noted that delegations had submitted all the relevant information to the IFRB and the latter need only compile it for inclusion in the Plan.

2.31 The delegate of Yugoslavia thought provision should be made both for altitude of site and for height of antenna above sea level. He therefore supported the proposal by the Chairman of Committee 6 to introduce a new column 6.3.

2.32 The Chairman of the Technical Working Group pointed out that provision was already made under column 14 for maximum effective antenna height, which was a more important figure for calculation purposes.

2.33 The delegate of the United Kingdom feared there might be some misunderstanding. He pointed out that the list of required input information given in the report of the first session included three items: altitude of the site, height of the antenna, and maximum effective antenna height. All that was being asked for was that the second of these three items, which was the most important, should be included.

2.34 The delegate of the Islamic Republic of Iran said he would like to know why the additional information was needed and how it was to be used. Some administrations might find difficulty in supplying further data that had not been taken into account during the coordination process in the course of the Conference. He wondered whether the height of antenna should also be taken into consideration for unresolved cases.

2.35 The Chairman explained that the information to be included was not new; it had already been supplied by administrations at the request of the IFRB. She took it that there was agreement that "height of antenna" should be included in the columns of the Plan, the most appropriate place to be decided by the Editorial Committee.

It was so agreed.

2.36 The Chairman of Committee 6 said his Committee would thus be submitting two tables, one for the reading of the Plan and the other for the final edition, which would differ in some respects.

2.37 The Chairman, in reply to a question from the delegate of Burkina Faso, said that if an antenna had been entered on Form A as non-directional, but had then been altered as a result of negotiations, it would eventually be entered in the Plan as directional.

Document 129(Rev.) (series B.2(Rev.)) as amended, was approved on first reading.

3. Oral reports by Chairmen of the Technical Working Group and Committees

3.1 The Chairman of the Technical Working Group said his Group had completed the bulk of its work but had still to reach a final decision on coordination distances between sound broadcasting and TV stations; the relevant document would be considered the following day. The Group would also be considering the question of the tolerances required for changing transmitter sites. The Group had just received a document from Committee 4 regarding usable field strength data which would take some time to deal with, and it was likely that a further meeting would be needed.

3.2 The Chairman of Committee 2 said his Committee's Working Group had held a further meeting at which it had examined 11 credentials; the list of countries concerned was contained in Document 110. There were still seven credentials to be verified, and some nine credentials that remained outstanding. The Committee would hold its final meeting on 30 November and would prepare a report for submission to the Plenary on 4 December.

3.3 The Chairman of Committee 4 said that work in the four Planning Groups was continuing and encouraging results had been achieved. A decision had been taken on the assignments which were to be included in the Plan (Document 151), unresolved cases being listed in an appendix or separate list. Committee 5 was being requested to establish appropriate procedures in regard to the status of unresolved cases.

3.4 The Chairman of Committee 5 said Working Group 5A was still engaged in developing procedures to protect services such as the aeronautical radionavigation service and the fixed and mobile services, in the case of modifications to the Plan. Working Group 5B had approved a Resolution dealing with the permitted services to which the band 104 - 108 MHz was allocated, and Working Group 5C was preparing material for the technical annexes.

The Committee itself had that morning approved in principle procedures to deal with A1/B1 cases of interference. It would review a final version of those procedures at a meeting the next day or the day following. The Committee was now considering a draft text for the Agreement, and was to meet again that night to speed up the work. It hoped also to have a second discussion of the problem of abrogation or modification of the Stockholm or Geneva Agreements.

4. Approval of the minutes of the Fourth and Fifth Plenary Meetings  
(Documents 93 and 111)

4.1 Minutes of the Fourth Plenary Meeting (Document 93)

Approved.

4.2 Minutes of the Fifth Plenary Meeting (Document 111)

4.2.1 The delegate of the USSR, with reference to paragraph 2 of the document, pointed out that the fifth report of the Technical Working Group (Document 108) had not yet been discussed by Committee 5.



4.2.2 The Chairman of Committee 5 said that the information contained in Document 108 had in fact been used in the work of Working Groups 5A, 5B and 5C. However, he agreed that it had not yet been formally discussed or approved by the Committee itself, and that would be done at one of the forthcoming meetings.

Document 111 was approved.

The meeting rose at 1615 hours.

The Secretary of the Conference:

J. JIPGUEP

The Chairman:

M. HUET

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Corrigendum 2 to  
Document 157-E  
5 February 1985  
Original: English

COMMITTEE 5

SUMMARY RECORD  
OF THE  
SEVENTH MEETING OF COMMITTEE 5

1. Paragraph 1.12

Replace the words "nuisance field strength" in the second line by "usable field strength".

2. Paragraph 3.12.2.10

Replace by the following:

"The delegate of the United Kingdom said that, with regard to the Algerian proposal and to Article 2, paragraphs 1 and 2, he was concerned that the wording used was perhaps too stringent. At the entry into force of the Agreement, there might well be stations in service which, although they were not in the Plan or its Appendix, to which Radio Regulation 584 applied, were nevertheless in conformity with Radio Regulation 342 in that they caused no harmful interference to services carried on by stations operating in accordance with the Plan. As the wording of the provisions mentioned stood, such inoffensive stations might be forced to cease transmission upon entry into force of the Agreement."

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INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Corrigendum 1 to  
Document 157-E  
5 December 1984  
Original: English

COMMITTEE 5

SUMMARY RECORD

OF THE

SEVENTH MEETING OF COMMITTEE 5

Paragraph 3.12.2.6

Please replace by the following:

"3.12.2.6 The delegate of Algeria said that in that case he proposed that a further sentence should be added to paragraph 13.2 as follows:

At this date sound broadcasting systems not in conformity with the Plan, or contained in the appendix thereto, shall cease transmission until such time as they are brought into conformity with the Plan."

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 157-E  
3 December 1984  
Original: English/French

COMMITTEE 5

SUMMARY RECORD  
OF THE  
SEVENTH MEETING OF COMMITTEE 5  
(AGREEMENT AND PROCEDURES)

Wednesday, 28 November 1984, at 1930 hrs  
and Thursday, 29 November, at 0900 and at 1540 hrs

Chairman: Mr. K. OLMS (Federal Republic of Germany)

<u>Subjects discussed</u>	<u>Documents</u>
1. Report of ad hoc Group 5	160
2. Consideration of the first report of Working Group 5A (continued)	139
3. Contents of the Plan	151

1. Report of ad hoc Group 5 (Document 160)

1.1 The Chairman, inviting the Committee to consider the report of the ad hoc Group (Document 160) which had just been circulated, asked delegates to refrain from raising editorial points. When Committee 6 encountered difficulties of interpretation it sought the assistance of the Chairmen of Committees and the Secretariat.

1.2 The Chairman of ad hoc Group 5 said that agreement had been reached on the text submitted in the Annex for incorporation in Article 4 (in place of paragraphs 3.5 to 3.8 of Document 139) but figures would need further examination in the Technical Working Group of the Plenary. The Group had discussed whether the modification method should be one agreed bilaterally by administrations or whether it should be of a general character. It had also examined the question of whether the calculation of nuisance or usable field strength should be made at the edge of the service area or at the transmitter site. The compromise adopted had been that in normal cases it should be at the transmitter site but that in exceptional cases it should be at predetermined points somewhere in the service area. Opinion had been almost equally divided on the choice between the two alternatives of using the criterion of nuisance field strength or usable field strength so that they had been placed in square brackets in section 3.7.

The first sentence in paragraph 3.8 should be corrected by replacing the comma after the words "transmitter site" by a full stop and by inserting the word "at" before the word "predetermined".

He thanked the representatives of the IFRB for their assistance in preparing the report.

1.3 Paragraphs 3.5 and 3.6

Approved, subject to a minor editorial correction.

Paragraphs 3.7 and 3.8

1.4 The delegate of Finland pointed out that the word "more" should be replaced by the word "less" in the second indent in section 3.7.

1.5 The delegate of Libya favoured the first alternative and regarded the second as unacceptable.

1.6 The delegate of the Netherlands, supported by the delegate of Belgium, favoured the first indent because the second indent would mean that nuisance fields would be calculated from frequencies in the Plan.

1.7 The delegate of the USSR considered that whereas paragraphs 3.5 and 3.6 should be incorporated in Article 4, 3.7 and 3.8 ought to appear in a technical annex. He hoped the Committee would not spend too much time on technical details while ignoring matters of principle.

1.8 The delegate of Poland said that in the ad hoc Group he had expressed a slight preference for the second alternative, i.e. usable field strength, and was now even more convinced that it was the appropriate one. If a reference usable field strength calculated according to the method refined in the Technical Annex were based on the calculation of all the nuisance field strengths from other transmitters, the only possible way of judging the consequences of adding a new transmitter to the network would be by calculating the increase of the usable field strength. That could not be

done on the basis of the nuisance field strength of one new station alone. The second alternative had an added advantage that it would not have to be referred back to the Technical Working Group of the Plenary which had already expressed its view on the question. Moreover, that Group was also having to consider what parameters to choose for determining unresolved cases and it would be undesirable to select differing criteria for different parts of the Agreement. He proposed that the Committee provisionally adopt the second alternative while retaining it in square brackets pending the decision to be taken by the Technical Working Group of the Plenary the following day.

The calculation of the usable field strength would clearly have to be made at the transmitter site or in some cases in the service area.

1.9 The delegate of Qatar said that the calculation of the nuisance field strength would only give an intermediate value in the calculation of usable field strength and would not yield any idea of the quality of the coverage. He regretted the fact that the two alternatives were again being discussed at length after the protracted deliberations on Document DT/30 (Rev.1) when only one reservation had been expressed in the face of general agreement. The first alternative was not at all acceptable and he did not believe that specific problems such as the existence of mountainous areas should influence the formulation of a general planning rule.

1.10 The delegate of the Islamic Republic of Iran favoured the second alternative which should be placed in square brackets and referred to the Technical Working Group of the Plenary.

1.11 The delegates of the German Democratic Republic, Hungary, Turkey, the United Kingdom and the Federal Republic of Germany also favoured the second alternative.

1.12 The delegate of Finland said that the choice of a reference situation based on calculations of nuisance field strength was not suitable for application by administrations, especially for networks that were being built up station by station as it might mean that one administration would have to accept a high level value. From the outset his delegation's preference had been to reject such a complex procedure altogether as being unnecessary. If it had to be retained, the first alternative was preferable.

1.13 The delegates of Norway, Sweden, Ireland and Iraq favoured the first alternative.

1.14 The delegate of Italy said that he would have preferred dropping paragraph 3.7 but as a majority in favour of the second alternative seemed to be emerging he must again voice his concern that usable field strength as a reference point resulting from the Plan would not take account of terrain configuration in countries receiving a request to coordinate. If that omission could be corrected, he would be prepared to accept the second alternative.

1.15 The Chairman said he understood that the values finally adopted would not be mandatory but were intended to assist administrations in their bilateral or multi-lateral negotiations.

1.16 After a show of hands, the Chairman stated that 10 delegations appeared to favour the first alternative and 19 the second with the values placed in square brackets. He therefore proposed that the second alternative in paragraph 3.7 be submitted to the Plenary after the values had been reviewed by the Technical Working Group of the Plenary.

It was so agreed.

1.17 The Chairman of ad hoc Group 5 proposed, in the interests of clarity, that the words "as they may be ... modifications" at the end of paragraph 3.8 be replaced by the words "If, due to deletion or modification, the particular reference value becomes lower then this lower value becomes the reference." With such wording the reference value could never become higher.

1.18 The delegate of France said it was surprising that under paragraph 3.6, administrations were required to indicate certain elements in the actual situation on which the calculations would be based, whereas under paragraph 3.8 the reference values would be those resulting from the Plan. If the real situation were not taken into account that could result in unacceptable levels of usable field strength in certain cases. The second paragraph in section 3.8 could be improved if it were redrafted to the effect that reference values were those resulting from the real situation, when it could be determined, and only when that was impossible should reference be made to the situation resulting from the Plan.

1.19 The delegate of Italy agreed with the French proposal.

1.20 The delegate of the Islamic Republic of Iran proposed that the phrase after the words "transmitter site" in the first paragraph of paragraph 3.8 be replaced by the following words "or at predetermined points of the service area of the stations which are likely to be affected". His amendment simply involved a textual rearrangement which would make the sentence clearer and would look after those exceptional cases where an increase of 0.5 dB might give rise to difficulties.

1.21 The delegates of the Netherlands and Qatar supported that amendment.

1.22 The delegate of Algeria considered that the choice between the methods for calculating the usable field strength should lie with the administration whose agreement was being sought. The important thing was to avoid conflicts between administrations.

He wondered whether adoption of the proposals of France and the Islamic Republic of Iran would bring into question the whole procedure established for providing all administrations with criteria and values that were as realistic as possible to enable them to form a judgement. Limits that were applicable to all and by all were essential.

1.23 The delegate of France stated that account should be taken of the actual situation resulting from the topography of the path to obtain a more accurate idea of the foreseeable field strength. If the administrations concerned failed to reach agreement after examining the actual situation, they could always refer to the Plan.

1.24 The delegate of the Islamic Republic of Iran thought that paragraph 3.5, which stipulated that administrations might also communicate any additional information, and paragraph 3.8 in its modified form, met the concerns of the delegate of France.

1.25 The delegate of Poland felt that some test points should be determined for purposes of informing administrations; the delegate of France stated that, in his view, it was unnecessary to determine the points beforehand, since that would mean taking into account all possible cases, whereas, more often than not, it was necessary only to protect a station and to perform simple calculations limited in time and space.

1.26 The text of paragraph 3.8 finally adopted after fairly lengthy discussion was as follows:

"3.8 The limits referred to in section 3.7 shall be calculated by the method contained in / / at the transmitter site or at specific points of the service area of the stations which are likely to be affected; these specific points are indicated by the administration whose agreement is sought.

The reference values indicated in section 3.7 are those of an assignment in the Plan. If, due to deletions or modifications, the particular reference value becomes lower, then this lower value becomes the reference."

1.27 Note was taken of a reservation by the delegate of France, to the effect that the text no longer contained any reference to the actual situation, as well as of a reservation entered by the delegate of Italy.

Subject to those reservations, Document 160 as a whole was approved. The text would be inserted in Document 139 after appropriate renumbering.

2. Consideration of the first report of Working Group 5A (continued)  
(Document 139)

2.1 On a proposal by the delegate of the Islamic Republic of Iran, it was decided to ensure that measures were carried out in the correct sequence, to insert paragraph 3.5 of the Annex to Document 160 after paragraph 2.5 of Article 4. The other paragraphs of the Annex would be renumbered accordingly.

2.2 Paragraphs 3.7, 3.8, 3.9, 3.10, 3.11, 3.12, 4.1, 4.2, 5, 6.1, 6.3, 6.4

Those paragraphs were approved as they stood. Letters D, E, F placed between square brackets corresponded to values of 70, 100 and 14 respectively.

2.3 Paragraph 6.2

The delegate of Libya requested that the words "within 14 days" should be added at the beginning of the paragraph. The Chairman of the IFRB said that it was to be feared that, in the event of a heavy workload, such a commitment might affect other services of the IFRB. The IFRB would publish the relevant information in a special section as soon as it was technically possible.

2.4 Paragraph 7

The delegate of Libya requested the insertion, before that paragraph, of the text of paragraph 8 in Document DT/30, since Working Group 5A had decided to delete that paragraph.

The reinsertion of that paragraph was approved. Paragraph 7 would be renumbered accordingly.

2.5 The delegate of the USSR having said that he would be compelled to maintain the reservation entered with regard to paragraphs 2.2 and 2.4b) of Article 4 unless the remaining square brackets were removed, the Chairman stated that the reservations of the delegates of the USSR, Poland and the German Democratic Republic had been noted and that the matter would be further discussed at a later meeting.

3. Contents of the Plan (Document 151)

3.1 The Chairman of Committee 4, introducing the note from Committee 4 to Committee 5, said that the figure "506" in paragraph 1d) should be replaced by "586".



Paragraph 2 offered the choice between an appendix to the Plan and a separate list for the entry of unresolved cases. However, a list might be deleted, but not an appendix. With regard to paragraph 3, the Committee had been divided between variants a) and c).

### 3.2 Paragraph 1

3.2.1 The delegate of Poland enquired how the Conference would take account, in the categories of paragraph 1, of cases of interference suffered by the aeronautical radionavigation service and mentioned in the Plan.

3.2.2 The delegate of Switzerland suggested that an appropriate entry should be made in the remarks column.

3.2.3 The Chairman pointed out that paragraph 1 was confined to cases of interference between broadcasting stations. The delegation of Poland might raise the problem in the Plenary Meeting.

3.2.4 The delegate of Poland requested the Committee to take note of his reservations on that subject.

3.2.5 The delegate of the Islamic Republic of Iran said that a category of stations should be added to paragraph 1, namely, sound broadcasting stations in Region 3 and parts of Turkey not covered by the Stockholm Agreement (1961), operating in accordance with the Radio Regulations and notified to the IFRB by 1 December 1983.

3.2.6 The Chairman stated that it was not for the Committee to consider what constituted an unresolved case and invited the delegation of the Islamic Republic of Iran to raise the matter either in Committee 4, or in the Plenary meeting.

3.2.7 The delegate of the USSR asked why the planning area was divided, even though all the requirements expressed would have the same status in that area.

3.2.8 The Chairman of Committee 4 said that reference should be made to Document 149 for a full explanation and definition of unresolved cases and that the Technical Working Group of the Plenary had been instructed to define the field strength level and the relevant limit value to be applied in settling unresolved cases during and after the Conference. That value might differ according to planning area.

Paragraph 1 was noted.

### 3.3 Paragraph 2

Paragraph 2 was noted.

### 3.4 Paragraph 3

3.4.1 The delegate of Poland said that he was surprised at the wording of the first sentence, which seemed to him to be unusual in broadcasting agreements; the Chairman of Committee 4 pointed out that it had resulted from a decision of Committee 4, which had set up an ad hoc Working Group for that purpose.

3.4.2 The delegate of Algeria said that an assignment might have been coordinated with several countries and agreed on with all but one; the purpose of the text in question was to prevent an administration with an unresolved case from losing the advantage of coordination effected with, for instance, a dozen countries.

3.4.3 The Chairman suggested that variants a) and c) proposed in paragraph 3 should be examined.

3.4.4 With regard to variant c), the delegate of Switzerland enquired what body would be responsible for establishing the extra time to be allowed to administrations in special cases.

3.4.5 The delegate of the Islamic Republic of Iran suggested that the second Regional Administrative Conference should set a time limit of x months but thought that it was still too early to make specific suggestions.

3.4.6 The delegate of the USSR proposed the inclusion in the Plan of the requirements for which a solution had been found during the Conference; the others should appear in a supplementary list, for application, of the Article 4 procedure, since if the latter assignments were to come into effect within a certain period from the date of entry into force of the Final Acts, the Plan would have no further validity.

3.4.7 The delegate of Algeria found that proposal unacceptable for reasons of substance and also because a decision taken by Committee 4 was involved and Committee 5 should not call it in question.

3.4.8 The delegate of the Islamic Republic of Iran was opposed to the idea that cases unresolved during the Conference, due to shortage of time or for other reasons, should be treated as entirely new cases or as modifications to the Plan.

3.4.9 The delegate of Switzerland, supported by the delegates of Libya, Poland and Algeria, proposed that stations on which agreement had not been reached with one of its neighbours should be entered in the Plan with a note in column 13 specifying that the question of the e.r.p. would be settled at a later stage. If the administrations concerned found that solution acceptable, there would be no further difficulty. The case would therefore be regarded as settled in principle, subject to refinement. This solution would make it possible to obviate the need to avoid listing such cases of interference separately.

3.4.10 The Chairman, on the basis of a proposal by the delegate of Switzerland, suggested that assignments which had not been fully coordinated should be entered in the Plan with an indication that further coordination was still required. Thus it would be unnecessary to attach a separate list to the Plan.

3.4.11 The delegate of the Islamic Republic of Iran agreed to that solution on condition that the acceptable limits would be those adopted by the Conference and not any other introduced at the Plan modification stage.

The meeting was suspended at 2250 hours and resumed at 0900 hours on 29 November 1984

3.4.12 The Chairman of Committee 4 made the following statement:

"After the Committee 5's meeting yesterday evening, I consider it essential to clarify a number of points raised in the course of discussion on Document 151, since it was suggested that certain paragraphs in the document were not within the terms of reference of Committee 4. Committee 4's terms of reference are "To prepare a frequency assignment plan for sound broadcasting in the

band 87.5 - 108 MHz on the basis of the report of the first session as it might be modified in accordance with agenda item 2.1, taking account of the need to ensure adequate protection to stations of the aeronautical radionavigation service in the band 108 - 117.975 MHz." Committee 5's terms of reference are "To prepare an agreement for sound broadcasting stations in the band 87.5 - 108 MHz and adopt the associated procedures.

Accordingly, if we are preparing a Plan, we need to know not only frequencies, strengths, coordinates, etc., but also the form, or content, of the Plan. Hence Committee 4, in paragraph 1 of Document 151, decided on the content of the Plan, as set out in sub-paragraphs a) to d). In addition, there is the problem of resolved and unresolved cases, and paragraph 2 of Document 151 deals with questions relating to the form of the Plan. Committee 4 made a proposal (contained in Document 149) to the Technical Working Group of the Plenary to the effect that the Conference should propose a definition of an unresolved case. Finally, paragraph 3 of Document 151 proposed that Committee 5 should establish the status and future treatment of unresolved cases within the context of the Agreement, which comes within its terms of reference.

Yesterday evening it was implied that Committee 4 had perhaps exceeded the limits of its terms of reference. I wish to draw attention to the first two lines of the document, which states "... Committee 4 took the following decisions on points 1 and 2 below"; points 1 and 2 concern the form of the Plan. If Committee 5 takes any decisions different from those already taken on the same question by Committee 4, this constitutes a question of competence, which should be referred to the Steering Committee or to the Plenary."

3.4.13 The Chairman of the Technical Working Group said that at the meeting the previous day he had questioned whether Committee 4 could properly decide to give equal status to resolved and unresolved cases. As he saw it, that was a procedural decision which did not come within that Committee's terms of reference.

3.4.14 The delegate of Algeria pointed out that the terms of reference of the ad hoc Working Group of Committee 4 did in fact cover the question of status of unresolved cases, and the introductory sentence in paragraph 3 had in fact been adopted by the Committee. However, sub-paragraphs a) to c) had not been adopted.

3.4.15 The Chairman of the Technical Working Group thought the problem should be left to Committees 4 and 5 to decide between them. If Committee 5 were to arrive at a decision on the procedure for regulating unresolved cases which conflicted with the decision already taken by Committee 4, the latter could be asked to review its decision.

3.4.16 The delegate of the Islamic Republic of Iran feared that if the matter were referred back to Committee 4, the Conference's work would be delayed. He pointed out that if Committee 5 were to decide on alternative a) in paragraph 3, paragraph 2 would automatically be deleted.

3.4.17 The Chairman of the Technical Working Group proposed that a joint meeting of Committees 4 and 5 be held to solve the problem of competence.

3.4.18 The Chairman said it was preferable for the question to be dealt with in Committee 5 itself.

He invited members to resume consideration of paragraph 3 (status of unresolved cases). A proposal from Switzerland, which had received some support, was that a distinction should be made between two categories of cases: the first on which some degree of agreement had been reached, which would be entered in the Plan with an appropriate entry in the "Remarks" column, and the second for which no agreement had been reached, which would be entered in a separate list, the lifetime of which would have to be determined. He suggested that the meeting proceed on the basis of that proposal.

3.4.19 The delegate of Switzerland explained that the intent of his proposal had been to relieve the list, or appendix, of the burden of a large number of unresolved cases. Many so-called "unresolved" cases could be defined as "resolved" by appropriate entries in the "Remarks" column of the Plan, making clear that agreement by all administrations concerned was expected. Cases where no agreement was in prospect would still be identified as unresolved.

3.4.20 The delegates of Norway, Portugal, Austria and Algeria supported the Swiss proposal.

3.4.21 The delegate of the USSR also supported the proposal but urged that the cases concerned should be very clearly defined in order to avoid possible ambiguity. It would be in no-one's interest to have a Plan containing too many unresolved cases.

3.4.22 The delegate of Turkey supported that view.

3.4.23 The Chairman said he took it there was agreement on the Swiss proposal. In reply to a question from the delegate of France, he said that any limitations to an assignment entered in the "Remarks" column would be assumed to apply until final agreement had been reached.

It was so agreed.

3.4.24 The Chairman said the Committee had now to decide between the alternative solutions for the destiny of unresolved cases set out in sub-paragraphs a), b) and c) of paragraph 3.

3.4.25 The delegate of Algeria preferred solution b), which was a compromise between a) and c). He proposed that the date should be four years subsequent to the date of entry into force of the Final Acts, with an extension in special cases of twelve months.

3.4.26 The delegates of Saudi Arabia and Qatar supported that proposal.

3.4.27 The delegate of France thought a four-year period too long; he would prefer a maximum of two years.

3.4.28 The delegate of the Islamic Republic of Iran favoured solution a), with no time limit, but could agree to b), with a six-year period and two year special extension.

3.4.29 The delegate of the USSR was opposed to any specific period being specified; administrations could take any necessary initiatives after the Conference.

3.4.30 The delegate of the Islamic Republic of Iran reminded the Committee that some administrations were much worse placed than others in regard to manpower and technical facilities, and would find difficulty in coordinating unresolved cases. Their situation should be taken into account.

3.4.31 The Chairman suggested, as a compromise, that the figure in b) should be five years, with an extension of 18 months.

It was so agreed.

3.4.32 The Chairman of the Technical Working Group asked for clarification as to how cases involving aeronautical radionavigation stations were to be dealt with.

3.4.33 The Chairman of the IFRB said that the decision by the Plenary that Form 1 should not be submitted for aeronautical radionavigation implied that the latter would not be among the unresolved cases to be included within the framework of the Plan. It was unresolved cases in regard to interference that would appear in the Plan, with an appropriate entry in the "Remarks" column.

He would like to know what was meant by the phrase "special cases" in b), and also whether the extension could be allowed to a single administration or only to several.

3.4.34 The delegate of the Islamic Republic of Iran urged that the extension should be allowed on the request of one administration only.

It was so agreed.

3.4.35 The Chairman of the IFRB pointed out that there was a possible contradiction between paragraph 2 and paragraph 3. If Committee 4 were to decide that unresolved cases were to be entered in a list separate from the Plan, it would not be possible to afford them the status and protection provided for under paragraph 3. He would also like to know whether both resolved and unresolved cases, or only resolved cases, were to be included in calculations of reference field strengths.

3.4.36 The Chairman of Committee 4 said the preference of his Committee had been for an appendix rather than a separate list, but he was not sure which alternative was most advantageous from the legal point of view.

3.4.37 The delegate of the USSR said the second question raised by the Chairman of the IFRB was one which gave him concern. It would cause considerable difficulties for the aeronautical radionavigation service if not only assignments contained in the Plan but also assignments entered later in the appendix were to be taken into account.

3.4.38 The Chairman of the Technical Working Group asked for clarification as to where in the Agreement the introductory sentence to paragraph 3 was to be inserted. The second question raised by the Chairman of the IFRB was indeed an important one, since inclusion of unresolved cases could completely alter the situation regarding usable field strengths.

3.4.39 The delegate of the Federal Republic of Germany thought it would be inappropriate to take into account unresolved cases in calculating reference field strengths because of the high amount of interference associated with them.

3.4.40 The delegate of the United Kingdom concurred with that view of the delegate of the Federal Republic of Germany. Even if an unresolved case causing high interference were to be withdrawn at the end of six and a half years, it could still leave the station concerned with an unacceptable usable field strength.

3.4.41 The delegate of Switzerland stressed that as far as his Administration was concerned steps had already been taken to protect the aeronautical radionavigation service, and thus neither solution would have any detrimental effect on it.

3.4.42 The delegate of the USSR considered that only those stations entered in the Plan as coordinated should be taken into account in determining the reference situation.

3.4.43 The delegates of Poland and the German Democratic Republic supported that view.

3.4.44 The Chairman noted that the majority of the Committee was in favour of excluding unresolved cases from determining the reference situation for resolved cases.

3.4.45 The Chairman of the IFRB said he could thus conclude that:

- 1) reference usable field strengths would be calculated taking into account only frequency assignments which had been resolved;
- 2) usable field strengths for unresolved cases would be calculated using all assignments appearing in the Plan, resolved or not; and
- 3) when an unresolved case was entered in the Plan, reference usable field strengths would be recalculated on the basis of that entry.

3.4.46 The Chairman, in reply to a question raised by the delegate of the Islamic Republic of Iran, confirmed that unresolved cases would be fully protected in the case of any modifications to the Plan.

3.4.47 The Chairman of the Technical Working Group noted that the Chairman of Committee 4 had stated that only paragraphs 1 and 2 of Document 151 represented decisions by Committee 4, and that the introductory sentence of paragraph 3 represented only a proposal. He wished it to be clearly stated in the record that he could not accept that that sentence had been adopted by the meeting.

The meeting was suspended at 1035 hours and resumed at 1540 hours.

3.5 The Chairman invited the Committee to revert to Article 3 - Content of the Plan as set out in Document 139 and said he assumed that the square brackets could be removed from that Article, on the understanding that the Resolution referred to at the end of paragraph 3 would probably be changed to the Recommendation appearing in Document DT/56.

In reply to a request for clarification by the Secretary of the Conference, he said he understood that, on the basis of the Recommendation in Document DT/56, the Administrative Council would decide on the future competent world administrative conference which would consider No. 584 of the Radio Regulations in the light of the Plan and the associated provisions of the Agreement and would submit its decisions to all Members of the Union for confirmation.

3.5.1 The delegate of Algeria proposed that the words "coordinated either during the Conference or in application of provisions contained in this Agreement" should be inserted after "87.5 - 108 MHz" in paragraph 1. He further proposed that paragraphs 2 and 3 should be renumbered 1.1 and 1.2 respectively.

3.5.2 The delegate of the USSR proposed that the first sentence of paragraph 2 should be replaced by the words:

"The first part contains frequency assignments in the band 87.5 - 100 MHz to sound broadcasting stations in accordance with Resolution 510 of the World Administrative Radio Conference, Geneva, 1979,"

so as to avoid mention of the replacement of the Plans in the 1961 and 1963 Regional Agreements: the question of the competence of the current Conference to replace those Plans had not yet been settled.

3.5.3 The Chairman of the IFRB pointed out that the first part of the Plan contained frequency assignments which were not in accordance with the Resolution in question and that any reference to that text should also apply to paragraph 3. He therefore suggested that paragraph 1 of Article 3 should begin with the words "The Plan is established in accordance with Resolution 510 of the World Administrative Radio Conference, Geneva, 1979, contains ...".

3.5.4 After a brief discussion, the delegate of Algeria proposed that the words "when so agreed by a competent conference" should be inserted after "to replace" in the second line of paragraph 2. The delegate of the USSR endorsed that amendment, as well as a suggestion by the delegate of the Islamic Republic of Iran to replace the word "containing" in the first line of the paragraph by "including".

3.5.5 The delegate of Finland proposed that the words "in the planning area" should be inserted after "non-Contracting Members" in the last sentence of paragraph 3.

3.5.6 After an explanation of the last sentence of paragraph 3 by the Chairman of the IFRB, the delegate of the Islamic Republic of Iran said that the status quo should not continue until the next competent conference, which might not be convened until 1990. He proposed that the sentence should be put in square brackets.

Article 3 was approved, as amended.

3.6 The Chairman drew attention to the fact that two new Articles had been proposed, one concerning compatibility with aeronautical radionavigation stations and the other relating to unresolved cases. He invited the Committee to comment on Article 5 - Notification of frequency assignments.

3.6.1 The Chairman of the Technical Working Group of the Plenary pointed out that two Resolutions would be annexed to the Agreement, concerning time-limits for bringing stations into operation and notification of assignments which might cause interference to radionavigation stations. Article 5 should perhaps contain reference to those Resolutions.

3.6.2 The Chairman suggested the addition of a phrase in parentheses referring to Article 4bis and the draft Resolution appearing in Document 145.

Article 5 was approved as amended.

### 3.7 Article 6 - Accession to the Agreement

3.7.1 The delegate of Algeria, supported by the delegate of the United Kingdom, said it was unclear whether the reference to the Plan in paragraph 1 of Article 6 included the appendix containing unresolved cases; he suggested that the reference to the Plan might be deleted entirely.

3.7.2 The Chairman of the IFRB recalled that no decision had been taken about the unresolved cases when paragraph 1 was drafted. A reference might be inserted to the appropriate Article concerned with unresolved cases.

3.7.3 The delegate of Algeria proposed that the definition of "Plan" in Article 1 should be modified to make clear that it included the appendix thereto.

It was so agreed.

3.7.4 The Legal Adviser suggested that the final sentence of paragraph 1 of Article 6 might read:

"Accession to the Agreement shall be made without reservation and shall apply to the Plan as it stands at the time of accession.",

or alternatively, that the formulation to be found in WARC-1979 might be copied.

The Legal Adviser's wording was adopted and Article 6 was approved, as amended.

### 3.8 Article 7 - Scope of application of the Agreement

#### Article 8 - Approval of the Agreement

Approved.

### 3.9 Article 9 - Denunciation of the Agreement

3.9.1 The Chairman of the IFRB stated that the provision contained in paragraph 3 posed a problem in regard to the band 100 - 108 MHz: it would not be possible to delete assignments of the Plan in that band until a competent administrative conference had dealt with provision No. 584 of the Radio Regulations. He therefore proposed two amendments: i) in line 2 of paragraph 3 after "assignments" insert "in the band 87.5 - 100 MHz"; and ii) the addition of a new sentence to read:

"Similar action shall be taken in regard to the band 100 - 108 MHz after consideration of provision No. 584 of the Radio Regulations by a competent administrative conference."

Article 9, as amended, was approved.



3.9.2 The delegate of Poland enquired whether the provision of Article 9, paragraph 3, meant that the assignments in question would likewise disappear from the Master International Frequency Register.

3.9.3 The Chairman of the IFRB replied in the negative.

3.10 Article 10 - Revision of the Agreement

Approved.

3.11 Article 11 - Partial abrogation of the Regional Agreement for the European Broadcasting Area (Stockholm, 1961)

Article 12 - Partial abrogation of the Regional Agreement for the African Broadcasting Area (Geneva, 1963)

3.11.1 The Chairman suggested that the draft Articles 11 and 12 should be deleted in view of the conclusions of the Committee in its consideration of documents issued subsequently.

It was so agreed.

3.12 Article 13 - Duration and entry into force of the Agreement

3.12.1 Paragraph 13.1

3.12.1.1 The delegate of the Islamic Republic of Iran proposed that the word "sound" be inserted before "broadcasting" on the third line.

The Chairman suggested that the proposal be adopted with the proviso that the Editorial Committee was at liberty to alter the term concerned to "broadcasting (sound)" or otherwise as required to bring the form of the expression into line with the terminology used elsewhere in the Final Acts.

It was so agreed.

3.12.1.2 The delegate of the Islamic Republic of Iran proposed that the period of duration of the Agreement from the date of its entry into force be set at between 15 and 20 years.

3.12.1.3 The delegate of France said that the duration of the Agreement would, in the nature of things, be determined more by the length of time Contracting Members remained satisfied with it than by any specific number of years written into the Agreement. He therefore questioned the utility of making such a provision.

3.12.1.4 The Chairman said it had always been the custom in the ITU, in response to the wish of delegates, for such agreements to set a limit to their duration. He therefore proposed that the practice continue to be observed in the present case and that the longer length of time suggested by the delegate of the Islamic Republic of Iran be accepted with insertion of the figure "20" in front of "years" on the third line of the paragraph and deletion of the square brackets.

It was so agreed.

3.12.2 Paragraph 13.2

3.12.2.1 The delegate of Italy said that after the Conference administrations would be faced with an enormous amount of calculation and coordination at national and international level to prepare the way for application of the Plan. He therefore considered that the entry into force of the Agreement should be postponed to 1 January 1988.

3.12.2.2 The delegate of the Islamic Republic of Iran, considering that it would be more logical to set the time of entry into force of the Agreement at exactly four years after closure of the Conference, proposed the date of 8 December 1987.

3.12.2.3 The delegate of the United Kingdom proposed that the Committee adjourn discussion of the date of entry of the Agreement into force until after it had considered Document 159, which proposed an optional procedure for early implementation of assignments in the Plan and would have a bearing on the subject.

3.12.2.4 The delegate of the USSR, supporting the proposal for adjournment of the debate, said the date of entry into force of the Agreement would be more usefully decided upon once the full text of the rest of the Agreement, many parts of which were still pending, had been approved.

It was decided to adjourn the discussion to a later meeting of Committee 5, leaving the date in paragraph 13.2 in square brackets.

3.12.2.5 In connection with the action to be taken with regard to stations not in conformity with the Agreement when the latter comes into force, the Chairman of the IFRB, in reply to a query from the delegate of Algeria, said that it was the general practice for administrative radio conferences to adopt a Resolution to embody such provisions. That precedent could be followed in the present case; alternatively, the issue could be covered in a provision added to paragraph 13.2.

3.12.2.6 The delegate of Algeria said that in that case he proposed that a further sentence should be added to paragraph 13.2 as follows:

"At this date sound broadcasting systems not in conformity with the Plan, or contained in the appendix thereto, shall cease transmission until such time as they are brought into conformity with the Plan."

3.12.2.7 A lengthy discussion ensued, in which the delegates of the United Kingdom and Algeria, the Chairman of the IFRB and the Chairman of Committee 6 took part, from which it emerged that the meeting was unclear as to the distinction to be made between "plan" and "Plan".

3.12.2.8 The delegate of Algeria said he considered that the difference between the two had been made plain in earlier discussion. However, if the Committee so wished, the words "with the plan or in the appendix thereto" in his proposal could be replaced by "with the Plan", but he reserved the right to reconsider the matter if he found on further deliberation that that wording did not express the exact meaning he wished to convey.

3.12.2.9 The Chairman said the point the delegate of Algeria wished to make was perhaps already sufficiently covered in Article 2, paragraph 1, and did not need to be restated.

3.12.2.10 The delegate of the United Kingdom said that with regard to the Algerian proposal and to Article 2, paragraphs 1 and 2, he was concerned that the wording used was perhaps too stringent. At the entry into force of the Agreement, there might well be stations in service, which, although they were not in the Plan or its appendix, nevertheless were in conformity with Radio Regulations 584 and 342 in that they caused no harmful interference to services carried on by stations operating in accordance with the Plan. As the wording of the provisions mentioned stood, such inoffensive stations might be forced to cease transmission upon entry into force of the Agreement.

3.12.2.11 The Chairman, supported by the delegate of Algeria, said that such cases would not be affected by the Agreement since the Radio Regulations took precedence over the Agreement.

On that understanding, the principle of the Algerian proposal was approved subject to acceptable wording being drafted by the Editorial Committee.

### 3.12.3 Paragraph 13.3

3.12.3.1 The delegate of the Islamic Republic of Iran noted that the paragraph almost exactly reproduced the wording of Article 10.

3.12.3.2 In order to remove the redundancy, the delegate of Spain proposed that the text of the paragraph following the word "revised" in the first line be replaced by "in accordance with the provisions of Article 10".

It was so agreed.

3.12.3.3 The delegate of France, noting that only one procedure, revision by a regional administrative radio conference, had been provided for review of the Agreement, wondered whether it might not be both useful and practical to make it possible to have recourse to other review procedures.

3.12.3.4 The Chairman of the IFRB explained that because of the interdependence and mutual impact of all decisions in the field of radiocommunications, which meant that all countries in a given planning area had to be party to decisions affecting that area, and the fact that such decisions would involve instructions to be given to the IFRB and other ITU organs, the only feasible way to ensure that workable agreements were arrived at and proper instructions given to the ITU Secretariat was to review administrative texts within the framework of the Convention and the Radio Regulations, in other words exclusively through an administrative radio conference.

Article 13, as amended in discussion, was approved.

3.13 The Chairman said that when the Committee came to review those parts of the draft Agreement that had been left pending in square brackets, it would have before it a text incorporating all the changes that had been decided on in the course of the discussion on Document 139. It would thus have a further opportunity to review and reconsider points which had perhaps remained unclear.

The meeting rose at 1710 hours.

The Secretary:

J. FONTEYNE

The Chairman:

K. OLMS

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Corrigendum 1 to  
Document 158-E  
5 December 1984  
Original: English

COMMITTEE 4

SUMMARY RECORD

OF THE

SEVENTH MEETING OF COMMITTEE 4

1. Paragraph 3.3.1

Delete the phrase "because the first did not take account of topographical characteristics."

2. Paragraph 3.5.5

Replace by the following:

"3.5.5 The delegate of the USSR observed that the ad hoc Group had not reached a decision on the status of television stations in the 87.5 - 100 MHz band outside the Stockholm Agreement in relation to broadcasting stations of other countries. That question should be taken up by the Technical Working Group of the Plenary based on the decision of the First Session."

3. Paragraph 3.5.7

Replace by the following:

"3.5.7 The delegate of the USSR said that in that case he was unable to see how an administration could object to a broadcasting assignment in that band which was outside the Stockholm Agreement in the case of deterioration of the service area of television stations."

4. Paragraph 3.6.1

In the first line replace the word "abolition" by "establishment".

5. After paragraph 4.1

Insert a new paragraph 4.2 as follows:

"4.2 The delegate of Libya expressed his delegation's reservation with respect to the first paragraph of Document 147."

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 158-E  
28 November 1984  
Original: English

## COMMITTEE 4

### SUMMARY RECORD

#### OF THE

#### SEVENTH MEETING OF COMMITTEE 4

#### (PLANNING)

Tuesday, 27 November 1984, at 0905 hrs

Chairman: Dr. I. STOJANOVIC (Yugoslavia)

#### Subjects discussed:

#### Documents

- |  |     |
|--|-----|
| 1. Note from the Chairman of Planning Group 4A             | 144 |
| 2. Note from the Chairman of Planning Group 4D             | 146 |
| 3. Report by the Chairman of ad hoc Group 4 to Committee 4 | 148 |
| 4. Additional columns to the Plan                          | 147 |
| 5. Introduction of documents                               | 126 |
| 6. Deadline for the submission of Form 3                   | -   |

1. Note from the Chairman of Planning Group 4A (Document 144)

1.1 The Chairman of Planning Group 4A, presenting his note (Document 144), said that it listed in the annexes additional requirements accepted by the Planning Group subject to the provisos set out in sub-paragraphs (i) and (ii).

The Committee took note of Document 144 and requested the IFRB to take into account the additional requirements listed therein.

1.2 The representative of the IFRB said that, in view of other priorities, he was not in a position to say exactly when the required diagrams could be made available, although the Secretariat would do its best to produce them as soon as possible.

2. Note from the Chairman of Planning Group 4D (Document 146)

2.1 The Chairman of Planning Group 4D, introducing his note (Document 146), recalled that several countries were intending to replace television transmitters in the 87.5 - 100 MHz band with sound broadcasting stations but the timing was uncertain and might vary from country to country. Planning Group 4D considered it appropriate to include a standard note in the Remarks column of the Plan dealing with such planned sound broadcasting assignments. Wording for such a note was proposed at the end of section 4 of the document.

2.2 The delegate of Greece wished to know what action was to be taken in respect of assignments for television stations in the 87.5 - 100 MHz band in Eastern European countries which had been included in the Stockholm Agreement but had never been and never would be put into service, and whether they would now be deleted by the administrations concerned. He could see no reason why such stations should be protected.

2.3 The Chairman of Planning Group 4D said it was for the administrations concerned to make their intentions known. Alternatively, when abrogating the Stockholm Agreement, the Conference could decide on what should be done with assignments never implemented.

