Documents of the Regional Administrative LF/MF Broadcasting Conference (Regions 1 and 3) (1st session) (Geneva, 1974)

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INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. DT/1-E
2 October 1974
Original : French

PLENARY MEETING

Note by the Secretary-General

COMMITTEE STRUCTURE

The suggestions made below were arrived at in the light of the committee structure at previous conferences and the provisions of Administrative Council Resolution 719.

Committee 1 - Steering Committee

Terms of Reference :

To coordinate the work of the Committees, fix the timetable of meetings, etc.

Committee 2 - Credentials Committee

Terms of Reference :

To verify the credentials of delegations (No. 639 of the General Regulations annexed to the International Telecommunication Convention, Montreux, 1965).

Committee 3 - Budget Control Committee

Terms of Reference :

To determine the organization and the facilities available to the delegates, examine and approve the accounts for expenditure incurred throughout the duration of the Conference (No. 674 of the General Regulations annexed to the International Telecommunication Convention, Montreux, 1965).

Committee 4 - Technical Data and Criteria Committee

Terms of Reference :

To prepare the technical and operational criteria which will serve as a basis for the establishment, by the second session of the Regional Administrative Radio Conference, of frequency assignment plans for the LF/MF broadcasting bands in Regions 1 and 3, taking into account the following non-exhaustive list of items :

- propagation data,
- emission :

  class of emission,
  bandwidth,

centre frequency (channel spacing),
power,
transmitting antennae characteristics,

- reception criteria :

protection ratio,
minimum field strength to be protected and noise.

Committee 5 - Planning Methods Committee

Terms of Reference :

In the light of the results achieved by Committee 4 :

to decide upon the planning methods which will serve as a basis for the establishment, by the second session of the Regional Administrative Radio Conference, of frequency assignment plans for the LF/MF broadcasting bands in Regions 1 and 3, taking into account the technical and operational criteria established by the Technical Committee.

Some of the points to be studied are as follows :

- planning methods (on the basis of the information supplied by Committee 4),
- synchronized networks.

Committee 6 - Committee for Submission of Requirements

Terms of Reference :

Taking account of the results achieved by Committees 4 and 5 and with a view to establishing a plan at the 2nd session :

- to determine the form in which frequency requirements to be included in the frequency assignment plans should be submitted to the I.T.U.,
- fix the final date for this submission,
- issue any directive which the Conference may consider useful for the establishment of the plan.

Committee 7 - Editorial Committee

Terms of reference :

To improve the form without altering the sense of the texts drafted by the various Committees and combine them with those parts of former texts which have not been altered (No. 759 of the General Regulations annexed to the International Telecommunication Convention, Montreux, 1965).

M. MILI

Secretary-General

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. DT/2-E
4 October 1974
Original : French

HEADS OF DELEGATION

DRAFT AGENDA

FIRST PLENARY MEETING

Monday, 7 October 1974 at 1100 hrs

Room I

		Document No.
1.	Opening by the Secretary-General of the I.T.U.	-
2.	Election of the Chairman of the first session of the Conference	-
3.	Election of the Vice-Chairmen of the first session of the Conference	-
4.	Address by the Secretary-General	-
5.	Committee structure and organization of the work of the Conference	DT/1
6.	Election of Chairmen and Vice-Chairmen of the Committees	-
7.	Constitution of Conference Secretariat	-
8.	Assignment of documents to Committees	DT/3
9.	Convening of the Conference	20
10.	Invitations to the Conference	24
11.	Participation of international organizations in the work of the Conference	23
12.	Date by which the Credentials Committee must reach its conclusions	-
13.	Conference time-table	-
14.	Other business	

M. MILI

Secretary-General

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. DT/3-E
7 October 1974

ASSIGNMENT OF DOCUMENTS TO COMMITTEES

Note : A 5/1024 (73) refers to the C.C.I.R. Recommendation which appears on page 73 of Document No. 10 and was the subject of pink Document 5/1024 approved by the XIIIth Plenary Assembly of the C.C.I.R.; R = C.C.I.R. Report, Res = C.C.I.R. Resolution.

Plenary Assembly Docs. : 1, 16, 20, 23, 24

Committee 3 Budget control Doc. 19

Committee 4 Technical data and criteria

- propagation

ground-wave Rec. 5/1024 (73), Rep. 5/1026 (87), Rep. 5/1027 (97), Rep. 5/1030 (107), Rep. 5/1040 (111), Rep. 5/1045 (113), Rep. 516 (353), Rep. 10/1003 (379), Docs : 7, 11, 13, 18

sky-wave Rep. 5/1026 (87), Rec. 6/1056 (121), Rep. 6/1068 (123), Rep. 6/1079 (141), Rep. 6/1063 (161), Rep. 6/1083 (203), Res 6/1055 (229), Rep. 461 (353), Rep. 10/1003 (379), Docs. : 7, 14, 18, 25

(Cross-modulation Rep. 6/1073 (191), Rec. 10/1019 (243), Rep. 10/1017 (341))

- emission

class of emission Rep. 10/1055 (257), Rep. 10/1058 (323), Docs. : 3, 6, 7, 9, 12, 18, 21
bandwidth Rec. 1/1025 (21), Rep. 10/1050 (311), Docs. : 6, 7, 9, 15, 18, 21, 25
centre frequency (channel spacing) Docs. : 2, 6, 7, 8, 12, 15, 17, 18, 21, 25
power Rec. 1/1026 (1), Rep. 1/1062 (69), Docs. : 7, 12, 15, 25
(Cross-modulation Rep. 6/1073 (191), Rec. 10/1019 (243), Rep. 10/1017 (341))

characteristics of transmitting antennae Rec. 414 (233), Rep. 10/1015 (301) + Add. 1, Docs. : 4, 7, 26, 27

- reception conditions

protection ratio Rep. 1/1051 (35), Rep. 1/1052 (47), Rep. 1/1056 (59), Rec. 10/1027 (231), Rec. 447 (233), Rec. 10/1039 (235), Rec. 10/1018 (237), Rep. 10/1047 (249), Rep. 10/1049 (263), Rep. 10/1008 (333), Rep. 10/1025 (383), Docs. : 6, 7, 12, 15, 21, 25

noise Rec. 6/1044 (119)

minimum field strength Rec. 10/1031 (245), Docs. : 6, 18, 21, 25

receivers and receiving antennae Rep. 10/1052 (371), Docs. : 2, 3, 6

sharing with other services Doc. : 22

Committee 5 Planning methods

- planning methods (general)

Docs. : 2, 7, 8, 9, 15, 18, 25

- service areas, coverage

Rec. 10/1031 (245), Rep. 10/1053 (281) + Corr. 1, Rep. 10/1060 (357), Docs. : 2, 12, 25

- division of the MF band into several sub-bands for various types of coverage

Docs. : 6, 8, 9, 25

- synchronized networks

Rep. 10/1008 (333), Doc. : 18

- international common frequencies

Docs. : 5, 9

Committee 6 Submission of requirements

Docs. : 8, 9

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. DT/4-E
7 October 1974
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COMMITTEE 4

TERMS OF REFERENCE OF WORKING GROUP 4A

Chairman : Dr. P. KNIGHT (United Kingdom)

Acting Chairman : Mr. R. DILWORTH (United Kingdom)

1. Terms of reference

To establish the technical criteria for :

- propagation by ground-wave,
- propagation by sky-wave,
- transmitting antenna characteristics, together with those of receiving antennae, having an influence on questions of propagation,
- ionospheric cross-modulation,
- power limitations as related to ionospheric cross-modulation.

2. Documents to be considered

2a) Ground-wave propagation

C.C.I.R. Documents approved by the XIIIth Plenary Assembly

Rec. 5/1024 (73), Rep. 5/1026 (87), Rep. 5/1027 (97), Rep. 5/1030 (107), Rep. 5/1040 (111), Rep. 5/1045 (113), Rep. 516 (353), Rep. 10/1003 (379)

(Conference Documents Nos. 7, 11, 13, 18) (For brief analysis see Annex 1)

2b) Sky-wave propagation

C.C.I.R. Documents approved by the XIIIth Plenary Assembly

Rep. 5/1026 (87), Rec. 6/1056 (121), Rep. 6/1068 (123), Rep. 6/1079 (141), Rep. 6/1063 (161), Rep. 6/1083 (203), Res 6/1055 (229), Rep. 461 (353), Rep. 10/1003 (379)

(Conference Documents Nos. 7, 14, 18, 25) (For brief analysis see Annex 2)

2c) Cross-modulation

C.C.I.R. Documents approved by the XIIIth Plenary Assembly

Rep. 6/1073 (191), Rec. 10/1019 (243), Rep. 10/1017 (341)

(Conference Document No. 7) (For brief analysis see Annex 3)

2d) Characteristics of transmitting antennae

C.C.I.R. Documents approved by the XIIIth Plenary Assembly

Rec. 414 (233), Rep. 10/1015 (301) + Add. 1

(Conference Document No. 26) (For brief analysis see Annex 4)

2e) Receiving antennae

C.C.I.R. Documents approved by the XIIIth Plenary Assembly

Rep. 10/1052 (371)

Note : A 5/1024 (73) refers to the C.C.I.R. Recommendation which appears on page 73 of Document No. 10 and was the subject of pink Document 5/1024 approved by the XIIIth Plenary Assembly of the C.C.I.R.; R = C.C.I.R. Report, Res = C.C.I.R. Resolution. (See also Addendum to Document No. 10.)

J. RUTKOWSKI
Chairman of Committee 4

Annexes : 4

A N N E X 1

PROPAGATION (GROUND-WAVE)

Administration	Proposals or comments
Roumania (Document No. 7)	The curves given in C.C.I.R. Recommendation No. 368-1 should be used.
Norway (Document No. 11)	The document describes a graphical procedure for calculation of field strength on inhomogeneous earth, based on Millingtons' method.
Algeria (Document No. 13)	The document gives an earth conductivity map for Algeria.
U.S.S.R. (Document No. 18)	C.C.I.R. Recommendation 368-2.

A N N E X 2

PROPAGATION (SKY-WAVE)

Administration	Proposals or comments
Roumania (Document No. 7)	Curves given in C.C.I.R. Report 264-2 should be used supplemented for distances greater than 3500 Km by the curves given in C.C.I.R. Document No. 10/82 Report 264-2 : "Sky-wave propagation curves between 300 Km and 3500 Km at frequencies between 150 kHz and 1 600 kHz in the European Broadcasting Area". C.C.I.R. Document No. 10/82: "U.S.S.R. - Night-time sky-wave propagation curves for the 150-1 600 kHz broadcasting band for distances greater than 300 Km from the transmitter.
Algeria (Document No. 14)	The document describes the measurements of sky-wave field strengths carried out on 164 kHz, 620 kHz, 764 kHz, 1 250 kHz, 1 345 kHz, 1 355 kHz, 1 403 kHz and 1 602 kHz.
U.S.S.R. (Document No. 18)	C.C.I.R. method for predicting sky-wave field strengths at frequencies between 150 kHz and 1 600 kHz (Pink Document 6/1083(Rev.1)).

ANNEX 3

IONOSPHERIC CROSS-MODULATION

Administration	Proposals or comments
Roumania (Document No. 7)	As far as the transmitter powers are concerned, we have not observed any ionospheric intermodulation

ANNEX 4

TRANSMITTING ANTENNA

Administration	Proposals or comments
United Kingdom (Document No. 4)	"... frequency planning should proceed on the basis of using omni-directional transmitters, and only in individual cases should the Planning Conference take account of the use of directional arrays. In this latter case it would not be realistic to assume the use of antennae having a maximum to minimum radiation ratio greater than 12 dB for sky-waves and 20 dB for ground-waves."
Roumania (Document No. 7)	"Vertically-polarized horizontal-directivity antennae" should be used in all cases where they might help to reduce interference. Vertical radiation patterns should be arranged so as to reduce long-distance radiation to the maximum. Horizontally-polarized antennae are not suitable since they can be used only at night, and coordination with other administrations operating on the same frequency is very difficult.
France (Document No. 26)	Description of antenna with high back protection

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

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8 October 1974
Original: English

COMMITTEE 4

TERMS OF REFERENCE OF WORKING GROUP 4B

Chairman : Mr. Günther GROESCHEL (Fed. Rep. of Germany)

1. Terms of reference :

To establish the technical data and criteria concerning :

- class of emission
- bandwidth
- channel spacing and centre frequencies
- power (with the exception of ionospheric cross-modulation)
- protection ratios (including synchronized networks)
- noise
- minimum field strength
- service area
- receivers

2. Documents to be considered :

2a) Class of emission :

C.C.I.R. Docs. approved by the XIIIth Plenary Assembly :

Report 10/1055 (257), Report 10/1058 (323)

Conference Docs. 3, 6, 7, 9, 12, 18, 21, 29, 35, 36, 40*

2b) Bandwidth :

C.C.I.R. Docs. approved by the XIIIth Plenary Assembly :

Recommendation 1/1025 (21), Report 10/1050 (311)

Conference Docs. 6, 7, 9, 15, 18, 21, 25, 35, 36, 37, 40*

2c) Channel spacing and centre frequencies :

C.C.I.R. Docs. approved by the XIIIth Plenary Assembly:
Report 10/1053(281)
Conference Docs. (channel spacing) 2, 6, 7, 9, 12, 15, 17, 21, 25, 29, 33, 35, 36, 37,40*

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

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7 October 1974
Original : English

COMMITTEE 4

TERMS OF REFERENCE OF WORKING GROUP 4B

Chairman : Mr. Günther GROESCHEL (Fed. Rep. of Germany)

1. Terms of reference :

To establish the technical data and criteria concerning :

- class of emission
- bandwidth
- channel spacing and centre frequencies
- power (with the exception of ionospheric cross-modulation)
- protection ratios (including synchronized networks)
- noise
- minimum field strength
- service area
- receivers

2. Documents to be considered :

2a) Class of emission :

C.C.I.R. Docs. approved by the XIIIth Plenary Assembly :

Report 10/1055 (257), Report 10/1058 (323)

Conference Docs. 3, 6, 7, 9, 12, 18, 21 (see Annex)

2b) Bandwidth :

C.C.I.R. Docs. approved by the XIIIth Plenary Assembly :

Recommendation 1/1025 (21), Report 10/1050 (311)

Conference Docs. 6, 7, 9, 15, 18, 21, 25 (see Annex)

2c) Channel spacing and centre frequencies :

Conference Docs. (channel spacing) 2, 6, 7, 8, 12, 15, 17, 18, 21, 25 (see Annex)

2d) Power (with the exception of ionospheric cross-modulation :

C.C.I.R. Docs. approved by the XIIIth Plenary Assembly :

Recommendation 1/1026 (1), Report 1/1062 (69)

2e) Protection ratios (including synchronized networks) :

C.C.I.R. Docs. approved by the XIIIth Plenary Assembly :

Report 1/1051 (35), Report 1/1052 (47), Report 1/1056 (59), Recommendation 10/1027 (231), Recommendation 447 (233), Recommendation 10/1039 (235), Recommendation 10/1018 (237), Report 10/1047 (249), Report 10/1049 (263), Report 10/1008 (333), Report 10/1025 (383)

Conference Docs. 6, 7, 12, 15, 21, 25 (see Annex)

2f) Noise

C.C.I.R. Docs. approved by the XIIIth Plenary Assembly :

Recommendation 6/1044 (119)

2g) Minimum fieldstrength

C.C.I.R. Docs. approved by the XIIIth Plenary Assembly :

Recommendation 10/1031 (245)

Conference Docs. 6, 18, 21, 25 (see Annex)

2h) Service area

C.C.I.R. Docs. approved by the XIIIth Plenary Assembly :

Recommendation 10/1031 (245)

2i) Receivers

C.C.I.R. Docs. approved by the XIIIth Plenary Assembly :

Report 10/1052 (371)

Conference Docs. 2, 3, 6 (see Annex)

Annex : 1

ANNEX

MODULATION STANDARDS

Administration	Proposals or comments
United Kingdom (Document No. 3)	Replanning of the LF/MF broadcasting bands should be on a DSB basis, leaving the way open for individual countries to replace their double sideband transmissions by ISB transmissions if and when such a change becomes practicable.
F.R. of Germany (Document No. 6)	Dynamic compression should be taken as a pre-requisite for frequency planning. AF bandwidth of about 4.5 kHz is proposed (for DSB transmissions) in conjunction with a specified attenuation slope of the receiver filter and the transmitter rate of cut of 60 dB per octave. It is proposed (in the form of a resolution) that a further Conference be convened "at which the technical and administrative problems concerning the introduction of SSB modulation in bands 5 and 6... should be discussed and at which decisions should be taken with the aim to introduce a... SSB modulation...".
Roumania (Document No. 7)	Double sideband modulation only should be considered. The audio-frequency bandwidth should be limited to half the channel spacing (i.e. 4.5 kHz), together with compression of "4 to 10 dB".
Nigeria (Document No. 12)	DSB modulation should be used for planning and a next appropriate Conference should "determine, in the light of the results of the working of the C.C.I.R., the introduction of ISB+C system".
German Democratic Republic (Document No. 21)	DSB modulation should be used as a basis. AF bandwidth should be chosen between 4.5 to 9 kHz. For high quality bandwidth up to 9 kHz acceptable if interference is not caused to other countries.

CHANNEL SPACING

Administration	Proposals or comments
United Kingdom (Document No. 3)	A uniform channel spacing should be adopted, if possible, throughout Region 1 and Region 3. The optimum channel separation is 8 kHz.
F.R. of Germany (Document No. 6)	8 kHz (Regions 1 and 3). The nominal channel frequencies should be integral multiples of channel spacing.
Roumania (Document No. 7)	It must be ensured that the same channel spacing is used in Region 1 and Region 3. The proposed value is 9 kHz. Nominal channels frequencies should be integral multiples of channel spacing.
Norway (Document No. 9)	A channel spacing of 8 kHz with audiofrequency bandwidth of $\pm$ 4.5 kHz.
Nigeria (Document No. 12)	A uniform channel spacing of 9 kHz be standardized in Regions 1 and 3.
U.S.S.R. (Document No. 17)	9 kHz (Regions 1 and 3).
Pakistan (Document No. 15)	10 kHz (Regions 1 and 3).
German Democratic Republic (Document No. 21)	Uniform channel spacing of 9 kHz should be applied for Regions 1 and 3 in LF/MF sound broadcasting. Carrier frequencies of LF and MF sound broadcasting are proposed to be integral multiples of the uniform channel spacing.

RF PROTECTION RATIO

Administration	Proposals or comments
F.R. of Germany (Document No. 6)	1. RF protection ratio : a) Between a constant wanted signal and a constant interfering signal : 30 dB b) Between a constant wanted signal and a fading interfering signal (referred to 2400 hours for at least 50% of the nights of the year) : 30 dB c) Between a fading wanted signal and a constant or fading interfering signal (referred to 2400 hours for at least 50% of the nights of the year) : 27 dB 2. For determining relative radio-frequency protection ratio the curves given in C.C.I.R. Recommendation 449-1(Rev.74), Pink Doc. 10/1018, should be used.
Roumania (Document No. 7)	Between a constant wanted signal and a varying interfering signal for 90% of nights : 34 dB.
Nigeria (Document No. 12)	30 dB.
Pakistan (Document No. 15)	30 dB.
U.S.S.R. (Document No. 18)	a) For day-time conditions : 30 dB. b) For night-time conditions : 27 dB. c) In particular cases, and by agreement between the Administrations concerned, other protection ratios may be fixed. d) Synchronous networks : 6 dB.
German Democratic Republic (Document No. 21)	RF protection ratio of 30 dB for constant wanted signal (day time) and 27 dB for fading wanted signal (night time).

NOISE

Administration	Proposals or comments
F.R. Germany (Document No. 6)	The correction factor to be applied to the minimum field strength to be protected for frequencies other than 1 MHz is the same as adopted by the African LF/MF Broadcasting Conference (Fig. 7 in the Final Acts of the Conference).
Roumania (Document No. 7)	It is not considered "that atmospheric and even man-made noise (except on long waves) are of any importance, in view of the very high level of radio interference caused by other transmitters".

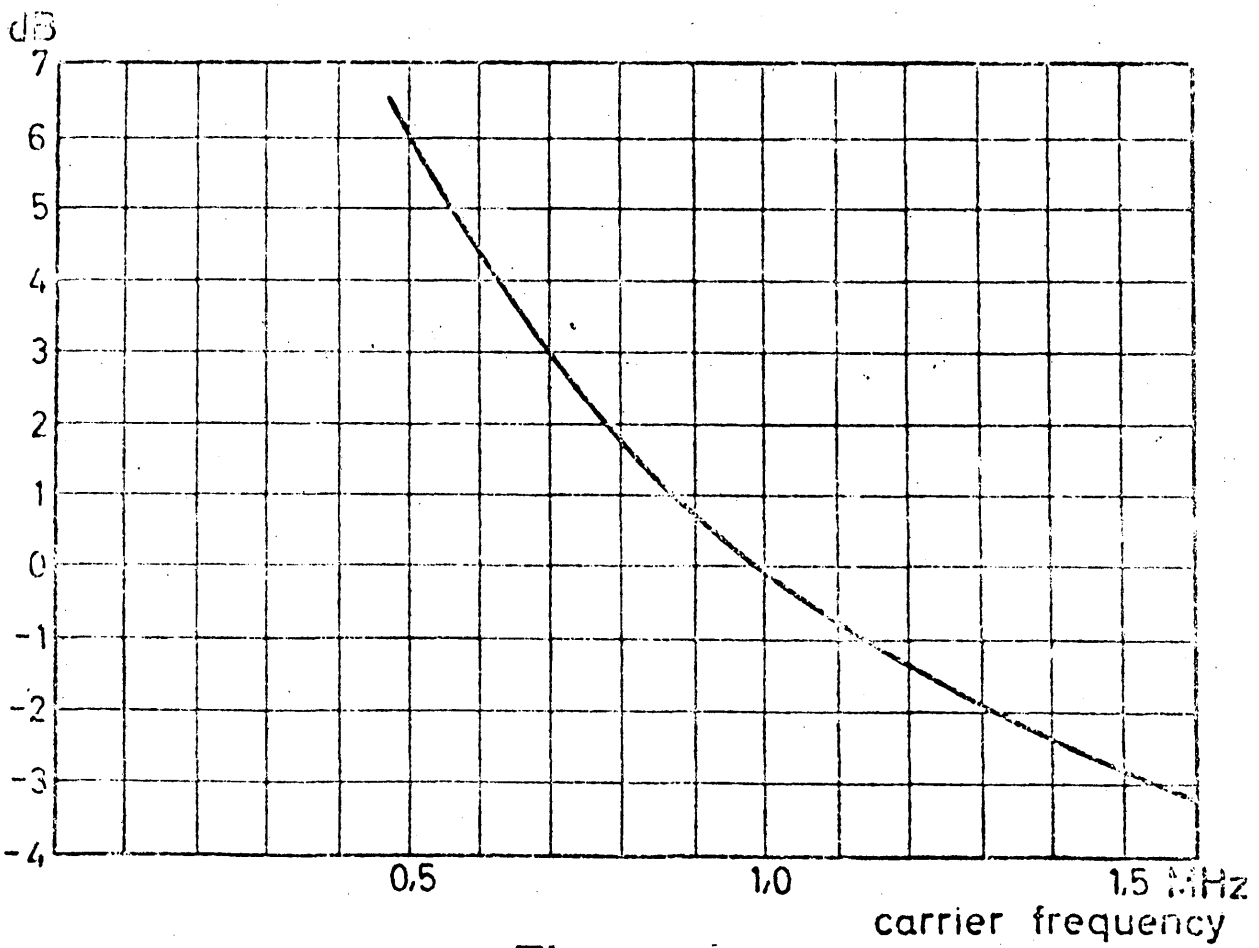

Figure
Correction factor of minimum field strength

RECEIVER CHARACTERISTICS

Administration	Proposals or comments
United Kingdom (Document No. 2)	Future receiver design should overcome any increase in susceptibility to adjacent channel interference due to reduction in channel spacing to 8 kHz.
F.R. Germany (Document No. 6)	"The intermediate frequencies used in receivers of the LF and MF bands" should be integral multiples of channel spacing.
German Democratic Republic (Document No. 21)	Intermediate frequencies of sound broadcasting receivers are proposed to be integral multiples of the uniform channel spacing.

MINIMUM FIELD STRENGTH

Administration	Proposals or comments
F.R. Germany (Document No. 6)	The value of 60 dB above 1 µV/m for the minimum field strength, is appropriate for Europe.
U.S.S.R. (Document No. 18)	a) at 150 kHz : 73 dB b) at 500 kHz : 64 dB c) at 1 000 kHz : 60 dB d) at 1 500 kHz : 58 dB

INTERNATIONAL TELECOMMUNICATION UNION

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COMMITTEE 4

TERMS OF REFERENCE OF WORKING GROUP 4C

Chairman : Mr. M. CHEF (France)

Terms of reference : To consider questions relating to the bands shared between the broadcasting services and the other radiocommunication services, i.e. :

- 150 - 285 kHz for Region 1

- 525 - 535 kHz for Region 3

Documents to be considered : Doc. No. 22

J. RUTKOWSKI
Chairman, Committee 4

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. DT/7-E
7 October 1974
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COMMITTEE 5

The Committee 5 has formed two working groups, namely Working Group 5A under the Chairmanship of Mr. C. Terzani (Italy) and Working Group 5B under the Chairmanship of Mr. Ben Youssef (Tunisia).

1. The terms of reference of Working Group 5A are as follows :

- to study the planning methods in LF and MF bands, taking into account the Service area, the coverage and the categories of transmission

- to study the division of MF band into sub-bands for various types of coverage.

The Working Group shall take into consideration the following documents :

2, 6, 7, 8, 9, 10 + Addendum, 12, 15, 18, 25, 28, 30, 31, 33, 34, 35, 40.

2. The terms of reference of Working Group 5B are as follows :

- to study the problems relating to the use of synchronized networks in a frequency assignment plan

- to the problems relating to the use of international common channels in a frequency assignment plan.

The Working Group shall take into consideration the following documents :

5, 9, 10 + Addendum, 18, 28, 33, 40.

K.R. BINZ
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. DT/8-E
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Original : English

WORKING GROUP 4A

Document No. 4 submitted by the C.C.I.R.

to the African LF/MF Broadcasting Conference,

16 September 1964

As requested by the Delegation of the Republic of Zambia, this Document No. 4 has been reproduced.

P. KNIGHT
Chairman, Working Group 4A

Annex : 1

INTERNATIONAL TELECOMMUNICATION UNION
AFRICAN BROADCASTING CONFERENCE
GENEVA 1964

Document No. 4-E
16 September 1964
Original : French

PLENARY MEETING

C.C.I.R. Secretariat

REVISED PROVISIONAL EQUIVALENT GROUND CONDUCTIVITY MAP FOR AFRICA

Recommendation No. 1, concerning measurements of equivalent ground conductivity in Africa, by the Preparatory Meeting of Experts of the African LF/MF Broadcasting Conference (Geneva, 1964) recommended inter alia : "that the Administrations or broadcasting organizations in Africa should submit to the C.C.I.R. Secretariat, for use by the African LF/MF Broadcasting Conference, the results of measurements of equivalent ground conductivity already completed or which may be made before the Conference".

Administrations or organizations of the following countries have replied to this Recommendation :

The United Arab Republic communicated the results of measurements of conductivity in the Nile Delta. From these, it appears that equivalent ground conductivity in that area exceeds 30 mmho/m, and is probably between 30 and 50 mmho/m. Higher levels of conductivity have been observed in areas near the coast. In the Nile Valley, south of Cairo, conductivity is 10 mmho/m.

The Republic of the Congo (Brazzaville) and France reported the results of measurements of ground conductivity in the Brazzaville area on 1484 kc/s, during the rainy season. From these, it may be deduced that ground conductivity in the Brazzaville region is from 1 to 3 mmho/m. These values tally with those shown on the provisional map in the Report by the Preparatory Meeting of Experts.

France submitted the results of measurements of ground conductivity in Reunion. From these it may be deduced that ground conductivity in the coastal region in the North of Reunion is 1 mmho/m. It appears from isolated measurements carried out in other areas of Reunion that ground conductivity is approximately 1 mmho/m in fairly level areas, and distinctly below this figure in mountainous districts. Measurements were made on 620 kc/s in the dry season.

The Islamic Republic of Mauritania communicated the results of measurements carried out in the vicinity of Nouakchott, on 1349 kc/s, in desert country. The curve for this terrain suggests that conductivity is less than 1 mmho/m.

The Federation of Nigeria reported that equivalent ground conductivity in the proximity of Ibadan was $\delta = 1.5$ mmho/m and the dielectric constant $\varepsilon = 4$.

The Group of Territories represented by the French Overseas Post and Telecommunications Agency reported the results of ground conductivity measurements on the French Somali Coast. From these it may be deduced that ground conductivity there approximates to 3 mmho/m for a frequency of 1538 kc/s. No significant rainfall occurred during the periods before these measurements were made.

Southern Rhodesia submitted the results of measurements in the area around Salisbury. These measurements, carried out on 584 and 890 kc/s, gave the value $\delta = 3$ mmho/m.

The Republic of the Senegal reported the results of measurements in the dry season in the vicinity of Dakar. The number of measurements carried out, and their distribution, did not permit determination of an accurate value for ground conductivity in the area concerned.

The Republic of South Africa communicated the results of the 1949-52 measurement campaign, together with a supplementary study on the accuracy of the measurements obtained. For the region round Keetmanshoop in South-West Africa, for instance, the estimated error was $\pm$ 45% (measurement frequency - 260 kc/s).

The median value for conductivity in the Orange Free State and South-East Transvaal is said to be approximately 20 mmho/m, with standard deviation of + 50% and - 25%.

The corresponding values for Basutoland are said to be 3 mmho/m, with standard deviations of + 40% and - 30%.

It appears from this study that the error in average conductivity values exceeds 20%.

