Documents of the African VHF/UHF Broadcasting Conference
(Geneva, 1963)

To reduce download time, the ITU Library and Archives Service has divided the conference documents into sections.

- This PDF includes Document No. 1-50.
- The complete set of conference documents includes Document No. 1-115.

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF/UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 1-E (Revised)
29 April, 1963
Original : French

PLENARY MEETING

INVITATION TO THE CONFERENCE

In accordance with Chapter 3 of the General Regulations annexed to the International Telecommunication Convention, the Secretary-General, in the absence of an inviting government and by agreement with the Government of the Swiss Confederation, undertook to convene and organize the African VHF/UHF Broadcasting Conference.

1. Invitations to Members and Associate Members

On 13 August, 1962, invitations (see annex) were sent to the Administrations of the countries listed in the annex to the invitation.

Only the Republic of Sudan has intimated that it is unable to send a representative to the Conference.

2. Later, on their accession to Membership of the I.T.U., invitations were sent to the Administrations of the following countries :

Burundi (Kingdom of)
Somali Republic
Rwandi (Republic of)
Tanganyika
Uganda

3. The Administration of Italy, a country not situated in the African area, has notified its intention of participating in the Conference as an observer.

4. Invitation to the United Nations and to Specialized Agencies

In accordance with Chapter 1 of the General Regulations annexed to the Convention, the United Nations and the following Specialized Agencies have been invited to send representatives to take part in the Conference as observers with consultative status :

Inter-governmental Maritime Consultative Organization (I.M.C.O.)

International Civil Aviation Organization (I.C.A.O.)

World Meteorological Organization (W.M.O.)

United Nations Educational, Scientific and Cultural Organization (UNESCO)

To date only UNESCO has signified its intention of sending a representative.

5. Notification to International Organizations

The following international organizations were notified:

International Association of Radio-Maritime Interests

International Radio-Maritime Committee (C.I.R.M.)

International Council of Scientific Unions (C.I.U.S.)

Committee on Space Research (C.O.S.P.A.R.)

International Air Transport Association (I.A.T.A.)

Inter-Union Committee for allocation of frequencies for radio-astronomy and space research (I.U.C.A.F.S.P.)

International Broadcasting and Television Organization (I.B.T.O.)

European Broadcasting Union (E.B.U.)

International Scientific Radio Union (U.R.S.I.)

International Chamber of Shipping

International Federation of Shipping

African and Malagasy Union of Posts and Telecommunications (A.M.U.P.T.)

The following organizations have requested admission to the conference:

International Council of Scientific Unions (I.C.S.U.)

International Broadcasting and Television Organization (I.B.T.O.)

European Broadcasting Union (E.B.U.)

The African and Malagasy Union of Posts and Telecommunications (A.M.U.P.T.) has also asked to be allowed to participate in the conference.

The requests for admission received from the above-mentioned organizations are set out in a separate document (Document No. 3).

It should be noted that, in accordance with No. 212 of the Convention, the Administrative Council has exonorated international organizations which have requested admission to the I.T.U. conferences from all share in defraying the expenses thereof.

Annex : 1

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ANNEX

International Telecommunication
Union

Geneva, 13 August, 1962.

Dear Sir,

As you are aware, the Administrative Council of the I.T.U., during its 17th Session, proposed that an African VHF/UHF Broadcasting Conference should be held in 1963. The text of the relevant Resolution is reproduced, for your convenience, in Annex 1.

I am pleased to inform you that the proposal of the Council has now been approved by the majority of the Members of the Union in the region concerned, and the Conference will therefore be convened accordingly.

The agenda for the Conference, as proposed by the Administrative Council, will be as follows :

1. Definition of the technical bases to be used in drawing up frequency assignment plans for national sound broadcasting and television stations in the VHF and UHF bands in the African region.

2. Establishment of frequency assignment plans and associated agreements for national sound broadcasting and television stations in the VHF and UHF bands in the African region.

In order to avoid conflict with other conferences and meetings, the Conference will open on Monday, 29 April 1963. A maximum duration of four weeks is envisaged.

Since no invitation has been received from a Member Government the Conference will be held in Geneva.

It gives me great pleasure to invite you to send a delegation to this Conference, which I am convinced will be of great value to all African countries. It would assist me in the organization of the Conference if you could inform me at an early date whether you accept this invitation, and, in the affirmative, of the probable size of your delegation. In accordance with Chapter 2, paragraph 1.(3) of the General Regulations annexed to the International Telecommunication Convention, Geneva, 1959, you may inform recognized private operating agencies of this invitation.

I should also be pleased to receive any proposals you may wish to submit under the terms of Chapter 4 of the General Regulations.

Under No. 199 of the Convention, the expenses of the Conference will be borne, in accordance with their unit classification, by all Members and Associate Members of the region concerned, (see Annex 2), and by any Members and Associate Members of other regions which may participate as observers.

Finally, I would draw your attention to the provisions of Article 16, paragraphs 5 and 6, of the Convention concerning the use of languages at conferences of the Union.

Yours faithfully,

Gerald C. GROSS
Secretary-General

Annexes : 2

Annex 1

No. 497 AFRICAN BROADCASTING CONFERENCES (SOUND BROADCASTING AND TELEVISION)
(cf. PV CA17/19, Doc. 2901/CA17 - May/June 1962)

The Administrative Council,

having examined

the report by the I.F.R.B., annexed to Document No. 2855/CA17;

considering

a) that it would be in the interests of the African countries for conferences to be held in the near future to consider the assignment of frequencies to national sound broadcasting and television stations in the broadcasting bands;

b) the fact, however, that new long and medium wave frequency assignments might cause harmful interference to stations in the European Broadcasting Area operating in conformity with the Copenhagen Convention, 1948;

in view of

the provisions of No. 69 of the Geneva Convention, 1959;

resolves

1. to propose the convening of two conferences as follows :

1.1 a special conference of countries in the African region (African countries other than those belonging to the European Broadcasting Area), which might be held preferably in April/May 1963 in an African country, with the following agenda :

1.1.1 definition of the technical bases to be used in drawing up frequency assignment plans for national sound broadcasting and television stations in the VHF and UHF bands in the African region;

1.1.2 establishment of frequency assignment plans and associated agreements for national sound broadcasting and television stations in the VHF and UHF bands in the African region;

1.2. a special conference of countries in both the African region and the European Broadcasting Area which might be held in 1964, taking into account the kind offer of the Government of the Kingdom of Morocco to act as host Government to this conference, with the following agenda :

1.2.1 preparation of an up-to-date broadcasting plan for the band 525-1605 kc/s for the African countries outside the European Broadcasting Area, taking into account the entries already recorded in the Master International Frequency Register;

1.2.2 examination of the existing situation in the bands 150-285 kc/s and 525-1605 kc/s for the African countries which are included in the European Broadcasting Area;

1.2.3 determination of all measures, bearing in mind Article 9 of the Radio Regulations, which might prove essential in the light of this examination but which would not involve revision of the Copenhagen Plan, 1948;

2. that these two conferences, if convened, shall be financed in accordance with No. 199 of the Geneva Convention, 1959;

instructs the Secretary-General

to consult the Administrations of the Members and Associate Members of the I.T.U. included in the areas referred to above, in accordance with No. 70 of the Convention;

requests the C.C.I.R.

to expedite the preparation of the technical information necessary for the preparation of frequency assignment plans for the national sound broadcasting and television stations in Africa;

invites the I.F.R.B.

1. to study in consultation with the Administrations concerned, the frequency usage and future frequency requirements in the "tropical broadcasting" bands for countries in the African region as defined above, bearing in mind the possibility of mutual harmful interference between stations in this region and those in Regions 1, 2 and 3, with a view to proposing the basis of a frequency assignment plan for national sound broadcasting stations in Africa in the bands concerned;

2. to carry out the technical planning for the two conferences and to give advice to Administrations on the submission of suitable frequency requirements.

Annex 2

MEMBERS

- Cameroon (Republic of the)
- Central African Republic
- Congo (Republic of the)(Brazzaville)
- Congo (Republic of the)(Leopoldville)
- Dahomey (Republic of)
- Ivory Coast (Republic of)
- Group of Territories represented by the French Overseas Post and Telecommunication Agency
- Spain (for the Canary Islands)
- Ethiopia
- France (for Reunion)
- Gabon Republic
- Ghana
- Guinea (Republic of)
- Upper Volta (Republic of)
- Liberia
- Malagasy Republic
- Mali (Republic of)
- Mauritania (Islamic Republic of)
- Niger (Republic of the)
- Nigeria (Federation of)
- Spanish Provinces in Africa
- Portuguese Overseas Provinces
- Rhodesia and Nyasaland (Federation of)
- Senegal (Republic of the)
- Sierra Leone
- Sudan (Republic of the)
- South Africa (Republic of) and Territory of South-West Africa
- Chad (Republic of the)
- Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible
- Togolese Republic

ASSOCIATE MEMBERS

- British East Africa
- Territory of Ruanda-Urundi

Documents of the African VHF/UHF Broadcasting Conference

(Geneva, 1963)

Document No. 1-E

Not available

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Pas disponible

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No disponible

INTERNATIONAL TELECOMMUNICATION UNION

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AFRICAN VHF / UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 2-E
25 April 1963
Original : French

HEADS OF DELEGATIONS

DRAFT AGENDA FOR THE FIRST MEETING OF HEADS OF DELEGATIONS,
on Monday, 29 April, 1963, in the Council Chamber, at 11 a.m.

1. Organization of the Conference; setting-up of Committees (Document No. 5-E);
2. Proposals for Chairman and Vice-Chairman of the Conference;
3. Constitution of the Secretariat;
4. Agenda for the first plenary meeting (Document No. 4-E);
5. Any other business.

N.B. : The official opening ceremony will take place on Monday, 29 April, 1963, at 3 o'clock p.m., in the Council Chamber.

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 3-E (Revised)
29 April, 1963
Original : French

PLENARY MEETING

INTERNATIONAL ORGANIZATIONS

The attached requests for admission, received by 25 April, 1963, from the following International Organizations, are submitted to the Plenary Meeting of the Conference in accordance with paragraph 515 of the Convention.

International Council of Scientific Unions (I.C.S.U.)

International Broadcasting and Television Organization (I.B.T.O.)

European Broadcasting Union (E.B.U.)

African and Malagasy Union of Posts and Telegraphs (A.M.U.P.T.)

It should be noted that, in accordance with No. 212 of the Convention, the Administrative Council has exonorated the above mentioned international organizations from all share in defraying the expenses of I.T.U. Conferences.

Annex: 1

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A N N E X

I.C.S.U. International Council of Scientific Unions

To the Secretary-General

Dear Sir,

I thank you for your letter and have much pleasure in informing you that the I.C.S.U. will be glad to participate in the Conference.

Yours faithfully,

A.E. DECAE
Executive Secretary

I.B.T.O. International Broadcasting and Television Organization

Mr. Gerald C. Gross, Burinterna, Geneva.

Reference your letter 3910/62/r of 14 August last oirt requests participation by an observer in African VHF broadcasting conference opening in Geneva on 29 april next stop thanks.

Yegorov technical director oirt

E.B.U. European Broadcasting Union

Dear Sir,

With reference to aour letter No. 3910/62/R of 13 August 1962 I would inform you that the European Broadcasting Union applies for admission to the African VHF/UHF Broadcasting Conference which will open in Geneva on 29 April, 1963.

Yours faithfully,

G. HANSEN
Director

A.M.U.P.T. African and Malagasy Union of Posts and Telecommunications
134/T, 1st April 1963

To the Chairman of the Administrative Council of ITU

Dear Sir,

The forthcoming African VHF/UHF Broadcasting Conference is of particular interest to all States of the African and Malagasy Union. In these States the administrative management frequencies, including broadcasting frequencies, falls within the competence of the Minister of Posts and Telecommunications.

The General Secretariat of A.M.U.P.T., representing as it does a sub-Union of the States within the African and Malagasy Union and being within that Union the co-ordinating body for telecommunication problems and in particular for the utilization of frequency bands, would like to send observers to take part as consultants, in the work of the Conference. May I ask you, therefore, to request the inviting Government, in accordance with paragraph 513 of Chapter 2 of the Convention, to notify the General Secretariat of A.M.U.P.T. of the forthcoming Conference so as to enable me, in conformity with paragraph 514, to send a request for admission to the Government of the Swiss Confederation?

Thanking you in anticipation,

I remain,

Yours faithfully,

J. BALIMA
Secretary General

Telegram Unipostam Brazzaville from Burinterna Geneva, 6 April

3910/62/R for Balima stop I have forwarded your letter No.000134 of 1 April to the Secretary General of the I.T.U. who will reply shortly stop yours truly Gabriel Tedros Chairman Administrative Council.

Telegram Unipostam Brazzaville from Burinterna Geneva, 8 April

3910/62 stop reference your letter 134/T 1 April stop we inform you that: first in the absence of an inviting government the provisions of number 523 of the General Regulations are applicable as regards invitations to the African VHF/UHF Broadcasting Conference second our telegram 3902/62 2 April is to be regarded as a notification to your organization in accordance with number 513 third we regard your letter 143/T of 1 April as a request for admission within the terms of number 514 fourth request will be submitted to the conference for decision in conformity with number 515 end.

INTERNATIONAL TELECOMMUNICATION UNION

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AFRICAN VHF / UHF BROADCASTING CONFERENCE

GENEVA, 1963

Addendum No. 1 to
Document No. 3-E
29 April, 1963
Original : French

PLENARY MEETING

INTERNATIONAL ORGANIZATIONS

The attached communication from the Union of African National Sound Broadcasting and Television Organizations is hereby submitted to the plenary meeting of the Conference, in accordance with No. 575 of the Convention.

The Administrative Council has exempted this organization from any obligation to share in defraying the expenses of the I.T.U. conferences, under the Convention, No. 212.

Annex : 1

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ANNEX

To the Secretary-General,
International Telecommunication Union,
Geneva,
Switzerland

Dear Sir,

Further to my telegram asking for official admission of the Union of African National Sound Broadcasting and Television Organizations, I beg to request that our Organization be allowed to follow the work of the African VHF/UHF Broadcasting Conference, in the same way as other, similar, international organizations.

Yours faithfully,

Alpha DIALLO
President, Union of African
National Sound Broadcasting and
Television Organizations

Documents of the African VHF/UHF Broadcasting Conference

(Geneva, 1963)

Document No. 3-E

Not available

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Pas disponible

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No disponible

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document 4-E (Rev)
29 April, 1963
Original: French

HEADS OF DELEGATIONS

DRAFT AGENDA

FOR THE INAUGURAL PLENARY MEETING

on

Monday, April the 29th, 1963, at 4 p.m.

1. Speech by the Secretary-General
2. Election of a Chairman for the Conference
3. Election of Vice-Chairmen
4. Setting-up of a Secretariat for the Conference
5. Organization of the Conference and setting-up of Committees (Document 5)
6. Hours of work
7. Statement by the Chairman, International Frequency Registration Board
8. Any other business.

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document 4-E
29 April, 1963
Original: French

HEADS OF DELEGATIONS

DRAFT AGENDA

FOR THE INAUGURAL PLENARY MEETING

on

Monday, April the 29th, 1963, at 3 o'clock p.m.

1. Speech by the Secretary-General
2. Election of a Chairman for the Conference
3. Election of Vice-Chairmen
4. Setting-up of a Secretariat for the Conference
5. Organization of the Conference and setting-up of Committees (Document 5)
6. Hours of work
7. Statement by the Chairman, International Frequency Registration Board
8. Any other business.

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 5-E
25 April 1963
Original : French

PLENARY MEETING

AGENDA FOR THE CONFERENCE

The agenda for the Conference, as proposed by the Council and appearing in Resolution No. 497, is as follows :

1. Definition of the technical bases to be used in drawing up frequency assignment plans for national sound broadcasting and television stations in the VHF and UHF bands in the African Region.

2. Establishment of frequency assignment plans and associated agreements for national sound broadcasting and television stations in the VHF and UHF bands in the African Region.

Some suggestions by the I.T.U. General Secretariat for organization of the Conference, committee structure and terms of reference of committees

It is suggested that the following committees be set up :

1. Steering Committee

(The Chairman and Vice-Chairmen of the Conference, and the chairmen of committees).

To coordinate committee work, settle the schedule of meetings, etc.

2. Credentials Committee

Terms of reference in accordance with No. 535 of the General Regulations annexed to the Convention.

3. Budget Supervision Committee

Terms of reference in accordance with Article 5 of the General Regulations annexed to the Convention.

4. Technical Committee

To define the technical bases to be used in drawing up frequency assisgnment plans for national sound broadcasting and television stations in the VHF and UHF bands in the African Region.

5. Planning Committee

Terms of reference : to draw up frequency assignment plans and associated agreements for national sound broadcasting and television stations in the VHF and UHF bands in the African Region.

The Planning Committee could be sub-divided into three working parties :

Working Party A :

Plans for television in Bands I and III

Working Party B :

Plans for FM sound broadcasting in Band II

Working Party C

Plans for television in Bands IV and V.

6. Drafting Committee

In accordance with Article 21 of the General Regulations annexed to the Convention.

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 6-E
25 April, 1963
Original : French

PLENARY MEETING

REQUEST BY THE PEOPLE'S DEMOCRATIC REPUBLIC OF ALGERIA FOR PERMISSION TO TAKE PART IN THE CONFERENCE

The following correspondence, between the Consulate-General of the People's Democratic Republic of Algeria in Geneva and the General Secretariat is brought to the notice of the Conference :

1) "No.3910/62/R

22 April, 1963

Subject : African VHF/UHF Broadcasting Conference

Reference: your letter dated 16 April, 1963

The Consulate-General of the People's Democratic Republic of Algeria,
42, rue de Vermont,
GENEVA

Dear Sir,

In your letter dated 16 April, you say that the Ministry of Foreign Affairs of your country wishes to send a delegation to attend the African VHF/UHF Broadcasting Conference, to meet in Geneva on 29 April.

There are two matters to be considered :

1. If, at the time the Conference begins, your Government has duly submitted an instrument of accession to the International Telecommunication Convention, and hence the People's Democratic Republic of Algeria has become a Member of the I.T.U., your delegation will automatically be admitted, but only as an observer, since Algeria is not in the Region in question.

Under No.199 of the Convention, Algeria will be called upon to share in defraying the expenses of the Conference, in accordance with the class of contribution it has chosen as a Member of the I.T.U.

2. If, on the other hand, your country has not yet become a Member of the I.T.U., the question of admission, and the circumstances of admission, could be submitted for a decision by the Conference.

Yours faithfully,

C. STEAD
COUNSELLOR "

2) "Algerian Republic

16 April, 1963

Consulate-General
42, rue de Vermont,
Geneva

Telephone: (022) 34 37 77

To the Secretary-General,
I.T.U., Place des Nations,
Geneva

Dear Sir,

I have to inform you that our Ministry of Foreign Affairs wishes to send a delegation to follow the work of the conference organized by the I.T.U. and beginning on 29 April.

I should be most grateful if you would let me know what action you have taken in response to this request.

Yours faithfully,

Mohammed Ben Amar
Chargé de mission "

Note by the General Secretariat :

The People's Democratic Republic of Algeria became a Member of the United Nations on 8 October, 1962

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF/UHF BROADCASTING CONFERENCE

GENEVA, 1963

Corrigendum to Document No. 7-E
1 May 1963
Original : French and English

NOTE BY THE DIRECTOR, C.C.I.R.

The following corrigenda apply to Circular Letter No. 27/031436 dated 11 April 1963, and to the C.C.I.R. documents annexed thereto.

1. Pages 2 and 3 of letter

The list of C.C.I.R. documents should be completed by the insertion of the final numbers of the texts as they will appear in the printed volumes of the Xth Plenary Assembly.

Doc. 2322	becomes	Recommendation 418
2321	becomes	Recommendation 417
2158	becomes	Recommendation 412
2323	becomes	Recommendation 419
2176	becomes	Report 239
2329	becomes	Report 308
2327	becomes	Report 306
2328	becomes	Report 307

The reference to Document No. 2292 should be deleted. These numbers should be included in the headings to each document.

2. General amendment to all texts

In the Recommendations, replace "RECOMMENDS" by "UNANIMOUSLY RECOMMENDS".

In the Reports, add an asterisk after the title "Report...*" and a corresponding footnote at the bottom of the page to read "This Report was adopted unanimously".

3. Corrections to individual documents

Doc. 2322 - Under title, replace "(Question ...(Annex 11/4))" by "(Question 267(XI))".

Doc. 2176 - Under title, remove the brackets from "Broadcasting and mobile services".

Page 3. Replace the reference "(Annex 5/3)" by the reference "(Recommendation 370)" eight times.

Page 4. Replace the reference "(Annex 5/3)" by the reference "(Recommendation 370)" three times.

Doc. 2327 - Page 1. Delete "(Annex 11/2)" and insert "418".

Page 2. Delete "(Annex 11/2)" and insert "418" twice.

Page 3. Line 3 : Replace "..." by "418".

Doc. 2328 - Under title, replace "(Question...(Annex 11/12)" by "(Question 267(XI))".

Page 2. Delete "(Annex 11/12)" and insert "418".

Doc. 2292 - This document should be withdrawn as it has been replaced by an amended version, which has been allotted the conference number Doc. No. 10-E. It is C.C.I.R. Report 240.

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF/UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 7-E
25 April 1963
Original: French
English

INTERNATIONAL FREQUENCY REGISTRATION BOARD (I.F.R.B.)

The documents listed below, concerning the technical preparation of the Conference by the I.F.R.B., are reproduced in Annex for the information of the delegations :

- Multi-address letter No. 20/0. 28027, 29 June 1962
- Multi-address letter No. 20/0. 28929, 21 September 1962
- Multi-address letter No. 27/0. 31436, 11 April 1963

Annexes: 3

APPENDIX No. 2

N° 20/0.28027

29 June 1962

Subject: Technical planning of the African Broadcasting Conferences

References: Administrative Council Resolution No. 497
No. 482 of the Geneva Radio Regulations

Sir,

I have the honour, on behalf of the International Frequency Registration Board, to invite the attention of your Administration to Resolution No. 497, adopted by the Administrative Council on 9 June 1962, of which a copy is attached hereto.

2. This resolution results from a detailed study by the Council, of information supplied to it by the I.F.R.B. and information contained in the Report of the Meeting of Experts on development of information media in Africa held under the auspices of UNESCO in Paris, 24 January - 6 February 1962 (UNESCO/MC/45 dated 15 May 1962 refers).

3. In the discussions during the Council Session, the following points were considered:

3.1 VHF/UHF broadcasting bands (41-68 Mc/s, 87.5-100 Mc/s, 174-216 Mc/s, 470-960 Mc/s)

a) The possibility for the C.C.I.R. to make technical information available in a relatively short time.

b) The existence of basic technical data adopted by the European Broadcasting Conference, Stockholm, 1961, which, with some adjustment, might serve as a basis for planning in countries of the African region.

c) The desirability for countries of the African region to adopt, if possible, a single set of television standards which, inter alia, would facilitate the international exchange of programmes, before plans for the introduction of television are too far advanced in some countries. In the event that the adoption of a single set of television standards already proves unrealisable, systems which are compatible from a frequency channelling standpoint should be adopted.

d) Many countries in Africa are without VHF broadcasting installations, thus they are in a position to introduce broadcasting networks using the most up-to-date and economical techniques best suited to serving, in the first instance, the more densely populated localities.

3.2 <u>Low Frequency and Medium Frequency bands (150-285 kc/s and 525-1605 kc/s respectively)</u>

a) African countries situated north of 30° North are included in the European Broadcasting Area (No. 133 of the Radio Regulations) for which the Copenhagen (1948) Plan for broadcasting stations in the LF and MF bands exists.

b) The decision taken in 1959 by Countries in the European Broadcasting Area not to consider revising the Copenhagen Convention, and the Plan annexed thereto, before 31 December 1964.

c) In view of the possible impact of the Copenhagen Plan on a LF/MF broadcasting assignment plan for the African region, and vice versa, the likely desire of some countries belonging to the European Broadcasting Area to participate in a conference dealing with frequency assignment planning in Africa in the LF and MF bands.

d) A period of at least one year is required for the C.C.I.R. to prepare the technical data necessary for the preparation of frequency assignment plans for sound broadcasting stations in Africa in the bands concerned. These technical data are an essential prerequisite for any attempt at frequency assignment planning.

3.3 <u>Bands allocated to the Broadcasting Service in the Tropical Zone (2300-2498 kc/s in Region 1, 3200-3400 kc/s, 4750-4995 kc/s and 5005-5060 kc/s in all Regions)</u>

Due to the possibility of mutual harmful interference between broadcasting stations in the Tropical Zone in Africa and in the Tropical Zone in Regions 2 and 3 on the one hand, and stations of other services with which the bands are shared on the other, assignments of Administrations of countries in Regions 1, 2 and 3 may be affected by the use of these bands in Africa.

3.4 With regard to sound broadcasting in the <u>HF bands</u> (bands allocated exclusively to the Broadcasting Service between 5950 and 26,100 kc/s), Article 10 of the Radio Regulations applies. The I.F.R.B. is preparing a study on the extent to which this procedure has been fully applied in the

African region. The results of this study will be communicated to you under cover of a separate letter.

4. The Administrative Council therefore decided to propose, under No. 69 of the International Telecommunication Convention, the convening of two conferences. The first, a conference of countries in the African region (African countries other than those belonging to the European Broadcasting Area) to be held preferably in April/May 1963 in an African country, to deal with the VHF/UHF bands. The second, a conference of countries in both the African region and the European Broadcasting Area which might be held in 1964, taking into account the kind offer of the Government of the Kingdom of Morocco to act as host Government, to deal with the LF and MF bands.