2.4 The delegate of the Islamic Republic of Iran considered that it was not for the present Conference to discuss the status of assignments in the Stockholm Agreement.

2.5 The representative of the IFRB pointed out that only broadcasting requirements would be included in the Plan of the present Conference but they should not affect existing or planned assignments for television stations in the Stockholm Agreement, though the latter would not appear in the Plan.

The Committee took note of Document 146 and the text in section 4 for the proposed note was approved.

3. Report by the Chairman of ad hoc Group 4 to Committee 4 (Document 148)

3.1 The Chairman of ad hoc Group 4 said that as the Group had not been able to complete its work within the prescribed time-limit he had been authorized to draw up its report (Document 148) but its content was subject to endorsement by the Group's members.

The following corrections should be made in the text in Document 148; the word "limit" should be inserted before the word "value" in the last sentence of section 1. At the end of section 3, the full stop should be replaced by a comma and the following text should be added:

"and indicating the type of station affected, namely:

- sound broadcasting station, or
- aeronautical radionavigation station, or
- television station in conformity with the 1961 Stockholm Agreement."

Sections 1, 2 and 3 had been adopted unanimously but section 4 had not been adequately considered so that the alternatives in sub-paragraphs a) to c) had been left in square brackets as well as the last paragraph in that section, the decision on which would depend on the time-limit adopted. Annexes 1 and 2 contained draft notes to Committee 5 and to the Technical Working Group of the Plenary.

3.2 The Chairman, observing that there was no need to resume a general discussion on the question of unresolved cases which had already taken place at the sixth Plenary Meeting, invited the Committee to consider the ad hoc Group's report section by section.

3.3 Section 1

3.3.1 The delegate of Spain, supported by the delegates of Iraq and Italy, favoured the second alternative definition "a nuisance field strength level" because the first did not take account of topographical characteristics.

3.3.2 The delegate of Tunisia, also supporting the second alternative, considered that account should be taken of the possible creation of a nuisance field strength level by more than one station belonging to an administration.

3.3.3 The delegate of the Islamic Republic of Iran considered that the whole problem of unresolved cases should be referred to the Technical Working Group of the Plenary.

3.3.4 The Chairman of ad hoc Group 4 agreed that the Technical Working Group of the Plenary must choose between the alternative criteria in section 1 which had not been discussed in depth by the ad hoc Group. The important point was to establish a limit value and he was bound to point out that the second alternative was as theoretical as the first, as shown by the IFRB's analysis.



3.3.5 The delegate of Libya emphasized that the value chosen must take account of terrain characteristics.

3.3.6 The delegate of the Federal Republic of Germany agreed that the definition should be settled by the Technical Working Group of the Plenary but doubted whether terrain characteristics could be taken into account in a general definition: that element must be left to bilateral negotiations. He proposed that the opening words of the last paragraph in section 1 be amended to read: "The type and limit of the value will be established ...".

3.3.7 The delegate of the German Democratic Republic said that it might be difficult for the Conference to define a limit for nuisance field strength that was generally applicable because it would vary from case to case and area to area.

3.3.8 The Chairman of ad hoc Group 4 drew the attention of the previous speaker to the last sentence in section 1 showing that his point had not been overlooked.

3.3.9 The delegate of the Islamic Republic of Iran said that unless a limit value was established, and he favoured the third alternative, the status of unresolved cases could not be settled. The last line in the opening sentence of section 1 should be amended to read "... necessary agreements during and after the Conference until the date to be decided in section 4; this limit might be:" since the limit would be applicable only until a certain date and not indefinitely.

It was agreed that section 1 be referred to the Technical Working Group of the Plenary.

### 3.4 Section 2

3.4.1 The delegate of Yugoslavia, drawing attention to paragraph 1.2 in Document 119 which concerned the European region alone, said that as some Form 1s were inconsistent with the procedure set out in that paragraph a new paragraph d) should be added at the end of section 2 reading:

"The requirements concerning the sound broadcasting stations contained in the Reference List as given in the IFRB Circular-letter No. 575 as amended in Annex 6 to the IFRB Circular-letter No. 586 cannot be treated as unresolved cases if the required characteristics are in conformity with the characteristics contained in the Reference List."

3.4.2 The delegate of Greece seconded the proposal.

The Yugoslav proposal was adopted. Section 2, as amended, was approved.

### 3.5 Section 5

3.5.1 The representative of the IFRB said in reply to a question by the delegate of the Federal Republic of Germany, that the IFRB would automatically produce a list of unresolved cases which should be designated as a "separate list" and not an

"appendix" because, according to the procedures suggested in Document 148, an appendix would disappear and would not form part of the Plan once a decision was taken on stations which remained unresolved up to the date of entry into force of the Final Acts.

3.5.2 The delegate of the Federal Republic of Germany pointed out that there could be cases which could not automatically be recorded in a separate list and which could only be resolved after the end of the Conference perhaps through bilateral negotiations even though a frequency might be agreed earlier on a temporary basis.

3.5.3 The representative of the IFRB pointed out that a case which would only be resolved after the Conference during the interval before the entry into force of the Final Acts, would be identified as unresolved and presumably would be deleted from the Plan.

3.5.4 The Chairman of ad hoc Group 4 agreed with the representative of the IFRB.

The choice between using the title "separate list" or "appendix" would depend on the decision concerning the status of unresolved cases.

He added that the report of the ad hoc Group failed to mention the fact that unresolved cases on which agreement was reached subsequently should normally be included in the Plan: a point which would have to be examined by Committee 5.

3.5.5 The delegate of the USSR observed that the ad hoc Group had not reached a decision on the status of television stations in the 87.5 - 100 MHz band coming within the Stockholm Agreement. That question should be taken up by the Technical Working Group of the Plenary.

3.5.6 The representative of the IFRB explained that television stations outside the European Broadcasting Area and the Stockholm Agreement were not on the Conference agenda and did not have to be taken into account.

3.5.7 The delegate of the USSR said that in that case he was unable to see how an administration could object to a broadcasting assignment in that band which was outside the Stockholm Agreement.

3.5.8 The representative of the IFRB pointed out that the present Conference was required to establish a sound broadcasting Plan for Region 1 and two countries in Region 3. The only television stations needing protection were those within the Stockholm Agreement i.e. the European Broadcasting Area. Questions connected with the operation of television stations outside the European Broadcasting Area and their status vis-à-vis sound broadcasting assignments covered by the present Conference would have to be resolved under the Radio Regulations.

### 3.6 Section 4

3.6.1 The delegate of Spain said he was opposed to the abolition of any time-limit for the protection of unresolved cases. Moreover, with regard to the last paragraph, he did not consider that the appendix should be deleted, since the cancellations would be transferred automatically from the appendix to the Plan.

3.6.2 The delegate of the Islamic Republic of Iran observed that the wording of the opening sentence of the section was obscure and proposed that it should be replaced by the words "Unresolved cases will have the same status as resolved cases vis-à-vis modifications to the Plan". The Chairman of ad hoc Group 4 accepted that amendment.

3.6.3 The delegate of Libya, supported by the delegates of Iraq, Syria and the United Arab Emirates, proposed that sub-paragraph a) should be adopted and sub-paragraphs b) and c) should be omitted. The delegate of Tunisia also supported that proposal and further proposed that the last paragraph of the section should also be deleted.

3.6.4 The delegate of the Federal Republic of Germany pointed out that the section contained no paragraph relating to the issue discussed in the ad hoc Group of the reference situation to be developed by the IFRB after the Conference. If unresolved cases were to enjoy the same status as stations appearing in the Plan without any time-limit, they should not be included in the reference situation, because such cases, which might never be resolved, would nevertheless unnecessarily raise the usable field strength on which further modifications would be based.

3.6.5 The delegate of Italy supported those remarks, adding that he was in favour of the solution in sub-paragraph c). The delegate of the United Kingdom also endorsed those remarks.

3.6.6 The delegate of the Islamic Republic of Iran said he could not agree with the arguments of the delegate of the Federal Republic of Germany. The cases in question related to requirements submitted by administrations in accordance with rights granted to them by the Convention and there was no reason why they should be subjected to the pressure of time-limits, particularly since that procedure had not been applied at previous conferences. He therefore supported the Libyan proposal. Those views were endorsed by the delegate of Greece.

3.6.7 In reply to the delegate of Iraq, who asked how the non-inclusion of unresolved cases in the reference situation would affect the time-limit to be set by the Technical Working Group of the Plenary, the delegate of the Federal Republic of Germany observed that two different procedures were involved. The limit to be set by the Technical Working Group applied to the definition of unresolved cases, and if the criterion used was below that limit, an unresolved case would automatically be resolved; that had nothing to do with the resolution of cases still unresolved, which could be agreed upon between administrations or through multilateral negotiations, taking into account such factors as the influence of the terrain, protection shielding and propagation peculiarities.

3.6.8 The delegate of Iraq said that he was not entirely satisfied by that explanation, which did not take account of possible effects of the reference field strength on the definition of unresolved cases.

3.6.9 The delegate of the Federal Republic of Germany cited No. 11 of Annex G to the report of the first session describing the situation which would be used as a reference in the future modification process under Article 4 of the Agreement. If the usable field strength was increased at a new station or an existing station with modified characteristics, by more than the predetermined value of 0.5 dB, coordination was required, whereas in other cases coordination should be assumed to have been effected automatically. If the Article 4 modification procedure related to the reference situation, it was essential to define carefully at the current Conference which stations determined that situation. He proposed that the unresolved cases of transmitters in the separate list should not be included in the reference situation, because their contribution to the usable field strength could increase that strength to unnecessarily high values.

3.6.10 The delegate of Iraq said that those explanations confirmed his suspicions that coordinated usable field strengths which might be accepted in one direction because of an intervening mountain, for instance, might, when calculated after the Conference, result in quite a different situation, in which there would be no intervening obstacle. Considerable difficulties could thus be caused for countries which had accepted high field strengths on the basis of physical factors.

3.6.11 The delegate of the Islamic Republic of Iran said it was obvious that many incompatibilities could be resolved relatively soon after the Conference and there seemed to be no real reason for not taking the unresolved cases into account in the reference situation. In any case, the problem was under discussion in Working Group 5A, in connection with Document 123.

3.6.12 The delegate of the United Kingdom pointed out that much depended on when the reference situation would be established - at the Conference or at the date of entry into force of the Final Acts. In the second case, the previous speaker's point would be covered.

3.6.13 The Chairman proposed that the problem should be referred to Committee 5.

It was so agreed.

### 3.7 Section 5

Approved.

Document 148 was approved as amended.

3.8 The Chairman said he would forward sections 1 and 4 to the Chairmen of the Technical Working Group of the Plenary and Committee 5, respectively, and thanked ad hoc Group 4 and its Chairman for their work.

4. Additional columns to the Plan (Document 147)

4.1 In reply to a question by the delegate of Italy, the Technical Secretary reminded the Committee of its decision that columns 1 to 17 of the Plan should be printed on paper and that the information in the former boxes 31B and 32 of the inventory of requirements - now columns 18 and 19 - should be published in microfiche form only. It was now proposed to publish columns 1 to 17 in microfiche as well as in printed form, to facilitate consultation of the Plan as a whole.

Document 147 was approved.

5. Introduction of documents (Document 126)

5.1 The delegate of Egypt, introducing the document, first read out some minor corrections to it. The paper began with a description of propagation characteristics over warm seas and coastal land which opened the way to realistic planning, since it took into account the actual propagation conditions over coastal land, not a rough approximation based on 50 km of land bordering on the sea. In fact, sea conditions changed gradually to deep inland characteristics, and the sharp transitions mentioned in other documents were fictitious. The paper went on to show the significance of different values of usable field strength, demonstrating that only a value of 70 dB( $\mu$ V/m) would yield the required transmitter powers for reasonable coverage. Section 2 of the document contained a list of seven demerits of the regular lattice planning proposed by the first session when applied along the borders of warm seas: after five weeks of the Conference's deliberations, those demerits had been amply proved. Section 3 set out a systematic method for planning assignments close to the borders of warm seas. It was naturally assumed that transmitters were located with reasonable spacing, since the accumulation of a number of transmitters at any location would hinder the planning process or would even render it impossible. The proposed method divided the area concerned into three sections, the boundary area close to the sea, the deep inland area and the transit zone, lying between the first two areas. The planning approaches used for the three areas were described in sections 3.1, 3.2 and 3.3, respectively.

5.2 The delegate of Oman said that the document contained much valuable material and it was to be regretted that it had not been discussed at an earlier stage of the Conference.

The Committee took note of Document 126.

6. Deadline for the submission of Form 3

6.1 The delegate of Belgium, pointing out that the deadline for the submission of Form 3 had been set at 1800 hours on Tuesday, 27 November, asked whether it might not be possible to extend that time-limit, only for stations for which green modification forms would be issued.

6.2 The Technical Secretary said it would be seen from the microfiches of the Plan to be issued shortly that Form 3 was applicable only to certain cases. The Secretariat had received over 14,000 modifications to the Plan, over 4,000 on Form 1 and some 6,000 on Form 2; he appealed to delegations to submit their green modification forms and Forms 2 as quickly as possible. With regard to the Belgian delegate's request, the time-limit for the submission of Form 3 might be extended to midday on Thursday, 29 November, but only in a few special cases.

6.3 The Chairman urged all delegations to respond to that appeal.

The meeting rose at 1100 hours.

The Secretary:

D. SCHUSTER

The Chairman:

I. STOJANOVIC

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 159-E  
28 November 1984  
Original: English

COMMITTEE 5

Botswana (Republic of), Ireland,  
Lesotho (Kingdom of), United Kingdom

## OPTIONAL PROCEDURE FOR EARLY IMPLEMENTATION OF ASSIGNMENTS IN THE PLAN

### Introduction

1. This paper considers the possibilities for bringing some assignments of the new Plan into service before the Plan itself comes into effect. It is recognized that, until the Plan comes into effect, the use of its assignments (where they are not identical with assignments already coordinated) depends on the consent of any other administration whose existing services could be affected. Existing stations in the band 87.5 - 108 MHz will continue to have precedence so long as the Plan is not yet in force. Any procedure for earlier implementation of Plan assignments must therefore be optional, not mandatory. It should be available to administrations who can mutually benefit from it, but any administration which prefers to wait until the coming into effect of the Plan, before making any changes to its services, is free to do so.

### Discussion

2. In principle it is open to any administration to implement a Plan assignment in advance of the Plan's operative date, by treating that assignment as a proposed assignment subject to the modification procedures set out in agreements which for the time being remain in force, or subject to the more general provisions of the Radio Regulations where no current agreement applies. In practice, that approach is not likely to produce significant opportunities for advance implementation of Plan assignments, chiefly because it does not provide for the synchronization of implementation of related assignments.

3. The advantages of facilitating early implementation are clear. An individual administration may have operational reasons for starting up new broadcast services ahead of the Plan's operative date. Moreover, administrations generally can benefit from the practice, even if they do not themselves take part in it. The reason for this is that there are likely to be situations where an administration must, to conform with the new Plan, change the characteristics of a significant number of stations providing a current service. In view of economic and manpower constraints it may not be feasible to make all the necessary changes simultaneously to coincide with the coming into effect of the Plan. There is thus a real risk that, after the Plan has come into effect, some stations no longer in conformity with the operative plan will still be in use for a time and thus reduce the freedom of other administrations to implement their Plan assignments. This risk can be reduced, though not eliminated, by making it easier for administrations to carry out the implementation of Plan assignments in stages beforehand.

4. Timing appears to be a key problem in devising a procedure. For example, if Administration A wishes to implement a Plan assignment in advance it may find itself blocked by Administration B even though B is contemplating a related change some months further in the future. A procedure which focuses on particular dates for synchronized implementation would be more likely to produce sets of related Plan assignments which administrations could agree to implement early.

5. An appropriate procedure would therefore subdivide the period between the conference and the coming into effect of the Plan, creating a series of phases - six months long, for example - in each of which there would be prescribed dates for each stage of a simplified coordination process. For example, the first phase after the Conference might begin on 1 February 1985. By that date, any administration wishing to implement a Plan assignment at the end of that phase should send appropriate details to all administrations within coordination distance. Further dates would be set for replies and for the completion of any consultations. (In the absence of agreement, the assignment could not be implemented.) Assignments to which the necessary agreement had been given would be implemented on 1 August 1985, which would also be the date for notifying intentions for the next phase; and so on.

6. The date on which the Plan comes fully and formally into effect could then be 1 February or 1 August 1987, giving three or four previous dates for practical implementation by agreement. In this way it would be possible to adapt to the working of the new Plan in four or five stages instead of one, and it would also be possible to use manpower and financial resources more evenly over a period of two-two and a half years.

7. As the procedure proposed would be optional and is designed for a relatively short transitional period, it cannot displace existing formal agreements except by mutual consent. For example, previous Agreements which will still be in force during this period contain modification procedures with schedules; the purpose of the procedure discussed here is to create a simpler and quicker alternative which can be informally available to administrations wishing mutually to benefit from it. Implementation of an assignment for which this procedure has been successfully applied would not be in derogation of the formal modification procedures in existing agreements.

8. In some instances an administration may have an operational requirement to introduce during this period a new assignment which is not in the Plan, for example as an intermediate step in converting a currently operating station to the characteristics provided for in the Plan. Such a requirement could be processed in the same way as assignments appearing in the Plan, subject of course to the fact that, once the Plan is in effect, they must not cause interference to Plan assignments nor claim protection from them.

#### Proposal

9. It is proposed that the Conference adopt the draft Resolution and associated annex appended to this document.

Annex: 1



ANNEX

DRAFT RESOLUTION

Relating to an optional procedure for the early implementation  
of assignments in the Plan

The Regional Administrative Conference for the Planning of VHF Sound  
Broadcasting (Region 1 and part of Region 3) (Geneva, 1984),

considering

- a) that the Plan will come into effect on      ;
- b) the advantages that can accrue from a simplified procedure whereby  
administrations may agree to implement certain assignments of the Plan before the  
Plan comes into effect;

resolves

to adopt an optional procedure to be used by administrations seeking  
agreement to their early implementation of Plan assignments;

invites administrations

to follow for this purpose the procedure set out in the annex to this  
Resolution.

Annex: 1

Annex

(to Resolution .....)

Procedure for early implementation  
assignments in the Plan

1. Administrations wishing to follow the optional procedure referred to in Resolution ..... may observe the following steps:

- a) a final date for notifying, by telex, all administrations having territory within coordination distance that they wish to implement a specified Plan assignment or assignments (or a temporary assignment not in the Plan, which shall have no status with respect to the Agreement and associated Plan once these are in effect) on the date applicable to step d);
- b) a final date by which administrations consulted shall inform the initiating administration, by telex,
  - i) that they agree to the proposal; or
  - ii) that they wish to consult; or
  - iii) that they do not agree to the proposal;
- c) a final date for completing any consultations required as a result of step b) (ii);
- d) a date on which all the assignments agreed to may be implemented.

2. The schedule to be followed for the first phase of early implementation is:

Step a) [ 1.2.85 ]

Step b) [ 1.3.85 ]

Step c) [ 1.6.85 ]

Step d) [ 1.8.85 ]

The date of step d) also becomes that of step a) for the second phase of early implementation, repeating the cycle until the Plan comes into effect.

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 160-E  
28 November 1984  
Original: English

## COMMITTEE 5

### REPORT OF AD HOC GROUP OF COMMITTEE 5

The ad hoc Group of Committee 5 had two meetings and proposes the following text (see annex): it is noted that once Committee 5 has agreed on 3.7, it should be handed to the Technical Working Group of the Plenary to consider the figures in square brackets.

E. DEVENTER

Chairman of the ad hoc Group of Committee 5

Annex: 1

ANNEX

3.5 When requesting the agreement of another administration, the administration proposing to modify the Plan may also communicate any additional information relating to proposed methods and criteria to be used as well as other details concerning the terrain conditions, particular propagation problems, etc.

3.6 On receipt of the Special Section of the IFRB weekly Circular referred to in Sections 2.6 c) and 3.2. Any administration listed therein shall determine the impact on its assignments resulting from the proposed modification to the Plan using any of the additional information referred to in Section 3.5 which is acceptable to it.

3.7 The administration consulted should normally accept the proposed modification provided that:

- DT/41
- The nuisance field strength is less than  $\lfloor 54 \text{ dB } (\mu\text{V/m}) \rfloor$ , or
  - The nuisance field is less than  $\lfloor Y \rfloor$  dB below the  $\lfloor X \rfloor$ th interferer.

However, when the station to be modified already appears among the  $\lfloor Z \rfloor$  highest nuisance fields, its nuisance field resulting from the Plan adopted by the Conference or from its first entry in the Plan following the application of this procedure may be increased by no more than  $\lfloor 0.5 \text{ dB} \rfloor$ .

- 139
- the resulting usable field strength is not greater than 54 dB( $\mu\text{V/m}$ ), or
  - the resulting usable field strength is greater than 54 dB( $\mu\text{V/m}$ ), but is increased by 0.5 dB or less compared with the usable field strength resulting from the Plan adopted by the Conference or from its first entry in the Plan, following the application of this procedure. An increase of more than 0.5 dB is open to negotiations, in which more detailed calculation methods may be used.

3.8 The limits referred to in Section 3.7 shall be calculated by the method contained in  $\lfloor \quad \rfloor$  at the transmitter site exceptionnally administrations may request the IFRB to calculate the usable field strength predetermined points of the service area of the station which is likely to be affected.

The reference values indicated in Section 3.7 are those resulting from the Plan adopted by the Conference or from the first entry of an assignment in the Plan, as they may be lowered by deletions or other modifications.

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 161-E  
28 November 1984  
Original: English

COMMITTEE 4

THIRD REPORT OF WORKING GROUP 4C TO COMMITTEE 4

So far, Working Group 4C has held 15 official meetings and 16 informal meetings including weekends.

Although coordination among administrations progressed, some difficulties with the procedure arose which required further discussion. This was the main cause for delays. However, at its 14th official meeting on 26 November 1984, a decision was reached to proceed with calculations of incompatibility based on the agreed procedure.

1. Delegates should submit their requirements of high and low power stations without splitting frequencies to different sites. Delegates agreed to submit all the temporary forms to Dr. O'Leary at the latest by 0900 hours on 28 November 1984.

2. It was also agreed that modifications on splitting frequencies to different sites should be submitted from the morning of 27 November 1984 up to 1600 hours on 28 November 1984. Discussion of split cases and combined cases should start at 1830 hours on the same day.

In view of the time-limit, it was agreed that the forms relating to cases mentioned in paragraphs 1 and 2 above be processed without administrations' signatures.

The above procedures are in addition to those previously agreed and acted upon by the Group.

Working Group 4C has only two more meetings. Although progress has been achieved, I must admit that the delegations still have much to do. I sincerely hope that within the available time, some good results for this area would be achieved.

H. AL-KINDY  
Chairman of Working Group 4C

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 162-E  
28 November 1984  
Original : French

## COMMITTEE 2

### THIRD REPORT OF THE WORKING GROUP

#### OF COMMITTEE 2

#### (CREDENTIALS)

The Working Group of Committee 2 held a third meeting on Wednesday 28 November 1984 to examine the Credentials of the following delegations :

ALGERIA (People's Democratic Republic of)

AUSTRIA

BURKINA FASO

CAMEROON (Republic of)

ISRAEL (State of)

JORDAN (Hashemite Kingdom of)

KENYA (Republic of)

UGANDA (Republic of)

QATAR (State of)

ZAMBIA (Republic of)

ZIMBABWE (Republic of)

The Credentials of these delegations were all found to be in order.

J. SZEKELY

Chairman of the Working Group C2-A

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 163(Rev.1)-E  
29 November 1984  
Original: French

COMMITTEE 4

Note by the Chairman of Committee 4

TEXT OF THE SYMBOLS IN THE "REMARKS" COLUMN OF THE PLAN  
(COLUMN 17 OF THE PLAN DISTRIBUTED ON TUESDAY, 4 DECEMBER 1984).  
(COLUMN .. OF THE PLAN TO BE DISTRIBUTED AFTER THE CONFERENCE).

- 1/... Type A1 incompatibility - When it is brought into service this assignment may cause interference to an aeronautical radionavigation station of the country whose symbol is given after this remark. The provisions of Article / / must be applied before it is finally brought into service.
- 2/... Type B1 incompatibility - This assignment may cause intermodulation interference to an aeronautical radionavigation station. The names following the first stroke are those of the countries whose broadcasting stations contribute to the interference. The name following the second stroke is that of the country to which the aeronautical radionavigation station belongs.
- 3/... The bringing into service of this assignment is contingent on the cessation of assignments to television stations belonging to the administrations named after this symbol and may not take place until a date to be agreed with that/ those administrations(s).
- 4/... Up to the date which follows the symbol, this assignment must be used with the characteristics given in columns / 15 / and / 16 /. After that date, it may be used with the radiation characteristics given in column / 19 /.
- 5/... This assignment may continue to be used until the date which follows the symbol. After that date, it will be deleted from the Plan.

Dr. I. STOJANOVIC  
Chairman of Committee 4

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 163-E  
28 November 1984  
Original: French

COMMITTEE 4

Note by the Chairman of Committee 4

TEXT OF THE SYMBOLS IN THE "REMARKS" COLUMN OF THE PLAN  
(COLUMN 17 OF THE PLAN DISTRIBUTED ON TUESDAY, 4 DECEMBER 1984)  
(COLUMN .. OF THE PLAN TO BE DISTRIBUTED AFTER THE CONFERENCE).

1. Type A1 incompatibility - Coordination to be effected with /.../...
2. Type B1 incompatibility - Coordination to be effected with /.../...
3. The bringing into service of this assignment is contingent on the cessation of assignments to television stations belonging to the administrations named after this symbol and may not take place until a date to be agreed with that/those administration(s).
4. Up to the date which follows the symbol, this assignment must be used with the characteristics given in columns / 15 / and / 16 /. After that date, it may be used with the radiation characteristics given in column / 19 /.
5. This assignment may continue to be used until the date which follows the symbol. After that date, it will be deleted from the Plan.

Dr. I. STOJANOVIC  
Chairman of Committee 4



# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 164(Rev.)-E

30 November 1984

Original: English

## COMMITTEE 5

### Note from the Chairman of Committee 5

#### DRAFT NEW ARTICLE RELATING TO THE COMPATIBILITY WITH THE AERONAUTICAL RADIONAVIGATION SERVICE

After discussion of the draft new Article in Committee 5, the following revised version is presented.

The Federal Republic of Germany reserved its position on point 2.1.3

K. OLMS  
Chairman of Committee 5

Annex: 1

ANNEX

DRAFT

ARTICLE [ ]

**Compatibility with the aeronautical radionavigation service**

**1. General**

1.1 The Plan prepared by the Conference has identified the potential interferences to the aeronautical radionavigation stations. At a limited number of test points identified by administrations (see also Annex [ ]). The cases of unresolved A1, A2 and B2 interferences shall be resolved by application of the procedures in paragraph 2.1 on the basis of the criteria presented in Annex [ ]. The cases of B1 interference shall be resolved by application of the procedures in paragraph 2.2 on the basis of the criteria presented in Annex [ ].

1.2 Assignments in the Plan which may cause either interference to stations in the aeronautical radionavigation service are identified by the symbols:

- 1/ ... interference of type A1
- 2/ ... interference of type B1
- [x]/ ... interference of type A2
- [y]/ ... interference of type B2

**2. Implementation of the Plan**

**2.1 Type A1, A2 and B2 interference**

2.1.1 Before bringing into use an assignment in the Plan which has a symbol 1, [x] or [y], the administration responsible for the station shall inform the administration indicated in that symbol at the latest 120 days before the bringing into use, indicating the dates and conditions under which the broadcasting station intends to arrange experimental test transmissions.

2.1.2 The administrations concerned shall agree on the dates, duration and conditions of the test period.

2.1.3 The administration on the territory of which the aeronautical radionavigation station is operated shall verify the interference situation resulting from the experimental transmission. In cases where this administration finds that the level of interference exceeds the level indicated in Annex [ ], it shall inform the administration on the territory of which the broadcasting station is to be operated. If there is disagreement on the level of interference caused to the aeronautical radionavigation station, the level of interference will be calculated at test points to be determined by the administration responsible for the aeronautical radionavigation station.

If that level also exceeds the level indicated in Annex [ ], the administration on the territory of which the broadcasting station is to be operated will be informed with a copy to the IFRB.

2.1.4 The administration on the territory of which the broadcasting station is to be operated shall adopt immediate appropriate measures in order to reduce the interference to the aeronautical radionavigation station, to, or below, the level indicated in Annex [ ].

2.1.5 When notifying the assignment of the broadcasting station in accordance with Article 12 of the Radio Regulations, the administration responsible for the broadcasting station shall indicate the agreement of the administration whose name appears in the symbols 1, [x] or [y].

## 2.2 Type B1 interference

2.2.1 If all broadcasting stations contributing to the incompatibility case belong to the country operating the aeronautical radionavigation station, this case shall be solved on a national basis. The IFRB shall offer assistance to the country concerned, if it cannot resolve the case itself.

All cases for which this rule applies can easily be identified from the IFRB computer analysis.

2.2.2 If all broadcasting stations contributing as "primary interferer" to the incompatibility case belong to the country operating the aeronautical radionavigation station, this case is treated as in 2.2.1 after 2.2.4 has been applied for the foreign broadcasting station contributing as "secondary interferer" to the incompatibility.

2.2.3 Before bringing into use an assignment in the Plan which bears the symbol 2/..., the administration responsible for the station shall consult all the administrations mentioned in this symbol, indicating the date at which it intends to bring this assignment into use.

2.2.4 The administrations concerned shall reduce the power of the broadcasting stations in the direction of the test point considered, where this is possible without reducing their service area.

2.2.5 If this is insufficient, the administrations concerned shall take appropriate measures they may agree upon in order to avoid the existence of B1 interference.

2.2.6 In case of disagreement, the following measures shall be considered:

- a) reduction of power of all stations in the direction to the test point considered (by reducing the transmitter output power, by reducing the e.r.p. by means of an appropriate antenna diagram, or both);
- b) an alternative frequency for one of the broadcasting stations shall be searched;
- c) in exceptional cases an alternative frequency for the aeronautical radionavigation station may be searched.

a) to c) are not given in the order of priority. The most appropriate measure will depend on the particular case.

2.2.7 When notifying the assignment of the broadcasting station in accordance with Article 12 of the Radio Regulations, the administration responsible for the broadcasting station shall indicate the agreement of the administration whose name appears in the symbol 2/...

2.2.8 For the purpose of these provisions, a primary interferer is a broadcasting station, the power of which at the input to the aeronautical radionavigation receiver is equal to or above the trigger level, and a secondary interferer is a broadcasting station, the power of which at the input to the aeronautical radionavigation receiver is equal to or above the cut-off level but below the trigger level.

[ Note 1 -- The frequency of primary interferers appear in column 1 of the IFRB computer analysis. ]

[ Note 2 -- A station identified in the IFRB computer list, column 4, is a secondary interferer provided it does not appear again for the same intermodulation case in column 1. ]

[Notes 1 and 2 shall be deleted after the Conference.]

### 3. Modifications to the Plan

3.1 Any administration wishing to modify the Plan shall obtain the agreement of any other administration whose aeronautical radionavigation stations are likely to be affected.

3.2 The aeronautical radionavigation stations of an administration are likely to be affected if the distance from the broadcasting station under consideration to the nearest point of the boundary of that country is less than the limit indicated in [ ].

3.3 The administrations concerned shall agree on the criteria and methods to be used, taking into account those developed during the Conference (see Annex ...) and use updated Plan and lists of the aeronautical radionavigation services as well as any criteria appearing in the latest relevant CCIR Recommendation.

3.4 Administrations may request the IFRB to carry out this coordination on their behalf, including any necessary calculations for the protection of the aeronautical services, provided they supply the necessary information to the IFRB.

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 164-E  
28 November 1984  
Original: English

Source: Documents DT/48 and DT/49

COMMITTEE 5

Note from the Chairman of Committee 5

DRAFT NEW ARTICLE RELATING TO THE COMPATIBILITY WITH  
THE AERONAUTICAL RADIONAVIGATION SERVICE

1. Committee 5, in considering Documents DT/48 and DT/49, has agreed to the principles outlined in the documents. A combined draft new Article is presented in the Annex 1.
2. It follows from these conclusions, that all assignments to broadcasting stations in the Plan, which are liable to cause type A1 or B1 interference to stations in the aeronautical radionavigation service will be marked with an appropriate symbol, e.g. A or B respectively.
3. It remains to be decided later whether type A2/B2 interference needs to be included in these considerations.
4. To organize the consideration, at a competent conference, of provisions governing the bringing into use or the modification of stations in the aeronautical radionavigation service in the band 108 - 117.975 MHz vis-à-vis sound broadcasting stations in the Plan, a draft Recommendation is presented for consideration in Annex 2.

K. OLMS  
Chairman of Committee 5

Annexes: 2

ANNEX 1

DRAFT

ARTICLE / \_ /

Compatibility with the aeronautical radionavigation service

1. General

1.1 The Plan prepared by the Conference has identified the A1 and B1 interferences to the aeronautical radionavigation stations. The cases of A1 interference shall be resolved by application of the procedures in paragraph 2 on the basis of the criteria presented in Annex / \_ /. The cases of B1 interference shall be resolved by application of the procedures in paragraph 3 on the basis of the criteria presented in Annex / \_ /.

1.2 Assignments in the Plan which may cause either type A1 or B1 interference to stations in the aeronautical radionavigation service are identified by the symbols A or B respectively.

If necessary, appropriate additions need to be made to cover type A2/B2 interferences.

2. Type A1 interference

2.1 Implementation of the Plan

2.1.1 Before bringing into use an assignment in the Plan which has a symbol A, the administration responsible for the station shall inform the administration indicated in that symbol at the latest / \_ X \_ / days before the bringing into use, indicating the dates and conditions under which the broadcasting station shall make experimental test transmissions during a period of at least / \_ Y \_ / days.

2.1.2 The two administrations concerned shall agree on the dates, duration and conditions of the test period.

2.1.3 The administration on the territory of which the aeronautical radionavigation station is operated shall verify the interference situation resulting from the experimental transmission. In cases where this administration finds that the level of interference exceeds the level indicated in Annex / \_ /, it shall inform the administration on the territory of which the broadcasting station is to be operated. If there is disagreement on the level of interference caused to the aeronautical radionavigation station, the level of interference will be determined at the test point contained in Appendix / \_ /. If that level also exceeds the level indicated in Annex / \_ /, the administration on the territory of which the broadcasting station is to be operated will be informed with a copy to the IFRB.

2.1.4 The administration on the territory of which the broadcasting station is to be operated shall adopt appropriate measures in order to reduce the interference to the aeronautical radionavigation station to, or below, the level indicated in Annex / \_ /.

2.1.5 When notifying the assignment of the broadcasting station in accordance with Article 12 of the Radio Regulations, the administration responsible for the broadcasting station shall indicate the agreement of the administration whose name appears in the symbol A7.

## 2.2 Modifications to the Plan

2.2.1 Any administration wishing to modify the Plan shall obtain the agreement of any other administration whose aeronautical radionavigation stations are likely to be affected.

2.2.2 The aeronautical radionavigation stations of an administration are likely to be affected if the distance from the broadcasting station under consideration to the nearest point of the boundary of that country is less than the limit indicated in 7.

2.2.3 The two administrations concerned shall agree on the criteria and methods to be used, taking into account those developed during the Conference (see Annex ..) and use updated lists of the broadcasting and aeronautical radionavigation services as well as any criteria appearing in the latest relevant CCIR Recommendation.

2.2.4 Administrations may request the IFRB to carry out this coordination on their behalf, including any necessary calculations for the protection of the aeronautical services, provided they supply the necessary information to the IFRB.

## 3. Type B1 interference

3.1 The following definitions apply:

Primary interferer: Broadcasting station, the power of which at the input to the aeronautical radionavigation receiver is equal to or above the trigger level.

Secondary interferer: Broadcasting station, the power of which at the input to the aeronautical radionavigation receiver is equal to or above the cut-off level but below the trigger level.

Note 1: The frequency of primary interferers appear in column 1 of the IFRB computer analysis.

Note 2: A station identified in the IFRB computer list, column 4, is a secondary interferer provided it does not appear again for the same intermodulation case in column 1.

3.2 If all broadcasting stations contributing to the incompatibility case belong to the country operating the aeronautical radionavigation station, this case was not treated at the Conference. The IFRB shall offer assistance to the country concerned, if it cannot resolve the case itself.

All cases for which this rule applies can easily be identified from the IFRB computer analysis.

3.3 If all broadcasting stations contributing as "primary interferer" to the incompatibility case belong to the country operating the aeronautical radionavigation station, this case is treated as in 3.2 after 3.5 has been applied for the foreign broadcasting station contributing as "secondary interferer" to the incompatibility.



3.4 If at least one broadcasting station contributing as "primary interferer" to the incompatibility is situated in a country other than that operating the aeronautical radionavigation station, the following measures shall be considered:

- a) reduction of power of all primary stations in the direction to the test point considered (by reducing the transmitter output power, by reducing the e.r.p. by means of an appropriate antenna diagram, or both);
- b) an alternative frequency for one of the broadcasting stations shall be searched;
- c) in exceptional cases an alternative frequency for the aeronautical radio-navigation station may be searched.

a) to c) are not given in the order of priority. The most appropriate measure will depend on the particular case.

Before applying any measure indicated in a) to c) above, 3.5 shall be applied for primary and secondary broadcasting interferers involved.

3.5 All broadcasting stations involved shall reduce their power in the direction to the test point considered, where this is possible without reducing their service area.

ANNEX 2

RECOMMENDATION

Relative to the development of provisions governing  
the use of the band 108 - 117.975 MHz by the  
aeronautical radionavigation service

The Regional Administrative Conference for the Planning of VHF Sound Broadcasting (Region 1 and part of Region 3) (Geneva, 1984).

considering

- a) that in accordance with its mandate contained in Administrative Council Resolution 896, it adopted the Regional Agreement for FM Sound Broadcasting in the VHF Band in Region 1 and certain countries in Region 3 and the Associated Frequency Assignment Plan for the Sound Broadcasting Stations in the band 87.5 - 108 MHz;
- b) that its mandate referred to under a) above did not include the establishment of provisions governing the implementation of new aeronautical radionavigation stations nor the modification of basic characteristics of such stations vis-à-vis assignments in the Plan;

noting

that the Regional Agreement referred to in considering a) contains provisions to ensure adequate protection to stations in the aeronautical radionavigation service in the band 108 - 117.975 MHz;

recommends to the Administrative Council

to include in the agenda of a forthcoming competent conference, the consideration of provisions governing the bringing into use or the modification of stations in the aeronautical radionavigation service in the band 108 - 117.975 MHz.

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 165-E

28 November 1984

Original: English

## COMMITTEE 5

### SECOND REPORT FROM WORKING GROUP 5A TO COMMITTEE 5

After discussion in Working Group 5A, on Document 152, relating to the procedure to be applied by mobile services in the band 87.5-88 MHz, a drafting group of 5A has prepared the draft Resolution presented in Annex I, and proposed amendments to Article 4 of the Agreement in Annex II.

These annexes are submitted to Committee 5 for consideration.

S.M. CHALLO  
Chairman of Working Group 5A

Annexes: 2

ANNEX I

DRAFT RESOLUTION No. ...

**Procedure relating to mobile services  
in the band 87.5-88 MHz**

The Regional Administrative Conference for the Planning of VHF Sound Broadcasting (Region 1 and part of Region 3) (Geneva, 1984).

noting

- a) that the Conference was requested to adopt transitional procedures for bringing into service the assignments in the Plan in order to enable normal operation of stations of another service to which the band 87.5-88 MHz is also allocated in accordance with Radio Regulation 581, under the conditions specified therein;
- b) that in some countries this frequency band is used for television broadcasting;

considering

- a) that the planning of sound broadcasting stations was made without taking account of existing and planned stations of the permitted services, to which the band 87.5-88 MHz is also allocated;
- b) that the bringing into use of broadcasting stations may cause interference to stations pertaining to the permitted service and vice versa;
- c) that this question only concerns a limited number of countries, mainly in Europe and that only their immediate neighbours are likely to be affected.

resolves

1. that those existing sound broadcasting stations co-ordinated under the Stockholm Agreement (1961) shall continue to operate with their existing characteristics until 31 December 1990 or a date to be agreed amongst the administrations concerned. The characteristics may however be changed prior to this date by agreement between the administrations concerned;
2. that television stations in accordance with the Stockholm Agreement should be taken into account in the development of mobile service in this frequency band;

3. [that prior to the date detailed in Resolves 1.] [that up to [31 December 1990]] the FM Broadcasting Plan Geneva 1984 shall be implemented in the frequency band 87.5-88 MHz in such a way that any necessary adjustments to the existing mobile stations in this band can be made without detriment to their continuing normal provision of an operational service;
4. protection of the mobile services in the band 87.5-88 MHz shall not hinder the full implementation of the FM Broadcasting Plan at [the date agreed in Resolves 1 above.] [a date to be agreed between] affected administrations, but not later than [31 December 1990];
5. the implementation of the Plan for the FM broadcasting service shall be based on bilateral or multilateral agreements between the administrations concerned.

ANNEX II

MODIFICATION PROCEDURE

The following is proposed for inclusion in paragraph 2.2 of Article 4 of the Agreement:

"2.2 e) The mobile stations of an administration of a Contracting Member in Region 1 in the band 87.5-88 MHz, coordinated under Article 14 of the Radio Regulations, are likely to be affected by a proposed modification to the Plan [if the distance from the station under consideration to the nearest point of the boundary of the country of that administration is less than the limit indicated in [ ]]. [if the limits indicated in [ ] are exceeded]."

The following is proposed for inclusion in paragraph 3.6 of Article 4 of the Agreement (but noting that Committee 5 is currently considering whether paragraphs 3.5 and 3.6 should be included at all, and if they are to be included, how the text should be worked):

"If the administration in Region 1 consulted is responsible for a band mobile station, the following interfering field strengths should normally be accepted:

- for amplitude modulated mobile stations 14 dB( $\mu$ V/m) if the sound broadcasting station uses horizontal polarization;
- for frequency modulated mobile stations 24 dB( $\mu$ V/m) if the sound broadcasting station uses horizontal polarization;
- for amplitude modulated mobile stations 6 dB( $\mu$ V/m) if the sound broadcasting station uses vertical or mixed polarization;
- for frequency modulated mobile stations 16 dB( $\mu$ V/m) if the sound broadcasting station used vertical or mixed polarization.

These field strengths are calculated using the method contained in [ ] at 10 metres above ground at the edge of the service area."

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 166-E  
28 November 1984  
Original: English

Source: DT/51

COMMITTEE 5

INFORMATION NOTE

Working Group 5B has noted Document DT/51 and is of the opinion that the text reproduced in the annex is of valuable information and should be attached to the minutes of the appropriate meeting of Committee 5.

P. PETTERSSON  
Chairman of Working Group 5B

Annex: 1

ANNEX

INFORMATION NOTE BETWEEN THE  
ADMINISTRATIONS OF THE GERMAN DEMOCRATIC REPUBLIC,  
DENMARK, POLAND, SWEDEN AND THE USSR

During the FM-Sound Broadcasting Conference RARC, 1984, the above-mentioned administrations had unofficial consultations concerning the implementation of the FM-broadcasting service in accordance with the Plan in the frequency band 104 - 108 MHz.

As a result of these informal consultations the Document /DT/42\_7 was agreed upon as principles for the implementation of the FM-service. The text of /Document 42\_7 is expected to go into the Final Acts of the Conference.

The countries concerned had discussed two possible solutions of the agreed principle of gradual implementation of the band in question for the broadcasting service:

- 1) that parts of the band 104 - 108 MHz is made available at certain dates ending at 31 December 1995;
- 2) that segments of the band in between the bands used by the OR-service are made available at certain dates ending at 31 December 1995.