The Administration of the Republic of South Africa also forwarded a conductivity map for a frequency of 500 kc/s, using the same classes of conductivity as the Provisional Map of Equivalent Ground Conductivity for Africa. This has been corrected accordingly by the C.C.I.R. Secretariat.

East Africa reported that it is not in a position to supply any measurement of ground conductivity whatsoever, for lack of suitable measuring instruments.

Conclusions

The map reproduced as an annex reflects all the measurement results reported to the C.C.I.R. Secretariat up to September 1964. To obtain an idea of the accuracy of the new map, reference may be made to the estimate of the accuracy of the map made in the Report by the Preparatory Meeting of Experts, Part 1, page 3.

This map, based on measurements of 7,000 paths, gives a relative accuracy of approximately -46% to +85%. Since, except for certain comparatively limited areas of Africa, no results of measurements are available, the appended map may be described as only rough approximation for those parts not based on actual measurements. That being so, it would seem unwise to attempt to draw a map with classes of conductivity narrower than those contained in Table 2, on page 3 of the Report by the Preparatory Meeting of Experts. Nevertheless the width of the conductivity ranges corresponding to these classes is considered to be the major source of error.

For the purpose of choosing precise locations for broadcasting stations later on, a close study will have to be made of ground wave propagation conditions, which may differ from the conditions corresponding to the appended map.

Annex : 1

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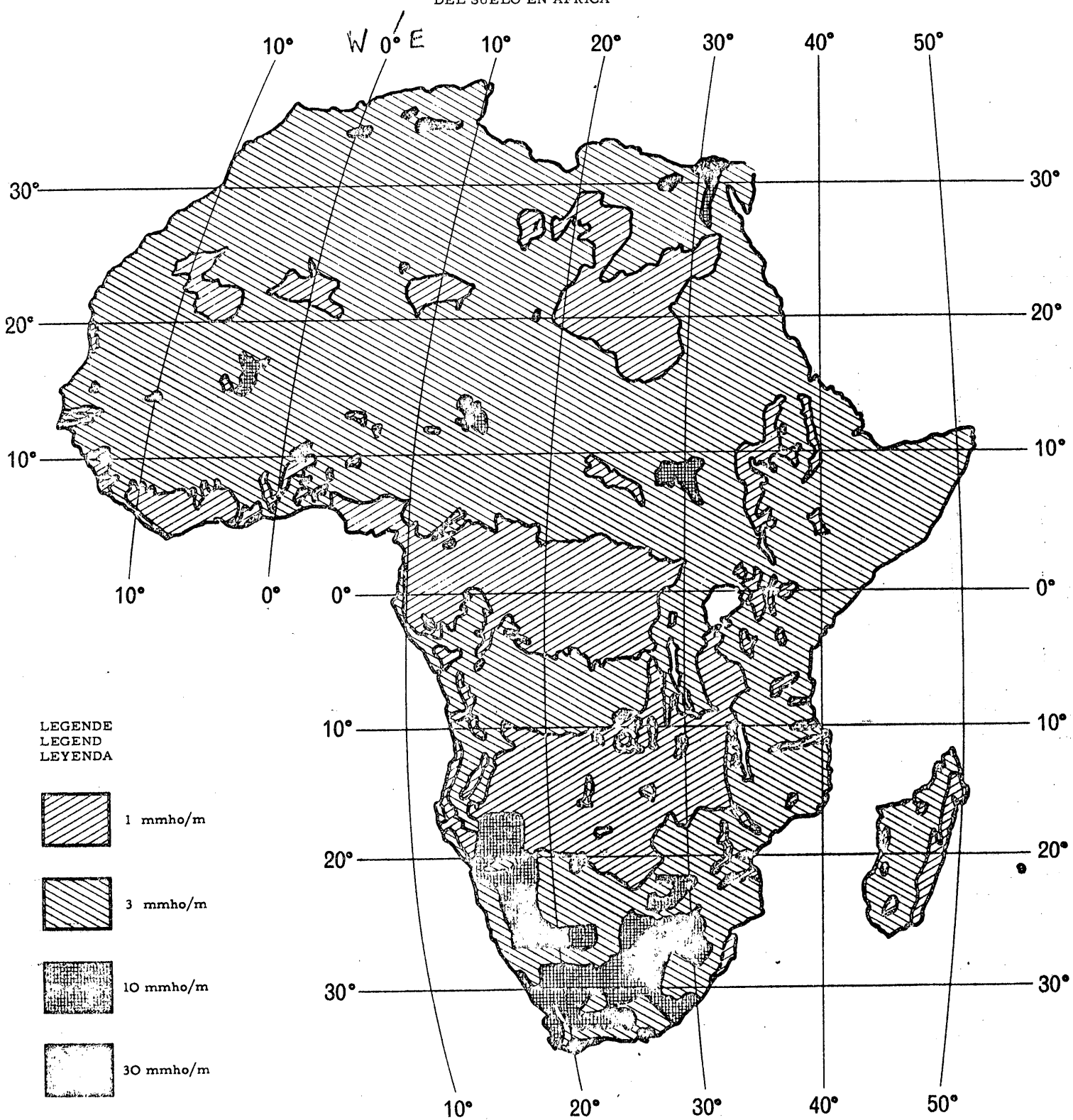
ANNEXE
ANNEX
ANEXO

CARTE PROVISOIRE DE LA CONDUCTIVITE EQUIVALENTE
DU SOL EN AFRIQUE

PROVISIONAL EQUIVALENT GROUND CONDUCTIVITY
MAP FOR AERICA

CARTA PROVISIONAL DE LA CONDUCTIVIDAD EQUIVALENTE
DEL SUELO EN ÁFRICA



INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. DT/9-E
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Original: English

WORKING GROUP 4B

DRAFT

FIRST REPORT OF WORKING GROUP 4B TO COMMITTEE 4

1. Class of emission

The Working Group considered the relevant documents submitted to the Conference together with relevant C.C.I.R. documentation and agreed on the text contained in the Annex.

In several documents it was pointed out, that it is desirable in future to make more economic use of the LF and MF broadcasting bands. Possible solutions are single sideband and independent single sideband transmissions.

The point of view was emphasized, that C.C.I.R. should be asked to carry out further studies on this matter. Following the opinion of the meeting final discussion on this subject was postponed.

2. Power

Following the decision of Committee 4 the Working Group 4B considered power of transmitters not in connection with propagation phenomena, ionospheric cross-modulation and frequency planning, but only in connection with definition and measurement of power. In this connection C.C.I.R. Rec. 326-...(Doc. 1/1026) was found to be useful information for the work of the Broadcasting Conference.

Annex: 1

G. GROESCHEL
Chairman
Working Group 4B

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A N N E X

Technical standards

Class of emission

The work of the Broadcasting Conference shall be based on a system with double side band amplitude modulation.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Addendum to
Document No. DT/10-E
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WORKING GROUP 4A

ANNEX

A GRAPHICAL METHOD FOR ESTIMATION OF PROPAGATION OVER MIXED PATHS

The C.C.I.R. Recommendation 368-2 (Rev. 74 contains a semi-empirical method to be used for the calculation of field strengths over mixed paths (inhomogeneous smooth earth). This method is generally easy to use, particularly with the aid of a computer.

For planning purposes where the coverage of a certain transmitter is needed, a graphical procedure, based on the same method, might be convenient for a quick estimation of the distance at which the ground wave field strength has a certain value.

A short description of the graphical method is given here.

Figure 1 applies to a path having two sections with different but individually homogeneous electrical constants $\sigma_1\ \varepsilon_1$ and $\sigma_2\ \varepsilon_2$ respectively for the distances d_1 and d_2. Here the complex dielectric constant $\varepsilon(\sigma_1\varepsilon_1) > \varepsilon(\sigma_2\varepsilon_2)$. For distances $d > d_1$ the field strength curve obtained by the C.C.I.R. Rec.368-2 method lies between the curves corresponding to the two different electrical properties E ($\sigma_1\ \varepsilon_1$) and E ($\sigma_2\ \varepsilon_2$). At the distance $d = 2\ d_1$, (where d_1 is the distance from the transmitter to the border separating the two sections,) the curve goes through the mid-point (the mean) between the curves E ($\sigma_1\ \varepsilon_1$) and E ($\sigma_2\ \varepsilon_2$) provided that the field strength is labelled linearly in dB. In addition, the same curve approaches an asymptote, which differs by m dB from the E ($\sigma_2\ \varepsilon_2$)-curve as indicated in Figure 1 where m is the difference in dB between the curves E ($\sigma_1\ \varepsilon_1$) and E ($\sigma_2\ \varepsilon_2$) at $d = d_1$ and their mean. The point at $d = 2\ d_1$ and the asymptote make it easy to draw the resulting field strength curve.

Figure 2 also shows the resulting curve for a two section path with electrical constants now changing from σ_2 ε_2 to σ_1 ε_1 where the complex dielectric constant $\varepsilon(\sigma_1 \varepsilon_1) > \varepsilon(\sigma_2 \varepsilon_2)$ as above. The corresponding procedure can be applied here bearing in mind that the asymptote is now parallel to the E (σ_1 ε_1)-curve.

For paths consisting of more than two sections, each change can be considered separately in the same way as the first change. The resulting curve has to be a continuous curve, and the portions of curves are displaced parallel to the value at the end of the previous section.

Figure 3 indicates how the approximate graphical method can be used to find the distance (coverage) where the field strength is 1 mV/m for a transmitted power of 100 kW over a path having several sections with different values of conductivity.

By means of ground-wave propagation curves for the three different values of conductivity where the field strength is given in dB relative to 1 μV/m for a transmitted power of 1 kW, the graphical procedure is repeated for the various sections. The values 1 mV/m and 100 kW correspond to 40 dB relative to 1 μV/m and 1 kW, which gives a distance (coverage) of 170 km in the example.

Using the graphical method it should be convenient to have ground-wave propagation curves for some different sets of electrical constants at each frequency concerned. Examples of such curves are given in Figures 4 and 5 for 200 and 700 kHz. Further sets of curves can easily be prepared for a number of frequencies by means of Recommendation 368-2 (Rev. 74).

A full description of the approximate graphical method is given by K.N. Stokke (to be published).

The accuracy of this method is dependent on the difference in slope of the field strength curves, and is therefore to an extent dependent on the frequency. For LF frequencies, the difference between the method described in C.C.I.R. Rec. 368-2 and the approximate method is normally minimal, but for the highest MF frequencies the differencies can be up to 3 dB for most paths.

Fig. 6 of this Annex is a comparison between the exact method and the approximate method carried out by the use of a computer.

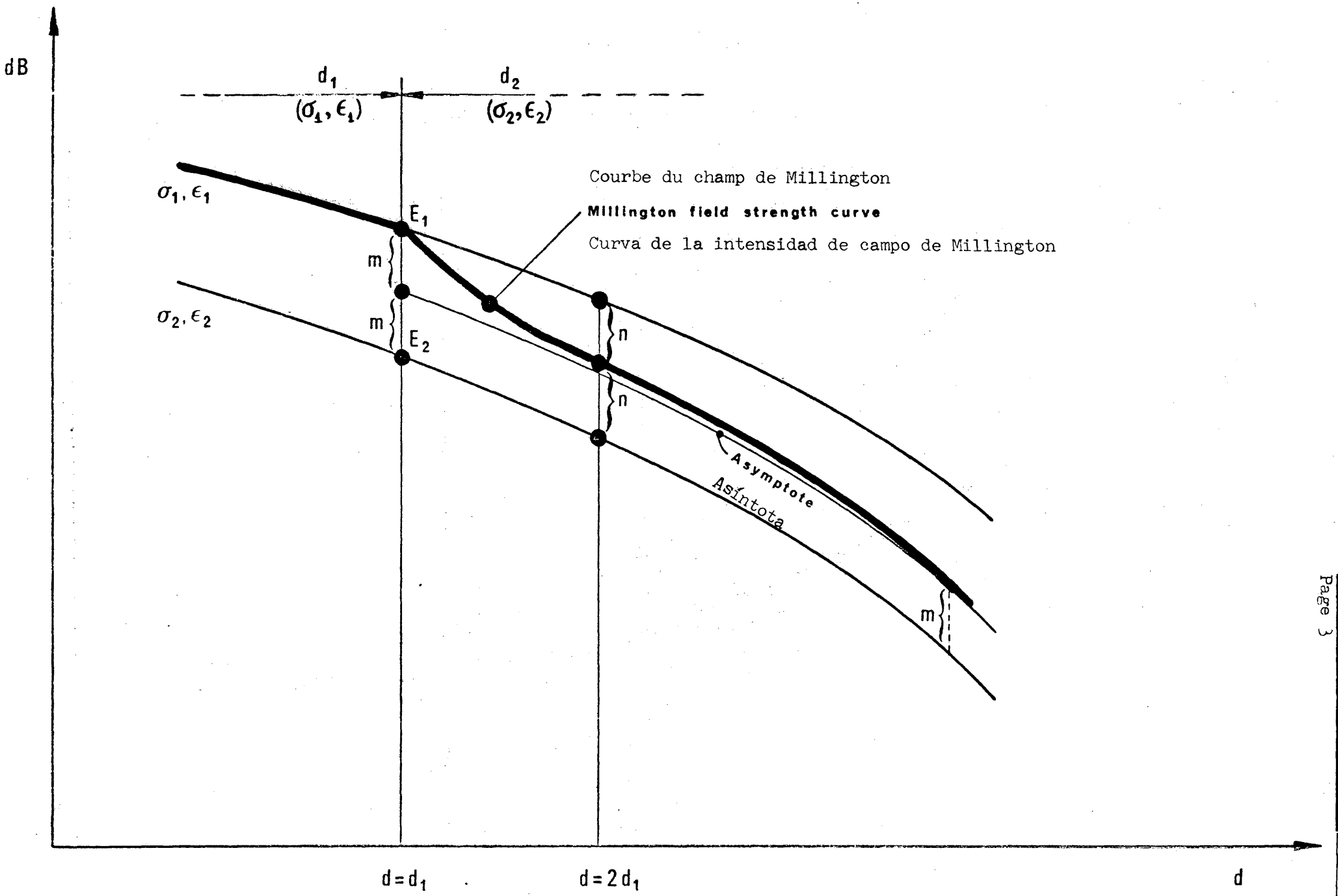


Figure 1 - Figura 1

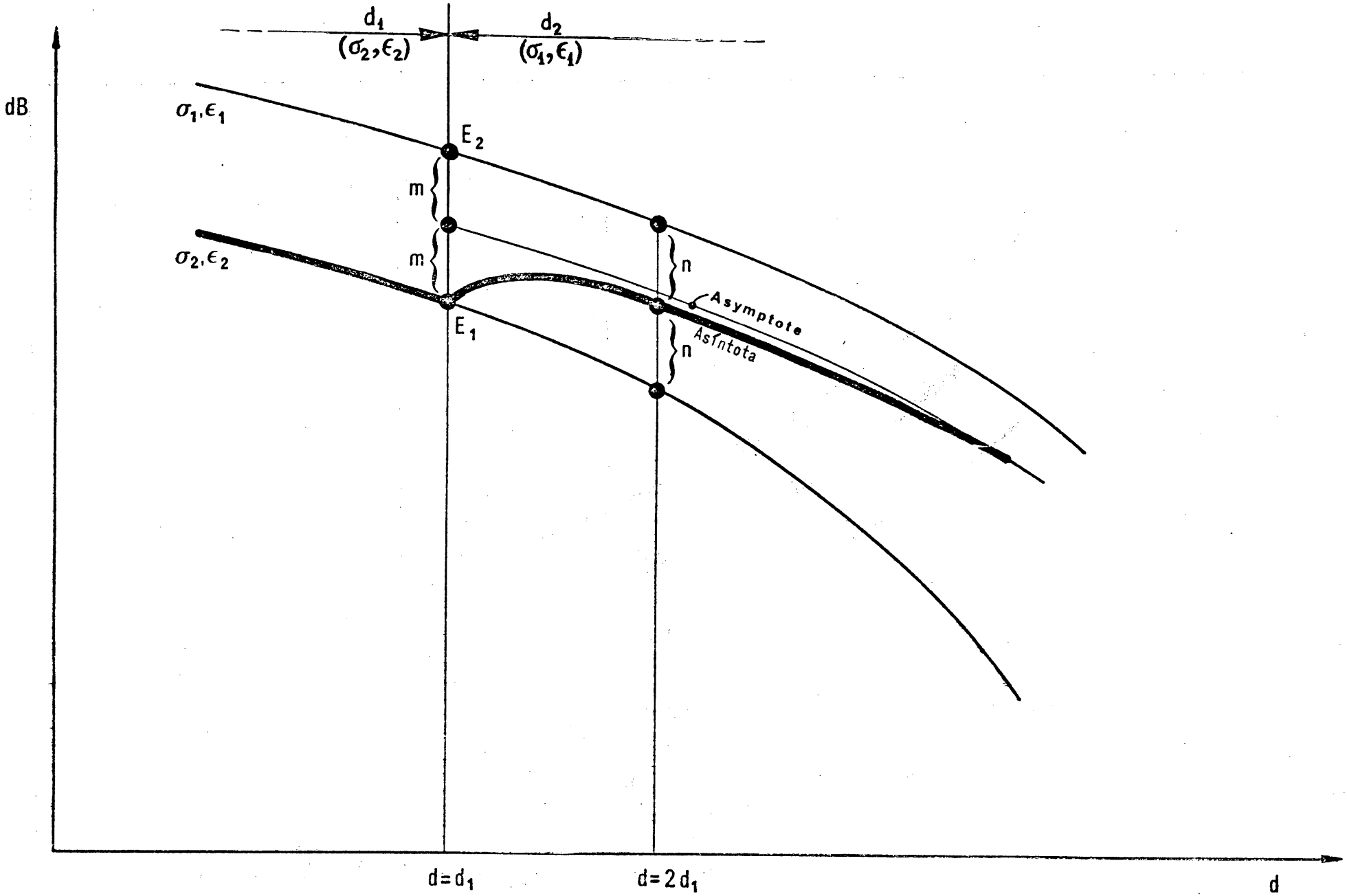
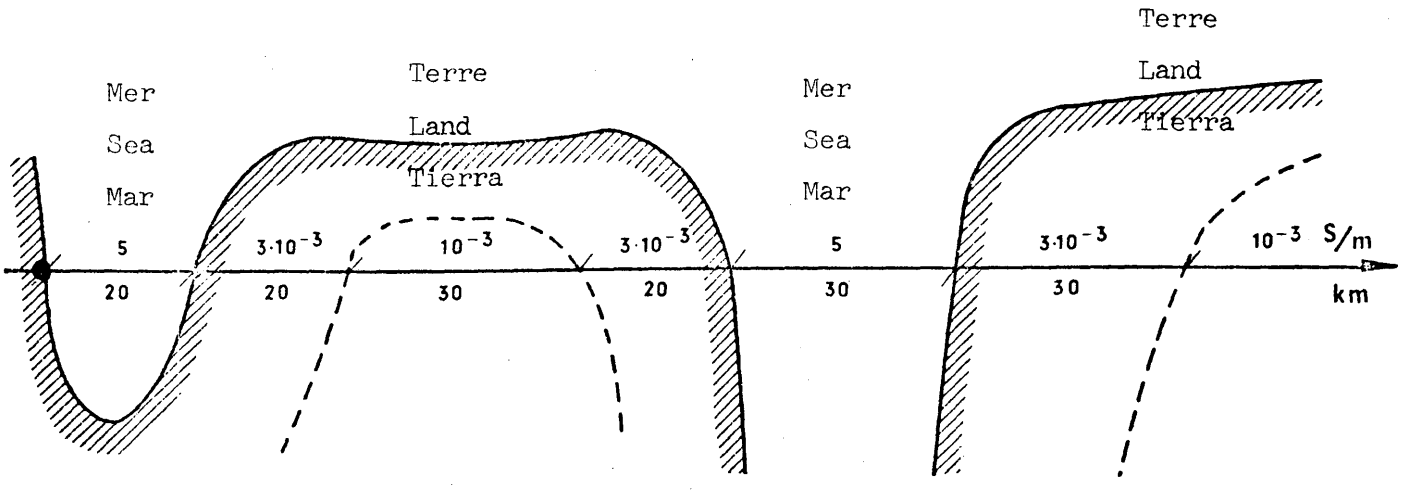
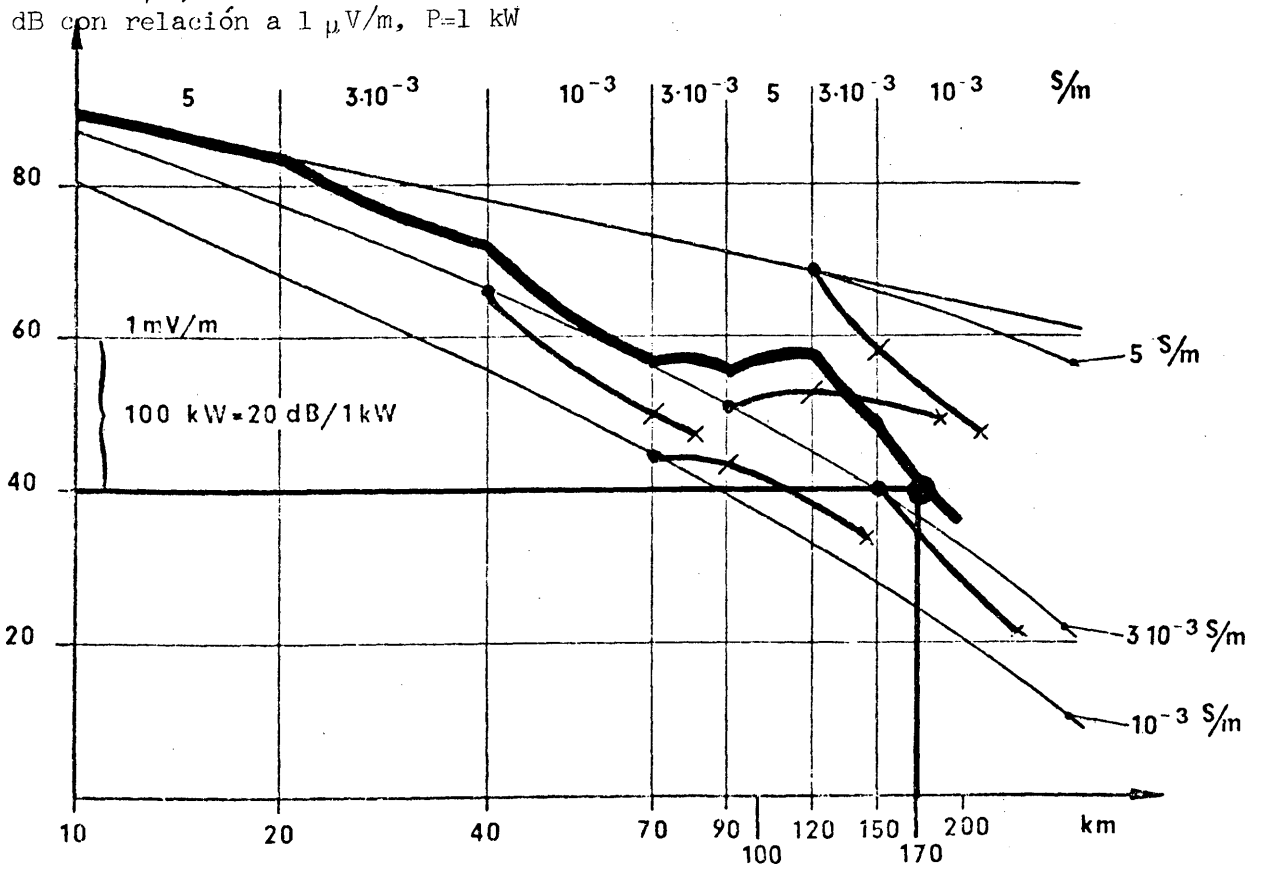


Figure 2 - Figura 2



dB par rapport à 1 µV/m, P=1 kW
dB over 1 µV/m, P=1 kW
dB con relación a 1 µV/m, P=1 kW