5. The Council further decided by Resolution No. 497 to entrust the wider problem of the "tropical broadcasting" bands for study by the I.F.R.B. in consultation with the Administrations concerned.

6. Consequential to Resolution No. 497, the I.T.U. Secretary-General has dispatched a letter of consultation concerning the convening of the first conference to deal with the VHF/UHF bands (reference No. 3910/62/R dated 19 June 1962). He has also dispatched a second letter of consultation (No. 3911/62/R dated 20 June 1962) with respect to the conference to deal with the LF and MF bands. The decisions as to whether these conferences will be convened as proposed rests, of course, with the Administrations concerned.

7. In view of the urgency already expressed by a number of Administrations to reach agreement on frequency planning for national sound broadcasting and television stations in Africa, the I.F.R.B. has decided to proceed immediately with the mandate entrusted to it under the provisions of No. 482 of the Radio Regulations without waiting for the definitive decisions to convene the conferences in question. The programme of preparatory work established by the I.F.R.B. in this connection, broadly speaking, is as follows:

a) <u>VHF/UHF bands</u>, to proceed forthwith with the technical planning of the African VHF/UHF Broadcasting Conference to deal with assignments in these bands and to this end paragraphs 8 - 13 hereinafter are addressed to this particular subject;

b) <u>LF and MF bands</u>, to inform the C.C.I.R. of the particular technical information which is most urgently required for the purpose of frequency planning to begin and, in parallel, to study the present situation in the frequency spectrum as notified by Administrations in conformity with Article 9 of the Geneva Radio Regulations, bearing in mind the Copenhagen Plan, with a view to finding as a basis for preparatory consultations with the Administrations concerned;

c) <u>Bands allocated to the Broadcasting Service in the Tropical Zone</u>, to study in consultation with the Administrations concerned, the frequency usage and future frequency requirements for these bands, which the Broadcasting Service shares with other services. A separate letter will be addressed to you in the near future by the Board on this subject.

8. The remaining paragraphs of the present letter deal exclusively with initial technical planning for the African VHF/UHF Broadcasting Conference.

9. The objective is to prepare draft frequency assignment plans for the national sound broadcasting and television stations in Africa in the VHF and UHF bands between 41 and 960 Mc/s which, in Region 1 are allocated to the Broadcasting Service. To achieve this end, preparations, prior to the opening date of the Conference, fall into three distinct phases, namely:

a) the establishment, by each Administration, of its requirements in information, educational, entertainment and other media, and the conversion of this data into terms of the layout of networks, number of programmes, transmitting station characteristics, etc., taking into account demographic considerations;

b) the notification by each Administration to the I.F.R.B. of technical characteristics of transmitting stations resulting from a) above (see paragraph 10);

c) the assembly by the Board of the information and the technical bases to be recommended for frequency planning, in the form most convenient to the Conference for the drawing up of frequency assignment plans.

10. When the convening of the African VHF/UHF Broadcasting Conference has been decided with the concurrence of a majority of Members of the Union in the African region, the I.F.R.B., in a further letter, will set out the manner in which your detailed requirements could best be presented - paragraph 9 b) above refers.

11. In proceeding as outlined in paragraph 9 above, the I.F.R.B. will take into account the technical standards recommended by the International Radio Consultative Committee (C.C.I.R.), as well as the technical data used by the European VHF/UHF Broadcasting Conference, Stockholm, 1961. In relation to the requirements for services submitted by the Administrations, due account must also be taken of the requirements of the other services to which certain of the bands concerned are also allocated in certain countries under derogations of the Table of Frequency Allocations, appearing in Article 5 of the Geneva Radio Regulations. In this regard, the attention of the Administration of each country included in Nos. 238, 239, 241, 291, 293, 330, 332 or 333 of the Radio Regulations is particularly invited to the restrictions which will be suffered by their broadcasting stations in proportion to the extent to which the derogations to the Table, adopted at the Administrative Radio Conference, Geneva, 1959, are implemented in their respective countries.

12. The Board hopes to be able to assist Administrations, in particular Administrations of new and developing countries, in matters relating to the assignment and utilization of frequencies. The Board will therefore be pleased to study all relevant information which Administrations may furnish and give advice concerning the formulation of specific requirements in the field of sound broadcasting and television. To this effect consultations could be held by the Board with a view to assisting those Administrations seeking advice on planning for their national and regional systems.

13. Such consultations could be held in Geneva, where representatives from the Administrations would discuss their problems with the Board, make themselves familiar with the I.F.R.B. procedures concerning frequency assignment and

obtain all necessary information and assistance for the formulation of their requirements. The Board may also consider sending its own representatives, if considered desirable, to conveniently chosen points in Africa where consultations could be held with officials from Administrations of neighbouring countries, in case these should not, for some reason or other, be in a position to send representatives to Geneva.

I have the honour to be, Sir,
Your obedient Servant,

N.I. Krasnosselski
Chairman

Annex: 1

A N N E X

RESOLUTION No. 497 — AFRICAN BROADCASTING CONFERENCES (SOUND BROADCASTING AND TELEVISION)

The Administrative Council,

<u>having examined</u>

the report by the I.F.R.B., annexed to Document No. 2855/CA17;

<u>considering</u>

a) that it would be in the interests of the African countries for conferences to be held in the near future to consider the assignment of frequencies to national sound broadcasting and television stations in the broadcasting bands;

b) the fact, however, that new long and medium wave frequency assignments might cause harmful interference to stations in the European Broadcasting Area operating in conformity with the Copenhagen Convention, 1948;

<u>in view of</u>

1. the provisions of No. 69 of the Geneva Convention, 1959;

<u>resolves</u>

to propose the convening of two conferences as follows:

1.1 a special conference of countries in the African region (African countries other than those belonging to the European Broadcasting Area), which might be held preferably in April/May 1963 in an African country with the following agenda:

1.1.1 definition of the technical bases to be used in drawing up frequency assignment plans for national sound broadcasting and television stations in the VHF and UHF bands in the African region;

1.1.2 establishment of frequency assignment plans and associated agreements for national sound broadcasting and television stations in the VHF and UHF bands in the African region;

1.2 a special conference of countries in both the African region and the European Broadcasting Area which might be held in 1964, taking into account the kind offer of the Government of the Kingdom of Morocco to act as host Government to this conference, with the following agenda:

1.2.1 preparation of an up-to-date broadcasting plan for the band 525-1605 kc/s for the African countries outside the European Broadcasting Area, taking into account the entries already recorded in the Master International Frequency Register;

1.2.2 examination of the existing situation in the bands 150-285 kc/s and 525-1605 kc/s for the African countries which are included in the European Broadcasting Area;

1.2.3 determination of all measures, bearing in mind Article 9 of the Radio Regulations, which might prove essential in the light of this examination but which would not involve revision of the Copenhagen Plan, 1948;

2. that these two conferences, if convened, shall be financed in accordance with No. 199 of the Geneva Convention, 1959;

instructs the Secretary-General

to consult the Administrations of the Members and Associate Members of the I.T.U. included in the areas referred to above, in accordance with No. 70 of the Convention;

invites the I.F.R.B.

1. to study in consultation with the Administrations concerned, the frequency usage and future frequency requirements in the "tropical broadcasting" bands for countries in the African region as defined above, bearing in mind the possibility of mutual harmful interference between stations in this region and those in Regions 1, 2 and 3, with a view to proposing the basis of a frequency assignment plan for national sound broadcasting stations in Africa in the bands concerned;

2. to carry out the technical planning for the two conferences and to give advice to Administrations on the submission of suitable frequency requirements;

requests the C.C.I.R.

to expedite the preparation of the technical information necessary for the preparation of frequency assignment plans for the national sound broadcasting and television stations in Africa.

COMITÉ INTERNATIONAL
D'ENREGISTREMENT DES FRÉQUENCES
I. F. R. B.

JUNTA INTERNACIONAL
DE REGISTRO DE FRECUENCIAS
I. F. R. B.

INTERNATIONAL
FREQUENCY REGISTRATION BOARD
I. F. R. B.

Référence à rappeler dans la réponse:
When replying, please quote:
Indiquese en la respuesta esta referencia: No 20/028929

Ø 34 70 00 - 34 80 00
Burinterna. Genève
Tx 22142

GENÈVE
Place des Nations

21 September, 1962

Subject : Technical planning of the African VHF/UHF Broadcasting Conference, Geneva, 1963.

Notification to the I.F.R.B. of requirements for national sound broadcasting and television stations in Bands I, II, III, IV and V.

References : I.F.R.B. letter No. 20/028027 dated 29 June 1962.

No. 482 of the Radio Regulations.

Sir,

I have the honour, on behalf of the International Frequency Registration Board, to invite your attention to I.F.R.B. letter No. 20/028027 of 29 June, 1962 concerning the technical planning of the African Broadcasting Conferences and, in particular, to paragraphs 3.1 and 8 to 12 inclusive of that letter.

2. Since, in reply to letter No. 3910/62/R dated 19 June 1962 from the I.T.U. Secretary-General, the convening of the African VHF/UHF Conference has been decided with the concurrence of a majority of Members of the Union in the African region, the Board wishes to invite each Administration to notify to it the technical characteristics of actual and proposed transmitting stations for sound broadcasting and for television which will serve as a basis for the technical preparation of the Conference. The present letter, as foreseen in paragraph 10 of I.F.R.B. letter No. 20/028027, sets out the manner in which your detailed requirements might best be presented.

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3. Information to be supplied in respect of existing or projected sound broadcasting or television stations in the bands shown below :

Band I	41	-	68 Mc/s	(Television)
Band II	87.5	-	100 Mc/s	(Sound Broadcasting)
Band III	162	-	230 Mc/s	(Television)
Band IV	470	-	582 Mc/s	(Television)
Band V	582	-	960 Mc/s	(Television)

3.1 The information in respect of existing and projected sound broadcasting and television stations should be sent in the form of a complete list of such stations . Also, it would be desirable that the transmitting stations which are located at the same site should be grouped together and shown consecutively in the list, since some of the data in respect of all co-sited transmitters will be the same.

3.2 The I.F.R.B. would therefore request you kindly to send the information in the following manner.

3.3 Information in respect of Transmitter Sites

a) Name of each transmitter site (see Annex, Note I)

b) Geographical co-ordinates of each transmitter site (see Annex, Note II)

c) Effective height of transmitting aerial at each transmitter site (see Annex, Note III)

d) Correction factor for irregularities of terrain in respect of each transmitter site. These data should be given only for television stations in Bands IV and V (see Annex, Note IV).

3.4 Information in respect of Transmitting Stations

The following information should be given in respect of each transmitter located at each transmitter site.

a) Effective radiated power (ERP) (see Annex, Note V)

b) Transmitting aerial directivity (see Annex, Note VI)

c) Required protection of service area of transmitter (see Annex, Note VII)

d) Required radius of service area of transmitter

e) Preferred frequency or channel (see Annex, Note VIII).

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4. Other information relating to sound broadcasting and television services in Bands I, II, III, IV and V

The following general information in respect of projected sound broadcasting and television stations in the territory of your Administration should be given in a separate list.

4.1 Frequency band or bands in the frequency ranges listed in paragraph 3 above which will be allocated by your Administration to sound broadcasting and television services respectively (see Annex, Note IX).

4.2 Television standard your Administration is planning to use for its television service.

4.3 Standard your Administration is planning to use for the sound broadcasting service.

4.4 Preferred channel separation for programmes radiated from the same site (only for bands IV and V - see Annex, Note X).

5. It is most desirable that the information requested in paragraphs 3 and 4 above should be sent to reach the Board as soon as possible and in any event not later than 30 November, 1962. This information should be given for both low power stations (effective radiated power of less than 1 kW) and stations with an effective radiated power of 1 kW or more. In order to assist you in formulating your requirements, a supply of blank forms is enclosed herewith together with a sample copy filled out.

6. The I.F.R.B. appreciates that the preparation of such complete information as required by the present letter, may be quite a difficult task for your Administration as it may involve preliminary national planning of sound broadcasting and television services in your country.

6.1 If, in exceptional circumstances, you are not in a position to supply your requirements for these services in the manner outlined in the present letter, the Board would be pleased to receive from you the following initial information :

- Name of each transmitter site where you are planning to install your sound broadcasting or television stations;
- Geographical co-ordinates of each transmitter site;
- The height of the transmitter site above mean sea-level;
- Proposed radius of the service area of each transmitter;
- Number of sound broadcasting and television programmes planned to be transmitted simultaneously from one transmitter site.

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6.2 This information may permit the Board to consider your requirements during its preparatory work. In each case where the information is supplied in this skeleton form, the Board would propose to your Administration appropriate technical characteristics for each station concerned.

7. Plans for frequency assignments to sound broadcasting and television stations should be based on agreed technical standards. The Board believes that the technical standards contained in the C.C.I.R. Recommendations, as well as certain decisions of the European VHF/UHF Broadcasting Conference, Stockholm, 1961, concerning technical planning for sound broadcasting and television, (propagation curves, protection ratios, etc.) might be used as a basis for the African VHF/UHF Broadcasting Conference. The choice of the particular characteristics for sound broadcasting or television systems to be used in your country, is of course a matter within the competence of your Administration. The Board cannot over-emphasize the desirability for countries of the African region to adopt, if possible, a single set of television standards which, inter alia, would provide for higher efficiency of the service and facilitate the international exchange of programmes, before plans for the introduction of television are too far advanced in some countries. Should the adoption of a single set of television prove unrealisable, the Board would most strongly recommend that at least systems which are compatible from the frequency channelling standpoint be adopted.

The Board therefore invites your Administration kindly to consider the above suggestions and to advise your point of view when you are answering paragraphs 4.2 and 4.3 above. The Board considers it would be profitable to have preparatory talks to consider this question at the Xth Plenary Assembly of the C.C.I.R. in New Delhi (January - February 1963) in which occasion it may be possible to seek the advice of C.C.I.R. Study Groups.

<u>Information to be supplied in respect of assignments of services other than the Broadcasting Service to which certain of the frequency bands concerned are allocated</u>

8. It is important that the African VHF/UHF Broadcasting Conference should have information in respect of stations of other services operating in the bands concerned or on frequencies immediately adjoining these bands, which might cause harmful interference to the sound broadcasting and television stations or which might experience harmful interference from such stations. This is particularly the case where, in the Table of Frequency Allocations, the bands allocated to the Broadcasting Service are shared with other services or where, in specific countries or areas, a band is allocated to services other than

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broadcasting in a footnote to the Table. Particulars of assignments in such services should be notified by your Administration in accordance with Article 9 of the Radio Regulations for inclusion in the Master International Frequency Register and the I.F.R.B. will extract the information in respect of such stations from the Master Register. The I.F.R.B. would therefore kindly request you to ensure that the information which you have submitted in respect of such assignments reflects completely and accurately your usage of the bands in question. Additionally, information on projected assignments in these services and bands would be helpful to the Conference and should be notified to the Board, either in list form or on separate frequency assignment notices, but in any event, clearly marked "African VHF/UHF BC Conference".

I have the honour to be, Sir,
Your obedient Servant,

N.I. Krasnosselski
Chairman

Annex : 1

ANNEX to I.F.R.B. letter No. 20/028929 dated 21 September, 1962

NOTES

TRANSMITTER SITES

Note I - Name of Transmitter Site

The name of each site should be given for identification purposes, for example, Lagos.

Note II - Geographical Co-ordinates of Site

The longitude and latitude of the site should be given in degrees and minutes with an accuracy to the nearest minute (for example 03.24E 06.27N).

Note III - Effective height of transmitting aerial

(1) The effective height of the transmitting aerial should be stated in terms of the height of the radiating antenna in metres above the average level of the surrounding terrain between distances of 3 kilometres and 15 kilometres from the site and should be given as one of the following six values, as most appropriate : 37.5 m; 75 m; 150 m; 300 m; 600 m; 1200 m.

(2) The effective height of the transmitting aerials as defined in (1) above should be given if it is possible for four directions separated from each other by 90°. The first direction, which should be clearly stated, should be either true North or a multiple of 10° up to 80° in a clock-wise direction from true North. For example :

N : h = 75 m; N + 90° : h = 75 m etc.

or N + 30° : h = 150 m; N + 120° : h = 300 m etc.

Note IV - Correction factor for irregularities of terrain (television stations in Bands IV and V only)

The correction factor ($\Delta\lambda$) should be given in metres for each of the same four directions for which the effective height of the transmitting aerial is given (see Note III above). This correction factor should be expressed as the difference in heights which are exceeded for 10% and 90% of the propagation path in the range 10 km and 50 km from the transmitter. In this connection, see Recommendation 312 of the C.C.I.R. (Los Angeles, 1959). If correction factor ($\Delta\lambda$) is not supplied, large scale topographical maps in the radius of 15 km from the transmitter site should be supplied to the I.F.R.B.

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TRANSMITTING STATIONS

Note V - Effective Radiated Power (ERP)

The maximum effective radiated power (ERP) should be given in kilowatts. When a directional transmitting aerial is used the figure given for maximum ERP should be that in the direction of maximum radiation.

Note VI - Transmitter Aerial Directivity

If a directional transmitting aerial is used, values for the attenuation, in db, of the effective radiated power relative to that in the direction of maximum radiation, should be given for 12 equally spaced directions, clock-wise, beginning with true North. Reference level ERP (0 db) should therefore be in the direction of maximum radiation of the transmitting aerial, and the values of the attenuation in other directions should be given in multiples of 1 db. For example :

N : -6 db; N + 30° : -3 db; N + 60° : 0 db etc.

Note VII - Required protection of service area of transmitter

The required protection of the service area should be stated in terms of :

(i) percentage of time for which protection is desired;

(ii) percentage of locations at which protection is desired :

"Definition of service area (Para. 5.4, part 5, TECHNICAL DATA USED BY THE EUROPEAN VHF/UHF BROADCASTING CONFERENCE, STOCKHOLM, 1961)

"The boundaries of a service area are given by the distances from the transmitter at which the field strength of the wanted signal at 50% of locations and 50% of the time has a value equal to that of the so-called "protected field strength", as determined by the method of Section 3.4

"The value of the protected field strength depends upon the grade of service chosen.

"Three different grades of service : A, B and C were considered :

Grade	Percentage	
	Locations	Time
A	70%	99% *)
B	50%	99% *)
C	45%	90%

" *) If overseas propagation occurs, the value of 95% of the time may be taken instead of 99% of the time. "

Note VIII - Preferred Frequency or Channel

The African VHF/UHF Broadcasting Conference will ultimately assign specific frequencies to each sound broadcasting and television station. Many Administrations may wish, therefore, to leave this entry blank until the Conference has confirmed the basis on which an initial frequency assignment plan will be drawn up. However, some Administrations which have already prepared a tentative frequency assignment plan for the stations of their national network may wish to indicate the preferred frequency (or channel number) for each station.

OTHER INFORMATION

Note IX - Frequency band, or bands, in the frequency range 41 - 960 Mc/s to be assigned to sound broadcasting or television services

The actual frequency bands to be allocated to sound broadcasting or television services by your Administration (see the Table of Frequency Allocations) in the frequency range 41 - 960 Mc/s, should be stated. In cases where the whole of the authorized band is not to be so allocated, information in respect of those portions of the frequency range 41 - 960 Mc/s which will be assigned should be given (for example, 470 - 582 Mc/s, and 606 - 790 Mc/s for television).

Note X - Preferred Channel separation for programmes radiated from the same site (only for Bands IV and V)

The preferred channel separation for programmes radiated from the same site should be stated.

ANTENNES A EFFET DIRECTIF - DIRECTIONAL ANTENNAE - ANTENAS DIRECTIVAS

No.	EMPLACEMENT-SITE UBICACIÓN		0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°
1		1	-6	-3	0	-6	-3	-3	0	0	-6	-6	-6	-6
		2												
		3												
2		1												
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7		1												
		2												
		3												
8		1												
		2												
		3												

FORMULE (Voir paragraphe 5 de la lettre N° 20/028929 de l'I.F.R.B. en date du 21 septembre 1962) FORM (See paragraph 5 of I.F.R.B. letter No. 20/028929 dated 21 September 1962) FORMULARIO (Vease párrafo 5 de la carta de la I.F.R.B. N.° 20/028929 de 21 de septiembre 1962)

EMPLACEMENTS - SITES - UBICACIONES									EMETTEURS - TRANSMITTERS - TRANSMISORES					
No.	Nom - Name - Nombre Coord.	Az.	h_{eff}, Δh terr				Polar.	Mer Sea Mar	No.	Ppe kW	Ant. Direct	Prot.	Canal Channel Pref.	Observations Remarks Observaciones
	NOTE - NOTA * I + II		III + IV							V	VI**	VII	VIII	
1	LAGOS 0324 E 0627 N	–	75	75	120	75			1	100		B	3	
									2	100		B	3	
									3	50		B	3	
2									1					
									2					
									3					
3									1					
									2					
									3					
4									1					
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5									1					
									2					
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6									1					
									2					
									3					
7									1					
									2					
									3					
8									1					
									2					
									3					

EXEMPLE

EXAMPLE

EJEMPLO

* Voir l'annexe à la présente lettre

** S'il s'agit d'une antenne d'émission à effet directif, il y a lieu de remplir également la formule imprimée au verso.

* See annex to the present letter

** If a directive transmitting antenna is used, the form printed overleaf should also be filled in.

* Véase el anexo a la presente carta

** Si se utiliza una antena transmisora con características directivas llénese también el formulario impreso al dorso.

COMITÉ INTERNATIONAL
D'ENREGISTREMENT DES FRÉQUENCES
I. F. R. B.

JUNTA INTERNACIONAL
DE REGISTRO DE FRECUENCIAS
I. F. R. B.

INTERNATIONAL
FREQUENCY REGISTRATION BOARD
I. F. R. B.

Référence à rappeler dans la réponse:
When replying, please quote:
Indiquese en la respuesta esta referencia: No 27/031436

☎ 34 70 00 - 34 80 00
Burinterna. Genève
Tx 22142

REGISTERED

GENÈVE
Place des Nations 11 April 1963

Subject : Technical planning of the African VHF/UHF Broadcasting Conference, Geneva, 1963.

References : No. 482 of the Radio Regulations
I.F.R.B. letter No. 20/0.28027 dated 29 June 1962
I.F.R.B. letter No. 20/0.28929 dated 21 September 1962
I.F.R.B. letter No. 20/0.29769 dated 12 November 1962.

Sir,

1. I have the honour, on behalf of the International Frequency Registration Board, to draw the attention of your Administration to certain outstanding technical problems still to be solved for the African VHF/UHF Broadcasting Conference which is to open in Geneva, on Monday, 29 April 1963.

2. The Board has received from all but four Administrations of countries situated in the African region, a comprehensive set of requirements for sound broadcasting services in the VHF bands and for television services in the VHF and UHF bands, in response to, and in the form suggested in, the above letters of the I.F.R.B. The Board's preparatory work in connection with these requirements is well advanced and it is in correspondence with certain Administrations individually with respect to the clarification of certain relevant details.

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3. The I.F.R.B. wishes me to invite the special attention of your Administration to the need for the adoption, very early in the Conference, of the technical bases upon which the engineering of the plans may be carried out. This is an essential prerequisite since, of course, the international planning of frequency assignments to broadcasting stations cannot begin without agreed technical standards.

4. In this regard, I am to recall that the Board has already expressed its considered opinion in paragraph 7 of its letter dated 21 September 1962 which, for ease of reference, is reproduced hereunder:

> "7. Plans for frequency assignments to sound broadcasting and television stations should be based on agreed technical standards. The Board believes that the technical standards contained in the C.C.I.R. Recommendations, as well as certain decisions of the European VHF/UHF Broadcasting Conference, Stockholm, 1961, concerning technical planning for sound broadcasting and television (propagation curves, protection ratios, etc.) might be used as a basis for the African VHF/UHF Broadcasting Conference. The choice of the particular characteristics for sound broadcasting or television systems to be used in your country, is of course a matter within the competence of your Administration. The Board cannot over-emphasize the desirability for countries of the African region to adopt, if possible, a single set of television standards which, inter alia, would provide for higher efficiency of the service and facilitate the international exchange of programmes, before plans for the introduction of television are too far advanced in some countries. Should the adoption of a single set of television prove unrealisable, the Board could most strongly recommend that at least systems which are compatible from the frequency channelling standpoint be adopted."

5. The Xth Plenary Assembly of the C.C.I.R., held in Geneva (January-February, 1963) adopted some recommendations concerning Frequency Modulation Sound Broadcasting and Television which can be directly applied to the work of the African VHF/UHF Broadcasting Conference. In this connection, the following recommendations of the C.C.I.R. and reports may be mentioned :

- Recommendation (Doc. No. 2322) - Ratio of the wanted to the unwanted signal in monochrome television
- Recommendation (Doc. No. 2321) - Minimum field strength for which protection may be sought in planning a television service.

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- Recommendation (Dco. No. 2158)	- Standards for frequency modulation sound broadcasting in the VHF (Metric) band.
- Recommendation (Doc. No. 2323)	- Directivity of antennae in the reception of Broadcast Sound and Television.
- Recommendation (Doc. No. 2176)	- VHF and UHF Propagation Curves for the frequency range from 40 Mc/s to 1000 Mc/s.
- Report (Dco. No. 2329)	- Characteristics of monochrome television systems.
- Report (Doc. No. 2327)	- Ratio of wanted to unwanted signal for colour television in Bands IV & V.
- Report (Doc. No. 2176)	- VHF and UHF Propagation Curves in the frequency range 40 Mc/s to 1000 Mc/s.
- Report (Doc. No. 2328)	- Protection ratio for television in the shared bands.
- Report (Doc. No. 2292)	- VHF/UHF Broadcasting Propagation Curves for the African Continent.