It is the understanding that the requirement for starting the implementation of the broadcasting service is in the order of 20 broadcasting channels by the coming into force of the Agreement, Geneva 1984.

The countries concerned find it useful to discuss the details of the implementation at multilateral meetings in the period until the coming into force of the Agreement, Geneva 1984.

It has been proposed, that Denmark convenes a meeting in the first half of 1985.

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 167-E

28 November 1984

Original: English

## COMMITTEE 5

### SECOND REPORT OF WORKING GROUP 5B

The draft Resolution to be found in the Annex is a provisional application of the Agreement for the modifications to the Plan before the entry into force of the Agreement.

The delegation of Italy has expressed a reservation concerning considering b).

P. PETTERSSON  
Chairman of Working Group 5B

## Annex

ANNEX

DRAFT RESOLUTION No. ...

**Provisional Application of the Agreement**

The Regional Administrative Conference for the Planning of VHF Sound Broadcasting (Region 1 and part of Region 3) (Geneva, 1984).

considering

- a) that administrations may need to modify the stations appearing in the Plan or to add new stations before the entry into force of this Agreement;
- b) that these modifications should not cause an unacceptable deterioration of the situation resulting from the Plan for primary and permitted services;
- c) that in this respect it would be advisable to apply provisionally the procedure described in Articles 4 and [ ] respectively of the Agreement;

resolves

- 1. that, before the date of entry into force of the Agreement, an administration proposing modifications to the Plan, the administrations which are likely to be affected and the IFRB shall apply the procedure described in Articles 4 and [ ] of the Agreement instead of the corresponding procedures for sound broadcasting existing in Stockholm, 1961 and Geneva, 1963 for those countries parties to these Agreements;
- 2. that in addition to the publications made in accordance with Article 4 during the period preceeding the entry into force of the Final Acts the IFRB shall, at the date of entry into force of the Final Acts, publish a recapitulative list of the modifications to the Plan made in accordance with the present Resolution together with the names of the administrations whose agreement was obtained and shall update the Plan accordingly;
- 3. [to be added depending on the decisions to be taken in respect to the permitted services].

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Corrigendum 1 to  
Document 168-E  
5 February 1985  
Original: English

COMMITTEE 4

SUMMARY RECORD

OF THE

EIGHTH AND LAST MEETING OF COMMITTEE 4

Please replace paragraph 2.7 by the following:

"2.7 The delegate of Libya said that the Administration of Chad had requested assignments whose coordinates were in Libyan territory. The Libyan administration therefore requested that the following remark be entered against each assignment whose coordinates were located in Libyan territory but which appeared under the name of Chad:

"The Libyan Administration does not agree to these coordinates because they are in Libyan territory."

He also requested that the remark appear in column 7 in the Plan and its Appendix against the assignments with the following coordinates:

Aozou	017E25	21N5°
F	021E49	20N04
G	023E26	19N41
E	020E37	20N21
Mezafeh	015E16	23N05."

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 168-E  
3 December 1984  
Original: English

COMMITTEE 4

SUMMARY RECORD  
OF THE  
EIGHTH AND LAST MEETING OF COMMITTEE 4  
(PLANNING)

Thursday, 29 November 1984, at 1405 hrs

Chairman: Dr. I. STOJANOVIĆ (Yugoslavia)

Subjects discussed:

Documents

- |  |            |
|--|------------|
| 1. Approval of the summary records of the sixth and seventh meetings | 136, 158   |
| 2. Text of the symbols in the "Remarks" column of the Plan           | 163(Rev.1) |
| 3. Introduction of documents   | 140(Rev.1) |
| 4. Reports of the Chairmen of Planning Groups                        | DT/57      |
| 5. Completion of the work of Committee 4                             | -          |

1. Approval of the summary records of the sixth and seventh meetings  
(Documents 136 and 158)

The summary record of the sixth meeting was approved as amended by the delegates of Belgium and the USSR and the Chairman of Planning Group 4 (see Corrigendum 1 to Document 136).

The summary record of the seventh meeting was approved as amended by the delegates of the USSR and Libya and subject to editorial corrections (see Corrigendum 1 to Document 158).

2. Text of the symbols in the "Remarks" column of the Plan (Document 163(Rev.1))

2.1 The delegate of the United Kingdom asked what arrangements were being made to enlarge the list to take into account other remarks made by delegates on signing Form 2.

2.2 The Chairman, replying to the delegate of Spain, said that the IFRB would determine A1 type incompatibilities after the Conference.

2.3 The delegate of Italy asked if the countries and frequencies involved would be mentioned for B1 type incompatibilities.

2.4 The Technical Secretary said that no such provision had yet been made but that the matter could be studied if the Committee so desired. Any indication made would appear in the published edition of the Plan in any event and not in the Plan to be submitted to the Conference the following week.

2.5 The delegate of Jordan said that his Administration wished to propose the addition in the "Remarks" column of the Plan of the symbol "6/..." with the following text beside it :

"Discussions about this assignment could not take place, because the Administration of Jordan does not recognize the Administration of Israel."

the reference to appear against the Israeli assignments with the list which his delegation would be submitting to the IFRB Secretariat.

2.6 The delegate of Israel said that his Administration reserved the right to return to any of the problems which might arise from the point mentioned by the delegate of Jordan, and requested the insertion of a suitable note against all Jordan's requirements.

2.7 The delegate of Libya said that his Administration believed that the position of certain Libyan broadcasting stations had been charted incorrectly. He would be submitting a note to the Secretariat on the matter.

2.8 The delegate of Chad failed to understand the allusion made by the previous speaker. He saw no reference to Libyan localities on Chad territory in his documentation. All the localities mentioned on the map of Chad fully respected the frontiers of the country which were recognized by the Organization of African Unity and the United Nations.

2.9 The Chairman suggested that the matter be settled with the Secretariat.

Document 163(Rev.1) was approved.

3. Introduction of documents (Document 140(Rev.1))

3.1 The delegate of Israel introduced the document which described a practical method of evaluating the nuisance field of a station in maritime paths in the Eastern Mediterranean. The method of application was to fold the paper along the upper horizontal line and apply it to the map from the interfering station to the surface area of the station suffering from interference. The figures read out to the left of the vertical line from top to bottom would give the field strength of the transmitter, the co-channel nuisance field, the adjacent channel nuisance field and the nuisance fields of frequencies separated by 200 and 300 kHz. The power correction factor could then be added. In fact the scales would have to be adapted to a length of 14 cm for use with a 1:5 000 000 map on the basis of Document DT/40.

The Committee took note of Document 140(Rev.1).

4. Reports of the Chairmen of Planning Groups (Document DT/57)

4.1 The Chairman of Planning Group 4A said that the Group had held ten formal meetings and that one written and one oral report on its work had been made up to the present. It had discussed issues related to preparing and improving the FMBC frequency plan in Region 1 and part of Region 3. Some members had asked for extra frequency requirements to be added. Lengthy negotiations had taken place in the Group and many modifications proposed to the Plan. The Group had worked closely with the IFRB whenever it had been unable to negotiate with the representative of a neighbouring country so that all countries had been covered by its work. He hoped that the few problems left outstanding would be settled shortly and thanked all members of the Group for the spirit of cooperation and understanding they had displayed.

4.2 The Chairman of Planning Group 4B said that his Group had held five formal meetings and several informal meetings. Generally speaking, negotiations had been held uninterruptedly. The coordination of matters concerning the Western Mediterranean had nearly been completed. Negotiations concerning Algeria had been resumed recently and considerable progress made since then. He believed the remaining incompatibilities would be smoothed out shortly. No special problems had arisen concerning the Central Mediterranean. Considerable progress had been made concerning the Eastern Mediterranean and, after adoption of Document 133, he was confident that the remaining problems would be settled satisfactorily. Some points might be dealt with outside the framework of the Conference.

4.3 The Chairman of Planning Group 4C said that his Group had held a total of 35 meetings, 16 official and 19 informal, between 5 and 28 November. After lengthy discussions during the first week of its work, the Group had adopted the guidelines for planning from Shatt-al-Arab up to and including the Gulf of Oman which appeared in Document 92 and Corrigendum 1. It had further agreed to plan initially for two instead of six channels per lattice point falling within the coordination zone located within 200 km from the sea. For that planning, lattices had been assigned to the groups of channels AD, BE and CF. Each point could thus be assigned two frequencies. At the 13th meeting of the Group, further clarification had become necessary on whether the two frequencies should be at the same geographical site or could be split into two geographical sites within the same administration, and the matter had only been resolved at the 14th meeting, as indicated in Document 161. The summary record of the sixth meeting of Committee 4 (Document 136) described the other rules agreed upon by the Group during the coordination process.

Working Group 4C had concluded its work the previous day at its 16th meeting. Good progress had been made in the work of coordination and it was hoped that administrations would be satisfied with the Plan. In conclusion, he thanked the Chairman of the Conference, the Deputy Secretary-General, the representatives of the IFRB and all delegates for their assistance in bringing the work of the Group to a satisfactory conclusion.

4.4 The Chairman of Planning Group 4D, referring to paragraph 3 of his draft second Report, Document DT/57, said that one of the most difficult tasks facing the Group had been the consideration of modifications that did not obviously improve the Plan. That had involved consultation of all the delegations concerned. Also, at the beginning of the Conference there had been many stations whose frequencies were not multiples of 100 kHz. Most had already been eliminated during the negotiations and he hoped the remaining few would follow.

Concerning paragraph 6 of the Report, he noted that the volume of modifications and negotiations to be dealt with had been very great, which had placed some delegations under considerable pressure so that they had not entirely completed the work. Most of the main stations had been coordinated but the frequencies of the more subsidiary and lower-power ones had still to be adjusted to cope with the networks set up by the former. For that reason it was considered advisable to keep the three Coordinating Groups in being for a few more days. He also drew attention to the mention in his Report of the need for a standard form for the presentation of modifications as well as the suggested deadline of 1800 hours, Tuesday, 4 December for that purpose.

4.5 The delegate of Algeria, supported by the delegate of Iraq, called for an extension of that deadline.

4.6 The Technical Secretary said that in view of the fact that some negotiations would have to continue, the Secretaries of the different Planning Groups would remain at their disposal until the end of the Conference. As regards procedure, he was able to confirm that, subject to the approval of the Steering Committee, the Plan would be distributed on Tuesday morning and in the meantime a special form would be issued for use by all delegations in presenting modifications that might result from an agreement, modifications following the distribution of the fourth version of Form 2, and material corrections to the Plan following its distribution.

It was also proposed to extend the deadline for submission of modifications to 1200 hours, Wednesday, 5 December, to allow time for the distribution of a print-out of all the processed information. Account would be taken of any agreements and modifications notified after that deadline. However, although they would appear in the final Plan, it would not be possible to record them in the Conference documentation.

4.7 The Chairman of the Conference said it was hoped that delegations would continue their negotiations up to the end of the Conference. Some of the negotiations might not involve frequency changes and would merely take the form of a simple agreement or acceptance of a power limitation. To facilitate the reading of the Plan, the results of such negotiations should be communicated to the Secretariat as soon as possible. Other negotiations, however, might necessitate frequency changes. As it would no longer be possible to make calculations at that stage, the assignments would be considered in Plenary but could not be entered in the Plan until they had been reviewed by the IFRB to ensure that they would not cause interferences with countries whose agreement had not been obtained. In entering such stations in the Plan, it was expected that the IFRB would apply the definition of an unresolved case adopted by the Committee, as set out in Document 149.

To save time it had been proposed that the Plan be read directly in Plenary rather than being first considered by the Committee.

4.8 The Chairman of Planning Group 4D recalled that the deadline of 1800 hours, Tuesday, 4 December had been selected to ensure that modifications were considered coincidentally with the reading of the draft Plan, but a later deadline would be quite acceptable.

5. Completion of the work of the Committee

5.1 The Chairman announced that the Committee had completed its work and thanked all concerned for their cooperation.

The meeting rose at 1515 hours.

The Secretary:

D. SCHUSTER

The Chairman:

I. STOJANOVIĆ



INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 169-E  
29 November 1984  
Original: English

COMMITTEE 5

THIRD REPORT OF WORKING GROUP 5A

Working Group 5A has considered and approved the draft Recommendation presented in the Annex. This Recommendation, relating to non-Contracting Members in the planning area, is referred to in the Article 3, paragraph 3, of the Agreement, as presented in Document 139.

S.M. CHALLO  
Chairman of Working Group 5A

Annex: 1 page

ANNEX

DRAFT RECOMMENDATION No. ....

**Relating to Non-Contracting Members in the Planning Area**

The Regional Administrative Conference for the Planning of VHF Sound Broadcasting (Region 1 and part of Region 3) (Geneva, 1984).

considering that

- a) in accordance with its agenda, it has prepared a Plan for sound broadcasting stations in the band 87.5-108 MHz;
- b) in accordance with provision No. 584 of the Radio Regulations, broadcasting stations in the band 100-108 MHz in Region 1 shall be established and operated in accordance with the Plan adopted by this Conference by countries in Region 1 (Contracting and non-Contracting Members);
- c) that the provisions of a Regional agreement are binding only the parties to this agreement;
- d) that the Conference entered in the Plan frequency assignments for all countries in the planning area;

recommends to the Administrative Council

to include in the agenda of a forthcoming competent Conference the consideration of the provision RR 584 in the light of the Plan and the associated provisions of the agreement adopted by this Conference.

recommends to Administrations of non-Contracting Members in the planning area

- 1. to accede to the Agreement as soon as possible;
- 2. to apply the provisions of Article 4 before notifying modifications to their stations appearing in the Plan or the additions of a new station.

recommends to the IFRB

to adopt the technical criteria adopted by this Conference when establishing its technical standards and rules of procedure to be applied in the relation between Contracting and non-Contracting Members in the planning area.

# REGIONAL BROADCASTING CONFERENCE

Document 170-E  
29 November 1984  
Original: English

(SECOND SESSION)

GENEVA, 1984

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## COMMITTEE 5

### Note from the Chairman of Committee 5

Following the conclusions of Committee 4 and Committee 5 relative to unresolved cases, the following draft new Article is presented for consideration.

K. OLMS  
Chairman of Committee 5

### Annex

"ARTICLE [4C]

**Continued Coordination**

1. The requirements concerning assignments which cause a level of interference to other assignments higher than [... dB/ $\mu$ V/m] and which has not secured all the necessary agreements during the Conference are contained in the Appendix [ ] to the Plan. They will remain in this Appendix until [1 January 1992]. Exceptionnally on request of one or more administrations concerned, an assignment may remain in the Appendix until [31 June 1993].
2. Until the dates indicated in paragraph 1, these assignments have the same status as assignments in the Plan and shall be taken into account in applying the provisions of Article 4 for the modifications to the Plan.
3. Administrations should continue coordination of these assignments and inform the IFRB of the agreements obtained.
4. When the IFRB finds that all the necessary agreements were obtained it shall publish the assignment concerned in a Special Section of its weekly Circular with the view to inform all administrations and shall update the appropriate part of the Plan.
5. For the purpose of the provisions of Article 4, the reference usable field strength to be used shall be:
  - for an assignment appearing in the Plan, the usable field strength resulting from the other assignments appearing in the Plan;
  - for an assignment appearing in Appendix [ ], the usable field strength resulting from all the assignments appearing in the Plan and in the Appendix [ ].
6. Each time an assignment is transferred from the Appendix [ ] to the appropriate part of the Plan, the usable field strength of the stations concerned shall be calculated again and shall be used for the application of the provisions of Article 4."

**REGIONAL BROADCASTING  
CONFERENCE**Document 171(Rev.1)-E

4 December 1984

(SECOND SESSION)

GENEVA, 1984

B.3(Rev.)

PLENARY MEETINGTHIRD SERIES OF TEXTS SUBMITTED BY THE  
EDITORIAL COMMITTEE TO THE PLENARY MEETINGThe following texts are submitted to the Plenary Meeting for first reading:

<u>Source</u>	<u>Document</u>	<u>Contents</u>
COM.5	204	Regional Agreement

H. BERTHOD  
Chairman of Committee 6Annex: 19 pagesNote from Committee 5

The following reservations have been made:

- on Article 1, definition of Contracting Member: Poland;
- on Article 4, treatment of aeronautical mobile (OR) service: Poland, German Democratic Republic and USSR;
- on Article 4, inclusion of the last paragraph of 3.6b).

## REGIONAL AGREEMENT

Relating to the use of the band 87.5-108 MHz  
for FM Sound Broadcasting (Region 1 and part of Region 3)

## PREAMBLE

The delegates of the following Members of the International  
Telecommunication Union:

[  
meeting in Geneva for a Regional Administrative Radio Conference convened under  
the terms of Articles 7 and 54 of the International Telecommunication  
Convention (Nairobi, 1982) to establish an Agreement incorporating a Plan for  
sound broadcasting in the band 87.5 to 108 MHz in accordance with  
Resolution No. 510 of the World Administrative Radio Conference (Geneva, 1979),  
and No. 584 of the Radio Regulations have adopted, subject to the approval of  
the competent authorities of their respective countries, the following  
provisions and the related Plan concerning the broadcasting service in the band  
87.5 to 108 MHz in the planning area as defined in Article 1 of this  
Agreement.]

## ARTICLE 1

## Definitions

For the purposes of this Agreement, the following terms shall have  
the meanings defined below:

Union: The International Telecommunication Union.

Secretary-General: The Secretary-General of the Union.

IFRB: The International Frequency Registration Board.

CCIR: The International Radio Consultative Committee.

Convention: The International Telecommunication Convention  
(Nairobi, 1982).

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Radio Regulations: The Radio Regulations (Geneva, 1979) annexed to the Convention.

Conference: The Regional Administrative Conference for FM Sound Broadcasting in the VHF Band (Region 1 and certain countries concerned in Region 3)\* (Geneva, 1984), also called the Regional Administrative Conference for the Planning of VHF Sound Broadcasting (Region 1 and part of Region 3) (Geneva, 1984).

Planning area: The countries of Region 1 as defined in No. 393 of the Radio Regulations together with the Democratic Republic of Afghanistan and the Islamic Republic of Iran.

Agreement: This Regional Agreement and its Annexes.

Plan: The Plan forming Annex 1 to this Agreement, and its Appendix.

Contracting Member: Any Member of the Union which has approved or acceded to this Agreement.

Assignment in conformity with this Agreement: Any assignment appearing in the Plan, or for which the procedure of Article 4 has been successfully applied.

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\* This Conference was held in two Sessions:

- the First Session, responsible for preparing a report to the Second Session, was held in Geneva from 23 August to 17 September 1982;
- the Second Session, responsible for drawing up a Plan and associated provisions was held in Geneva from 29 October to 7 December 1984.

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## ARTICLE 2

**Execution of the Agreement**

2.1 The Contracting Members shall adopt for their sound broadcasting stations in the planning area operating in the band 87.5-108 MHz the characteristics specified in the Plan.

2.2 The Contracting Members shall not modify these characteristics or establish new stations, except under the conditions provided for in Article 4 of this Agreement.

2.3 The Contracting Members undertake to study and, in common agreement [and to the extent possible], to put into practice the measures necessary to eliminate any harmful interference that might result from the application of of this Agreement.

2.4 Should agreement, as envisaged in paragraph 3 above, prove impossible, the Members concerned may resort to the procedure laid down in Article 22 of the Radio Regulations and, if necessary, to that laid down in Article 35 of the Convention.



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## ARTICLE 3

**Content of the Plan**

1. The Plan contains frequency assignments and associated characteristics of sound broadcasting stations in the band 87.5-108 MHz, coordinated either during the Conference or by the application of provisions contained in this Agreement, and comprises two parts.

1.1 The first part, including frequency assignments in the band 87.5-100 MHz, is intended to replace, when it is so decided by competent conferences, the corresponding sound broadcasting Plans appearing in the Regional Agreements Stockholm (1961) and Geneva (1963). The provisions of this Agreement are applicable to these assignments in the relations between all Contracting Members in the planning area.

1.2 The second part contains frequency assignments in the band 100-108 MHz in conformity with No. 584 of the Radio Regulations in order to permit all countries of Region 1 to use this band for sound broadcasting. The provisions of this Agreement are applicable to these assignments in the relations between all Contracting Members in the planning area. In the absence of provisions applicable to all countries in Region 1, to be adopted by a competent administrative radio conference, non-Contracting members in the planning area are being recommended to apply this procedure until such a conference adopts provisions applicable to them (see Recommendation COM 5/A).

2. The Plan also includes, for a fixed term, a list of the assignments for which coordination still has to be effected; these assignments are listed in the Appendix.

## ARTICLE 4

**Modifications to the Plan**

1. When a Contracting Member proposes to make a modification to the Plan, i.e.:

- to modify the characteristics of a frequency assignment to a broadcasting station shown in the Plan, whether or not the station has been brought into use; or
- to bring into use an assignment to a broadcasting station not appearing in the Plan; or

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- to modify the characteristics of a frequency assignment to a broadcasting station for which the procedure in this Article has been successfully applied, whether or not the station has been brought into use; or
- to cancel a frequency assignment to a broadcasting station;

the following procedure shall be applied before any notification is made under Article 12 of the Radio Regulations (see Article 7 of this Agreement).

## **2. Initiation of the modification procedure**

2.1 Any administration proposing to modify the characteristics of an assignment appearing in the Plan or to add a new assignment to the Plan shall obtain the agreement of any other administration whose services are likely to be affected.

- 2.2 a) The sound broadcasting stations of an administration are likely to be affected by a proposed modification to the Plan if the distance from the station under consideration to the nearest point on the boundary of the country of that administration is less than the limit indicated in Annex 4, Chapter 1.
- 2.2 b) The television stations of an administration in the band 87.5-100 MHz which are in conformity with the Stockholm Agreement (1961) are likely to be affected by a proposed modification to the Plan if the distance from the station under consideration to the nearest point on the boundary of the country of that administration is less than the limit indicated in Annex 4, Chapter 2.
- 2.2 c) The stations in the fixed and mobile services of an administration of a Contracting Member in Region 3 in the band 87.5-100 MHz are likely to be affected by a proposed modification to the Plan if the limits indicated in Annex 4, Chapters 4 and 5, are exceeded.
- 2.2 d) The stations in the mobile service of an administration of a Contracting Member in Region 1 in the band 87.5-88 MHz, coordinated under Article 14 of the Radio Regulations, are likely to be affected by a proposed modification to the Plan if the limits indicated in Annex 4, Chapter 4, are exceeded.
- 2.2 e) The stations of the fixed and mobile services of an administration of a Contracting Member in Region 1, operating in the band 104-108 MHz in conformity with the Radio Regulations on a permitted basis until 31 December 1995, are likely to be affected by a proposed modification to the Plan if the limits indicated in Annex 4, Chapters 4, 5 and 6, are exceeded.

2.2f) The aeronautical radionavigation stations of an administration in the band 108-117.975 MHz are likely to be affected by a proposed modification to the Plan if the distance from the station under consideration to the nearest point on the boundary of the country of that administration is less than the limit indicated in Annex 4, Chapter 3. However, in this case, the procedure to be applied is contained in Article 5.

2.3 Administrations shall seek the agreement of other administrations, preferably directly or, when this is not possible, by applying the procedure contained in this article.

2.4 The agreement mentioned in section 2.1 is not required if:

- a) the proposed modification relates to a reduction in effective radiated power or to other changes which would not increase the level of interference to services of other countries; or
- b) the distances from the station under consideration to the nearest points on the boundaries of other countries, the administrations of which are Contracting Members, are equal to or greater than the limits indicated in Annex 4; or
- c) the proposed modification relates to a change in the site of the station and the distance between the actual site of the transmitter and the site indicated in the Plan is no greater than:
  - 15 km for transmitters having a total e.r.p. greater or equal than 1 kW;
  - 5 km for transmitters having a total e.r.p. less than 1 kW.

2.5 An administration proposing to modify the Plan shall communicate to the IFRB the information listed in Annex 3 and shall also indicate, if appropriate:

- a) that the agreement referred to in section 2.1 is not required with any administration; or
- b) the name of any administration which has already agreed to the modification proposed on the basis of the characteristics communicated to the IFRB.

2.6 When requesting the agreement of another administration, the administration proposing to modify the Plan may also communicate any additional information relating to proposed methods and criteria to be used as well as other details concerning the terrain, particular propagation conditions, etc.

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2.7 On receipt of the information referred to in section 2.5 above, the IFRB shall:

- a) identify the administrations whose services are likely to be affected in conformity with sections 2.2 and 2.5;
- b) send immediately a telex to those administrations identified in a) above which have not yet given their agreement, drawing their attention to the information contained in the special section of a forthcoming weekly circular and indicating the nature of the modification to the Plan;
- c) publish the information received in the special section of this weekly circular, together with the names of the administrations identified, indicating those whose agreement has been obtained.

### 3. Consultation of the administrations whose stations may be affected

3.1 The special section of the IFRB weekly circular, referred to in 2.7 c), constitutes the formal request for agreement addressed to those administrations whose agreement remains to be obtained.

3.2 Any administration which considers that it should have been included in the list of administrations whose frequency assignments are likely to be affected may, within 28 days from the date of publication of the weekly circular, request the IFRB by telex to include its name. A copy of the request shall be sent to the administration proposing the modification to the Plan.

On receipt of the telex, the IFRB shall consider the matter and, if it finds that the name of this administration should have been included in the list, it shall:

- inform the administrations concerned by telex; and
- publish the name of the administration in an addendum to the special section.

For this administration, the overall period of 100 days specified in section 3.9 shall run from the date of publication of the addendum to the special section.

3.3 An administration receiving a telex from the IFRB sent in accordance with sections 2.7 or 3.2 above shall acknowledge receipt within 50 days.

3.4 If the IFRB has not received an acknowledgement after 50 days, it shall send a reminder telex and inform the administration that, if no reply is received within 10 days, it will be deemed to have received the request for agreement.

3.5 On receipt of the special section of the IFRB weekly circular referred to in sections 2.7 c) and 3.2, any administration listed therein shall determine the effect produced on its assignments by the proposed modification to the Plan, using any of the additional information referred to in section 2.6 which it finds acceptable.

3.6 If the administration consulted is responsible for:

3.6.1 a sound broadcasting station, it should normally accept the proposed modification provided that:

- the resulting usable field strength is not greater than 54 dB( $\mu$ V/m), or
- the resulting usable field strength is greater than 54 dB( $\mu$ V/m), but is increased by 0.5 dB or less compared with the reference usable field strength. An increase of more than 0.5 dB is open to negotiations, in which more detailed calculation methods may be used.

The values referred to above shall be calculated by the method contained in Annex 2, Chapter 4, at the transmitter site or at specific points of the service area of the stations which are likely to be affected. The reference usable field strength results from the Plan as adopted by the Conference or, for stations introduced therein pursuant to this procedure, from the Plan as it was at the time they were introduced. If, due to deletions or modifications, the usable field strength becomes lower, then this lower value becomes the new reference usable field strength. The actual geographical conditions should be taken into account, whenever possible.

3.6.2 a television station, it should normally accept an increase in the usable field strength at the transmitter site, provided that:

- the resulting usable field strength is not greater than 52 dB( $\mu$ V/m), or
- the resulting usable field strength is greater than 52 dB( $\mu$ V/m), but is increased by 0.5 dB or less compared with the usable field strength resulting from the Plan adopted by the Conference and from the television stations in accordance with the Stockholm Agreement at the date of the Conference. An increase of more than 0.5 dB is open to negotiations, in which more detailed calculation methods may be used.

FM sound broadcasting stations in the band 87.5 to 100 MHz outside the Stockholm Agreement should be coordinated with TV stations in this band through bilateral and multilateral negotiations between the administrations concerned on the basis of equal rights, without priority to either type of station.

3.6.3 a mobile service station in Region 3, it should normally accept the following interfering field strength:

- 18 dB( $\mu$ V/m) if the sound broadcasting station uses horizontal polarization;

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- 0 dB( $\mu$ V/m) if the sound broadcasting station uses vertical or mixed polarization. In the case of mixed polarization, only the vertical component of the total effective radiated power of the broadcasting station should be taken into account.

These limits apply when the frequency of the sound broadcasting station coincides with the frequency of the station of the mobile service. If they do not coincide, an appropriate allowance should be made (see Annex 5, Chapter 2).

The interfering field strengths are calculated using the method contained in Annex 4, Chapter 4 at 10 m above ground at the site of the base station assuming the use of vertical polarization.

3.6.4 a station in the fixed service it should normally accept an interfering field strength of 0 dB( $\mu$ V/m) at 10 m above ground, calculated in accordance with the method in Annex 4, Chapter 5.

This limit applies when the frequency of the sound broadcasting station coincides with the frequency of the station of the fixed service. If they do coincide, an appropriate allowance should be made (see Annex 5, Chapter 2).

3.6.5 a station in the land mobile service in Region 1 in the band 87.5-88 MHz, it should normally accept the following interfering field strengths:

- 14 dB( $\mu$ V/m) for mobile stations if the sound broadcasting station uses horizontal polarization;
- 24 dB( $\mu$ V/m) for mobile stations if the sound broadcasting station uses horizontal polarization;
- 6 dB( $\mu$ V/m) for mobile stations using amplitude modulation if the sound broadcasting station uses vertical or mixed polarization;
- 16 dB( $\mu$ V/m) for mobile stations using frequency modulation if the sound broadcasting station used vertical or mixed polarization.

In the case of mixed polarization, only the vertical component of the total effective radiated power of the broadcasting station should be taken into account.

These limits apply when the frequency of the sound broadcasting station coincides with the frequency of the station of the land mobile service. If they do not coincide, an appropriate allowance should be made (see Annex 5, Chapter 2).

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The interfering field strengths are calculated using the method contained in Annex 4, Chapter 4 at 10 metres above ground at the edge of the service area.

3.6.6 a station in the mobile except aeronautical (OR) service in Region 1 in the frequency band 104-108 MHz, it should normally accept the following interfering field strength:

- 18 dB( $\mu$ V/m) if the sound broadcasting station uses horizontal polarization;
- 0 dB( $\mu$ V/m) if the sound broadcasting station uses vertical or mixed polarization. In the case of mixed polarization, only the vertical component of the total effective radiated power of the sound broadcasting station should be taken into account.

These limits apply when the frequency of the sound broadcasting station coincides with the frequency of the station of the mobile service. If they do not coincide, an appropriate allowance should be made (see Annex 5, Chapter 2).

The interfering field strengths are calculated using the method contained in Annex 4, Chapter 4 at 10 m above ground at the site of the base station assuming the use of vertical polarization.

3.7 An administration receiving a telex from the IFRB sent in accordance with sections 2.7 or 3.2 may request the IFRB to calculate as indicated in section 3.6 above the increase in the usable field strength resulting from the proposed modification.

3.8 An administration may ask the administration proposing the modification for any additional information it considers necessary to calculate the increase in the usable field strength. Similarly, the administration proposing the modification may ask any administration whose agreement it seeks for any additional information it considers necessary. The administrations shall inform the IFRB of such requests.

3.9 An administration which is not in a position to give its agreement to the proposed modification shall give its reasons within 100 days.

3.10 Seventy days after the publication of the weekly circular mentioned in section 2.7 or 3.2, the IFRB shall request by telex any administration which has not yet given its decision in the matter to do so and shall inform it that, if no reply is received within an overall period of 100 days following the date of publication of this weekly circular, it is deemed to have agreed to the proposed modification to the Plan. This time limit may be extended by 14 days in the case of an administration which has requested additional information or which has asked the IFRB to carry out technical studies.



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3.11 If at the end of the 100-day period [(possibly extended by 14 days)] there is continuing disagreement, the IFRB shall make any study that may be requested by these administrations; it shall inform them of the result of the study and shall make such recommendations it may be able to offer for the solution of the problem.

3.12 An administration may request the assistance of the IFRB in the following cases:

- in seeking the agreement of another administration;
- in applying any stage of the procedure described in this Article;
- in carrying out technical studies in relation to this procedure;
- in applying the procedure with respect to other administrations.

#### **4. Comments of other administrations**

4.1 On receipt of the special section of the IFRB weekly circular published pursuant to section 2.7, administrations may send their comments to the administration proposing the modification either directly or through the IFRB. In any event the IFRB shall be informed that comments have been made.

4.2 An administration which has not notified its comments either to the administration concerned or to the IFRB within a period of 100 days following the date of the weekly circular referred to in section 2.7 c) shall be understood to have no objection to the proposed change. This time limit may be extended by 14 days in the case of an administration which has requested additional information.

#### **5. Cancellation of Assignments**

When an assignment in conformity with this Agreement is released, whether or not as a result of a modification (for instance, in connection with a change of frequency), the administration concerned shall immediately inform the IFRB, which shall publish this information in a special section of its weekly circular.

#### **6. Updating of the Plan**

6.1 An administration which has obtained the agreement of the administrations whose names were published in the special section referred to in sections 2.7 and 3.2, may bring the assignment in question into use and shall inform the IFRB, indicating the final agreed characteristics of the assignment together with the names of the administrations with which agreement has been reached.



6.2 The IFRB shall publish in the special section of its weekly circular the information received under sections 2.5 or 6.1 together with the names of any administrations with which the provisions of this article have been successfully applied. With respect to Contracting Members, the assignment concerned shall enjoy the same status as those appearing in the Plan.

6.3 The IFRB shall maintain an up-to-date master copy of the Plan, taking account of any modifications, additions and deletions made in accordance with the procedure of this Article.

6.4 The Secretary-General shall publish an up-to-date version of the Plan in an appropriate form as and when the circumstances justify and in any case every three years.

#### **7. Elimination of harmful interference**

If a change, although made in accordance with the provisions of this Article, causes harmful interference to services of other Contracting Members, the administration which has made the change shall take the requisite action to eliminate such interference.

#### **8. Settlement of disputes**

If, after application of the procedure described in this Article, the administrations concerned have been unable to reach agreement, they may resort to the procedure described in Article 50 of the Convention. They may also agree to apply the Optional Additional Protocol to the Convention.

### **ARTICLE 5**

#### **Compatibility with the Aeronautical Radionavigation Service**

##### **1. General**

1.1 The Plan adopted by the Conference has identified the cases of potential interference to the aeronautical radionavigation stations, at a limited number of test points identified by administrations (see Annex 2, Chapter 7). Unresolved cases of A1, A2 and B2 type interference shall be resolved by application of the procedures in section 2.1 above, and those of B1 type interference shall be resolved by application of the procedures in section 2.2 above, in both cases on the basis of the criteria contained in Annex 2, Chapter 7.

1.2 Assignments in the Plan which may cause interference of any of these types to stations in the aeronautical radionavigation service are identified by the following symbols:

- 1/ type A1 interference
- 2/ type B1 interference
- [x]/ type A2 interference
- [y]/ type B2 interference

followed by the symbols of the countries whose aeronautical radionavigation stations may be affected.

## 2. Implementation of the Plan

### 2.1 Type A1, A2 and B2 interference

2.1.1 Before bringing into use an assignment in the Plan which bears a symbol 1/, [x]/ or [y]/, the administration responsible for the sound broadcasting station shall inform the administration designated after that symbol, not later than 120 days before the date of bringing into use, indicating the dates and conditions under which the broadcasting station intends to arrange experimental transmissions.

2.1.2 The administrations concerned shall agree on the dates, duration and conditions of the test period.

2.1.3 The administration of the territory on which the aeronautical radionavigation station is operated shall verify the interference situation resulting from the experimental transmission. If this administration finds that the level of interference exceeds the level indicated in Annex 2, Chapter 7, it shall inform the administration of the territory on which the sound broadcasting station is to be operated.

If there is disagreement on the level of interference caused to the aeronautical radionavigation station, this level will be verified at other test points to be determined by the administration responsible for the aeronautical radionavigation station. If that level still exceeds the level indicated in Annex 2, Chapter 7, the administration of the territory on which the sound broadcasting station is to be operated shall be informed, with a copy to the IFRB.

2.1.4 The administration of the territory on which the sound broadcasting station is to be operated shall immediately adopt appropriate measures to reduce the interference to the aeronautical radionavigation station to or below the level indicated in Annex 2, Chapter 7.

2.1.5 When notifying the assignment of the sound broadcasting station in accordance with Article 7 of this Agreement the administration responsible for this designated station shall indicate the agreement of the administration designated after the symbols 1/, [x]/ or [y]/.

### 2.2 Type B1 interference

2.2.1 If all sound broadcasting stations contributing to the incompatibility case belong to the country operating the aeronautical radionavigation station, this case shall be resolved on a national basis. The IFRB shall offer assistance to the country concerned if it cannot resolve the case itself.

B.3/14(Rev.)

2.2.2 If all sound broadcasting stations contributing as "primary interferer"\* to the incompatibility case belong to the country operating the aeronautical radionavigation station, this case shall be dealt with as in section 2.2.1 after section 2.2.4 has been applied in respect of the foreign broadcasting station contributing as "secondary interferer"\* to the incompatibility.

2.2.3 Before bringing into use an assignment in the Plan which bears the symbol 2/, the administration responsible for the sound broadcasting station shall consult all the administrations designated after this symbol, indicating the date at which it intends to bring this assignment into use.

2.2.4 Each administration designated after the symbol shall reduce in the direction of the test point considered, the effective radiated power of its sound broadcasting stations contributing to the incompatibility, where this is possible without reducing their service areas.

2.2.5 If this is insufficient, the administrations concerned shall take such appropriate measures as they may agree upon in order to avoid B1 interference.

2.2.6 In case of disagreement, the following measures shall be considered:

- a) reduction of power of all sound broadcasting stations contributing to the incompatibility in the direction of the test point considered (by reducing the transmitter output power, by reducing the effective radiated power by means of an appropriate antenna diagram, or both);
- b) seeking an alternative frequency for one of the broadcasting stations;
- c) in exceptional cases seeking an alternative frequency for the aeronautical radionavigation station.

a) to c) are not given in order of priority. The most appropriate measure will depend on the particular case.

2.2.7 When notifying the assignment of the sound broadcasting station in accordance with Article 7 of this Agreement, the administration responsible for this station shall indicate the agreement of the administrations designated after the symbol 2/.

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\* See paragraph 2.2.8.

2.2.8 For the purpose of these provisions, a primary interferer is a sound broadcasting station the power of which at the input to the aeronautical radionavigation receiver located at the test point is equal to or above the trigger level, and a secondary interferer is a broadcasting station the power of which at the input to the aeronautical radionavigation receiver located at the test point is equal to or above the cut-off level but below the trigger level.

Note 1 - The frequency of primary interferers appear in column 1 of the IFRB computer analysis.

Note 2 - A station identified in the IFRB computer list, column 4, is a secondary interferer provided it does not appear again for the same intermodulation case in column 1.

[Notes 1 and 2 will be deleted after the Conference.]

### 3. Modifications to the Plan

3.1 Any administration wishing to modify the Plan shall obtain the agreement of any other administration whose aeronautical radionavigation stations are likely to be affected.

3.2 The aeronautical radionavigation stations of an administration are likely to be affected if the distance from the broadcasting station under consideration to the nearest point on the boundary of that country is less than the limit indicated in Annex 4, Chapter 3.

3.3 The administrations concerned shall agree on the criteria and methods to be used, taking into account those developed during the Conference (see Annex 2) and use the updated Plan and updated lists of the aeronautical radionavigation stations as well as any criteria appearing in the latest relevant CCIR Recommendations.

3.4 Administrations may request the IFRB to carry out this coordination on their behalf, including any calculations required for the protection of the aeronautical radionavigation stations, provided they supply the necessary information to the IFRB.

## ARTICLE 6

**Continued Coordination of Assignments Appearing  
in the Appendix to the Plan**

1. The requirements concerning assignments which cause a [nuisance field strength higher than 60 dB/ $\mu$ V/m to other assignments and which have not secured all the necessary agreements during the Conference are contained in the Appendix to the plan. They will remain in this Appendix until 1 July 1992. Exceptionally, at the request of one or more the administrations concerned, an assignment may remain in the Appendix until 31 December 1993; a copy of this request shall be sent to the IFRB.
2. Until the dates indicated in paragraph 1, these assignments have the same status as the other assignments in the Plan as regards the application of the provisions of Article 4.
3. Administrations should continue coordination of these assignments and inform the IFRB of the agreements obtained.
4. When the IFRB finds that:
  - all the necessary agreements have been obtained, or
  - the assignment appearing in the Appendix to the Plan has been notified in such a way that [its nuisance field strength caused to the stations of the administrations whose agreement is still required is 60 dB/ $\mu$ V/m or less], it shall publish the assignment concerned in a special section of its weekly circular and shall transfer it to the appropriate part of the Plan.
5. For the purpose of applying Article 4, the reference usable field strength to be used shall be:
  - for an assignment appearing in Part 1 or Part 2 of the Plan, the usable field strength resulting from the other assignments appearing in those parts of the Plan;
  - for an assignment appearing in the Appendix, the usable field strength resulting from all the assignments appearing in the Plan including the Appendix.
6. Each time an assignment is transferred from the Appendix to the appropriate part of the Plan, the usable field strength of the stations concerned shall be calculated again and shall be used for the application of the provisions of Article 4.

B.3/17(Rev.)

## ARTICLE 7

**Notification of Frequency Assignments**

When an administration of a Contracting Member proposes to bring into use an assignment in conformity with this Agreement, it shall notify the assignment to the IFRB in accordance with the provisions of Article 12 of the Radio Regulations. (See also Article 5 of this Agreement and Resolutions COM 5/1 and COM 5/4.)

## ARTICLE 8

**Accession to the Agreement**

1. Any Member of the Union in the planning area which has not signed the Agreement may at any time deposit an instrument of accession with the Secretary-General, who shall immediately inform the other Members of the Union. Accession to the Agreement shall be made without reservations and shall apply to the Plan as it stands at the time of accession.
2. Accession to the Agreement shall become effective on the date on which the instrument of accession is received by the Secretary-General.

## ARTICLE 9

**Scope of Application of the Agreement**

1. This Agreement shall bind Contracting Members in their relations with one another but shall not bind those Members in their relations with non-Contracting Members.\*
2. If a Contracting Member makes reservations with regard to any provision of this Agreement, other Contracting Members shall be free to disregard the said provision in their relations with the Member which has made such reservations.

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\* For relations with non-Contracting Members with respect to the band 100-108 MHz, see Article 3 of this Agreement.

B.3/18(Rev.)

## ARTICLE 10

**Approval of the Agreement**

Members shall notify their approval of this Agreement, as promptly as possible, to the Secretary-General, who shall at once inform the other Members of the Union.

## ARTICLE 11

**Denunciation of the Agreement**

1. Any Contracting Member may denounce this Agreement at any time by a notification sent to the Secretary-General, who shall inform the other members of the Union.
2. Denunciation shall become effective one year after the date on which the Secretary-General receives the notification of denunciation.
3. On the date on which the denunciation becomes effective, the IFRB shall delete from the Plan the assignments in the band 87.5-100 MHz entered in the name of the Member denouncing the Agreement. The same shall hold true for assignments in the band 100-108 MHz after reconsideration of No. 584 of the Radio Regulations by a competent administrative radio conference, (see Recommendation COM 5/A).

## ARTICLE 12

**Revision of the Agreement**

No revision of this Agreement shall be undertaken except by a [Regional Administrative Radio Conference] convened in accordance with the procedure laid down in the Convention, to which shall be invited at least all the Members of the Union in the planning area.

## ARTICLE 13

**Entry into Force and Duration of the Agreement**

1. This Agreement shall enter into force on 1 July 1987, at 0001 hours UTC.
2. On that date, with the exception of stations operating in conformity with No. 342 of the Radio Regulations, sound broadcasting stations in operation with frequency assignments which do not appear in Parts 1 and 2 of the Plan referred to in Article 3, paragraph 1, shall cease transmitting. Such stations may be brought into service again provided the necessary agreements are obtained.
3. This Agreement and the annexed Plan have been established with a view to meeting the requirements of the broadcasting service (sound) in the band 87.5-108 MHz for a period of 20 years from the date of entry into force of the Agreement.
4. This Agreement shall remain in force until it is revised in accordance with Article 12.