700 kHz

Figure 3 - Figura 3

dB par rapport à 1 μ V/m, P=1 kW

dB over 1 μ V/m, P=1 kW

dB con relación a 1 μ V/m, P=1 kW

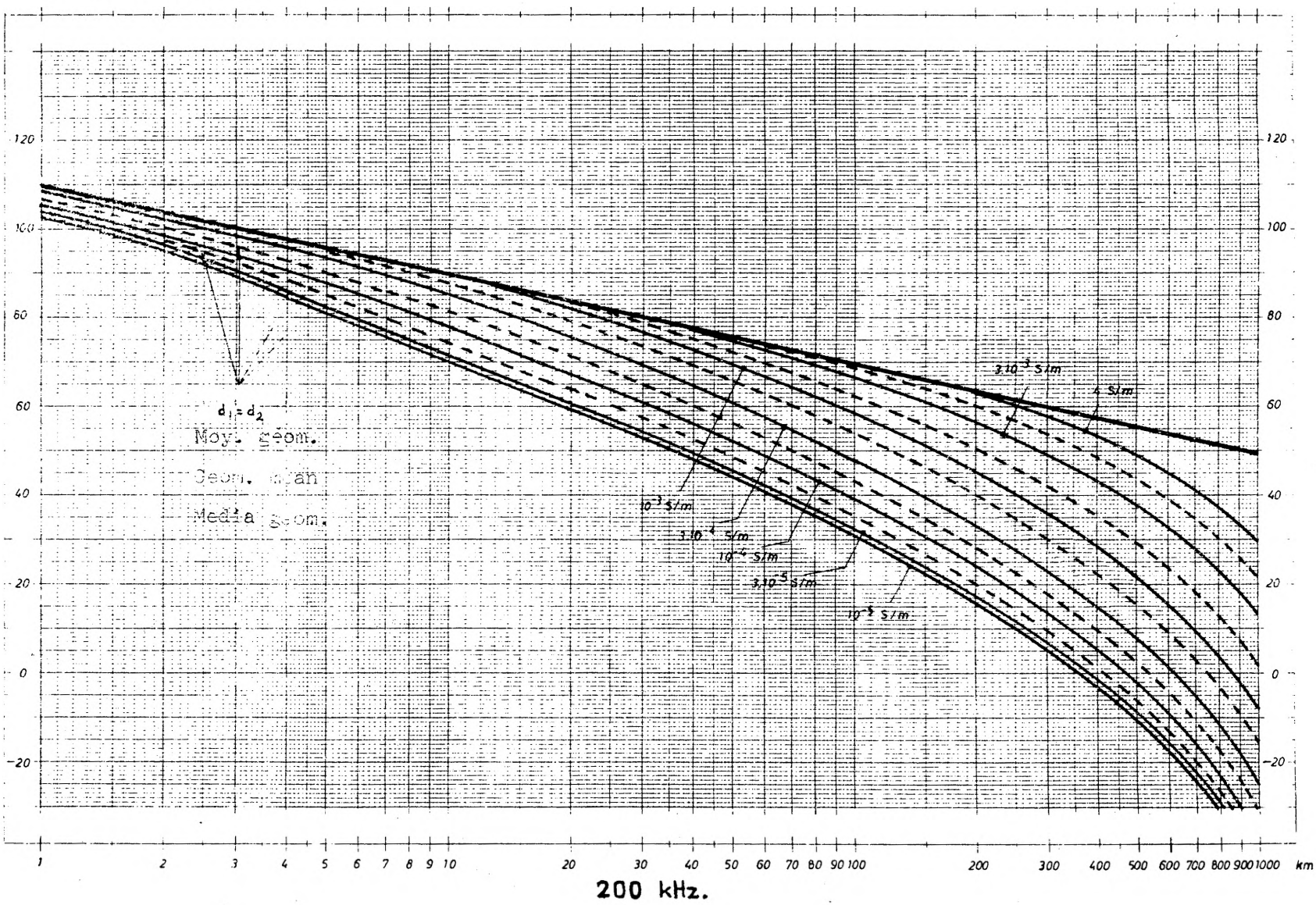


Figure 4 - Figura 4

dB par rapport à 1 μV/m, P=1 kW

dB over 1 μV/m, P=1 kW

dB con relación a 1 μV/m, P=1 kW

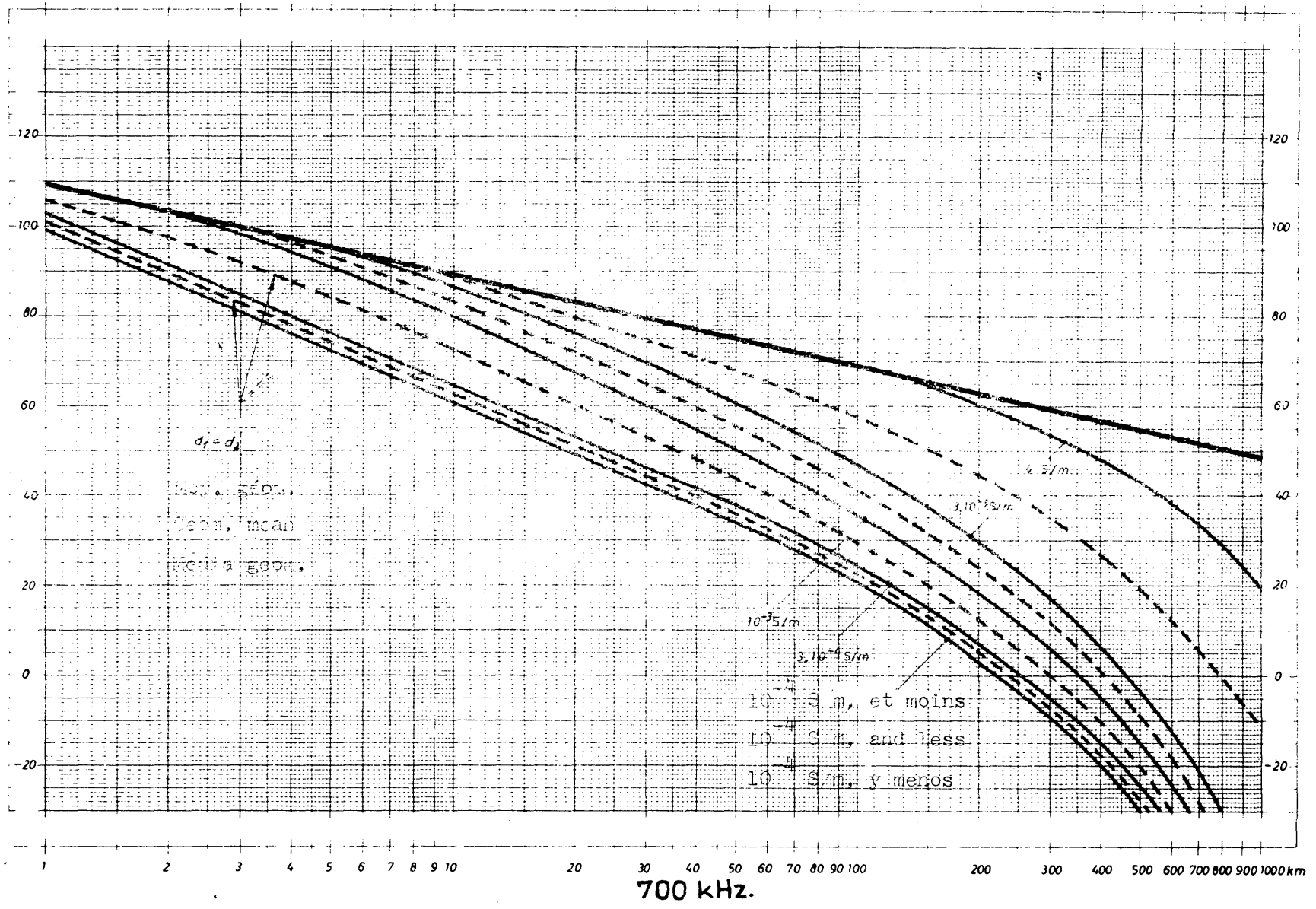
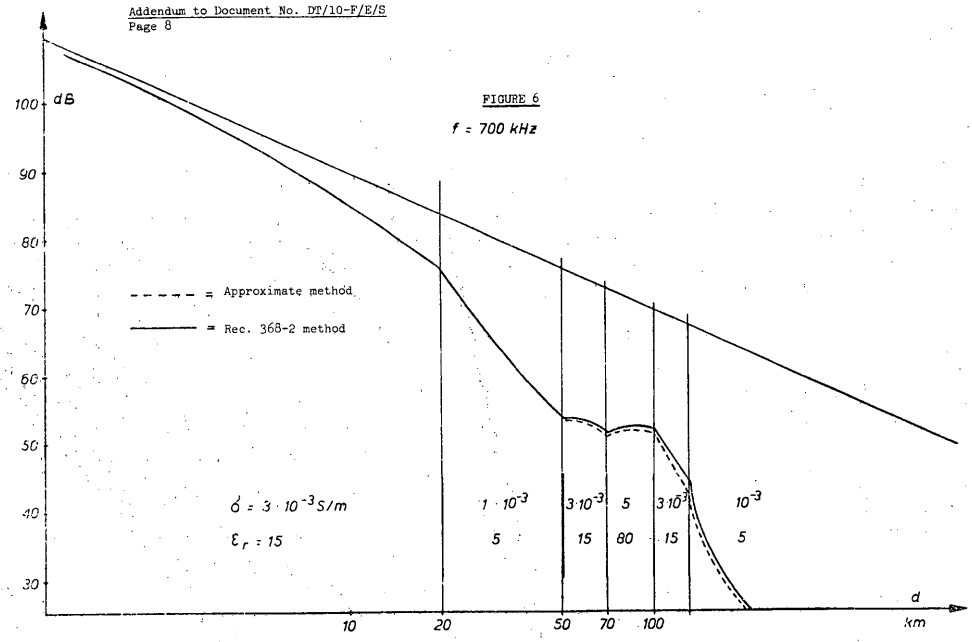
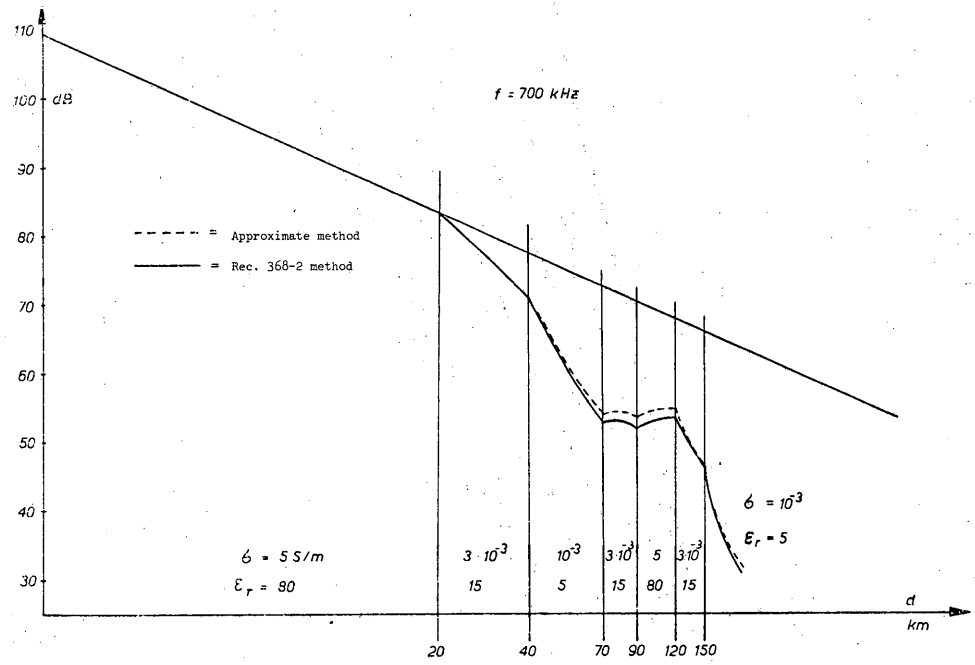
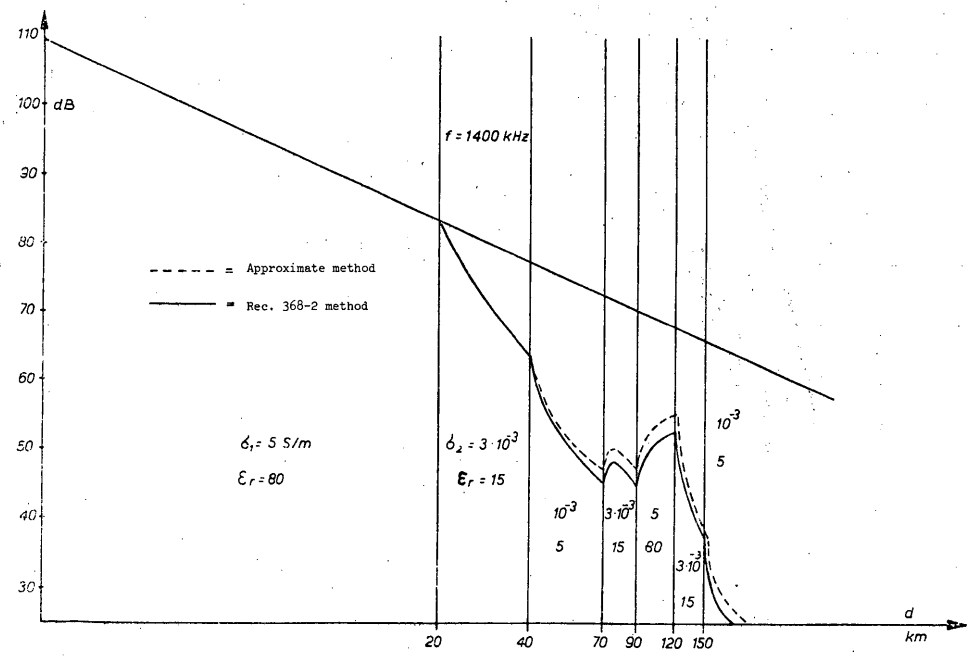


Figure 5 - Figura 5

FIGURE 6


f = 700 kHz
dB
d
km
= Approximate method
= Rec. 368-2 method
σ = 3 · 10⁻³ S/m
εr = 15
1 · 10⁻³
3·10⁻³
5
3·10⁻³
10⁻³
5
15
80
15
5
10
20
50
70
100


f = 700 kHz
dB
d
km
= Approximate method
= Rec. 368-2 method
σ = 5 S/m
εr = 80
3 · 10⁻³
10⁻³
3·10⁻³
5
3·10⁻³
σ = 10⁻³
εr = 5
15
5
15
80
15
20
40
70
90
120
150


f = 1400 kHz
dB
d
km
= Approximate method
= Rec. 368-2 method
σ1 = 5 S/m
εr = 80
σ2 = 3 · 10⁻³
εr = 15
10⁻³
5
10⁻³
3·10⁻³
5
3·10⁻³
15
5
15
80
15
20
40
70
90
120
150

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

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WORKING GROUP 4A

REPORT OF DRAFTING SUB-GROUP 4A-1

1. Ground-wave propagation

1.1 It is proposed to use the C.C.I.R. Recommendation 368-2 to determine the ground-wave field-strength.

1.2 To calculate the ground-wave field strength over a mixed path (with different values of ground conductivity), it is proposed to use the method described in the C.C.I.R. Recommendation 368-2. Annex I contains a simplified manual method which enables a more rapid approximate calculation.

2. Ground conductivity

It is proposed to recommend to Committee 6 to include among the data to be requested from all Administrations information relating to ground conductivity, as detailed as practicable. The values used should preferably be to the nearest values for which the curves of C.C.I.R. Recommendation 368-2 have been prepared, i.e. 3×10^{-2}, 10^{-2}, 3×10^{-3}, 10^{-3}, 3×10^{-4}, 10^{-4}, 3×10^{-5}, 10^{-5} S/m. In the absence of the above information a value of 10^{-2} S/m should be used.

C.C.I.R. Report 229-2 contains information on the electrical characteristics of the surface of the earth.

K.N. STOKKE
Chairman
Drafting Sub-Group 4A-1

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WORKING GROUP 5B

REPORT OF SUB-WORKING GROUP 5B-2 ON INTERNATIONAL COMMON FREQUENCIES

1. Terms of reference

1.1 To consider the presently used term International Common Frequency (ICF) and to recommend whether in any new plan, this term or a new term should be applied to MF channels used in the same or in a similar way.

1.2 To consider alternative proposals for planning methods applied to such MF channels and to recommend a method for adoption.

2. Considerations

The Sub-group have given consideration to these matters and in particular have taken account of Document No. 5 and of Document No. 49.

2.1 Nomenclature

It is considered that the term ICF does not properly describe such channels; all channels are international and all are to some degree common. The Sub-group have noted that the essential feature of these channels is that they are to be used only for low power assignments so that some form of simplified coordination procedure may be used.

The Sub-group therefore recommend use of the term Low Power Channels (LPCs).

2.2 Existing method

In the Copenhagen Plan, countries were entitled to use ICFs with transmitter powers up to 2 kW without consultation with other administrations. Stations subsequently added could use transmitter powers up to 0.25 kW. The availability of ICFs has been found valuable although experience has shown that the existing planning method is not entirely satisfactory.

2.3 New methods

Two new methods have been considered and in a sense they are similar; both recognize that it would be acceptable for a new station operating on a LPC to be added without need for full coordination, provided that the level of usable field strength in a neighbouring country is not caused to increase to an unacceptable level.

The first proposal, from the United Kingdom, is described in Document No. 5. The method allows normal coordination to be dispensed with if the calculated field strength in a neighbouring country does not exceed some critical level. In the example given, this value is taken to be 54 dBμV/m although, finally, the value would depend upon protection ratio and minimum usable field strength data to be decided by Committee 4.

The second proposal was from Italy and is described in Document No. 49. In this case, normal coordination may be dispensed with if a station radiating more than a certain level of power towards a neighbouring country is outside a given distance from that country. As for the first proposal, the precise values of power and distance would depend upon data from Committee 4.

With similar assumptions for protection ratios etc, the two methods would lead in practice to similar results. The main difference occurs in the way that the methods are intended to be applied. The United Kingdom proposal is for the method to be used for all planning of assignments in LPCs whereas the proposal from Italy is that, in any new plan, the frequency assignments would all be made initially using the normal planning procedure. The method would be applied only for subsequent changes or additions.

After discussion, the Sub-group concluded that the proposal from Italy would be the more acceptable to the Working Group.

2.4 Additional factors

In their discussions, the Sub-group thought that the criteria in the method should be based upon the Effective Monopole Radiated Power (emrp) towards a neighbouring country and that in no case should this exceed 1 kW. In addition no assignments in a LPC should be used to operate as a synchronized group except when the equivalent power of the group is less than 1 kW.

Taking note of presently accepted values of minimum usable field strength and protection ratio, it appears that use of these methods would not lead to difficulty with adjacent channel interference, provided

that LPC assignments were not adjacent in frequency to those for sky-wave services. Additionally, it is recommended that the LPCs should be separated from each other in order to allow simultaneous use in one area.

2.5 Further consideration

Final values for criteria would depend upon data from Committee 4. It is, however, for consideration whether the acceptable increase in nominal interfering field strength given as an example in the document from Italy is preferred. In the example, this was 0.1 dB, corresponding to the addition of a new source of interference 16 dB less than the nominal interfering field strength. As a further example, for a 1 dB increase, the corresponding value for the new source would be 12 dB less than the nominal interfering field strength.

3. Recommendations

3.1 That the term Low Power Channel (LPC) replaces the present term International Common Frequency (ICF).

3.2 That for modification or addition to any new plan, a simplified coordination procedure may be used for stations operating in the LPCs. This should be based upon the proposal from Italy (Document No. 49). Final numerical values are to be determined from data given by Committee 4 together with the further considerations mentioned in section 2.5 of this document.

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WORKING GROUP 4A

SECOND DRAFT REPORT OF EDITORIAL SUB-GROUP 4A-3

TO WORKING GROUP 4A

PROPAGATION BY SKY-WAVE

The following proposals are made for the sky-wave propagation prediction methods to be adopted for LF/MF planning.

Within I.T.U. Region 1 and for Australia and New Zealand, the method recommended in C.C.I.R. Recommendation 435-1, described in Section 7 and in the Annex of Report 575 (Document 6/1083(Rev.1)), should be used. In I.T.U. Region 1 the basic propagation formula is given by Equation (1) of the Annex of Report 575. In Australia and New Zealand the basic propagation formula is given by Equation (13) of the Annex of Report 575.

Within the Asian part of Region 3, the Cairo North-South curve, or a mathematical formula which gives the same result, should be used. No corrections should be made for sea gain or for polarization coupling loss.

For sky-wave field-strength prediction, the boundary between Australia and New Zealand and the Asian part of Region 3, shall be described by geographic latitude 11° South.

The method which should be used for paths which pass from one region to another should be that which applies at the mid-point of the great-circle path.

Within the whole of I.T.U. Regions 1 and 3, the reference transmitting aerial is a semi-isotropic source which radiates with a cymomotive force of 300 V. Corrections must be applied to calculated field-strenghts to take account of the actual cymomotive force, which should be determined by one of the methods described in Section 1.2 of C.C.I.R. Report 618 (Document 10/1003). Section 2.2 of the Annex to C.C.I.R. Report 575 should be disregarded.

Within the whole of I.T.U. Regions 1 and 3, the corrections for nocturnal, day-to-day and short-period variations of field-strength, given in Sections 3 and 4 of the Annex to C.C.I.R. Report 575, should be applied.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Addendum to
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WORKING GROUP 4A

DRAFT REPORT OF DRAFTING SUB-GROUP 4A-2

Examples of the use of the sky-wave field-strength prediction method described in Section 7 of C.C.I.R. Doc. 6/1083 (Rev.1)

Figure numbers quoted below refer to C.C.I.R. Doc. 6/1083 (Rev.1).

1) Short distance path

Data

Transmitter	Rome (Italy)
Receiver	Darmstadt (F.D.R.)
Great-circle distance	950 km
Frequency	845 kHz

Basic field strength (Annex Fig. 4) 45.5 dBμ

Geomagnetic latitude of transmitter $\Phi_T = 44°$

Geomagnetic latitude of receiver $\Phi_R = 52°$ } Annex Fig. 8

Geomagnetic latitude parameter $\Phi = \frac{\Phi_T + \Phi_R}{2} = 48°$

Basic loss factor (Annex Fig. 5) 7.2

Attenuation contributed by loss factor = $7.2 \times 950 \times 10^{-3} = 6.9$ dB

Annual median field strength = 45.5 - 6.9 = 38.6 dBμ

2) Long distance path with one terminal near the sea and the other in the tropical region

Data

Transmitter	Riyad (Saudi Arabia)	
Receiver	Helsinki (Finland)	(2 km from sea)
Great-circle distance	4 280 km	
Frequency	587 kHz	

Basic field strength (Annex Fig. 4) 32.5 dBμ

Geomagnetic latitude of transmitter $\Phi_T = 18°$

Geomagnetic latitude of receiver $\Phi_R = 58°$ } Annex Fig. 8

	First half of path	Second half of path
Geomagnetic latitude parameter	$\frac{3\Phi_T + \Phi_R}{4} = 28°$	$\frac{\Phi_T + 3\Phi_R}{4} = 48°$
Basic loss factor (Annex Fig. 5)	4.1	6.9

Average loss factor = $\frac{4.1 + 6.9}{2} = 5.5$

Attenuation contributed by loss factor $= 5.5 \times 4\ 280 \times 10^{-3}$
$= 23.5$ dB

Dip latitude of transmitter I (Annex Fig. 9) = 30°

Direction of propagation relative to magnetic east-west at transmitter, θ = 70°

Polarisation coupling loss at transmitter (Annex Fig. 7) = 0.5 dB

Sea-gain for terminal on the coast, G_o (Annex Fig. 2) = 9.0 dB

Reduction in sea-gain because receiver is 2 km from sea $= \frac{10^{-3} \times 1.75 \times 2 \times 587}{9.0} = 0.2$ dB

Sea-gain G_s = 9.0 - 0.2 = 8.8 dB

Annual median field strength = 32.5 - 23.5 + 8.8 - 0.5 = 17.3 dBμ

Note: These two examples give the field strength produced by a semi-isotropic source radiating with a cymomotive force of 300 V. Corrections for antenna gain (Annex Fig. 1) and for transmitter power are not included. The reference time is 6 hours after sunset. For other times, use should be made of Annex Fig. 3.

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WORKING GROUP 4A

DRAFT REPORT OF DRAFTING SUB-GROUP 4A-2

Propagation by sky-wave

Agreement could not be obtained on the sky-wave propagation prediction method to be adopted for LF/MF planning.

The use of the C.C.I.R. method defined in Rec. 435-1, (the method described in paragraph 7 and in Annex to Report ... (Doc. 6/1083, Rev. 1) was proposed by the U.S.S.R., France and the E.B.U. but this was opposed by the delegate of Pakistan on the grounds that it was too complex.

The People's Republic of China and Pakistan proposed the use of the Cairo North-South curve for the Asian part of Region 3 because it was considered that the C.C.I.R. method is inaccurate for this region.

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WORKING GROUP 4A

FIRST DRAFT REPORT OF DRAFTING SUB-GROUP 4A-3

IONOSPHERIC CROSS-MODULATION

The sub-group recommends for the planning in the Regional Broadcasting Conference not to consider the influence of the ionospheric cross-modulation.

Information on ionospheric cross-modulation is to be found in the C.C.I.R. Documents particularly in Report 460.

INTERNATIONAL TELECOMMUNICATION UNION

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WORKING GROUP 4A

SECOND DRAFT REPORT OF DRAFTING SUB-GROUP 4A-3

DIRECTIONAL ANTENNAE

1. In order to facilitate planning, it should be borne in mind that in some cases directional antennae can be used.

Present technical knowlege shows that there is no particular technical difficulty about constructing antennae with high back protection within a wide angular sector in the horizontal and vertical planes.

Thus it has been possible to obtain with a 3 mast antenna a front to back ratio of over 25 dB over a sector of 80° in the horizontal plane and 40° the vertical plane. For planning purposes a value of 20 dB would appear to be reasonable for radiation in the horizontal plane and 15 dB for radiation in the vertical plane. Administrations could, however, agree to other values of protection in special cases.

Present techniques also make it possible to obtain very varied radiation diagrams utilizable in certain cases.

Antennae with low radiation at high elevation angles can also be built, which, for a ground-wave service at night, enable the area affected by fading to be further away from the transmitter.

2. The Plan should be drawn up without taking into account the directivity of receiving antennae.

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Original : French

WORKING GROUP 4A

THIRD DRAFT REPORT OF EDITORIAL SUB-GROUP 4A-3

C.M.F. - E.M.R.P.

In defining the radiation of transmitters it is recommended that the concepts of c.m.f. and e.m.r.p. defined in C.C.I.R. Report 10/1003 be used simultaneously.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

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WORKING GROUP 5B

1st REPORT BY WORKING GROUP 5B

TO COMMITTEE 5

1. Definition

Synchronized Network : group of broadcasting transmitters whose carrier frequencies are identical or differ only slightly, usually by a fraction of an Hz, and which broadcast the same programme.

2. For the purposes of planning and for determining the probabilities of harmful interference, a network of synchronized transmitters may generally be represented by an equivalent single transmitter of which the characteristics are calculated according to the method described in Appendix .....*) (see Annex 1).

3. Annex 2 contains a draft Recommendation.

Annexes : 2

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*) More details can be found in C.C.I.R. Reports Nos. 459 and 616.

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ANNEX 1

APPENDIX .....

CALCULATION OF INTERFERENCE IN THE CASE OF A SYNCHRONIZED NETWORK

1. Interference caused by a synchronized network

In the simple but frequent case in which the transmitters of the synchronized network use omnidirectional antennae and in which the transmitters are sufficiently close together, the interference can be calculated by replacing the transmitters by an equivalent single transmitter. This transmitter will be located at the "centre of gravity" of the network. This centre is determined as that of various masses, the mass in this case being the square of the c.m.f. of each of the transmitters (or the e.m.r.p. of each transmitter). The radiation of this equivalent transmitter will be the sum of the radiations of each transmitter of the network (i.e. the sum of the squares of the c.m.f. or the arithmetical sum of the e.m.r.p.).

If the transmitters of the network are equipped with directional antennae, the same rules apply for the calculation of the interference in a given direction (that of the transmitter to be protected). In this case, the centre of gravity and the radiated power of the equivalent transmitter will depend on the direction considered. The calculation of the centre of gravity must be effected with the masses proportionate to the radiated power of the transmitters in the direction considered. In the same way, the radiated power of the equivalent single transmitter will be determined by adding up the radiated powers of each transmitter in the direction considered.

Let D be the distance between any transmitter of the network and any transmitter not belonging to the group and suffering interference, and D' the distance of the centre of gravity of the network from this transmitter. It is assumed that the previous method is acceptable only if :

$| D - D' | \leq 0.15D$ in the case of co-channel interference

$| D - D' | \leq 0.25D$ in the case of adjacent channel interference

If the conditions described above for the distances are not fulfilled, the general method will be applied, which consists in calculating the interference caused by each transmitter in the synchronized network and adding up the squares of the interference fields. This method is clearly valid in all cases, and can be applied systematically if the validity of the equivalent transmitter method is challenged.

The radio frequency protection ratio to be applied for interference caused by a synchronized network suffered by the service of any other transmitter is the same as for a single transmitter.

2. Interference suffered by a transmitter of the synchronized network

The interference suffered by a transmitter belonging to a synchronized network can be due to :

- the other transmitters of the synchronized network (internal interference);
- other transmitters (external interference).

In the case of external interference, the protection ratio is considered to be the same as in the case of a single transmitter.

In the case of internal interference, the protection ratio is regarded as a problem specific to each country. However, in order to compare different frequency plans, it is necessary to calculate the coverage of the transmitters of a synchronized network. This coverage is determined in the same way as in the general case, namely, by calculating for each transmitter the usable field by the formula :

$$E_u = \sqrt{\Sigma\,(a_e E_{be})^2 + \Sigma\,(a_i E_{bi})^2 + E_m^2}$$

where E_{be} and E_{bi} are the external and internal interference fields,

a_e and a_i are the corresponding protection ratios, and

E_m is the minimum usable field.

This formula corresponds to that given in C.C.I.R. Recommendation 499. In this calculation, the internal protection ratio a_i for the purposes of planning objectives is taken as / 8 / dB.

A N N E X 2

DRAFT RECOMMENDATION

USE OF SYNCHRONIZED NETWORKS

The Regional LF and MF Broadcasting Conference,

considering

that synchronized networks present considerable advantages over an equivalent single transmitter and therefore should be employed in much larger numbers in any frequency assignment plan;

that a synchronized network covers a greater area than the equivalent single transmitter; this increase, which depends on the local conditions and the composition of the network, may be large;

that the population coverage is in most cases increased to an even greater extent, since a synchronized network makes it possible to set up transmitters providing a higher field strength in the most densely populated areas; the population coverage may be doubled or increased even more;

that subject to the rules explained in Appendix ...., the interference caused by a synchronized network to transmitters in the same channel or adjacent channels is practically identical to that which would be caused by the equivalent single transmitter;

that in view of the present congestion of the LF and MF bands, transmitter synchronization is one of the few ways of keeping most of the transmitters in operation in a country and reducing the number of channels required; this is a particularly important advantage;

that transmitters can be synchronized on any channel in the band employed (LF or MF);

that the composition of a synchronized network may take a wide variety of forms, consisting, for example, of a small number of high-power transmitters or a large number of low-power transmitters, or a combination of both types of transmitter;

that synchronization methods, which previously called for complex equipment, monitoring centres and a large number of highly skilled technicians, are nowadays simplified; indeed there is no problem at all if atomic oscillators are used since these oscillators provide a more than adequate stability frequency for many years without requiring any maintenance or supervision; various countries are already using such oscillators while others are planning to introduce them universally;

that the only limitation of the synchronized network is the need to broadcast the same programme at night-time. However, different programmes may be broadcast in daylight hours except in cases where the transmitters are very close together and cause mutual ground-wave interference;

recommends

that in developing their broadcasting network in the LF and MF bands administrations use synchronized networks to the maximum extent possible.

Note : Additional technical information of synchronized networks will be found in C.C.I.R. Reports Nos. 459 and 616, and in Publication TECH 3210 of the E.B.U. "Synchronized groups of transmitters in MF and LF broadcasting".

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. DT/16-E
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WORKING GROUP 5B

REPORT OF SUB-GROUP 5B-1 TO WORKING GROUP 5B

Synchronized networks*)

Synchronized networks should be used on a much wider scale in a future frequency plan, since they offer considerable advantages over an equivalent single transmitter. Let us first define the equivalent single transmitter as a transmitter which, in a given direction, has the same radiated power as the sum of the radiated powers of the transmitters of the synchronized network. When the antennae are identical and omnidirectional, the power of the equivalent single transmitter is equal to the sum of the transmitters of the synchronized network.

The advantages are as follows :

- The synchronized network covers a greater area than the equivalent single transmitter. This increase, which depends on the local conditions and the composition of the network, may be large.

- The population coverage is in most cases increased to an even greater extent, since a synchronized network makes it possible to set up transmitters in the most densely populated areas, thus taking advantage of a higher wanted field strength. The population coverage may be doubled or increased even more.

- Subject to the rules explained below, the interference caused by a synchronized network to transmitters in the same channel or adjacent channels is practically identical to that which would be caused by the equivalent single transmitter.

- In view of the present congestion of the LF and MF bands, transmitter synchronization is one of the few ways of keeping most of the transmitters in operation in a country and reducing the number of channels required; this is a particularly important advantage.

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*) Synchronized network : A group of broadcasting transmitters whose carrier frequencies are identical or differ only slightly, usually by a fraction of a Hz, and which broadcast the same programme.

The following considerations may be added :

- The transmitters may be synchronized irrespective of the band employed (LF or MF).

- The composition of a synchronized network may take a wide variety of forms, consisting, for example, of a small number of high-power transmitters or a large number of low-power transmitters, or a combination of both types of transmitter.

- The synchronization methods, which previously called for complex equipment, monitoring centres and a large number of highly skilled technicians, are nowadays simplified. There is even no problem at all if atomic oscillators are used since these oscillators provide a more than adequate stability frequency*) for many years without requiring any maintenance or supervision. The present cost of these oscillators, still rather higher than that of the conventional type, is absolutely negligible in comparison with the advantages which they offer. They will certainly get cheaper in the next few years. Various countries are already using such oscillators while others are planning to introduce them universally.

The only drawback of the synchronized network is the need to broadcast the same programme at night-time. However, different programmes may be broadcast in daylight hours except in cases where the transmitters are very close together and cause mutual ground-wave interference.

The bibliography [3] contains a detailed study of the technical problems connected with the synchronized network (theoretical study, composition of networks, determination of coverage, synchronization methods, etc.).

Rules for the calculation of interference

1. Interference caused by a synchronized network

In the simple but frequent case in which the transmitters of the synchronized network use omnidirectional antennae and in which the transmitters are sufficiently close together, the interference can be calculated by replacing the transmitters by an equivalent single transmitter. This transmitter will be located at the "centre of gravity" of the network. This centre is determined as that of various masses, the mass in this case being the square of the c.m.f. of each of the transmitters (or the e.m.r.p. of each transmitter). The radiation of this equivalent transmitter will be the sum of the radiations of each transmitter of the network (i.e. the sum of the squares of the c.m.f. or the arithmetical sum of the e.m.r.p.).

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*) The frequency precision required for each synchronized network transmitter is about $\pm 0.5 \times 10^{-7}$.

Let D be the distance between any transmitter of the network and the foreign transmitter to be protected and D' the distance of the centre of gravity of the network from the foreign transmitter to be protected. It is assumed that the previous method is acceptable only if :

- $| D - D' | \leq 0.15$ when the foreign transmitter of the network is in the same channel

- $| D - D' | \leq 0.25D$ when the foreign transmitter of the network is in the adjacent channel

If the transmitters of the network are equipped with directional antennae, the same rules apply for the calculation of the interference in a given direction (that of the transmitter to be protected). However, the calculation of the centre of gravity must be effected with the masses proportionate to the radiated power of the transmitters in the direction considered. In the same way, the radiated power of the equivalent single transmitter will be determined by adding up the radiated powers of each transmitter in the direction considered. In this case, the centre of gravity and the radiated power of the equivalent transmitter will depend on the direction considered.