6. However, these recommendations and reports are not sufficient to carry out the overall technical planning for broadcasting (both Television and FM Sound). To fulfil this task, the Conference will need to take additional technical decisions. The I.F.R.B. considers that the Conference should take decisions on the following basic problems :

6.1 Recent information concerning ionospheric propagation in the African Continent reveals a high probability of interference for television stations working in Band I (41 - 68 Mc/s) due to long-range propagation caused by the reflection of radio-waves from the Es and F2 layers. Measurements made at ionospheric sounding stations in Africa show that for the F2 layer, maximum critical frequencies of the order of 20 Mc/s may be expected in day-time. This high ionisation in the F2 layer takes place in two belts situated roughly at 15° North and 10° South. There is in Africa another small belt of the sporadic E layer with extremely high ionisation situated along the geomagnetic equator. The ionospheric reflection for these Es and F2 layers can be observed up to the very high frequencies and may be expected during a high percentage of time for the frequency bands between 40 - 60 Mc/s. From the explanations given above, it may be concluded that the Conference should give careful attention to the planning of television stations in Band I with a view to reducing the probability of harmful interference between stations in this band.

6.2 For the reason explained in paragraph 6.1 above, it may be concluded that not all countries of the African Continent will be in a position to enjoy the use of Band I for television. At the same time, it may happen that some countries will find it inappropriate to develop their television in decimetric Bands IV and V allocated by the Radio Regulations

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for television between 470 - 960 Mc/s. In such circumstances, some countries will be in a position to use only Band III for their television, i.e. bands between 174 - 216 Mc/s. However, the use of Band III within the limits prescribed by the Radio Regulations does not provide a sufficient number of television channels for adequate coverage of the territory of their countries, even by one programme. In such a case, thought should be given to the extension of the upper limit of Band III at the expense of other services. Of course, such decisions can be taken only by the Administrations themselves and involve a special consideration of this problem by the Conference in order to preserve the interests of the other services working in this range in accordance with the provisions of the Radio Regulations.

6.3 From the answers given by the Administrations of the countries situated in the African region, the conclusion may be drawn that for television in Bands I and III, two channel spacings are intended to be used. Some countries propose to use 7 Mc/s channel spacing and others visualize channel spacing of 8 Mc/s. For Bands IV and V, a channel spacing of 8 Mc/s could be proposed throughout Africa. As far as channel spacing in Bands I and III is concerned, the Board would like to invite the Conference to consider the use of a uniform channel spacing of 8 Mc/s by all countries, without regard to the television system to be used in any particular country, subject to agreement at the Conference to placing the video carrier of any system on the same frequency in each channel. Such a step would reduce the possibility of mutual interference between the television stations using different television systems.

6.4 The VHF/UHF propagation curves in the frequency range from 40 Mc/s to 1,000 Mc/s need to be finally decided at the beginning of the Conference. At the request of the I.F.R.B., the Xth Plenary Assembly of the C.C.I.R. has studied the problem of the tropospheric propagation in Africa. Due to great differences in the climatic conditions in Africa, C.C.I.R. Study Group V proposed to split the African Continent into 6 climatic zones for each of which a different set of propagation curves should be applied. Unfortunately, Study Group V was unable to complete this work during the Xth Plenary Assembly of the C.C.I.R. and the final decision should be taken by the Conference itself.

7. For the planning of channel allocations for television stations in Bands IV and V, the European VHF/UHF Broadcasting Conference held in Stockholm in 1961 used a special theoretical lattice which gave the distribution of channels likely to provide the greatest possibility of frequency sharing. The I.F.R.B. is of the opinion that the same approach to the assignment of channels be adopted by the African Conference, not only for Bands IV and V, but for Bands I, II and III as well. Unfortunately, the absence of agreed information mentioned in paragraph 6 has prevented the I.F.R.B. from preparing theoretical lattices, and this task should be done by the Conference itself.

./...

8. The I.F.R.B. would be grateful if your Administration would give consideration to the foregoing matters prior to the opening of the Conference.

9. It is foreseen that the draft frequency assignment plans will be engineered by Planning Groups of the Conference and that the electronic computer, installed in the Headquarters building of the Union, will make computations from which technical incompatibilities among selected channels may be identified. In this connection, the extensive task of preparing the detailed computer programmes has been advanced by the Board as far as is possible. These programmes can only be fully completed and tested for the use of the Conference upon receipt of the agreed technical bases, to which reference is made above.

10. The question of the type of Agreement which has to be drawn up by the Conference also requires your consideration. This question is solely within the competence of the Administrations participating in the African VHF/UHF Broadcasting Conference. The Board, however, would suggest that the Regional Agreement for the European Broadcasting Area, Stockholm, 1961, might serve as a basis for your consideration.

11. The I.F.R.B. hopes the above information will prove helpful to your Administration in its final preparation for the Conference and requests me to assure you that its resources are being made available to contribute in every way possible to ensure the success of the Conference.

I have the honour to be, Sir,
Your obedient Servant,

John H. Gayer

John H. Gayer
Chairman

Annexes : Related documentation (sent by same mail under separate cover)

DRAFTING COMMITTEE

The following text, submitted by Study Group XI (Annex 11/2) and revised by the Drafting Committee, is submitted to the Plenary Assembly for approval.

RECOMMENDATION ...*

RATIO OF THE WANTED TO THE UNWANTED SIGNAL IN MONOCHROME TELEVISION

(Question ...(Annex 11/4))

(Geneva, 1963)

The C.C.I.R.,

RECOMMENDS

that the protection ratios given in the Annex should be used for planning purposes.

ANNEX

1. Introduction

The protection ratios quoted are considered to be acceptable for planning purposes for a small percentage of the time, not precisely defined, but assumed to be between 1% and 10%. Protection ratios for just perceptible interference would be some 10 to 20 db higher.

When utilizing the protection ratios in planning, suitable allowance for fading is made by using field strength curves appropriate to the percentage of time for which protection is desired, it being assumed that fading of the wanted signal is small, compared with that of the unwanted signal.

The protection ratios quoted refer in all cases to the ratios at the input to the receiver, no account having been taken of the effect of using directional receiving aerials or of the advantage that can be obtained by using different polarization for transmission of the wanted and unwanted signals.

The amplitude of a vision-modulated signal is defined as the r.m.s. value of the carrier at peaks of the modulation envelope, while that of a sound-modulated signal is the r.m.s. value of the unmodulated carrier, both for amplitude-modulation and for frequency modulation.

All the protection ratios quoted in this Annex refer to interference from a single interfering source.

The full advantage of offset operation can only be obtained if the carrier frequencies of the transmitters concerned are within ± 500 c/s of their nominal values.

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* This Recommendation replaces Report 125

2. Interference within the same channel

2.1 Protection ratio when the wanted and unwanted signals have the same line frequency

2.1.1 Carriers separated by less than 1000 c/s, but not synchronized:

Protection ratio: 45 db.*

2.1.2 Carriers separated by less than 50 c/s, but not synchronized:

Protection ratio reduced by 5 - 10 db, relative to the preceding case.

2.1.3 Nominal carrier frequencies separated by 1/3, 2/3, 4/3 or 5/3 of the line frequency:

Protection ratio: - for 405-line system: 35 db;
- for 525-line system: 28 db;
- for 625- and 819-line systems. 30 db.

These values may be reduced to 28 db, 20 db and 20 db respectively if a carrier separation equal to an appropriate multiple of the frame frequency can be maintained; the line frequency should be kept constant to within 5×10^{-6} and each transmitter should have a frequency tolerance of not more than $\pm$ 2.5 c/s.

The 20 db value is at present valid for th 525 and 625-line systems when there is one unwanted transmitter. Under these conditions, the ratio between the wanted and unwanted sound signals will also be 20 db, and this is only permissible if the offset is at least 5/3 of the line frequency in the case of frequency modulated sound (see § 6.1) or above the audio frequency range in the case of amplitude-modulation sound (see § 6.2).

2.1.4 Nominal carrier frequencies separated by 1/2 or 3/2 of the line frequency

Protection ratio: - for 405-line system: 31 db;
- for 525-, 625- and 819-line systems: 27 db.

2.2 Protection ratio for the picture signal when the wanted and unwanted signals have different line frequencies

2.2.1 Carriers separated by less than 1000 c/s, but not synchronized:

Protection ratio: 45 db.

---

* For the 525-line system this value may be reduced by about 20db if a carrier separation of a few hundred cycles per second is maintained at an appropriate multiple of the frame frequency with a variation in carrier frequency difference less than $1\frac{1}{2}$ cycles per second.

2.2.2 Carriers separated by less than 50 c/s, but not synchronized:

Protection ratio reduced by 5 - 10 db relative to the preceding case.

2.2.3 Nominal carrier frequencies separated by 6.3 kc/s:

Protection ratio between a 625-line system and an 819-line system: 30 db.

3. Adjacent-channel interference

Throughout this section fairly conservative values have been chosen to take account of the divergence in performance between different types of television receivers and to allow for the possible introduction of colour.

3.1 Lower* adjacent-channel interference - Bands I and III

The worst interference on the picture signal from another signal using the same standard results from the sound signal in the lower* adjacent channel. The figures below relate to the cases where the separation between the wanted vision carrier frequency and the unwanted sound carrier frequency is 1.5 Mc/s and the ratio between the unwanted vision and unwanted sound powers is 7 db. The ratios are expressed in terms of the wanted and unwanted vision signals.

Protection ratio: - for frequency-modulated sound carrier: - 6 db;
- for amplitude-modulated sound carrier: - 2 db.

3.2. Lower adjacent-channel interference - Bands IV and V

Protection ratio: - for the 525-line system in a 6 Mc/s channel: - 6 db

For the various 625-line systems proposed for use in 8 Mc/s channels in Bands IV and V, the following table gives the protection required by a signal on any system against a lower adjacent-channel signal of the same or any of the other standards. The protection ratios quoted are those to be applied between the wanted vision and unwanted vision signal levels.

* Upper, in the case of the 405-line standard, since the vestigial sideband lies above the vision carrier frequency.

Interfering signal standard *	Protection ratio (db) for a wanted-signal standard:					Vision/sound power-ratio (db) for interfering signal
	G	H	I	K(1)	L	
G	-6	-6	-6	-6	-6	7
H	-6	-6	-6	-6	-6	7
I	-6	-6	-6(2)	-6	+3(2)	7
K	-6	+16	+16	-6	+16	7
L	-4	+18	+18	-4	+18	9

(1) Administrations using system K in Bands I and III are studying the possibility of broadening the vestigial sideband to 1.25 Mc/s for use in Bands IV and V without changing the other parameters of the systems. In this case, the protection ratios required for system K would be the same as those quoted for the 625 system L.

(2) The values for systems I and L are different in this case because receivers for system I will contain a sound trap giving additional rejection at the frequency of the interference.

N.B. When an interfering frequency-modulated sound signal is offset, during quiescent periods, relative to the wanted vision signal by a frequency equal to a multiple of the line frequency plus or minus about one-third line frequency, the protection ratio may be reduced by 6 db. For an interfering amplitude-modulated sound signal with the carrier offset in a similar way the reduction may be greater.

3.3 Upper** adjacent-channel interference - Bands I, III, IV and V

Protection ratio:

- for system K : 4 db;
- for all other systems : -12 db

4. Overlapping-channel interference

Figures 1 to 9 give protection ratios for the 405, 525, 625 and 819-line systems when a CW signal or the carrier of an interfering sound or vision signal lies within the channel of the wanted transmission.

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* See Report ... (Annex 11/9)

** Lower, for system A in Bands I and III.

When the frequency difference between a wanted signal carrier and an unwanted signal carrier is large and it is desired to use offset to reduce the necessary protection ratio, the line-frequency of the wanted signal must be controlled to within 5 parts in 10^6.

Where it affects the result, the ratio of vision power to sound power is assumed to be 9 db for system L, 3 db for system M and 7 db for the other systems.

5. Second channel (image channel) interference

The protection ratio required depends upon the intermediate frequency used and upon the second channel rejection of the receiver. For the purposes of planning it may be assumed that the second channel rejection of receivers will be not less than 40 db except in the case of receivers for the I.B.T.O. systems D and K when it will be not less than 30 db.

6. Protection ratios between sound signals

(The ratios quoted are those between wanted and unwanted sound signals)

6.1 Wanted and unwanted sound signals frequency-modulated

Protection ratio :

- for carriers separated by less than 1000 c/s : 28 db
- for carriers separated by 5/3 of the line frequency : 20 db

6.2 Wanted and unwanted sound signals amplitude modulated

Protection ratio :

- for carriers separated by frequency below audio range : 30 db
- for carriers separated by frequency within audio range : 40 db
- for carriers separated by frequency above audio range : 15 db

6.3 Wanted sound signal amplitude-modulated, unwanted sound signal frequency-modulated

Protection ratio :

- for carriers separated by frequency below 1000 c/s : 40 db
- for carriers separated by 25 kc/s : 30 db
- for carriers separated by 50 kc/s : 12 db

6.4 Wanted sound signal frequency-modulated, unwanted sound signal amplitude-modulated

Protection ratio : 30 db

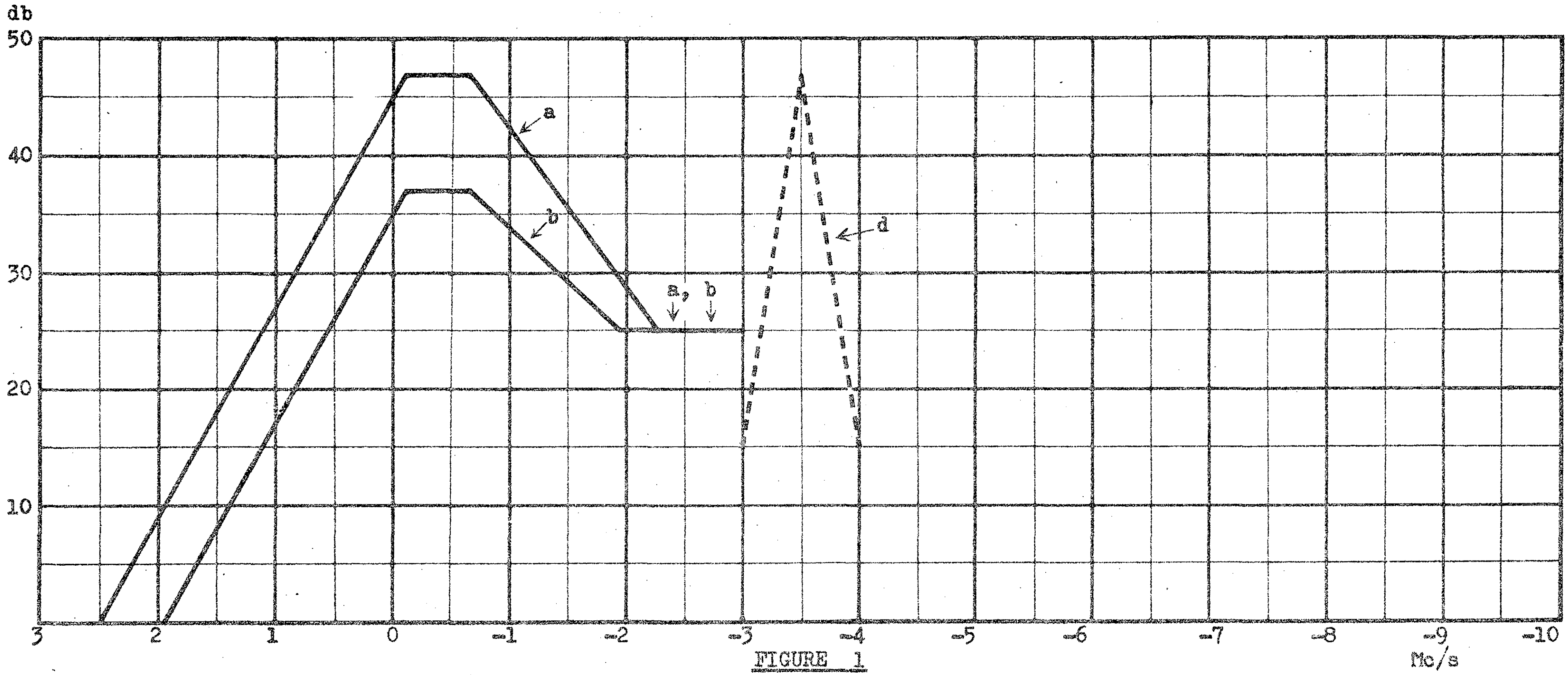

FIGURE 1

System A. Protection from vision signal interference

In all cases in this figure, the ratios quoted are those between the wanted vision and the unwanted vision levels.

Curve a - Interference to vision from a 405-, 625-, or 819-line vision signal with no special control of the nominal frequency difference between the wanted and unwanted signal carriers.

Curve b - Interference to vision from a 405-, 625-, or 819-line vision signal when the nominal frequency difference between the wanted and unwanted signal carriers is a multiple of the line frequency (10.125 kc/s) plus or minus 3 to 5 kc/s. If the nominal frequency difference is 1/2 or 3/2 of the line frequency, a protection ratio of 31 db may be accepted (see para. 2.1.4)

Curve d - Interference to sound signal from a 405-, 625-, or 819-line vision signal.

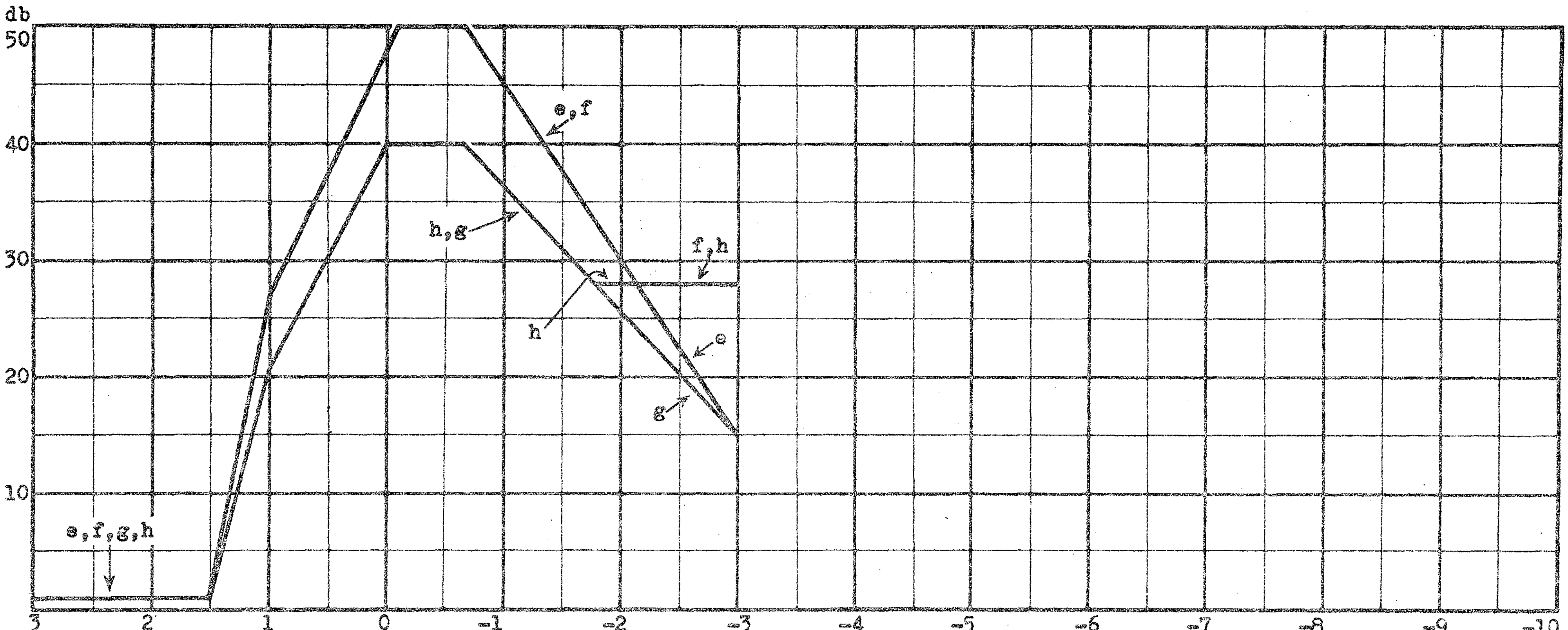

FIGURE 2

System A. Protection from CW or sound-signal interference

In all cases in this figure, the ratios quoted are those between the wanted vision and the unwanted sound levels.

Curve e - Interference to vision from a CW or frequency-modulated sound signal with no special control of the nominal frequency difference between the wanted and unwanted signal carriers.

Curve f - Interference to vision from an amplitude-modulated sound signal with no special control of the nominal frequency difference between the wanted and unwanted signal carriers.

Curve g - Interference to vision from a frequency-modulated sound signal when the nominal frequency difference between the wanted signal carrier and the interfering sound carrier during quiescent periods is an odd multiple of half the line-frequency (5.0625 kc/s).

Curve h - Interference to vision from an amplitude-modulated sound signal when the nominal frequency difference between the wanted and unwanted signal carriers is an odd multiple of half the line-frequency (5.0625 kc/s).

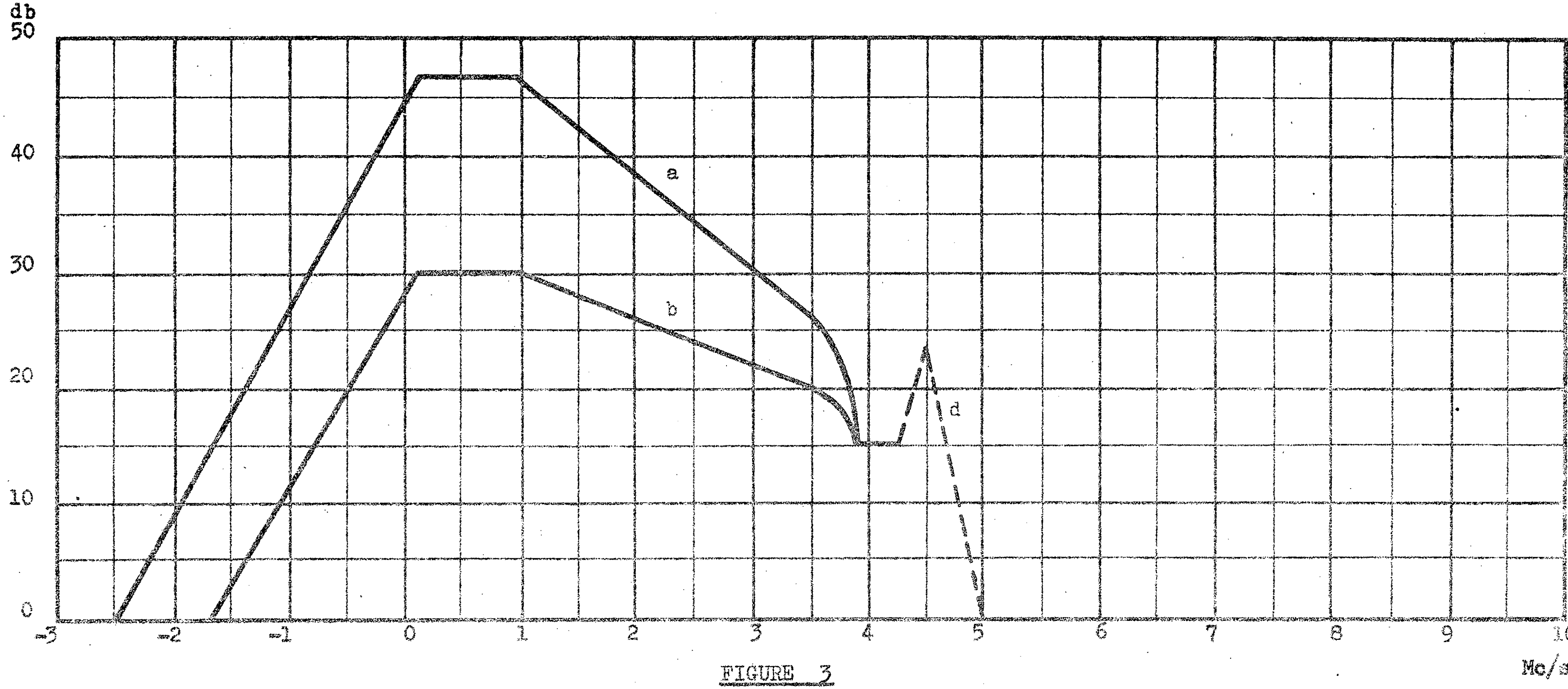

FIGURE 3

System M : Protection from vision signal interference

In all cases in this figure, the ratios quoted are those between the wanted and the unwanted vision signals.

Curve a - Interference to vision from another 525-line vision signal with no special control of the nominal frequency difference between the wanted and unwanted signal carriers.

Curve b - Interference to vision from another 525-line vision signal when the nominal frequency difference between the wanted and unwanted signal carriers is a multiple of the line frequency (15.75 kc/s) plus or minus one-third of line frequency (5.25 kc/s).

Curve d - Interference to sound signal from a 525-line vision signal.