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In witness whereof, the undersigned Delegates of the Members of the Union mentioned above have, on behalf of the competent authorities of their respective countries, signed this Agreement in a single copy in the French, English and Spanish languages; in case of dispute, the French text shall be authentic. This copy shall remain deposited in the archives of the Union. The Secretary-General shall forward one certified true copy to each Member of the Union in the planning area.

Done at Geneva, [7] December 1984

Annex 1: Frequency Assignment Plan for FM Sound Broadcasting Stations in Region 1 and Part of Region 3 in the Band 87.5 MHz

Annex 2: Technical Data

Annex 3: Basic characteristics of sound broadcasting stations to be submitted for Modifications to the Plan in Application of Article 4 of the Agreement

Annex 4: Limits for Determining when Coordination with another Administration is Required as a Result of a proposed Modification to the Plan

Annex 5: Additional Technical Data which May be Used for Coordination Between Administrations



**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document No. 171-E  
29 November 1984

B.3

PLENARY MEETINGThird series of texts submitted by the  
Editorial Committee to the Plenary Meeting

The following texts are submitted to the Plenary Meeting for first reading:

<u>Source</u>	<u>Document No.</u>	<u>Contents</u>
WG 5A	139	Draft Regional Agreement
		Article 1
		Article 2

H. BERTHOD  
Chairman of Committee 6

Annex: 2 pages

B.3/1

[DRAFT]  
REGIONAL AGREEMENT

Relating to the use of the band 87.5-108 MHz  
for FM Sound Broadcasting (Region 1 and part of Region 3)

PREAMBLE

The delegates of the following Members of the International  
Telecommunication Union:

[  
meeting in Geneva for a Regional Administrative Radio Conference convened  
under the terms of Articles 7 and 54 of the International Telecommunication  
Convention (Nairobi, 1982) to establish an Agreement incorporating a Plan  
for sound broadcasting in the band 87.5 to 108 MHz in accordance with  
Resolution No. 510 of the World Administrative Radio Conference (Geneva, 1979)  
and No. 584 of the Radio Regulations have adopted, subject to the approval of  
the competent authorities of their respective countries, the following  
provisions and the related Plan concerning the broadcasting service in the  
band 87.5 to 108 MHz in the planning area as defined in Article 1 of this  
Agreement.]

ARTICLE 1

Definitions

For the purposes of this Agreement, the following terms shall have  
the meanings defined below:

Union: The International Telecommunication Union.

Secretary-General: The Secretary-General of the Union.

IFRB: The International Frequency Registration Board.

CCIR: The International Radio Consultative Committee.

Convention: The International Telecommunication Convention  
(Nairobi, 1982).

B.3/2

Radio Regulations: The Radio Regulations (Geneva, 1979) annexed to the Convention.

Conference: The Regional Administrative Conference for FM Sound Broadcasting in the VHF Band (Region 1 and certain countries concerned in Region 3)\* (Geneva, 1984), also called the Regional Administrative Conference for the Planning of VHF Sound Broadcasting (Region 1 and part of Region 3) (Geneva, 1984).

Planning area: The countries of Region 1 as defined in No. 393 of the Radio Regulations together with the Democratic Republic of Afghanistan and the Islamic Republic of Iran.

Agreement: This Regional Agreement and its Annexes.

Plan: The Plan forming Annex 1 to this Agreement.

Contracting Member: Any Member of the Union which has approved or acceded to this Agreement.

Assignment in conformity with this Agreement: Any assignment appearing in the Plan, or for which the procedure of Article 4 has been successfully applied.

## ARTICLE 2

### Execution of the Agreement

2.1 The Contracting Members shall adopt for their sound broadcasting stations in the planning area operating in the band 87.5-108 MHz the characteristics specified in the Plan.

2.2 The Contracting Members shall not modify these characteristics or establish new stations, except under the conditions provided for in Article 4 of this Agreement.

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\* This Conference was held in two Sessions:

- the First Session, responsible for preparing a report to the Second Session, was held in Geneva from 23 August to 17 September 1982;
- the Second Session, responsible for drawing up a Plan and associated provisions was held in Geneva from 29 October to 7 December 1984.

2.3 The Contracting Members undertake to study and, in common agreement [and to the extent possible], to put into practice the measures necessary to eliminate any harmful interference that might result from the application of this Agreement.

2.4 Should agreement, as envisaged in paragraph 3 above, prove impossible, the Members concerned may resort to the procedure laid down in Article 22 of the Radio Regulations and, if necessary, to that laid down in Article 35 of the Convention.

# REGIONAL BROADCASTING CONFERENCE

Document 172-E  
29 November 1984  
Original: English

(SECOND SESSION)

GENEVA, 1984

## COMMITTEE 5

### FOURTH REPORT OF WORKING GROUP 5A

Working Group 5A considered the provisions necessary for the protection of television stations, fixed and mobile stations in Region 3, and aeronautical radionavigation services in the band 108-117.975 MHz, and the competence of this Conference to adopt provisions applicable to these services. The majority's view expressed was that the Conference should in these provisions only recommend to the administrations responsible for these services to accept the proposed criteria.

Some delegations preferred the wording used for sound broadcasting protection, i.e. "the administration ... should normally accept".

One delegation was of the opinion that the provisions relating to the services other than sound broadcasting should not be included in the main agreement, but rather in a separate Recommendation.

It was noted that the subject matter was serious and warranted further consideration. Due to the limited time, it was agreed, with the consent of the Chairman of Committee 5, that this matter shall be taken up in Committee 5 for further consideration and conclusion.

In addition to the above, the Working Group considered modification procedures to the Plan related to the protection of the mobile service in the band 87.5-88 MHz. The Draft Resolution in document 152 and additional provisions relating to the mobile service in this band were discussed by the Working Group. The Working Group appointed a special drafting Group comprising interested delegations to redraft the Resolution and related provisions in the procedures of Article 4 taking into account the views expressed in the Working Group. As this was the final meeting of Working Group 5A, the output of the drafting group are being submitted directly to Committee 5 (document 165 refers).

S.M. CHALLO  
Chairman of Working Group 5A

## Annex

ANNEX

1. Replace 2.2 by the following provisions:

"2.2 a) The sound broadcasting stations of an administration are likely to be affected by a proposed modification to the Plan if the distance from the station under consideration to the nearest point of the boundary of the country of that administration is less than the limit indicated in [ ].

2.2 b) The television stations of an administration in the band 87.5-100 MHz are likely to be affected by a proposed modification to the Plan if the distance from the station under consideration to the nearest point of the boundary of the country of that administration is less than the limit indicated in [ ].

2.2 c) The fixed and mobile stations of an administration of a Contracting Member in Region 3 in the band 87.5-100 MHz are likely to be affected by a proposed modification to the Plan [if the distance from the station under consideration to the nearest point of the boundary of the country of that administration is less than the limit indicated in [ ]] [if the limits indicated in [ ] are exceeded].

[ 2.2 d) The aeronautical radionavigation stations of an administration in the band 108-117.975 MHz are likely to be affected by a proposed modification to the Plan if the distance from the station under consideration to the nearest point of the boundary of the country of that administration is less than the limit indicated in [ ]. However, in this case, the procedure to be applied is contained in Article [ ]."

2. Add to 3.5:

"If in any case no agreement can be obtained on the method and criteria to be used, paragraphs 3.6 a) to 3.6 d) apply."

3. Replace 3.6 by the following:

"3.6 a) If the administration consulted is responsible for a sound broadcasting station, it should normally accept an increase in the usable field strength at the transmitter site, calculated by the method contained in [ ], provided that:

- the resulting usable field strength is not greater than 54 dB( $\mu$ V/m), or

- the resulting usable field strength is greater than 54 dB( $\mu$ V/m), but is increased by 0.5 dB or less compared with the usable field strength resulting from the Plan adopted by the Conference or from its first entry in the Plan, following the application of this procedure. An increase of more than 0.5 dB is open to negotiations, in which more detailed calculation methods may be used.

3.6 b) If the administration consulted is responsible for a television station, this administration is recommended to accept an increase in the usable field strength at the transmitter site, calculated by the method contained in [ ], provided that:

- the resulting usable field strength is not greater than 54 dB( $\mu$ V/m), or
- the resulting usable field strength is greater than 54 dB( $\mu$ V/m), but is increased by 0.5 dB or less compared with the usable field strength [resulting from the Plan adopted by the Conference and from the television stations in accordance with the Stockholm Agreement at the date of the Conference]. An increase of more than 0.5 dB is open to negotiations, in which more detailed calculation methods may be used.

3.6 c) If the administration consulted is responsible for a land mobile station, this administration is recommended to accept the following interfering field strengths:

-18 dB( $\mu$ V/m) if the sound broadcasting station uses horizontal polarization;

-0 dB(dB( $\mu$ V/m)) if the sound broadcasting station uses vertical or mixed polarization.

These field strengths are calculated using the method contained in [ ] at 10 m above ground at the site of the base station using vertical polarization.

3.6 d) If the administration consulted is responsible for a station in the fixed services this administration is recommended to accept an interfering field strength of 0 dB( $\mu$ V/m) at 10 m above ground, calculated in accordance with the method in [ ]."

Notes from Working Group 5A:

1. The television stations referred to in 2.2 b) and 3.6 b) are only those to which the Stockholm Agreement applies, i.e. in the European Broadcasting Area. The situation of television stations not in the European Broadcasting Area has not been considered.
2. Should the Conference decide to protect those stations which would be modified or added in accordance with the Stockholm Agreement, this implies that countries not party to the Stockholm Agreement will endorse these modifications.
3. The Group noted that, in paragraphs 3.6 b) to 3.6 d), there is not indication that the agreement is not required when the assigned bandwidths are not overlapping.



INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**  
(SECOND SESSION) GENEVA, 1984

Document 173-E  
29 November 1984  
Original : French

Note by the Secretary of the Conference

FOR INFORMATION

FINAL DAYS OF THE CONFERENCE

1. Final Acts

The copies of the Final Acts will be distributed in the following manner:

- The Plan : one copy for each delegation to be collected from the Document Distribution Service on Tuesday, 4 December in the morning : a printed copy of the Plan including columns 1 to 17 (see Document 154), along with a set of micro-fiches providing information on the Plan assignments, including the information in columns 18 and 19.
- Final Acts (excluding the Plan) : one copy per delegate, distributed in the document distribution boxes before the signing ceremony.

Note - Delegates who leave the Conference before the signing ceremony are requested to fill in a form available at the Document Distribution Service to enable the Secretariat to dispatch their copies after the Conference.

2. Declarations concerning the Final Acts

When the last text to be included in the Final Acts of the Conference has been approved in second reading by the Plenary Meeting, a time limit will be set for the deposit of declarations concerning the Final Acts.

The declarations concerning the Final Acts are to be handed in to the Executive Secretary of the Conference (office J.165) for publication in a consolidated document.

The Plenary Meeting will take note of the declarations concerning the Final Acts and fix a second deadline for the deposit of additional declarations having regard to the first set of declarations.

A subsequent Plenary Meeting will take note of the additional declarations.

3. Signing ceremony

Between the final adoption, in second reading, of the last texts of the Final Acts and the signing ceremony, a period of 18 hours is required :

- for the preparation and printing of the Final Acts, and
- for the deposit and publication of the declarations and additional declarations, as well as for the Plenary Meeting held to take note of them. The time of the opening of the signing ceremony will therefore depend on when the last text is cleared in Plenary.

It should be noted that delegations (or members thereof) wishing to sign the Final Acts before the signing ceremony may do so by application to office J.165 (Mr. Macheret).

J. JIPGUEP  
Secretary of the Conference

# CONFÉRENCE RÉGIONALE DE RADIODIFFUSION

(SECONDE SESSION)

GENEVE, 1984

Corrigendum 1 au  
Document 174-F E  
30 novembre 1984  
Original : français

## NOTE DU PRESIDENT

Prière de remplacer le texte du point 1.3 par le texte suivant :

- 1.3 - un projet de Plan, imprimé sur papier suivant le format adopté par la Commission 4, contenant toutes les assignations mentionnées dans le point 1 du document 151, à l'exception de celles qui font l'objet du paragraphe 1 c).
- 

✓  
Please replace point 1.3 by the following text :

- 1.3 - a draft Plan printed on paper with the format adopted by Committee 4 and containing all the assignments mentioned in point 1 of Document 151, with the exception of those mentioned in paragraph 1 c).
- 

Sustitúyase el texto del punto 1.3 por el siguiente :

- 1.3 - un proyecto de Plan, impreso en papel según el formato adoptado por la Comisión 4, con todas las asignaciones mencionadas en el punto 1 del Documento 151, con excepción de aquellas a que se refiere el punto 1 c).
-

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 174-E  
29 November 1984  
Original: French

## PLENARY MEETING

### NOTE BY THE CHAIRMAN

1. Documents distributed for the first reading (at 2000 hours on Wednesday, 5 December) of the draft Plan

In view of the large number of assignments and the time required for data capture and checking as well as for calculation and document production, the delegations will have the following documents at their disposal at the beginning of the last week of the Conference:

- 1.1 - a broadcasting/broadcasting analysis to be distributed on paper (like the previous analyses) on Monday, 3 December;
- 1.2 - a broadcasting/aeronautical radionavigation analysis to be distributed on paper (like the previous analyses) on Tuesday, 4 December;
- 1.3 - a draft Plan printed on paper with the format adopted by Committee 4 containing all the assignments to which no objection has been raised (paragraph 1a) of Document 151) or for which the necessary agreements have been obtained by 1200 hours on Thursday, 29 November (paragraph 1b) of Document 151).

This draft will be distributed in the morning of Tuesday, 4 December.

Delegations are recommended to submit to the Technical Secretariat, by 1000 hours on Wednesday, 5 December, the following items for publication as a Conference document:

- the information contained in the (white) forms for the correction of material errors in the Plan;
- any comment which they may wish to make concerning any assignment in the draft Plan in order to facilitate the reading of the Plan in Plenary.

To permit the capture of this information and its publication within the scheduled time-limits, delegations are urged to provide these particulars, even in instalments, as soon as possible.

- 1.4 A printed list on paper of the assignments to which objections have been raised and for which the necessary agreements have not been obtained by 1200 hours on Thursday, 29 November. The countries of which the agreement is still required will be entered in the remarks column of this list. The list will be distributed at the same time as the draft Plan, i.e. in the morning of Tuesday, 4 December.

Cases corresponding to paragraph 1c) of Document 151 (automatic entry in the Plan of the assignments not causing interference in excess of the limit defined) cannot be identified until after the Conference. In view of the late stage at which the Conference adopted a decision on this matter, the necessary software cannot be produced in time (development, testing, production).

1.5 The additional information (columns 18 and 19) will be distributed in the form of microfiches on Tuesday, 4 December at the same time as the draft Plan.

2. Continued coordination

To allow delegations to continue their negotiations after Thursday, 29 November (1200 hours), the following arrangements have been made.

2.1 Agreement not requiring a calculation, as is the case with an agreement not involving any frequency change.

Form 2 and the modification forms which may accompany them should be handed in to the Technical Secretariat of the Conference not later than 1200 hours on Wednesday, 5 December to permit publication on paper of an addendum to the Plan which will be considered during the second reading of the Plan on Thursday, 6 December.

2.2 Other agreements

Agreements requiring calculation, as well as those handed in to the Secretariat after 1200 hours on Wednesday, 5 December will be dealt with by the IFRB after the Conference in accordance with the decisions of Committee 4.

3. Additional analysis

To provide delegations with up-to-date results incorporating the modifications of whatever kind submitted after Thursday, 29 November, an additional analysis will be carried out and distributed from 2000 hours on Thursday, 6 December. This analysis will be confined to broadcasting/broadcasting compatibility.

All the modifications received by the IFRB which are not included in the analysis distributed on Monday, 3 December will be classified in chronological order of receipt and the IFRB will attempt to process as many of them as possible in order to distribute a result on 6 December (from 2000 hours).

4. Broadcasting/aeronautical radionavigation compatibility

4.1 Type A1 interference

Type A1 interference will not appear in the draft Plan but will be identified automatically by the IFRB on the basis of an analysis performed after the Conference taking account of all the modifications introduced during the Conference.

4.2 Type B1 interference

For the administrations which have not completed Form 4, the IFRB will identify type B1 interference in the same way as type A1 interference.

Administrations which nevertheless wish to use Form 4 should hand it in to the Secretariat before the end of the Conference.

4.3 Types A1 and B1 interference will not appear in the draft Plan read to the Conference but will be included in the Plan published after the Conference.

5. First reading of the Plan

In view of the volume of the Plan, it will be impossible to read it page by page or channel by channel. Delegations are therefore requested, so far as possible, to submit their written comments to the Technical Secretariat of the Conference in accordance with the indications given in 1.3.

6. Second reading of the Plan

All the decisions adopted in Plenary during the first reading of the Plan will be recapitulated in a corrigendum to the Plan. Only this corrigendum will be considered in the second reading.

7. The essential points of the foregoing explanation are summarized in the annex, which also indicates the dates and times of the deposit of declarations and additional declarations and the signing of the Final Acts.

Marie HUET  
Chairman

Annex: 1

ANNEX

PROGRAMME FOR THE FINAL DAYS OF THE CONFERENCE

Monday 3

- 1400 hrs: Distribution of the third broadcasting/broadcasting analysis (in printed form; the microfiches will be distributed on Tuesday, 4 December)  
Distribution of the last version of Form 2

Tuesday 4

- 0900 hrs: Distribution of the draft Plan  
1400 hrs: Distribution of the third and last broadcasting/aeronautical radionavigation analysis  
Distribution of the microfiches for the third analysis

Wednesday 5

- 1000 hrs: Deadline for the submission of forms for material error correction and comments to be the subject of Conference documents  
1200 hrs: Deadline for the submission of Form 2 for agreements not requiring calculation  
1700 hrs: End of the first reading (blue documents) of the texts of the Final Acts  
2100 hrs: Beginning of the first reading of the draft Plan

Thursday 6

- 1400 hrs: Second reading (pink documents) of the texts of the Final Acts  
Second reading of the draft Plan in Plenary (modifications only)  
2100 hrs: Deadline for handing in declarations concerning the Final Acts

Friday 7

- 0800 hrs: Distribution of the document containing the declarations concerning the Final Acts  
0900 hrs: Plenary Meeting at which these declarations are noted  
1100 hrs: Deadline for handing in additional declarations concerning the first series of declarations  
1500 hrs: Distribution of the document containing the additional declarations  
1600 hrs: Plenary Meeting at which the additional declarations are noted  
1700 hrs: Signing ceremony and closure.
-

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 175-E  
30 November 1984  
Original: English

Source: Report of the first session  
DT/50, DT/60

COMMITTEE 5

## SECOND REPORT OF WORKING GROUP 5C

The annex contains Chapters 5 to 7 of Annex 2 to the Final Acts.

The delegation of the Federal Republic of Germany reserved its position on Chapter 7, section 7.4.

J. RUTKOWSKI  
Chairman of Working Group 5C

Annex: 1

ANNEX

CHAPTER 5

FREQUENCY SHARING BETWEEN SOUND AND TELEVISION BROADCASTING

5.1 Introduction

Several countries are operating television transmitters using the D/SECAM system in the band 87.5 to 100 MHz. All sound broadcasting requirements in the coordination area with countries using this band for television in accordance with the Regional Agreement, Stockholm, 1961, have been assessed for compatibility with television stations.

5.2 Protection to sound broadcasting stations within the coordination area

Calculations have been carried out to verify that there is no deterioration in the service areas of existing sound broadcasting stations [ which are operating in accordance with the Regional Agreement, Stockholm, 1961 (notified to IFRB before 1 December 1983) and which are situated in the coordination area with countries using this band for television in accordance with the Regional Agreement, Stockholm, 1961.] For comparison purposes, the reference situation (as described in paragraph 5.4 below) has been used as a basis.

A sound broadcasting station was considered to be situated in the coordination area when its distance from the nearest point of the border of the country using this band for television in accordance with the Regional Agreement, Stockholm, 1961, is less than the distance given in Table B of Annex 1 of the Stockholm Agreement.

5.3 Comparison

For the purpose of assessing compatibility with television stations (see paragraph 5.1 above) or protection to service areas of existing sound broadcasting transmitters (see paragraph 5.2 above), the existing situation has been used as a reference situation and has been compared with the new plan in the course of its development. To permit these comparisons it has been necessary to calculate (as in paragraph 5.6 below) the usable field strength ( $E_u$ ) for all television transmitters and all existing sound broadcasting stations (as in paragraphs 5.1 and 5.2 above) at a number of test locations (not more than 12) within the existing service area, as specified by the administrations concerned.

5.4 Reference situation

All existing or planned assignments to television, or sound broadcasting, stations in the band 87.5 to 100 MHz appearing in the Regional Plan, Stockholm, 1961 [ and those for which the procedure of the Regional Agreement, Stockholm, 1961, has been successfully applied before 1 December 1983 have been taken into account. The sound broadcasting stations in Region 3 and in the part of Turkey not covered by the Regional Agreement, Stockholm, 1961 which are operating in accordance with the Radio Regulations and notified before 1 December 1983 to the IFRB have been included in the reference situation.] The calculation for the reference situation has only been made once.



5.5 Situation resulting from planning

All existing or planned assignments to television stations (as in paragraph 5.4 above) and all sound broadcasting transmitters in the draft plan have been taken into account.

5.6 Usable field strength for a transmitter at the specified test location

5.6.1 The nuisance field from each interfering transmitter has been calculated according to section 3.5 of Chapter 3 using, in principle, propagation curves for 1% of the time and the appropriate protection ratio taken:

5.6.1.1 for the wanted television transmitter,

- from Table 5.1 for interference from a television transmitter, or
- from Figure 5.1 for interference from a sound broadcasting transmitter;

Note: Since the protection ratio curve for D/SECAM television broadcasting system against FM sound broadcasting interference is not defined in the band 6 to 7 MHz above the vision carrier frequency in Figure 5.1, the protection of the sound carrier has been calculated separately.

5.6.1.2 for a wanted sound broadcasting transmitter,

- from Table 5.2 or Figure 5.2 for interference from a television transmitter, using protection ratio values for tropospheric interference, or
- from paragraph 3.4 of Chapter 3 for interference from a sound broadcasting transmitter.

5.6.2 Receiving antenna discrimination shall be taken

- from Figure 5.3 for a wanted television transmitter;
- from Figure 3.3 of Chapter 3 for a wanted sound broadcasting transmitter.

5.6.3 In the case of orthogonal polarization a discrimination value of 10 dB has been applied for a wanted television transmitter. No polarization discrimination has been applied for a wanted sound broadcasting transmitter.

5.6.4 The interference contribution of each interfering transmitter is the value of the nuisance field derived in paragraph 5.6.1 above, including any discrimination value derived in paragraphs 5.6.2 and 5.6.3 above.

5.6.5 The usable field strength  $E_u$  has been calculated from the individual interference contributions using the simplified multiplication method, taking into account the 20 largest (either TV or sound broadcasting) contributions and specified to one decimal place.

#### 5.7 Result of examination

An incompatibility with a television station or a deterioration of the service area of a sound broadcasting station only exists if any value of  $E_u$  obtained (as in paragraph 5.6 above), in accordance with paragraph 5.5 above, exceeds the corresponding value of  $E_u$  in the reference situation defined in paragraph 5.4 above by more than 0.5 dB.

TABLE 5.1

Protection ratios, in dB, for colour television<sup>1</sup>

Offset (multiples of 1/12 line-frequency)	0	1	2	3	4	5	6	7	8	9	10	11	12
Co-channel Transmitter stability = 500 Hz (non-precision offset)	45	44	40	34	30	28	27	28	30	34	40	44	45
Lower adjacent channel	-6												
Upper adjacent channel	+4												

<sup>1</sup> For further information see CCIR Report 306.

TABLE 5.2

Radio-frequency protection ratio required by FM  
sound broadcasting against interference from  
D/SECAM television transmissions in the band 87.5 to 100 MHz

(Steady interference)

Wanted signal frequency (MHz) relative to vision carrier	RF-protection ratio (dB)	
	mono	stereo
-2.0	-30	-12
-1.0	-2	18
-0.5	0	20
-0.15	19	25
-0.1	24	35
-0.05	30	50
0.0	35	45
0.05	30	50
0.1	24	35
0.15	19	31
0.25	10	25
0.5	0	20
1.0	-1	20
2.0	-3	18
3.0	-4	17
4.0	-5	15
4.18	8	25
4.25	10	26
4.41	10	26
4.48	8	25
4.7	-5	15
5.0	-15	0
6.0	-25	-5
6.25	-13	-6
6.3	-5	5
6.4	6	26
6.45	15	40
6.475	25	43
6.5	28	35
6.525	25	43
6.55	15	40
6.6	6	26
6.7	-3	0
7.0	-30	-13

Note 1.- For tropospheric interference (protection 99% of the time)  
these values may be reduced by 8 dB.

Note 2.- Values for frequencies from 0.5 to 4 MHz are greatly affected  
by picture content. The figures given are for a test pattern  
and are representative of the on-the-air test picture transmissions.

Note 3.- This table is valid for 10 dB vision/sound carrier power ratio.

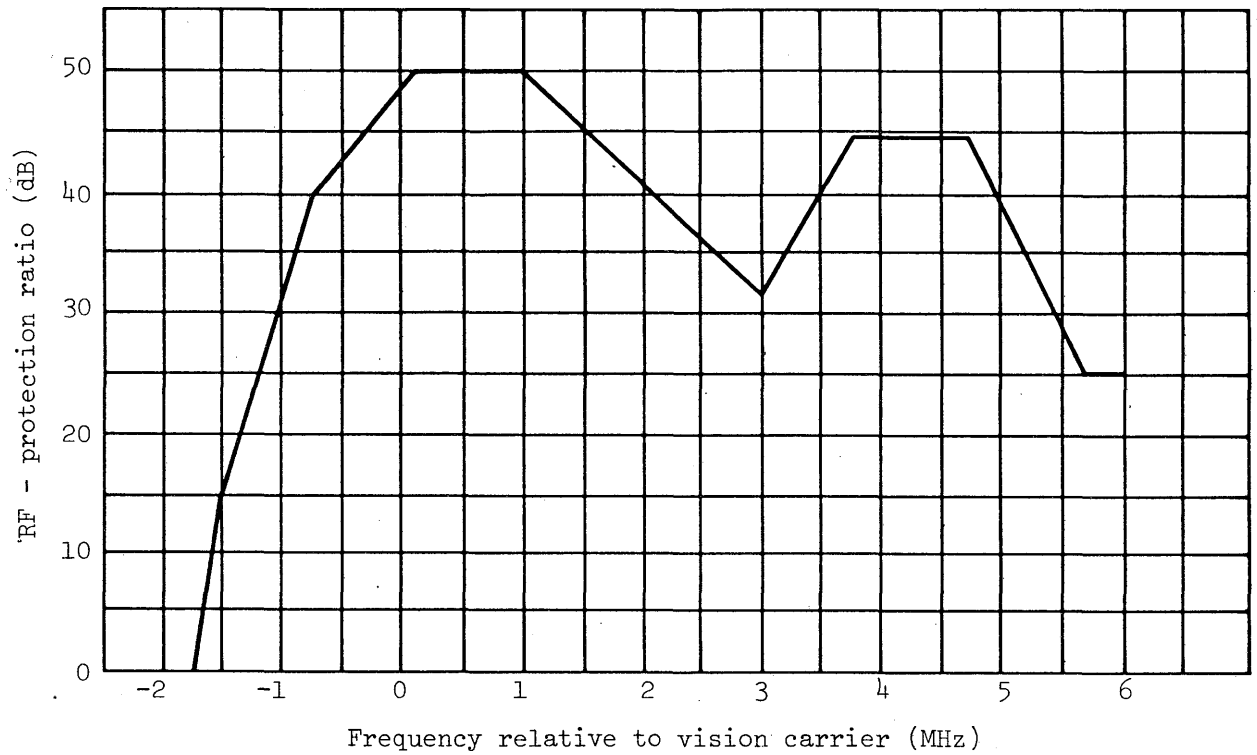


FIGURE 5.1

D/SECAM television system protection ratio  
in the case of frequency-modulated  
sound broadcasting tropospheric interference<sup>1)</sup>

Note: For steady interference 10 dB has been added.

<sup>1</sup> For further information see CCIR Report 306.

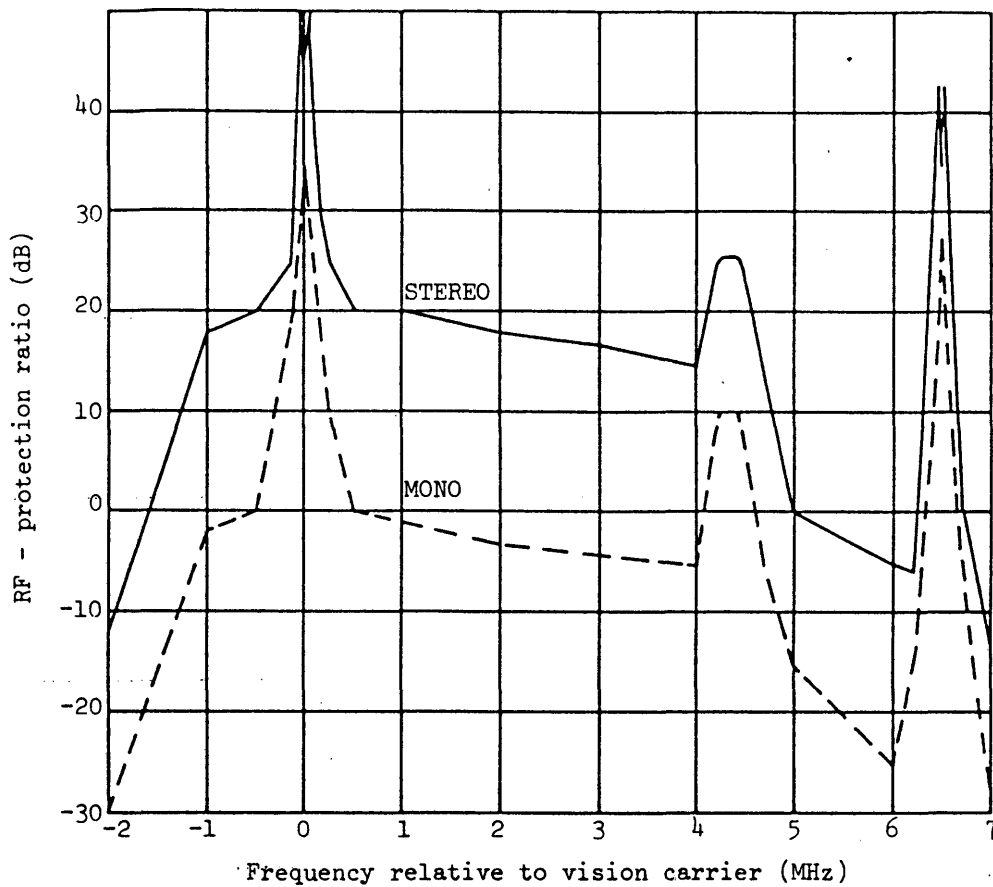


FIGURE 5.2

Radio-frequency protection ratio required by FM  
sound broadcasting against interference from  
D/SECAM television transmissions in the  
band 87.5 to 100 MHz (steady interference)

Note 1: For tropospheric interference (protection 99% of the time) these values may be reduced by 8 dB.

Note 2: This table is valid for 10 dB vision/sound carrier power ratio.

RECEIVING ANTENNA DISCRIMINATION<sup>1</sup>

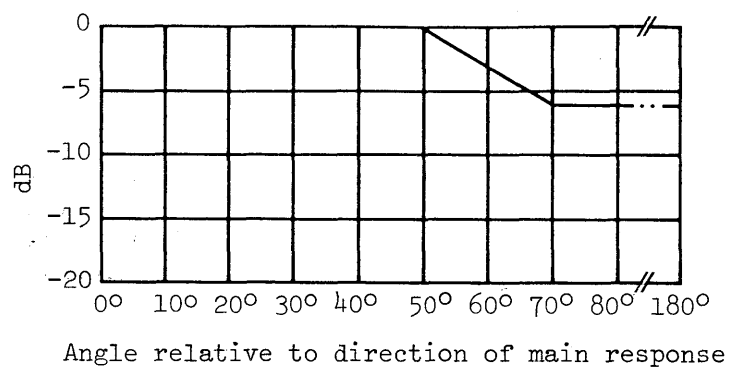


FIGURE 5.3

Discrimination obtained by the use  
of a directional receiving antenna  
for the television stations  
in the band 87.5 to 100 MHz

<sup>1</sup> CCIR Recommendation 419.

## CHAPTER 6

### ANALYSIS OF THE PLAN

#### 6.1 Introduction

The Plan has been analyzed on the basis of information supplied by administrations before or during the second session of the Conference or entered by the IFRB for those administrations which did not supply information.

#### 6.2 Method of analysis

In each analysis the nuisance field from each potentially interfering transmitter has been calculated at the site of the wanted transmitter according to the method given in paragraph 3.5 of Chapter 3.

The usable field strength,  $E_{u1}$ , has then been calculated by the simplified multiplication method taking into account the 20 largest values of nuisance field, specified to one decimal place. For the analysis of the Plan during the Conference, the simplified multiplication method has been used for the whole of the planning area; however, for comparison purposes the power sum method<sup>1</sup> was also used.

Sharing with television broadcasting in the European Broadcasting Area operating in accordance with the Regional Agreement, Stockholm, 1961, in the band 87.5 to 100 MHz (see Chapter 5) has been taken into account.

The method of analysis used during the Conference with respect to compatibility with the aeronautical radionavigation service in the band 108 to 117.975 MHz is described in Chapter 7.

##### 6.2.1 Analysis during the Conference

The computer analysis of the Plan during the Conference was based on the methods and criteria given in Chapters 2 to 5 and 7, but it did not take into account any receiving antenna discrimination.

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<sup>1</sup> See CCIR Recommendation 499.



6.2.2 Analysis during the implementation of the Plan

After the Conference, the analysis of the Plan is to be based on the simplified multiplication method. The results based on the power sum method are also to be provided on request for information only.

In the analysis subsequent to the Conference the coverage area of all transmitters above  $\sqrt{7}$  kW e.r.p. has been evaluated by additional calculations. These calculations, in which account is taken of the receiving antenna discrimination, determine on each of 36 radials at  $10^\circ$  intervals the distance at which the field strength from the transmitter is equal to  $E_u$ .

## CHAPTER 7

### COMPATIBILITY BETWEEN THE BROADCASTING SERVICE IN THE BAND 87.5 TO 108 MHz AND THE AERONAUTICAL RADIONAVIGATION SERVICE IN THE BANDS 108 TO 117.975 MHz

#### 7.1 Introduction

7.1.1 The criteria contained in this chapter have been used in the assessment of compatibility between sound broadcasting stations in the band 87.5 - 108 MHz, and aeronautical radionavigation stations in the band 108 - 117.975 MHz.

7.1.2 Use of the coordination contour method, as specified in section 7.3, has been made in the determination of a potential conflict between the sound broadcasting stations of one country and the aeronautical radionavigation stations of another country. In such cases resolution has been or will be effected through bilateral and multilateral negotiations between the administrations concerned.

7.1.3 Where the stations of the broadcasting service and the aeronautical radionavigation service belong to one and the same country, the assessment and resolution of conflicts have been or will be made by the administration concerned.

#### 7.2 Interference mechanisms

7.2.1 Type A interference - Due to radiation at frequencies in the aeronautical radionavigation band

These comprise the following:

Type A1: Intermodulation or other spurious products radiated from the broadcasting station;

Type A2: Out-of-band emissions from broadcasting stations in the aeronautical radionavigation band immediately above the band edge of 108 MHz.

7.2.2 Type B interference - Due to radiation at frequencies outside the aeronautical radionavigation band

These comprise the following:

Type B1: Intermodulation generated in the receiver;

Type B2: Desensitization in the RF section of the receiver.

7.3 Coordination contour around the test point of an aeronautical radionavigation station

7.3.1 The coordination contour is defined by a circle of a radius, as specified below, around each test point of the radionavigation station to be protected, as projected on the surface of the Earth. Broadcasting stations outside the coordination contour have been considered not being likely to affect the service provided by the aeronautical radionavigation station concerned and have therefore, not been considered.

7.3.2 For types A1, A2 and B2 interference the radius is 125 km.

7.3.3 For type B1 interference the radius is 500 km.

7.3.4 Only broadcasting stations which are in line-of-sight to the test point concerned have been taken into account (see section 2.2 of Chapter 2).

7.4 Test points

The calculations have been limited to four test points only. These test points have been chosen by the administration concerned in accordance with the constraints given in sections 7.4.1 and 7.4.2.

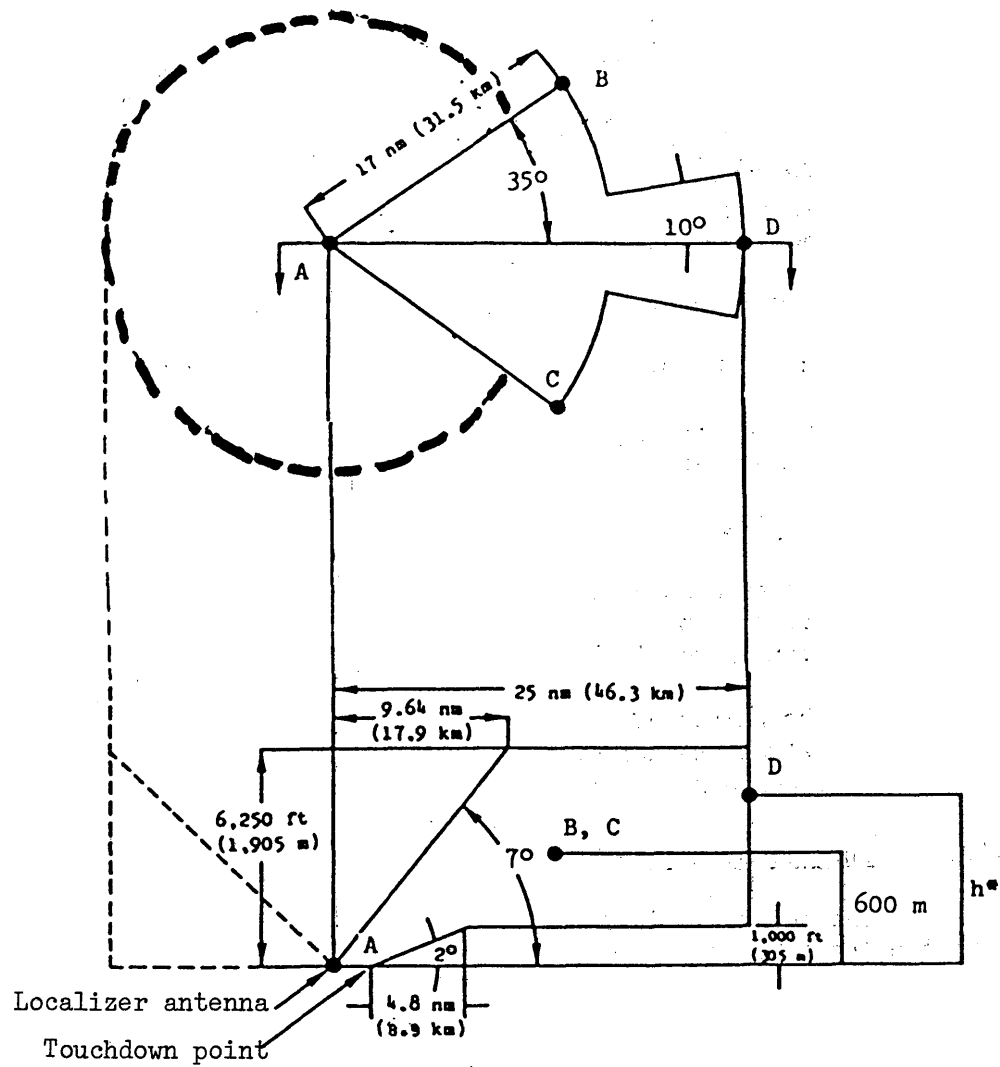
As the number of test points is insufficient, for the future coordination between administrations use of additional test points can be introduced by the administration concerned.

7.4.1 Instrument landing system (ILS)

The points A, B, C and D are defined in Figure 7.1. In some cases the height of test point A has differed from that indicated in Figure 7.1

7.4.2 VHF omnidirectional range (VOR)

The four cardinal points (N, E, S and W) of the circle forming the boundary of the service area at a height of 1,000 m above the VOR have been chosen as test points. In a number of cases the test point height has differed from the standard height of 1,000 m.



Note: The dashed line shows the limits of ILS back beam protection volume; in this case, the range and height are indicated.

• (A, B, C, D): test points for the ILS localizer

\* (h): altitude as indicated by the administration

FIGURE 7.1

ILS localizer protection volume

## 7.5 Polarization

No account has been taken of polarization differences between the broadcasting and the aeronautical radionavigation signals except in special cases, (e.g. circular polarization of the broadcasting signal).

The interfering signals have been assumed to have the same polarization (vertical or horizontal) as the navigation system. If, instead, the broadcasting station has a different polarization, there is in theory some reduction of received interfering signal levels, but it has been agreed that no allowance was made. In cases however, where an equal power in the other plane of polarization is added at the transmitter (e.g. circular polarization) an allowance has been made by adding 1 dB to the effective radiated power of the polarization component in the same plane as that used by the navigation system.

## 7.6 Protection criteria for ILS and VOR

Annex 10 to the Convention on International Civil Aviation contains specifications and characteristics relevant to the protection of both ILS and VOR.

### 7.6.1 Wanted signal

The minimum field strength to be protected is:

- ILS: 40  $\mu\text{V/m}$  (32 dB( $\mu\text{V/m}$ ))
- VOR: 90  $\mu\text{V/m}$  (39 dB( $\mu\text{V/m}$ ))

### 7.6.2 Principles of calculation

The field strength of every broadcasting station in the band 87.5 - 108 MHz inside the coordination contour of and within line-of-sight to a test point of an aeronautical radionavigation station has been calculated at this test point as an interfering signal.

For types A1 and A2 interference this field strength has been compared with the minimum field strength to be protected of the wanted signal, as indicated in section 7.6.1

For type B1 interference the relevant intermodulation formulae have been applied.

For type B2 interference the broadcasting signal level has been compared with the maximum permitted level.

Where applicable, field strength E has been converted to signal power N at the receiver input according to the following formula:

$$E \text{ (dB}(\mu\text{V/m)}) = N \text{ (dBm)} + 118 + L_s + L(f)$$

where:

$L_s$ : system fixed loss of 3.5 dB;

$L(f)$ : system frequency-dependent loss at frequency  $f$  of 1 dB per MHz from 108 - 100 MHz and then 0.5 dB per MHz below 100 MHz.

### 7.6.3 A1 interference

#### 7.6.3.1 Protection ratio

A protection ratio of 17 dB has been assumed and this includes a small safety margin in order to take account of multiple interference entries resulting from different broadcast transmitters.

7.6.3.2 The field strength of the interfering signal at the test point has been calculated on the basis of the following level of the spurious component (in the case of several transmitters contributing to one spurious component - see category a) below - the most powerful transmitter is taken as the reference in the calculations):

- 40 dB below the transmitter e.r.p. for transmitter e.r.p.s below and equal to 2.5 W;
- 250  $\mu$ W e.r.p. for transmitter e.r.p.s above 2.5 W and below 79 kW;
- 85 dB below the transmitter e.r.p. for transmitter e.r.p.s equal to and above 79 kW;

An antenna gain of 10 dB has been assumed in defining the levels given above.