If the conditions described above for the distances are not fulfilled, the general method will be applied, which consists in calculating the interference caused by each transmitter in the synchronized network and adding up the squares of the interference fields. This method is clearly valid in all cases, and it is perhaps easier to apply than that of the equivalent transmitter in cases where the transmitters of the network use directional antennae. It should be applied systematically if the validity of the equivalent transmitter method is challenged.

The protection ratio to be applied for interference by a synchronized network is the same as for a single transmitter.

2. Interference caused to a transmitter of the synchronized network

This interference is due :

- to the foreign transmitters (external interference)

- to the other transmitters of the synchronized network (internal interference).

In the case of external interference, the protection ratio is considered to be the same as for a single transmitter.

In the case of internal interference, the protection ratio is regarded as a problem specific to each country. However, in order to compare different frequency plans, it is necessary to calculate the coverage of the transmitters of a synchronized network. This coverage is determined in the same way as in the general case, namely, by calculating for each transmitter the usable field by the formula :

$$E_u = \sqrt{\Sigma (a_e E_{be})^2 + \Sigma (a_i \Sigma_{bi})^2 + E^2_m}$$

where E_{be} and E_{bi} are the external and internal interference fields,

a_e and a_i are the corresponding protection ratios, and

E_m is the minimum usable field.

This is the same formula as that given in C.C.I.R. Recommendation 499.

For the purpose of this calculation, the internal protection ratio a_i is taken as ... dB.

BIBLIOGRAPHY

1. C.C.I.R. Report 459

2. C.C.I.R. Report 616

3. Doc. TECH 3210 of the European Broadcasting Union (August 1974).

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. DT/17-E
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WORKING GROUP 4B

DRAFT

SECOND REPORT OF WORKING GROUP 4B TO COMMITTEE 4

TECHNICAL STANDARDS

NECESSARY BANDWIDTH

1. According to provision No. 91 of the Radio Regulations the necessary bandwidth of a broadcasting transmitter is the minimum value of the occupied bandwidth sufficient to ensure the transmission of information with the quality required for the system employed, under specified conditions. This value should be decided by the Administration responsible for the transmitter within the range 9 kHz (AF - bandwidth 4.5 kHz) to 20 kHz (AF - bandwidth 10 kHz).

2. The necessary bandwidth of the emission is one of the parameters that influence the adjacent channel protection ration required, as indicated by the curves of C.C.I.R. Rec. 449*. This is one of the parameters that may in certain cases be the subject of bilateral negotiations between Administrations in the second session of the Conference.

3. Committee 6 should be requested to include the necessary bandwidth among parameters of an emission to be given when submitting requirements to the second session of the Conference.

*) This reference may require revision in the light of the Working Group's conclusions about relative protection-ration curves.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

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WORKING GROUP 4C

DRAFT REPORT OF WORKING GROUP 4C TO COMMITTEE 4

1. In accordance with the terms of reference (Document DT/6), Working Group 4C studied the questions relating to the bands shared between the broadcasting service and other radiocommunication services. In this study it specially took into account the documents Nos. 22, 34, 38 and 41.

2. The present situation of the assignments recorded in the Master Register, maintained by the I.F.R.B., in the shared bands in question is as follows :

a) 150 - 160 kHz (Region 1) :

4 assignments of the broadcasting service
13 assignments of the maritime mobile service

b) 255 - 285 kHz (Region 1) :

11 assignments of the broadcasting service
12 assignments of the maritime mobile service
1 assignment of the fixed service
207 assignments of the aeronautical radionavigation service in Europe
215 assignments of the aeronautical radionavigation service in Africa

c) 525 - 535 kHz (Region 3) :

6 assignments of the broadcasting service
1 assignment of the aeronautical mobile service
17 assignments of the maritime mobile service

3. The technical data presented by the Administrations of France and Belgium was noted; it concerns particularly the operation of the aeronautical radionavigation service in the presence of broadcasting stations. Study of this question is, however, not within the competence of the present Conference.

Nevertheless, it is useful to examine the existing provisions relating to the conditions of sharing among services which are established by the texts in force.

The various cases that are encountered are studied below.

3.1 150 - 160 kHz band (Region 1) : shared between the maritime mobile and broadcasting services

- Nos. 174 and 175 of the Radio Regulations
- European Broadcasting Convention , Copenhagen, 1948, Article 2 paragraph 2a), Article 6 paragraph 3a)
- Procedure of Article 9 of the Radio Regulations

3.2 255 - 285 kHz band (Region 1) : shared among the maritime mobile, broadcasting and aeronautical radionavigation services

- Nos. 174, 175, 176 (alternative allocation), 177 and 178 of the Radio Regulations
- Document annexed to the Additional Protocol to the Acts of the International Radio Conference of Atlantic City, 1947, paragraph 7
- European Broadcasting Convention, Copenhagen, 1948, Article 2 paragraph 2a), Article 6 paragraph 4(2)
- No. 423 of the Radio Regulations
- Service range of radiobeacons - Nos. 435, 436, 437 of the Radio Regulations
- Protection of radiobeacons against interference - Nos. 433 and 434 of the Radio Regulations (at least 10 dB)

  (Note : I.C.A.O. prescribes 15 dB in Annex 10 to the Chicago Convention)

- Procedure of Article 9 of the Radio Regulations

3.3 525 - 535 kHz band (Region 3) : shared between the mobile and broadcasting services (broadcasting service is a permitted service)

- No. 138 of the Radio Regulations for the broadcasting service
- Procedure of Article 9 of the Radio Regulations

4. The Working Group is of the opinion that these provisions should be kept in mind but thinks that during the next revision of the Table of Frequency Allocations (at the World Administrative Radio Conference scheduled to be held in 1979), it would be desirable to avoid allocations which provide for sharing between broadcasting service and other services such as the maritime mobile and aeronautical radionavigation services.

4.1 In fact, it is not for the present Conference to fix technical criteria concerning radiocommunication services other than the broadcasting service in the LF/MF bands for Regions 1 and 3.

5. Besides, at the second session of this Broadcasting Conference which will be required to establish a Plan, if that session were to envisage new assignments in the shared bands, the conditions of putting into use of such assignments will have to be laid down in the form of an appropriate coordination procedure. (Article 9 of the Radio Regulations or any other special provisions that may be required.)

5.1 Finally, the provisions of Nos. 116 and 117 of the Radio Regulations (Protection of band-edges and coordination between Region) shall apply in any case.

M. CHEF
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

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WORKING GROUP 5A

REPORT OF DRAFTING SUB-GROUP 5A-1

Principles of Planning

Working Group 5A recommends that the LF/MF Broadcasting Conference should draw up a new LF/MF broadcasting frequency assignment plan for Regions 1 and 3.

The Group considers that planning should take place in accordance with the principle that all countries, big or small, should be equal in rights. It should also be based on the needs of individual Administrations for the provision of satisfactory reception conditions for all people, taking into account the different conditions in the countries of Regions 1 and 3, especially the needs of the developing countries.

A number of countries expressed the view that they would prefer to have a more technical planning principle based on a unit of coverage.

The Group considers that it is highly desirable to have uniform channel spacing in the whole of the planned area. Indeed, the application of this principle throughout the whole world would be ideal.

The Group considers that both ground-wave and sky-wave may be used. The ground-wave may be used for the coverage of both large and small areas.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

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WORKING GROUP 5A

REPORT OF DRAFTING SUB-GROUP 5A-1

Working Group 5A recommends that the LF/MF Broadcasting Conference should draw up a new LF/MF broadcasting frequency assignment plan for Regions 1 and 3.

The Group considers that planning should take place on the basis of the requirements of individual administrations and should be based on the provision of equivalent coverage to all countries, taking into account the different conditions in the countries of Regions 1 and 3, and special requirements of the developing countries.

One unit of coverage permits the provision of one programme to one hundred per cent of the population of the country. This programme may be different in different parts of the country. By equivalent coverage is meant the provision of the same number of units of coverage.

Pakistan considers that the definition of one unit of coverage should be as follows :

> "One unit of coverage permits the provision of one programme, or more than one programme on the basis of multi-lingual requirements of a country, to one hundred per cent of the population of the country. This programme may be different in different parts of the country or in different languages in the same area, to provide one hundred per cent coverage in each language to that area. By equivalent coverage is meant the provision of the same number of units of coverage."

The Group considers that it is highly desirable to have uniform channel spacing in the whole of the planned area. Indeed the application of this principle throughout the whole world would be ideal.

The Group recommends the adoption of the definition of service area of a broadcasting transmitter as given in C.C.I.R. Recommendation 499 viz :

"4. Service area (of a broadcasting transmitter)

The area within which the field-strength of a transmitter is equal to or greater than the usuable field-strength."

The Group considers that both ground-wave and sky-wave may be used / subject to the provisions of R.R. 423 /. The ground-wave may be used for the coverage of both large and small areas.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

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COMMITTEE 7

DRAFT PLAN FOR THE REPORT ON THE

1st SESSION OF THE CONFERENCE

(proposed by the Chairman and Vice-Chairmen of Committee 7)

Preamble

Chapter 1 : Definitions

Chapter 2 : Propagation

2.1 Ground-wave propagation

2.2 Sky-wave propagation

2.3 Cross-modulation

Chapter 3 : Broadcasting standards

3.1 Channel centre frequencies (channel spacing and centre frequency of each channel)

3.2 Class of emission

3.3 Emission bandwidth

3.4 Compression of modulation

Chapter 4 : Transmission characteristics

4.1 Transmitter power :

- definition
- maximum value(s)
- case of synchronized networks

4.2 (If the Conference so decides) :
frequency stability (in particular for synchronized networks)

4.3 Transmitter antennae

- polarization
- gain
- horizontal and vertical directivity

UNION INTERNATIONALE DES TELECOMMUNICATIONS

CONFERENCE DE RADIODIFFUSION

(PREMIERE SESSION) GENEVE, 1974

Addendum No 2 au
Document No DT/21(Rev.)-F/E/S
18 octobre 1974
Original : français, anglais, espagnol

GROUPE DE TRAVAIL 6A
WORKING GROUP 6A
GRUPO DE TRABAJO 6A

GAIN D'UNE ANTENNE EN ONDES KILOMETRIQUES ET HECTOMETRIQUES

Rapport entre la puissance nécessaire à l'entrée d'une antenne verticale courte placée sur un plan horizontal parfaitement conducteur pour produire une puissance apparente rayonnée sur antenne verticale courte (p.a.r.v.) de 1 kW (force cymomotrice de 300V) dans une direction horizontale et la puissance fournie à l'antenne /- -/ pour produire la même valeur de la puissance apparente rayonnée sur antenne verticale courte (p.a.r.v.) (force cymomotrice)dans une direction donnée .

GAIN OF LF/MF ANTENNA

The ratio of the power required at the input of a short vertical antenna situated on perfectly conducting horizontal plane to produce the reference effective monopole radiated power (e.m.r.p.) of 1 kW (cymomotive force (c.m.f. of 300V) in the horizontal direction, to the power supplied to the /actual/ antenna to produce the same e.m.r.p. (c.m.f.) in the given direction.

GANANCIA DE UNA ANTENA EN ONDAS KILOMÉTRICAS Y HECTOMÉTRICAS

Relación entre la potencia aplicada a la entrada de una antena vertical corta situada sobre un plano horizontal perfectamente conductor necesaria para producír una potencia aparente radiada con respecto a una antena vertical corta (p.a.r.v.) de 1 kW (fuerza cimomotriz de 300V) en una dirección horizontal y la potencia sumunistrada a la entrada de una antena dada para producír el mísmo valor de p.a.r.v. (potencia aparente radiada con respecto a una antena vertical corta) o de la fuerza cimomotriz en una dirección dada.

M.HARBI
Président
Chairman
Presidente

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

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WORKING GROUP 6A

DRAFT ANNEX

TO THE FORM ON WHICH ADMINISTRATIONS ARE TO SUBMIT THEIR FREQUENCY REQUIREMENTS TO THE I.T.U.

Detailed instructions concerning the information to be entered in the various boxes in the form

1. Administration — Name of the administration submitting the requirement.

2. Name of transmitting station — Indicate the name of the locality by which the station is (or will be) known by or in which it is (or will be) situated.

3. Country — Indicate the country in which the station is (or will be) located, using the symbols appearing in Table 1 of the Preface to the International Frequency List.

4. Coordinates of the antenna

Indicate the geographical coordinates of the site of the transmitter antenna (longitude and latitude, in degrees and minutes).

5. Frequency desired — Indicate the "assigned frequency" (see No. 85 of the Radio Regulations) your Administration would prefer to use. If this is not possible, state in the next box the frequency range (e.g. .....) within which the most suitable assigned frequency could be selected during planning.

6. Frequency range desired

If a frequency has been indicated in the preceding box, indicate here the frequency range(s) within which an alternative frequency could be selected during planning.

7. Necessary bandwidth

Indicate the necessary bandwidth of the emission as defined in No. 91 of the Radio Regulations. The value of this bandwidth should be between 9 kHz (AF-bandwidth: 4.5 kHz) and 20 kHz (AF-bandwidth: 10 kHz).

8. Carrier Power

Indicate the average power supplied to the antenna transmission line by the transmitter during one radio frequency cycle under conditions of no modulation (see No. 97 of the Radio Regulations).

9. Hours of operation (GMT)

Indicate the daily hours of operation of the transmitter (GMT). The first entry should show the time the first emission of the day begins, and the second the time the last emission ends.

Example: | 07 | 23 |

10. and 11. Required service area

Indicate the radius of the required service area round the transmitter, in km, specifying whether the area is served by ground-wave and/or sky wave. In case where directional antenna is used, the approximate co-ordinates of the centre of the required service area and the radius, in km, of the service range shall be indicated.

12. Mean value of ground conductivity in the required service area

Give particulars, in the greatest possible detail, of ground conductivity, preferably rounded off to the nearest values for which the curves in C.C.I.R. Recommendation 368-2 are plotted, namely:

3×10^{-2}, 10^{-2}, 3×10^{-3}, 10^{-3}, 3×10^{-4}, 10^{-4}, 3×10^{-5}, 10^{-5} S/m.

Antenna characteristics

13. and 14. Simple vertical antenna

13. Indicate the height of the antenna (in metres) and

14. its gain with reference to the maximum radiation of a short vertical antenna placed on the surface of a perfectly conducting plane earth.

15. to 17. Antenna other than a simple vertical antenna

15. The form should be accompanied by radiation diagram(s) of the antenna in the horizontal and vertical plane(s).

If this is impossible, indicate:

16. in the horizontal plane:

a) the azimuth of maximum radiation, in degrees, (clockwise) from True North;

b) the total angle, in degrees, within which the power radiated in any direction does not fall more than 6 dB below the power radiated in the direction of maximum radiation;

c) the gain of the antenna, in dB, with respect to the maximum radiation of a short vertical antenna placed on a perfectly conducting plane earth.

17. in the vertical plane:

a) the angle of elevation, in degrees, of maximum radiation;

b) the total angle, in degrees, within which the power radiated in any direction does not fall more than 6 dB below the power radiated in the direction of maximum radiation;

c) the gain of the antenna, in dB, with respect to the maximum radiation of a short vertical antenna placed on aperfectly conducting plane earth.

When the antenna diagram shows substantial secondary lobes indicate on a separate sheet for each lobe the azimuth and the angle of elevation of the radiation in the direction of the lobe axis and the gain, in dB, with respect to the maximum radiation of a short vertical antenna placed on a perfectly conducting plane earth.

18. Distance of the antenna site from the sea, in the case of stationsless than 100 km from the sea

Attach a map (on a scale of at least 1/1,000,000) showing the site of the antenna in relation to the coast if the latter is less than 100 km from the antenna. The scale of the map and direction of True North should be indicated on the map.

19. Synchronized network

If the transmitter forms part, or is intended to form part, of a synchronized network, indicate the name and the corresponding requirement sheet number of the other transmitters in the network. A separate request form must be filled in for each of these stations.

NOTE — If the request corresponds to a frequency assignment already in service, the frequency should be indicated irrespective of whether the Administration wishes to retain the frequency or agrees to its transfer.

The Administration may supply such additional information as it may consider useful on a separate sheet.

M. HARBI
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

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WORKING GROUP 6A

REVISED DRAFT FORM TO BE COMPLETED BY ADMINISTRATIONS WHEN SUBMITTING THEIR FREQUENCY REQUIREMENTS TO THE I.T.U.

M. HARBI
Chairman
of Working Group 6A

Regional Administrative Conference for LF/MF Broadcasting (Geneva, 1975)

1) Administration	Requirement sheet No.

Transmitting station

2) Name	3) Country	4) Coordinates of antenna site	
		Longitude (degrees and minutes)	Latitude (degrees and minutes)
		E W	N S

5) Desired frequency (kHz)	6) Frequency range desired for alternate frequencies (kHz)
	to ... or ... to

7) Necessary bandwidth in kHz	8) Carrier power Pc (kW)	9) Hours of operation (GMT)
A3		

Required service area			12) Mean value of ground conductivity in service area
10) Ground-wave	a) Coordinates of the centre of the area	b) Radius in km	
11) Sky-wave	a) Coordinates of the centre of the area	b) Radius in km	

Antenna characteristics

Simple vertical antenna	Antenna other than simple vertical antenna			
13) Height (metres)	15) Attach the radiation diagrams in the horizontal and vertical planes. (See No. 15 of Annex)			
	16) Horizontal plane	a) azimuth of maximum radiation (in degrees)	b) angular width of the main lobe (in degrees)	c) gain (in dB)
14) Gain in dB (See No. 14 of Annex)				
	17) Vertical plane	a) angle of elevation of maximum radiation (in degrees)	b) angular width of the main lobe (in degrees)	c) gain (in dB)

18) Distance from antenna from sea, for stations at less than 100 km from sea
Attach a map showing the antenna site relative to the coastline (see No. 18 of Annex)

19) Synchronized network	
If the station forms part of a synchronized network, list below other stations forming part of the network and for each such station complete a separate requirement sheet	
Name of the station	Requirement sheet No.

NOTE: If this requirement covers an assignment in use indicate the frequency: ..... kHz.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

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COMMITTEE 6

DRAFT ANNEX

TO THE FORM ON WHICH ADMINISTRATIONS ARE TO SUBMIT THEIR FREQUENCY REQUIREMENTS TO THE I.T.U.

Detailed instructions concerning the information to be entered in the various boxes in the form

Name of transmitting station	Indicate the name of the locality by which the station is (or will be) known by or in which it is (or will be) situated.
Country	Indicate the country in which the station is (or will be) located, using the symbols appearing in Table 1 of the Preface to the International Frequency List.
Coordinates of the antenna	Indicate the geographical coordinates of the site of the transmitter antenna (longitude and latitude, in degrees and minutes).
Frequency desired	Indicate the "assigned frequency" (see No. 85 of the Radio Regulations) your Administration would prefer to use. If this is not possible, state in the next box the frequency range (e.g. .....) within which the most suitable assigned frequency could be selected during planning.
Frequency range desired	If a frequency has been indicated in the preceding box, indicate here the frequency range within which an alternative frequency could be selected during planning.

Necessary bandwidth

Indicate the necessary bandwidth of the transmitter as defined in No. 89 of the Radio Regulations. The value of this bandwidth should be between 9 kHz (AF-bandwidth : 4.5 kHz) and 20 kHz (AF-bandwidth : 10 kHz).

Compression

Indicate by placing a cross in the appropriate box ("yes" or "no") whether or not compression is used. (See C.C.I.R. Recommendation 449 (Document 10/1018)).

Power

Indicate the carrier power as supplied to the antenna transmission line by the transmitter. (see No. 97 of the Radio Regulations).

Cymomotive force (c.m.f.)

Indicate the cymomotive force (in volts) as defined in the C.C.I.R. Report (Document 10/1003) adopted by the XIIIth Plenary Assembly (Geneva, 1974).

Effective monopole radiated power (e.m.r.p.)

Indicate (in kW) the effective monopole radiated power as defined in the C.C.I.R. Report (Document 10/1003) adopted by the XIIIth Plenary Assembly (Geneva, 1974).

Hours of operation (GMT)

Indicate the daily hours of operation of the transmitter (GMT). The first entry should show the time the first emission of the day begins, and the second the time the last emission ends.

Example :

from	to
0715	2300

Service area

Indicate the radius of the service area round the transmitter, in km, specifying whether the area is served by direct or indirect waves. (For the definition of service area see C.C.I.R. Document 10/1031(Rev.1)).

Mean value of ground conductivity
in the service area

Give particulars, in the greatest possible detail, of ground conductivity, preferably rounded off to the nearest values for which the curves in C.C.I.R. Recommendation 368-2 are plotted, namely :

3×10^{-2}, 10^{-2}, 3×10^{-3}, 10^{-3}, 3×10^{-4}, 10^{-4}, 3×10^{-5}, 10^{-5} S/m

In the absence of such information, the value of 10^{-2} S/m should be used.

(See page of the Final Report of this Conference)

Antenna characteristics

- Simple vertical antenna

Indicate the height of the antenna (in metres) and its isotropic gain (see No. 100 of the Radio Regulations).

- Antenna other than a simple vertical antenna

The form should be accompanied by radiation diagram(s) of the antenna in the horizontal /and vertical/ plane(s).

If this is impossible, indicate :

- the azimuth of maximum radiation in degrees clockwise from true north. If the radiation in the horizontal plane has more than one significant maximum, indicate the azimuths of all the maxima, e.g. : 90^{o} / 270^{o};

- the total angle, in degrees projected on a horizontal plane within which the radiated power in any direction is not more than 6 dB below the radiated power in the direction of maximum radiation;

- the isotropic gain of the antenna (in dB) in the direction(s) of maximum radiation (see No. 100 of the Radio Regulations). If the radiation in the horizontal plane has more than one significant maximum, indicate the gain for each of the significant maxima;

- in degrees, from the horizontal plane, the angle of elevation of the antenna in the direction of maximum radiation in the horizontal plane. If the radiation in the horizontal plane has more than one significant maximum, indicate the angle of elevation for each of the significant maxima.

When the antenna diagram shows substantial secondary lobes, indicate for each lobe the azimuth and the angle of elevation of the radiation in the direction of the lobe axis and the isotropic gain.

Distance of the antenna site from the sea, in the case of stations at least 100 km from the sea

Attach a map (on a scale of at least) showing the site of the antenna in relation to the coast if the latter is at least 100 km from the antenna. The scale of the map should be indicated on the map.

If this is impossible, indicate for all azimuths around the antenna, at 10° intervals, the distance of the antenna from the coast.

Synchronized network

If the transmitter forms part, or is intended to form part, of a synchronized network, indicate the name and the geographical co-ordinates of the other transmitters in the network. A separate request form must be filled in for each of these stations.

NOTE

If the request corresponds to a frequency assignment already in service, the frequency should be indicated irrespective of whether the Administration wishes to retain the frequency or agrees to its transfer.

M. HARBI
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. DT/21-E
12 October 1974
Original : French

COMMITTEE 6

DRAFT FORM

TO BE COMPLETED BY ADMINISTRATIONS WHEN

SUBMITTING THEIR FREQUENCY REQUIREMENTS TO THE I.T.U.

Regional Administrative
Conference for
LF/MF Broadcasting
(Geneva 1975)

Administration	Requirement sheet No.

Transmitting station			
Name	Country	Antenna site Longitude (degrees and minutes)	Latitude (degrees and minutes)

Desired frequency	Frequency range desired for alternate frequencies
... kHz	... kHz

Necessary bandwidth	Compression		Peak power (kW)	Cymomotive force (cmf) in maximum direction	Effective radiated power of short vertical antenna (emrp) in maximum direction	Hours of operation (GMT)
	YES	NO				

Service area (radius in km from transmitting antenna)		Mean value of ground conductivity in service area(1)
Ground-wave	Sky-wave	

Antenna characteristics	
Simple vertical antenna	Antenna other than simple vertical antenna
Height (metres)	Attach the radiation diagrams in the horizontal [and vertical] planes. If not possible, indicate below : azimuth of maximum radiation (degrees) ..... angular width of radiation main lobe (in the horizontal plane) ..... antenna gain (in relation to isotropic) ..... angle of elevation of maximum radiation ..... in the case of large secondary lobes, show for each lobe the azimuth and the elevation angle of the radiation of its axis and the gain .....
Gain (in relation to isotropic)	

Distance of anntenna from sea, for stations at less than 100 km from sea

a) Attach a map showing the antenna site relative to the coastline or,
b) show below for all azimuths, in steps of 10 degrees, the distance of the antenna from the coastline :

Azimuth	Distance	Azimuth	Distance	Azimuth	Distance	Azimuth	Distance	Azimuth	Distance	Azimuth	Distance
10°		70°		130°		190°		250°		310°	
20°		80°		140°		200°		260°		320°	
30°		90°		150°		210°		270°		330°	
40°		100°		160°		220°		280°		340°	
50°		110°		170°		230°		290°		350°	
60°		120°		180°		240°		300°		360°	

Synchronized network
If the station forms part of a synchronized network, list below other stations forming part of the network and for each such station complete a separate requirement sheet

NOTE : If this requirement covers an assignment in use indicate the frequency : ..... kHz.
(1) This information will be necessary only if the method described in C.C.I.R. Report 229 is applied.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. DT/22-E(Rev.)
16 October 1974
Original : English

COMMITTEE 5

ADDITIONAL INFORMATION TO BE COMMUNICATED
TO COMMITTEE 7 FOR INCLUSION IN
THE REPORT OF THE FIRST SESSION

Committee 7 has issued Document No. 64, on the draft Plan for the Report on the 1st Session of the Conference. It is proposed that detailed information concerning Chapter 9 be examined by Committee 5 for forwarding to Committee 7. A draft proposal is annexed herewith.

K.R. BINZ
Chairman of Committee 5

Annex : 1

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A N N E X

CHAPTER 9

Chapter 9 : Planning Method

9.1 Method of planning

9.1.1 Principles of planning

9.1.2 Method of planning

9.1.3 Planning of the band 525 - 1 605 kHz*)

9.1.4 Planning of the band 150 - 285 kHz*)

9.2 Synchronized networks

9.3 Low power channels**)

Separate grouping of Appendices, Resolutions, Recommendations (see Document No. 64).

*) FN : see also Chapter 8 concerning shared bands

**) FN : in the Copenhagen Plan named international common frequencies

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. DT/22-E
12 October 1974
Original : English

COMMITTEE 5

ADDITIONAL INFORMATION TO BE COMMUNICATED TO COMMITTEE 7 FOR INCLUSION IN THE REPORT OF THE FIRST SESSION

Committee 7 has issued Document No. DT/20, on the draft Plan for the Report on the 1st Session of the Conference. It is proposed that detailed information concerning Chapter 8 be examined by Committee 5 for forwarding to Committee 7. A draft proposal is annexed herewith.

K.R. BINZ
Chairman of Committee 5

Annex : 1

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A N N E X

CHAPTER 8

Chapter 8 : Planning Method

8.1 Method of planning

8.1.1 General views

8.1.2 Planning of the band 525 - 1 605 kHz

8.1.3 Planning of the band 150 - 285 kHz

8.2 Service area

8.2.1 Definition

8.2.2 Nominal usable field-strengths

8.3 Correlation of frequencies

8.3.1 Carrier frequencies multiple of channel spacing

8.3.2 Intermediate frequency of receivers

8.4 Synchronized networks

8.5 Low power channels (international common frequencies)

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. DT/23-E
14 October 1974
Original : French

WORKING GROUP 4B

EXTRACT FROM TECHNICAL STANDARD A-2

At the 4th meeting of Working Group 4B, the I.F.R.B. was requested to publish the attached extract from its Technical Standard A-2 : Minimum field strength to be protected (pages 1 to 7 and 22).

Annex : 1

ANNEXE

A-2

INTENSITE MINIMUM DU CHAMP A PROTEGER

1. Le Comité a adopté les valeurs de l'intensité minimum du champ à protéger (exprimées en décibels par rapport à un microvolt par mètre) qui figurent dans la présente norme technique, en vue de les appliquer aux divers types de transmission selon la position géographique du lieu de réception, l'ordre de grandeur de la fréquence utilisée et l'heure de l'émission. Les données incluses dans les tables ci-après ont été déduites du Rapport 322 et de l'Avis 339-1 du C.C.I.R. (Oslo, 1966).

2. La présente norme technique se compose de :

a) quatre tables, numérotées de 1 à 4, donnant chacune, en fonction de la latitude et de la longitude du lieu de réception, le degré de bruit (exprimé par la médiane des valeurs horaires, durant quatre heures consécutives, de la puissance du bruit radioélectrique dans une antenne de réception verticale courte, par rapport au bruit thermique, sur la fréquence 1 MHz). Des tables distinctes ont été établies respectivement pour les périodes décembre-février (DC), mars-mai (MR), juin-août (JN) et septembre-novembre (SE) et, dans chaque table, le degré de bruit est donné pour chacune des six tranches de quatre heures consécutives correspondant aux heures locales ci-après :

tranche	0000 - 0400,	désignée	par	le	symbole	N2
"	0400 - 0800,	"	"	"	"	T1
"	0800 - 1200,	"	"	"	"	J1
"	1200 - 1600,	"	"	"	"	J2
"	1600 - 2000,	"	"	"	"	T2
"	2000 - 2400,	"	"	"	"	N1

Afin de faciliter la lecture des degrés de bruit qui correspondent à n'importe quel lieu de réception, on a tracé sur chacune de ces tables, à l'échelle voulue, les contours d'un planisphère en projection cylindrique.