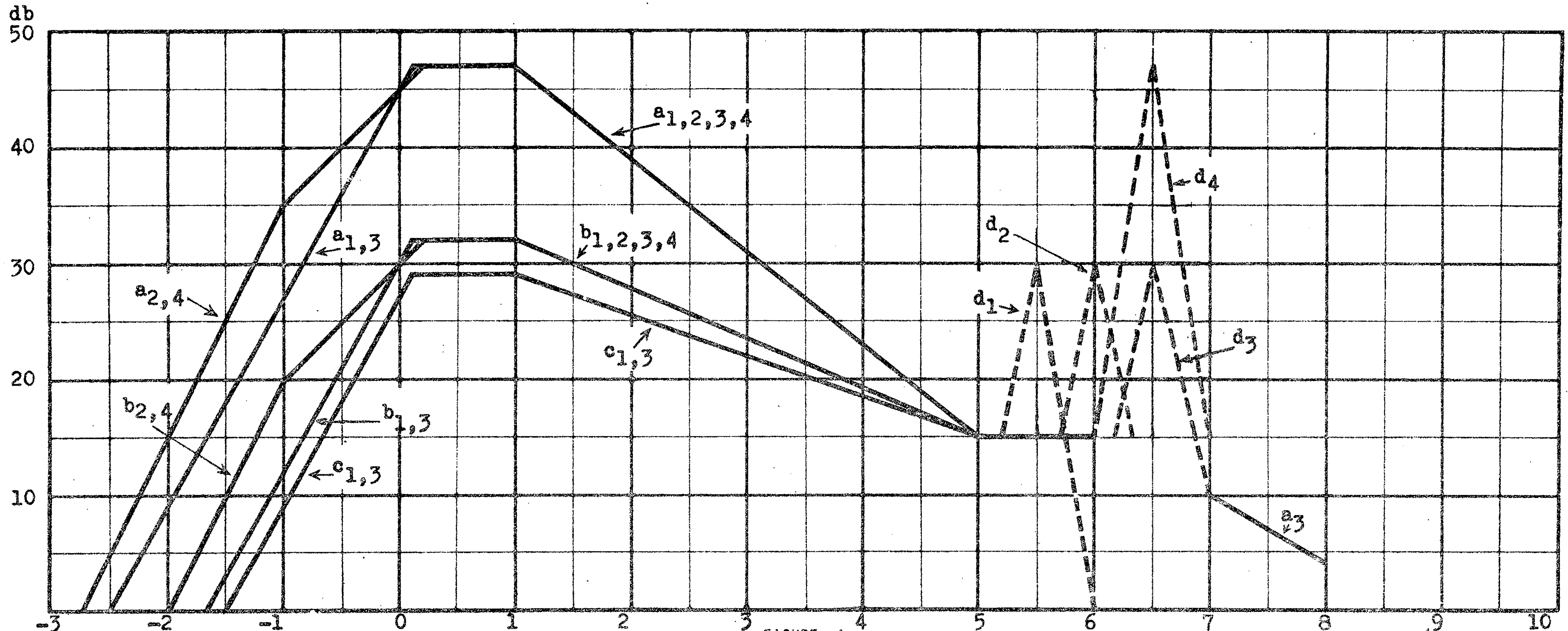

FIGURE 4

625-line system. Protection from vision-signal interference

In all cases in this figure, the levels quoted are those between the wanted and unwanted vision levels.

The subscript numbers used on the curves indicate the various applications of the 625-line system:

1 - 625 lines; 2 - system I; 3 - system K*; 4 - system L.

Curve a - Interference to vision from 405-, 625-, or 819-line systems vision signal, with no special control of the nominal frequency-difference between the wanted and unwanted signal carriers.

Curve b - Interference to vision from a 625-line vision signal when the nominal frequency difference between the wanted and unwanted signal carriers is a multiple of the line frequency (15.625 kc/s, plus or minus one third of the line-frequency (5.208 kc/s).

Curve c - Interference to vision from a 625-line vision signal when the nominal frequency difference between the wanted and unwanted signal carriers is an odd multiple of half the line-frequency (7.8125 kc/s).

Curve d - Interference to sound from a 625-line vision signal.

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* If a vestigial sideband of 1.25 Mc/s is used in system K, curves a_4 and b_4 should be used instead of curves a_3 and b_3 and curve c_3 is no longer valid.

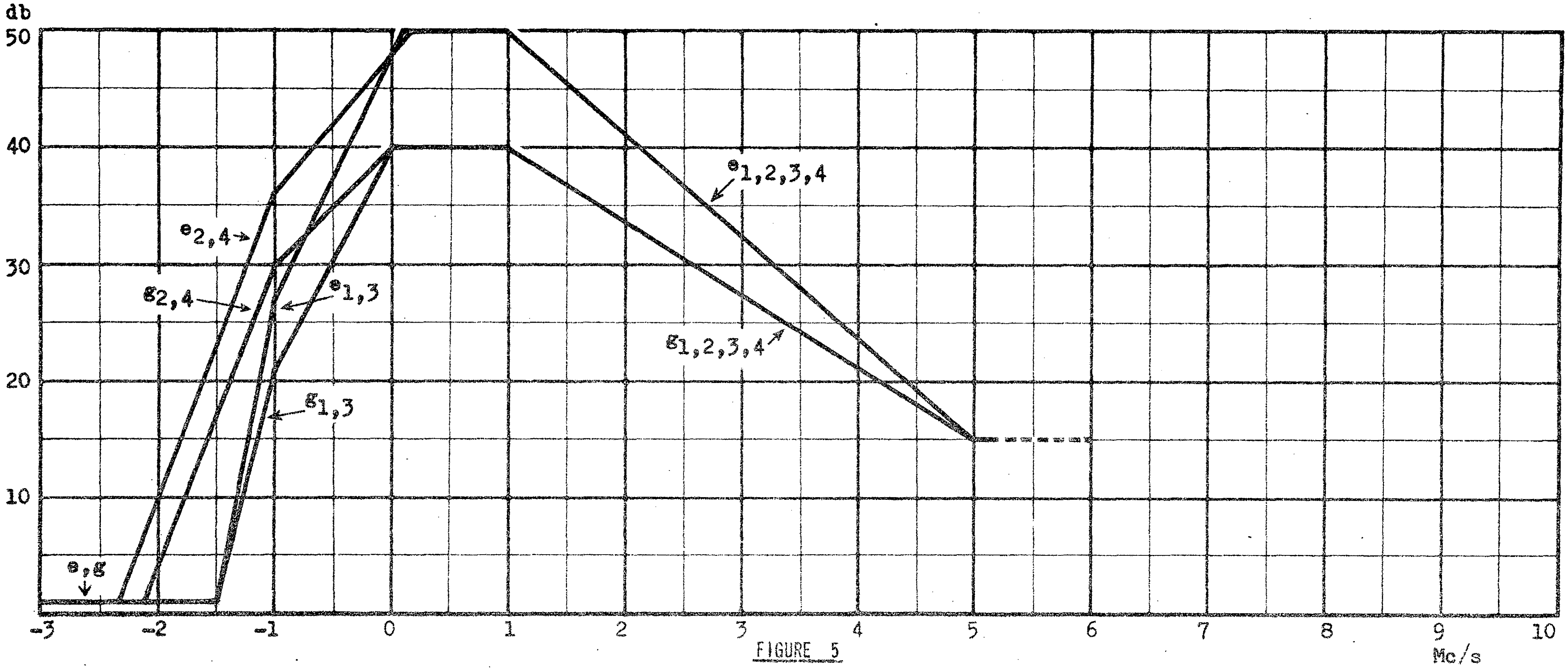

FIGURE 5

625-line system. Protection from CW or sound signal interference

In both cases in this figure, the ratios quoted are those between the wanted vision and the unwanted sound levels.

The subscript numbers are used on the curves to indicate the variations applicable to the various 625-line systems as follows:
1 - 625 lines; 2 - system I; 3 - system K*; 4 - system L.

Curve e. - Interference to vision from a CW or frequency-modulated sound signal with no special control of the nominal frequency difference between the wanted and unwanted signal carriers. For amplitude modulation of the interfering sound signal the protection ratios should be increased by 4 db.

Curve g - Interference to vision from a frequency-modulated sound signal when the nominal frequency difference between the wanted signal carrier and the sound carrier during quiescent periods is an odd multiple of half the line frequency (7.8125 kc/s).

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* If a vestigial sideband of 1.25 Mc/s is used in system K, curves e_4 and g_4 should be used instead of curves e_3 and g_3.

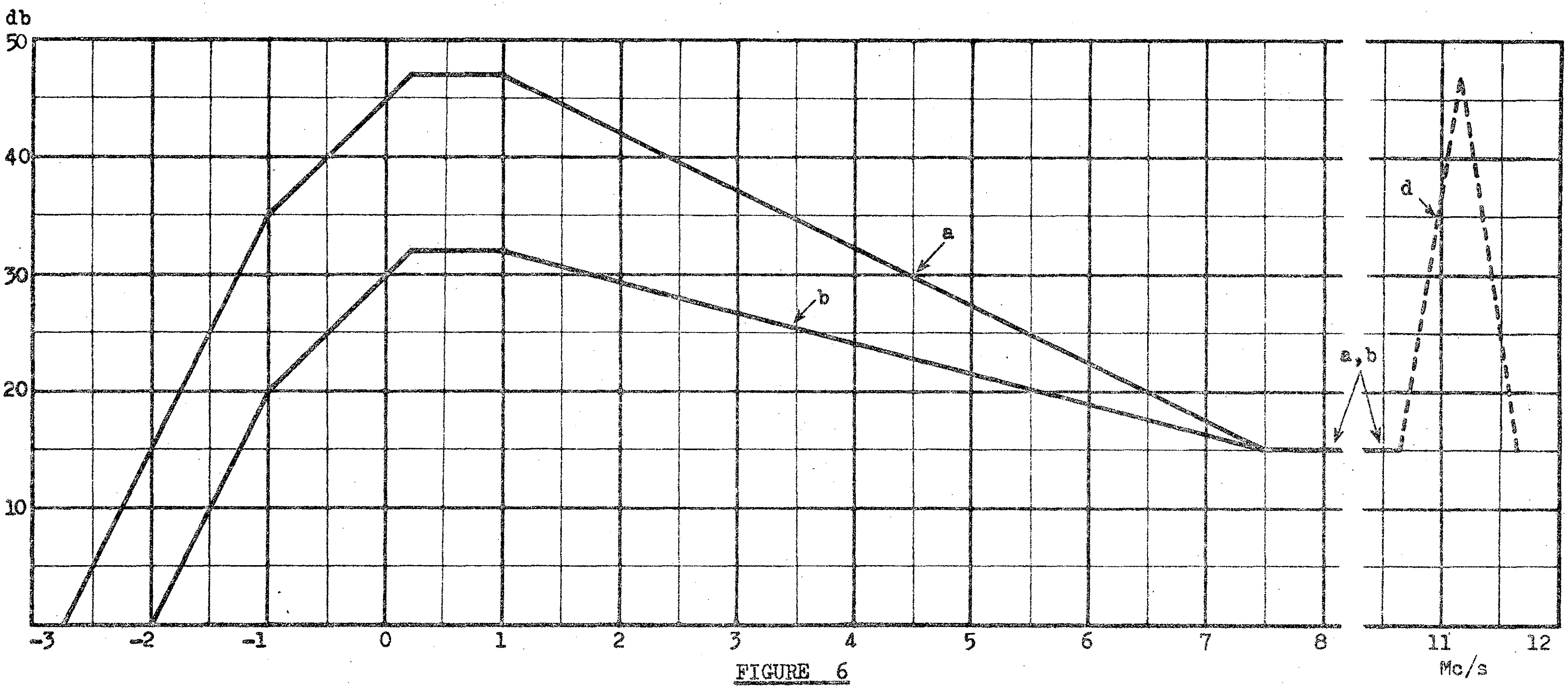

FIGURE 6

System E. Protection from vision-signal interference

In all cases in this figure, the ratios quoted are those between the wanted and unwanted vision levels.

Curve a - Interference to vision from a 405-, 625-, or 819-line vision signal with no special control of the nominal frequency difference between the wanted and unwanted signal carriers.

Curve b - Interference to vision from an 819-line vision signal when the nominal frequency difference between the wanted and unwanted signal carriers is a multiple of the line frequency (20.475 kc/s) plus or minus one third of the line frequency (6.825 kc/s).

Curve d - Interference to the sound signal from a 405-, 625-, or 819-line vision signal.

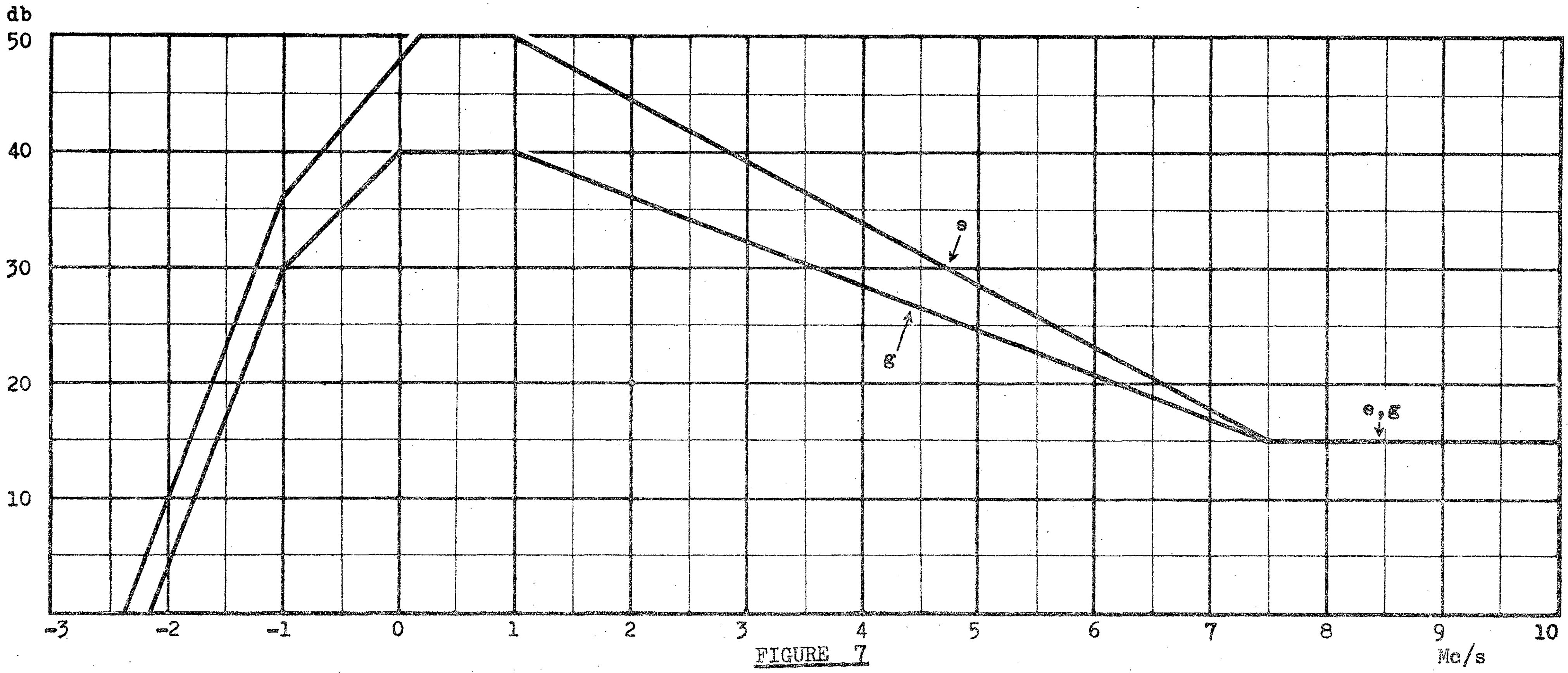

FIGURE 7

System E. Protection from CW or sound-signal interference

In both cases in this figure, the ratios quoted are those between the wanted vision and unwanted sound levels.

Curve e - Interference to vision from a CW or frequency-modulated sound signal with no special control of the nominal frequency difference between the wanted and unwanted signal carriers. For amplitude modulation of the interfering sound signal the protection ratios should be increased by 4 db.

Curve g - Interference to vision from a frequency-modulated sound signal when the nominal frequency difference between the wanted signal carrier and the sound carrier during quiescent periods in an odd multiple of half the line frequency (10.2375 kc/s).

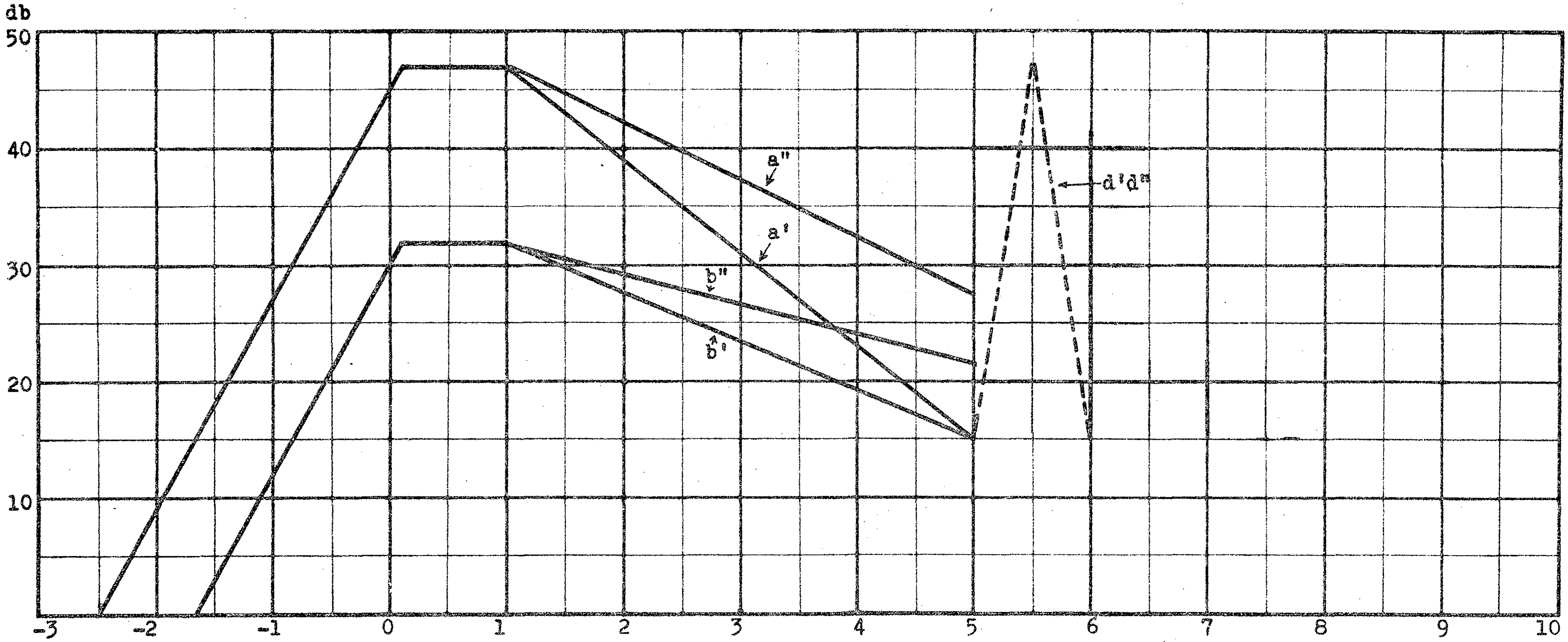

FIGURE 8

Systems C and F. Protection from vision-signal interference

In all cases in this figure, the ratios quoted are those between the wanted vision and unwanted vision levels.

Letters with a single prime are used for curves applying to System C. Letters with double primes are used for curves applying to System F.

Curve a - Interference to vision from a 405-, 625-, or 819-line vision signal with no special control of the nominal frequency difference between the wanted and unwanted signal carriers.

Curve b - Interference to vision from a vision signal having the same number of lines when the nominal frequency difference between the wanted and unwanted signal carriers is a multiple of the line frequency (15.625 or 20.475 kc/s) plus or minus one third of the line frequency (5.208 or 6.825 kc/s).

Curve d - Interference to the sound signal from a 405-, 625-, or 819-line vision signal.

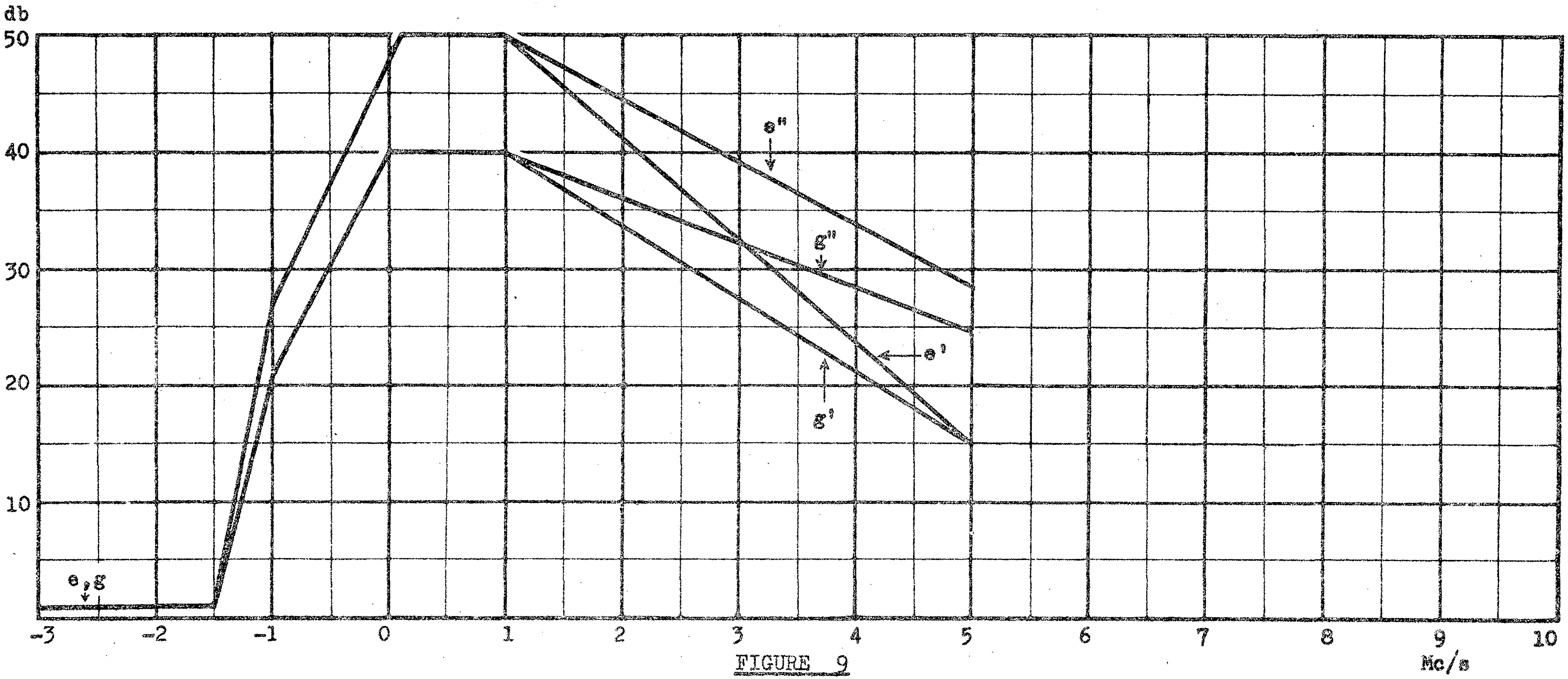

FIGURE 9

Systems C and F. Protection from CW and sound-signal interference

In all cases in this figure, the ratios quoted are those between the wanted vision and the unwanted sound levels.

Letters with a single prime are used for curves applying to System C. Letters with double primes are used for curves applying to System F.

Curve e - Interference to vision signal from a CW or frequency-modulated sound signal with no special control of the nominal frequency difference between the wanted and unwanted signal carriers. When the interfering sound signal is amplitude-modulated, the protection ratios should be increased by 4 db.

Curve g - Interference to vision signal from a CW or frequency-modulated sound signal when the nominal frequency difference between the wanted signal carriers and the sound carrier during quiescent periods is an odd multiple of half the line frequency (7.8125 or 10.2375 kc/s).

DRAFTING COMMITTEE

The following text, submitted by Study Group XI (Annex 11/1) and revised by the Drafting Committee, is submitted to the Plenary Assembly for approval.

RECOMMENDATION ...

MINIMUM FIELD STRENGTHS FOR WHICH PROTECTION MAY BE SOUGHT IN PLANNING A TELEVISION SERVICE

(Geneva, 1963)

The C.C.I.R.,

RECOMMENDS

1. that when planning a television service in Bands I, III, IV or V the median field strength for which protection against interference is planned should never be lower than:

Band	I	III	IV	V
db relative to 1 μV/m	+ 48	+ 55	+ 65*	+ 70*

2. that the percentage of time for which the protection may be sought should lie between 90 and 99.

Note 1: In arriving at these figures, it has been assumed that, in the absence of interference from other television transmissions and man-made noise, the minimum field strengths at the receiving antenna that will give a satisfactory grade of picture, taking into consideration receiver noise, cosmic noise, antenna gain and feeder loss, are + 47 db relative to 1 μV/m in Band I, + 53 db in Band III, + 62* db in Band IV and + 67* db in Band V.

Note 2: In a practical plan, because of interference from other television transmissions, the field strengths that can be protected will generally be higher than those quoted and the exact values to be used in the boundary areas between any two countries should be agreed between the Administrations concerned.

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* The figures shown for Bands IV and V should be increased by 2 db for the 625-line (I.B.T.O.) system.

DRAFTING COMMITTEE

The following text, submitted by Study Group X (Doc. 324) and revised by the Drafting Committee, is submitted to the Plenary Assembly for approval.