The levels of the spurious emission given above are valid in the band 108 - 137 MHz.

7.6.3.3 For the analysis of type A1 interference the following two categories of spurious emissions exist:

- a) spurious emissions resulting from an intermodulation process generated at the transmitter site, e.g. by multiple transmitters feeding the same antenna;
- b) spurious emissions with the exclusion of those covered by a) above.

Where the actual frequency of the spurious emission is known, Table 7.1 gives the values of protection ratio to be used for frequency differences up to 200 kHz. Type A1 interference need not be considered for frequency differences greater than 200 kHz.

TABLE 7.1

Frequency difference (kHz) between spurious emission and wanted signal	Protection ratio (dB)
0	17
50	10
100	-4
150	-19
200	-38

In the computer analysis during the Conference, the worst case has been assumed for category b), i.e. a spurious component exactly at the aeronautical frequency under consideration.

7.6.3.4 During the Conference no analysis has been made for category a) due to lack of necessary data.

7.6.4 Type A2 interference

The protection ratio values are given in Table 7.2.

TABLE 7.2

Frequency difference (kHz) between wanted signal and broadcasting signal	Protection ratio (dB)
150	-41
200	-50
250	-59
300	-68

A frequency difference below 150 kHz cannot occur. For frequency differences greater than 300 kHz this type of interference need not be considered.

#### 7.6.5 Type B1 interference

Third order intermodulation products of the form:

$$f_{\text{intermod}} = 2 f_1 - f_2 \text{ (two-signal case) or}$$

$$f_{\text{intermod}} = f_1 + f_2 - f_3 \text{ (three-signal case)}$$

$$\text{with } f_1 > f_2 > f_3,$$

generated in the airborne ILS or VOR receiver will cause an unacceptable degradation of receiver performance, if  $f_{\text{intermod}}$  coincides with the frequency of the wanted signal or is close to it and the inequalities given below are fulfilled subject to the conditions in 7.6.5.4.

Intermodulation of the second order is irrelevant and intermodulation of a higher order than three has not been considered.

$N_1$ ,  $N_2$  and  $N_3$  in the inequalities below have the following meaning :

$N_1$  ... level in dBm of the broadcasting signal of frequency  $f_1$  in MHz at the input of the aeronautical radionavigation receiver

$N_2$  ... level in dBm of the broadcasting signal of frequency  $f_2$  in MHz at the input of the aeronautical radionavigation receiver

$N_3$  ... level in dBm of the broadcasting signal of frequency  $f_3$  in MHz at the input of the aeronautical radionavigation receiver

$\max(0.4; 108.1 - f)$  in the inequalities below has the following meaning : either 0.4 or 108.1 - f, whichever is greater.

##### 7.6.5.1 Two-signal case

$$2(N_1 - 20 \log \frac{\max(0.4; 108.1 - f_1)}{0.4}) + N_2 - 20 \log \frac{\max(0.4; 108.1 - f_2)}{0.4} + 120 > 0$$

##### 7.6.5.2 Three-signal case

$$N_1 - 20 \log \frac{\max(0.4; 108.1 - f_1)}{0.4} + N_2 - 20 \log \frac{\max(0.4; 108.1 - f_2)}{0.4} + N_3 - 20 \log \frac{\max(0.4; 108.1 - f_3)}{0.4} + 126 > 0$$



### 7.6.5.3 Frequency offset conditions

Table 7.3 contains corrections to be applied to each broadcast signal level before applying the formulae in 7.6.5.1 or 7.6.5.2.

$$N_{1,2,3} \text{ (corrected)} = N_{1,2,3} - \text{correction term}$$

TABLE 7.3

Frequency difference between wanted signal and intermodulation product (kHz)	Correction term (dB)
0	0
±50	2
±100	8
±150	16
±200	26

For frequency differences beyond ±200 kHz, type B1 interference need not be considered.

### 7.6.5.4 Trigger and cut-off values

The trigger value is the minimum power level at the input to the airborne ILS or VOR receiver, considered necessary for a broadcasting signal to initiate the generation of intermodulation products which are of sufficient power to potentially exceed the receiver interference threshold. The trigger value for each contributing broadcasting signal of frequency  $f$  at the ILS or VOR receiver input has been derived from the following formula:

$$N = -42 + 20 \log \frac{\max (0.4; 108.1 - f)}{0.4}$$

The cut-off value is the minimum power level at the input to the airborne ILS or VOR receiver, considered necessary for a broadcasting signal to be one input to the non-linear process which results in the formation of an intermodulation product of sufficient power to potentially exceed the receiver interference threshold.

For the compatibility analysis a cut-off value of 12 dB below the trigger value has been chosen.

An intermodulation analysis has, therefore, only been carried out if at least one signal has been equal to or above the trigger value provided that the other signal or signals have been equal to or above the cut-off value.

7.6.6 Type B2 interference

Table 7.4 contains maximum permitted levels of broadcasting signals at the input to the airborne ILS or VOR receiver.

TABLE 7.4

Frequency of broadcasting signal (MHz)	Level (dBm)
107.9	-20
106	-5
102	5
≤ 100	10

Between the frequency values given above, the maximum permitted level has been determined by linear interpolation.

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 176-E  
30 November 1984  
Original: English

Source: DT/53

COMMITTEE 5

## THIRD REPORT OF WORKING GROUP 5C

The annex contains Annexes 3 and 4 to the Final Acts.

The delegations of Italy and the Federal Republic of Germany reserved their position on Chapter 6.

J. RUTKOWSKI  
Chairman of the Working Group

Annex: 1

ANNEX

ANNEX 3

Basic characteristics to be furnished in notices  
relating to the broadcasting stations

(For the application of Article 4)

Column

1. **Assigned frequency (MHz)**
2. **Country symbol**
3. **Name of transmitting station**
4. **Symbol of the geographical area in which the station is located**  
(see Table No. 1 of the Preface to the International Frequency List)
5. **Geographical coordinates, in degrees and minutes, of the transmitting antenna site**
6. **Altitude of site of transmitting antenna above sea level (m)**
7. **Height of the antenna above ground level (m)**
8. **Polarization (H, V or M)**
9. **System (1, 2, 3, 4 or 5) \***
10. **Total effective radiated power (dBW)**
11. **Maximum effective radiated power of the horizontally polarized component (dBW)**
12. **Maximum effective radiated power of the vertically polarized component (dBW)**
13. **Directivity of antenna (ND or D)**
14. **Effective radiated power of the horizontal component and the vertical component in different azimuths**
15. **Maximum effective antenna height (m)**
16. **Azimuthal variation of the effective antenna height**
17. **Sectors or directions of restricted e.r.p. (in degrees)**
  - 17.1 **Sector No. 1**
  - 17.2 **Sector No. 2**
  - 17.3 **Sector No. 3**
  - 17.4 **Sector No. 4**
18. **Attenuation in the sector concerned (dB)**
  - 18.1 **Attenuation in sector No. 1**
  - 18.2 **Attenuation in sector No. 2**
  - 18.3 **Attenuation in sector No. 3**
  - 18.4 **Attenuation in sector No. 4**
19. **Remarks**

Note 1: When the proposed modification involves the addition of a new frequency assignment at an existing station, the frequency assignment(s) at the existing station shall be included under Supplementary information.

Note 2: The Board shall develop and keep up-to-date a form of notice for the above requirements.

Note 3: In order to handle the large number of requirements during the Conference, an IFRB serial number was created. As the Board is already using an ID number within the framework of the application of Article 12, the IFRB serial number used during the Conference will be deleted and will be replaced by another number.✓

ANNEX 4

Limits for determining when coordination with another  
administration is required as a result of a proposed  
modification to the Plan

CHAPTER 1

LIMITS RELATING TO SOUND BROADCASTING

In applying paragraph 2.2 of Article 4 of the following tables of distances between the broadcasting station and the nearest point on the boundary of any other administration shall be used to identify administrations whose broadcasting services may be considered as affected (Tables 1 to 4).

The coordination distances of Tables 1 to 4 apply to cases where the propagation path is over land (index L), over cold sea (SC), over warm sea (SW), or in an area of super-refractivity and ducting (SS), respectively. To simplify coordination the distances that would be adequate for the various FM sound-broadcasting systems were unified by starting from a unique value of 54 dB(μV/m) for the nuisance field and by taking mean values for the protection ratio (39 dB for tropospheric, 47 dB for steady interference). The larger of the two distance values resulting from tropospheric and steady interference was retained and rounded to the nearest multiple of 10 km or 5 km for coordination distances above or below 100 km, respectively.

Linear interpolation shall be used for effective radiated powers, in dBW, differing from those given in the tables and also for effective antenna heights other than those in Tables 1 - 3. Antenna heights of 10 m or 1,800 m, respectively, shall be used when the actual height is below the former or above the latter value.

For mixed paths the coordination distance,  $D_M$ , shall be the sum of the pertinent fractions of the coordination distances,  $D_i$ , applicable to every type of propagation path involved.

$$D_M = \sum_i \frac{d_i}{d_T} D_i \quad (i = L, SC, SW, SS)$$

where

$d_T$  is the total path length from the transmitter to the nearest point of the border of the country concerned; and

$d_i$  are the total lengths of those parts of the path which are over land, over cold sea, over warm sea or in areas of super-refractivity as the case may be.

TABLE 1

Coordination distances  $D_T$ , in km, for propagation paths over land

EFFECTIVE RADIATED POWER		EFFECTIVE ANTENNA HEIGHT (m)							
		10	37.5	75	150	300	600	1200	1800
		COORDINATION DISTANCES (km)							
dBW	W								
55	300k	520	520	530	540	560	600	630	670
50	100k	460	460	470	490	510	540	580	610
45	30k	410	410	420	430	450	480	520	560
40	10k	350	350	370	380	400	430	470	500
35	3k	300	300	310	330	340	380	420	450
30	1k	250	250	260	270	290	320	360	400
25	300	140	190	210	220	240	280	320	350
20	100	70	140	160	180	190	230	270	300
15	30	45	100	130	140	150	190	230	260
10	10	35	65	90	100	120	150	190	220
5	3	30	45	65	75	95	120	160	180
0	1	20	35	50	60	80	100	140	150

TABLE 2

Coordination distances  $D_{SC}$ , in km, for propagation paths over cold sea

EFFECTIVE RADIATED POWER dBW      W		EFFECTIVE ANTENNA HEIGHT (m)							
		10	37.5	75	150	300	600	1200	1800
		COORDINATION DISTANCES (km)							
55	300k	790	790	800	820	850	880	910	950
50	100k	680	680	700	720	740	770	810	850
45	30k	590	590	610	630	650	670	730	750
40	10k	510	510	530	540	560	590	640	670
35	3k	440	440	460	470	490	530	570	600
30	1k	380	380	390	400	430	460	500	530
25	300	320	320	330	350	370	400	440	470
20	100	260	260	280	290	310	350	380	420
15	30	150	210	220	240	260	300	340	360
10	10	75	150	170	180	200	250	290	300
5	3	40	100	120	130	150	200	240	260
0	1	25	65	80	95	120	150	200	210



TABLE 3

Coordination distances  $D_{SW}$ , in km, for propagation paths over warm sea

EFFECTIVE RADIATED POWER dBW      W		EFFECTIVE ANTENNA HEIGHT (m)							
		10	37.5	75	150	300	600	1200	1800
		COORDINATION DISTANCES (km)							
55	300k	1300	1300	1300	1300	1300	1300	1300	1300
50	100k	1300	1300	1300	1300	1300	1300	1300	1300
45	30k	1100	1100	1130	1150	1170	1200	1230	1280
40	10k	800	800	840	870	900	940	970	1010
35	3k	610	610	650	680	700	740	780	800
30	1k	490	490	520	550	560	600	650	670
25	300	390	390	410	440	460	490	540	560
20	100	310	310	330	360	370	400	440	480
15	30	210	240	260	290	300	330	360	400
10	10	85	170	200	220	240	270	300	340
5	3	40	110	140	160	190	220	250	290
0	1	25	70	90	120	140	170	200	240

TABLE 4

Coordination distances  $D_{SS}$ , in km, for  
propagation paths in areas of super-  
refractivity

EFFECTIVE RADIATED POWER		COORDINATION DISTANCES
dBW	W	$D_{SS}$ (km)*
55	300k	1480
50	100k	1400
45	30k	1320
40	10k	1230
35	3k	1150
30	1k	1070
25	300	980
20	100	900
15	30	820
10	10	730
5	3	650
0	1	560

\* No dependency on effective  
antenna height.

## CHAPTER 2

### LIMITS RELATING TO TV BROADCASTING

In applying paragraph 2.2 of Article 4, the following tables of distances between the broadcasting station and the nearest point on the boundary of any other administration shall be used to identify administrations whose TV broadcasting services operating in accordance with the Regional Agreement, Stockholm, 1961 may be considered as affected (Tables 5 to 8).

The coordination distances in Tables 5 to 7 shall be used to ensure compatibility with television stations in countries using the band 87.5 - 100 MHz for television in accordance with the Regional Agreement, Stockholm, 1961. The tables apply to propagation paths which are fully overland or oversea (cold or warm). They are based on a nuisance field of 52 dB(μV/m) obtained by interpolation between values given for the bands 41 - 68 MHz and 174 - 223 MHz in the "Technical Data used by the European VHF/UHF Broadcasting Conference, Stockholm, 1961" (part 4, section 4.2) and a protection ratio of 50 dB for tropospheric interference in accordance with Chapter 5 of Annex 2, Figure 5.1. The coordination distances so obtained were rounded to the nearest multiple of 10 km or 5 km, respectively, for coordination distances above or below 100 km.

Coordination distances for steady interference are included in Tables 5-7 when they exceed those for tropospheric interference. They were derived from Figures 2.1 and 2.2 of Annex 2 Document 155(Rev.1) and protection-ratio values 10 dB above those for tropospheric interference.

The corrections presented in Table 8 take account of the frequency dependency of the television signal's susceptibility to interference. To account for this effect, the effective radiated power, in dB(W), shall be reduced by this correction before the coordination distance is determined. A value of 0 dB shall be used when the corrected effective radiated power, in dB(W), is negative.

Linear interpolation shall be used for effective radiated powers, in dB(W), and for effective antenna heights, in m, not appearing in Tables 5 to 7. Height values of 10 m or 1,800 m, respectively, shall be taken when the actual effective antenna height is below the former or above the latter value.

For mixed paths the coordination distance,  $D_M$ , shall be the sum of the pertinent fractions of the coordination distances,  $D_i$ , applicable to every type of propagation path involved.

$$D_M = \sum_i \frac{d_i}{d_T} D_i \quad (i = L, SC, SW)$$

where

$d_T$  is the total path length from the transmitter to the nearest point of the border of the country concerned; and

$d_i$  are the total lengths of those parts of the path which are over land, over cold sea, or over warm sea, as the case may be.

TABLE 5

Coordination distances  $D_T$ , in km, for propagation paths over land

EFFECTIVE RADIATED POWER		EFFECTIVE ANTENNA HEIGHT (m)							
		10	37.5	75	150	300	600	1 200	1 800
		Coordination distances (km)							
dBW	W								
55	300k	660	660	670	690	710	740	780	810
50	100k	600	600	620	630	650	680	720	760
45	30k	550	550	560	580	600	630	670	700
40	10k	500	500	510	520	540	570	610	650
35	3k	440	440	450	470	490	520	560	590
30	1k	390	390	400	410	430	460	500	530
25	300	330	330	340	360	370	410	450	480
20	100	280	280	290	300	320	360	390	430
15	30	200	230	240	250	270	300	340	380
10	10	110	170	190	200	220	260	300	330
5	3	60	130	150	160	180	210	260	280
0	1	45	90	110	120	140	170	220	240

TABLE 6

Coordination distances  $D_{SC}$  in km, for propagation paths over cold sea

EFFECTIVE RADIATED POWER		EFFECTIVE ANTENNA HEIGHT (m)							
		10	37.5	75	150	300	600	1 200	1 800
dBW	W	Coordination distances (km)							
55	300k	1160	1160	1190	1220	1240	1250	1270	1300
50	100k	990	990	1000	1040	1050	1070	1130	1160
45	30k	860	860	870	890	910	940	980	1010
40	10k	750	750	760	780	800	840	870	910
35	3k	640	640	660	680	700	730	780	810
30	1k	560	560	580	590	610	640	700	720
25	300	480	480	500	510	530	570	610	640
20	100	410	410	430	440	470	500	540	570
15	30	350	350	370	380	400	440	480	510
10	10	300	300	310	320	350	380	420	450
5	3	230	240	260	270	290	330	360	390
0	1	110	190	200	220	230	280	320	340

TABLE 7

Coordination distances,  $D_{SW}$ , in km, for propagation paths over warm sea

EFFECTIVE RADIATED POWER		EFFECTIVE ANTENNA HEIGHT (m)							
		10	37.5	75	150	300	600	1 200	1 800
		Coordination distances (km)							
aBW	W								
55	300k	1300	1300	1300	1300	1300	1300	1300	1300
50	100k	1300	1300	1300	1300	1300	1300	1300	1300
45	30k	1300	1300	1300	1300	1300	1300	1300	1300
40	10k	1300	1300	1300	1300	1300	1300	1300	1300
35	3k	1300	1300	1300	1300	1300	1300	1300	1300
30	1k	950	950	990	1020	1050	1080	1110	1150
25	300	720	720	750	780	810	850	890	920
20	100	560	560	600	620	640	680	730	750
15	30	440	440	480	500	520	560	600	620
10	10	350	350	380	400	420	460	500	510
5	3	280	280	300	330	350	370	400	450
0	1	140	210	230	260	280	300	340	370

TABLE 8

Correction, in dB, accounting for the television signal's  
frequency-dependent susceptibility to interference

Frequency MHz	Corr. dB	Frequency MHz	Corr. dB	Frequencies MHz	Corr. dB	Frequencies MHz	Corr. dB	Frequencies MHz	Corr. dB
92.0	25	93.2	2	95.2	8	88.4, 96.4	15	90.4, 98.4	14
92.1	22	93.3	0	95.3	9	88.5, 96.5	14	90.5, 98.5	16
92.2	19	to	⋮	95.4	10	88.6, 96.6	12	90.6, 98.6	18
92.3	16	94.3	0	95.5	11	88.7, 96.7	10	90.7, 98.7	21
92.4	13	94.4	1	87.6, 95.6	12	88.8, 96.8	9	90.8, 98.8	23
92.5	10	94.5	2	87.7, 95.7	13	88.9, 96.9	7	90.9, 98.9	25
92.6	8	94.6	3	87.8, 95.8	14	89.0, 97.0	5	to to	⋮
92.7	7	94.7	4	87.9, 95.9	15	to to	⋮	91.6, 99.6	25
92.8	6	94.8	5	88.0, 96.0	15	90.0, 98.0	5	91.7, 99.7	12
92.9	5	94.9	6	88.1, 96.1	16	90.1, 98.1	7	91.8, 99.8	12
93.0	4	95.0	6	88.2, 96.2	17	90.2, 98.2	10	91.9, 99.9	25
93.1	3	95.1	7	88.3, 96.3	17	90.3, 98.3	12		

### CHAPTER 3

#### LIMITS RELATING TO AERONAUTICAL RADIONAVIGATION SERVICES

In applying paragraph 2.2 of Article 4, the aeronautical radionavigation services of another administration are considered to be affected if the distance from the broadcasting station to the nearest point on the boundary of another administration is less than 500 km.

### CHAPTER 4

#### LIMITS RELATING TO THE LAND MOBILE SERVICE

In applying paragraph 2.2 of Article 4, the land mobile services of administrations listed in RR 587 and RR 589 and of administrations of Region 3 (in the band 87.5 - 100 MHz) are considered to be affected if the field strength from the broadcasting station exceeds the following limits at the nearest point on the border of another administration:

- for broadcasting stations using only horizontal polarization: 18 dB( $\mu$ V/m);
- for broadcasting stations using vertical or mixed polarization: 0 dB( $\mu$ V/m).

The field strengths shall be calculated at an antenna height of 10 m above ground, based on the curves in Figures Ann4.1, Ann4.2 and Ann4.3 (50% of locations, 10% of time). For mixed paths the calculation method as described in 2.1.3.5 of Annex 2 will be applied.

In the case of mixed polarization, only the vertical component of the total e.r.p. of the broadcasting station should be taken into account. It is assumed that the land mobile service is vertically polarized and that in the case of mixed polarization of the broadcasting station at least one-tenth of the total e.r.p. of the broadcasting station is radiated in the vertical component.



CHAPTER 5

LIMITS RELATING TO THE FIXED SERVICE

In applying paragraph 2.2 of Article 4, the fixed service of the administrations listed in RR588 and of administrations of Region 3 in the 87.5 - 100 MHz band shall be considered as affected if the field strength of the nearest point of the border of another administration exceeds the following limit.

For broadcasting stations: 0 dB( $\mu$ V/m).

This field strength will be calculated at an antenna height of 10 m above ground, using curves of Figures Ann4.1, Ann4.2 and Ann4.3 (50% of locations, 10% of time). For mixed paths, the calculation method as described in 2.1.3.5 of Annex 2 will be applied.

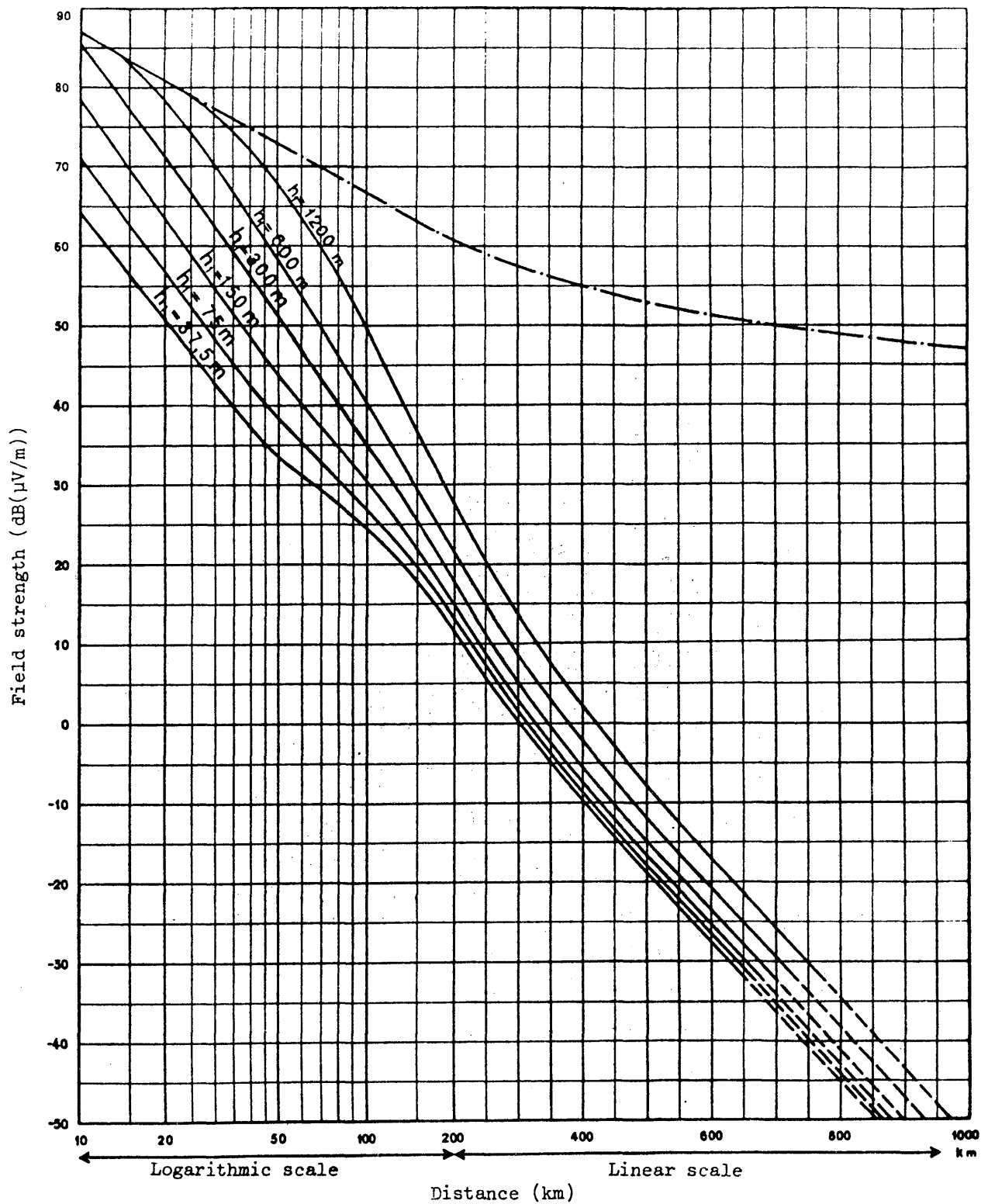


FIGURE Ann4.1

Field strength (dB(μV/m)) for 1 kW e.r.p.

Propagation over land

10% of the time; 50% of the locations;  $h_2 = 10$  m

---- Free space

PROPAGATION CURVES FOR THE BROADCASTING SERVICE

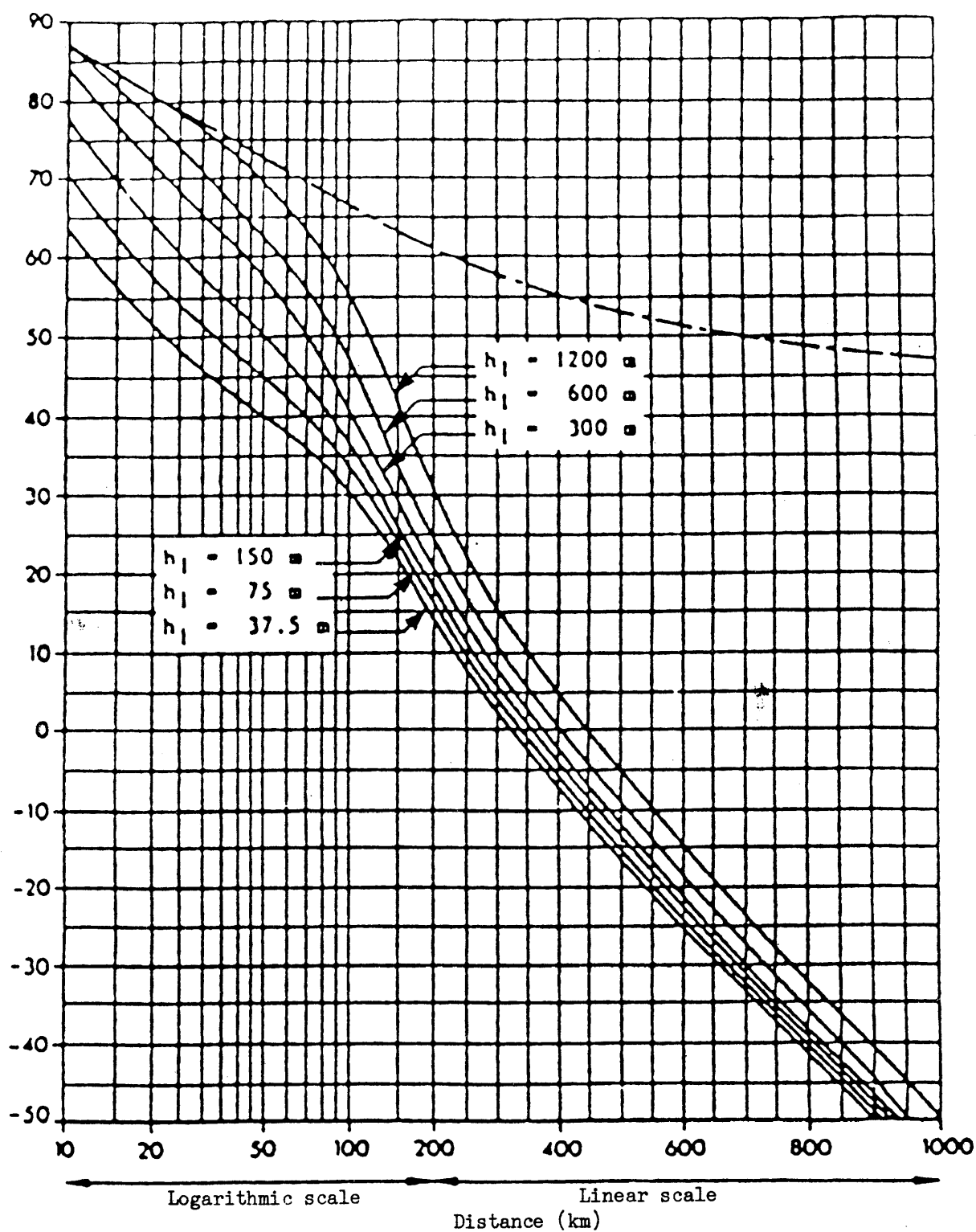


FIGURE Ann4.2

Field strength ( $\text{dB}(\mu\text{V/m})$ ) for 1 kW e.r.p.

Propagation over cold sea

10% of the time; 50% of the locations;  $h_2 = 10$  m

--- Free space

PROPAGATION CURVES FOR THE BROADCASTING SERVICE

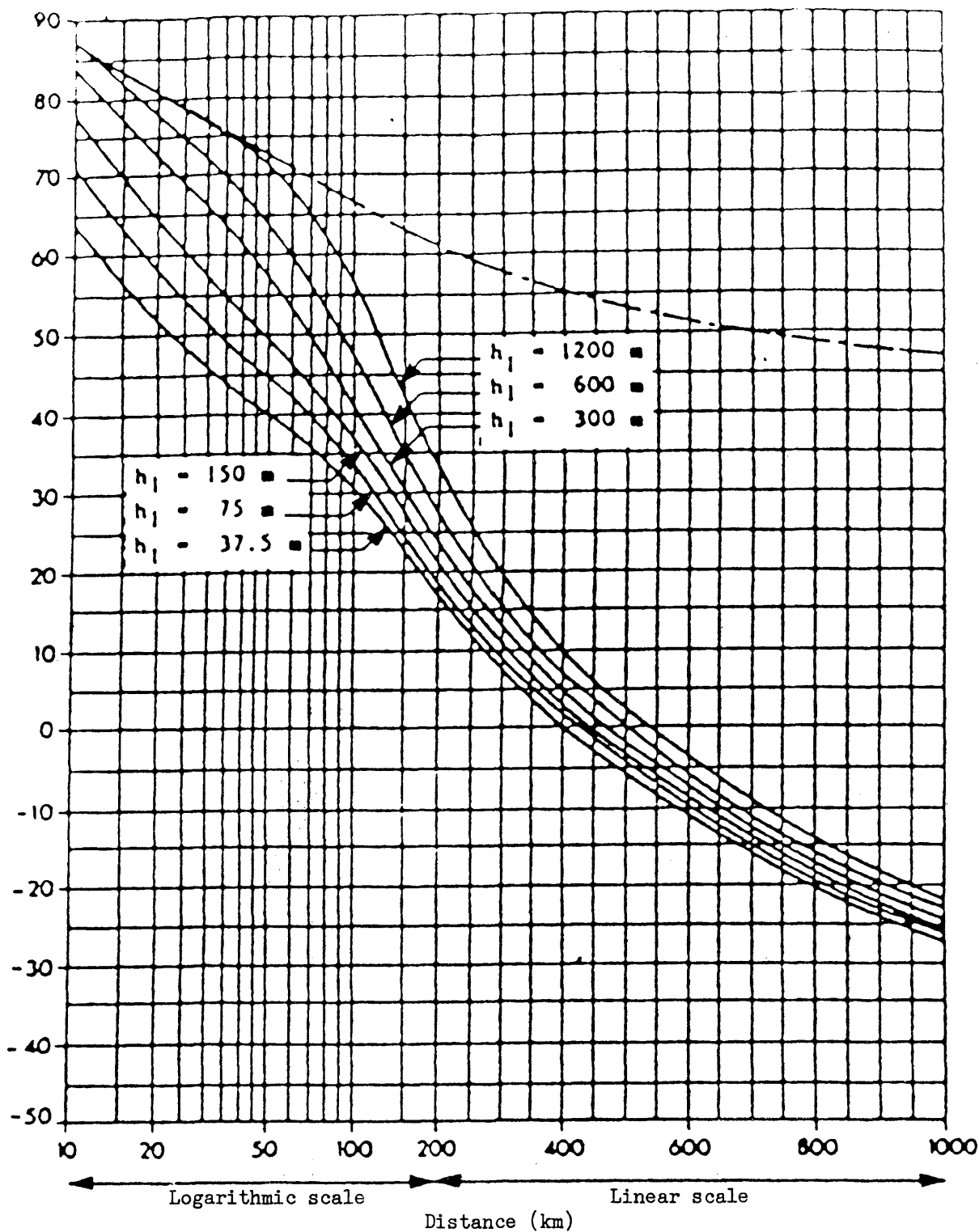


FIGURE Ann4.3

Field strength (dB(μV/m)) for 1 kW e.r.p.

Propagation over warm sea

10% of the time; 50% of the locations;  $h_2 = 10$  m

--- Free space

PROPAGATION CURVES FOR THE BROADCASTING SERVICE

CHAPTER 6

LIMITS RELATING TO THE AERONAUTICAL MOBILE (OR) SERVICE

In applying paragraph /2.2 of Article 4, / the aeronautical mobile (OR) services of another administration / listed in RR 587 and RR 589 / are considered to be affected if the field strength of the broadcasting station at the border of another administration exceeds 20 dB( $\mu$ V/m) at an altitude of 10,000 metres. This field strength is based on free space propagation. This coordination distance shall be limited to a maximum of the line-of-sight distance based on an effective Earth radius of  $4/3$  times the actual radius.

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 177-E  
30 November 1984  
Original: English

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COMMITTEE 5

NOTE FROM THE TECHNICAL WORKING GROUP  
OF THE PLENARY TO COMMITTEE 5

The Technical Working Group of the Plenary adopted the following limits to be used for site tolerances (Article 4, section 2.4.C in Document 139):

"The distance between the actual site of a transmitter and the site indicated in the Plan should not be greater than

- a) 15 km for transmitters having total e.r.p. greater or equal than 1 kW;
- b) 5 km for transmitters having total e.r.p. less than 1 kW."

J. RUTKOWSKI  
Chairman of the Technical Working Group

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 178-E  
30 November 1984  
Original: English

COMMITTEE 5

NOTE FROM THE TECHNICAL WORKING GROUP  
OF THE PLENARY TO COMMITTEE 5

The Technical Working Group of the Plenary reconsidered the criteria, which the administrations will use to accept a proposed modification to the Plan, and the Group confirms its previous decision that the increase can be accepted if:

- the resulting usable field strength is not greater than 54 db( $\mu$ V/m), or
- the resulting usable field strength is greater than 54 dB( $\mu$ V/m), but is increased by 0.5 dB or less compared with the usable field strength resulting from the Plan adopted by the Conference or from its first entry in the Plan, following the application of this procedure. An increase of more than 0.5 dB is open to negotiations, in which more detailed calculation methods may be used.

J. RUTKOWSKI  
Chairman of the Technical  
Working Group of the Plenary

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 179-E  
30 November 1984  
Original: English

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COMMITTEE 4

NOTE FROM THE TECHNICAL WORKING GROUP OF  
THE PLENARY TO COMMITTEE 4

The Technical Working Group of the Plenary adopted the following limit to be used to settle unresolved cases during and after the Conference:

"the nuisance field strength level is equal or less than 60 dB( $\mu$ V/m)".

J. RUTKOWSKI  
Chairman of the Technical Working Group



INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Corrigendum 1 to  
Document 180-E  
5 February 1985  
Original: English

COMMITTEE 5

SUMMARY RECORD

OF THE

EIGHTH MEETING OF COMMITTEE 5

1. Paragraph 3.4.4.1

Replace the second sub-paragraph by:

"At the request of the Chairman, he suggested the addition of a resolves 5,  
worded:"

2. Paragraph 3.4.4.4

Replace the word "proposal" by "suggestion" in both sentences.

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 180-E  
3 December 1984  
Original: English/  
French

COMMITTEE 5

SUMMARY RECORD  
OF THE  
EIGHTH MEETING OF COMMITTEE 5  
(AGREEMENT AND PROCEDURES)

Friday, 30 November 1984, at 0900 hrs

Chairman: Mr. K. OLMS (Federal Republic of Germany)

Subjects discussed:

Documents

- |  |                |
|--|----------------|
| 1. Approval of the summary record of the fourth meeting of Committee 5 | 121            |
| 2. Fifth report of the Technical Working Group of the Plenary          | 108 and Corr.1 |
| 3. First report of Working Group 5B                                    | 145            |
| 4. Second report of Working Group 5B                                   | 167            |
| 5. First report of Working Group 5C                                    | 155(Rev.1)     |

1. Approval of the summary record of the fourth meeting of Committee 5  
(Document 121)

Document 121 was approved.

2. Fifth report of the Technical Working Group of the Plenary  
(Document 108 and Corr.1)

2.1 The Chairman of the Technical Working Group of the Plenary said that the text in Corrigendum 1 to Document 108 took into account his informal consultations, referred to in paragraph 6.1 of the summary record of Committee 5's fourth meeting (Document 121), regarding the Austrian delegation's proposals contained in Document 118. He drew attention to the reservations made by Denmark and Norway concerning Appendix 1, point 3 and column 1 in Appendix 2 relating to the distances concerning the aeronautical mobile (OR) service, as well as to the provisional reservation by the delegation of the Islamic Republic of Iran concerning paragraphs 1 and 3 in Appendix 1.

2.2 The delegate of Denmark withdrew his delegation's reservation.

2.3 The delegate of the Islamic Republic of Iran said that his delegation continued to reserve its position regarding the coordinating distance in respect of the aeronautical mobile (OR) service.

2.4 The delegate of Italy said that his delegation had reservations concerning the values for coordinating distances, which it thought excessive; but the reservations did not concern the current text.

2.5 The Chairman invited the Committee to consider separately the paragraphs and appendices to the Annex to Document 108 and column 1.

2.6 Paragraph 1

2.6.1 The delegate of the United Kingdom said that, in accordance with the criteria established at the Conference's first session, only 8 dB was allowed for polarization discrimination in respect of mobile stations. Therefore, in the case of administrations operating mobile stations in the band 85.7 - 88 MHz, the trigger value of broadcasting stations using only horizontal polarization was not correct, and should be lowered. He proposed accordingly that the figure in Appendix 1 in the Annex to Document 108 should be reduced from 18 to 14 dB( $\mu$ V/m).

The proposal was rejected.

Paragraph 1 was approved.

2.7 Paragraphs 2-5

Approved.

2.8 Appendix 1

Approved.

2.9 Appendix 2

2.9.1 The Vice-Chairman of the IFRB, in response to a question by the delegate of the USSR, said that the information had been thought useful in terms of coordination between administrations, although it was not a necessary part of the data for triggering coordinations.

Appendix 2 was approved.

Document 108 as a whole was approved.

3. First report of Working Group 5B (Document 145)

The Chairman invited the Committee to consider, paragraph by paragraph, the draft Resolution contained in the Annex to that document.

3.1 Title COM5/1, noting

Approved.

3.2 considering a) and b)

The Chairman, in response to an observation by the delegate of Algeria, said that the Editorial Committee would be requested to use the expression permitted services, not authorized services, in the French text.

considering a) and b) were approved.

3.3 The delegate of Algeria proposed that a considering c) should be added, perhaps suitably worded by the IFRB, in order to limit the application in the text to the countries referred to in Radio Regulations 587, 588 and 589 and their neighbouring countries.

3.3.1 The delegate of Saudi Arabia supported that proposal.

3.3.2 The delegate of Poland, supported by the delegate of Italy, said that to refer to "neighbouring countries" in such a way could cause difficulties, since countries other than immediate neighbours could be affected.

3.3.3 The delegate of Switzerland, supported by the delegates of Hungary, the USSR, Ireland and the German Democratic Republic, thought that such an addition might be unnecessary, since trigger values provided an adequate technical means of defining the areas concerned.

3.3.4 The Chairman observed that Annex 4 to the Final Acts included references, in respect of limits, to the relevant provisions in the Agreement, as shown on pages 14, 15 and 19 of Working Group 5C's third report (Document 176). Therefore, if there was no objection, he would take it that the Committee agreed to add a considering c).

It was so agreed.

3.4 resolves 1-4

3.4.1 The delegate of the Islamic Republic of Iran reiterated his delegation's reservations concerning resolves paragraphs 1, 2 and 4.

3.4.2 resolves 1 and 2

Approved.

3.4.3 resolves 3

3.4.3.1 The Chairman noted that the square brackets around 1986 were to be retained for the time being.

It was agreed, following an observation by the delegate of Switzerland, that in the French text the words "l'on réalisera" would be replaced by "l'on devrait réaliser", subject to adjustment by the Editorial Committee, in order to conform to the sense of the English version.

On that understanding, resolves 3 was approved.

3.4.4 resolves 4

3.4.4.1 The delegate of the United Kingdom expressed concern that the text as it stood failed to clarify how regulatory procedures would apply in the absence of any agreement between administrations concerned in the implementation of a broadcasting assignment appearing in the Plan; he felt that some clarification was required.

At the request of the Chairman, he formally proposed the addition of a resolves 5, worded:

"in the absence of any agreement between administrations concerned in the implementation of a broadcasting assignment appearing in the Plan, mobile stations shall be protected up to 1 January 1988 in the band 104 - 108 MHz, up to 1 January 1990 in the band 105 - 108 MHz, up to 1 January 1992 in the band 106 - 108 MHz and up to 1 January 1994 in the band 107 - 108 MHz."

3.4.4.2 The delegate of Ireland supported the United Kingdom's approach, which in general could help to remove his delegation's reservations.

3.4.4.3 The delegate of the USSR, supported by the delegates of Poland, Hungary, the German Democratic Republic, Syria and Turkey, opposed the proposal.

3.4.4.4 The delegate of the Federal Republic of Germany supported the United Kingdom delegate's proposal, but preferred the expression "stations of the mobile services" in the proposed text.

On a show of hands, the United Kingdom delegate's proposal was rejected by 13 votes to 7.

3.4.4.5 The Chairman said that the Committee would report to the Plenary accordingly, including the United Kingdom delegation's question about how the regulatory procedure was to be understood.

3.4.4.6 The delegates of Ireland and Italy maintained the reservations they had expressed in Document 145.

3.4.4.7 The delegates of Spain and the Islamic Republic of Iran maintained their reservations in respect of the entire draft Resolution contained in the document.

3.4.4.8 The delegate of Switzerland withdrew his delegation's reservations.

3.4.4.9 The Chairman, in response to an observation by the delegate of Algeria, said that the Editorial Committee would be requested to consider the suitability of referring specifically to the year 1995 in the resolves part of the draft Resolution, since by that date there would no longer be services operating on a permitted basis in the band 104 - 108 MHz.

On that understanding, resolves 4 was approved.

The draft Resolution in Document 145, as a whole, was so approved.

4. Second report of Working Group 5B (Document 167)

The Chairman invited the Committee to consider the draft Resolution contained in the Annex to Document 167.

4.1 Title COM5/2

Approved.

4.2 considering a) and b)

Approved.

The delegate of Italy said that his delegation had withdrawn the reservation expressed concerning considering b).

4.3 considering c)

4.3.1 The Chairman of Working Group 5B said that the intention was to refer, in the space between square brackets, to the draft new article concerning compatibility with the new aeronautical radionavigation service, referred to in Document 164.

4.3.2 The Chairman of the IFRB said that mention should also be made, in considering c), decides 1 and the corresponding Annexes, of the Agreements which would determine the distance tables.

4.3.3 The delegate of Algeria said that Article 4bis should be referred to in considering c) and in resolves 1.

4.3.4 The Chairman said that, in addition, a reference should be added to the articles concerning unresolved cases and to the relevant annex.