MINIMUM FIELD STRENGTH TO BE PROTECTED

1. The Board has adopted the values of minimum field strength to be protected (expressed in decibels relative to one microvolt per metre) given in the present Technical Standard for application to the various types of transmission according to the geographical location of the receiving point, the frequency used, and the time of the transmission. The data have been derived from Report 322 and Recommendation 339-1 of the C.C.I.R.(Oslo, 1966).

2. The Technical Standard consists of:

a) four tables (Tables 1 - 4), giving the noise grade expressed as the median of the hourly values, during four consecutive hours, of the radio noise power in a short vertical receiving antenna, relative to thermal noise, at a frequency of 1 Mc/s, in terms of the latitude and longitude of the receiving point. Separate tables are given for the period December-February (DC) March-May (MR), June-August (JN), and September-November (SE) respectively; and in each table, the noise grade is given for each of six time blocks of four consecutive hours corresponding to the following local times:

0000 - 0400	designated	N2
0400 - 0800	"	T1
0800 - 1200	"	J1
1200 - 1600	"	J2
1600 - 2000	"	T2
2000 - 2400	"	N1

To facilitate the identification of the noise grades corresponding to the location of any particular receiving point, each of these tables has been superimposed on an outline map of the world, on a cylindrical projection, drawn to the appropriate scale.

INTENSIDAD DE CAMPO MÍNIMA A PROTEGER

1. Los valores de la intensidad de campo mínima a proteger (expresada en decibelios con relación a un microvoltio por metro) que figuran en la presente Norma técnica han sido adoptados por la Junta y se aplican a los diversos tipos de transmisión, según la ubicación geográfica del punto de recepción, la frecuencia utilizada y la hora de transmisión. Los datos incluidos en las tablas anexas se han deducido del Informe 322 y de la Recomendación 339-1 del C.C.I.R. (Oslo, 1966).

2. La presente Norma técnica comprende:

a) Cuatro tablas (1 a 4), cada una de las cuales da el grado de ruido (expresado como la mediana de los valores horarios, durante cuatro horas consecutivas, de la potencia del ruido radioeléctrico en una antena receptora vertical corta, con relación al ruido térmico, en una frecuencia de 1 Mc/s) en función de la latitud y longitud del punto de recepción. Comprende, asimismo, tablas separadas para los periodos diciembre-febrero (DC), marzo-mayo (MR), junio-agosto (JN) y septiembre-noviembre (SE), y cada tabla da el grado de ruido para cada uno de los seis bloques de tiempo de cuatro horas consecutivas correspondientes a las siguientes horas locales:

0000 - 0400	designado	N2
0400 - 0800	"	T1
0800 - 1200	"	J1
1200 - 1600	"	J2
1600 - 2000	"	T2
2000 - 2400	"	N1

Para facilitar la identificación de los grados de ruido correspondientes a la ubicación de cualquier punto de recepción, cada una de estas tablas se ha superpuesto a un mapa mundial de contornos, en proyección cilíndrica, trazado a una escala adecuada.

b) seize tables, numérotées de 5A à 12A et de 5B à 12B, donnant pour les divers types de transmission l'intensité minimum du champ à protéger (exprimées en décibels par rapport à un microvolt par mètre) en fonction du degré de bruit, tel qu'il est donné dans les Tables 1 à 4, de l'ordre de grandeur de la fréquence utilisée et de l'heure de l'émission. Dans ces seize tables, les symboles N1, T1, etc. ont la signification indiquée à l'alinéa a) ci-dessus.

3. Dans toutes les tables, les valeurs qui correspondent à chacune des six tranches horaires journalières sont données, dans chaque case, dans l'ordre suivant :

N_2	T_1	J_1
N_1	T_2	J_2

Ainsi le premier nombre de la ligne supérieure de la case donne la valeur qui correspond à la tranche 0000-0400 heures locales; le troisième nombre de la ligne supérieure de la case donne la valeur qui correspond à la tranche 0800-1200 heures locales; le deuxième nombre de la ligne inférieure de la case donne la valeur qui correspond à la tranche 1600-2000 heures locales, etc.

4. Les valeurs de l'intensité minimum du champ à protéger comportent des marges destinées à tenir compte de la variation journalière du bruit atmosphérique et, le cas échéant, des variations à longue période de l'intensité du signal; elles sont fondées sur l'intensité d'un signal telle que, pendant 90% des jours, son rapport à l'intensité du bruit dépasse le rapport minimum signal/bruit requis dans des conditions stables.

b) Sixteen tables (Tables 5A - 12A and 5B - 12B) giving, for the various types of transmission, the minimum value of field strength to be protected (expressed in decibels relative to one microvolt per metre) in terms of the noise grades given in Tables 1 - 4, the frequency used and the time of the transmission. In these tables, the symbols N1, T1, etc. have the same significance as those described in sub-paragraph a) above.

3. In all the tables, the values for the six daily time blocks are given in the following sequence:

N_2	T_1	J_1
N_1	T_2	J_2

Hence the first figure in the upper line of each block gives the value for the period 0000 - 0400 local time; the third figure in the upper line gives the value for 0800 - 1200 local time; the second figure of the lower line gives the value for the period 1600 - 2000 local time, etc.

4. The values of minimum field strength to be protected include allowances for the day-to-day variation of atmospheric noise and, where appropriate, for the long period intensity fluctuation of the signal, and are based on the field strength of the signal which will exceed the noise, by the minimum signal/noise ratio required under stable conditions for the type of transmission concerned, during 90% of the days.

b) Dieciséis tablas (5A a 12A y 5B a 12B) cada una de las cuales da, para los diversos tipos de transmisión, el valor de la intensidad de campo mínima a proteger (expresada en decibelios con relación a un microvoltio por metro) en función de los grados de ruido indicados en las tablas 1 a 4, de la frecuencia utilizada y de la hora de transmisión. En estas tablas, los símbolos N1, T1, etc., tienen el mismo significado que los descritos en el inciso a) que precede.

3. En todas las tablas, los valores correspondientes a los seis bloques de tiempo diarios se indican por el orden siguiente:

N_2	T_1	J_1
N_1	T_2	J_2

Por consiguiente, la primera cifra del renglón superior de cada bloque da el valor para el periodo 0000 -0400 (hora local); la tercera cifra del renglón superior el valor para el periodo 0800 - 1200 (hora local); la segunda cifra del renglón inferior el valor para el periodo 1600 - 2000 (hora local), etc., etc.

4. Los valores de la intensidad de campo mínima a proteger incluyen márgenes para la variación diaria del ruido atmosférico y, cuando corresponde, para las fluctuaciones de largo periodo de la intensidad de la señal; están basados en la intensidad de campo de una señal que durante el 90% de los días rebasa a la del ruido, en la relación señal/ruido mínima requerida en condiciones estables para el tipo de transmisión considerado.

5. Pour déterminer, en n'importe quel lieu et à n'importe quelle heure, l'intensité minimum du champ à protéger dans le cas d'un type de transmission et d'une fréquence quelconque, on extrait tout d'abord des Tables 1 à 4 la valeur du degré de bruit qui correspond au lieu de réception, à la saison et à l'heure en question. On prend ensuite cette valeur du degré de bruit dans la colonne de gauche de la table relative au type de transmission considéré (Tables 5A à 12B), et l'intensité minimum du champ à protéger (exprimée en décibels par rapport à un microvolt par mètre) est donnée par le nombre inscrit, pour la tranche horaire voulue, dans la colonne qui correspond à l'ordre de grandeur de la fréquence en question. Il faut généralement procéder à des interpolations, car la dimension des Tables 5A à 12B a été limitée afin qu'elles soient faciles à consulter.

6. Dans le cas des radiophares sans effet directif, les intensités minimum du champ à protéger, selon la classe du radiophare et la latitude intéressées, sont celles qui sont spécifiées aux numéros 436, 437, 460, 461 et 462 du Règlement des radiocommunications.

7. Pour évaluer la probabilité de brouillages nuisibles causés par une station brouilleuse, c'est normalement à l'intensité de champ médiane du signal désiré, calculée au lieu de réception notifié, que l'on applique le rapport de protection qui figure dans la Norme technique A-1. Mais dans le cas où l'intensité de champ médiane du signal désiré, calculée au lieu de réception pour une tranche horaire quelconque, est inférieure à l'intensité minimum du champ à protéger, le Comité admet que la liaison ne peut pas fonctionner de façon satisfaisante pendant cette période; cependant, dans les cas où c'est une portée de service qui a été notifiée, si l'intensité de champ médiane du signal désiré, calculée à la limite de la portée de service, est inférieure à l'intensité minimum du champ à protéger, le Comité réduit la portée de service à la valeur de la distance à laquelle l'intensité de champ médiane du signal désiré, telle qu'elle résulte du calcul, est égale à l'intensité minimum du champ à protéger.

8. Dans les cas où il existe un accord régional comportant un plan et où une valeur uniforme de l'intensité minimum du champ à protéger a été admise dans l'établissement de ce plan, le Comité considère que la valeur de l'intensité minimum du champ à protéger en chacun des lieux de la région intéressée est la valeur moyenne, telle qu'elle résulte des tables, de cette intensité dans la région.

5. In order to ascertain, at any location and at any particular time, the minimum field strength to be protected for any type of transmission on any frequency, the noise grade figure for the location of the receiving point and for the season and time concerned is first obtained from Tables 1 - 4. This noise grade figure is then used in the left-hand column of the appropriate table for the type of transmission concerned (Tables 5A - 12B), and the minimum field strength to be protected (in decibels relative to one microvolt per metre) is given by the figure for the time concerned in the appropriate frequency column of the table. Interpolations are usually necessary as a result of restricting the size of Tables 5A - 12B to manageable proportions.

6. In the case of omni-directional radiobeacons, the minimum field strengths to be protected, for the class of radiobeacon and for the latitudes concerned, are those given in Nos. 436, 437, 460, 461, and 462 of the Radio Regulations.

7. In the estimation of the probability of harmful interference from an unwanted station, the appropriate protection ratio given in Technical Standard A-1 is normally applied to the calculated median field strength of the wanted signal at the notified receiving point. However, should the calculated median field strength of the wanted signal, at the notified receiving point during any time block, be below the minimum field strength to be protected, the Board assumes that the circuit cannot operate satisfactorily during the period concerned; except that, in cases where a service range has been notified, if the calculated median field strength of the wanted signal at the limit of the service range is below the minimum field strength to be protected, the Board reduces the service range to the value at which the calculated median field strength of the wanted signal is equal to the minimum field strength to be protected.

8. In cases where a Regional agreement including a plan exists, and a uniform value of minimum field strength was assumed in establishing the plan, the value of the minimum field strength to be protected, at all points of the region concerned, is considered to be the average value of this field strength in the region as given by the tables.

5. Si se desea conocer la intensidad de campo mínima a proteger en cualquier ubicación y a cualquier hora, para cualquier tipo de transmisión en cualquier frecuencia, es necesario buscar en primer lugar en las tablas 1 a 4 el grado de ruido correspondiente a la ubicación del punto de recepción, a la estación del año y a la hora de que se trate. Se entra después con este valor del grado de ruido en la columna de la izquierda de la tabla apropiada para el tipo de transmisión considerado (tablas 5A a 12B) y, en la columna de la tabla correspondiente a la frecuencia considerada, se obtiene el valor de la intensidad de campo mínima a proteger, en decibelios con relación a un microvoltio por metro, para la hora en cuestión. Debido a que ha habido que reducir a proporciones razonables el formato de las tablas 5A a 12B, habrá que recurrir frecuentemente a interpolaciones.

6. En el caso de los radiofaros omnidireccionales, las intensidades de campo mínimas a proteger para la clase de radiofaro y latitudes correspondientes son las indicadas en los números 436, 437, 460, 461 y 462 del Reglamento de Radiocomunicaciones.

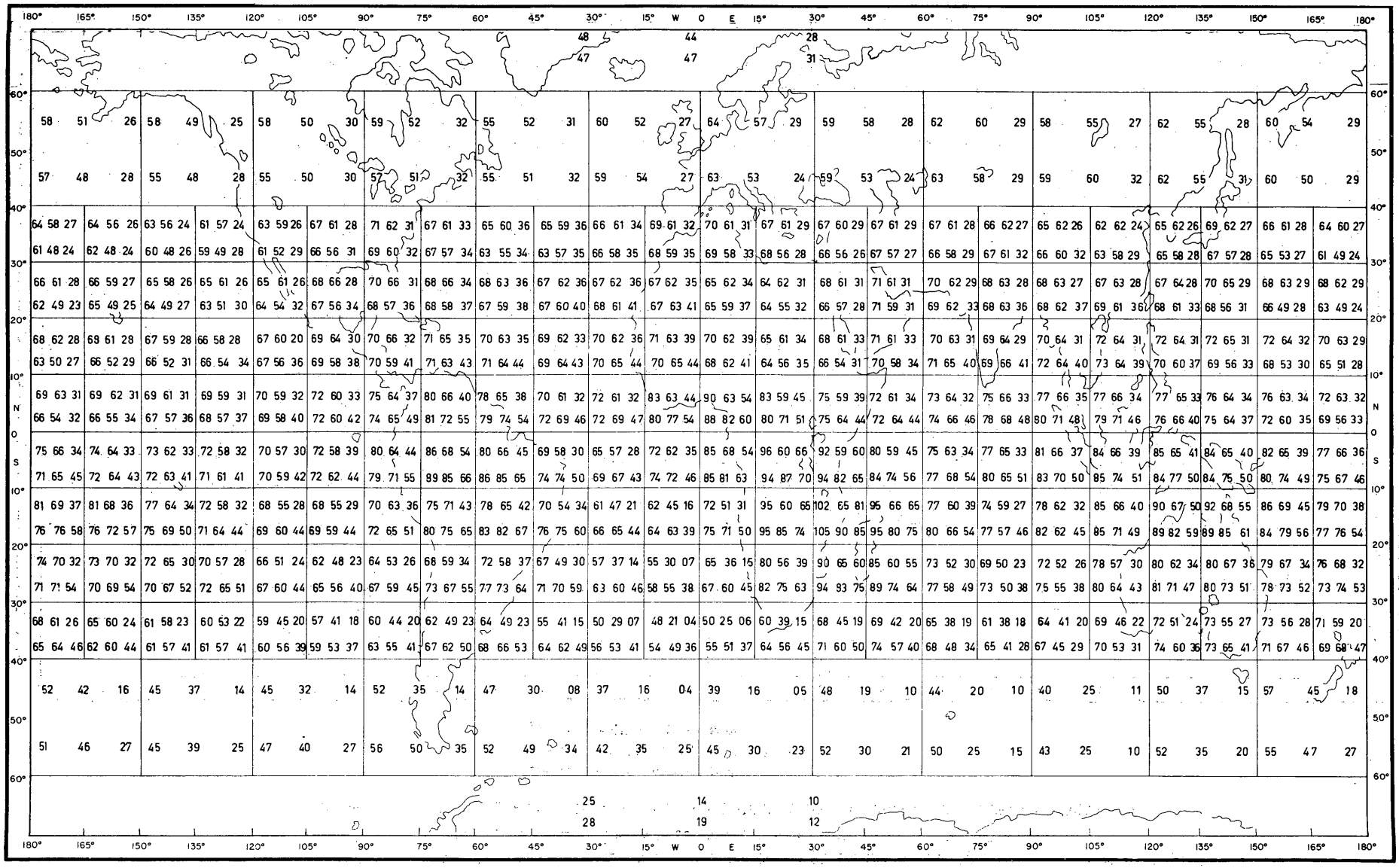
7. Para determinar la probabilidad de que una estación no deseada cause interferencias perjudiciales, se aplicará la relación de protección apropiada de la Norma técnica A-1 al valor mediano de la intensidad de campo de la señal deseada calculado en el punto de recepción notificado. Sin embargo, si durante cualquier bloque de tiempo, este valor mediano es inferior al de la intensidad de campo mínima a proteger, la Junta considera que el circuito no puede explotarse satisfactoriamente durante ese periodo. Ahora bien, de haberse notificado un alcance de servicio y el valor mediano de la intensidad de campo de la señal deseada calculado en el límite del alcance de servicio es inferior al de la intensidad de campo mínima a proteger, la Junta reduce el alcance de servicio al valor en que el valor mediano calculado de la intensidad de campo de la señal deseada es igual al de la intensidad de campo mínima a proteger.

8. En los casos en que existe un acuerdo regional que comprende un plan, habiéndose admitido en el establecimiento de ese plan un valor uniforme de la intensidad de campo a proteger, la Junta considera que la intensidad mínima de campo a proteger en cualquier punto de la región en consideración es igual al valor medio de la intensidad en toda la región, dado en las tablas.

VALEUR DU DEGRE DE BRUIT EN FONCTION DE LA LATITUDE ET DE LA LONGITUDE DU LIEU DE RECEPTION
NOISE GRADE FIGURES ACCORDING TO LATITUDE AND LONGITUDE OF RECEIVING POINT
VALORES DEL GRADO DE RUIDO EN FUNCION DE LA LATITUD Y DE LA LONGITUD DEL LUGAR DE RECEPCION

période : DECEMBRE - JANVIER - FEVRIER
period : DECEMBER - JANUARY - FEBRUARY
periodo : DICIEMBRE - ENERO - FEBRERO
} DC

(1)
DC



A-2 p.5

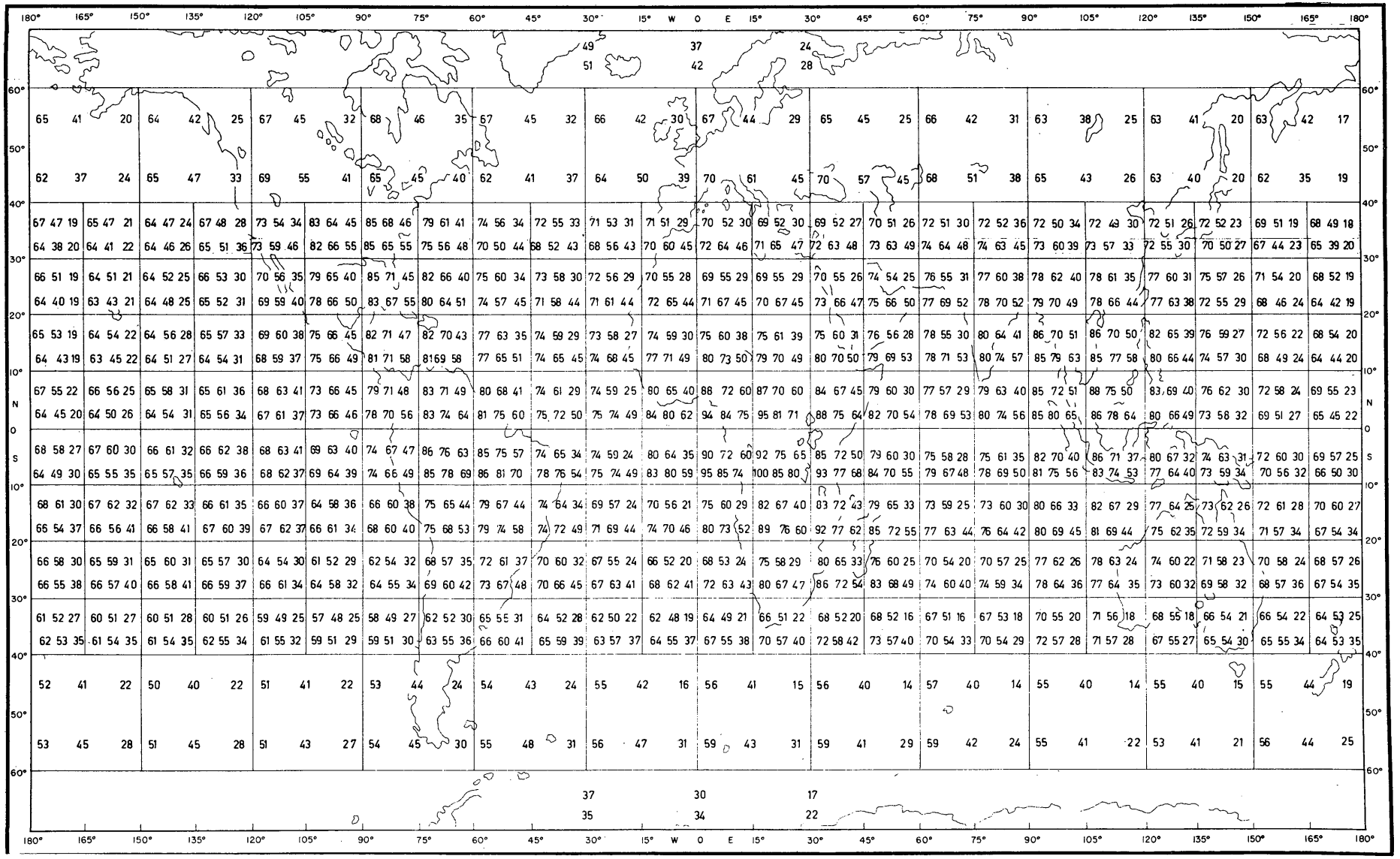
VALEUR DU DEGRE DE BRUIT EN FONCTION DE LA LATITUDE ET DE LA LONGITUDE DU LIEU DE RECEPTION
NOISE GRADE FIGURES ACCORDING TO LATITUDE AND LONGITUDE OF RECEIVING POINT
VALORES DEL GRADO DE RUIDO EN FUNCION DE LA LATITUD Y DE LA LONGITUD DEL LUGAR DE RECEPCION

période : MARS - AVRIL - MAI
period : MARCH - APRIL - MAY
periodo : MARZO - ABRIL - MAYO

MR

(2)

MR



A-2 p.6

VALEUR DU DEGRE DE BRUIT EN FONCTION DE LA LATITUDE ET DE LA LONGITUDE DU LIEU DE RECEPTION

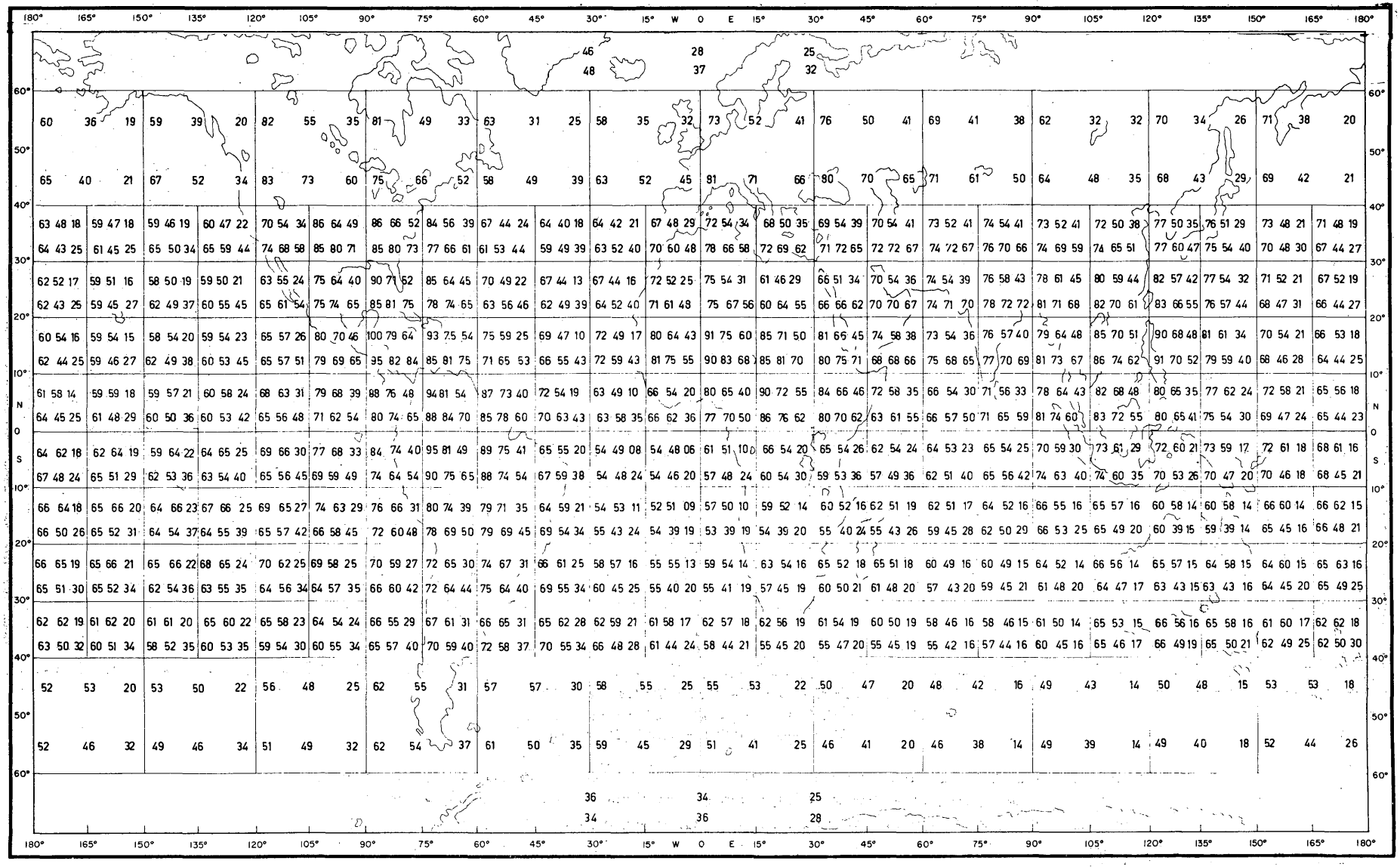
NOISE GRADE FIGURES ACCORDING TO LATITUDE AND LONGITUDE OF RECEIVING POINT

VALORES DEL GRADO DE RUIDO EN FUNCION DE LA LATITUD Y DE LA LONGITUD DEL LUGAR DE RECEPCION

période : JUIN - JUILLET - AOUT
period : JUNE - JULY - AUGUST
periodo : JUNIO - JULIO - AGOSTO } JN

(3)

JN

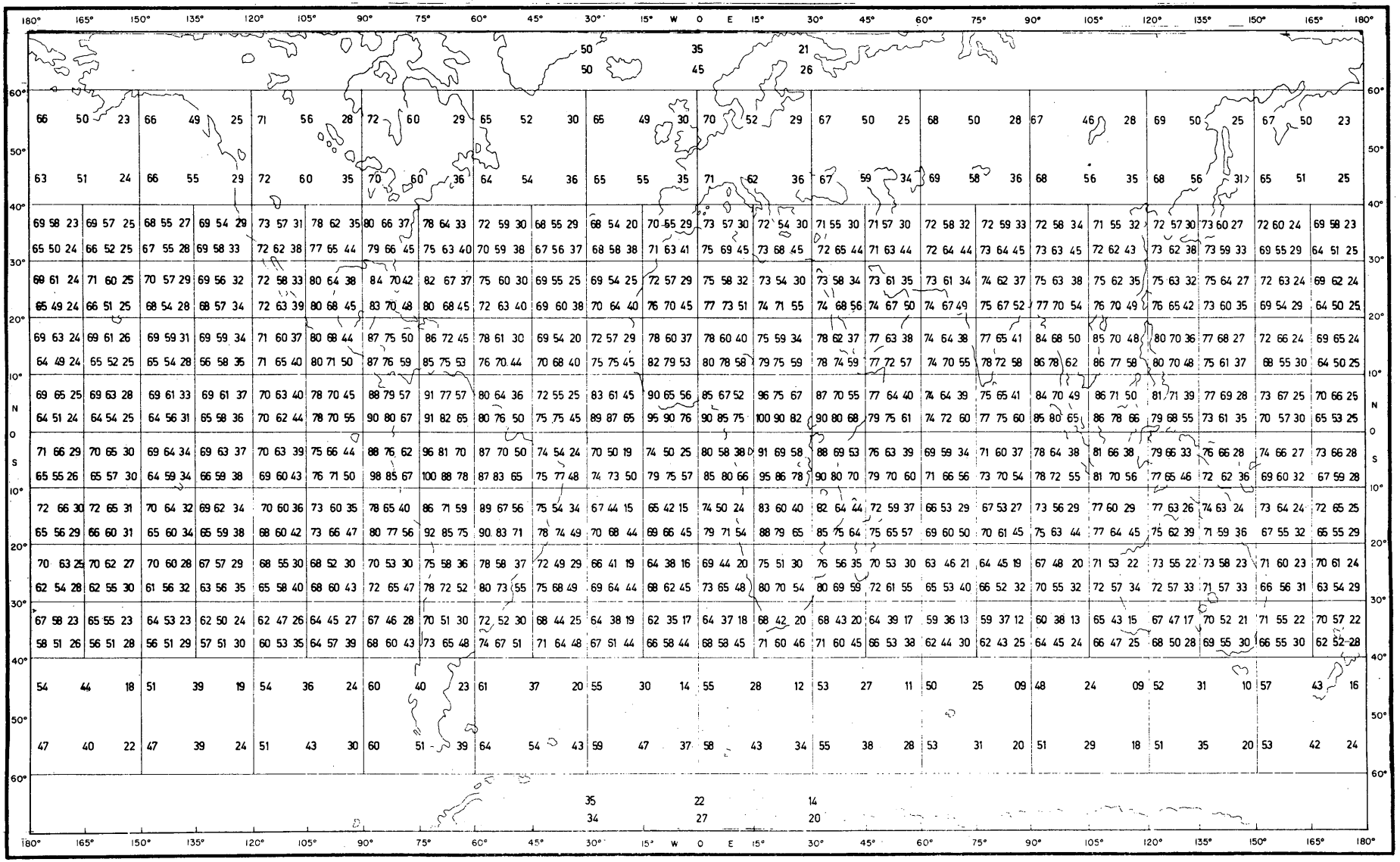


A-2 p.7

VALEUR DU DEGRE DE BRUIT EN FONCTION DE LA LATITUDE ET DE LA LONGITUDE DU LIEU DE RECEPTION
NOISE GRADE FIGURES ACCORDING TO LATITUDE AND LONGITUDE OF RECEIVING POINT
VALORES DEL GRADO DE RUIDO EN FUNCION DE LA LATITUD Y DE LA LONGITUD DEL LUGAR DE RECEPCION

période : SEPTEMBRE - OCTOBRE - NOVEMBRE
period : SEPTEMBER - OCTOBER - NOVEMBER
periodo : SEPTIEMBRE - OCTUBRE - NOVIEMBRE
} SE