RECOMMENDATION ...*

STANDARDS FOR FREQUENCY MODULATION SOUND BROADCASTING IN THE VHF (METRIC) BAND

(Question 150)

(Warsaw, 1956 - Los Angeles, 1959 - Geneva, 1963)

The C.C.I.R.,

RECOMMENDS

that for frequency-modulation sound broadcasting in the VHF (metric) band:

1. the maximum frequency deviation should be either ± 75 kc/s or ± 50 kc/s;

2. the pre-emphasis characteristic should be defined as a curve rising with frequency in conformity with the admittance of a parallel combination of a capacitance and a resistance having a time constant of either 50 or 75 μs;

3. in the absence of interference from industrial and domestic equipment, a field strength** of at least 50 μV/m can be considered to give an acceptable service;

4. in the presence of interference from industrial and domestic equipment, a satisfactory service requires a median field strength** of at least:

   - 0.25 mV/m in rural areas,
   - 1 mV/m in urban areas,
   - 3 mV/m in large cities;

5. the protection ratios required to give satisfactory reception for 99% of the time, in systems using a maximum frequency deviation of ± 75 kc/s, are those given by the continuous curve in Fig. 1. For steady interference, it is desirable desirable to provide the higher degree of protection, shown by the dashed curce curve in Fig. 1.

   The corresponding values for systems using a maximum frequency deviation of ± 50 kc/s are given in Fig. 2.

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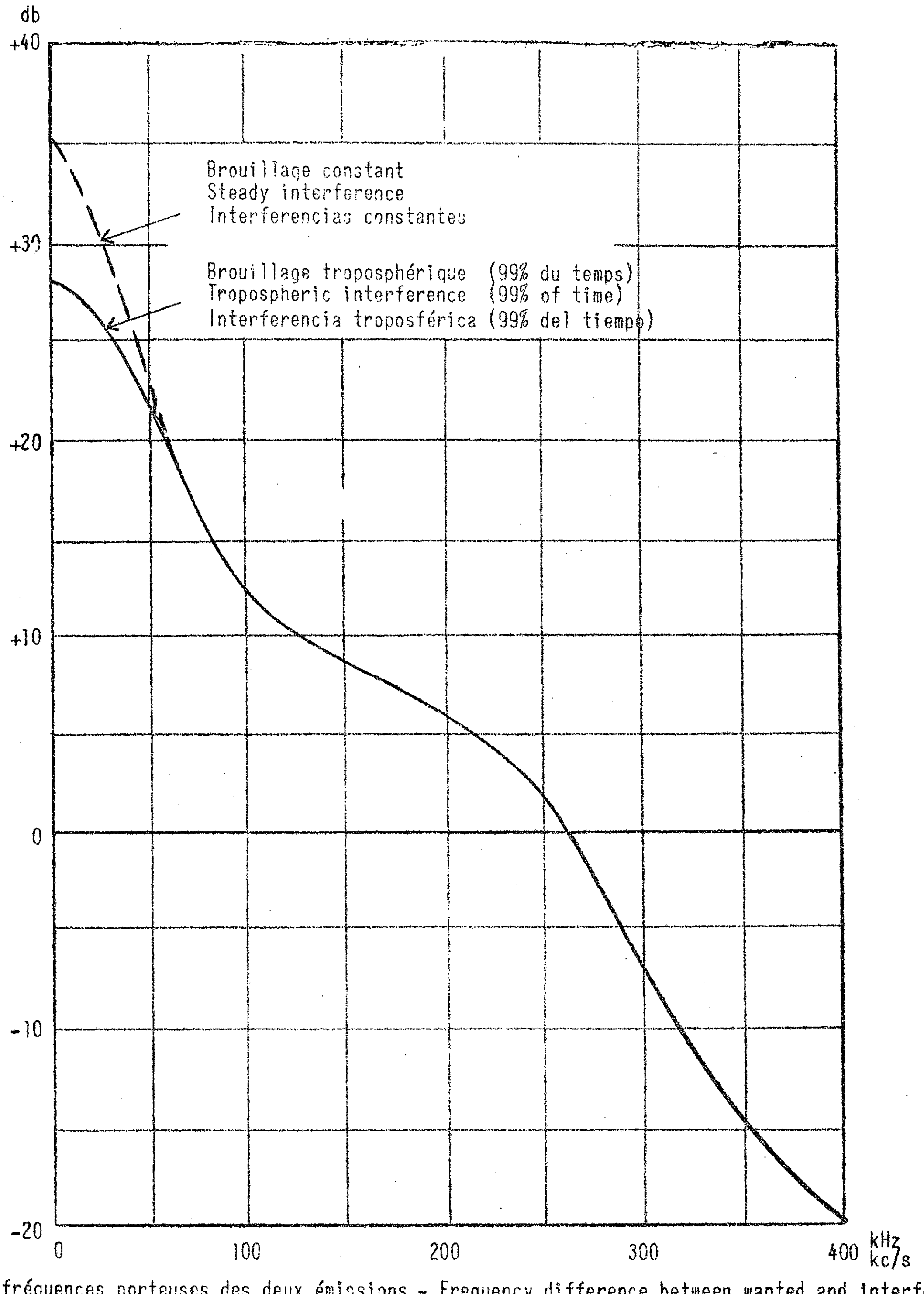
* This Recommendation replaces Recommendation 263 and concludes the study of Question 150.

** The field-strength as measured 10 m above ground level.



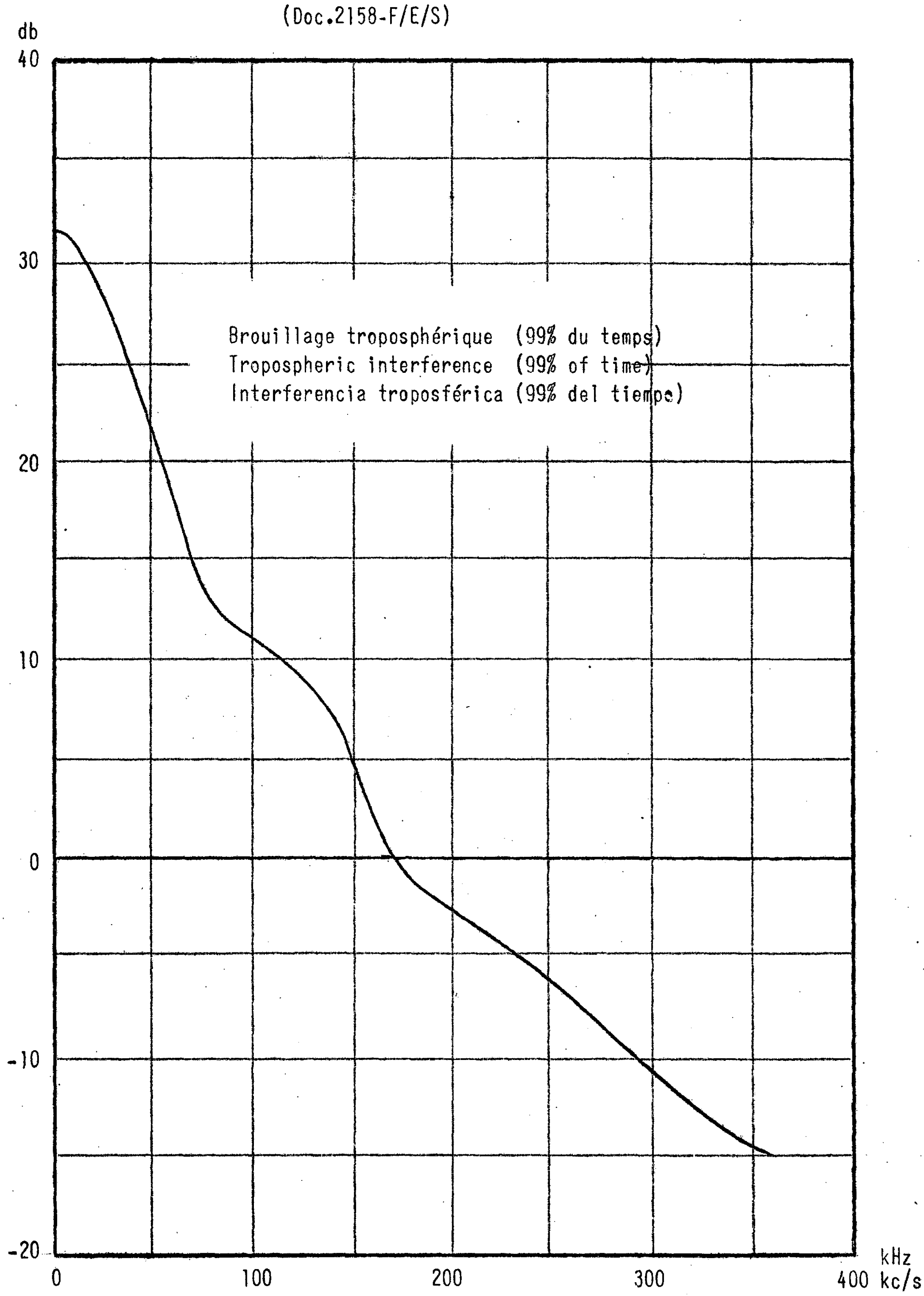
Ecart entre les fréquences porteuses des deux émissions - Frequency difference between wanted and interfering transmitters - Diferencia de frecuencia entre las portadoras de los dos transmisores

FIG. 1

RAPPORT DE PROTECTION POUR LA RADIODIFFUSION SONORE A MODULATION DE FREQUENCE EN ONDES METRIQUES DANS LA BANDE 87,5 MHz à 108 MHz POUR UNE EXCURSION MAXIMALE DE FREQUENCE DE ± 75 kHz

PROTECTION RATIOS REQUIRED BY VHF BROADCASTING SERVICES AT FREQUENCIES BETWEEN 87,5 Mc/s AND 108 Mc/s USING A MAXIMUM FREQUENCY DEVIATION OF ± 75 kc/s

RELACION DE PROTECCION PARA LA RADIODIFUSION SONORA CON MODULACION DE FRECUENCIA EN ONDAS METRICAS EN LA BANDA ENTRE 87,5 Mc/s Y 108 Mc/s PARA UNA EXCURSION MAXIMA DE FRECUENCIA DE ± 75 kc/s



Ecart entre les fréquences porteuses des deux émissions - Frequency difference between wanted and interfering transmitters - Diferencia de frecuencia entre las portadoras de las dos transmisores

FIG. 2

RAPPORTS DE PROTECTION POUR LA RADIODIFFUSION SONORE A MODULATION DE FREQUENCE EN ONDES METRIQUES AU-DESSOUS DE 87,5 MHz ET POUR DES EXCURSIONS MAXIMALES DE FREQUENCES DE ± 50 kHz

PROTECTION RATIOS REQUIRED BY VHF-FM SOUND BROADCASTING SERVICES AT FREQUENCIES BELOW 87.5 Mc/s USING A MAXIMUM DEVIATION OF ± 50 kHz

RELACIONES DE PROTECCION PARA LA RADIODIFUSION SONORA EN ONDAS METRICAS CON MODULACION DE FRECUENCIA POR DEBAJO DE 87,5 Mc/s, PARA EXCURSIONES MAXIMAS DE FRECUENCIA DE ± 50 kc/s

DRAFTING COMMITTEE

The following text, submitted by Study Group XI (Annex 11/3) and revised by the Drafting Committee, is submitted to the Plenary Assembly for approval.

RECOMMENDATION ...

DIRECTIVITY OF ANTENNAE IN THE RECEPTION OF BROADCAST SOUND AND TELEVISION

(Geneva, 1963)

The C.C.I.R.,

RECOMMENDS

that the characteristics of directivity of the receiving antennae of Fig. 1 can be utilized for planning broadcast sound or television service in Bands I to V.

Note 1: It is considered that the discrimination shown will be available at the majority of antenna locations in built-up areas. At clear sites in open country, slightly higher values will be obtained.

Note 2: The curves in Fig. 1 are valid for signals of vertical or horizontal polarization, when both the wanted and the unwanted signal are of the same polarization.

Note 3: The Special Regional Conference, Geneva, 1960, and the European VHF/UHF Broadcasting Conference, Stockholm, 1961, did not take the directional characteristics of antennae into consideration for sound broadcasting.

AVIS ...

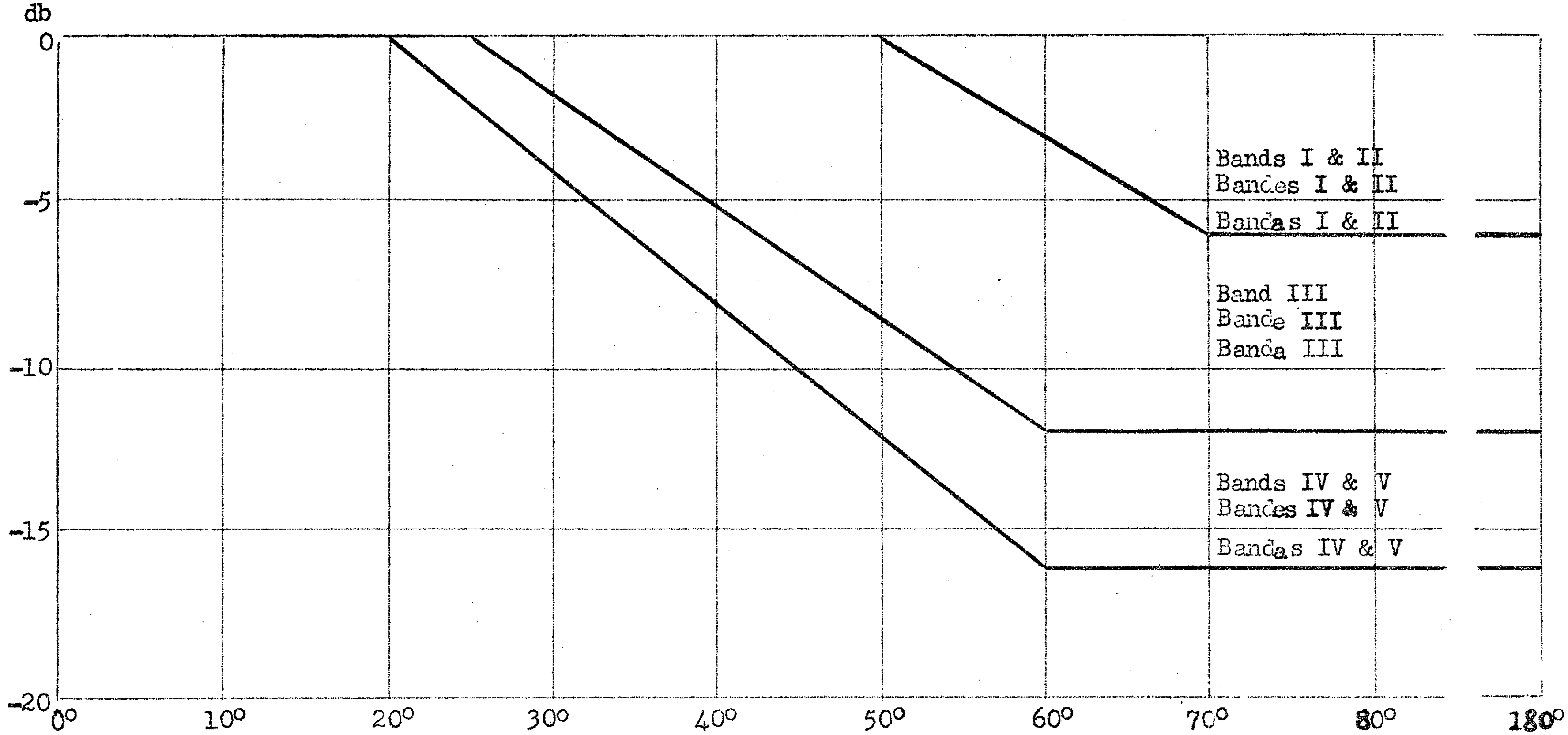
DIRECTIVITE DES ANTENNES DE RECEPTION EN
RADIODIFFUSION SONORE ET VISUELLE

Veuillez trouver ci-joint la Fig. 1 du Doc. 2323.

Please find attached Fig. 1 of Doc. 2323.

Adjunto se acompaña la Fig. 1 del Doc. 2323.

FIG. 1



Angle relative to direction of main response (degrees)
Ecart par rapport à la direction du lobe principal
Ángulo con la dirección del lóbulo principal

Discrimination obtained by the use of directional receiving antennae in broadcasting

Protection obtenue par l'utilisation d'antennes de réception directives en radiodiffusion

Protección obtenida con el uso de antenas receptoras directivas en radiodifusión

DRAFTING COMMITTEE

The following text, submitted by Study Group V (Annex 5/21) and revised by the Drafting Committee, is submitted to the Plenary Assembly for approval.

REPORT ...*

VHF AND UHF PROPAGATION CURVES IN THE FREQUENCY RANGE FROM 40 Mc/s TO 1000 Mc/s

(Broadcasting and mobile services)

(Los Angeles, 1959 - Geneva, 1963)

1. Introduction

This Report gives details of the construction of the propagation curves in Recommendation ... (Annex 5/3) and also suggests a method of computing the field strength over mixed land-sea paths. The Report is divided into four parts. The first section treats the development of the propagation curves for distances beyond the horizon; the second deals with the derivation of the curves for distances within the normal horizon; the third discusses the effects of terrain irregularities on the curves; and the last section considers propagation over mixed land-sea paths.

Results of field strength measurements have been made available by many Administrations, and these have been combined in the production of these propagation curves. These curves were developed at a Meeting of C.C.I.R. Experts, Cannes 1961 to prepare for the European VHF/UHF Broadcasting Conference, Stockholm, 1961.**

The following definitions are pertinent to this Report:

1.1 The field strengths have been adjusted to correspond to 1 kW of power radiated from a half-wave dipole.

1.2 The height of the transmitting antenna is defined as its height over the average level of the ground, between distances of 3 and 15 km from the transmitter, in the direction of the receiver.

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* This Report replaces Report 145.

** It must be emphasized that the curves are based on data obtained mainly in temperate climates and should be used with caution in other climates.

1.3 The receiving antenna height is defined as the height above local terrain.

2. Beyond-the-horizon distances

The long-term data for distances beyond the horizon were separated into VHF and UHF classes. Figs. 1, 2, and 3 show the average curves which were derived from the data.

Fig. 1 shows the average curves for VHF propagation at the greater distances and incorporates a very large amount of data on many land paths together with about a dozen sea paths around the British Isles. The average heights of the transmitting and receiving antennae were about 300 m and 10 m respectively. The technique in developing curves for transmitting antennae at other heights is to assume that the field strength is a function of the distance between horizons only. Then, the field strength at a distance X km from the transmitter for a transmitting antenna at a height h_1 m would be obtained from the 300 m curves at an equivalent distance of $(X + 70 - 4.1\sqrt{h_1})$ km. This procedure may be used for distances beyond the horizon.

A similar set of curves are shown in Fig. 2 for propagation over land in the UHF range. Here again, the curves represent the average of a great amount of data for many land paths, representing many areas of the world. As above, curves for transmitting antennae at other heights may be for transmitting antennae at other heights developed by assuming that the field strength depends only on the distance between the horizons.

Fig. 3 shows field strength curves for oversea paths at greater distances. The only data available relating to oversea propagation at the greater distances are for the North Sea and Mediterranean areas. The curves of Fig. 3 are based on measurements over a number of paths in the North Sea area over a period of about 18 months. Limited measurements of the median value of field strength in the Mediterranean are in good agreement. There is evidence, however, that the field strengths exceeded for small percentages of time in the Mediterranean are even greater than those experienced in the North Sea area.

The field strengths exceeded for small percentages of the time are not expected to be sensitive to appreciable changes in the height of the transmitting antenna; and the field strengths exceeded for 50% of the time may be adjusted for transmitting antennae at other heights, by again assuming that the field strength beyond the horizon depends only upon the distance between the horizons.

3. Within-the-horizon distances

Propagation curves for distances within the normal horizon were developed by comparing the data obtained from many mobile surveys and a number of long-term measurements at fixed locations for short path lengths with theoretical propagation curves for a smooth earth at the appropriate frequencies and antenna heights. The variation in field strength with frequency proved to be relatively minor and the data was separated into VHF and UHF classes, as was done for the beyond-the-horizon distances.

Fig. 1 (Annex 5/3) shows the field strength exceeded for 50% of the time at VHF. The curves within the normal horizon distances were derived by comparison with the theoretical corresponding curves for a smooth earth. These curves were then merged smoothly into the corresponding family of curves for distances beyond the horizon, as described in the previous section. Fig. 1 (Annex 5/3) thus includes portions of field-strength curves within the horizon, beyond the horizon as well as intermediate portions which are the result of merging the within-horizon and beyond-horizon curves.

Figs. 2 and 3 (Annex 5/3) show the field strengths exceeded for 10% and 1% of the time, respectively, at VHF. The derivation of these curves was very similar to those of Fig. 1 (Annex 5/3). The assumption was made that time fading is negligible at short distances, so that the median curves of Fig. 1 (Annex 5/3) may be used as a guide at short distances and merged with the appropriate 10% and 1% curves from Fig. 1.

A set of field strength versus distance curves was derived for the UHF in similar fashion. These are shown as Figs. 6, 7 and 8 (Annex 5/3).

4. Influence of irregularities in the terrain

The influence of irregularities in the terrain increases with frequency. It is therefore, more important in the UHF (bands IV and V) than in the VHF (bands I, II and III) (see Technical Data, Stockholm, 1961, Part I, § 1.2.2). The parameter Δh is used to define the degree of terrain irregularity. It is the difference in the heights exceeded for 10% and 90% of the terrain over propagation paths in the range 10 km to 50 km from the transmitter (see Fig. 5, (Annex 5/3)). All of the curves for propagation over land refer to the kind of rolling irregular terrain found in many parts of Europe and North America, for which a vlaue of Δh of 50 m is considered representative.

If one could visualize an ideal experiment in which long-term recordings are made at a large number of locations, then the distribution of time medians for each and every site will result in a location distribution such as Fig. 4 (Annex 5/3) for VHF over the typical rolling terrain for a Δ h of 50 m.

It is further assumed that the change in the range of variation, i.e., the slope, of this location distribution is approximately unaffected by the roughness of the terrain at VHF, so that the distribution of Fig. 9 (Annex 5/3) may be assumed to apply for most practical values of Δh.

At UHF typical location distributions for various values of Δh are shown in Fig. 9 (Annex 5/3); the changes in the range of variation cannot be assumed to be negligible.

Not only does the range of variation of the location distribution increase with the terrain roughness, but also the average received field strengths are reduced as the terrain becomes rougher - i.e. Δh becomes greater. Again, this effect increases with frequency. Measurements indicate that the following corrections are appropriate for UHF for distances up to 100 km.

TABLE I

Δh (m)	Attenuation correction factor (db)
$\ll 50$	- 10
50	0
100 - 200	10
200 - 400	20

In the above, the attenuation correction factor should be subtracted from the UHF field strength curves for the required Δh. For distances greater than 200 km the attenuation correction factor is assumed to be half the number of decibels shown in the above Table I for the same roughness of terrain.

For distances between 100 and 200 km the corrected propagation curves for the two distances may be merged.

For Band III, the attenuation factor (in db) used at UHF should be halved. At lower frequencies, no attenuation correction factors are proposed at this time.

The propagation curves in Recommendation ... (Annex 5/3) are the result of merging the appropriate curves.

Annex: 1

ANNEX

PROPAGATION OVER MIXED LAND AND SEA PATHS

Although there is little evidence of any large difference between the propagation over sea and over land in Bands I, II and III except for the small percentages of time, there is an appreciable difference at frequencies in Bands IV and V.

When the path is over a mixture of land and sea, then an estimate must be made of the effect on the received signal of the mixed path. An attemp has been made to determine the attenuation from an all-sea path when the path is a mixture of land and sea based on experimental measurements made in the United Kingdom on mixed paths.

From these measurements, curves have been drawn showing the decrease in field strength relative to the value for an all-sea path in accordance with the distance from:

- the receiver point to the coast, as shown in Fig. 4 (a);
- the transmitter site to the coast as shown in Fig. 4 (b);

It should be noted that the corrections are zero if the coastal boundary is within the radio horizon from the receiving or transmitting aerials (for heights of 10 m and 300 m respectively). The total corrections must not exceed 45 db, 31 db or 22 db for the 1%, 5% or 10% time values respectively, because these corrections would reduce the field strength values to those for an overland path of the same total length.

When there are more than two land/sea intersections along a propagation path, i.e. with one or more intervening portions of land, the calculation of field strength should normally be made as follows:

- the curves of Fig. 4 (b) should be applied to the land-sea intersection nearest to the transmitter;
- the curves of Fig. 4 (a) should be applied to the sum of the length of all the remaining land portions of the propagation path.

Application of the method for the determination of field strength over mixed land and sea paths may lead to an erroneous result in certain special cases where either the length of a sea portion of the path is short or the percentage of the total path that is over sea is small. In such cases, the method should be used with extreme caution and only after consultation between the Administrations concerned.