On that understanding, considering c) was approved.

#### 4.4 resolves 1

4.4.1 The Chairman said that the references already made to the Articles and corresponding Annexes would be inserted in the space between square brackets.

4.4.2 The Legal Adviser pointed out, in response to an observation by the delegate of Finland, that to delete from resolves 1 the words from "instead of the corresponding procedures" to the end of the paragraph would be to risk divesting the text of its purpose, unless the deletion was replaced by the words "in order to update the Plan prior to the entry into force of the Agreement and the Plan"; the revised wording would emphasize the preparatory purpose.

4.4.3 The Chairman suggested that that part of the text should be left as it stood.

4.4.4 It was agreed, on a proposal by the delegate of Saudi Arabia that the words "the administrations which" should be replaced by "the administrations whose stations", and that the word "two" should be inserted in front of the word "Agreements" at the end of the paragraph.

4.4.5 It was also agreed after further discussion that the delegates of Algeria, Finland and the United Kingdom, together with the Legal Adviser would hold informal consultations concerning both the title and resolves 1.

#### 4.5 resolves 2

4.5.1 The Chairman, in response to an observation by the delegate of Algeria concerning publications made in accordance with Article 4 and 4bis, suggested that the text could be simplified by referring back to the text of resolves 1.

It was so agreed.

On that understanding resolves 2 was approved.

4.6 The Legal Adviser, in response to a question by the delegate of Poland as to whether articles of the Agreement could be validly invoked for procedure before the Agreement entered into force, said that it must first be clarified whether the modification procedure applied was to be understood as preparatory in nature or whether the modifications agreed upon on the basis of the new Agreement were to be understood as operational even prior to the Agreement's entry into force. The former understanding was acceptable, but the latter would run counter to what had been done in earlier Agreements. He suggested that the details which the Committee had agreed to insert in the spaces between square brackets in considering c) and resolves 1 should be annexed to the draft Resolution for the sake of clarity.

#### 5. First report of Working Group 5C (Document 155(Rev.1))

5.1 The Chairman of Working Group 5C said that a number of mistakes in Document 155 had been corrected in the revised version.

5.2 Paragraph 1.1

Following a discussion between the delegate of Poland, supported by the delegates of the Federal Republic of Germany, the Islamic Republic of Iran and the delegate of Algeria, on whether the word "wanted" qualifying the word "transmitter" should be deleted or not, it was decided to leave the text as it stood.

5.3 Paragraph 2.1.3.5

5.3.1 The delegate of Poland proposed that the square brackets be removed from the last sentence of the paragraph; the sentence had been added to settle a problem raised by the delegation of Finland.

It was so decided.

5.4 Paragraph 3.8.2

5.4.1 The delegate of the United Kingdom, having pointed out that the paragraph was still confusing and needed to be redrafted, the Chairman suggested that an appropriate text should be submitted at the following meeting.

It was so decided.

The meeting rose at 1045 hours.

The Secretary:

J. FONTEYNE

The Chairman:

K. OLMS



INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Corrigendum 1 to  
Document 181-E  
25 April 1985  
Original : English

MINUTES  
OF THE  
NINTH PLENARY MEETING

Page 2, replace paragraph 1.7 by the following :

"1.7        The delegate of the Islamic Republic of Iran, referring to the second part of paragraph 1.4, pleased that every effort should be made to include the cases mentioned therein for separate reading. In view of the administrative difficulties involved, it was not right to leave them all to be worked out by the IFRB after the Conference, nor was it right that the time limits imposed should harm the interests of administrations. While his delegation had agreed to the deadline referred to in Document 78, it had not agreed to the working method based on which the plan was going to be built up, and now that a criterion of 60 dB had been adopted it was essential for administrations to see the results of the calculations."

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# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 181-E  
4 December 1984  
Original: English/  
French/  
Spanish

## PLENARY MEETING

### MINUTES

### OF THE

### NINTH PLENARY MEETING

Friday, 30 November 1984, at 1105 hrs

Chairman: Miss M. HUET (France)

#### Subjects discussed

1. Programme for the final days of the Conference

#### Document

174

1. Programme for the final days of the Conference (Document 174)

1.1 The Chairman outlined the programme for the final days of the Conference, as decided by the Steering Committee (Document 174), and said that the following words should be added at the end of paragraph 1.3: "It will also include assignments to sound broadcasting stations contained in the reference list (Document 151, paragraph 1 d))".

As a result of exceptional efforts by the IFRB Secretariat, the draft Plan would contain all the modifications so far submitted, including those received after the deadline of 1200 hours on Thursday, 29 November.

1.2 The delegate of the Islamic Republic of Iran recalled the difficulties experienced by certain administrations which, because of the application of the new formula of super-refractivity, had been unable to submit their modifications before the 1200 hours deadline. In view of the fact that those administrations had voluntarily reduced their requirements from six to two, he urged that the very small number of modifications which they wished to submit might be received after the deadline.

1.3 The Chairman of the IFRB said that since very few modifications were involved, they would be entered in the calculations provided they were received by the Secretariat by 1400 hours that day.

1.4 The delegate of the Islamic Republic of Iran further drew attention to some sound broadcasting stations in Region 3 which had been notified to the IFRB in accordance with Article 12 of the Radio Regulations and which were already in operation. He urged that they should be included in the third analysis as stations for which coordination was still required.

1.5 The Chairman of the IFRB said that since it appeared that only a few stations were involved, the IFRB would carry out a separate analysis for them and submit the results to the delegation of the Islamic Republic of Iran.

1.6 The delegate of Algeria having proposed that the addition proposed by the Chairman to paragraph 1.3 of Document 174 should refer to all the assignments listed in paragraph 1 of the document and also to the Appendix to the Plan, the Chairman of the IFRB said it would be more correct to say: "... assignments listed in paragraph 1 with the exception of those in paragraph 1 c)."

It was so agreed.

1.7 The delegate of the Islamic Republic of Iran, referring to the second part of paragraph 1.4, pleaded that every effort should be made to include the cases mentioned therein in the first or, if that was not possible, at least in the second reading of the Plan. In view of the administrative difficulties involved, it was not right to leave them all to be worked out by the IFRB after the Conference, nor was it right that the time limits imposed should harm the interests of administrations. While his delegation had agreed to the working methods proposed in Document DT/10, it had not agreed to the deadline, and now that a criterion of 60 dB had been adopted it was essential for administrations to see the results of the calculations.

1.8 The Chairman explained that it was materially impossible to produce the figures required during the Conference. The Chairman of the IFRB confirmed that explanation but said that the IFRB Secretariat would do its utmost, and if the figures were available they would be considered at the second reading.

1.9 The delegate of Italy, supported by the delegates of Spain and Tunisia, said he understood that the Conference had accepted a Swiss proposal that stations for which coordination was not yet completed but was being or was intended to be completed should be listed in the Plan with a note to that effect, rather than being put in the Appendix.

1.10 The Chairman of Committee 5 confirmed that that had been Committee 5's decision.

1.11 The Chairman of the IFRB apologized if there had been a misunderstanding of Committee 5's decision. It had been his understanding that Committee 4 would decide what was to be contained in the Plan and Committee 5 would decide the date until which the Appendix would remain in force, and the IFRB's work had been based on paragraph 1 b) in Document 151. It appeared that further discussion of the point in Plenary might be necessary to avoid any ambiguity.

1.12 The delegate of Switzerland, supported by the delegate of Libya, said that the misunderstanding was indeed a serious one. It had been clearly stated in Plenary that under column 17 administrations could make the remarks appropriate to each entry and if an entry in the Plan, including the remarks in column 17, was agreed to by all the administrations concerned, it should be considered as an entry in conformity with paragraph 1 b) of Document 151. It was on that understanding that his delegation's proposal had been made and approved.

1.13 The delegate of the Islamic Republic of Iran said that inclusion in the Plan of certain assignments for which coordination had yet to be completed would be inconsistent with the placement of unresolved cases in the Appendix to the Plan.

1.14 After further discussion, in which the delegates of the Islamic Republic of Iran, Libya, the United Kingdom speaking as Chairman of Planning Group 4D, Italy, Algeria and the Federal Republic of Germany, the Chairman of Committee 4 and the Chairman of the IFRB took part, the Chairman said that the point under discussion was outside the scope of the Plenary's agenda for that meeting but, in view of its importance, it would be examined at a subsequent Plenary Meeting.

1.15 The delegate of the United Kingdom, supported by the delegate of the Islamic Republic of Iran, speaking in connection with paragraph 4 of Document 174, drew attention to the fact that the IFRB's analysis would not necessarily capture all cases of VOR interference and there was a need for administrations to consider the broadcasting stations referred to in the VOR volume to make sure that nothing had been overlooked.

1.16 The delegate of France endorsed the point made by the United Kingdom delegate. The number of test points chosen had clearly been inadequate and it was for that reason that he had suggested at the fifth meeting of Committee 5 that two countries might agree to have additional test points.

1.17 The Chairman of Committee 5 said that a decision regarding types A2 and B2 interference was still pending in Committee 5.

1.18 The Chairman drew attention to paragraphs 5 and 6 of Document 174 regarding the first and second readings of the Plan.

The meeting rose at 1220 hours.

The Secretary-General:

R.E. BUTLER

The Chairman:

M. HUET

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Corrigendum 1 to  
Document 182-E  
5 February 1985  
Original: English

COMMITTEE 5

SUMMARY RECORD  
OF THE  
NINTH MEETING OF COMMITTEE 5

Paragraph 3.6.7.7

Replace by:

"3.6.7.7 The Vice-Chairman of the IFRB stated that details of all international systems had been supplied to the Board by ICAO, but some national systems might be missing."

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 182-E  
4 December 1984  
Original: English/  
French

## COMMITTEE 5

SUMMARY RECORD  
OF THE  
NINTH MEETING OF COMMITTEE 5  
(AGREEMENTS AND PROCEDURES)

Friday, 30 November 1984, at 1500 and 1930 hrs

Chairman: Mr. K. OLMS (Federal Republic of Germany)

Subjects discussed:

Documents

- |  |                   |
|--|-------------------|
| 1. End of consideration of the first report of Working Group 5C                  | DL/26, 155(Rev.1) |
| 2. Revision of the Stockholm Agreement (1961) and of the Geneva Agreement (1963) | DT/52             |
| 3. Compatibility with the aeronautical radionavigation service                   | 164               |
| 4. Unresolved cases  | 170               |
| 5. Third report of Working Group 5A  | 169               |
| 6. Unresolved cases (continued)  | 170               |
| 7. Fourth and second reports of Working Group 5A                                 | 172, 165          |

1. End of consideration of the first report of Working Group 5C  
(Documents DL/26, 155(Rev.1))

1.1 Document DL/26

Point 3.8.2, proposed by the United Kingdom delegate, was approved; it replaces point 3.8.2 in Document 155(Rev.1).

1.2 The Chairman of Committee 6 queried the layout of the document, the technical data in which had to be used to prepare the Plan. Since the Technical Group had produced another text on the modification of the Plan, it might be preferable to have a single text covering the calculations for both the preparation and the modification of the Plan. Would Committee 5 agree that Committee 6 might amend the text accordingly?

1.3 The Chairman of Working Group 5C suggested that the title of Annex 1 should be shown in square brackets pending the preparation of the final document by Committee 6, which was authorized to amend the text slightly to ensure coordination between Annexes 2, 3, 4 and 5.

1.4 The Chairman said that, to avoid any amendment of substance, such changes should be made in consultation with the Secretariat, Working Group 5C and himself; they would be shown in square brackets to bring out the differences.

2. Revision of the Stockholm Agreement (1961) and of the Geneva Agreement (1963)  
(Document DT/52)

2.1 The Legal Adviser introduced the document and said that the various paragraphs were self-explanatory. The present Conference had no mandate to abrogate parts of the Geneva and Stockholm Agreements and, as it would be too late for the Administrative Council to call a conference on the subject in accordance with Article 54 of the International Telecommunication Convention, reference had been made to Articles 62 and 63 of the Convention which provided a much faster procedure for solving the problem.

While Annex 2 to the document seemed appropriate, Annex 1 was incomplete. Working Group 5A had considered it necessary to adopt supplementary provisions relating to the television Plan in the same band as that of the Stockholm Agreement (see points 18-20 in Document 104(Add.1)). He wondered whether revision of a part of the Stockholm Agreement or the television Plan was envisaged, in which case a conference would have to be called. On the other hand, no such conference would be needed if it was simply a matter of abrogating the provisions of Annexes 1 and 2 to the Stockholm and Geneva Agreements.

2.2 The Chairman suggested that the question should be examined during the discussion of the Annexes.

2.3 The delegate of the USSR considered that the problem was an imaginary one since point 20 in Document 104 exactly described the situation as it was.

A note should be added to draw the attention of the Secretary-General to Recommendation No. 5 of the Stockholm Agreement and to Resolution No. 850, adopted by the Administrative Council at its 35th session in 1980, which required the Secretary-General to consult the administrations of the European Broadcasting Area with regard to any revision of the Agreement.



2.4 The Chairman suggested that the title should contain a reference to the provisional nature of the lists.

2.5 Considering

2.5.1 The delegate of the USSR called for the inclusion of a new paragraph under "considering", with a reference to Administrative Council Resolution No. 850.

2.5.2 The delegate of Poland said that the new paragraph should also contain a reference to Recommendation No. 5 of the Stockholm Agreement.

It was so decided.

2.5.3 The delegate of the Netherlands, referring to points raised by the delegate of Algeria, proposed, in the light of the agreement that the Plan being drafted by the present Conference could not exist alongside the Stockholm and Geneva Plans, that an additional paragraph e) be added to the considering section as follows:

"e) that the Plan annexed to the Agreement under a) above is incompatible with the Plans referred to in b) and c);"

It was so agreed.

2.6 Recognizing

2.6.1 The delegate of Algeria suggested that the following note be added to recognizing b): "For information see Annex 1."

It was so agreed.

2.7 Resolves

2.7.1 Replying to the delegate of the USSR who expressed misgivings about the formulation of the paragraph entitled "resolves", the Chairman said that the Recommendation it contained was addressed to the Members of the two regions concerned and not to the Administrative Council.

2.7.2 The Legal Adviser said that the two Regional Administrative Conferences in question could be convened without the intervention of the Administrative Council, i.e. in accordance with Articles 62 and 63 of the Nairobi Convention.

Addressing the delegate of Finland, he said that from the legal standpoint there was no reason why the present Conference should not address a Recommendation to Members of the Union; indeed, that solution seemed more appropriate than abrogating a part of the Stockholm Agreement by an additional protocol.

2.7.3 The Chairman of the IFRB proposed that, to avoid confusion as to the respective roles of the World Conference (1985) and the two Regional Conferences, the last part of the paragraph after the word "possibly" should be amended to read: "at a convenient date between 8 August and 13 September 1985".

2.7.4 The Secretary of the Conference said that the two Conferences should preferably be held before the World Conference.

2.7.5 The delegate of Algeria considered that the text should be accepted as it stood as it would be preferable to establish a link between the two Regional Conferences and the World Conference, thus enabling administrations to reduce their expenditure.

2.7.6 The delegate of Poland pointed out that a precedent had been established by the Broadcasting-Satellite Conference of 1977, when an item totally unrelated to the initial terms of reference had been added to its agenda, namely, the structure of the Radio Regulations.

2.7.7 To meet the concern of the delegate of Algeria, the Chairman of the IFRB proposed the addition of the following footnote: "These dates were chosen to coincide with those of the WARC-ORB".

The paragraph entitled "resolves" was finally approved subject to the two amendments proposed by the Chairman of the IFRB.

2.8 Consequently urges the Members of the Union in the European Broadcasting Area

2.8.1 Sub-paragraph a)

Approved, with the previously agreed editorial change to WARC-ORB;

2.8.2 Sub-paragraph b)

Approved to include the date of 1 February 1985 and consequent removal of the square brackets.

2.9 Consequently further urges the Members of the Union in the African Broadcasting Area

Approved with the same amendments as in the preceding section.

2.10 Invites the Secretary-General

2.10.1 The Legal Adviser, following up a proposal made by the delegate of Algeria, said that two new sub-paragraphs c) and d) might be added to the existing text, inviting the Secretary-General to report to the 40th session of the Administrative Council if consultations proved negative, and to invite the Council to consider the matter and take appropriate action to solve the problem. Suitable wording could be left to the Editorial Committee.

On that understanding, the section as a whole was approved.

2.11 Annex 1

2.11.1 The Chairman of the IFRB pointed out that the comments in the "Remarks" column of the Stockholm Agreement, some of which undoubtedly related to television, would have to be considered in detail after the Conference. He had already informed Working Group 5A that provisions had been adopted by the Conference for protecting television stations in conformity with the Stockholm Plan. If Committee 5 wished to include provisions protecting the sound broadcasting Plan from any changes in television, there would have to be a reference in the text to the procedure for modifying the sound broadcasting Plan.

2.11.2 The Chairman of Working Group 5C suggested that in that case both annexes should be considered provisional and the Conference left to decide which paragraphs required change.

It was so agreed.

2.12 The Legal Adviser drew the attention of Members from both the European and African Broadcasting Areas to Article 62 of the Convention which required that an agenda be proposed for an administrative conference, as well as its place and date. The two agendas in the present case would require coordination between the two regions concerned in view of the requirement concerning concordant requests under Article 63.

2.13 The Chairman said that since, for lack of time, the agendas could not be prepared by the Committee, they would have to be dealt with after the Conference when the annexes were reviewed, provided that the Committee's discussions ensured that appropriate action would be taken either by administrations or by the Council, with the assistance of the Secretary-General.

2.14 The delegate of France, supported by the delegate of Poland, said that under No. 361 of the Convention, it was up to Members themselves to propose an agenda, even if it were restricted to the revision of the two Agreements. It had nothing to do with the Secretary-General.

2.15 The Chairman consequently invited the delegates of France and Poland to work out an agenda that would be annexed to the Resolution.

It was so agreed.

Subject to the revised annexes and addition of agendas, the Resolution, as amended, was approved.

2.16 The Chairman of the IFRB said that that decision meant that the modifications to the Stockholm Plan would only take into account the existing television and sound broadcasting stations, and the provisional implementation of the Geneva Agreement would not be protected from any modifications to the Stockholm Plan.

3. Compatibility with the aeronautical radionavigation service (Document 164)

3.1 The Chairman, introducing the document, drew attention to paragraph 2 of the covering note which stated that A1 and B1 interference would be appropriately marked.

3.2 The Chairman of the IFRB said that for structural reasons, the paragraphs in Annex 1 should be renumbered as follows:

2. Implementation of the Plan

2.1 Type A1 interference

2.2 Type B1 interference

3. Modifications to the Plan

It was so agreed.

3.3 The delegate of France, having observed that there was nothing in the document on the future of unresolved cases, which was a basic problem as far as the aeronautical cases were concerned; the Chairman said that that problem would be considered at a later stage.

3.4 The delegate of the United Kingdom wondered how the new paragraph 2.2, Type B1 interference, fitted into the Article. The text had been developed by the ad hoc Group of the Plenary as a set of rules for the evolution of cases of B1 interference during the Conference. The Group had suggested in its covering note that the rules might apply to the resolution of such problems outside the Conference. It should in any event be made clear that sections 3.1 to 3.5 contained a procedure and criteria that might be adopted if administrations so wished. However, administrations were free to adopt other methods.

3.5 Annex 1 - Compatibility with the aeronautical radionavigation service

3.5.1 Paragraph 1.1

3.5.1.1 Following a proposal by the delegate of Sweden and discussion between the Chairman, the Chairman of the IFRB and the delegate of the Netherlands, it was agreed to add the following phrase at the end of the first sentence:

"at a limited number of test points identified by administrations  
(see Annex ...)."

3.5.1.2 The delegate of Finland said that it would not be sufficiently clear to someone who had not participated in the Conference that the text referred only to possible interference.

3.5.1.3 The Chairman proposed that the word "potential" be inserted before "interference".

3.5.1.4 The delegate of the Islamic Republic of Iran objected to that proposal.

There being no other objection, the proposal was adopted.

Paragraph 1.1, as amended, was approved.

3.5.2 Paragraph 1.2

It was agreed to remove the square brackets around the second sentence, since the analysis done by the Board showed a few cases of A2/B2 interference.

3.5.2.1 The Chairman said that the sentence as it stood was merely a reminder that appropriate amendments might be needed, and that a more suitable text would have to be drafted.

3.5.3 Paragraph 2 - Type A1 interference

3.5.3.1 It was agreed in paragraph 2.1.1:

- i) to replace the words "shall make experimental test transmissions" by "intends to arrange experimental test transmissions";
- ii) to insert the figure "120 days" in place of X in the first set of square brackets;
- iii) to delete the phrase "during a period of at least [Y] days", since the conditions under which transmissions would be made would be determined in section 2.2.2.

3.5.3.2 The Chairman of the IFRB said that the wording of section 2.1.1 seemed to imply that, more than 100 days before bringing a station into use, an administration would have to make experimental tests and then the station would have to stop operating for 120 days.

3.5.3.3 The Chairman said that he, for his part, understood the wording to mean that at least 120 days before bringing a station into use the administration would inform others so as to negotiate the requisite conditions.

3.5.3.4 The delegate of France said it was not clear what was meant by an assignment in the Plan "which has a symbol A"; the delegate of Poland said that that concern would be met by bringing the French text into line with the English.

3.5.3.5 The Chairman suggested that the final wording could be left to Committee 6. He presumed that the administration indicated by symbol A had to be informed by the administration responsible for the station.

Paragraph 2.1.1, as amended, was approved.

3.5.4 Paragraph 2.1.2

It was agreed to delete the word "two" since more than two administrations might be concerned.

3.5.5 Paragraph 2.1.3

3.5.5.1 The delegate of the Netherlands pointed out that test points for aeronautical radionavigation services did not necessarily have to be within the borders of the country operating the station and could be within another country which, for example, might intend to operate a broadcasting station. The first sentence in section 2.1.3 restricted the verification process to measurements by the administration operating the aeronautical radionavigation station whereas there were other methods of verification. Therefore, the sentence should be recast in more general terms indicating that during test periods the interference situation should be further evaluated.

3.5.5.2 The delegate of France, supported by the delegate of Kenya, considered that if there were disagreement on the level of interference it should be determined at test points contained in the Appendix, or at others decided upon by the administrations concerned.

3.5.5.3 The delegate of the USSR considered that in cases of disagreement the level of interference should be calculated at test points determined by the administration responsible for the aeronautical radionavigation.

3.5.5.4 The delegates of the Islamic Republic of Iran and France supported the USSR proposal, which was approved.

3.5.5.5 The Chairman observed that as a consequence of that decision a list of test points would need to be inserted.

Paragraph 2.1.3, as amended, was approved.

3.5.5.6 The delegate of the Federal Republic of Germany reserved his position on paragraph 2.1.3.

3.5.6 Paragraph 2.1.4

3.5.6.1 The delegate of the Islamic Republic of Iran proposed the insertion of the word "immediate" before the words "appropriate measures"; the delegate of the USSR believed that the amendment was essential because interference was equally dangerous whether it was caused to a regular broadcasting station or to one being tested.

3.5.6.2 The delegates of the Netherlands and the United Kingdom thought the amendment unnecessary.

Paragraph 2.1.4 was approved, as amended.

3.5.7 Paragraphs 2.1.5, 2.2

Approved, subject to deletion of the word "two" in 2.2.3.

3.5.8 Paragraph 3 - Type B1 interference

Paragraph 3.1

3.5.8.1 The delegate of Poland, commenting on a suggestion by the Chairman that Committee 6 might be requested to transfer the definitions in paragraph 3.1 to Article 1, said that they should remain where they were because they specifically related to the Article on compatibility with the aeronautical radionavigation service.

3.5.8.2 The Chairman of the IFRB pointed out that if the definitions were left in 3.1 accompanied by Notes 1 and 2, the latter contained references to two columns in the IFRB computer list which would not appear in the Agreement.

3.5.8.3 The Chairman said that the notes would disappear after the end of the Conference and if placed in square brackets Committee 6 could delete them at that time.

3.5.8.4 The Chairman of the IFRB said that as in the case of type A1 interference a symbol indicating the name of the countries concerned would need to be inserted in paragraph 3 which ought to be re-drafted in the form of provisions; furthermore the definitions would require further review by Sub-Working Group 5C-1. The IFRB would need directives if it were to assist in the re-drafting. The Plan would contain a symbol as designated in Document 163 indicating the countries whose broadcasting stations contributed to B1 incompatibility and the name of the country to which the aeronautical radionavigation station belonged.

The question was whether an administration intending to bring a broadcasting station into service should consult or coordinate with broadcasting stations or the aeronautical radionavigation station affected or with all the countries named in the symbol.

3.5.8.5 The Chairman considered that it would be safest to coordinate with all the administrations affected.

3.5.8.6 The delegate of Algeria said that perhaps the IFRB should keep under review the putting into service of potentially interfering stations. There could be cases when two stations could operate at full power for some years but might have to be reduced when a third went into service. If agreement could not be reached about a station causing interference it should cease to operate.

3.5.8.7 The delegate of Poland said that obviously interference only occurred with at least two or three stations in operation because with one only there would be no intermodulation. If three stations in the Plan belonging to three different administrations caused interference to an aeronautical navigation station all the administrations concerned must take part in the consultation.

3.5.8.8 The Chairman of the IFRB observed that a provision could be drafted requiring an administration bringing a station into service to consult all other administrations concerned using the test points: if no agreement could be reached, the rules in paragraph 3.4 would apply. However, that paragraph did not indicate which of the administrations would have to reduce power first.

Referring to a question by the delegate of France, he said that when no agreement could be reached between administrations in respect of either type of interference, the interfering station should not be brought into service.

3.5.8.9 The Chairman said the question of which administration should reduce power first had been deliberately left open because it was difficult, if not impossible, to devise a general rule.

He suggested that further consideration of paragraph 3 be deferred until the appropriate procedures had been formulated in the form of provisions.

It was so agreed.

3.6 Annex 2 - Recommendation relative to the development of provisions governing the use of the band 108 - 117.975 MHz by the aeronautical radionavigation service

3.6.1 The delegate of the Netherlands doubted whether the Recommendation in Annex 2 should be maintained. The Conference's terms of reference precluded it from dealing with aeronautical radionavigation services and especially modifications to them, a process which would best be left to bilateral negotiations with the assistance of ICAO.

3.6.2 The delegate of the USSR agreed that the Recommendation would serve no useful purpose.

3.6.3 The delegate of the United Kingdom shared the doubts of the previous speakers about the utility of the Recommendation. In the course of discussion on Document 122 it had been generally agreed that the coordination procedure for future frequency assignments to aeronautical radionavigation services should take account of the operation and planned broadcasting stations using the compatibility criteria developed at the Conference. That was the Recommendation addressed to administrations.

At the suggestion of the Chairman, it was agreed that the delegate of the United Kingdom be invited to present a new version of the draft Recommendation.

3.6.4 The delegate of the United Kingdom accordingly presented a revised draft, contained in Document DL/27. He explained that there were four additional considerations, labelled c), d), e) and f), which might well contain some element of duplication which the Editorial Committee could remove. The important new material was in the text of the Recommendation itself which was addressed to administrations instead of to the Administrative Council and was directed to the problem of coordinating frequency assignments with the stations of the aeronautical radionavigation service. The question of existing assignments not communicated to the Conference had been included at the request of another delegation. He added that the need to modify the title of the draft Recommendation had been overlooked in Document DL/27 and the Editorial Committee should be requested to deal with that as well.

3.6.5 considering a) to f)

3.6.5.1 The delegate of the Islamic Republic of Iran proposed that considering a) should be amended to read:

"...Resolution No. 896, it adopted the Agreement and the Associated Frequency Assignment Plan for FM Sound Broadcasting in the VHF Band in Region 1 and certain countries in Region 3;"

He also proposed that the first line of considering c) should read "that its agenda required".

3.6.5.2 The Vice-Chairman of the IFRB suggested that considering d) should be amended to read "that it developed technical criteria to protect the aeronautical radionavigation service;"

3.6.5.3 The Chairman commented that in considering e) it would be preferable to use the term "a modification procedure" instead of "an amendment procedure".

3.6.5.4 The delegate of the Federal Republic of Germany pointed out that the Recommendation cited in considering f) should read "GTECH/1".

Consideranda a) to f), all as amended, were approved.

3.6.6 Noting

Approved.

3.6.7 Recommends

3.6.7.1 The delegate of the USSR said that the verb "coordinate" used in line 2 of the Recommendation ought to be given a precise meaning and he inquired what procedure was envisaged.

3.6.7.2 The delegate of the United Kingdom said he appreciated the point made and suggested further discussion outside the meeting with a view to improving that part of the draft Resolution.

He subsequently read out a revised text, as follows:

"recommends

"1. that administrations, in assigning future frequencies for the stations of the aeronautical radionavigation service, take into consideration the existing FM Sound Broadcasting Plan in the band 87.5 - 108 MHz, including subsequent modifications, and resolve possible incompatibilities using the protection criteria specified in Annex [ ] to the Final Acts, taking account of the latest CCIR Recommendations."

He added that, if it was agreed to include the question of existing assignments, a paragraph 2 could be added, to read:

"2. that for existing aeronautical stations not taken into account in compatibility analyses made at this Conference, their compatibility with FM sound broadcasting stations in the Plan should be examined, using the same criteria, and the appropriate action taken."



3.6.7.3 The delegate of the Islamic Republic of Iran, referring to the first paragraph of the revised text, suggested that the words "including subsequent modifications" should be replaced by "in its latest updated version".

3.6.7.4 The Chairman suggested that the same change might be appropriate in paragraph 2 and that the Editorial Committee should be requested to take care of the matter.

Subject to the above comments, paragraphs 1 and 2 of recommends in the latest version were approved.

3.6.7.5 The delegate of Algeria inquired whether the Committee had thereby taken into account all radionavigation stations, including those operated by Members not attending the Conference.

3.6.7.6 The Chairman replied that he believed the approved text would do so.

3.6.7.7 The Vice-Chairman of the IFRB stated that details of all international systems had been supplied to the Board by ICAO at the first session of the Conference but some national systems were missing.

3.6.7.8 The delegate of the USSR, while recognizing the correctness of that statement of the position, pointed out that since BI calculations had not been made at the Conference problems might still be encountered on the international systems.

#### 4. Unresolved cases (Document 170)

4.1 The Chairman opened the discussion on the text of a new draft Article concerning unresolved cases.

##### 4.2 Paragraph 1

4.2.1 The Chairman explained that the first date in square brackets represented five years after the Agreement entered into force on 1 January 1987 and the second date would be 18 months later.

4.2.2 The delegate of the Technical Working Group of the Plenary said the value to be inserted in the square brackets in the second line would be a nuisance field strength of 60 dB (Document 179).

4.2.3 The Chairman said that as Committee 4 had completed its work that figure could be inserted for approval by the Plenary.

4.2.4 The Chairman of the IFRB said that the last sentence in the section should indicate to whom the request for an assignment to remain in the appendix should be addressed. The delegate of the Islamic Republic of Iran said the request should be made to the administrations whose agreement was being sought.

4.2.5 At the Chairman's suggestion, it was agreed to add the words "a copy of the request shall be sent to the IFRB" at the end of the paragraph.

4.2.6 The delegate of Libya said it should be divided into two paragraphs, the second dealing with the category of cases needing continuous coordination and he read out a proposed text.

The meeting was suspended at 1730 hours and resumed at 1930 hours.

4.2.7 The Chairman said that following discussions, it had been decided that no addition to paragraph 1 of the draft Article was needed, on the understanding that any unresolved cases entered in the Appendix would be considered as resolved when all administrations concerned had given their agreement. In the last line of the paragraph, 30 June 1993 should be substituted for 31 June 1993.

On that understanding, paragraph 1 was approved.

#### 4.3 Paragraph 2

4.3.1 The wording of paragraph 2 gave rise to a lengthy discussion; as it stood, it would mean that unresolved assignments would have the same status as assignments in the Plan and that they could be put into service.

4.3.2 The delegate of the Islamic Republic of Iran proposed an amended wording, which was supported by the delegate of Algeria and France.

Following a number of further proposals, designed to make the meaning clear, the Chairman suggested that the paragraph be placed within square brackets for the present and that a new text, based on the views expressed, should be submitted for consideration in the form of a yellow document the following day.

It was so agreed.

#### 4.4 Paragraph 3

4.4.1 The delegate of the Islamic Republic of Iran suggested the addition of the phrase "taking into account the level referred to in paragraph 1".

4.4.2 The delegate of Algeria suggested the addition of a paragraph 3bis to cover that point, reading as follows:

"An assignment contained in the Appendix which, after modification, no longer causes any interference higher than 60 dB/μV/m, is considered by the IFRB as a coordinated assignment / as an assignment having received agreement /."

4.4.3 The Chairman of the Technical Working Group said that proposal needed careful consideration. The limit of 60 dB/μV/m had been agreed to as an exceptional step to avoid difficulties, but he did not think it could be accepted as an obligatory limit for future coordination without due reflection.

4.4.4 The delegates of France and the USSR agreed that the point was an important one which merited further consideration.

4.4.5 The delegate of the Islamic Republic of Iran did not agree that the original figure agreed had been in any way exceptional. If the same level of interference agreed during the Conference were not to be applicable five years following it, that would constitute discrimination against certain administrations.

4.4.6 The Chairman of the Technical Working Group reiterated his view that a limitation of 60 dB for nuisance field strength ought not to be accepted as binding on future negotiations between administrations, because while in some cases its effects might be negligible, in others it might affect the service area so considerably that the station could not be put into operation at all. Following lengthy discussions in the Group, the figure had been accepted as a parameter in order to help the Conference out of a critical situation, but to impose it for the future would in his view be contrary to the Telecommunications Convention, which provided that every administration

should be free to plan its telecommunications as it wished provided it did not create harmful interference to others.

4.4.7 The delegate of Algeria, on a point of order, said that Committee 5 was not entitled to call in question a decision taken by Committee 4.

4.4.8 The Chairman suggested that the Committee return to consideration of paragraph 3 at a later stage.

It was so agreed.

5. Third report of Working Group 5A (Document 169)

5.1 The Chairman of Working Group 5A, introducing the report, pointed out that, by provision No. 584 of the Radio Regulations, the band 87.5 - 108 MHz could only be used in accordance with the Plan established by the Conference. The draft Recommendation annexed to the report was an invitation to non-Contracting Members to join Contracting Members in using the Plan.

The draft Recommendation relating to non-Contracting Members in the planning area was approved, subject to the following amendments:

- i) substitution of the word "adopted" for "entered" in considering d);
- ii) deletion of the words "Administrations of" in the second sub-paragraph under recommends;
- iii) replacement of the words "recommends to the IFRB" by "requests the IFRB".

5.2 The Chairman reported a proposal by the Chairman of the IFRB that Articles 4 and 4bis should be cited in the text of the Recommendation to the IFRB. In fact, all Articles that regulated relations BC/BC and between BC and other services should be cited.

It was so agreed.

6. Unresolved cases (continued) (Document 170)

6.1 Opening further discussion of the draft new Article dealing with unresolved cases, the Chairman said it was proposed to amend the title to read:

"Continued coordination of assignments appearing in the Appendix to the Plan."

It was so agreed.

6.2 He then read out a revised text for paragraph 2:

"Until the dates indicated in paragraph 1, the assignments in the Appendix have the same status as the other assignments in the Plan in relation with the application of the provisions of Article 4."

6.3 The Chairman read out the following text for the beginning of paragraph 4:

"When the IFRB finds that all the necessary agreements were obtained and in cases where the assignment appearing in the Appendix to the Plan is modified in such a way that its nuisance field satisfies the conditions set forth in paragraph 1 in the direction of the stations of the administrations whose agreement is still required, it shall publish ...."

6.3.1 The delegate of Algeria stated that it was desirable to be more precise than the proposed reference to "satisfying the conditions set forth in paragraph 1". The latter mentioned interference greater than 60 dB/ $\mu$ V/m whereas the inverse was required in paragraph 4. He suggested that the relevant phrase in paragraph 4 should read "... in such a way that its nuisance field is less than or equal to 60 dB/ $\mu$ V/m in the direction ....".

6.3.2 The delegate of Libya suggested that the phrase "all the necessary agreements" should be placed within square brackets for later consideration.

It was so agreed.

Subject to that remark, paragraph 4 was approved, as amended.

6.4 Following a brief discussion in which the delegates of Iraq, Algeria, the Islamic Republic of Iran, the Federal Republic of Germany, Portugal and the United Kingdom participated, it was agreed to retain paragraph 5 in its entirety.

6.5 The Chairman noted that the Committee had approved paragraphs 1.5 and 6 of draft Article [4c] but that consideration of paragraphs 2.3.3bis and 4 had been deferred.

7. Fourth and second reports of Working Group 5A (Documents 172 and 165)

7.1 The Chairman of Working Group 5A, introducing the fourth report (Document 172) concerning the protection of fixed and mobile stations in Region 3 and aeronautical radionavigation services in the band 108 - 1117 - 975 MHz and the Conference's competence to adopt such provisions said that divided views had been expressed about the protection of the mobile service. Document 152 and other material were discussed, on the basis of which a re-draft had been produced. The Annex to the second report (Document 165) included two proposed amendments placed in square brackets. The first had been discussed in Document 164 and a new Article had been drafted, while the second had been discussed and modified by the Committee, which had approved a new version. In conclusion, he drew attention to the notes at the end of the fourth report, listing matters unresolved by the Working Group owing to shortage of time.

7.2 The Chairman invited the Committee to consider the proposed replacement paragraphs for Article 4.

7.3 Replacement paragraph 2.2 a)

Approved.

7.4 Replacement paragraph 2.2 b)

7.4.1 The delegate of the Islamic Republic of Iran proposed that the words "which are in conformity with the Stockholm 1961 Agreement" should be added in the second line after "87.5 - 100 MHz".

It was so agreed.

7.5 Replacement paragraph 2.2 c)

7.5.1 The Chairman noted that, in accordance with an earlier decision, the first of the two alternative phrases in square brackets at the end of the paragraph should be deleted and the second retained with removal of the square brackets.

That amendment was approved.

7.6 Replacement paragraph 2.2 d)

It was agreed to remove the square brackets outside the paragraph.

7.6.1 The delegate of Sweden said that the aeronautical radionavigation services in many countries had responsibilities that went far beyond the borders of the countries concerned. Since protection was therefore required on the basis of service areas and not country boundaries, he proposed that the words "the nearest point of the boundary of the country of that administration" on the fourth and fifth lines should be replaced by "the nearest point of the service area of the aeronautical radionavigation service of the country of that administration".

7.6.2 That proposal was supported by the delegates of Algeria and Italy.

7.6.3 The Vice-Chairman of the IFRB, supported by the delegate of the USSR, said that the ITU had no data on the service volumes of aeronautical radionavigation facilities since the Conference at an earlier stage of its proceedings had decided not to draw up any listings of test points. It was therefore not feasible to use the service area as the reference point for the trigger distance for initiating coordination between administrations.

7.6.4 The delegate of Italy noted that Working Group 5C had proposed (in Document 176) that the trigger distance be 500 km.

7.6.5 The delegate of Algeria said that the separation distance of aeronautical radionavigation stations with powers of 100 to 200 watts and service areas of 360 km was already 500 km. In view of the fact that broadcasting stations would be operating on higher powers, he wondered whether it would not be more prudent to increase the trigger distance for coordination by a few hundred kilometers.

7.6.6 The Chairman of Working Group 5C said the issue was a very difficult one and had been the subject of lengthy discussion in the CCIR in the intersessionary period before being taken up again by the second session of the Conference. Opinion now seemed to be that the proposed trigger distance was not so much too small as perhaps over-prudently large, thus providing an unnecessarily high degree of protection to aeronautical radionavigation services, particularly in the case of BI interference, which had a low probability of occurrence. The Working Group had concluded that further studies of the matter were required, especially in view of the fact that improvements in aeronautical radionavigation equipment was expected in the future. However, since proper operation of the aeronautical radionavigation service was essential for the safety of human life, it was not considered wise to make any changes in the trigger distance at the present time.

7.6.7 In view of the explanations given, the delegates of Sweden and Algeria decided not to press their proposals.

7.7 Replacement paragraph 2.2 e)

The Chairman invited the Committee to consider the replacement paragraph appearing as the first paragraph of Annex II of Document 165. He noted that, in accordance with an earlier decision, the first of the two alternative phrases in square brackets at the end of the paragraph should be deleted and the second retained with removal of the square brackets.

Replacement paragraphs 2.2 a), b), c), d) and e), as amended in discussion, were approved.

7.8 Replacement paragraph 3.5

7.8.1 The Chairman recalled that the Committee, at its seventh meeting, had discussed Document 160 and approved the text of its Annex, with some amendments, for insertion in the appropriate sections of the draft Agreement. As a result, former paragraph 3.5 (see Document 139) of Article 4 should be replaced by paragraph 3.6 of the Annex to Document 160.

That replacement was noted.

7.8.2 The Chairman of the IFRB said he understood that the sentence in section 2 of the Annex to Document 172 was to be added to that paragraph.

7.8.3 The Chairman of the Technical Working Group of the Plenary reminded the Committee that that sentence had been the subject of considerable controversy at an earlier meeting and it had finally been decided to delete it.

That deletion was noted.

7.8.4 The delegate of Finland, supported by the delegate of Belgium, said that although the sentence in question was inappropriate in paragraph 3.5 of Article 4, it might well be required somewhere else in the Agreement. However, it was premature to discuss that point at the present stage.

7.9 Amendment of paragraph 3.6

7.9.1 The Chairman recalled that with the adoption of Document 160, paragraphs 3.7 (with the second alternative paragraph proposed) and 3.8 of its Annex should become paragraph 3.6 a) of article 4.

That amendment was noted.

7.9.2 The Chairman of the Technical Working Group of the Plenary noted that the figures in the indented paragraphs of Article 4, section 3.6 a) as amended had been referred to his Group for verification. The appropriateness of those figures had been confirmed (see Document 178).

7.9.3 The delegate of Finland said he had some difficulties with the wording of the new section 3.6 a) which did not affect the principle embodied in the text.

On that understanding, it was agreed that the delegate of Finland could submit his editorial amendments in writing later.

The meeting rose at 2230 hours.

The Secretary:

J. FONTEYNE

The Chairman:

K. OLMS

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document 183-E  
30 November 1984  
Original : French

COMMITTEE 2

SUMMARY RECORD

OF THE

SECOND AND LAST MEETING OF COMMITTEE 2

(CREDENTIALS)

Friday 30 November 1984 at 14.30 hours

Chairman : Mr. J. SZÉKELY (Hungarian People's Republic)

Subjects discussed :

Documents

- |   |              |
|---|--------------|
| 1. Summary Record of the First Meeting                      | 56           |
| 2. First to third reports of Working Group 2A               | 83, 110, 162 |
| 3. Fourth (oral) report by the Chairman of Working Group 2A | -            |
| 4. Draft report to the Plenary Meeting                      | DT/61        |



1. Summary Record of the First Meeting (Document 56)
  - 1.1 The Summary Record of the First Meeting (Document 56) was approved.
2. First to third reports of Working Group 2A (Documents 83, 110, 162)
  - 2.1 The first to the third reports of Working Group 2A were approved.
3. Fourth (oral) report by the Chairman of Working Group 2A
  - 3.1 The Chairman, speaking as Chairman of Working Group 2A said that the Group had met to examine the credentials deposited by the delegation of the Ukrainian Soviet Socialist Republic and had found them to be in order.
4. Draft Report to the Plenary Meeting (Document DT/61)
  - 4.1 The Chairman, introducing the Committee's draft report to the Plenary Meeting (Document DT/61), said that as a result of Working Group 2A's fourth report, the Ukrainian Soviet Socialist Republic should be added to the countries whose credentials had been found to be in order (Annex, List 1.) and deleted from those which had not deposited credentials (Annex, list 3.).