(4)
SE



Intensité minimum du champ à protéger (exprimée en dB par rapport à 1 μV/m) A-2 p.22

Minimum field strength to be protected (expressed in dB relative to 1 μV/m)

Intensidad de campo mínima a proteger (expresada en dB con relación a 1 μV/m)

Type de transmission: Radiodiffusion

Type of transmission: Broadcasting

Tipo de transmisión: Radiodifusión

12A

DEGRÉ DE BRUIT / NOISE GRADE / GRADO DE RUIDO	kHz - Kc/s																		MHz - Mc/s																	
	10			20			50			100			200			500			1			1,5			2			3			4					
	N2	T1	J1	N2	T1	J1	N2	T1	J1	N2	T1	J1	N2	T1	J1	N2	T1	J1	N2	T1	J1	N2	T1	J1	N2	T1	J1	N2	T1	J1	N2	T1	J1	N2	T1	J1
	N1	T2	J2	N1	T2	J2	N1	T2	J2	N1	T2	J2	N1	T2	J2	N1	T2	J2	N1	T2	J2	N1	T2	J2	N1	T2	J2	N1	T2	J2	N1	T2	J2	N1	T2	J2
100	117	117	119	115	117	126	113	115	130	110	113	128	107	110	123	102	104	112	97	99	97	92	95	86	89	92	79	83	87	68	79	83	61			
	117	119	122	116	120	126	113	119	128	110	118	129	107	115	125	101	108	113	96	100	99	92	94	88	87	90	81	81	84	72	77	80	67			
90	114	114	117	112	114	122	108	110	123	104	106	120	99	102	114	93	95	102	87	89	87	83	85	77	80	83	71	76	79	62	73	76	56			
	115	116	119	112	116	122	107	113	122	103	110	120	98	105	115	92	98	102	86	90	89	82	85	78	79	81	73	75	76	65	72	73	60			
80	111	111	114	108	110	118	103	104	117	97	99	112	91	94	105	83	85	91	77	79	77	73	76	68	72	74	63	69	72	55	67	70	50			
	112	113	116	108	111	117	102	106	116	96	102	112	90	96	105	82	88	91	76	80	79	73	75	70	71	73	65	68	69	58	66	67	54			
70	109	108	111	105	106	113	98	99	111	91	93	104	83	85	95	73	75	80	67	69	67	64	67	59	63	65	55	62	64	48	61	63	46			
	109	110	113	104	106	113	97	100	108	90	94	103	82	87	95	71	77	81	66	70	69	64	67	61	63	65	57	61	63	51	60	61	49			
60	106	105	109	102	102	109	94	94	104	85	87	96	75	77	87	63	66	70	57	59	57	55	57	51	55	57	47	55	57	43	55	57	41			
	106	106	111	101	101	108	92	93	102	84	85	94	74	77	85	63	67	71	56	60	59	54	57	52	54	56	49	54	56	45	54	55	43			
50	103	102	106	98	98	105	89	89	97	78	80	88	67	69	77	53	56	60	47	49	47	45	47	41	46	48	39	48	49	37	49	50	37			
	103	103	108	97	97	104	88	86	95	77	77	86	66	68	75	53	57	61	46	50	49	45	48	43	45	48	41	47	48	38	49	49	38			
40	100	100	103	94	95	101	83	84	91	71	73	80	59	61	67	43	46	49	37	39	37	36	38	36	37	39	35	40	42	34	43	44	34			
	100	100	105	94	92	100	83	80	88	71	69	77	59	59	65	43	47	50	37	40	39	36	39	36	37	39	35	39	41	34	42	43	34			
30	97	97	101	91	92	97	78	79	85	64	67	72	51	53	58	40	40	40	37	37	37	36	36	36	35	35	35	34	34	34	37	37	34			
	97	96	103	90	87	95	77	73	81	65	61	69	51	49	55	40	40	40	37	37	37	36	36	36	35	35	35	34	34	34	36	37	34			
20	95	94	99	88	87	93	73	73	78	57	60	65	44	45	49	40	40	40	37	37	37	36	36	36	35	35	35	34	34	34	34	34	34			
	94	93	100	85	82	91	72	65	75	59	53	60	44	44	46	40	40	40	37	37	37	36	36	36	35	35	35	34	34	34	34	34	34			
10	93	91	96	85	84	89	67	68	73	50	53	56	44	44	44	40	40	40	37	37	37	36	36	36	35	35	35	34	34	34	34	34	34			
	92	90	98	80	77	87	66	59	66	53	46	51	44	44	44	40	40	40	37	37	37	36	36	36	35	35	35	34	34	34	34	34	34			
0	90	88	93	81	80	85	62	63	67	47	47	48	44	44	44	40	40	40	37	37	37	36	36	36	35	35	35	34	34	34	34	34	34			
	89	86	95	76	72	82	61	52	59	48	47	47	44	44	44	40	40	40	37	37	37	36	36	36	35	35	35	34	34	34	34	34	34			

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) **GENEVA, 1974**

Document No. DT/24-E(Rev.1)
15 October 1974
Original : English

WORKING GROUP 4B

DRAFT REPORT OF EDITORIAL SUB-GROUP 4B-2 TO WORKING GROUP 4B

Radio frequency protection ratios

1. Radio frequency protection ratios are defined in C.C.I.R. Recommendation 447, paragraph 4.

2. For planning purposes, the following values of co-channel protection ratios should be used :

- 30 dB for a stable wanted signal interfered by a stable or fluctuating signal,

- 27 dB for a fluctuating wanted signal interfered by a stable or fluctuating signal.

In cases of a fluctuating wanted or unwanted signal, these values apply for at least 50% of the nights of the year at midnight.

However some countries proposed higher values of up to 40 dB and 37 dB, respectively. These values may be adopted in some particular cases, following agreement between the Administrations concerned.

3. Adjacent channel protection ratio may be taken from C.C.I.R. Recommendation 449/... (Document No. 10/1018). During the second session of the Conference planning should be based on curve A of that Recommendation. Thus, planning will be based on a transmitted audio bandwidth of 10 kHz. After the establishment of the plan, curves B, C and D of the Recommendation may be used in cases where they apply, subject to agreement between the Administrations concerned.

The delegation of Australia stated that where Administrations of countries considered it necessary to provide a high quality medium frequency broadcasting service, an appropriate value of adjacent channel relative protection ratio cannot be taken from the curves of Recommendation 449. A value of up to 0 dB may be adopted, following agreement between the Administrations concerned.

4. An internal protection ratio of 8 dB shall be adopted for determining the service area of a synchronized network.*)

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*) This paragraph will be transmitted to Committee 5.

5. It is noted that by selecting integral multiples of the channel spacing for future use as the receiver's intermediate frequency or frequencies some advantage may be achieved in reducing receiver-internal interference (see C.C.I.R. Report 458 ... (Document No. 10/1058), item 3.2.4).

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

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WORKING GROUP 4B

DRAFT REPORT OF EDITORIAL SUB-GROUP 4B-2 TO WORKING GROUP 4B

Radio frequency protection ratio

1. Radio protection ratio is defined in C.C.I.R. Recommendation 447, paragraph 4.

2. For planning purposes during the Regional Broadcasting Conference it is recommended to use the following values for protection ratio :

- 30 dB for day-time conditions
- 27 dB for night-time conditions (for 50% of the time).

However, some countries proposed higher values for these protection ratio :

- 40 dB for day-time conditions
- 37 dB for night-time conditions (for 50% of the time).

Consequently the Working Group 4B recommends that, for planning purposes during the second session of the Conference and for certain particular cases, values of protection ratios other than 30 and 27 dB respectively could be adopted, following an agreement between the countries concerned.

3. Adjacent channel protection ratio may be taken from C.C.I.R. Recommendation 499/... (Document No. 10/1018). During the second session of the Conference planning should be based on curve A of that Recommendation. Thus, planning will be based on a transmitted bandwidth of 10 kHz. After the establishment of the plan curves B, C and D of the Recommendation may be used in cases where they apply.

4. For planning purposes in synchronous network 8 dB should be adopted as the internal protection ratio for day-time and night-time operation.

5. It is noted that by selecting integral multiples of the channel spacing for future use as the receiver's intermediate frequency or frequencies some advantage may be achieved in reducing receiver-internal interference (see C.C.I.R. Report 458 ... (Document No. 10/1058), item 3.2.4).

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

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COMMITTEE 6

DEFINITIONS NECESSARY FOR COMPLETING THE FORM FOR THE SUBMISSION OF FREQUENCY REQUIREMENTS

The following definitions relate to some of the terms used in the form and are given to assist administrations in completing it. A reference, indicating the document in which the definition can be found, is given for each of the terms defined.

Cymomotive force (c.m.f.) (see C.C.I.R. Report 1003, page 379 of the Annex to Document No. 10 of this Conference)

Definition

Cymomotive force (in a given direction)

The product formed by multiplying the electric field-strength at a given point in space, due to a transmitting station, by the distance of the point from the antenna. This distance must be sufficient for the reactive components of the field to be negligible; moreover the finite conductivity of the ground is supposed to have no effect on propagation.

The cymomotive force (c.m.f.) is a vector; when necessary it may be expressed in terms of components along axes perpendicular to the direction of propagation.

The c.m.f. is expressed in volts; it corresponds numerically to the field-strength in mV/m at a distance of 1 km.

Determination of the c.m.f.

Vertical antennae: For vertical antenna systems which are actually in operation, the c.m.f. in a horizontal direction is obtainable by measurements of field-strength on a radial line over the range 2λ to 15λ from the aerial system. Here λ is taken to be either the wavelength or the maximum dimensions of the antenna, whichever is the greater, in order to avoid the effect of reactive fields. If E is the field-strength at distance d, the product Ed is plotted graphically against d. The best-fitting line is extrapolated to d = 0, and the product $(E_o d_o)$ gives the c.m.f.

For the single mast it is desirable to take the average of values for a few radials. For a multiple mast system, separate measurements are required on a number of radials to establish the c.m.f. as a function of bearing.

For directions above the horizontal, a correction should be derived theoretically from the behaviour over a perfectly-conducting plane. Alternatively, field-strength measurements may be made from a helicopter.

For antenna systems which have not yet been constructed, or when for some other reason measurements cannot be made reliably, the c.m.f. may be estimated from a calculation of the system performance over a perfectly-conducting surface, and from the estimated efficiency of the antenna system.

Horizontal dipole array: In this case the most practical method is a computation for the array over perfectly-conducting ground, assuming the total transmitter power (less feeder loss) represents the radiated power. In this case the c.m.f. should be the combination of two orthogonal components, perpendicular to the direction of propagation, made on a root mean square basis.

Effective monopole radiated power (e.m.r.p.) (see C.C.I.R. Report 1003, page 381 of the Annex to Document No. 10 of this Conference)

Definition

The power supplied to an antenna, multiplied by its gain in a given direction, referred to that of a short vertical antenna in the horizontal direction.

Radio Regulation No. 102 defines gain referred to a short vertical antenna as :

"The gain (Gv) of an antenna in a given direction when the reference antenna is a perfect vertical antenna, much shorter than one quarter of the wave-length, placed on the surface of a perfectly conducting plane earth".

The reference antenna when fed with 1 kW produces a field-strength of 300 mV/m at 1 km distance and is aligned precisely with the ground-wave propagation curves of Recommendation 368 ... (Doc. No. 5/1024) and the sky-wave curves of Report 264 .... (Doc. No. 6/1068).

Determination of e.m.r.p.

For vertical antennae only, e.m.r.p. may be measured or estimated in the manner described in § 1.2 for determining c.m.f.

Relationship between c.m.f. and e.m.r.p.

The value of c.m.f. is related to e.m.r.p. by the formula :

$$\text{e.m.r.p. (kW)} = (\text{c.m.f.(Volts)}/300)^2$$

The following table gives some practical examples of c.m.f. and e.m.r.p. in the absence of losses.

Transmitter power (kW)	Antenna	Gain relative to a short vertical antenna (dB)	c.m.f. (V)	c.m.f. (dB rel.300V)	e.m.r.p. (kW)
0.01	short vertical	0	30	-20	0.01
0.1	" "	0	95	-10	0.1
1.0	" "	0	300	0	1.0
10	" "	0	950	+10	10
100	λ/2 vertical	2	3 800	+22	160
300	" "	2	6 600	+27	475
1 000	" "	2	12 000	+32	1 600

Service area (of a broadcasting transmitter) (see C.C.I.R. Document 10/1031(Rev.1), page 247 of the Annex to Document No. 10 of this Conference)

The area within which the field-strength of a transmitter is equal to or greater than the usable field-strength.

The percentage of time during which this condition is satisfied should be stated.

The service area may be different under day-time and night-time conditions or vary with other factors.

Usable field-strength (see C.C.I.R. Document 10/1031(Rev.1), page 246 of the Annex to Document No. 10 of this Conference)

The minimum value of the field-strength necessary to permit satisfactory reception, under specified conditions, in the presence of noise and interference in a practical situation (or in that resulting from a Frequency Plan).

It may be expressed by the formula :

$$E_u = \sqrt{\sum_i (a_i E_{ni})^2 + E_{min}^2}$$

where :

E_{ni} is the field-strength of the i-th unwanted transmitter (μV/m)*.

E_{min} is the minimum usable field-strength (μV/m).

a_i is the radio-frequency protection ratio associated with the i-th unwanted transmitter, expressed as a numerical ratio of field-strengths.

In general, the usable field-strength is different for each transmitter. For instance for two transmitters operating in the same channel but with different powers the usable field-strength is higher for the transmitter having the lower power.

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*) For a fluctuating unwanted signal the percentage of time during which E_{ni} is exceeded should be stated.

M. HARBY
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

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WORKING GROUP 4B

DRAFT

FOURTH REPORT OF WORKING GROUP 4B TO COMMITTEE 4

TECHNICAL STANDARDS

Noise, minimum field-strength, service area

1. When attempting to specify values of minimum usable field-strength for Regions 1 and 3 the Working Group decided not to take account of man made noise in order to reduce the number of variables that have to be considered. Furthermore the Group was of the opinion that it is more the responsibility of Committee 5 to specify the influence of the particular values of man made noise.

For these reasons the minimum field-strength values fixed here do not correspond to the minimum usable field-strength as defined in C.C.I.R. Recommendation 499 (10/1018).

2. Reliable information on atmospheric noise available in C.C.I.R. Report 322 and values resulting from experience and measurements in the countries concerned were used as a basis to lay down minimum field-strength value for three different areas A, B and C in Regions 1 and 3.

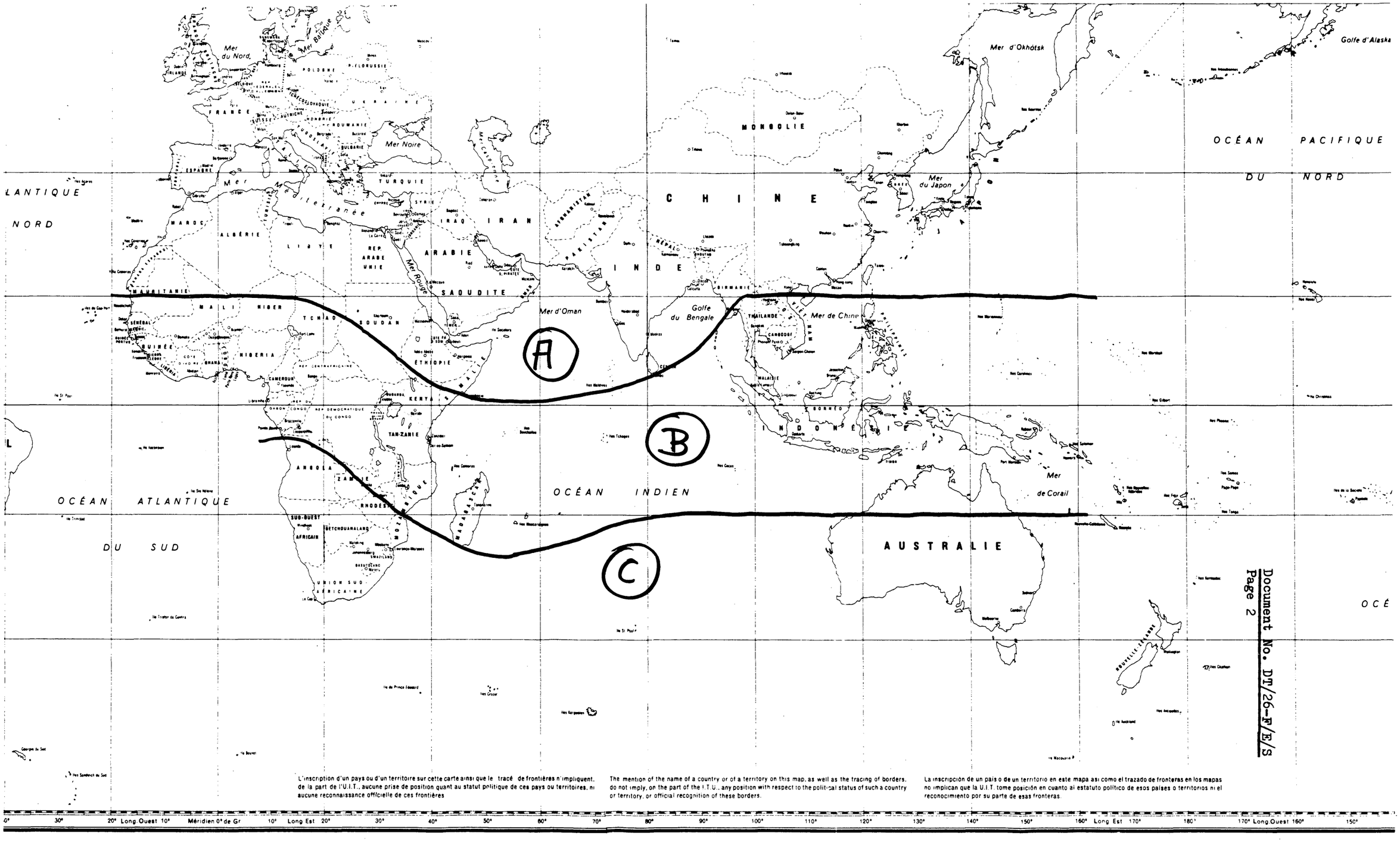
3. The contours of these three zones are given in the map contained in Annex 1. As minimum field-strength necessary to overcome natural noise in these zones the following values are proposed (for 1 MHz):

+ 60 dB/u in Zone A

+ 70 dB/u in Zone B

+ 63 dB/u in Zone C

Annex: 1



L'inscription d'un pays ou d'un territoire sur cette carte ainsi que le tracé de frontières n'impliquent, de la part de l'U.I.T., aucune prise de position quant au statut politique de ces pays ou territoires, ni aucune reconnaissance officielle de ces frontières

The mention of the name of a country or of a territory on this map, as well as the tracing of borders, do not imply, on the part of the I.T.U., any position with respect to the political status of such a country or territory, or official recognition of these borders.

La inscripción de un país o de un territorio en este mapa así como el trazado de fronteras en los mapas no implican que la U.I.T. tome posición en cuanto al estatuto político de esos países o territorios ni el reconocimiento por su parte de esas fronteras.

ANNEX 1

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

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WORKING GROUPE 4B

DRAFT

FIFTH REPORT OF WORKING GROUP 4B TO COMMITTEE 4

Technical Standards

Frequency dependance of minimum field-strength, service area

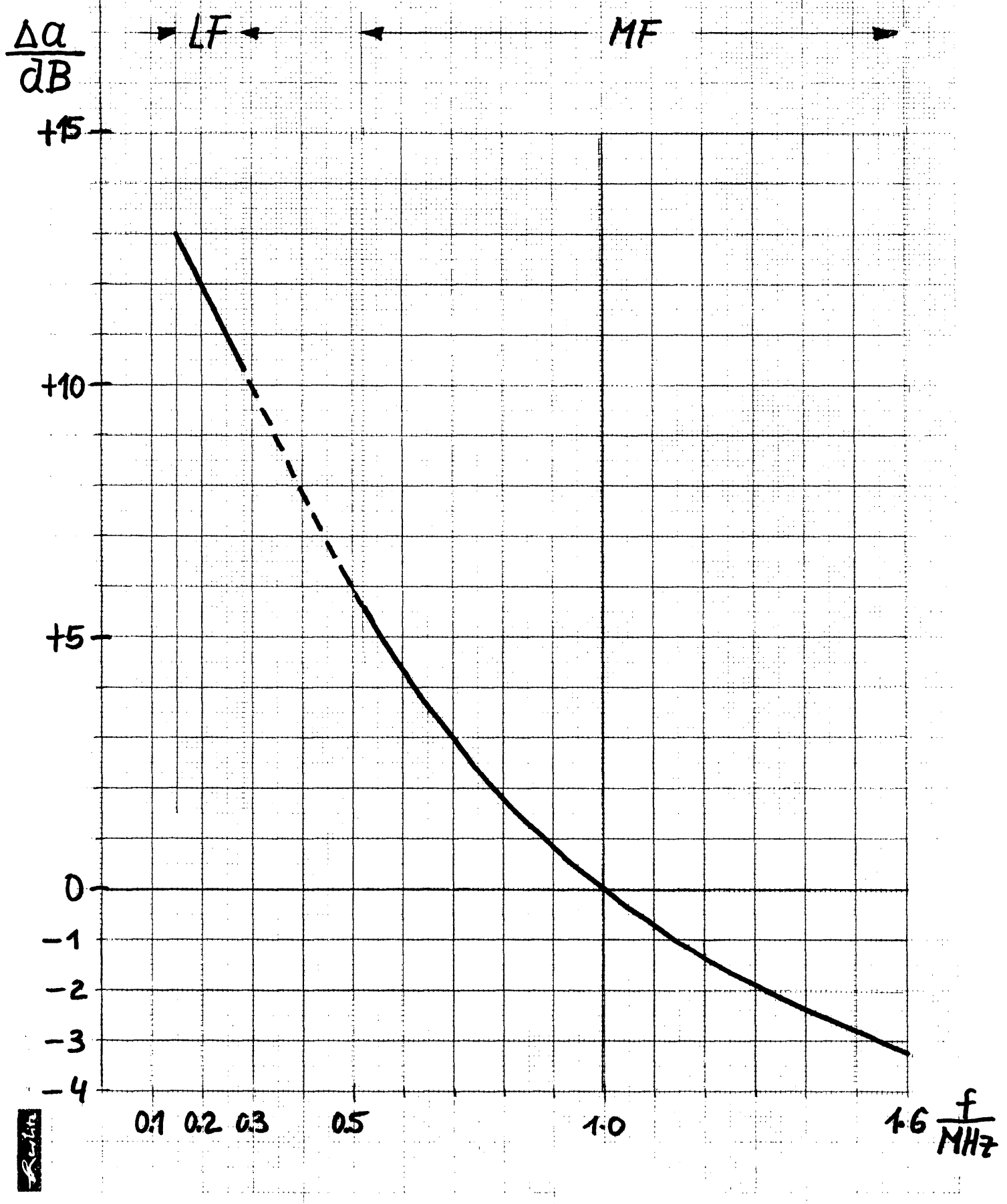
1. Working Group 4B recommends the adoption of one uniform curve representing the correction value Δa to be added to the values of minimum field-strength to overcome natural noise for frequencies other than 1 MHz. The correction curve is given in the Annex.

The French Delegation considers that this curve is not valid for LF and that lower values of the minimum field-strength can be admitted for rural areas.

2. Working Group 4B decided to convey its opinion to Committee 5, that in the definition of service area the percentage of time during which the conditions are satisfied should be stated.

Annex: 1

ANNEXE - ANNEX - ANEXO



INTERNATIONAL TELECOMMUNICATION UNION

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WORKING GROUP 4B

DRAFT RESOLUTION ....

relating to frequency saving modulation systems

The Regional Administrative LF/MF Broadcasting Conference, Geneva, 1974,

considering

a) the inefficient use of the frequency bands 5 (LF) and 6 (MF) due to the application of double-sideband modulation,

b) the difficulties involved with transmitters, receivers and the frequency planning when a later transition to frequency saving modulation systems is envisaged;

requests

the C.C.I.R. to undertake as a matter of urgency the study of frequency saving modulation methods, in particular the technical and operational aspects of single-sideband and independent sideband modulation,

requests

the next World Administrative Radio Conference to decide on the basis of the results of the studies of the C.C.I.R. concerning frequency saving modulation methods on the feasibility of introducing such techniques in the LF/MF broadcasting service.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

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WORKING GROUP 5B

SECOND REPORT OF SUB-WORKING GROUP 5B-2

LOW POWER CHANNELS

1. Definition of Low Power Channels : see Annex 1.

2. Method of Planning Low Power Channels (LPCs)

2.1 Principles of Planning

It is intended that a coordinated plan for assignments on these channels will be drawn up at Part 2 of the Conference. Simplified methods are to be used for the initial planning and also for coordination of any subsequent additions or modifications to the plan.*)

Channel allocations for LPCs should not be adjacent to those employed for sky-wave services operating with low values of usable field strength. In addition, LPCs should be separated from each other in frequency in order to allow simultaneous use in one area.

The number of channels used for this purpose should be / /.

---

*) It may be of assistance to administrations when drawing up their requirements for LPC allocations to note that an approximate indication of their quota of assignments in these channels may be assessed on the basis of uniform power density. According to this principle, the total power used in a country of area A km^2 may be approximately A.50 MW in any LPC.

It must be stressed that this will depend upon local conditions and will in any case be less if transmitters are required to be concentrated near the borders with other countries.

2.2.1 Method of Planning

The nominal usable field strength in those channels is to be 88 dB μV/m. In order for this value not to be exceeded due to interference from foreign countries, the transmitter network of each country is to be regulated such that the composite field strength due to its network at the border of any neighbouring country does not exceed 0.5 mV/m in any LPC. If required, this limit may be varied by negotiation between neighbouring countries.

The composite field strength is calculated according to the formula $\sqrt{E_1^2 + E_2^2 + E_3^2 + \text{--}}$ where E_1, E_2, E_3, --- are the values of field strength due to each individual transmitter in a country operating in a given LPC. For this purpose, only the field strengths due to the stations within 500 km of the border of a neighbouring country will be included in the calculation.

These values of field strength E_1, E_2, E_3 etc. are to be calculated according to the curves shown in Figure 1, taking account of the actual e.m.r.p. and distance from the border of the neighbouring country. The curves are for an e.m.r.p. of 1 kW (c.m.f. of 300 V) with the ground-wave propagation based upon a ground conductivity of 10 mS/m over land and 4 S/m over sea. Where the ground conductivity is known to be significantly greater than 10 mS/m, the higher value should be used in the calculation. In the case of sky-wave propagation, the curves have been derived assuming the characteristics of a short vertical transmitting aerial.

It is noted that Committee 6 may be required to study the need for a special simplified form for the requirements of administrations needing LPC allocations.

2.2.2 Modification to the Plan

Subsequent to Part 2 of the Conference, it may be that administrations require to modify or add to their requirements. In these circumstances, it will be permissible for administrations to make changes, coordinating only with those countries whose borders fall within a certain distance of the new or modified station. This coordination distance is dependent upon the e.m.r.p. of the new or modified station and values are shown in Table 1.

The basis of Table 1 is that the increase in nominal interfering field strength will not exceed 0.2 dB taking into account both ground-wave and sky-wave propagation.

The simplified coordination is not to be used for the addition of synchronized transmitters unless the total equivalent power of the group does not exceed 1 kW.

Where new requirements are such that the simplified coordination cannot be used, modification or additions to the plan may be agreed by the normal coordination procedure.

TABLE 1

c.m.f. (V)	e.m.r.p. (kW)	Coordination distance (km)
300	1.0	700
260	0.75	500
212	0.5	400
150	0.25	200, 350*)
95	0.1	70, 250*)
67	0.05	50, 200*)

*) Values used where the propagation path is over sea.

Annex : 1

A N N E X

DEFINITION

Low Power Channels (LPCs)

Lower Power Channels*) are for use by medium frequency broadcasting stations employing a maximum e.m.r.p. of 1 kW (c.m.f. of 300 V) and for which simplified planning and coordinating methods may be used.