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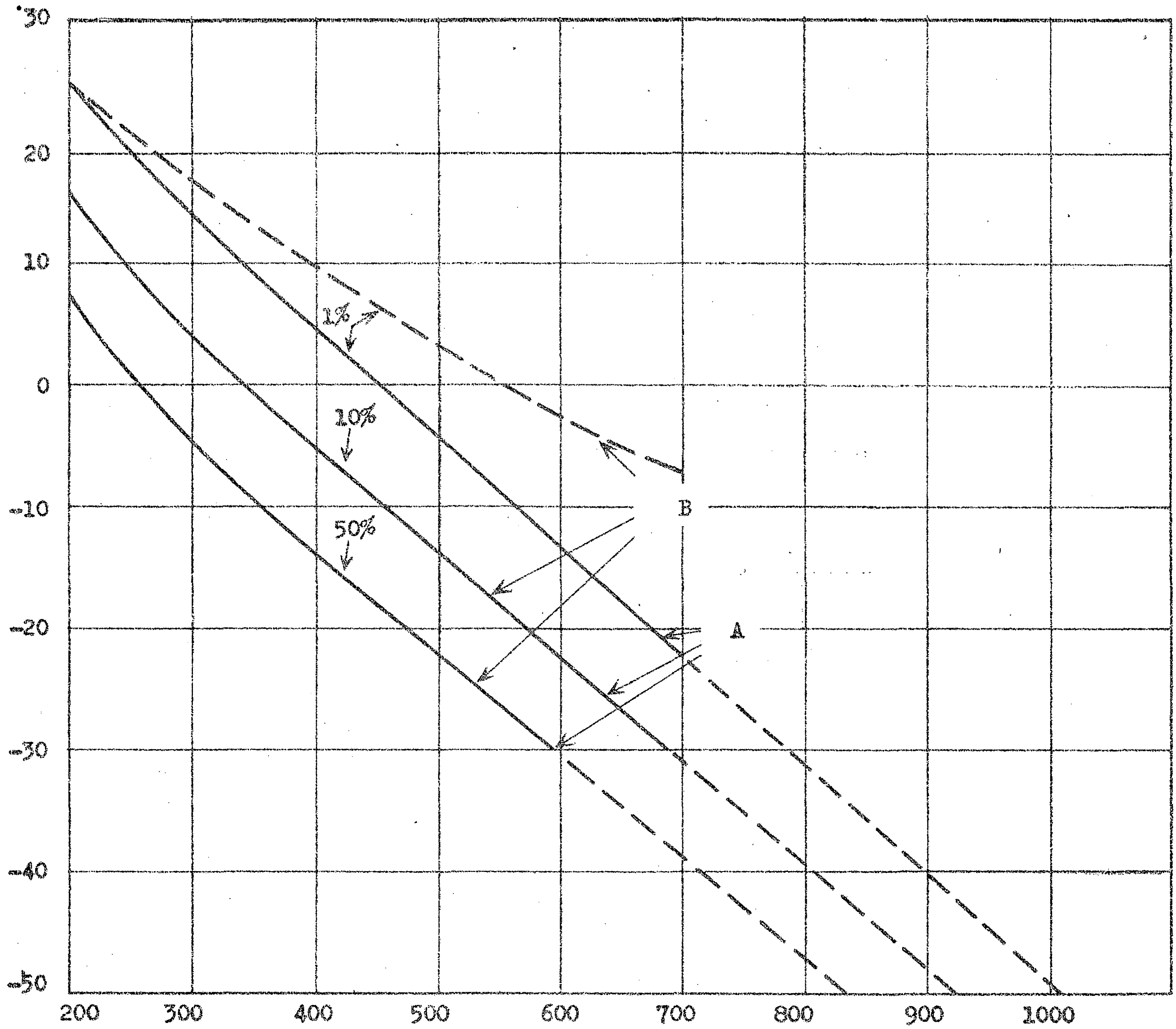

Fig. 1

BANDES)
BANDS) I, II, III h_1 = 300 m
BANDAS) h_2 = 10 m

50 % des emplacements - 50% of locations - 50% de las ubicaciones

Courbe)
Curve) A : Land
Curva)

Terre
Tierra

Courbe)
Curve) B : North Sea
Curva)

Mer du Nord
Mar del Norte

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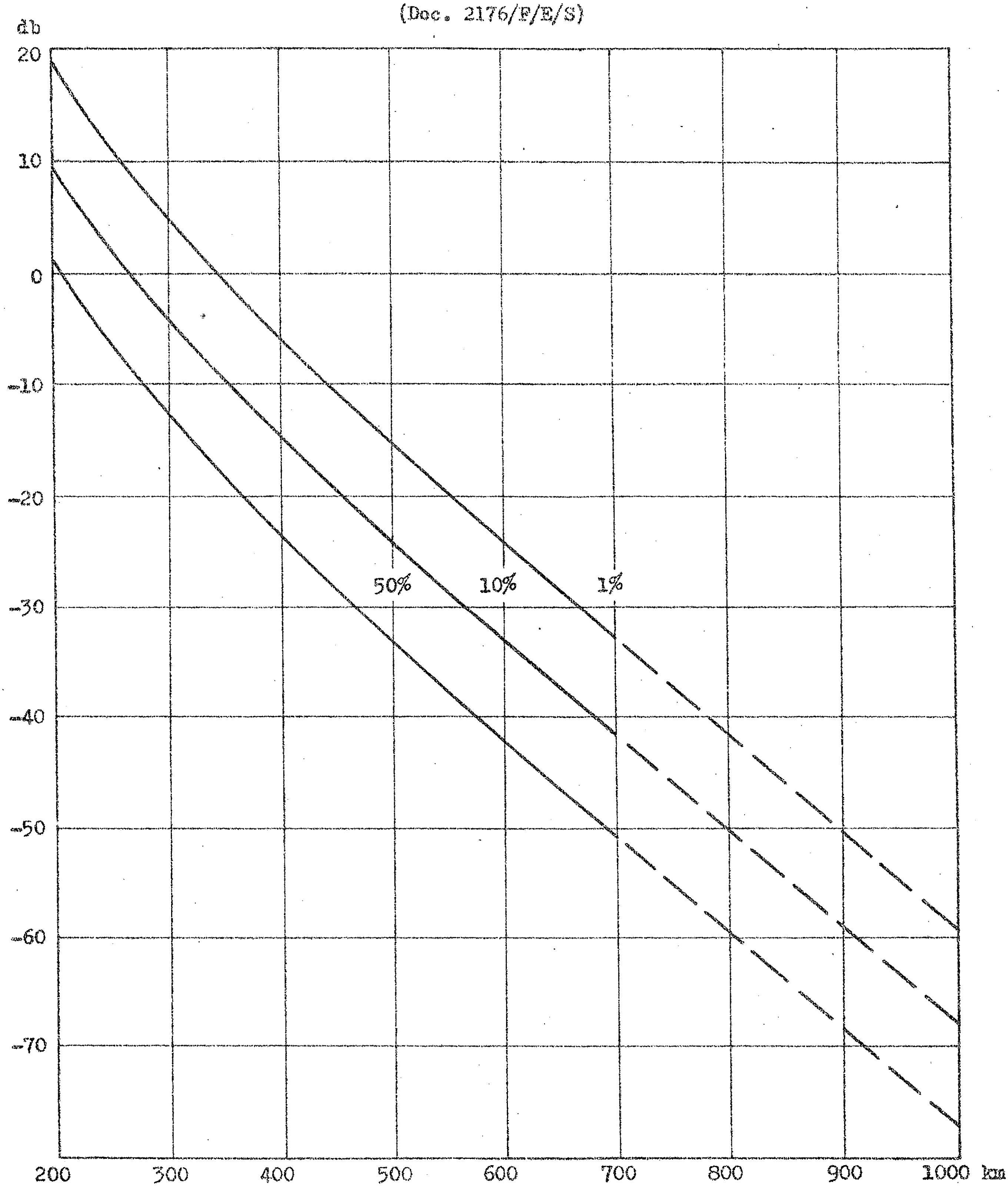

Fig. 2

BANDES IV/V	50 % des emplacements - 50% of locations - 50% de las ubicaciones
BANDS IV/V	(Pourcentage du temps : comme indiqué sur chaque courbe
BANDAS IV/V	(Percentage of time: as indicated on the curves
	(Porcentaje de tiempo: el indicado en cada curva

Terre
Land
Tierra

h_1 = 300 m
h_2 = 10 m

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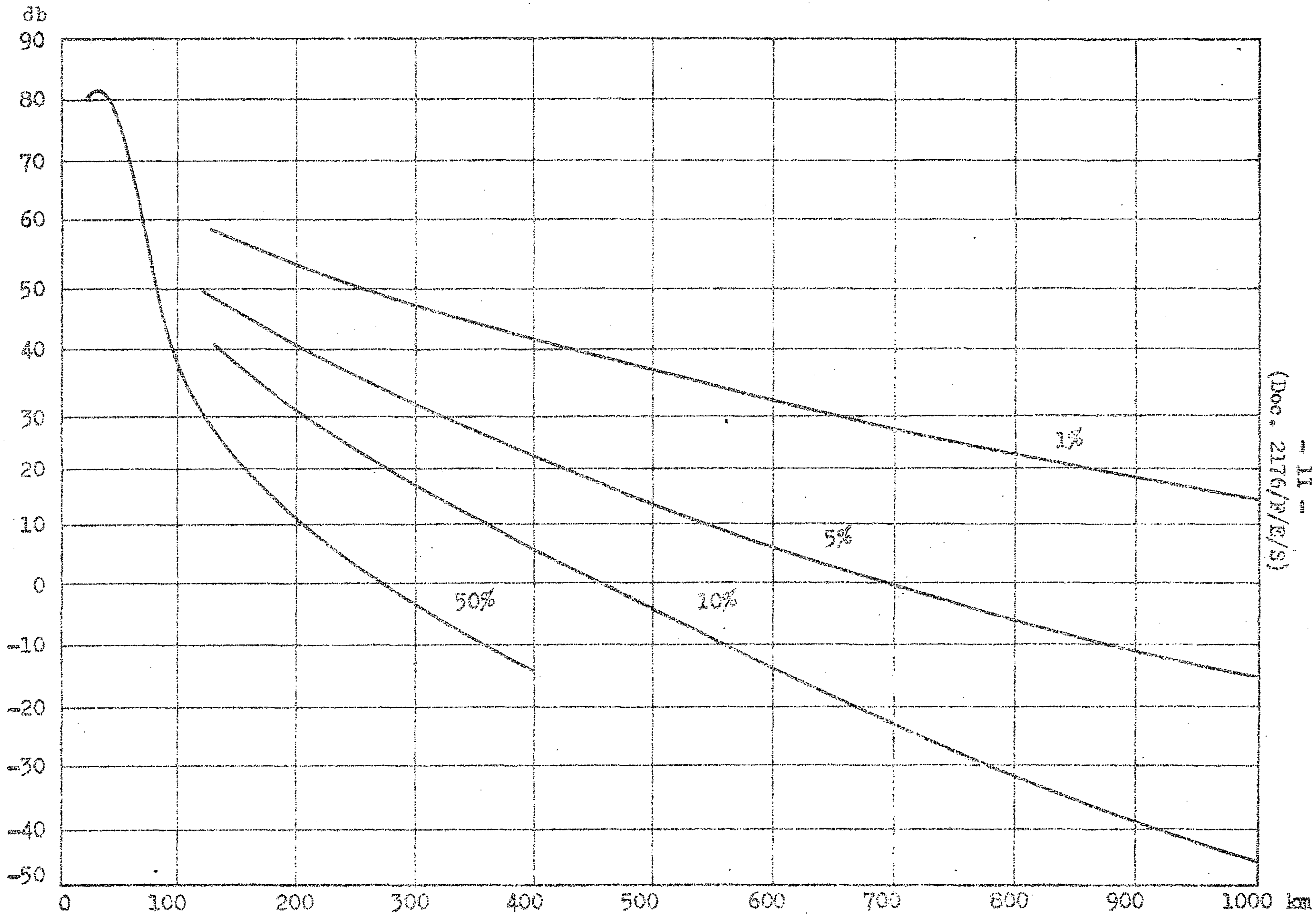

Fig. 3

BANDES IV/V (Pourcentage du temps : comme indiqué sur chaque courbe
BANDS IV/V (Percentage of time: as indicated on the curves
BANDAS IV/V (Porcentaje de tiempo: el indicado en cada curva
Mer
Sea h_1 = 300 m
Mar h_2 = 10 m

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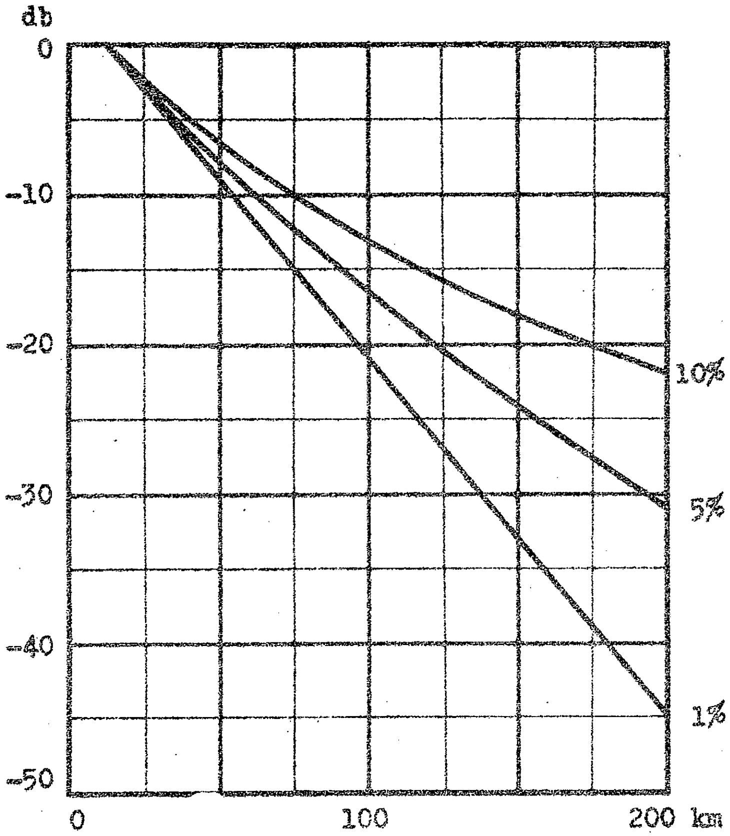

Fig. 4 a

Distance du point de réception à la côte
Distance from receiver to coast
Distancia del punto de recepción a la costa

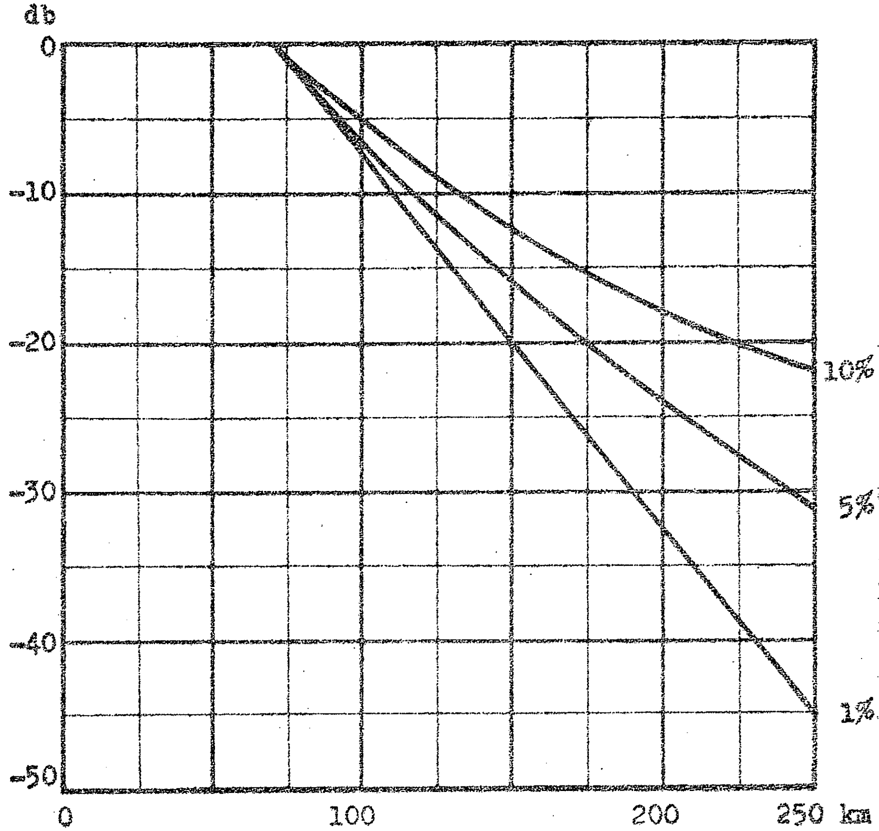

Fig. 4 b

Distance du point d'émission à la côte
Distance from transmitter to coast
Distancia del punto de emisión a la costa

Fig. 4

Corrections à apporter aux courbes pour trajets maritimes lorsque le trajet est partiellement terrestre

Corrections to be applied to oversea curves when path is partly overland

Correcciones aplicables a las curvas para trayectos marítimos cuando el trayecto es parcialmente terrestre

DRAFTING COMMITTEE

The following text, submitted by Study Group XI (Annex 11/9) and revised by the Drafting Committee, is submitted to the Plenary Assembly for approval.

REPORT ... *

CHARACTERISTICS OF MONOCHROME TELEVISION SYSTEMS

(Study Group XI)

(Geneva, 1951 - London, 1953 - Warsaw, 1956 - Los Angeles, 1959 - Geneva, 1963)

The following Tables, given for information purposes, contain details of a number of different monochrome television systems in use at the time of the Xth Plenary Assembly of the C.C.I.R., Geneva, 1963.

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* This Report replaces Report 124.

TABLE I

CHARACTERISTICS OF MONOCHROME TELEVISION SYSTEMS

ITEM	CHARACTERISTICS	SYSTEM			
		A	M (2)	N	B
	Video characteristics (See also Tables II and III for details of line and field synchronizing signals respectively)				
1	Number of lines per picture (frame)..	405	525	625	625
2	Field frequency (fields/second)	50	60	50	50
3	Interlace	2/1*	2/1*		2/1*
4	Picture (frame) frequency (pictures/ second)	25	30		25
5	Line frequency and tolerance when operated non-synchronously (lines/ second)	10 125	15 750		15 625 ± 0.1%
6	Aspect ratio (width / height)........	4 / 3*	4 / 3*		4 / 3*
7	Scanning sequence ...... (Line)	Left to right*	Left to right*		Left to right*
	(Field)	Top to bottom*	Top to bottom*		Top to bottom*
8	System capable of operating independently of power supply frequency	Yes*	Yes*		Yes*
9	Approximate gamma of picture signal..	0.4-0.5	0.45		0.5
10	Nominal video bandwidth (Mc/s)	3	4.2	4.2	5
	Radio frequency characteristics (See also Table IV for ideal sideband characteristics of vision transmitters)				
11	Nominal radio-frequency bandwidth (Mc/s)	5	6	6	7
12	Sound carrier relative to vision carrier (Mc/s)	-3.5*	+4.5*	4.5	+5.5*
13	Sound carrier relative to nearest edge of channel (Mc/s)	+0.25*	-0.25*		-0.25*
14	Nominal width of main sideband (Mc/s)	3	4.2		5
15	Nominal width of vestigial sideband (Mc/s)	0.75	0.75	0.75	0.75
16	Type of polarity of vision modulation	A5* positive, asymmetric sideband*	A5* negative, asymmetric sideband*	A5* negative, asymmetric sideband*	A5* negative, asymmetric sideband*
17	Synchronizing level as a percentage of peak carrier	< 3	100		100
18	Blanking level as a percentage of peak carrier	30	75		72.5-77.5
19	Difference between black level and blanking level as a percentage of peak carrier	0	2.875-6.75		3-6.5
20	Peak white level as a percentage of peak carrier	100	≒15		10-12.5
21	Type of sound modulation	A3	F3, ± 25 kc/s 75 μs pre-emphasis		F3, ± 50 kc/s 50 μs pre-emphasis
22	Ratio of effective radiated powers of vision and sound (1)	4 / 1	2/1-1.43/1 (4 / 1)		5 / 1

NOTES: See page 4

TABLE I (cont'd)

CHARACTERISTICS OF MONOCHROME TELEVISION SYSTEMS

ITEM	SYSTEM							
	C	G	H	I	D, K	L	F	E
Video characteristics (See also Tables II and III for details of line and field synchronizing signals respectively)								
1	625	625	625	625	625	625	819	819
2	50	50	50	50	50	50	50	50
3	2/1*	2/1*	2/1*	2/1*	2/1*	2/1*	2/1*	2/1*
4	25	25	25	25 ± .001%	25	25	25	25
5	15.625 ± 0.1%	15.625 ± 0.1%	15.625 ± 0.1%	15 625 ± .001%	15.625 ± 0.05%	15.625 ± 0.1%	20 475 ± 0.1%	20 475
6	4/3*	4/3*	4/3*	4/3*	4/3*	4/3*	4/3*	4/3*
7	Left to right* Top to bottom*	Left to right* Top to bottom*	Left to right* Top to bottom*	Left to right* Top to bottom*	Left to right* Top to bottom*	Left to right* Top to bottom*	Left to right* Top to bottom*	Left to right* Top to bottom*
8	Yes*	Yes*	Yes*	Yes*	Yes*	Yes*	Yes*	Yes*
9	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6
10	5	5	5	5.5	6	6	5	10
Radio frequency characteristics (See also Table IV for ideal sideband characteristics of vision transmitters)								
11	7	8	8	8	8	8	7	14
12	+5.5*	+5.5*	+5.5*	6	+6.5*	+6.5*	+5.5*	11.15
13	-0.25*	-0.25*	-0.25*	-0.75*	-0.25*	-0.25*	-0.25*	0.02
14	5	5	5	5.5	6	6	5	10
15	0.75	0.75	1.25	1.25	0.75 (4)	1.25	0.75	2
16	A5* positive, asymmetric sideband*	A5* negative, asymmetric sideband*	A5* negative, asymmetric sideband*	A5* negative asymmetric sideband*	A5* negative, asymmetric sideband*	A5* positive, asymmetric sideband*	A5* positive, asymmetric sideband*	A5* positive, asymmetric sideband*
17	< 3	100	100	100	100	> 6	<3	< 3
18	22.5-27.5	72.5-77.5	72.5-77.5	77	72.5-77.5	30 ± 2	22.5-27.5	30
19	3-6 (3)	3-6.5	3-6.5	0	3-5	5 ± 2	3-6 (3)	5
20	100	10-12.5	10-12.5	18 - 20	10	100	100	100
21	A3, 50 μs pre-emphasis	F3, ± 50 kc/s 50 μs pre-emphasis	FB, ± 50 kc/s 50 μs pre-emphasis	F3, ± 50kc/s 50 μs pre-emphasis	F3, ± 50 kc/s 50 μs pre-emphasis	A3, No pre-emphasis	A3, 50 μs pre-emphasis	A3, No pre-emphasis
22	4/1 (3)	5/1	5/1	5/1	2/1 - 5/1	5/1	4/1 (3)	4/1

NOTES: See page 4

NOTES :

* These characteristics are in accordance with Recommendation 212.

(1) The values to be considered are :

- the r.m.s. value of the carrier at the peak of the modulation envelope for the vision signal;

- the r.m.s. value of the unmodulated carrier for amplitude-modulated and frequency-modulated sound transmissions.

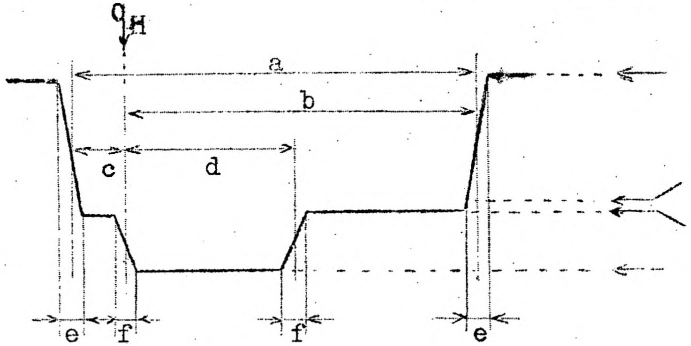
(2) The figures in brackets refer to the Japanese 525-line system.

(3) Tentative data.

(4) The Administrations proposing this standard are studying the possibility of increasing the width of the vestigial sideband to 1.25 Mc/s.

TABLE II

DETAILS OF LINE SYNCHRONIZING SIGNALS



Item	Characteristic	Durations (Measured between half-amplitude points on the appropriate edges) for system.							
		A		M		N		B, H, G (1)	
		% H	µs	% H	µs	% H	µs	% H	µs
H	Line period	100	98.8	100	63.5	100	64	100	64
a	Line blanking interval	17.7-19.2	17.5-19	16-18	10.2-11.4			18.5-19.2	11.8-12.3
b	Interval between time datum (0_H) and back edge of line blanking signal	16.2-17.2	16 -17	14.3	> 9.1				
c	Front porch	1.52-1.95	1.5-2.0	>2.7	> 1.71			2-2.8	1.3-1.8
d	Synchronizing pulse	8.1-10.1	8-10	6.6-8.6	4.19-5.46			7-7.7	4.5-4.9
e	Build-up time (10-90%) of the edges of the line blanking signal.	0.26-0.51	0.25-0.5	1	0.64			0.31-0.62	0.2-0.4
f	Build-up time (10-90%) of line synchronizing pulses	≤ 0.26	≤ 0.25	0.4	0.25			0.31-0.62	0.2-0.4

(1) The primary values are those given in µs.
(2) Tentative data
(3) Calculated values
(4) The values given in %H are rounded-off.