Document DT/61, as orally revised, was approved.

The meeting rose at 14.50 hours

The Secretary :

R. MACHERET

The Chairman :

J. SZÉKELY

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 184-E  
30 November 1984  
Original: English

Source: Documents 61, DT/54, DT/58

COMMITTEE 5

## FOURTH REPORT OF WORKING GROUP 5C

The annex contains Annex 5 to the Final Acts.

The delegation of the United Kingdom reserved its position on the note, section 2.1 and also pointed out that 3 m antenna height is not appropriate for a base station.

The delegations of Denmark, Italy and the Islamic Republic of Iran reserved their position on Chapter 3.

J. RUTKOWSKI  
Chairman of Working Group 5C

Annex: 1

ANNEX

ANNEX 5

Additional technical data which may be used  
in coordination between administrations

CHAPTER 1

AERONAUTICAL RADIONAVIGATION SERVICE

1.1 Separation distance for compatibility

Table Ann5.1 gives the minimum distances between a test point of the radionavigation station to be protected and a broadcasting station at which the protection criteria for A1, A2, B1 and B2 types of interference are all met. The more critical requirements are those for A1 and B1; the higher of the two separation distances is shown in each case.

The A1 distances assume the protection ratio for frequency coincidence, and that the level of the broadcasting transmitter spurious emissions conform to the level given in section 7.6.3.2 of Annex 2. The B1 distances ensure that the signal level is below the cut-off value as given in section 7.6.5.4 of Annex 2 with free-space propagation, but are subject to an upper limit of 500 km from practical considerations of the line-of-sight limit, in conformity with section 7.3 of Annex 2.

Where two or more assignments are used at a common site, the highest e.r.p. must be taken.

Linear interpolation shall be used for values of e.r.p. in dB and frequency not appearing in the table.

Preliminary analyses based on these distances assumes, in the case of A1 and B1 types of interference, that there is frequency coincidence between a spurious emission or intermodulation product and the frequency of the radionavigation station. When the frequencies of the radionavigation station and of all broadcast transmitters that may be involved are known, detailed calculations can be made for all types of interference using the data for protection of the aeronautical radionavigation service given in Chapter 7 of Annex 2. However, in the case of A1 type interference it will be necessary to check that the transmitter does not generate significant spurious components apart from third-order intermodulation products.

Any case-by-case study may take into account other relevant factors such as detailed consideration of the propagation path between the broadcasting station and the aeronautical test point, and the radiation pattern of the broadcasting antenna in both vertical and horizontal planes.

TABLE Ann5.1

Minimum separation distance in km between a test point  
of a radionavigation station and a broadcasting station  
required to ensure compatibility

Effective radiated power of broadcasting station		Broadcasting frequency (MHz)					
		≤ 100	102	104	106	107	107.7 to 107.9
dBW	W	Separation distance (km)					
55	300k	40	53	99	245	500	500
50	100k	22	31	57	141	302	500
45	30k	20	20	31	77	166	494
40	10k	20	20	20	45	96	285
35	3k	20	20	20	24	52	156
30	1k	20	20	20	20	30	90
25	300	20	20	20	20	20	49
20	100	20	20	20	20	20	29
≤ 15	30	20	20	20	20	20	20

## 1.2 Future improvements in aeronautical receivers

It is expected that future receivers will permit a significant relaxation of compatibility criteria and that revised criteria shall be applied from 1 January 1998.

### 1.2.1 B1 type interference

Present indications from the ICAO are that the two-signal case criterion for B1 type interference given in section 7.6.5.1 of Annex 2 shall be replaced by:

$$2N_1 + N_2 + 72 - 60 \log \frac{\max(0.4; 108.1 - f_1)}{0.4} > 0$$

for both ILS and VOR.

Subject to further study of type B1 interference by the CCIR it is expected that a comparable relaxation in the criterion for the three-signal case can be developed and that the trigger and cut-off values given in section 7.6.5.2 of Annex 2 shall be raised by 16 dB.

### 1.2.2 B2 type interference

The maximum permitted levels of broadcasting signals at the input to the ILS or VOR receiver for B2 type interference shall be those given in the Table Ann5.2, in place of the values given in Table 7.4 of Annex 2.

TABLE Ann5.2

Frequency of broadcasting signal (MHz)	Level (dBm)
107.9	-10
106	5
102	15
≤ 100	15

Between the frequency values given above, the maximum permitted level will be determined by linear interpolation.

### 1.2.3 Further studies

Studies on possible improvements are requested in [ Recommendation GTECH/1 ].

CHAPTER 2

FIXED AND MOBILE EXCEPT AERONAUTICAL MOBILE (OR) SERVICES

2.1 Sharing criteria for the protection of the land mobile service in the bands 87.5 - 100 MHz and 104 - 108 MHz

Field strength to be protected : 15 dB ( $\mu$ V/m) at a height of 3 m  
Protection ratio : See Table Ann5.3

TABLE Ann5.3

Frequency separation between carriers of the two services (kHz)	Protection ratio for AM land mobile services (dB)	Protection ratio for FM land mobile services (dB)
0	18	8
25	16	6
50	4.5	- 5.5
75	- 7.5	-17.5
100	-17.5	-27.5

Propagation data to be used for sharing calculations:

Propagation curves for calculating interference to the land mobile service operating in the VHF bands shall be derived from the broadcasting propagation curves of Figures 4.1, 4.2 and 4.3 of Annex 4. Because these propagation curves are for a receiving antenna height of 10 m above the local terrain and the receiving antenna height is reduced from 10 m to 3 m, a 9 dB reduction in the field strength shall be applied.

Note - The method and criteria concerning antenna height factors, to be used for coordination between administrations between the broadcasting and land mobile and fixed services, are to be agreed by the administrations concerned and should be based where possible on the latest relevant CCIR Recommendations.

Percentage of locations to be protected : 50%

Percentage of time to be protected : 90%

Polarization discrimination for horizontal : 18 dB Base Station  
polarized broadcasting emission : 8 dB Mobile Station

2.2 Sharing criteria between the FM sound broadcasting service and the fixed service in the band 87.5 - 100 and 104 - 108 MHz

The basic criteria can be those as established for the land mobile service (see paragraph 2.1 in this annex). The field strength to be protected, the height gain factor and the effect of the directivity of the antenna in the fixed service are for consideration between the administrations concerned.

CHAPTER 3

AERONAUTICAL MOBILE (OR) SERVICE

When the frequencies of the broadcasting and the aeronautical mobile stations are both known, the field strengths given in Table Ann5.4 below may be used as sharing criteria.

TABLE Ann5.4

Frequency separation in kHz between BC station and aeronautical mobile (OR) station	dB( $\mu$ V/m) at an altitude of 10,000 metres
0	20
50	34
100	58
150	90

CHAPTER 4

SUPPLEMENTARY PROPAGATION DATA CORRECTION FACTORS

This chapter gives supplementary correction factors which can be applied to the basic propagation curves to improve the accuracy of predictions in particular cases of coordination involving bilateral or multilateral negotiations between administrations.

4.1 Correction for various location percentages

The propagation curves in Annex 2 and Annex 5 are representative of 50% of locations. Figure Ann5.1 shows the correction (in dB) to be applied for other percentages of receiving locations.

#### 4.2 Receiver terrain correction (terrain clearance angle)

The location correction in paragraph 4.1 above can be applied only on a statistical basis. If more precision is required for predicting the field strength in a specific small receiving area a correction may be based on a "terrain clearance angle". This angle  $\theta$  is measured at a point chosen to be representative of the reception area; it is defined as the angle between the horizontal plane passing through the receiving antenna and the line from this antenna which clears all obstacles within 16 km in the direction of the transmitter. The example in Figure Ann5.2 indicates the sign convention, which is negative if the line to the obstacles is above the horizontal. Figure Ann5.3 indicates the correction, as a function of the angle  $\theta$ , to be applied to the prediction for 50% of locations. If this correction is applied, the location correction of paragraph 1 (Figure Ann5.1) may no longer be applicable.

Corrections for terrain clearance angles outside the range  $-5^\circ$  to  $0.5^\circ$ , are not given in Figure Ann5.3, because of the lack of experimental data. However, they may be obtained tentatively by linear extrapolation of the curve in Figure Ann5.3 with limiting values of 30 dB at  $1.5^\circ$  and  $-40$  dB at  $-15^\circ$ , subject to the condition that the free-space field strength is not exceeded.

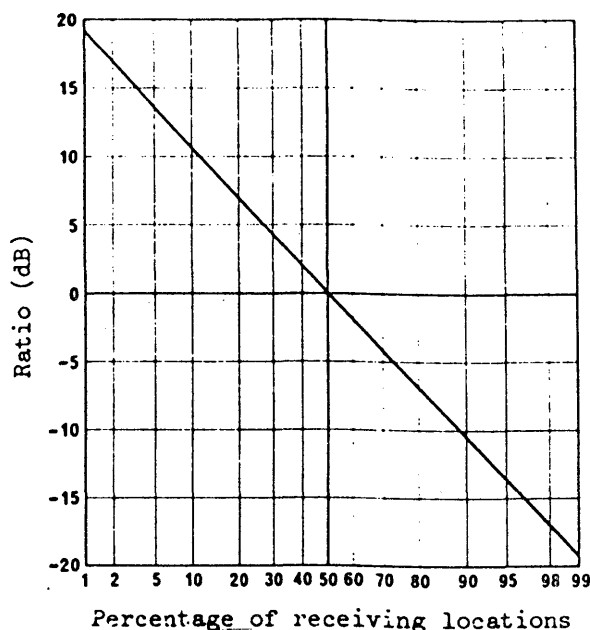


FIGURE Ann5.1

Ratio (dB) of the field strength for a given percentage  
of the receiving locations to the field strength for 50%  
of the receiving locations

Frequency: 30 to 250 MHz



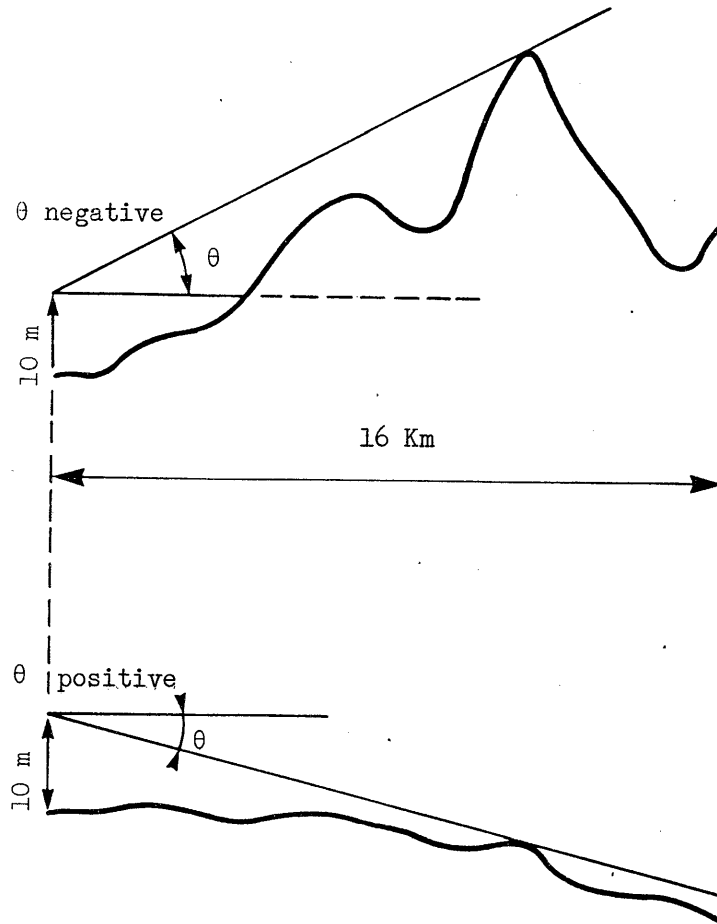


FIGURE Ann5.2

Terrain clearance angle

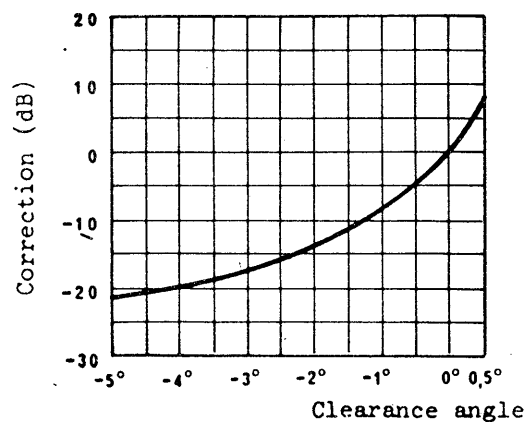


FIGURE Ann5.3

Receiving terrain clearance angle correction (VHF)

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 185-E  
3 December 1984  
Original: French

## BUDGET CONTROL COMMITTEE

### Note by the Secretary of the Conference

#### POSITION OF THE CONFERENCE ACCOUNTS AT

30 NOVEMBER 1984

I hereby submit an estimate of the Conference expenses at 30 November 1984 for the consideration of the Budget Control Committee.

The statement shows a surplus of 84,300 Swiss francs over the budget approved by the Administrative Council and revised to take account of additional credits approved by the Council at its 39th session in 1984 (Resolution 905) and adjustments to salaries and daily subsistence allowances (Resolution 647).

J. JIPGUEP  
Secretary of the Conference

Annex: 1

ANNEX

Item No.	Heading	Adjusted budget 1)	Credit transfers		Available credits	Expenditure as at 30 November 1984			
			item to item	chapter to chapter 2)		actual	committed	estimated	total
1	2	3	4	5	6	7	8	9	10
	<u>I. Preparatory work</u>								
20.301	IFRB salaries and related expenses	656,400		-36,000	620,400	567,316	39,000	13,684	620,000
20.302	Insurance	131,900		-21,000	110,900	97,866	5,500	6,634	110,000
20.303	Premises, furniture	30,000	+25,000 <sup>3)</sup>	-	55,000	39,728	9,700	572	50,000
20.304	Electronic equipment	50,000	+ 5,000 <sup>3)</sup>	-	55,000	47,425	2,900	675	51,000
20.311	CCIR preparatory work	48,000	-30,000 <sup>3)</sup>	-18,000	-	-	-	-	-
		916,300	-	-75,000 <sup>4)</sup>	841,300	752,335	57,100	21,565	831,000
	<u>II. Staff expenses</u>								
20.351	Salaries and related expenses of the Conference Secretariat staff	1,477,000		-98,000	1,379,000	130,581	1,086,000	118,419	1,335,000
20.352	Salaries and related expenses of the translation, typing and reproduction services staff	676,000		-6,000	670,000	114,740	481,000	64,260	660,000
20.353	Travel (recruitment)	76,000		-36,000	40,000	16,715	16,429	1,856	35,000
20.354	Insurance	47,000		-17,000	30,000	5,107	9,000	15,893	30,000
		2,276,000		-157,000 <sup>4)</sup>	2,119,000	267,143	1,592,429	200,428	2,060,000
	<u>III. Travel expenses</u>								
20.361	Subsistence costs at Conference venue	-							
20.362	Travel to Conference venue and back	-							
20.363	Transport of material to Conference venue and back	-							
		-	-	-	-	-	-	-	-

1	2	3	4	5	6	7	8	9	10
	<u>IV. Premises and equipment</u>								
20.371	Premises, furniture, machines	55,000		+5,000	60,000	3,621	21,180	35,199	60,000
20.372	Document production	58,000		+217,000	275,000	186,136	60,000	28,864	275,000
20.373	Office supplies and overheads	30,000		+20,000	50,000	26,795	7,823	15,382	50,000
20.374	Postage, telephone calls, telegrams	50,000	+10,000 <sup>5)</sup>	+10,000	60,000	43,967	-	16,033	60,000
20.375	Technical installations	5,000	-10,000 <sup>5)</sup>	-	5,000	-	600	4,400	5,000
20.376	Sundry and unforeseen	10,000		-10,000	-	-18,326	-	13,326	-5,000
20.377	Use of outside computers	90,000		+25,000	115,000	57,954	32,935	24,111	115,000
		298,000	-	+267,000 <sup>4)</sup>	565,000	300,147	122,538	137,315	560,000
	<u>V. Other expenses</u>								
20.381	Interest credited to the ordinary budget	64,000	-	+21,000 <sup>4)</sup>	85,000	25,283	-	59,717	85,000
	<u>VI. Final Acts</u>								
20.391	Final Acts of the Conference	176,000	-	-56,000 <sup>4)</sup>	120,000	-	-	110,000	110,000
		3,730,300	-	-	3,730,300	1,344,908	1,772,067	529,025	3,646,000
	<u>VII. Additional credits</u>								
20.395	Expenditure in 1985	223,000	-	-	223,000	-	-	223,000	223,000
		3,953,300	-	-	3,953,300	1,344,908	1,772,067	752,025	3,869,000
Total contributory shares 239 7/8 or : per contributory unit for 1984 per contributory unit for 1985		15,550 930	Surplus = 84,300 Sw. fr.						15,200 930

Note 1 - Budget approved by the Administrative Council and adjusted to take account of changes in the common system of staff salaries and allowances of the United Nations and the specialized agencies and of the additional credits approved by the Administrative Council at its 39th session (see Document 66).

Note 2 - In accordance with Article 15, paragraph 3, of the Financial Regulations of the Union.

Note 3 - Transfer of credits from item 20.311 30,000  
to items 20.303 25,000  
20.304 5,000  
30,000  
30,000

Note 4 - Transfer of credits from subheads 20.300 75,000  
20.350 157,000  
20.390 56,000  
to subheads 20.370 267,000  
20.380 21,000  
288,000  
288,000

Note 5 - Transfer of credits from item 20.376 to item 20.374 of 10,000,-

**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Document No. 186-E  
1 December 1984

B.4

PLENARY MEETINGFourth series of texts submitted by the  
Editorial Committee to the Plenary Meeting

The following texts are submitted to the Plenary Meeting for first reading:

<u>Source</u>	<u>Document No.</u>	<u>Contents</u>
WG 5G	155(Rev.)	Annex 2-Technical data (Chapters 1 to 4)

H. BERTHOD  
Chairman of Committee 6

Annex: 27 pages

## ANNEX 2

**Technical data**

These data were used for the preparation of the Plan  
Their use is also recommended for Plan modification procedures

## CHAPTER 1

## DEFINITIONS

The following definitions supplement those contained in the International Telecommunication Convention and in the Radio Regulations.

**1.1      Coverage area**

The area within which the field strength of the wanted transmitter is equal to or greater than the usable field strength.

In this area the protection against interference is provided for 99% of time.

Note - The field strength of the wanted transmitter is derived from the propagation curve relating to 50% of locations and for 50% of time.

**1.2      Service area**

The part of the coverage area in which the administration has the right to demand that the agreed protection conditions be provided.

**1.3      Usable field strength ( $E_u$ )**

Minimum value of the field strength necessary to permit a desired reception quality, under specified receiving conditions, in the presence of natural and man-made noise and interference, either in an existing situation or as determined by agreements or frequency plans.

Note 1 - The desired quality is determined in particular by the protection ratios against noise and interference and, in the case of fluctuating noise or interference, by the percentage of time during which the required quality must be ensured.

Note 2 - The receiving conditions include, amongst others:

- the type of transmission and frequency band used;
- the receiving equipment characteristics (antenna gain, receiver characteristics, siting);
- receiver operating conditions, particularly the geographical zone, the time and the season, or if the receiver is mobile, the local variations of the field strength due to propagation effects.

Note 3 - The usable field strength can be calculated by the simplified multiplication method<sup>1</sup>, or the power sum method<sup>2</sup>. For the application of the Article 4 procedure, the simplified multiplication method is used.

#### 1.4 Nuisance field

The field strength of the interfering transmitter (at its pertinent e.r.p.) modified by the relevant protection ratio.

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<sup>1</sup> See Chapter 4.

<sup>2</sup> See CCIR Recommendation 499-2.

## CHAPTER 2

## PROPAGATION

2.1 Propagation data for the VHF broadcasting service2.1.1 General

The propagation data given in this chapter were used for the planning of the broadcasting service. [They are based on CCIR Recommendation 370-4.] They relate field strength to path length and the effective transmitting antenna height. They represent the field strength exceeded at 50% of locations for 50% and 1% of the time and apply to both horizontal and vertical polarization.

The data are given for various types of areas and climates, namely, land, cold sea, warm sea and areas subject to extreme super-refractivity. The definition of these categories has to be based on statistical data; it is thus to a certain extent arbitrary, but experience indicates that the following distinctions are appropriate for the application of the data set out in this chapter.

Cold sea

Seas, oceans and other substantial bodies of water at latitudes greater than 23.5° North or South, but excluding the Mediterranean, the Black Sea, the Red Sea and the area extending from the Shatt-al-Arab to and including the Gulf of Oman.

Warm sea

Seas, oceans and other substantial bodies of water at latitudes less than 23.5° North or South, including the Mediterranean and the Black Sea.

Area of extreme super-refractivity

Seas, oceans and other substantial bodies of water in the area extending from the Shatt-al-Arab to and including the Gulf of Oman [and possibly the Red Sea and the West coast of Africa\*].

Note - In bilateral and multilateral negotiations during the Conference, some administrations in the Eastern Mediterranean area (East of 30°E) used the criteria described in section 2.3, for the application of the 1% time curves, the sea area was assumed to include also a coastal strip extending up to 50 km inland and for the Nile delta region (from 30° East to 32° East) a coastal strip extending up to 200 km inland.

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\* [In the preparation of the Plan, neither the Red Sea nor the West coast of Africa was considered as an area of extreme super-refractivity.]



## 2.1.2 Area of extreme super-refractivity

### 2.1.2.1 Oversea paths

For oversea path calculations for 50% of the time, Figure 2.2 was used. For the application of the 1% time curves, the sea area includes also a coastal strip extending up to 50 km inland.

For oversea paths in the area from the Shatt-al-Arab up to and including the Gulf of Oman, calculations for propagation occurring for 1% of the time were based on the following formulae:

$$\begin{array}{l} E = 106.9 - 20 \log d \quad \text{for } 10 \leq d \leq 400 \\ E = 78.9 - 0.06 d \quad \text{for } d > 400 \end{array} \quad \left. \begin{array}{l} \text{where } d - \text{path length in km} \\ E = \text{field strength in dB}(\mu\text{V/m}) \end{array} \right\}$$

### 2.1.2.2 Overland paths

For overland path calculations for 50% of the time, Figure 2.1 was used. For overland path calculations for 1% of the time, Figure 2.3 was used, but any coastal strip as defined in section 2.1.2.1 was treated as sea.

### 2.1.2.3 Mixed paths

For both 1% and 50% of the time, mixed paths were evaluated according to the procedure set out in section 2.1.3.5.

## 2.1.3 Application of the curves

### 2.1.3.1 Time variability

The field strength values given in Figures 2.1 to 2.5, are those exceeded for 50% and 1% of the time. They are expressed in decibels relative to 1  $\mu\text{V/m}$  and correspond to an effective radiated power of 1 kW.

The 50% time curves were used for the determination of coverage areas. The 50% and 1% time curves were used for interference calculations for steady and tropospheric interference respectively.

### 2.1.3.2 Effective transmitter antenna height

The effective height of the transmitting antenna,  $h_1$ , is defined as its height over the average ground level between distances of 3 km and 15 km from the transmitter in the direction of the receiver. The height of the receiving antenna,  $h_2$ , was assumed to be 10 m above ground level.

The curves given in Figures 2.1 and 2.5 correspond to effective transmitter antenna heights,  $h_1$ , from 37.5 to 1200 metres.

For effective antenna heights,  $h_1$ , of 20 m and 10 m, additional curves can be derived from the 37.5 m curve by applying correction factors of -5 dB and -11 dB for distances up to 25 km, and 0 dB in both cases for distances in excess of 250 km, with linear interpolation for intermediate distances. For effective transmitter antenna heights,  $h_1$ , of less than 10 m, the values derived for 10 m are used.

For effective transmitter antenna heights,  $h_1$ , in excess of 1200 m, the field strength at a distance of  $x$  km from the transmitter was taken to be the same as the field strength given by the curve for an effective height of 300 m at a distance of  $(x + 70 - 4.1 \sqrt{h_1})$  km. As this extrapolation is only applicable to trans-horizon distances its use is limited to distances beyond  $x = (4.1 \sqrt{h_1} + 70)$  km. For distances between 100 km and  $x = (4.1 \sqrt{h_1} + 70)$  km, it is assumed that the field strength exceeds that for 1200 m by the same amount as at  $x = (4.1 \sqrt{h_1} + 70)$  km, calculated in accordance with the above procedure. For smaller distances this increment was determined by linear interpolation between 0 dB at 20 km and the height,  $h_1$ , dependent value at 100 km distance. This is subject to the condition that the free space field strength is not exceeded.

#### 2.1.3.3 Location variability

The curves given are representative of 50% of locations, the percentage which was used for planning purposes.

#### 2.1.3.4 Terrain irregularity correction

The curves for propagation overland refer to the kind of irregular rolling terrain found in many parts of Region 1. No terrain irregularity correction was taken into account in drawing up the Plan.

Note—In bilateral or multilateral coordinations during the Conference, some administrations took account of actual path profiles. [This method may also be used for coordination after the Conference.]

### 2.1.3.5 Mixed land/sea path calculations

When the propagation path is partially over land and partially over sea, the following method is used for interpolation between the appropriate land and sea curves.

Let

EL, t: field strength for land path equal in length to the mixed path for t% of the time,

ES, t: field strength for sea path equal in length to the mixed path for t% of the time,

EM, t: field strength for mixed path for t% of the time,

ds: length of sea path,

dT: length of total path.

The field strength for the mixed path (EM, t) is then determined by using the formula:

$$EM, t = EL, t + \frac{ds}{dT} \left( ES, t - EL, t \right)$$

In the calculations of mixed paths, a computerized approximation of the coastline was employed. It should be borne in mind that in some cases this gives rise to certain inaccuracies when compared to calculations based on the actual coastline.

## 2.2 Propagation data for the aeronautical radionavigation service

The compatibility calculations are based on free space propagation conditions. In drawing up the Plan the calculations were limited to the test points of the aeronautical radionavigation station in line of sight from the broadcasting station, it being assumed that the effective Earth's radius is 4/3 of the actual radius.

2.3 [Additional propagation data for the Eastern Mediterranean.]

In bilateral and multilateral negotiations during the Conference, some administrations in the Eastern Mediterranean (East of 30° East) calculated the field strength for 1% of the time for oversea paths using the following formulae:

$$E = 106.9 - 20 \log d - 0.07 d \quad \text{for } 10 \leq d < 100$$

$$E = 99.9 - 20 \log d \quad \text{for } 100 \leq d \leq 568$$

$$E = 78.9 - 0.06 d \quad \text{for } d > 568$$

where  $d$  = path length in km

$E$  = field strength in dB( $\mu$ V/m)

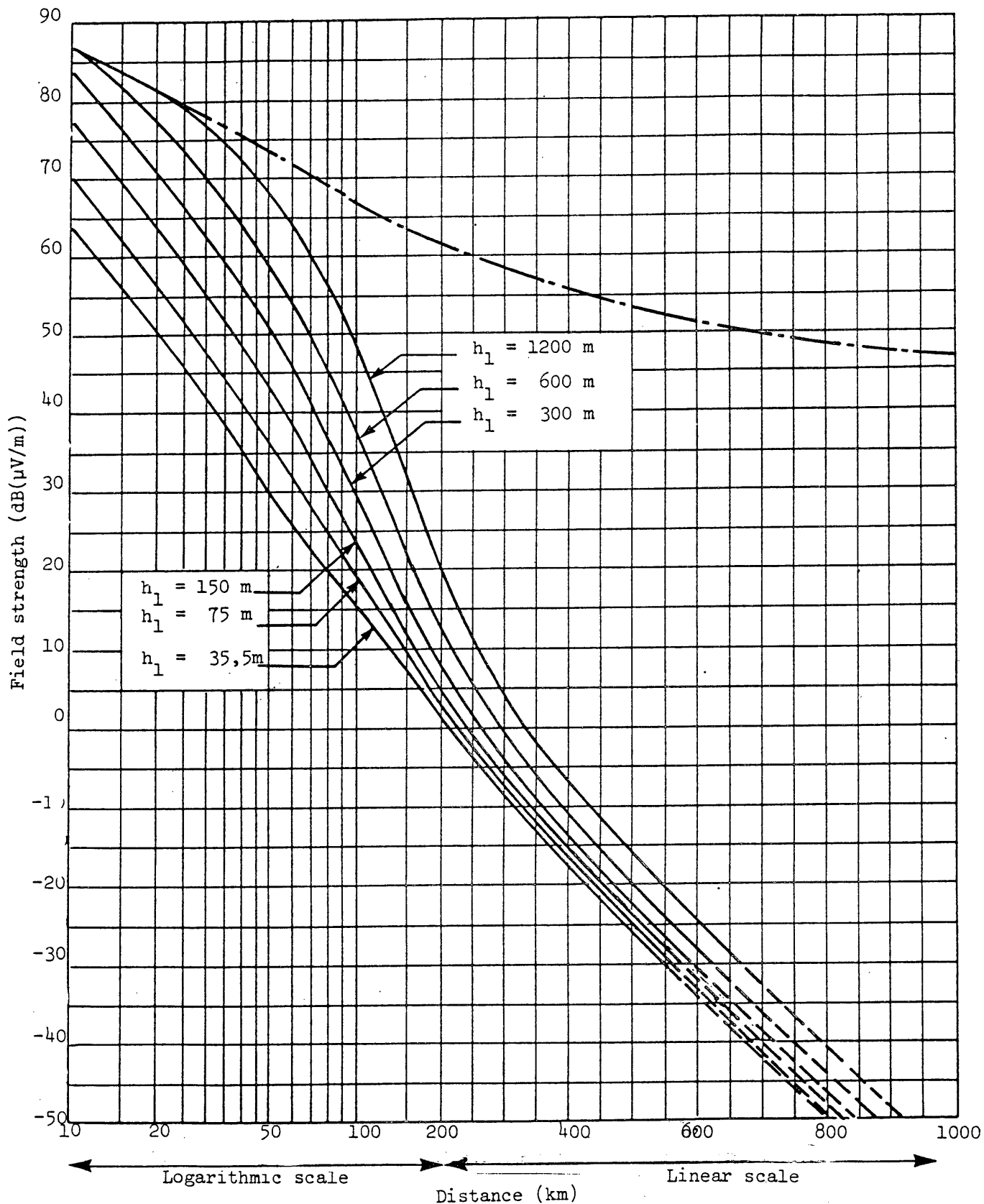


FIGURE 2.1

Field strength (dB(μV/m)) for 1 kW e.r.p.

Propagation over land

50% of the time; 50% of the locations;  $h_2 = 10$  m

--- Free space

PROPAGATION CURVES FOR THE BROADCASTING SERVICE

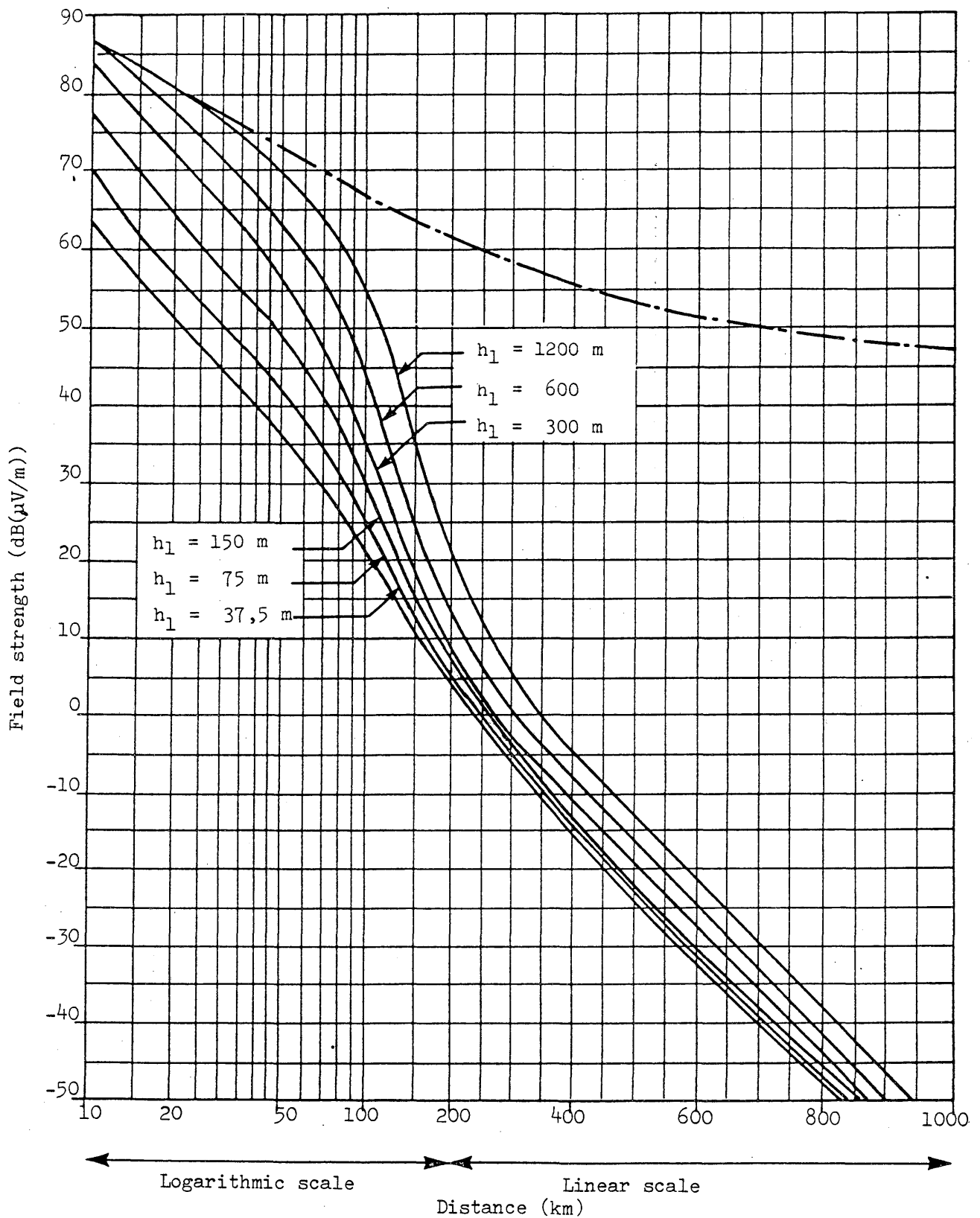


FIGURE 2.2

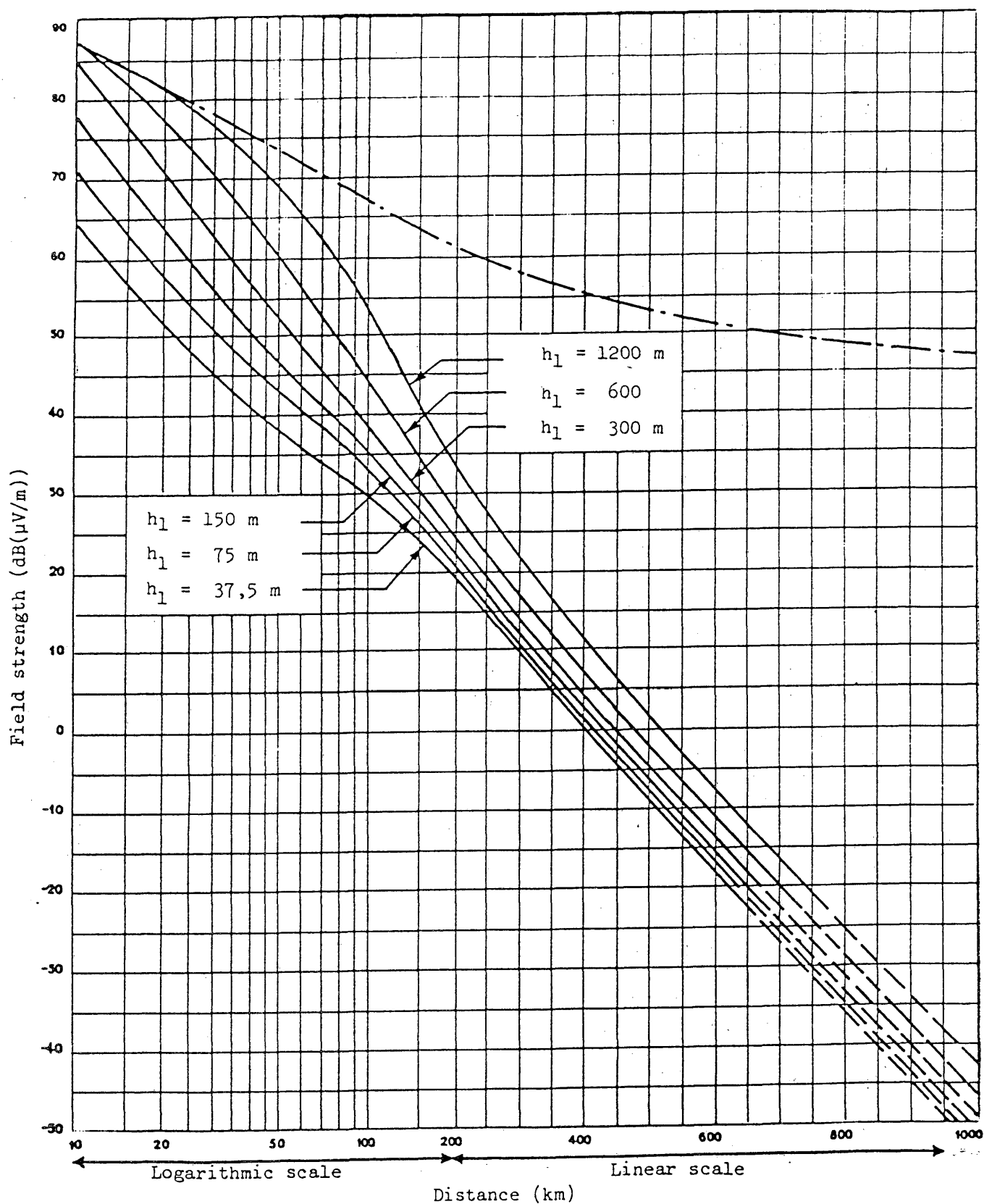
Field strength (dB( $\mu$ V/m)) for 1 kW e.r.p.

Propagation over land

50% of the time; 50% of the locations;  $h_2 = 10$  m

--- Free space

PROPAGATION CURVES FOR THE BROADCASTING SERVICE



Field strength ( $\text{dB}(\mu\text{V/m})$ ) for 1 kW e.r.p.

Propagation over land

1% of the time; 50% of the locations;  $h_2 = 10 \text{ m}$

--- Free space

PROPAGATION CURVES FOR THE BROADCASTING SERVICE

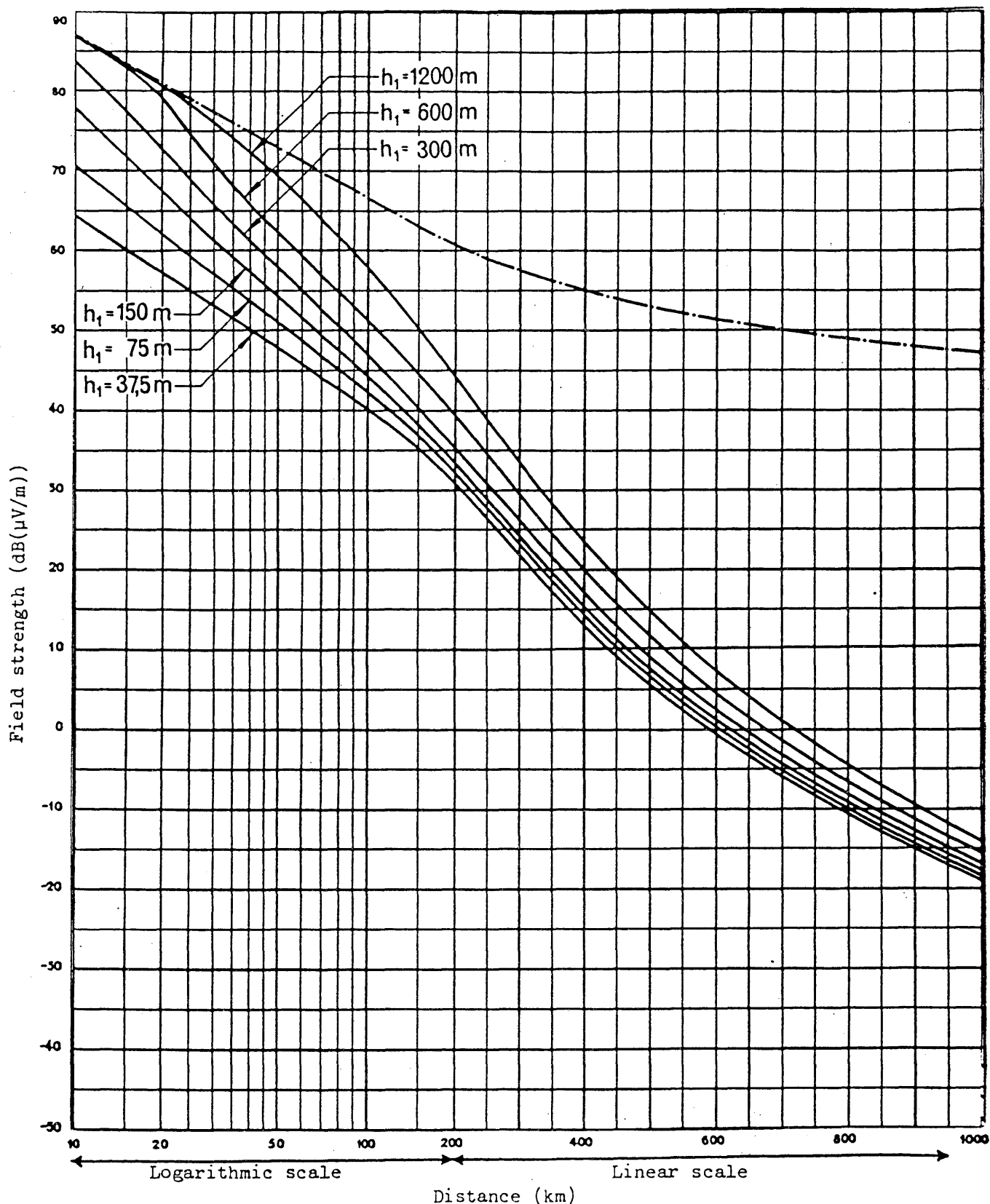


FIGURE 2.4

Field strength (dB( $\mu$ V/m)) for 1 kW e.r.p.