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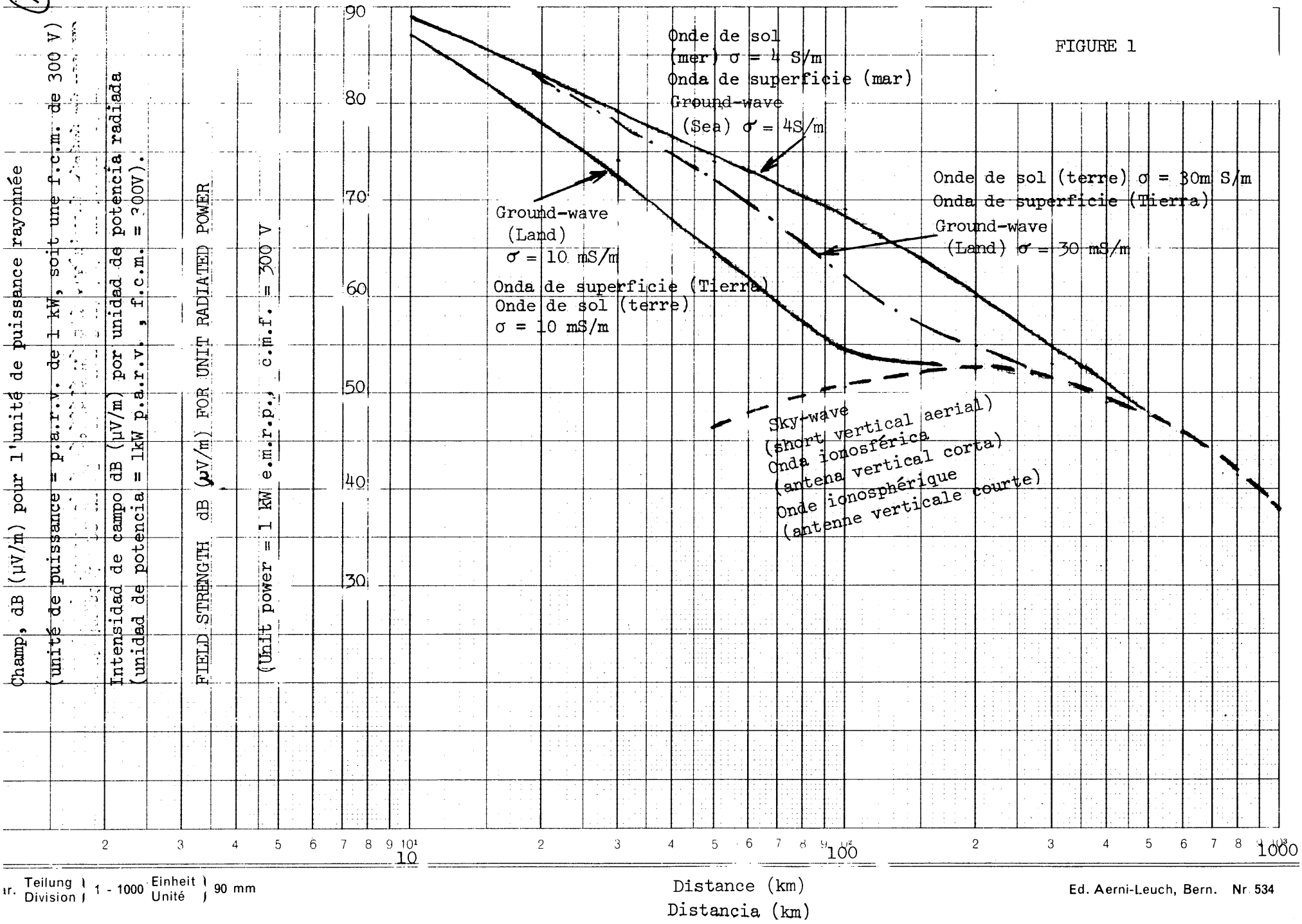
*) These Low Power Channels are intended to replace the International Common Frequencies defined in the 1948 Copenhagen Plan.

FIGURE 1



ar. Teilung / Division 1 - 1000 Einheit / Unité 90 mm

Ed. Aerni-Leuch, Bern. Nr. 534

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

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PLENARY MEETING

Note by the Secretary-General

FORM OF THE FINAL REPORT OF THE FIRST SESSION OF THE BROADCASTING CONFERENCE

1. At the second meeting of Committee 1 (Steering Committee) held on 10 October, the question was raised as to whether the final report should be signed by the delegations of administrations Members of the Union present at the first session. At the request of that Committee, I have the honour to submit herewith some information on the subject.

Among the conferences held since 1960, there is one administrative conference which had, like the present one, two sessions. That was the Aeronautical Conference of 1964-1966.

The three broadcasting conferences which have been held since 1960 had only one session, but they were preceded by preparatory technical meetings (the reports of which were never signed). These conferences were as follows :

- the European VHF/UHF Broadcasting Conference (Stockholm, 1961),
- the African VHF/UHF Broadcasting Conference (Geneva, 1963), and
- the African LF/MF Broadcasting Conference (Geneva, 1966).

2. The Extraordinary Administrative Radio Conference for the preparation of a revised allotment plan for the Aeronautical Mobile (R) Service (Geneva, 1966)

The convening of the Conference was the subject of Resolution 525 of the 17th session of the I.T.U. Administrative Council. By this Resolution it was decided that the Aeronautical Conference should hold two sessions : a first, or preparatory, session (Geneva, 1964), and a second session, or main session (Geneva, 1966).

In regard to signature, it was decided :

a) Document 60 (summary record of the 1st plenary meeting) : that, there being no objections, the proposal of the delegate of Italy, that signature of the Final Acts should take place at the end of the second session, was approved.

b) Document 169 (summary record of the 2nd plenary meeting) : that the final Report of the first session should be authenticated by the Chairman of the Conference.

A proposal that this report should be signed by delegations was not adopted.

3. According to the Convention (No. 764) : "The final texts approved by the Conference shall be submitted for signature, in the alphabetical order of the French names of their countries, to the delegates provided with the powers defined in Chapter 5 of the General Regulations." Thus, final texts are submitted for signature.

By its Resolution 743, the 29th session of the Administrative Council decided that the agenda of the second session of the present Broadcasting Conference should be, inter alia, "to consider the report of the first session of the .... Conference ....".

The fact that it is required "to consider the report" undoubtedly means that the second session has the right to bring the text submitted to it up to date, should it consider it necessary to do so. The three Regional Broadcasting Conferences held since 1961 availed themselves of that right in regard to the preparatory technical reports which were submitted to them.

4. Signature of a text constitutes an undertaking in regard to its various articles, and in particular in regard to the final article concerning approval of the text itself by the Member administrations (including the procedures of approval by governments and of transmission to the Secretary-General of the Union).

5. In the case of signature of Final Acts, it is advisable to provide for a final protocol to incorporate any reservations by Member administrations.

6. It should be noted that the final texts of administrative conferences issued in the form of Final Acts have to be translated into the five official languages. In the case of this session only translation into the three working languages of the Union (English, French and Spanish) has been provided for in the budget.

7. It may be mentioned, for information, that it is customary to have the texts of Final Acts published in printed form and offered for sale. All the preparatory technical reports have hitherto been transmitted in roneod form (to the second session of the Aeronautical Conference or to the Regional Administrative Broadcasting Conferences), and it is only on publication of the Final Acts that the text of these reports has been, in whole or in part, published in the form of an annex contained in the printed volume of the Final Acts, or in the form of a separate printed publication.

M. MILI

Secretary-General

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. DT/31 -E
16 October 1974
Original : English

WORKING GROUPS OF COMMITTEE 5

DISTRIBUTION OF DOCUMENTS

1. Working Group 5A

Documents Nos.

2 (United Kingdom)
6 (Federal Republic of Germany)
7 (Roumania)
8 (Italy)
9 (Norway)
10+Add. (Note by the Secretary-General)
12 (Federal Republic of Nigeria)
15 (Pakistan)
18 (U.S.S.R.)
25 (New Zealand)
28 (Republic of Zambia)
30 (Republic of Zambia)
31 (Republic of Zambia)
33 (The Netherlands)
34 (Note by the Secretary-General)
35 (Japan)
36 (India)
37 (Republic of the Philippines)
40 (European Broadcasting Union)
41 (Note by the Secretary-General)
44 (Arab States Broadcasting Union)
53 (U.S.S.R.)
54 (Note by the Secretary-General)
55 (Austria - Switzerland)

59 (twenty-seven countries)

64 (Plenary)

67(Rev.1) (thirteen countries)

69 (Asian Broadcasting Union)

70 (seven countries)

2. Working Group 5B

Documents Nos.

5 (United Kingdom of Great Britain and Northern Ireland)

9 (Norway)

10+Add. (Note by the Secretary-General)

18 (U.S.S.R.)

28 (Republic of Zambia)

33 (The Netherlands)

40 (European Broadcasting Union)

49 (Italy)

64 (Plenary)

68 (New Zealand)

3. In the consideration of the documents in the above list marked to Committee 4, it has to be assured that the action of Committee 4 on these documents is taken into consideration along with the relevant documents issued by that Committee.

R.K. BINZ
Chairman of Committee 5

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) **GENEVA, 1974**

Document No. DT/32-E
16 October 1974
Original : English

WORKING GROUP 5A

REPORT OF DRAFTING SUB-GROUP 5A-1

Definitions

Sub-Group 5A-1 recommends adoption of the following definitions :

1. Nominal usable field strength

The minimum conventional value of the field strength necessary to permit satisfactory reception, under specified conditions, in the presence of natural noise, industrial noise and interference from other transmitters, whether existing or planned. This value - which should, in the case where the wanted and/or unwanted signal is fluctuating, be expressed as a percentage of time - should be taken as a reference for planning purposes.

2. Nominal service area

The area within which the field strength of a transmitter is equal to or greater than the nominal usable field strength.

3. Usable field strength

The minimum value of the field strength necessary to permit satisfactory reception, under specified conditions, in the presence of noise (natural or industrial) and interference in a practical situation (or in that resulting from a Frequency Plan). This value should, in the case where the wanted and/or unwanted signal is fluctuating, be expressed as a percentage of time.

4. Usable service area

The area within which the field strength of a transmitter is equal to or greater than the usable field strength.

Principles of Planning (continued)

The Group considers that the nominal channel frequencies should be integral multiples of the channel spacing. It also considers that the intermediate frequencies used in receivers should be integral multiples of the channel spacing.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. DT/33-E
18 October 1974
Original : French

COMMITTEE 3

DRAFT REPORT

OF THE BUDGET CONTROL COMMITTEE

TO THE PLENARY MEETING

The Budget Control Committee held three meetings during the First Session of the Broadcasting Conference and examined the various points arising from its terms of reference.

As a result of its work and in accordance with Chapter 9, Rule 5, of the General Regulations annexed to the International Telecommunication Convention, Montreux, 1965, this report is presented for consideration by the Plenary Meeting.

1. Budget of the Conference

The Budget Control Committee took note of the budget of the Conference as approved by the Administrative Council at its 28th Session and revised at its 29th Session in 1974. This budget amounted to 1,130,000 Swiss francs (see Document No. 19).

2. Situation of Conference expenditure

In accordance with the provisions of the General Regulations annexed to the International Telecommunication Convention, Montreux, 1965, the Budget Control Committee presents to the Plenary Meeting a report showing, as accurately as possible, the estimated expenditure of the Conference.

In accordance with these provisions, a statement including the budget as adjusted by the Administrative Council at its 29th Session, the breakdown of the amounts set aside in the budget for the various chapters and items, the credit transfers and expenditure incurred up to 18 October 1974 for the Broadcasting Conference is submitted for consideration by the Plenary Meeting. This statement, which is given in Annex I to this document is supplemented by an indication of the commitments to expenditure up to that date and estimates of foreseeable expenditure until the close of the Conference.

It can be seen from this statement that total expenditure is estimated at 1,047,000 Swiss francs, or 83,000 Swiss francs less than the budget approved by the Administrative Council.

3. Contributions of recognized private operating agencies and non-exempted international organizations

Under Article 16 of the Financial Regulations of the I.T.U., the report of the Budget Control Committee to the Plenary Meeting must include a list of the recognized private operating agencies and international organizations which are required to contribute to defraying the expenses of the Broadcasting Conference. To this list must be added a list of the international organizations which have been exempted from payment in accordance with Number 225 of the Convention.

The list in question is given in Annex 3 to this document.

4. Breakdown of Conference expenditure

Since this Conference is a regional conference within the meaning of Article 7, No. 50, of the Montreux Convention and concerns countries situated in Regions 1 and 3 as defined in Article 5 of the Radio Regulations, the costs involved must be borne by all the Members and Associate Members of those Regions in accordance with their classes of contribution and on the same basis by the Members and Associate Members of Region 2 participating in it. The list of Members and Associate Members responsible for meeting the costs of the Conference will be found in Annex 2.

At its 27th Session, the Administrative Council decided that the Regional Broadcasting Conference should be divided into two sessions. Since, however, a new Convention will come into force on 1 January 1975, the costs of the First Session in 1974 must be charged to Members separately at the end of the year.

According to the figures given in Annex 1 to this document, total expenditure is estimated at 1,047,000 Swiss francs. Taking account of the contributions to be paid by recognized private operating agencies and non-exempted international organizations, and of the 347 contributory units of Members and Associate Members responsible for meeting the costs of the Conference (see Annex 2), the amount of the contributory unit to be paid by Members and Associate Members works out at 3,000 Swiss francs.

5. Organization of the Conference

In accordance with Chapter 9, Rule 5, Number 674, of the General Regulations annexed to the Montreux Convention, the Budget Control Committee is also responsible for assessing the organization and the facilities made available to delegates.

The Budget Control Committee has looked into this matter and it considered that, in general, the facilities available to delegates were adequate and that the organization of the Conference calls for no comment on its part.

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In accordance with Number 677 of the General Regulations annexed to the Montreux Convention, this report together with the observations of the Plenary Meeting will be transmitted to the Secretary-General for submission to the Administrative Council at its next annual session.

*

* *

The Plenary Meeting is requested to approve this report.

Dr. M.K. RAO
Chairman

Annexes : 3

ANNEX 1

No.	Item	Final budget	Transfers of credits		Credits available	Expenditure at 18 October 1974			Total expenditure	Difference
			Item/item	Chap./chap.		Actual	Committed	Estimated		
1	2	3	4	5	6	7	8	9	10	11
	Chapter I - Staff									
9.101	Salaries and related expenses									
	- Salaries	631,000				31,900	553,000	12,100	597,000	
	- Overtime	53,000				-	4,000	26,000	30,000	
		684,000	- 1,000		683,000	31,900	557,000	38,100	627,000	- 56,000
9.102	Travel expenses									
	- Travel expenses	47,000			47,000	7,800	17,200	2,000	27,000	- 20,000
9.103	Insurance									
	- UNJSFP	-				900	900	200	2,000	
	- Sickness	10,000				300	-	8,700	9,000	
	- Accidents	4,000				-	-	4,000	4,000	
		14,000	+ 1,000		15,000	1,200	900	12,900	15,000	-
TOTAL CHAPTER I		745,000	-	-	745,000	40,900	575,100	53,000	669,000	- 76,000
	Chapter II - Premises and Equipment									
9.201	Premises, furniture, machines									
	- Rental for CICG	242,000				87,700	146,600	700	235,000	
	- Purchase/lease furniture and machines	3,000				-	3,300	700	4,000	
		245,000	- 2,000	-	243,000	87,700	149,900	1,400	239,000	- 4,000
9,202	Document production									
	- Production of current documents	30,000	-	-		14,500	-	12,500	27,000	
		30,000	-	-	30,000	14,500	-	12,500	27,000	- 3,000

No.		Final budget	Transfers of credits		Credits available	Expenditure at 18 October 1974			Total expenditure	Difference
			Item/item	Chap./chap.		Actual	Committed	Estimated		
1	2	3	4	5	6	7	8	9	10	11
9.203	Office supplies and overheads									
	- Supplies	8,000				500	4,300		5,000	
	- Local transport	3,000						200	8,000	
							7,500	500		
		11,000	+ 2,000	-	13,000	500	11,800	700	13,000	
9.204	Post, telegraph and telephone									
	- Post	20,000				4,400	-	14,600	19,000	
	- Telegraph charges	1,000				-	-	-	-	
	- Telephone charges	1,000				-	-	-	-	
		22,000	- 2,000	-	20,000	4,400	-	14,600	19,000	- 1,000
9.205	Technical material									
	- Technical material	1,000			1,000	-	-	-	-	- 1,000
9.206	Sundry and unforeseen									
	- Badges, etc.	3,000				400	3,800	800	5,000	
		3,000	+ 2,000		5,000	400	3,800	800	5,000	-
TOTAL CHAPTER II		312,000	-	-	312,000	107,500	165,500	30,000	303,000	- 9,000
	Chapter III - Other expenses									
9.301	IFRB preparatory work									
	- Computer supplies	7,000				-	-	-	-	
	- Reproduction of documents	4,000				2,300	-	-	2,300	
	- Office and other supplies	2,000				-	-	3,700	3,700	
		13,000			13,000	2,300	-	3,700	6,000	- 7,000

No.	Title	Final budget	Transfers of credits		Credits available	Expenditure at 18 October 1974			Total expenditure	Difference
			Item/item	Chap./chap.		Actual	Committed	Estimated		
1	2	3	4	5	6	7	8	9	10	11
9.302	Report to the second session									
	Reproduction costs	45,000			45,000	-	-	45,000	45,000*)	
		45,000	-	-	45,000	-	-	45,000	45,000*)	
9.303	Interest credited to the ordinary budget									
	Interest	15,000			15,000	-	-	24,000	24,000	
		15,000	-	-	15,000	-	-	24,000	24,000	+ 9,000
TOTAL CHAPTER III		73,000			73,000	2,300	-	72,700	75,000	+ 2,000
GENERAL TOTAL		1,130,000	-	---	1,130,000	150,700	740,600	155,700	1,047,000	- 83,000

*) Credit foreseen by the Administrative Council pending a decision by the Plenary Meeting on form of the final report.

ANNEX 2

List of Members and Associate Members of the Union and contributory units

A. MEMBERS in Regions 1 and 3	Contributory units
1. Afghanistan (Republic of)	½
2. Albania (People's Republic of)	½
3. Algeria (Algerian Democratic and Popular Republic)	3
4. Germany (Federal Republic of)	20
5. Saudi Arabia (Kingdom of)	1
6. Australia	18
7. Austria	1
8. Bangladesh (People's Republic of)	1
9. Belgium	8
10. Byelorussian Soviet Socialist Republic	1
11. Burma (Socialist Republic of the Union of)	1
12. Botswana (Republic of)	½
13. Bulgaria (People's Republic of)	1
14. Burundi (Republic of)	½
15. Cameroon (United Republic of)	½
16. Central African Republic	½
17. China (People's Republic of)	15
18. Cyprus (Republic of)	½
19. Vatican City State	½
20. Congo (People's Republic of the)	½
21. Korea (Republic of)	1
22. Ivory Coast (Republic of the)	1
23. Dahomey (Republic of)	½
24. Denmark	5
25. Egypt (Arab Republic of)	5
26. United Arab Emirates	1
27. Group of Territories represented by the French Overseas Post and Telecommunication Agency	1
28. Spain	3
29. Ethiopia	1
30. Fiji	½
31. Finland	3
32. France	30
33. Gabon Republic	½
34. Gambia	½
35. Ghana	1
36. Greece	1
37. Guinea (Republic of)	½
38. Equatorial Guinea (Republic of)	½
39. Upper Volta (Republic of)	½
40. Hungarian People's Republic	1

MEMBERS in Regions 1 and 3 (continued)	Contributory units
41. India (Republic of)	13
42. Indonesia (Republic of)	1
43. Iran	1
44. Iraq (Republic of)	1
45. Ireland	3
46. Iceland	½
47. Israel (State of)	1
48. Italy	10
49. Japan	20
50. Jordan (Hashemite Kingdom of)	½
51. Kenya (Republic of)	½
52. Khmer Republic	1
53. Kuwait (State of)	1
54. Laos (Kingdom of)	½
55. Lesotho (Kingdom of)	½
56. Lebanon	1
57. Liberia (Republic of)	1
58. Libyan Arab Republic	½
59. Liechtenstein (Principality of)	½
60. Luxembourg	½
61. Malaysia	3
62. Malawi	½
63. Maldives (Republic of)	½
64. Malagasy Republic	1
65. Mali (Republic of)	½
66. Malta	½
67. Morocco (Kingdom of)	1
68. Mauritius	½
69. Mauritania (Islamic Republic of)	½
70. Monaco	½
71. Mongolian People's Republic	½
72. Nauru (Republic of)	½
73. Nepal	½
74. Niger (Republic of the)	½
75. Nigeria (Federal Republic of)	2
76. Norway	5
77. New Zealand	5
78. Oman (Sultanate of)	½
79. Uganda (Republic of)	½
80. Pakistan	3
81. Netherlands (Kingdom of the)	8
82. Philippines (Republic of the)	1
83. Poland (People's Republic of)	3
84. Qatar (State of)	½
85. Syrian Arab Republic	1
86. German Democratic Republic	3
87. Ukrainian Soviet Socialist Republic	3
88. Roumania (Socialist Republic of)	1
89. United Kingdom of Great Britain and Northern Ireland	30
90. Rwanda (Republic of)	½

MEMBERS in Regions 1 and 3 (continued)	Contributory units
91. Senegal (Republic of the)	1
92. Sierra Leone	½
93. Singapore (Republic of)	1
94. Somali Democratic Republic	1
95. Sudan (Democratic Republic of the)	1
96. Sri Lanka (Ceylon) (Republic of)	1
97. Sweden	10
98. Switzerland (Confederation of)	10
99. Swaziland (Kingdom of)	½
100. Tanzania (United Republic of)	½
101. Chad (Republic of the)	½
102. Czechoslovak Socialist Republic	3
103. Spanish Saharian Territory	1
104. Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible	1
105. Thailand	2
106. Togolese Republic	½
107. Tonga (Kingdom of)	½
108. Tunisia	2
109. Turkey	2
110. Union of Soviet Socialist Republics	30
111. Viet-Nam (Republic of)	1
112. Yemen Arab Republic	½
113. Yemen (People's Democratic Republic of)	½
114. Yugoslavia (Socialist Federal Republic of)	1
115. Zaire (Republic of)	1
116. Zambia (Republic of)	1
B. ASSOCIATE MEMBERS in Regions 1 and 3	
1. Papua New Guinea	½
C. MEMBERS AND ASSOCIATE MEMBERS in Region 2 participating in the conference	
1. Brazil (Federative Republic of)	5
	347

A N N E X 3

PARTICIPATION OF INTERNATIONAL ORGANIZATIONS AND RECOGNIZED PRIVATE OPERATING AGENCIES IN THE WORK OF THE FIRST SESSION OF THE BROADCASTING CONFERENCE

	Class of contribution
I. INTERNATIONAL ORGANIZATIONS	
a) Specialized agencies	
NONE	
b) Other international organizations	
International Special Committee on Radio Interference (C.I.S.P.R.)	exempt
International Radio and Television Organization (O.I.R.T.)	exempt
Arab Telecommunication Union	exempt
Asian Broadcasting Union	exempt
Arab States Broadcasting Union	exempt
Union of National Radio and Television Organizations of Africa (U.R.T.N.A.)	exempt
European Broadcasting Union (E.B.U.)	exempt
II. RECOGNIZED PRIVATE OPERATING AGENCIES	
British Broadcasting Corporation	*
Independent Broadcasting Authority	*

* Class of contribution not yet notified to the Secretary-General.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. DT/34 -E
16 October 1974
Original : English

WORKING GROUP 5A

FIRST REPORT OF SUB-GROUP 5A-2 TO WORKING GROUP 5A

NOMINAL USABLE FIELD STRENGTH

The conclusions of the Sub-Group are as follows :

I. MF band

1. Sky-wave service

The sky-wave service is generally intended for rural areas where the man-made noise is low. The nominal usable field-strength (F_{nom}) for the service provided by the sky-wave shall be F_{min} + 6 dB. This value of F_{nom} is considered adequate and takes into account the fluctuation of the received signal.

2. Ground-wave service

2.1 During daytime, in general the service area will be limited by natural noise. Accordingly, under these conditions, the F_{nom} will be identical to the value given to F_{min}. However, in the presence of interference due to ground-wave of other transmitters F_{nom} shall be F_{min} + 3 dB. In the presence of severe man-made noise the value of F_{nom} could be higher.

2.2 At night, two conditions can exist :

2.2.1 The ground-wave service area is limited by the fading caused by the sky-wave of the same transmitter. In this case, F_{nom} at the beginning of the fading zone is a function of the transmitter power. Such a situation is likely to occur only in case of very high power and very good ground conductivity.

2.2.2 Where the ground-wave service area is not limited due to onset of fading, $F_{nom} = F_{min}$ + X dB. For rural areas X = 11 dB and for urban areas X = 17 dB. (The derivation of the two values of X is explained in the Annex).

II. LF band

For LF band $F_{nom} = F_{min} + 17$ dB.

III. For the values of F_{nom} given above, the correction factor for frequency dependence (Doc. DT/27) has been taken into account.

J.D. KALISILIRA
Chairman

Annex : 1

A N N E X

DETERMINATION OF THE VALUE OF X

1. Influencing parameters

To decide on value of X, one should consider the allowances for man-made noise, frequency dependency and interference. (It was decided that the allowance for atmospheric noise in tropical regions will be included in the value of E_{min} and that it is the matter of consideration of Committee 4.)

1.1 Man-made noise

The two values are proposed :

1.1.1 For rural areas the allowance for man-made noise should be 3 dB. By this, it is supposed that the contribution of man-made noise is equal to that of natural noise, which seems to be a realistic value. Even in sparsely populated rural areas it seems that a certain amount of man-made noise should be taken into account.

1.1.2 For urban areas the allowance should be much greater and it seems that a value of 9 dB could be acceptable. In estimating this value it was considered that higher estimations are more adequate than lower ones, due to a general tendency to the increase of man-made noise.

1.2 Frequency dependency

In Committee 4 it was decided that the curve of the African Conference, Geneva 1966, should be taken as a planning reference. In the calculations which follow, it is supposed that the curve gives an addition of 6 dB for the lowest frequency in the MF band, and a substraction of 3 dB for the highest frequency in the MF band. These values are considered as convenient for the determination of extreme values for the range in consideration.

1.3 Interference

For economical use of the frequency spectrum it is essential that interference contribution to the total disturbances in a channel is at least the same as the contribution of other sources of noise, which leads to a value of 3 dB. This value could be increased if there is an intention of more intensive use of the channels. It is proposed that a value of 6 dB has to be taken as the allowance for efficient use of the spectrum.

The allowance for efficient use of the spectrum could be different in different zones of planning area for ground wave service, depending on the specific needs and possibilities.

2. Calculation of X

All the values in the calculation are used as determined before. The common contribution of man-made noise and frequency dependency is to be calculated on the basis of the square law, to which the interference factor will be added.

	urban	rural
a) Man-made noise	9 dB	3 dB
b) Frequency dependency factor		
- lowest frequency	6 dB	6 dB
- highest frequency	-3 dB	-3 dB
c) Value of $\sqrt{a^2 + b^2}$		
- lowest frequency	11.4 dB	6.8 dB
- highest frequency	9 dB	3 dB
d) Interference allowance	6 dB	6 dB
e) Total, c + d		
- the lowest frequency	17.4 dB	12.8 dB
- the highest frequency	15 dB	9 dB

3. Proposal for the value of X

Taking into account the two different receiving conditions, that one typical for rural areas and that typical for urban areas, it is proposed that the two values of F_{nom} have to be defined, respectively.

Frequency dependency is proposed to be neglected, provided that the chosen values of F_{nom} will be related to the lower part of MF band, where they came out somewhat higher.

The proposed values are :

- rural areas 11 dB
- urban areas 17 dB

4. Value of F_{nom} in LF band

As in the preceding case, the value of F_{nom} will be $F_{nom} = F_{min} + X_{(LF)}$. Under the supposition that the LF service is not influenced by man-made noise, due to typical receiving conditions in the huge service area of LF broadcasting transmitter, that the frequency utilization factor is 6 dB, and frequency correction factor 11 dB, it is proposed that the value of $X_{(LF)}$ will be 17 dB.

5. Examples

The values given below are approximate and are shown here only for purpose of illustration.

F_{nom} = 71 dB/μ (rural)

p =	D =	d =
10 kW	2,100 km	48 km
30 kw	2,700 km	65 km
100 kW	3,300 km	85 km
300 kW	4,000 km	110 km
1,000 kW	5,000 km	120 km

F_{nom} = 77 dB/μ (urban)

p =	D =	d =
10 kW	1,200 km	37 km
30 kW	2,000 km	46 km
100 kW	2,600 km	62 km
300 kW	3,100 km	75 km
1,000 kW	3,700 km	95 km

Frequency used : 700 kHz
Ground conductivity : 3 mS/m
Antenna height : λ/2
Protection Ratio : 30 dB

p = transmitter power
D = Co-channel separation distance
d = ground-wave service range.

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WORKING GROUP 5A

REPORT OF DRAFTING SUB-GROUP 5A-3

Planning of the Band 525-1 605 kHz

Some delegations felt that they would be in favour of splitting the MF band into sub-bands for use of sky-wave and ground-wave service respectively. Channels for sky-wave service should preferably be located in the higher part of the band and the lower part of the band should be used for ground-wave services. The lowest frequencies are most suitable for the coverage of very large areas by ground-wave.

Other delegations held the view that the band should not be split into sub-bands and felt that the whole band should be used both for the ground-wave and sky-wave services. These delegations considered that this gives the possibility of planning in an optimal manner to satisfy the needs of the countries. Splitting would reduce the number of channels available for ground-wave service. This would be particularly so in the areas where LF is not used and the sky-wave service is generally unreliable.

The Group is of the opinion that both procedures for the planning of the MF band could be referred to the Second Session of the Conference and that coordination of assignments to countries using different methods could take place at that time.

Planning of the Band 150-285 kHz

The Group considered that the LF band should be used for the coverage of large areas and that, in the areas where the LF band is used, its use should be planned in conjunction with the lower end of the MF band.

INTERNATIONAL TELECOMMUNICATION UNION

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WORKING GROUP 5A

REPORT OF DRAFTING SUB-GROUP 5A-1

Planning of the Band 525-1 605 kHz

Some delegations favour the use of the sky-wave service for night-time coverage, and, of these, some would, in addition, like to have a certain number of channels reserved for this service in order that the sky-wave fields might be suitably protected. These delegations consider that such channels would be best located in the higher part of the MF band, and, therefore, that the lower part of the band should be used for ground-wave services. The lowest frequencies seem most suitable for services designed to cover very large service areas.

Other delegations, however, felt that they would like to have both ground-wave and sky-wave services and that it is not necessary to split the MF band in order to give protection to sky-wave services as this would further reduce the number of channels available for ground-wave services. This would be the case in the tropical zones where LF is not used and where sky-wave service is generally unreliable.

The observer from the A.S.B.U. indicated that 20 members of his Union wished to reserve their position on this matter until the Second Session of this Conference. The observer from the A.B.U. indicated that many member countries of his Union considered that band splitting would restrict the freedom of planning and should not be adopted.

The Group is of the opinion that both procedures for the planning of the MF band could be referred to the Second Session of the Conference and that coordination of assignments to countries using different methods could take place at that time.

Planning of the Band 150-285 kHz

The Group considered that the LF band should be used for the coverage of large areas and that, in the areas where the LF band is used, its use should be planned in conjunction with the lower end of the MF band.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

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Original : French

COMMITTEE 2

DRAFT

FINAL REPORT OF COMMITTEE 2 (CREDENTIALS) TO THE

PLENARY MEETING

1. Committee 2 held two meetings. At its first meeting, it set up a Working Group to examine credentials as and when they were submitted to the Conference Secretariat.