TABLE II (Cont'd)

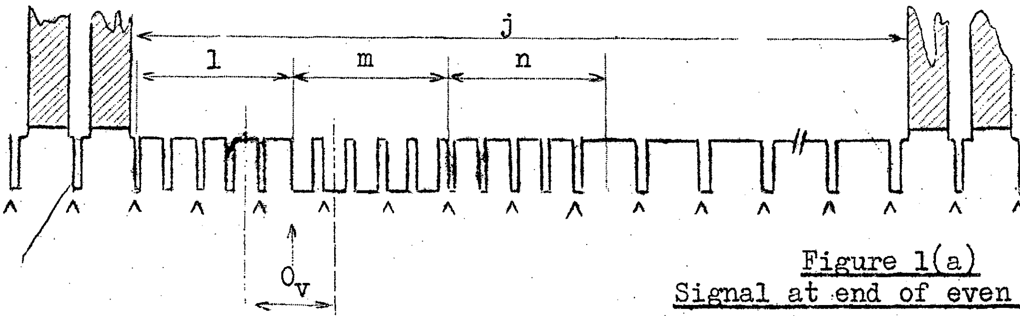
Item	Durations for system: (Measured between half-amplitude points on the appropriate edges)											
	C		I		D, K		L		F		E	
	% H	µs	% H	µs	% H (4)	µs	% H (4)	µs	% H	µs	% H	µs
H	100	64	100	64	100	64	100	64	100	48.84	100	48.84
a	18.7	11.8-12.2 (2)		12.05 ±0.25	18.4-19.5	11.8-12.6	19	12.1 ± 0.3	18.4	9-9.4 (2)	19	9.2-9.8
b	16.5	10.2-11 (2)			16.1-17.3	10.3-11.3 (3)	16.7	10.7 ± 0.3	16.4	7.8-8.6 (2)	17.8	8.9
c	2.2	1.2-1.6 (2)		1.55 ±0.25	1.9-2.35	1.2-1.5	2.3	1.5 ± 0.2	2	0.8-1.2 (2)	1.2	0.5-0.7
d	7.8	4.8-5.2 (2)		4.7 ±0.2	7-8.3	4.5-5.3	7.5	4.8 ± 0.2	7.2	3.4-3.8 (2)	5.2	2.4-2.6
e	0.5	0.2-0.4 (2)		0.3 ±0.1	0.3-0.7	0.2-0.45	0.5	0.3 ± 0.1	0.4	0.1-0.3 (2)	0.4	0.17-0.23
f	0.5	0.2-0.4 (2)		0.3 ±0.1	0.2-0.4	0.13-0.26	0.25	0.15 ± 0.05	0.4	0.1-0.3 (2)	0.25	0.10-0.14

(1) The primary values are those given in µs.
(2) Tentative data
(3) Calculated values
(4) The values given in %H are rounded-off.

TABLE III

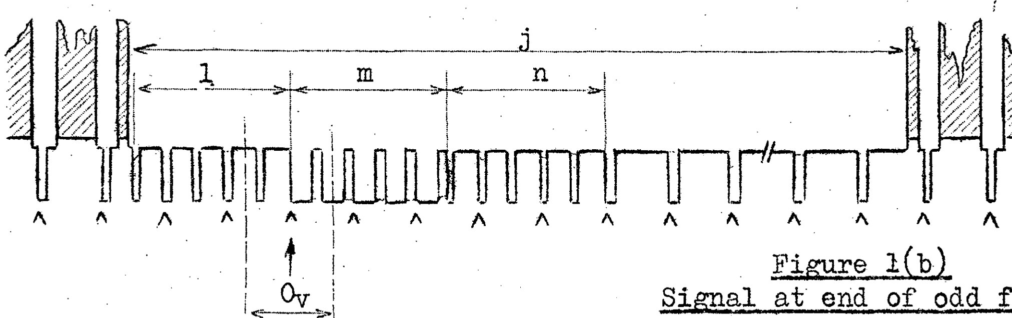
DETAILS OF FIELD SYNCHRONIZING WAVEFORMS

1. Diagrams applicable to all systems except system E



See Fig. 1(c)

Figure 1(a)
Signal at end of even fields



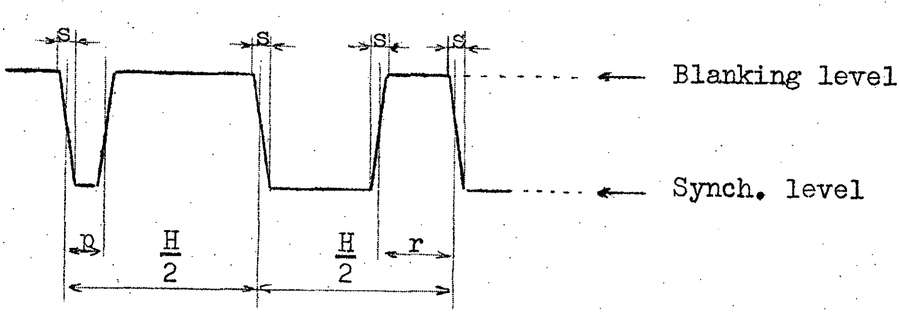
See Fig. 1(c)

Figure 1(b)
Signal at end of odd fields

Note 1: ^^^ indicates an unbroken sequence of edges of line synchronizing pulses throughout the field blanking period.

Note 2: At end of even fields, the edge of the field synchronizing pulse (0_V) falls midway between the edges of two line synchronizing pulses if ℓ is an odd number of half-line periods as shown.

Note 3: At end of odd fields, the edge of the field synchronizing pulse (0_V) coincides with the edge of a line synchronizing pulse if l is an odd number of half-line periods of half-line periods as shown.



Note: The durations measured to the half-amplitude points on the appropriate edges.

Figure 1(c)

Details of equalizing and synchronizing pulses

TABLE III (continued)

DETAILS OF FIELD SYNCHRONIZING WAVEFORMS

2. Diagrams applicable to system E

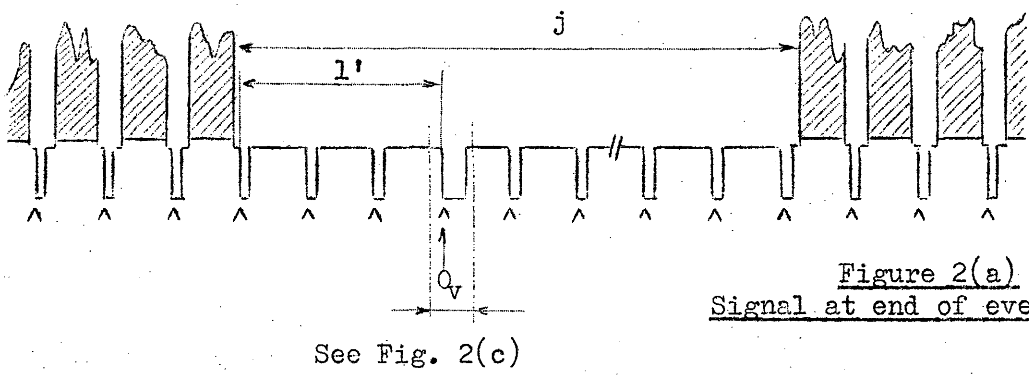


Figure 2(a)
Signal at end of even fields

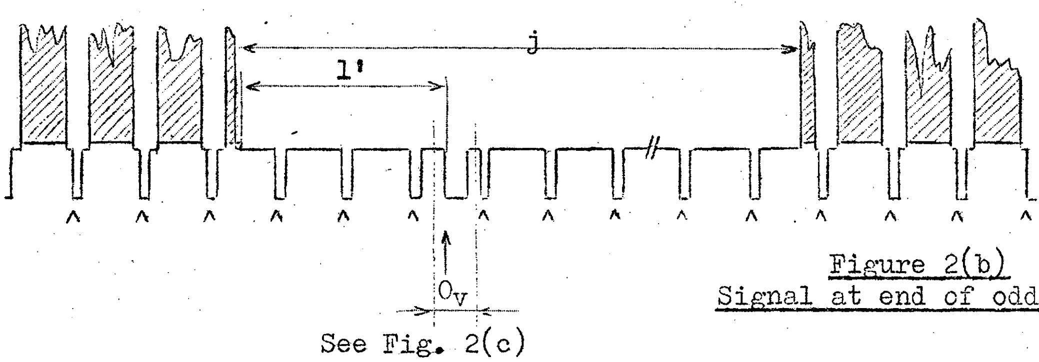
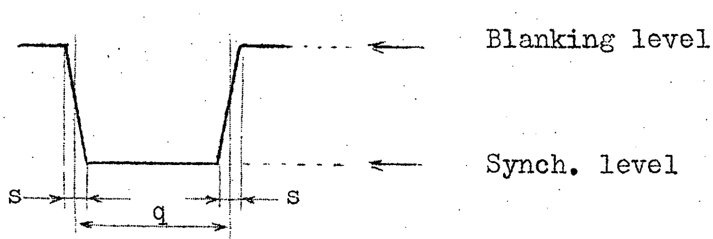


Figure 2(b)
Signal at end of odd fields

Note 1: ΛΛΛ indicates an unbroken sequence of edges of line synchronizing pulses throughout the field blanking period.

Note 2: At end of even fields, the edge of the field synchronizing pulse (O_V) coincides with the edge of a line synchronizing pulse.

Note 3: At end of odd fields, the edge of the field synchronizing pulse (O_V) falls midway between the edges of two line synchronizing pulses.



Note: The durations measured to the half-amplitude points on the appropriate edges.

Figure 2(c)

Details of equalizing and synchronizing pulses

TABLE III

Item	Characteristic	System							
		A		M (5)		N		B, H, G (6)	
V	Field period ....(ms)	20		16.667		20		20	
H	Line period ....(µs)	98.8		63.5		64		64	
j	Field-blanking period ....(µs)	(13-15.5) H (2) + 18.25 (3)		(13-21)H + 10.7				(18-22) H + 12	
k(1)	Build-up times (10-90%) of the edges of field-blanking pulses..............(µs)	0.25-0.5		6.35				≤ 6	
l	Duration of first equalizing pulse sequence	(4)		3 H				2.5 H	
l'u	Nominal interval between beginning of the field blanking pulse and the leading edge of the field synchronizing pulse (0v)...........................								
m	Duration of synchronizing pulse sequence	4 H		3 H				2.5 H	
n	Duration of second sequence of equalizing pulses			3 H				2.5 H	
		% H	µs	% H	µs	% H	µs	% H	µs
p	Duration of equalizing pulse............			3.6	2.54			3.4-3.75	2.2.2.4
q	Duration of field synchronizing pulse ..	38.5-42.5	38-42	42.6	27.1				
r	Interval between field synchronizing pulses..................................	11.5-7.5	11.4-7.4	7.4	4.7			7-7.7	4.5-4.9
s	Build-up times (10-90%) of the edges synchronizing signals	≤ 0.26	≤ 0.25	0.4	0.25			0.31-0.62	0.2-0.4

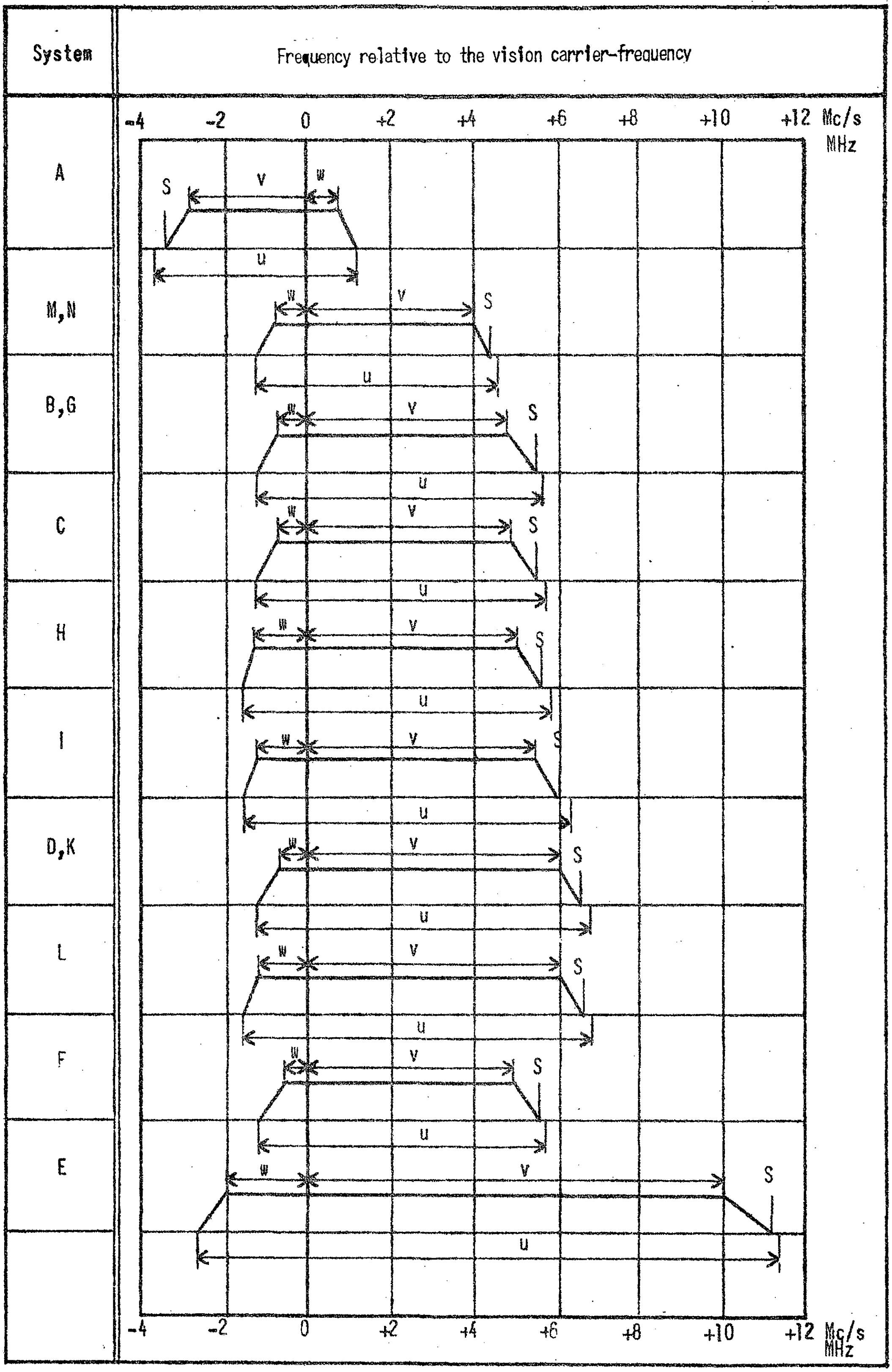
(1) Not indicated on diagram
(2) The coefficient of H is an integral multiple of 0.5
(3) In reality, the value of (a) given in Table II
(4) In the 405-line system there are no equalizing pulses; the field-blanking period (j) commences in advance of the field-synchronizing pulse sequence by an interval of from 0.015H to 0.515 H

(5) The figures in brackets refer to the Japanese 525-line system
(6) The primary values are those given in µs.
(7) Tentative data
(8) The values given in %H are rounded-off

TABLE III (Contd.)

Item	System											
	C		I		D, K		L		F		E	
V	20		20		20		20		20		20	
H	64		64		64		64		48.84		48.84	
j	(20-21) H + 12		(18-22) H + 12.05		(23-27) H		(22-24) H		(29-30) H + 9		41 H	
k (1)	$\leqslant$ 6.4		$\leqslant$ 6		0.2-6.4		0.2-2		< 4.9		< 0.2	
l	2.5 H		2.5 H		2.5 H or 3 H		2.5 H		3.5 H			
l'											3 H	
m	2.5 H		2.5 H		2.5 H or 3 H		2.5 H		3.5 H			
n	2.5 H		2.5 H		2.5 H or 3 H		2.5 H		3.5 H			
	%H	μs	%H	μs	%H (8)	μs	%H (8)	μs	%H	μs	%H	μs
p	3.7	2.3-2.5 (7)		2.3 ±0.1	3.5-4.15	2.25-2.65	3.6	2.3 ± 0.1	3.5	1.6-1.8 (7)		
q	42	26.8-27.2 (7)		27.3 ±0.2			42.5	27.2 ± 0.4	43	20.6-21 (7)	41	19-21
r	7.8	4.8-5.2 (7)		4.7 ±0.2	7-8.3	4.5-5.3	7.5	32-9 or 4.8	7.2	3.4-3.8 (7)		
s	0.5	0.2-0.4 (7)		0.3 ±0.1	0.2-0.4	0.13-0.26	0.25	0.15 ± 0.05	0.4	0.1-0.3 (7)	< 0.4	< 0.2

(1) Not indicated on diagram
(2) The coefficient of H is an integral multiple of 0.5
(3) In reality, the value of (a) given in Table II
(4) In the 405-line system there are no equalizing pulses: the field-blanking period (j) commences in advance of the field-synchronizing pulse sequence by an interval of from 0.015H to 0.515H
(5) The figures in brackets refer to the Japanese 525-line system
(6) The primary values are those given in μs
(7) Tentative data
(8) The values given in %H are rounded-off



S: sound carrier;
u: limits of radio frequency channel;
v: nominal width of main sideband;
w: nominal width of vestigial sideband.

IDEAL FREQUENCY-CHARACTERISTICS FOR VISION TRANSMITTERS

(See Table I for precise frequency spacings)

TABLE IV

ANNEX

SYSTEMS USED IN VARIOUS COUNTRIES

Explanation of signs used in the list :

* : planned (whether the standard is indicated or not),

– : not yet planned or no information received,

** : data concerning this Administration have been taken from Chapter 2 of the "Technical Data used by the European VHF/UHF Broadcasting Conference".

Country	System used in bands:		Number of Note for bands:	
	I-III	IV-V	I-III	IV-V
British East Africa	B*	–		
Saudi Arabia	M	–		
Argentina	N	N*		1
Australia	B	–		
Austria	B	G*		2
Belgium	C, F	G*H*I*L*		3
People's Republic of Bulgaria	D	K*		
Canada	M	M		
Cyprus **	–	H		
Korea	M	–		
Denmark	B	G*		4
Spain **	B	G*		
United States of America	M	M		
Finland	B	G*		4
France	E	L		
Ghana	B*			
Greece	B*	G*		4
Hungarian People's Republic	D	K*		
India	B	–		
Indonesia	B*	–		
Iran	M	–		
Ireland	A(I*)	I*	5	
Iceland**	–	G*		6
Israel	B*	H*		7

Country	System used in bands:		Number of Note for bands:	
	I-III	IV-V	I-III	IV-V
Italy	B	G		
Japan	M	M*		
Jordan	-	-		
Libya	-	G*		
Luxembourg**	F	H*		
Malaya	B*	G*		
Morocco	B	H*		
Mexico	M	-		
Monaco	E	L*		
Nigeria	B	-		
Norway	B	G*		4
New Zealand	B	-		
Pakistan	B	-		
Panama	M	-		
The Netherlands	B	G*		4
People's Republic of Poland	D	K*ρ		
Portugal	B	G*		
Republic of the Congo (Leopoldville)	B*	-		
Federal Republic of Germany	B	G		
Rhodesia and Nyasaland	B	-		
Roumanian People's Republic**	D	K*		
United Kingdom	A	I*		8
Senegal	-	-		
Sweden **	B	G*		4
Switzerland **	B	G*		9
Czechoslovak S.R. **	D	K*		
Overseas Territories of the U.K. in the European Broadcasting Area**	-	H*		
Territories of Ruanda-Urundi	-	-		
Turkey **	-	H*		7
U.S.S.R.	D	K		
Yugoslavia	-	H*		

NOTES TO LIST

Note 1: "N" relative to bands IV and V applies to the television signal itself, but not necessarily to the channel bandwidth.

Note 2: Austria reserves the right to the possible use of additional frequency-modulated sound carriers in the band between 5.75 and 6.75 Mc/s in relation to the picture carrier.

Note 3: The Belgian Administration has not yet decided on the transmission standards for bands IV and V; it reserves the right to use standards G, H, I or L or a combination of the characteristics of standards G, H, I and L.

Note 4: No definite decision has been taken about the width of the residual sideband, but this country is willing to accept the assumption that for planning purposes the residual sideband will be 0.75 Mc/s wide.

Note 5: System "I" will be used at all stations. In addition, during a transition period, transmissions on system "A" will be made from the Dublin and Sligo stations.

Note 6: This country does not at present intend to use bands IV and V but accepts the parameters given in the table under "Standard G" as television standard in bands IV and V.

Note 7: No final decision has been taken about the width of the residual sideband, but for planning purposes this country is willing to accept the assumption of a residual sideband 1.25 Mc/s wide.

Note 8: The parameters given are those adopted in the United Kingdom for experimental transmissions in Bands IV and V.

Note 9: The Swiss Administration is planning to use additional frequency-modulated sound carriers in the frequency interval between the spacings of 5.5 and 6.5 Mc/s in relation to the picture carrier, at levels lower than or equal to the normal level of the sound carrier, for additional sound-tracks or for sound broadcasting.

DRAFTING COMMITTEE

The following text, submitted by Study Group XI (Annex 11/7) and revised by the Drafting Committee, is submitted to the Plenary Assembly for approval.

REPORT ...

RATIO OF WANTED TO UNWANTED SIGNAL FOR COLOUR TELEVISION IN BANDS IV AND V

(Question 119(XI))

(Geneva, 1963)

1. Introduction

The information given in this report is based on the technical data used by the European VHF/UHF Broadcasting Conference, Stockholm, 1961. Minor amendments concerning systems L and M have been made.

The general conditions shown for the case of monochrome television in Recommendation ... (Annex 11/2), § 1 also apply to this report.

The protection ratios required by four variants (G, I, K, L) of the 625-line system proposed for use in 8 Mc/s channels in Bands IV and V, when adapted for colour transmission with a colour sub-carrier of 4.43 Mc/s, have been considered. All the ratios given in this report should be regarded as tentative pending decisions upon the type of colour system and the precise parameters to be used. For the purposes of planning, it may be assumed that the power in the chrominance channel at peaks of the colour modulation envelope cannot exceed a value 14 db lower than the power in the main carrier at peaks of the modulation envelope.

2. Co-channel interference - protection ratios for mutual interference between any of the four systems G, I, K, L.

2.1 Carriers separated by less than 1000 c/s, but not synchronized

Protection ratio: 45 db.

2.2 Nominal carrier frequencies separated by 1/3, 2/3, 4/3 or 5/3 of the line frequency

Protection ratio: 30 db*.

2.3 Carriers separated by 1/2 or 3/2 of the line frequency

Protection ratio: 27 db*.

3. Adjacent-channel interference

3.1 Lower adjacent-channel interference

The protection ratios are the same as those quoted for monochrome television in Recommendation ... (Annex 11/2), § 3.2.

3.2 Upper adjacent-channel interference

The protection ratios are the same as those quoted for monochrome television in Recommendation ... (Annex 11/2), § 3.3.

4. Protection ratio curves

4.1 625-line N.T.S.C. systems

The curves of Fig. 1 give the estimated protection ratios required by the four variants of the 625-line colour television signal for interference from a CW or frequency-modulated sound signal.

Letters, G. I, K, L shown on the curves, apply to the appropriate systems:

G - 625-line system,
I - 625-line system (United Kingdom),
K - 625-line system (I.B.T.O.)**,
L - 625-line system (France) ***

---

* If the wanted signal is system K or system L, and the interfering signal is system G, the protection ratio must be increased to 35 db to avoid interference from the unwanted sound signal.

** If a vestigial sideband of 1.25 Mc/s is used in a modified system K, curve K' should be used instead of curve K for frequencies located on the same side as the vestigial sideband.

*** For frequencies located on the opposite side to the vestigial sideband, curve L, refers to a system in which the colour information is transmitted by a process of quadrature modulation in which double, instead of single-sideband modulation of the chrominance sub-carrier is used ($\pm$ 1.26 Mc/s relative to the sub-carrier).

For frequency differences up to 2.85 Mc/s, the curves are the same as those for the monochrome 625-line systems (see Fig. 4 curves e_1, e_2, e_3, e_4 of Recommendation ...). For higher frequency differences, the estimates are based upon the requirements for an adapted N.T.S.C. system.

For interfering signals other than CW or frequency-modulated sound, no curves are given as insufficient information is available.

4.2 <u>625-line SECAM system</u>

The curve shown in Fig. 2 gives the estimated value of the necessary protection ratio required for the 625-line colour television signals (system L) using the SECAM system*, when the interfering signals are non-modulated waves or frequency-modulated sound signals.

4.3 <u>525-line N.T.S.C. system</u>

The curve shown in Fig. 3 gives the protection ratio required for 525-line colour television signals using the N.T.S.C. system. The curve is also applicable in the VHF bands.

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* Described in Doc. XI/47 of Bad Kreuznach, 1962.

Xe Assemblée plénière
C.C.I.R.
GENEVE, 1963

Addendum au Doc. 2327-F/E/S
14 février 1963

RAPPORT N° ...

RAPPORT SIGNAL DESIRE/SIGNAL NON DESIRE POUR LA TELEVISION EN COULEUR DANS LES BANDES IV ET V

(Question 119(XI))

Veuillez trouver ci-joint les Figures 1, 2 et 3 du Doc. 2327.

Please find attached Figures 1, 2 and 3 of Doc. 2327.

Adjunto se acompañan las Figuras 1, 2 y 3 del Doc. 2327.