Propagation over cold sea

1% of the time; 50% of the locations;  $h_2 = 10$  m

--- Free space

PROPAGATION CURVES FOR THE BROADCASTING SERVICE



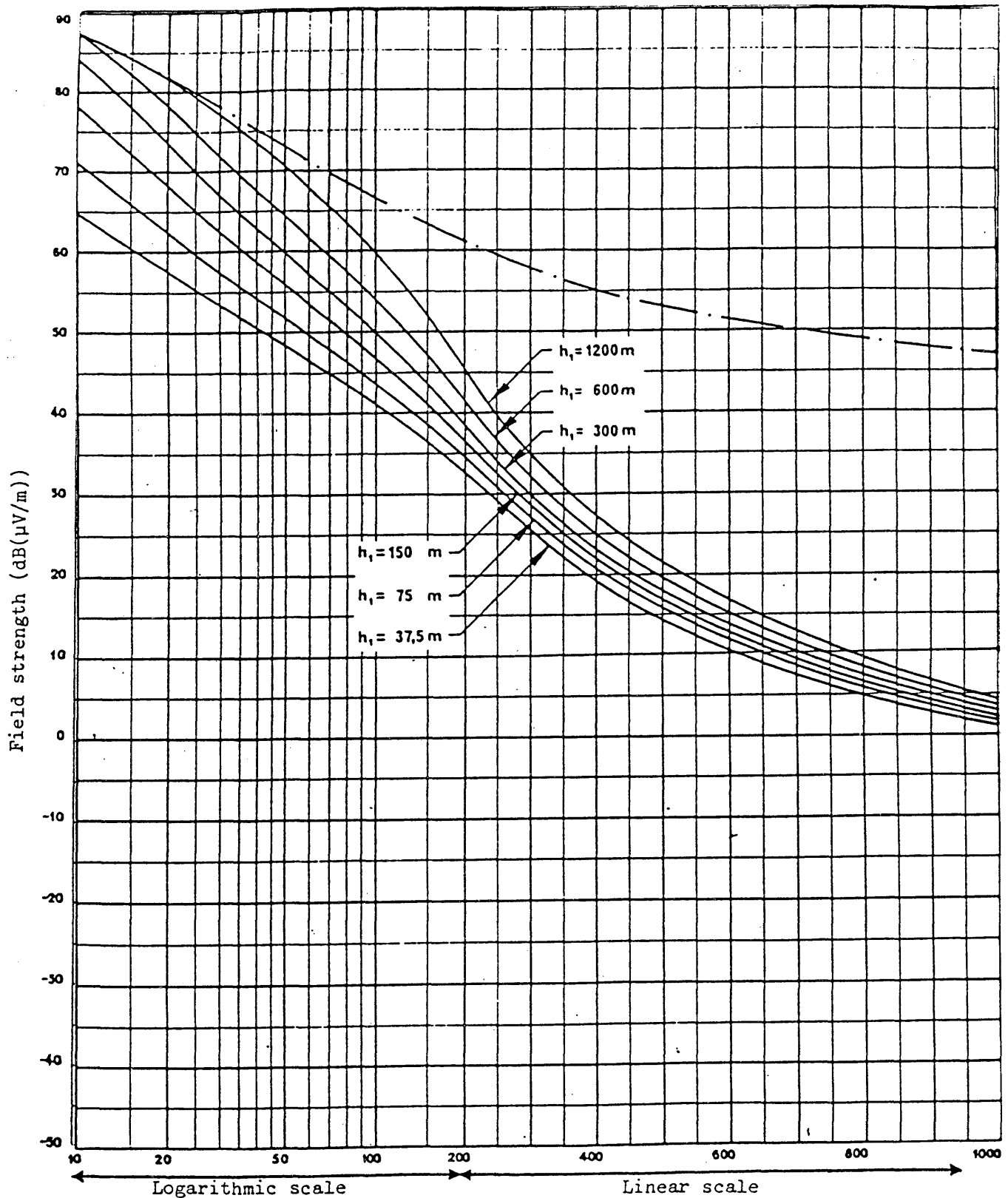


FIGURE 2.5

Field strength (dB( $\mu$ V/m)) for 1 kW e.r.p.

Propagation over warm sea (excluding areas  
subject to extreme super-refractivity)

1% of the time; 50% of the locations;  $h_2 = 10$  m

---Free space

PROPAGATION CURVES FOR THE BROADCASTING SERVICE

## CHAPTER 3

TECHNICAL STANDARDS AND TRANSMISSION CHARACTERISTICS  
FOR THE SOUND BROADCASTING SERVICE3.1 Transmission systems

In planning, the following transmission systems were used, as specified by the administrations when notifying their requirements:

- System 1: Monophonic (maximum frequency deviation  $\pm 75$  kHz)
- System 2: Monophonic (maximum frequency deviation  $\pm 50$  kHz)
- System 3: Stereophonic, polar modulation system (maximum frequency deviation  $\pm 50$  kHz)
- System 4: Stereophonic, pilot-tone systems (maximum frequency deviation  $\pm 75$  kHz)
- System 5: Stereophonic, pilot-tone system (maximum frequency deviation  $\pm 50$  kHz)

Column 9 of the Plan indicates the system used in accordance with the above classification.

The addition of sub-carriers for the transmission of supplementary information<sup>1</sup> was considered as being included in each of the five systems above, provided that the maximum carrier frequency deviation was not exceeded and the protection required was not increased.

As an alternative, other systems having different characteristics (e.g. other pre-emphasis characteristics, digital modulation) may be used, provided that such use does neither cause greater interference nor demand higher protection than the reference system indicated in the Plan.

3.2 Channel spacing

A uniform channel spacing of 100 kHz was adopted in principle for both monophonic and stereophonic emissions.

The nominal carrier frequencies are, in principle, integral multiples of 100 kHz.

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<sup>1</sup> See CCIR Recommendation 450-1.

### 3.3 Modulation standards

#### 3.3.1 Monophonic transmissions

The radio-frequency signal consists of a carrier frequency modulated by the sound signal after pre-emphasis with a maximum frequency deviation of  $\pm 75$  kHz or  $\pm 50$  kHz.

The pre-emphasis characteristic of the sound signal is identical to the admittance-frequency curve of a parallel resistance-capacitance circuit having a time constant of 50  $\mu$ s.

#### 3.3.2 Stereophonic transmissions

The radio-frequency signal consists of a carrier frequency modulated by baseband signal according to the specifications of the polar-modulation or the pilot-tone system. The maximum frequency deviation is  $\pm 50$  kHz for the polar modulation system and  $\pm 75$  kHz or  $\pm 50$  kHz for the pilot-tone system.

The pre-emphasis characteristics of the sound signals M and S<sup>1</sup> are identical to the admittance-frequency curve of a parallel resistance-capacitance circuit having a time constant of 50  $\mu$ s.

### 3.4 Protection ratios

#### 3.4.1 Monophonic transmissions

The radio-frequency protection ratios required to give satisfactory monophonic reception for 99% of the time are given by the curve M2 in Figure 3.1 for systems using a maximum frequency deviation of  $\pm 75$  kHz. For steady interference a higher degree of protection is required; this is shown by the curve M1 in Figure 3.1. The protection ratios at specific frequency spacing values are also given in Table 3.1.

The corresponding values for monophonic systems using a maximum frequency deviation of  $\pm 50$  kHz are given in Figure 3.2 and Table 3.2.

#### 3.4.2 Stereophonic transmissions

The radio-frequency protection ratios required to give satisfactory stereophonic reception for 99% of the time are given by curve S2 in Figure 3.1 for transmissions using the pilot-tone system and a maximum frequency deviation of  $\pm 75$  kHz. For steady interference, a higher degree of protection is required; this is shown by the curve S1 in Figure 3.1. The protection ratios at specific frequency spacing values are also given in Table 3.1.

---

<sup>1</sup> M and S are equal to one half of the sum and one half of the difference of the "left-hand" and "right-hand" signals, respectively; for further information see CCIR Recommendation 450-1.

Table 3.2 and Figure 3.2 give the radio-frequency protection ratios required for satisfactory reception in the case of tropospheric interference (99% of time), or in the case of steady interference for stereophonic transmissions using the pilot-tone system or the polar modulation system with a maximum frequency deviation of  $\pm 50$  kHz.

Table 3.3 gives the radio-frequency protection ratios required for satisfactory stereophonic reception in the case of tropospheric interference (99% of time), or in the case of steady interference where the wanted and interfering transmitters use different maximum frequency deviations.

The protection ratios stereophonic broadcasting assume the use of a lowpass filter following the frequency-modulation demodulator in the receiver designed to reduce interference and noise at frequencies greater than 53 kHz in the pilot-tone system and greater than 46.25 kHz in the polar-modulation system. Without such a filter or an equivalent arrangement in the receiver, the protection-ratio curves for stereophonic broadcasting cannot be met, and significant interference from transmission in adjacent or nearby channels is possible.

Note—The protection ratios for steady interference provide approximately 50 dB signal-to-noise ratio. (Weighted quasi-peak measurement in conformity with CCIR Recommendation 468-3, with a reference signal at maximum frequency deviation.)<sup>1</sup>

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<sup>1</sup> For further information see CCIR Report 796-1.

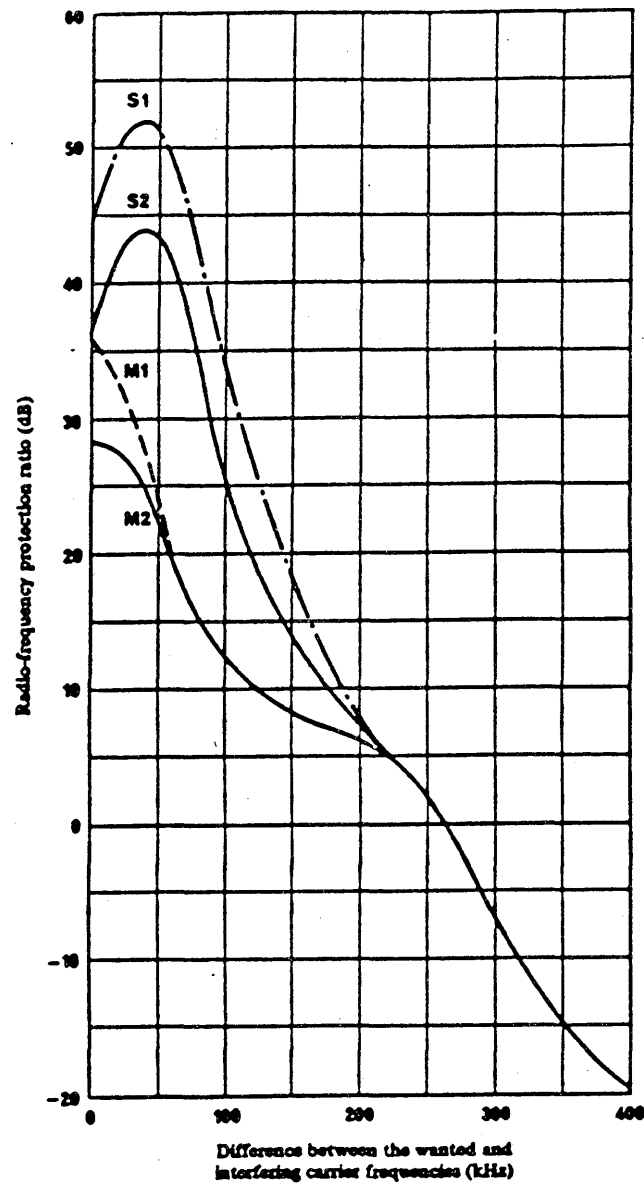


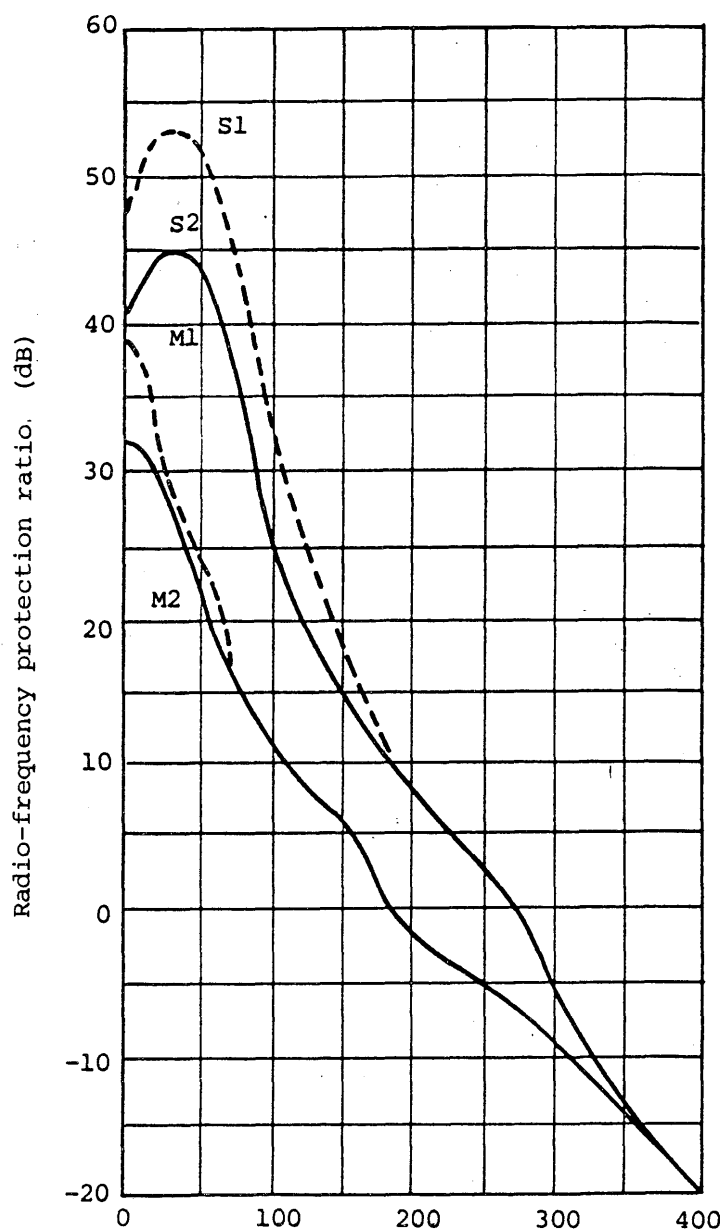
FIGURE 3.1

Radio-frequency protection ratio required by broadcasting services  
in Band 8 (VHF) at frequencies between 87.5 MHz and 108 MHz  
using a maximum frequency deviation of  $\pm 75$  kHz

- Curve M1 : monophonic broadcasting; steady interference
- Curve M2 : monophonic broadcasting; tropospheric interference  
(protection for 99% of the time)
- Curve S1 : stereophonic broadcasting; steady interference
- Curve S2 : stereophonic broadcasting; tropospheric interference  
(protection for 99% of the time)

TABLE 3.1

Frequency spacing, (kHz)	Radio-frequency protection ratio (dB) using a maximum frequency deviation of $\pm 75$ kHz			
	Monophonic		Stereophonic	
	Steady interference	Tropospheric interference	Steady interference	Tropospheric interference
0	36	28	45	37
25	31	27	51	43
50	24	22	51	43
75	16	16	45	37
100	12	12	33	25
150	8	8	18	14
200	6	6	7	7
250	2	2	2	2
300	-7	-7	-7	-7
350	-15	-15	-15	-15
400	-20	-20	-20	-20



Difference between the wanted and interfering carrier frequencies (kHz)

FIGURE 3.2

Radio-frequency protection ratio required by broadcasting services  
in Band 8 (VHF) at frequencies between 87.5 MHz and 108 MHz  
using a maximum frequency deviation of  $\pm 75$  kHz

- Curve M1 : monophonic broadcasting; steady interference
- Curve M2 : monophonic broadcasting; tropospheric interference  
(protection for 99% of the time)
- Curve S1 : stereophonic broadcasting; steady interference
- Curve S2 : stereophonic broadcasting; tropospheric interference  
(protection for 99% of the time)

TABLE 3.2

Frequency spacing (kHz)	Radio-frequency protection ratio (dB) using a maximum frequency deviation of $\pm 50$ kHz			
	Monophonic		Stereophonic	
	Steady interference	Tropospheric interference	Steady interference	Tropospheric interference
0	39	32	49	41
25	32	28	53	45
50	24	22	51	43
75	15	15	45	37
100	12	12	33	25
125	7.5	7.5	25	18
150	6	6	18	14
175	2	2	12	11
200	-2.5	-2.5	7	7
225	-3.5	-3.5	5	5
250	-6	-6	2	2
275	-7.5	-7.5	0	0
300	-10	-10	-7	-7
325	-12	-12	-10	-10
350	-15	-15	-15	-15
375	-17.5	-17.5	-17.5	-17.5
400	-20	-20	-20	-20



TABLE 3.3

Frequency spacing (kHz)	Maximum frequency deviation : wanted transmitter $\pm 50$ kHz interfering transmitter $\pm 75$ kHz		Maximum frequency deviation : wanted transmitter $\pm 75$ kHz interfering transmitter $\pm 50$ kHz	
	Radio-frequency protection ratio (dB) stereophonic		Radio-frequency protection ratio (dB) stereophonic	
	Steady interference	Tropospheric interference	Steady interference	Tropospheric interference
0	49	41	45	37
25	53	45	51	43
50	51	43	51	43
75	45	37	45	37
100	33	25	33	25
125	25	18	24.5	18
150	18	14	18	14
175	12	11	11	10
200	7	7	7	7
225	5	5	4.5	4.5
250	2	2	2	2
275	0	0	-2	-2
300	-7	-7	-7	-7
325	-10	-10	-11.5	-11.5
350	-15	-15	-15	-15
375	-17.5	-17.5	-17.5	-17.5
400	-20	-20	-20	-20

### 3.5 Calculation of nuisance field

To apply the protection-ratio curves of Figures 3.1, it is necessary to determine whether, in the particular circumstances, the interference is to be regarded as steady or tropospheric<sup>1</sup>. A suitable criterion for this is provided by the concept of "nuisance field", which is the field strength of the interfering transmitter (at its pertinent e.r.p.) modified by the relevant protection ratio.

Thus, the nuisance field for steady interference is given by the formula

$$E_s = P + E(50,50) + A_s$$

and the nuisance field for tropospheric interference is given by the formula

$$E_t = P + E(50,T) + A_t$$

where  $P$  : e.r.p. (dB(1 kW)) of the interfering transmitter;

$A$  : radio-frequency protection ratio (dB);

$E(50,T)$  : field strength (dB( $\mu$ V/m)) of the interfering transmitter, normalized to 1 kW, and exceeded during  $T\%$  of the time,

and where indices  $s$  and  $t$  indicate steady or tropospheric interference respectively.

The protection-ratio curve for steady interference is applicable when the resulting nuisance field is stronger than that resulting from tropospheric interference,

$$\text{i.e. } E_s \geq E_t$$

This means that  $A_s$  should be used in all cases when:

$$E(50,50) + A_s \geq E(50,T) + A_t.$$

### 3.6 Minimum field strength

The planning was based on the following median values of the minimum usable field strength (measured 10 m above ground level):

- stereophonic service: 54 dB( $\mu$ V/m) in rural areas;
- monophonic service: 48 dB( $\mu$ V/m) in rural areas.

These values apply for systems with a maximum frequency deviation of  $\pm 50$  kHz or  $\pm 75$  kHz.

### 3.7 Maximum radiated power

No maximum power values have been specified.

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<sup>1</sup> For further information see CCIR Recommendation 412-3.

### 3.8 Characteristics of transmitting and receiving antennas - polarization

#### 3.8.1 Transmitting antennas

The maximum effective radiated power and, in the case of directional antennas, the azimuth(s) relative to true north together with the azimuths of the -3 dB points anti-clockwise and clockwise from the azimuth of the maximum, have been indicated in accordance with the Radio Regulations (Appendix 1, section D, column 9).

The attenuation (dB) with respect to the maximum value of the effective radiated power has been specified at 10° intervals in a clockwise direction starting at true north. Where administrations have been unable to give information in such detail, they have, where possible, provided the values at 30° intervals in a clockwise direction starting at true north.

For mixed polarized transmissions, the effective radiated powers and radiation patterns have been specified separately for the horizontally and vertically polarized components.

#### 3.8.2 Receiving antennas

For stereophonic transmissions, the directivity curve of Figure 3.3 was taken into account by administrations for assessing coverage areas. For monophonic transmissions, an omnidirectional receiving antenna was assumed.

In the computer analysis of the Plan during the Conference, no account was taken of receiving antenna directivity, since the usable field strength was calculated at the transmitter site.

The antenna was assumed to be at a height of 10 m above the ground.

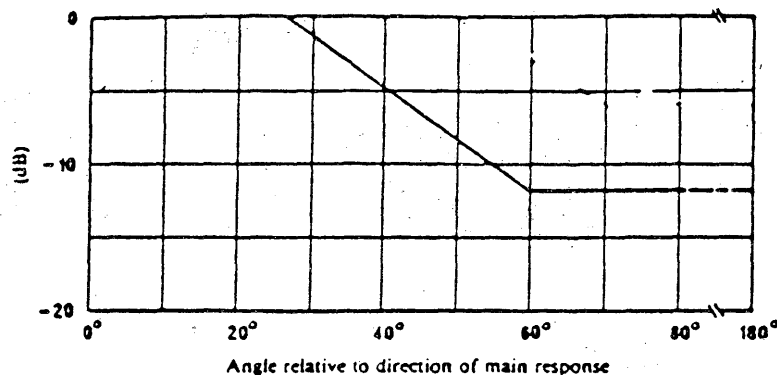


FIGURE 3.3

Protection obtained by the use of  
directional receiving antennas

Note 1—It is considered that the protection shown will be available at the majority of antenna locations in built-up areas. At clear sites in open country, slightly higher values will be obtained.

Note 2—The curve in Figure 3.3 is valid for signals of vertical or horizontal polarization, when both the wanted and the unwanted signals have the same polarization.

### 3.8.3 Polarization

Administrations were free to choose the polarization to be used in their countries<sup>1</sup>.

Polarization discrimination was not taken into account in the planning procedure, except in specific cases with the agreement of affected administrations. In such cases, a value of 10 dB was used for orthogonal polarization discrimination.

### 3.9 Receiver sensitivity and selectivity

Receiver sensitivity and selectivity were taken into account when specifying the values of the minimum usable field strength and the radio-frequency protection ratios.

<sup>1</sup> For further information see CCIR Report 464-3.

## CHAPTER 4

DETERMINATION OF THE USABLE FIELD STRENGTH  
BY THE SIMPLIFIED MULTIPLICATION METHOD4.1 Principle of calculation

The usable field strength is determined for a specified coverage probability (with respect to time and location) and depends on the values of the nuisance fields.

$$E_{si} = P_i + E_{ni}(50, T) + A_i + B_i$$

where :  $E_{si}$  : the nuisance field of the  $i$ th transmitter corrected by the discrimination factor of the receiving antenna,

$P_i$  : the e.r.p. in dB(kW) of the  $i$ -th unwanted transmitter,

$E_{ni}(50, T)$  : the field strength, in dB( $\mu$ V/m), normalized to an e.r.p. of 1 kW, of the  $i$ -th unwanted transmitter. The field strength is exceeded at 50% of the locations during at least  $T\%$  (e.g. 1%) of the time,

$A_i$  : the radio-frequency protection ratio, in dB, associated with the  $i$ -th unwanted transmitter,

$B_i$  : the receiving antenna discrimination, in dB.

Appropriate account of the effect of multiple interference can be taken by the use of statistical computation methods among which the simplified multiplication method is the least complex. With this method the usable fieldstrength  $E_u$  can be calculated by iteration from:

$$P_c = \prod_{i=1}^n L(E_u - E_{si})$$

where  $P_c$  : the coverage probability (e.g. 50% of locations,  $(100 - T)\%$  of time);

$L(x)$  : the probability integral for a normal distribution.

4.2 Calculation by computer

The calculation of the usable field strength with the simplified multiplication method is based on the probability integral for a normal distribution:

$$L(x) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^x e^{-\frac{t^2}{2}} dt$$

This integration however can be avoided in the practical calculation in replacing it by a polynomial approximation as follows:

$$L(x) = 1 - \frac{1}{2}(1 + a_1x + a_2x^2 + a_3x^3 + a_4x^4)^{-2} + \epsilon(x)$$

with  $a_1 = 0.196854$

$a_2 = 0.115194$

$a_3 = 0.000344$

$a_4 = 0.019527$

$\epsilon(x)$  represents the error between the approximation and the exact value, obtained by the probability integral. Since  $|\epsilon(x)|$  is less than  $2.5 \cdot 10^{-4}$ , this error can be neglected.

The above approximation was used to calculate the multiple interference with the simplified multiplication method.

#### 4.3 Manual calculation

The basic material for the manual calculation of the usable field strength in applying the simplified multiplication method is given below.\*

The manual calculation needs only additions, subtractions, multiplications, divisions and the reading of a value from Table 4.1.

An example with five interfering transmitters is given in Table 4.2.

Experience has shown that it is expedient to begin with a value for  $E_0$ , which is 6 dB larger than the largest of the  $E_{si}$  values. If the difference between 0.5\*\* and the result (product of the 5 values of  $L(x_i)$ ) equals  $\Delta$ , the value of  $E_0$  should be modified by  $\Delta/0.05$  to obtain a better approximation. The whole process can be repeated to receive better accuracy.

Table 4.2 shows that, even after the second step, the difference to the precise value is in the order of 0.2 dB.

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\* For further details see CCIR Report 945.

\*\* 0.5 represents the coverage probability for 50% of locations.

B.4/26

TABLE 4.1

Probability integral

$$\varphi(x) = \frac{2}{\sqrt{2\pi}} \int_0^x [\exp(-t^2/2)] dt$$

$x$	$\varphi(x)$	$x$	$\varphi(x)$	$x$	$\varphi(x)$	$x$	$\varphi(x)$
0.00	0.0000	0.60	0.4515	1.20	0.7699	1.80	0.9281
01	0.0080	61	0.4581	21	0.7737	81	0.9297
02	0.0160	62	0.4647	22	0.7775	82	0.9312
03	0.0239	63	0.4713	23	0.7813	83	0.9328
04	0.0319	64	0.4778	24	0.7850	84	0.9342
0.05	0.0399	0.65	0.4843	1.25	0.7887	1.85	0.9357
06	0.0478	66	0.4907	26	0.7923	86	0.9371
07	0.0558	67	0.4971	27	0.7959	87	0.9385
08	0.0638	68	0.5035	28	0.7995	88	0.9399
09	0.0717	69	0.5098	29	0.8029	89	0.9412
0.10	0.0797	0.70	0.5161	1.30	0.8064	1.90	0.9426
11	0.0876	71	0.5223	31	0.8098	91	0.9439
12	0.0955	72	0.5285	32	0.8132	92	0.9451
13	0.1034	73	0.5346	33	0.8165	93	0.9464
14	0.1113	74	0.5407	34	0.8198	94	0.9476
0.15	0.1192	0.75	0.5467	1.35	0.8230	1.95	0.9488
16	0.1271	76	0.5527	36	0.8262	96	0.9500
17	0.1350	77	0.5587	37	0.8293	97	0.9512
18	0.1428	78	0.5646	38	0.8324	98	0.9523
19	0.1507	79	0.5705	39	0.8355	99	0.9534
0.20	0.1585	0.80	0.5763	1.40	0.8385	2.00	0.9545
21	0.1663	81	0.5821	41	0.8415	05	0.9556
22	0.1741	82	0.5878	42	0.8444	10	0.9563
23	0.1819	83	0.5935	43	0.8473	15	0.9568
24	0.1897	84	0.5991	44	0.8501	20	0.9572
0.25	0.1974	0.85	0.6047	1.45	0.8529	2.25	0.9576
26	0.2041	86	0.6102	46	0.8557	30	0.9586
27	0.2128	87	0.6157	47	0.8584	35	0.9589
28	0.2205	88	0.6211	48	0.8611	40	0.9593
29	0.2282	89	0.6265	49	0.8638	45	0.9597
0.30	0.2358	0.90	0.6319	1.50	0.8664	2.50	0.9599
31	0.2434	91	0.6372	51	0.8690	55	0.9602
32	0.2510	92	0.6424	52	0.8715	60	0.9607
33	0.2586	93	0.6476	53	0.8740	65	0.9612
34	0.2661	94	0.6528	54	0.8764	70	0.9616
0.35	0.2737	0.95	0.6579	1.55	0.8789	2.75	0.9619
36	0.2812	96	0.6629	56	0.8812	80	0.9623
37	0.2886	97	0.6680	57	0.8836	85	0.9626
38	0.2961	98	0.6729	58	0.8859	90	0.9629
39	0.3035	99	0.6778	59	0.8882	95	0.9632
0.40	0.3108	1.00	0.6827	1.60	0.8904	3.00	0.9635
41	0.3182	01	0.6875	61	0.8926	10	0.9638
42	0.3255	02	0.6923	62	0.8948	20	0.9641
43	0.3328	03	0.6970	63	0.8969	30	0.9644
44	0.3401	04	0.7017	64	0.8990	40	0.9647
0.45	0.3473	1.05	0.7063	1.65	0.9011	3.50	0.9649
46	0.3545	06	0.7109	66	0.9031	60	0.9652
47	0.3616	07	0.7154	67	0.9051	70	0.9655
48	0.3688	08	0.7199	68	0.9070	80	0.9658
49	0.3759	09	0.7243	69	0.9090	90	0.9661
0.50	0.3829	1.10	0.7287	1.70	0.9109	4.00	0.9664
51	0.3899	11	0.7330	71	0.9127	4.417	$1 - 10^{-5}$
52	0.3969	12	0.7373	72	0.9146		
53	0.4039	13	0.7415	73	0.9164		
54	0.4108	14	0.7457	74	0.9181		
0.55	0.4177	1.15	0.7499	1.75	0.9199	5.327	$1 - 10^{-7}$
56	0.4245	16	0.7540	76	0.9216		
57	0.4313	17	0.7580	77	0.9233		
58	0.4381	18	0.7620	78	0.9249		
59	0.4448	19	0.7660	79	0.9265		
0.60	0.4515	1.20	0.7699	1.80	0.9281		

TABLE 4.2

1. Approximation $E_u = 78$ dB					$\sigma_n = 8.3$ dB
$i$	$E_{si}$ (dB)	$z_i = E_u - E_{si}$ (dB)	$x_i = \frac{z_i}{\sigma_n \sqrt{2}}$	$\varphi(x_i)$ (from Table 1)	$L(x_i) = \frac{\varphi(x_i)}{2} + \frac{1}{2}$
1	64	14	1.19	0.7660	0.8830
2	72	6	0.51	0.3899	0.6950
3	60	18	1.53	0.8740	0.9370
4	50	28	2.39	0.9831	0.9916
5	45	33	2.81	0.9950	0.9975
$\sum_{i=1}^5 L(x_i) = 0.5688$ $\frac{\Delta}{0.05} = \frac{0.5 - 0.5688}{0.05} = -1.38 \text{ dB}$					
2. Approximation $E_u = 76.62$ dB					
1	64	12.62	1.08	0.7199	0.8600
2	72	4.62	0.39	0.3035	0.6518
3	60	16.62	1.42	0.8444	0.9222
4	50	26.62	2.26	0.9762	0.9881
5	45	31.62	2.69	0.9929	0.9965
$\sum_{i=1}^5 L(x_i) = 0.5090$ $\frac{\Delta}{0.05} = \frac{0.5 - 0.5090}{0.05} = -0.18 \text{ dB}$					
3. Approximation $E_u = 76.44$ dB					
1	64	12.44	1.06	0.7109	0.8555
2	72	4.44	0.38	0.2961	0.6481
3	60	16.44	1.40	0.8385	0.9193
4	50	26.44	2.25	0.9756	0.9878
5	45	31.44	2.68	0.9927	0.9964
$\sum_{i=1}^5 L(x_i) = 0.5016$ $\frac{\Delta}{0.05} = \frac{0.5 - 0.5016}{0.05} = -0.03 \text{ dB}$					

The 4th approximation yields  $E_u = 76.44 - 0.03 = 76.41$  dB.  
This value can be considered as sufficiently exact.



# REGIONAL BROADCASTING CONFERENCE

Document No. 187(Rev.1)-E  
30 November 1984

(SECOND SESSION)

GENEVA, 1984

B.5(Rev.1)

PLENARY MEETING

Fifth series of texts submitted by the  
Editorial Committee to the Plenary Meeting

The following texts are submitted to the Plenary Meeting for first reading:

<u>Source</u>	<u>Document No.</u>	<u>Contents</u>
WG 5B	145	Resolution No. COM 5/1.

H. BERTHOD  
Chairman of Committee 6

Annex: 1 page

Note by Committee 5 - In considering this Resolution, the following delegations entered reservations:

- Spain to the entire Resolution;
- The Islamic Republic of Iran for resolves 1, 2 and 4;
- Ireland and Italy for resolves 4.

## RESOLUTION No. COM 5/1

**Procedure relating to the fixed and mobile except aeronautical  
mobile (R) services in the band 104-108 MHz**

The Regional Administrative Conference for the Planning of VHF Sound Broadcasting (Region 1 and Part of Region 3) (Geneva, 1984),

noting

that the Conference was requested to adopt transitional procedures for bringing into service the assignments in the Plan to permit the normal operation of stations of other services to which the band 104-108 MHz is also allocated in accordance with Nos. 587, 588 and 589 of the Radio Regulations, under the conditions specified therein;

considering

a) that the planning of sound broadcasting stations was carried out without taking account of existing and planned stations of the permitted services to which the band 104-108 MHz is also allocated;

b) that the bringing into service of broadcasting stations may cause interference to stations belonging to the permitted service and vice versa;

c) that the criteria governing the initiation of the coordination procedure have been adopted by the Conference and appear in the Agreement;

resolves

1. that the VHF Sound Broadcasting Plan (Geneva, 1984), shall be implemented in the frequency band 104-108 MHz in such a way as to permit the normal operation of the existing fixed and mobile services in this band on the conditions specified in the Radio Regulations;

2. that protection of the fixed and mobile services in the band 104-108 MHz shall not obstruct the gradual implementation of the Plan in the period between the coming into force of the Agreement (Geneva, 1984) and 31 December 1995, when the stations of these services will no longer operate on a permitted basis;

3. that the band 104-108 MHz should be gradually brought into use for the FM Sound Broadcasting Service by introducing different portions of the band at different stages of the period between the entry into force of the Agreement and 31 December 1995, or by any method agreed between the administrations concerned;

4. that this gradual introduction shall be based on bilateral or multilateral agreements concluded between the administrations concerned during or after this Conference and if possible before the date of entry into force of the Plan, but not later than one year after this date.

**REGIONAL BROADCASTING  
CONFERENCE**

Document No. 187-E

30 November 1984

(SECOND SESSION)

GENEVA, 1984

B.5

PLENARY MEETINGFifth series of texts submitted by the  
Editorial Committee to the Plenary Meeting

The following texts are submitted to the Plenary Meeting for first reading:

<u>Source</u>	<u>Document No.</u>	<u>Contents</u>
WG 5B	145	Resolution No. COM 5/1

H. BERTHOD  
Chairman of Committee 6

Annex: 1 page

## RESOLUTION No. COM 5/1

**Procedure relating to the fixed and mobile services  
in the band 104-108 MHz**

The Regional Administrative Conference for the Planning of VHF Sound Broadcasting (Region 1 and part of Region 3) (Geneva, 1984).

noting

that the Conference was requested to adopt transitional procedures for bringing into service the assignments in the Plan to permit the normal operation of stations of other services to which the band 104-108 MHz are also allocated in accordance with Nos. 587, 588 and 589 of the Radio Regulations, under the conditions specified therein;

considering

- a) that the planning of sound broadcasting stations was carried out without taking account of existing and planned stations of the permitted services to which the band 104-108 MHz is also allocated;
- b) that the bringing into service of broadcasting stations may cause interference to stations belonging to the permitted service and vice versa;
- c) that the criteria governing the initiation of the coordination procedure have been adopted by the Conference and appear in the Agreement;

resolves

1. that the VHF Sound Broadcasting Plan (Geneva, 1984), shall be implemented in the frequency band 104-108 MHz in such a way as to permit the normal operation of the existing fixed and mobile services in this band on the conditions specified in the Radio Regulations;
2. that protection of the fixed and mobile services in the band 104-108 MHz shall not obstruct the gradual implementation of the Plan in the period between the coming into force of the Agreement (Geneva, 1984) and 31 December 1995, when the stations of these services will no longer operate on a permitted basis;
3. that the band 104-108 MHz should be gradually brought into use for the FM Sound Broadcasting Service by introducing different portions of the band at different stages of the period between the entry into force of the Agreement and 31 December 1995, or by any method agreed between the administrations concerned;
4. that this gradual introduction shall be based on bilateral or multilateral agreements concluded between the administrations concerned during or after this Conference and if possible before the date of entry into force of the Plan, but not later than one year after this date.

# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document No. 188-E  
30 November 1984

R.2

PLENARY MEETING

Second series of texts submitted by the  
Editorial Committee to the Plenary Meeting

The following texts are submitted to the Plenary Meeting for second reading:

<u>Source</u>	<u>Document No.</u>	<u>Contents</u>
B.2(Rev.)	129(Rev.)	Information included in the columns of the Plan (Annex 1)

H. BERTHOD  
Chairman of Committee 6

Annex: 1 page

## ANNEX 1

**Frequency Assignment Plan for FM Sound Broadcasting Stations  
in Region 1 and Part of Region 3 in the Band 87.5-108 MHz**

Information included in the columns of the Plan

Column

1. Assigned frequency (MHz)
2. Country symbol
3. Name of transmitting station
4. Symbol of the geographical area in which the station is located  
(see Table No. 1 of the Preface to the International Frequency List)
5. Geographical coordinates, in degrees and minutes, of the transmitting antenna site
6. Altitud of site of transmitting antenna above sea level (m)
7. Height of the antenna above ground level (m)
8. Polarization (H, V or M)
9. System (1, 2, 3, 4 or 5) \*
10. Total effective radiated power (dBW)
11. Maximum effective radiated power of the horizontally polarized component (dBW)
12. Maximum effective radiated power of the vertically polarized component (dBW)
13. Directivity of antenna (ND or D)
14. Effective radiated power of the horizontal component and the vertical component in different azimuths
15. Maximum effective antenna height (m)
16. Azimuthal variation of the effective antenna height
17. Sectors or directions of restricted e.r.p. (in degrees)
- 17.1 Sector No. 1
- 17.2 Sector No. 2
- 17.3 Sector No. 3
- 17.4 Sector No. 4
18. Attenuation in the sector concerned (dB)
- 18.1 Attenuation in sector No. 1
- 18.2 Attenuation in sector No. 2
- 18.3 Attenuation in sector No. 3
- 18.4 Attenuation in sector No. 4
19. Remarks

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\* See [No. ....] of [Annex ....] to the Agreement.

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Corrigendum 2 to  
Document 189-E  
7 December 1984  
Original : French

AMENDMENTS TO THE  
REPORT OF COMMITTEE 2 TO THE PLENARY MEETING

Following the oral report by the Chairman of Committee 2 to the 19th Plenary meeting, the following changes should be made in the Annex to Document 189 :

Section 1

Insert SENEGAL (Republic of) after SAN MARINO (Republic of).

Section 3

Delete SENEGAL (Republic of).

J. SZEKELY  
Chairman of Committee 2

INTERNATIONAL TELECOMMUNICATION UNION  
**REGIONAL BROADCASTING  
CONFERENCE**

(SECOND SESSION)

GENEVA, 1984

Corrigendum 1 to  
Document 189-E  
4 December 1984  
Original : French

AMENDMENTS TO THE  
REPORT OF COMMITTEE 2 TO THE PLENARY MEETING

Following the oral report by the Chairman of Committee 2 to the eleventh Plenary Meeting, the following changes should be made in the Annex to Document 189 :

Section 1

Insert ROMANIA (Socialist Republic of) after UKRAINIAN SOVIET SOCIALIST REPUBLIC

Section 3

Delete ROMANIA (Socialist Republic of)

J. SZÉKELY  
Chairman of Committee 2



# REGIONAL BROADCASTING CONFERENCE

(SECOND SESSION)

GENEVA, 1984

Document 189-F  
30 November 1984  
Original : French

## PLENARY MEETING

### REPORT OF COMMITTEE 2 TO THE PLENARY MEETING

#### CREDENTIALS

1. Terms of reference of the Committee

The terms of reference of the Committee are set out in Document 40.

2. Meetings

The Committee met twice, on 31 October and 30 November 1984.

At its first meeting, it set up a Working Group consisting of the Chairman and Vice-Chairman of the Committee and one delegate from the People's Democratic Republic of Algeria, from Austria and from the Islamic Republic of Iran to verify delegations' credentials in accordance with Article 67 of the International Telecommunication Convention, Nairobi (1982).

3. Conclusions

The conclusions reached by the Committee are reproduced in the Annex attached hereto and submitted to the Plenary Meeting for approval.

4. Final remark

The Committee recommends that the Plenary Meeting authorize the Chairman and the other members of the Working Group to verify the credentials received after the date of the present Report and to report to the Plenary Meeting on the matter.

J. SZÉKELY  
Chairman of Committee 2

Annex : 1

A N N E X

1. \*\* Credentials found to be in order, deposited by the delegations of countries having the right to vote

AFGHANISTAN ( Democratic Republic of)  
ALBANIA (Socialist People's Republic of)  
ALGERIA (People's Democratic Republic of)  
GERMANY (Federal Republic of)  
ANGOLA (People's Republic of)  
SAUDI ARABIA (Kingdom of)  
AUSTRIA  
BELGIUM  
BENIN (People's Republic of)  
BYELORUSSIAN SOVIET SOCIALIST REPUBLIC  
BOTSWANA (Republic of)  
BULGARIA (People's Republic of)  
BURKINA FASO  
CAMEROON (Republic of)  
CYPRUS (Republic of)  
VATICAN CITY STATE  
CONGO (People's Republic of)  
IVORY COAST (Republic of the)  
DENMARK  
EGYPT (Arab Republic of)  
SPAIN  
FINLAND  
FRANCE  
GABONESE REPUBLIC  
GHANA \*  
GREECE  
GUINEA (Republic of)  
HUNGARIAN PEOPLE'S REPUBLIC  
IRAN (Islamic Republic of)  
IRAQ (Republic of)  
IRELAND  
ISRAEL (State of)  
ITALY  
JORDAN (Hashemite Kingdom of)  
KENYA (Republic of)  
KUWAIT (State of)  
LESOTHO (Kingdom of)  
LIBYA (Socialist People's Libyan Arab Jamahiriya)  
LIECHTENSTEIN (Principality of)  
LUXEMBOURG  
MALI (Republic of)  
MALTA (Republic of)  
MOROCCO (Kingdom of)  
MONACO  
MONGOLIAN PEOPLE'S REPUBLIC

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\* The delegation of this country is not present to the Conference;  
the credentials have been received by mail.

\*\* French alphabetical order

NIGER (Republic of the)  
NORWAY  
OMAN (Sultanate of)  
UGANDA (Republic of)  
NETHERLANDS (Kingdom of the)  
POLAND (People's Republic of)  
PORTUGAL  
QATAR (State of)  
SYRIAN ARAB REPUBLIC  
GERMAN DEMOCRATIC REPUBLIC  
UKRAINIAN SOVIET SOCIALIST REPUBLIC  
UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND  
SAN MARINO (Republic of)  
SWEDEN  
SWITZERLAND (Confederation of)  
SWAZILAND (Kingdom of)  
TANZANIA (United Republic of)  
CZECHOSLOVAK SOCIALIST REPUBLIC  
TOGOLESE REPUBLIC  
TUNISIA  
TURKEY  
UNION OF SOVIET SOCIALIST REPUBLICS  
YEMEN ARAB REPUBLIC  
YEMEN (People's Democratic Republic of)  
YUGOSLAVIA (Socialist Federal Republic of)  
ZAMBIA (Republic of)  
ZIMBABWE (Republic of)

Conclusion : The delegations of these countries are entitled to vote and to sign the Final Acts.

2. Credentials found to be in order, deposited by the delegations of countries which do not have the right to vote (see Document 31 Rev.)

CHAD (Republic of)

Conclusion : The delegation of this country is not entitled to vote, but may sign the Final Acts.

3. Delegations attending the Conference which have not deposited credentials

UNITED ARAB EMIRATES (this country has not the right to vote, see document 31 Rev.)

ETHIOPIA

ROMANIA (Socialist Republic of) (credentials announced)

RWANDESE REPUBLIC

SENEGAL (Republic of)

Conclusion : The delegations of these countries are entitled neither to vote nor to sign the Final Acts