2. The composition of the Working Group, which met on 9, 16 and 21 October 1974 under the chairmanship of Mr. Samuel H. BUTLER (Liberia), Chairman of Committee 2, was as follows :

Region B (Western Europe) was represented by France (Mr. Fauris)

Region C (Eastern Europe and Northern Asia) was represented by the Ukrainian Soviet Socialist Republic (Mr. Zybanov)

Region D (Africa) was represented by Algeria (Algerian Democratic and Popular Republic) (Mr. Bensaïd)

Region E (Asia and Australasia) was represented by Japan (Mr. Kajitani)

3. On the basis of the provisions of Chapter 5 of the General Regulations annexed to the International Telecommunication Convention (Montreux, 1965), Committee 2 reached the conclusions set out in the annex below.

4. The Committee authorized its Chairman, or its Vice-Chairman, to examine any credentials which might be submitted after its last meeting on Monday, 21 October 1974, and to report on them directly to the Plenary Meeting.

Samuel H. BUTLER
Chairman of Committee 2

Annex : 1

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A N N E X

REGIONAL BROADCASTING CONFERENCE
REGIONS 1 AND 3

First session Geneva, 1974

SITUATION WITH REGARD TO CREDENTIALS ON 16 OCTOBER 1974, AT 1130 HOURS

Note : The countries in regions 1 and 3 that are not represented at the Conference have been crossed out in this list and marked with a dash in columns 2 to 4.

Country	Credentials			Comments
	In order	Not in order	Not received	
1	2	3	4	5
~~1. Afghanistan (Republic of)~~	-------	-------	-----	
2. Albania (People's Republic of)	X			
3. Algeria (Algerian Democratic and Popular Republic)	X			
4. Germany (Federal Republic of)	X			
5. Saudi Arabia (Kingdom of)	X			
6. Australia	X			
7. Austria	X			
~~8. Bangladesh (People's Republic of)~~	-------	-------	-----	
9. Belgium			X	
10. Byelorussian Soviet Socialist Republic	X			
~~11. Burma (Socialist Republic of the Union of)~~	-------	-------	-----	
~~12. Botswana (Republic of)~~	-------	-------	-----	
13. Bulgaria (People's Republic of)			X	

1	2	3	4	5
14. Burundi (Republic of)			X	
15. Cameroon (United Republic of)	X			
16. Central African Republic	X			
17. China (People's Republic of)	X			
~~18. Cyprus (Republic of)~~	-------	-------	-------	
19. Vatican City State	X			
20. Congo (People's Republic of the)			X	
21. Korea (Republic of)	X			
22. Ivory Coast (Republic of the)	X			
23. Dahomey (Republic of)		X		3)
24. Denmark	X			
25. Egypt (Arab Republic of)	X			
~~26. United Arab Emirates~~	-------	-------	-------	
27. Group of Territories represented by the French Overseas Post and Telecommunication Agency	X			1)
28. Spain	X			
~~29. Ethiopia~~	-------	-------	-------	
~~30. Fiji~~	-------	-------	-------	
31. Finland	X			
32. France	X			
33. Gabon Republic	X			
34. Gambia (Republic of the)			X	
~~35. Ghana~~	-------	-------	-------	
36. Greece	X			
~~37. Guinea (Republic of)~~	-------	-------	-------	
~~38. Equatorial Guinea (Republic of)~~	-------	-------	-------	

1	2	3	4	5
~~39. Upper Volta (Republic of)~~	-------	-------	-------	
40. Hungarian People's Republic	X			
41. India (Republic of)	X			
42. Indonesia (Republic of)		X		2)
43. Iran			X	
~~44. Iraq (Republic of)~~	-------	-------	-------	
45. Ireland	X			
~~46. Iceland~~	-------	-------	-------	
~~47. Israel (State of)~~	-------	-------	-------	
48. Italy	X			
49. Japan	X			
50. Jordan (Hashemite Kingdom of)		X		2)
51. Kenya (Republic of)	X			
~~52. Khmer Republic~~	-------	-------	-------	
53. Kuwait (State of)	X			
54. Laos (Kingdom of)	X			
55. Lesotho (Kingdom of)	X			
56. Lebanon	X			
57. Liberia (Republic of)	X			
58. Libyan Arab Republic			X	
59. Liechtenstein (Principality of)	X			
60. Luxembourg	X			
61. Malaysia	X			
62. Malawi	X			
~~63. Maldives (Republic of)~~	-------	-------	-------	
64. Malagasy Republic	X			
~~65. Mali (Republic of)~~	-------	-------	-------	

1	2	3	4	5
66. Malta			X	
67. Morocco (Kingdom of)	X			
68. Mauritius	X			
69. Mauritania (Islamic Republic of)			X	
70. Monaco	X			
71. Mongolian People's Republic		X		2)
~~72. Nauru (Republic of)~~	-------	-------	------	
~~73. Nepal~~	-------	-------	------	
~~74. Niger (Republic of the)~~	-------	-------	------	
75. Nigeria (Federal Republic of)	X			
76. Norway	X			
77. New Zealand	X			
78. Oman (Sultanate of)	X			
79. Uganda (Republic of)			X	
80. Pakistan	X			
81. Netherlands (Kingdom of the)	X			
82. Philippines (Republic of the)	X			
83. Poland (People's Republic of)	X			
84. Qatar (State of)		X		4)
~~85. Syrian Arab Republic~~	-------	-------	------	
86. German Democratic Republic	X			
87. Ukrainian Soviet Socialist Republic	X			
88. Roumania (Socialist Republic of)			X	
89. United Kingdom of Great Britain and Northern Ireland	X			
~~90. Rwanda (Republic of)~~	-------	-------	------	

1	2	3	4	5
91. Senegal (Republic of the)			X	
92. Sierra Leone			X	
93. Singapore (Republic of)	X			
~~94. Somali Democratic Republic~~	-------	-------	-------	
95. Sudan (Democratic Republic of the)			X	
~~96. Sri Lanka (Ceylon) (Republic of)~~	-------	-------	-------	
97. Sweden	X			
98. Switzerland (Confederation of)	X			
~~99. Swaziland (Kingdom of)~~	-------	-------	-------	
100. Tanzania (United Republic of)		X		4)
101. Chad (Republic of the)			X	
102. Czechoslovak Socialist Republic	X			
~~103. Spanish Saharian Territory~~	-------	-------	-------	
104. Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible	X			
105. Thailand	X			
106. Togolese Republic	X			
~~107. Tonga (Kingdom of)~~	-------	-------	-------	
108. Tunisia			X	
109. Turkey	X			
110. Union of Soviet Socialist Republics	X			
111. Viet-Nam (Republic of)			X	
~~112. Yemen Arab Republic~~	-------	-------	-------	
~~113. Yemen (People's Democratic Republic of)~~	-------	-------	-------	

1	2	3	4	5
114. Yugoslavia (Socialist Federal Republic of)	X			
115. Zaire (Republic of)	X			
116. Zambia (Republic of)			X	
ASSOCIATED MEMBER 117. Papua New Guinea	X			

Notes

1) Powers delegated to France (No. 640 of the Convention).

2) Provisionally accredited in accordance with provision No. 631 of the Convention.

3) Accreditation not in conformity with the terns of provisions Nos. 630 and 633 of the Convention.

4) Accreditation not in conformity with the terns of provision No. 630 of the Convention.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. DT/37-E
19 October 1974
Original : English

COMMITTEE 4

CHANGES TO CHANNEL FREQUENCIES RESULTING FROM THE ADOPTION OF VARIOUS CHANNELLING ARRANGEMENTS

Notes : 1. COP/AFR indicates the existing channelling provided in the Copenhagen Plan, 1948 and the African Plan, 1966.

2. 8 kHz, 9 kHz, 10 kHz indicate channelling arrangements based on a uniform channel spacing of 8, 9 or 10 kHz throughout the MF band, each channel frequency being an integral multiple of the spacing.

Existing Plan	New Plan	Frequency change necessary (kHz)					Number of channels unfilled
		0	1	2	3	4	
10 kHz	8 kHz	27	-	54	-	27	27
	9 kHz	12	24	24	24	24	12
	COP/AFR	11	24	26	22	24	13
COP/AFR	8 kHz	14	28	36	29	14	14
	9 kHz	1	113	3	2	1	-1
	10 kHz	11	24	26	22	24	-13

T. KILVINGTON
Chairman
Ad hoc Group on Channel Spacing

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. DT/38-E
19 October 1974
Original : English

COMMITTEE 5

Norway

TEXT PROPOSED FOR THE AMENDMENT OF DOCUMENT No. 87

1. Insert on page 1 for Chapter 9.3.1 after "... the country concerned" :

"In cases where countries are separated by sea water, the 0.5 mV/m field-strength shall, in principle be met at the mid-point of the over-water path, unless other agreement between the Administrations concerned is achieved."

2. Insert on page 2 in the appendix, first §, after "... neighbouring country" :

"or at the mid-point of an over-water path"

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. DT/39-E
20 October 1974
Original : French

COMMITTEE 6

DRAFT

FIRST REPORT OF COMMITTEE 6

(SUBMISSION OF REQUIREMENTS)

Subjects treated :

i) Form for the submission of a frequency assignment requirement

ii) Detailed instructions concerning the information to be entered in the various boxes in the form for the submission of a frequency assignment requirement

iii) Definitions of the gain of an antenna referred to a short vertical antenna in a given direction.

Committee 6 unanimously adopted the form and texts on the above subjects appearing in Annexes A, B and C attached hereto.

M. HARBI

Chairman

Annexes : 3

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ANNEX A

FORM FOR THE SUBMISSION OF A FREQUENCY ASSIGNMENT REQUIREMENT
(See detailed instructions - Annex B)

Regional Administrative Conference for LF/MF Broadcasting (Geneva, 1975)

1) Administration	Requirement sheet No.

Transmitting station

2) Name	3) Country	4) Coordinates of antenna site	
		Longitude (degrees and minutes)	Latitude (degrees and minutes)
		E W	N S

5) Desired frequency (kHz)	6) Frequency range desired for alternate frequencies (kHz)
	to / or / to

7) Necessary bandwidth in kHz	8) Carrier power Pc (kW)	9) Hours of operation GMT
A3		from / to

Required service area		
10) Ground-wave	a) Coordinates of the centre of the area	b) Radius in km
11) Sky-wave	a) Coordinates of the centre of the area	b) Radius in km

12) Ground conductivity in service area (S/m)

3×10^{-2}	10^{-2}	3×10^{-3}	10^{-3}
3×10^{-4}	10^{-4}	3×10^{-5}	10^{-5}

Antenna characteristics

Simple vertical antenna	Antenna other than simple vertical antenna			
13) Height (metres)	15) Attach the radiation diagrams in the horizontal and/or vertical planes.			
14) Gain in dB	16) Horizontal plane	a) azimuth of maximum radiation (in degrees)	b) angular width of the main lobe (in degrees)	c) gain (in dB)
	17) Vertical plane	a) angle of elevation of maximum radiation (in degrees) where other than zero	b) angular width of the main lobe (in degrees)	c) gain (in dB)

18) For stations at less than 100 km from sea, attach a map showing the antenna site relative to the coastline

19) Synchronized network

If the station forms part of a synchronized network, list below other stations forming part of the network (if necessary, continue on the back) and for each such station complete a separate requirement sheet

Name of the station	Requirement sheet No.

N.B.: If this requirement covers an assignment in use indicate the frequency:..... kHz.

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ANNEX B

Detailed instructions concerning the information to be entered in the various boxes in the form for the submission of a frequency assignment requirement

1. Administration — Name of the Administration submitting the requirement.

2. Name of transmitting station — Indicate the name of the locality by which the station is (or will be) known or in which it is (or will be) located. Use the name as shown in the International Frequency List where this exists. Limit the number of letters and numerals to a total of 14.

3. Country — Indicate the country in which the station is (or will be) located, using the symbols appearing in Table 1 of the Preface to the International Frequency List. (Seventh Edition, together with the latest Recapitulative Supplement).

4. Coordinates of the antenna

Indicate the geographical coordinates of the site of the transmitter antenna (longitude and latitude, in degrees and minutes).

5. Frequency desired — Indicate the assigned frequency of the channel (see No. 85 of the Radio Regulations) your Administration would prefer to use. /For this purpose the centre frequency of the channels adopted at the present Session of the Conference shall be used./ Where this is not possible, state in the next box the frequency range within which the most suitable assigned frequency could be selected during planning.

6. Frequency range desired

If a frequency has been indicated in the preceding box, indicate here the frequency range(s) within which an alternative frequency could be selected during planning.

Example : 680 - 740 kHz or 1200 - 1300 kHz

7. Necessary bandwidth

Indicate the necessary bandwidth of the emission as defined in No. 91 of the Radio Regulations. The value of this bandwidth should be between 9 kHz (AF-bandwidth: 4.5 kHz) and 20 kHz (AF-bandwidth: 10 kHz).

8. Carrier Power

Indicate the average power supplied to the antenna transmission line by the transmitter during one radio frequency cycle under conditions of no modulation (see No. 97 of the Radio Regulations). The last column in this box is for the decimal.

9. Hours of operation (GMT)

Indicate the daily hours of operation of the transmitter (GMT), to the nearest hour. The first pair of figures should show the time the first emission of the day begins, and the second the time the last emission ends.

Example :

from	0	7	to	2	3

10. and 11. Required service area

Indicate the radius of the required service area round the transmitter, in km, specifying whether the area is served by ground-wave and/or sky wave. In case where directional antenna is used, the approximate co-ordinates of the centre of the required service area and the radius, in km, of the service range shall be indicated.

12. Ground conductivity in the required service area

Give particulars, in the greatest possible detail, of ground conductivity, preferably rounded off to the nearest values for which the curves in C.C.I.R. Recommendation 368-2 are plotted, namely :

3×10^{-2}, 10^{-2}, 3×10^{-3}, 10^{-3}, 3×10^{-4}, 10^{-4},

3×10^{-5}, 10^{-5} S/m

Put a cross in the appropriate box.

Antenna characteristics

13. and 14. Simple vertical antenna (see extracts from C.C.I.R. /No. .../ reproduced on pages 11 and 12 of this Annex).

13. Indicate the height of the antenna (in metres) and

14. its gain (dB), referred to a short vertical antenna, in a given direction.
The radiation may be expressed either in effective monopole radiated power (e.m.r.p.) or in cymomotive force (c.m.f.); to define the gain of an antenna referred to a short vertical antenna in a given direction one should adopt either of the two definitions :

The ratio between the cymomotive force of the actual antenna in a given direction and the cymomotive force in the horizontal plane of a short vertical antenna without losses on a perfectly conducting plane, the two antennas being supplied with the same power.

The ratio of the power required at the input of a short vertical antenna without losses situated on perfectly conducting horizontal plane to produce the reference effective monopole radiated power (e.m.r.p.) of 1 kW (cymomotive force of 300V) in the horizontal direction, to the power supplied to the actual antenna to produce the same e.m.r.p. (c.m.f.) in the given direction.

The ratio, expressed in dB, is the same for the two definitions.

15. to 17. Antenna other than a simple vertical antenna

15. The form should be accompanied by radiation diagram(s) of the antenna in the horizontal and vertical plane(s).

Or, if this is impossible, indicate :

16. in the horizontal plane:

a) the azimuth of maximum radiation, in degrees, (clockwise) from True North;

b) the total angle, in degrees, within which the power radiated in any direction does not fall more than 6 dB below the power radiated in the direction of maximum radiation;

c) the gain of the antenna, **(dB)(see item 14 above).**

17. in the vertical plane:

a) the angle of elevation, in degrees, of maximum radiation;

b) the total angle, in degrees, within which the power radiated in any direction does not fall more than 6 dB below the power radiated in the direction of maximum radiation;

c) the gain of the antenna (dB) (see item 14 above).

When the antenna diagram shows substantial secondary lobes indicate on a separate sheet for each lobe the azimuth and the angle of elevation of the radiation in the direction of the lobe axis and the gain, in dB, with respect to the maximum radiation of a short vertical antenna placed on a perfectly conducting plane earth.

18. In the case of stations at less than 100 km from the sea

Attach a map (on a scale of at least 1/1,000,000) showing the site of the antenna in relation to the coast if the latter is less than 100 km from the antenna. The scale of the map and direction of True North should be indicated on the map.

19. Synchronized network

If the transmitter forms part, or is intended to form part, of a synchronized network, indicate the name and the corresponding requirement sheet number of the other transmitters in the network. A separate request form must be filled in for each of these stations.

N.B. If the requirement corresponds to a frequency assignment already in service, that frequency should be indicated irrespective of whether the Administration wishes to retain the frequency or agrees to its transfer.

/The Administration may supply such additional information as it may consider useful on a separate sheet, in a simplified form so that it can be processed by electronic means./

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VERTICAL ANTENNAS

Figure No. 1 gives curves drawn so that the radius vector is proportional to the *field* expected in a given direction in a vertical plane at 1 km distance for 1kW radiated.

The functions are independent of the azimuth, so the power contours become horizontal straight lines in the diagrams. The formulas used for calculating these power distribution diagrams are given below. It is assumed that the antennas are on perfectly conducting ground, and that one kilowatt is being radiated in each case.

1. *Uniform current element* (antenna length short compared with $\lambda/4$)

$E = 300 \cos \theta$, in mV/m at one kilometre distance where

θ = elevation angle (latitude)

$(Ed)_{max} = 300$ mV/m $\sqrt{P}$ ($\theta = 0^0$ on horizon)
($\theta = 90^0$ in zenith)

2. *Quarter wave antenna*

$$E = 313.6 \frac{\cos (90^0 \sin \theta)}{\cos \theta}$$ in mV/m at one kilometre distance

$(Ed)_{max} = 313.6$ mV/m $\sqrt{P}$

3. .311 *wave antenna*

$$E = 234.21 \frac{\cos (112^0 \sin \theta) + 0.3740}{\cos \theta}$$ in mV/m at one kilometre distance

$(Ed)_{max} = 321.8$ mV/m $\sqrt{P}$

4. *Half wave antenna*

$$E = 190.26 \frac{\cos (180^0 \sin \theta) + 1}{\cos \theta}$$ in mV/m at one kilometre distance

$(Ed)_{max} = 380.52$ mV/m $\sqrt{P}$

5. .625 *wave antenna*

$$E = 261 \frac{\cos (225^0 \sin \theta) - \cos 225^0}{\cos \theta}$$ in mV/m at one kilometre distance

$(Ed)_{max} = 445$ mV/m $\sqrt{P}$

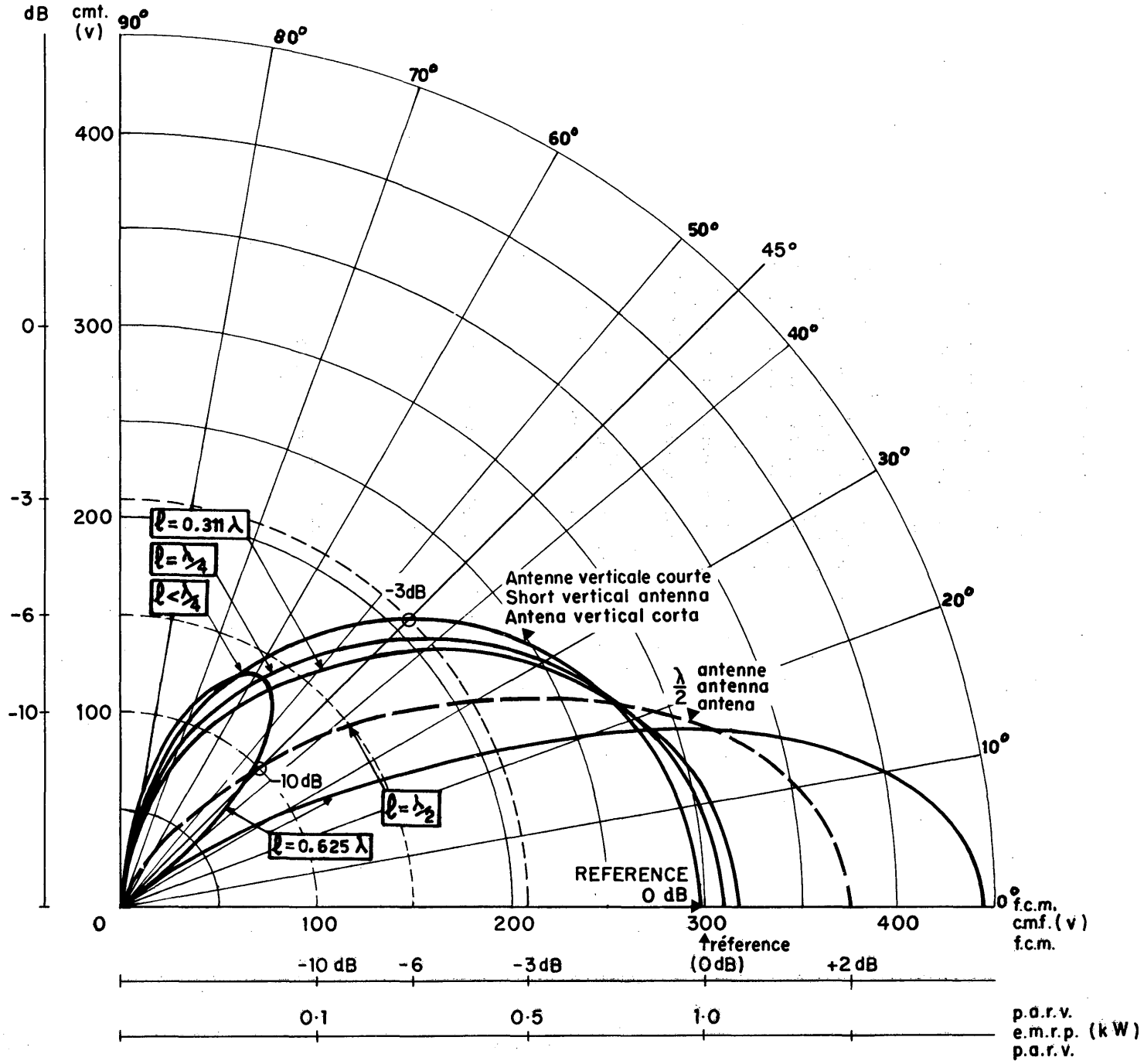

dB
cmt. (v)
90°
80°
70°
60°
50°
45°
40°
30°
20°
10°
0°
400
300
200
100
0
0
-3
-6
-10
ℓ = 0.311 λ
ℓ = λ/4
ℓ < λ/4
-3dB
-10dB
Antenne verticale courte
Short vertical antenna
Antena vertical corta
λ/2 antenne
antenna
antena
ℓ = λ/2
ℓ = 0.625 λ
REFERENCE
0 dB
f.c.m.
cmf. (v)
f.c.m.
0
100
200
300
400
réference
(0dB)
-10 dB
-6
-3dB
+2 dB
0·1
0·5
1·0
p.a.r.v.
e.m.r.p. (kW)
p.a.r.v.

Figure 1

ANNEX C

Definitions

GAIN OF AN ANTENNA REFERRED TO A SHORT VERTICAL ANTENNA IN A GIVEN DIRECTION

The radiation may be expressed either in effective monopole radiated power (e.m.r.p.) or in cymomotive force (c.m.f.); to define the gain of an antenna referred to a short vertical antenna in a given direction one should adopt either of the two definitions :

The ratio between the cymomotive force of the actual antenna in a given direction and the cymomotive force in the horizontal plane of a short vertical antenna without losses on a perfectly conducting plane, the two antennas being supplied with the same power.

The ratio of the power required at the input of a short vertical antenna without losses situated on perfectly conducting horizontal plane to produce the reference effective monopole radiated power (e.m.r.p.) of 1 kW (cymomotive force (c.m.f.) of 300V in the horizontal direction, to the power supplied to the actual antenna to produce the same e.m.r.p. (c.m.f.) in the given direction.

The ratio, expressed in dB, is the same for the two definitions.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. DT/40-E
20 October 1974
Original : French

COMMITTEE 6

DRAFT RESOLUTION ...

concerning studies to be made by the I.F.R.B. before the second session of the Conference

The Regional Administrative LF/MF Broadcasting Conference, Geneva 1974,

considering

that it is essential for the proper conduct of its second session on planning that preparatory work should be carried out by the I.F.R.B. on the basis of the requirements submitted by Administrations and the standards adopted at the first session,

invites Administrations

to submit their frequency requirements to the I.F.R.B. on the appropriate forms, a model of which is to be found /_ _/, as soon as possible after the end of the first session and in any case not later than . . . . . .

instructs the I.F.R.B.

1. to supplement the information it receives by means of the following data :

- carrier power in dB per kW,
- cymomotive force (c.m.f.),
- effective monopole radiated power (e.m.r.p.) with vertical antenna,
- magnetic dip /_ . . . ._/;

2. to prepare, with the aid of the computer, a list of all the requirements it receives, supplemented by the data listed in paragraph 1, and to send a copy thereof to each Administration in Regions 1 and 3 not later than . . . . . .

3. The Board shall study the requirements it receives on the basis of the technical decisions taken at the first session, proceeding as follows :

3.1 It shall study incompatibilities that are evident between Administrations' requirements.

3.2 It shall recommend to Administrations that have not indicated a preferred frequency the frequency which it considers most suitable in the desired range;

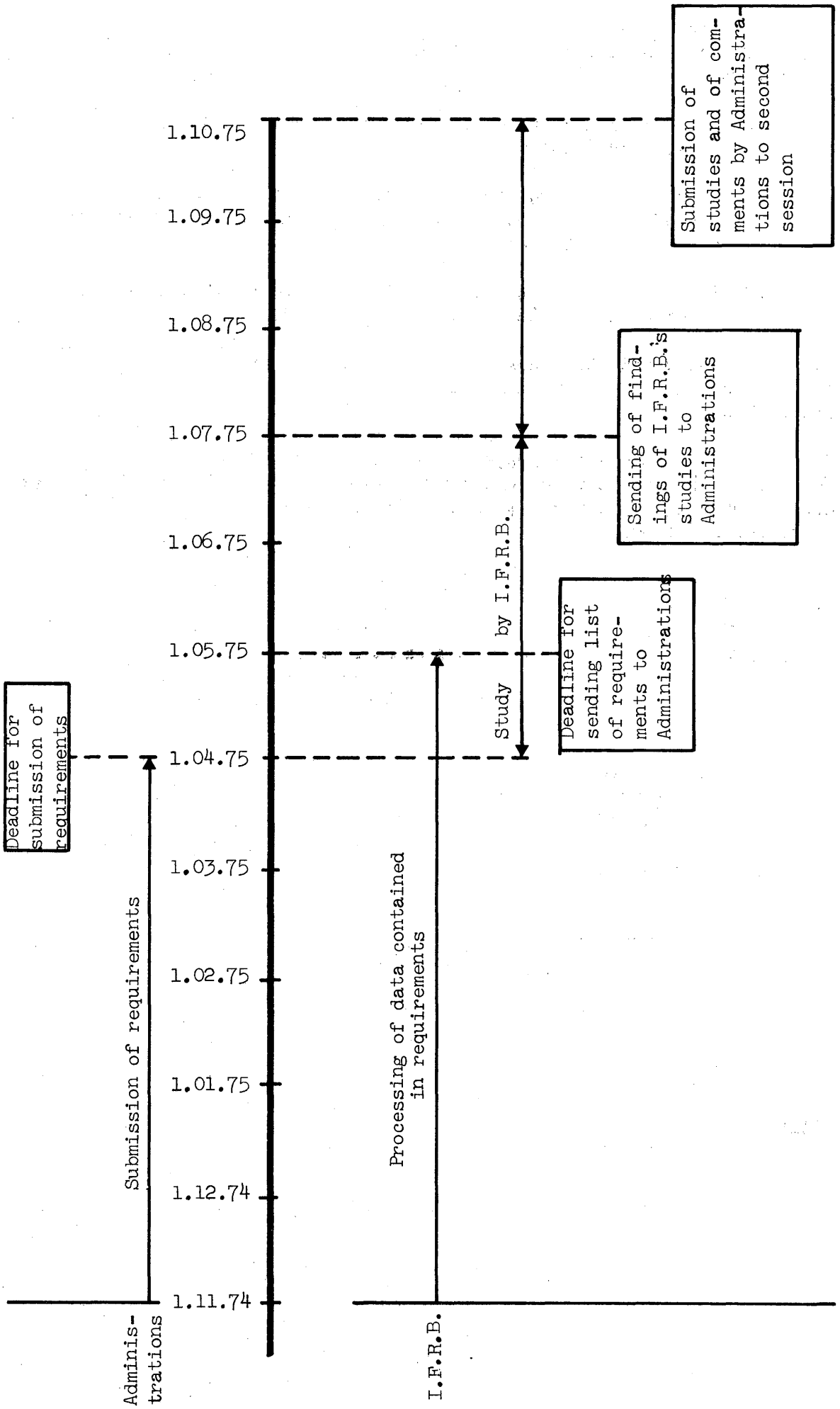
3.3 It shall make whatever suggestions it sees fit with a view to eliminating the incompatibilities found;

4. The Board shall draw up a report containing the findings of its studies and send it to all Administrations in Regions 1 and 3 not later than . . . . . .

5. The Board shall prepare for the second session of the Conference an up-to-date document containing the findings of its studies as sent to Administrations, together with any comments it has received since sending them.

Annex to the Draft Resolution : 1

A N N E X


1.10.75
1.09.75
1.08.75
1.07.75
1.06.75
1.05.75
1.04.75
1.03.75
1.02.75
1.01.75
1.12.74
1.11.74
Submission of studies and of comments by Administrations to second session
Sending of findings of I.F.R.B.'s studies to Administrations
Deadline for sending list of requirements to Administrations
Study by I.F.R.B.
Deadline for submission of requirements
Submission of requirements
Processing of data contained in requirements
Administrations
I.F.R.B.