(Doc. 2327-F/E/S)

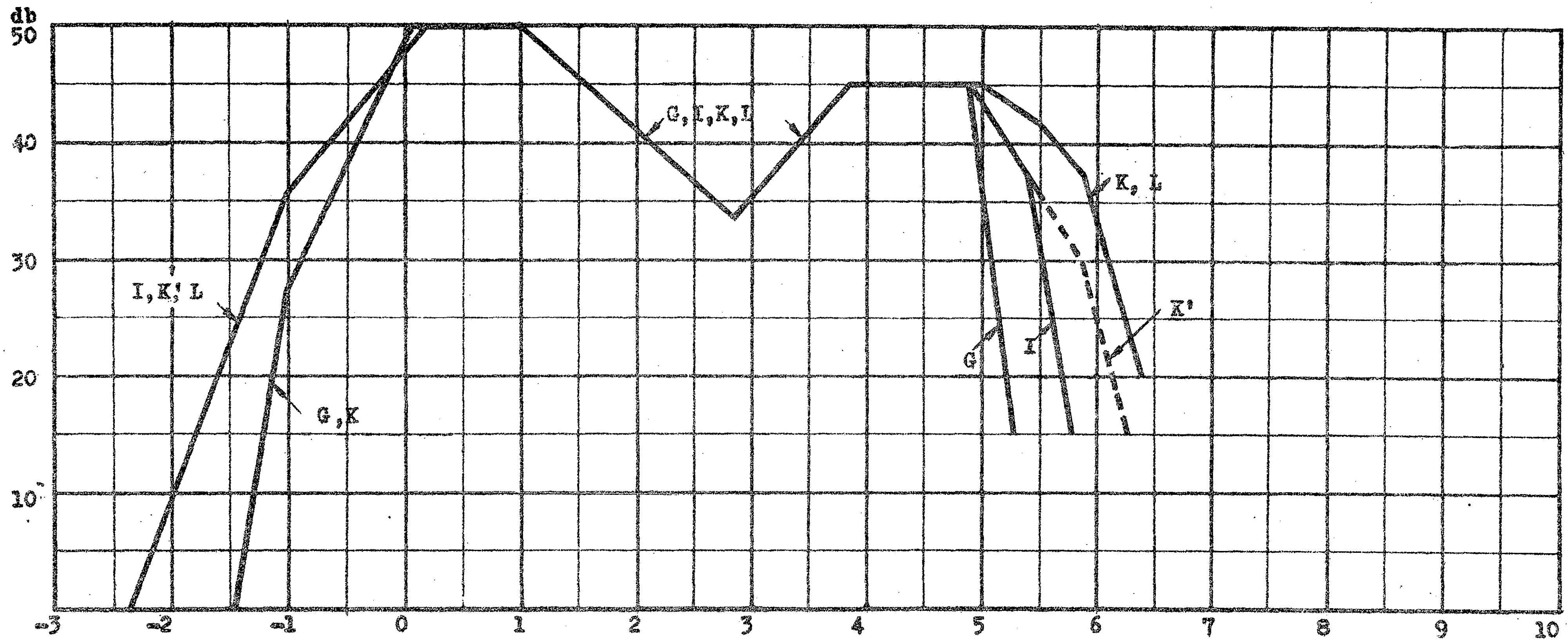


FIG. 1

MHz - Mc/s

Estimation des rapports de protection pour la télévision en couleur dans le cas du système NTSC adapté à 625 lignes.

Estimated protection ratios for 625-line colour television systems (NTSC system adapted for 625 lines)

Relaciones de protección calculadas para sistemas de televisión en color de 625 lineas (Sistema N.T.S.C. adaptado para 625 lineas).

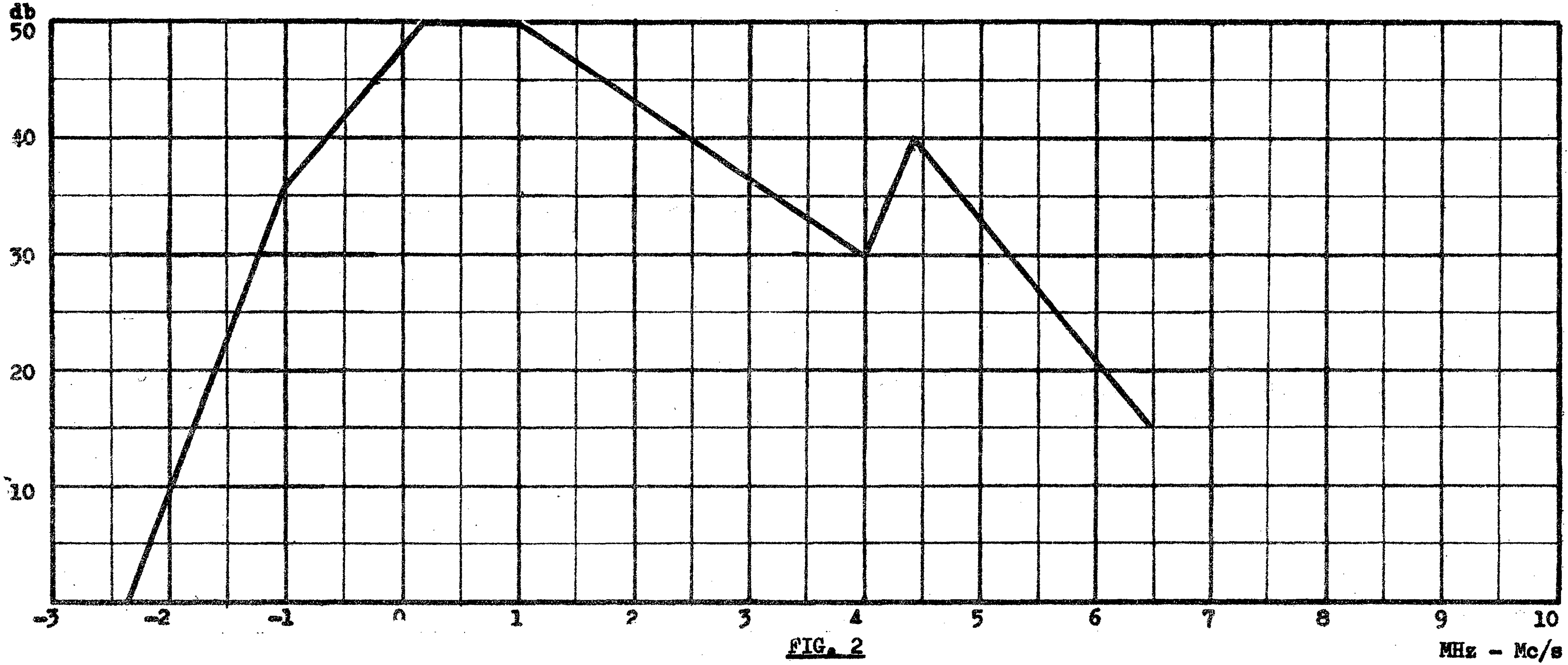
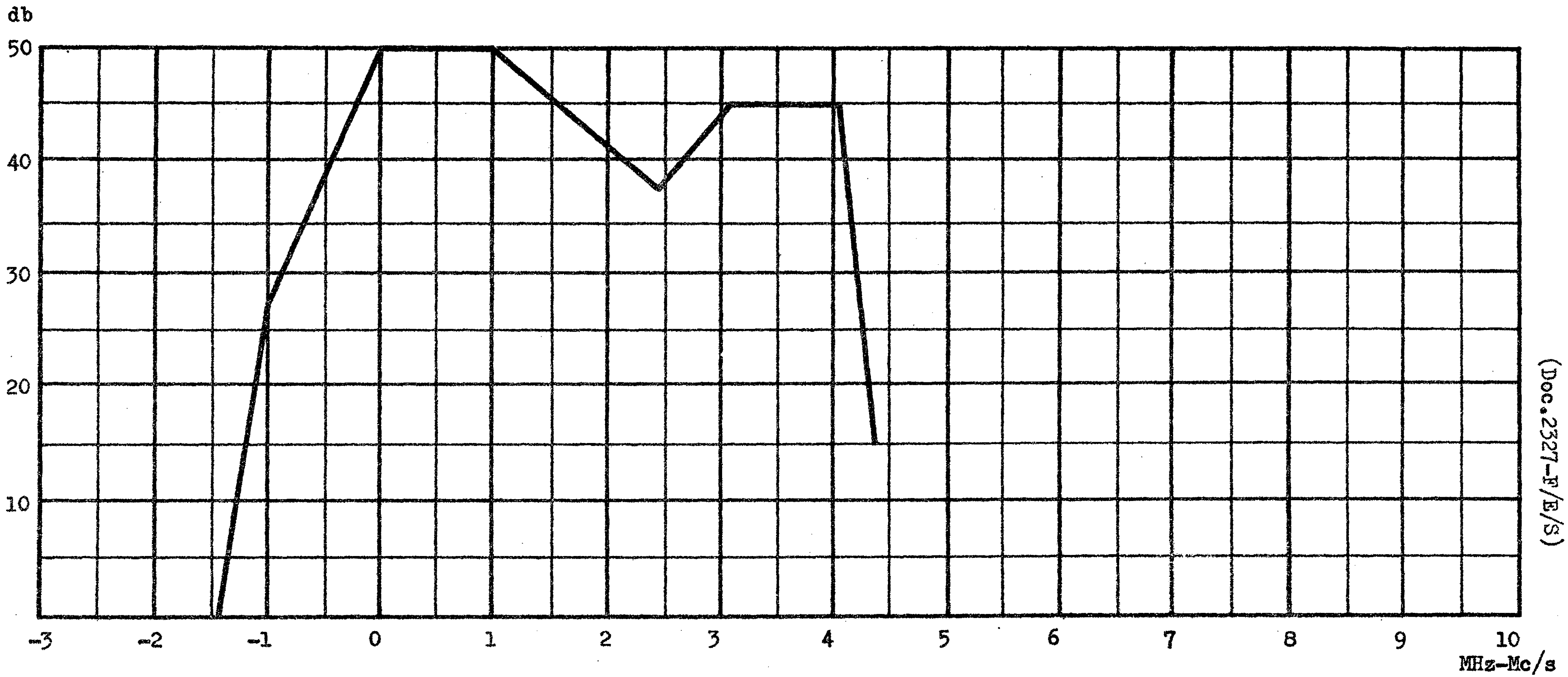


FIG. 2

Estimation des rapports de protection dans le cas du système de télévision en couleur SECAM à 625 lignes (système L)

Estimated protection ratio for a SECAM 625-line (system L) colour television system

Relación de protección calculada para un sistema de televisión en color S.E.C.A.M. de 625 lineas (Sistema L)



(Doc.2327-F/E/S)

FIG. 3

RAPPORTS DE PROTECTION POUR LE SYSTEME DE TELEVISION EN COULEURS NTSC A 525 LIGNES

PROTECTION RATIOS FOR THE 525-LINE N.T.S.C. COLOUR TELEVISION SYSTEM

RELACION DE PROTECCION PARA EL SISTEMA DE TELEVISION EN COLOR NTSC DE 525 LINEAS

DRAFTING COMMITTEE

The following text, submitted by Study Group XI (Annex 11/8) and revised by the Drafting Committee, is submitted to the Plenary Assembly for approval.

REPORT ...

PROTECTION RATIOS FOR TELEVISION IN THE SHARED BANDS

Protection against radionavigation transmitters operating in the band 582 to 606 Mc/s

(Question ... (Annex 11/12))

(Geneva, 1963)

1. Introduction

This Report is based on subjective tests carried out in Belgium, France and the United Kingdom. The results of some of these tests were used for planning purposes at the European VHF/UHF Broadcasting Conference, Stockholm, 1961*, and after some amendment, for the Special Agreement relating to the use of the band 582 to 606 Mc/s by the radionavigation service, Brussels, 1962.

The tests were carried out with monochrome television signals, but the results were assumed to apply also to colour television signals. Further tests, however, are needed to confirm this assumption.

It is considered that the protection ratios quoted in this Report should, in general, be afforded for at least 99% of the time.

The protection ratios quoted apply to the signal at the input of the television receiver. The level of the television signal is expressed in terms of the power at the peak of the modulation envelope and that of the radionavigation signal as the power at the peak pulse level.

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* However, at Stockholm, some delegates made reservations as to the prospect of fulfilling the technical criteria in the actual planning.

2. Protection ratios required when the radionavigation signal falls within the pass-band of the television receiver

It has been found that when the radionavigation signal falls within the pass-band of the television receiver, the required signal-to-interference ratio is:

10 db for systems with negative modulation,

15 db for systems with positive modulation.

The ratio is sensibly constant over the greater part of the passband of the television receiver, but decreases in accordance with the selectivity of the receiver as shown in the Figure.

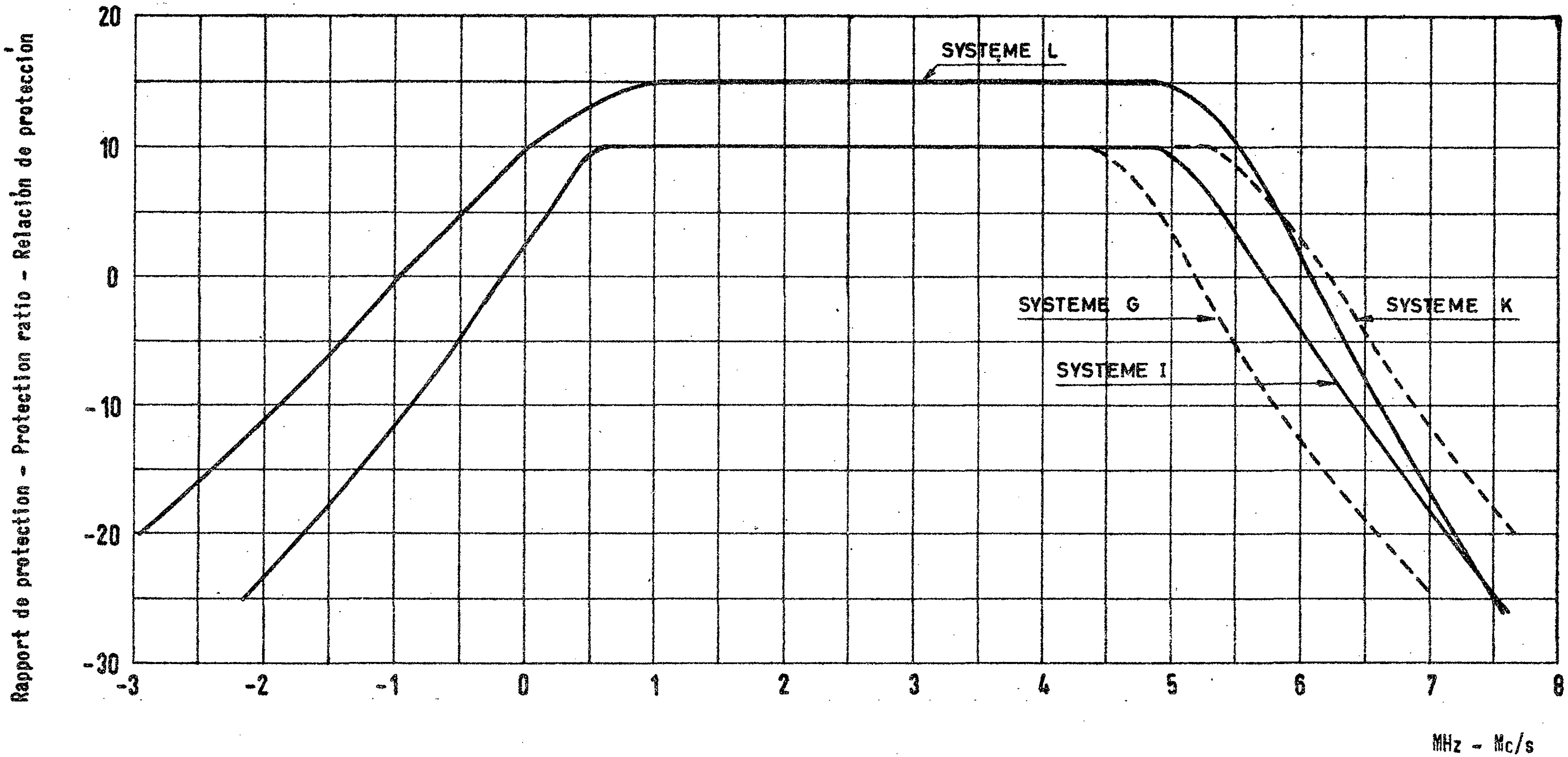
The protection ratios given in the Figure do not relate to interference to the sound channel from signals of the radionavigation services. Further studies should be carried out on this subject.

3. Protection ratios required when the radionavigation signal falls outside the pass-band of the television receiver

Reference should be made to Recommendation ... (Annex 11/12), §5, for second-channel (image channel) interference.

No information exists at present on adjacent channel interference.

Note: Other interference effects (intermodulation) are likely to occur if radionavigation stations, which in general use high peak powers and highly directional antennae, are situated near receiving locations, especially where the television signal is weak.



Ecart de fréquence par rapport à la fréquence de la porteuse image - Frequency relative to the vision carrier frequency
Separación de la frecuencia de radionavegación con relación a la frecuencia de la portadora de imagen

RAPPORT DE PROTECTION NECESSAIRE AU SIGNAL D'IMAGE CONTRE LE SERVICE DE RADIONAVIGATION DANS LA BANDE 582 -606 MHz
PROTECTION RATIO REQUIRED BY A PICTURE SIGNAL AGAINST A RADIONAVIGATION SIGNAL IN THE 582 - 606 Mc/s BAND
RELACIÓN DE PROTECCIÓN NECESARIA EN LA SEÑAL DE IMAGEN CONTRA EL SERVICIO DE RADIONAVEGACIÓN EN LA BANDA 582 - 606 Mc/s

FIG. 1

DRAFTING COMMITTEE

The following text, submitted by Study Group V (Doc. 560(Rev.)) and revised by the Drafting Committee, is submitted to the Plenary Assembly for approval.

REPORT ...

VHF/UHF BROADCASTING PROPAGATION CURVES FOR THE AFRICAN CONTINENT

(Geneva, 1963)

1. Introduction

It is now well known that radio field strengths depend upon climatic conditions. The C.C.I.R. curves (Recommendation Annex 5/3) refer primarily to temperate continental climates and will therefore only apply in limited regions of the African continent. Although data for other types of climate are somewhat sparse it is possible to give an estimate of the modifications to the above C.C.I.R. curves required to make them applicable, at least approximately, to other parts of Africa.

2. African climates

For convenience Africa has been divided into regions, as shown in Fig. 1, each of which corresponds to a fairly well defined kind of climate. The classification is as follows :

1. Temperate (Mediterranean)
2. Desert (Sahara)
3. Sub-Tropical (Continental)
4. Sub-Tropical (Maritime)
5. Equatorial
6. Temperate (Continental)

It should be noted that these divisions are somewhat arbitrary and that the classification of radio climates is not necessarily the same as that of meteorological climates even though the terminology is comparable. Furthermore, it is clear that the boundaries between the various regions will be ill-defined; and guidance on the estimation of propagation conditions for paths near to a boundary or covering more than one climatic region, can be obtained from Report ...(Annex 5/23).

3. Presentation of curves

Figs. 2 to 37 present curves of field strength versus distance for the VHF/UHF broadcasting bands, and give for 50% of receiving locations the field strengths exceeded for at least 50%, 10% and 1% of the time. They refer to 1 kW radiated from a half-wavelength dipole. The curves have been drawn for the values of N_{so} listed below*, these being taken as reference values. In using these curves for practical planning, the general considerations contained in Annexes 1 and 2 of Recommendation ...(Annex 5/3) and in Report ...(Annex 5/23) may be taken to apply. Instead of the correction for changes in N_s given in paragraph 6 of Annex 1 of Recommendation ...(Annex 5/3), the field-strength should be increased by 0.2 $(N_s - N_{so})$ db using the values of N_{so} given in the note.

In the construction of comprehensive curves such as those given in this report for the UHF band (450 to 1000 Mc/s) it has been necessary to use such experimental data as are available and to extend their range of application by theoretical methods. Thus consideration has been given to the data in Doc. 5/45 (France), Geneva, 1962, to the curves of Doc. 231, Geneva, 1963, derived from measurements made by the French Administration, and to what is known of meteorological conditions in Africa. There are, however, some differences between some of the curves derived in this report and some of those derived in Doc. 231; and these differences require comment. (The two sets of curves are shown for comparison in the relevant Figs. 20 to 25 and 29 to 37).

It should first be noted that the curves of Doc. 231 refer to a frequency of 460 Mc/s, whereas the curves of this report have been derived for a frequency of 700 Mc/s, taken to be representative of the entire band 450 to 1000 Mc/s. The latter procedure must be regarded as arbitrary, but there are insufficient experimental observations to justify multiplying the number of curves to give predictions for different

---

* Note: Reference values of N_{so} are the following :
Climates Nos. 1, 3 and 6, N_{so} = 320
Climate No. 2, N_{so} = 280
Climate No. 4, N_{so} = 370
Climate No. 5, N_{so} = 360

frequencies within this band. Secondly, the horizon elevation angles assumed in the derivation of the curves in this report, which are considered to be representative of conditions likely to be encountered in broadcasting, are larger than assumed in the construction of the curves in Doc. 231. Corrections for these two factors would result in a reduction of the field strengths given in Doc. 231 by some 5 or 6 db, thus bringing them into closer agreement with the main curves given in this report.

Some discrepancies between the two sets of curves still exist after these corrections have been made; and these are probably due to the incidence of duct propagation in certain parts of Africa, particularly in the West Coast region (Climate No. 4). It remains uncertain whether the differences still existing between the curves of Doc. 231 and the others given in this Report would be as large if measurements were made in these regions for much larger periods of time, and for more paths, than has so far been the case.

Finally, as regards the VHF curves given in Figs. 2 to 19, it must be emphasized that they only apply to propagation by tropospheric mechanisms. It is known that at times propagation by way of the ionosphere is possible at the lower frequencies in the VHF band. This is particularly so in equatorial regions, and it is therefore likely that higher field strengths will occur at long range more often at frequencies below about 60 Mc/s than indicated by the curves in this Report; and this factor must be borne in mind in planning broadcasting for such frequencies.

Note by the Secretariat

Figs. 2 to 37 are not reproduced herewith, and will be provided later.

LEGENDE DE LA FIGURE - LEGEND OF THE FIGURE
LEYENDADE LA FIGURA

1. TEMPERE (MEDITERRANEEN) - TEMPERATE (MEDITERRANEAN) - TEMPLADA (MEDITERRÁNEA)
2. DESERTIQUE (SAHARA) - DESERT (SAHARA) - DESÉRTICA (SAHARA)
3. SUB-TROPICAL (CONTINENTAL) - SUBTROPICAL (CONTINENTAL)
4. SUB-TROPICAL (MARITIME) - SUBTROPICAL (MARÍTIMA)
5. EQUATORIAL - ECUATORIAL
6. TEMPERE (CONTINENTAL) - TEMPERATE (CONTINENTAL) - TEMPLADA (CONTINENTAL)

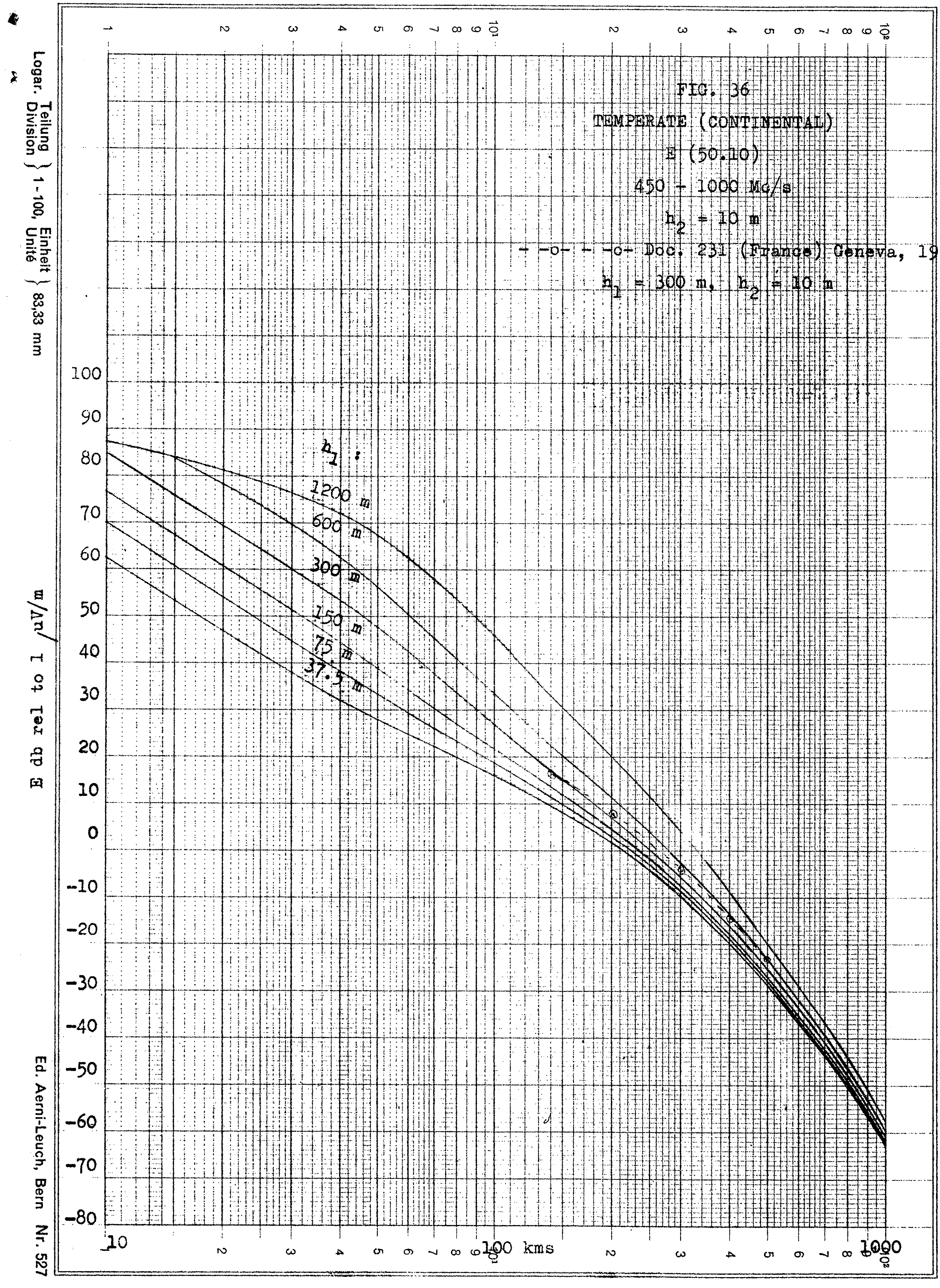
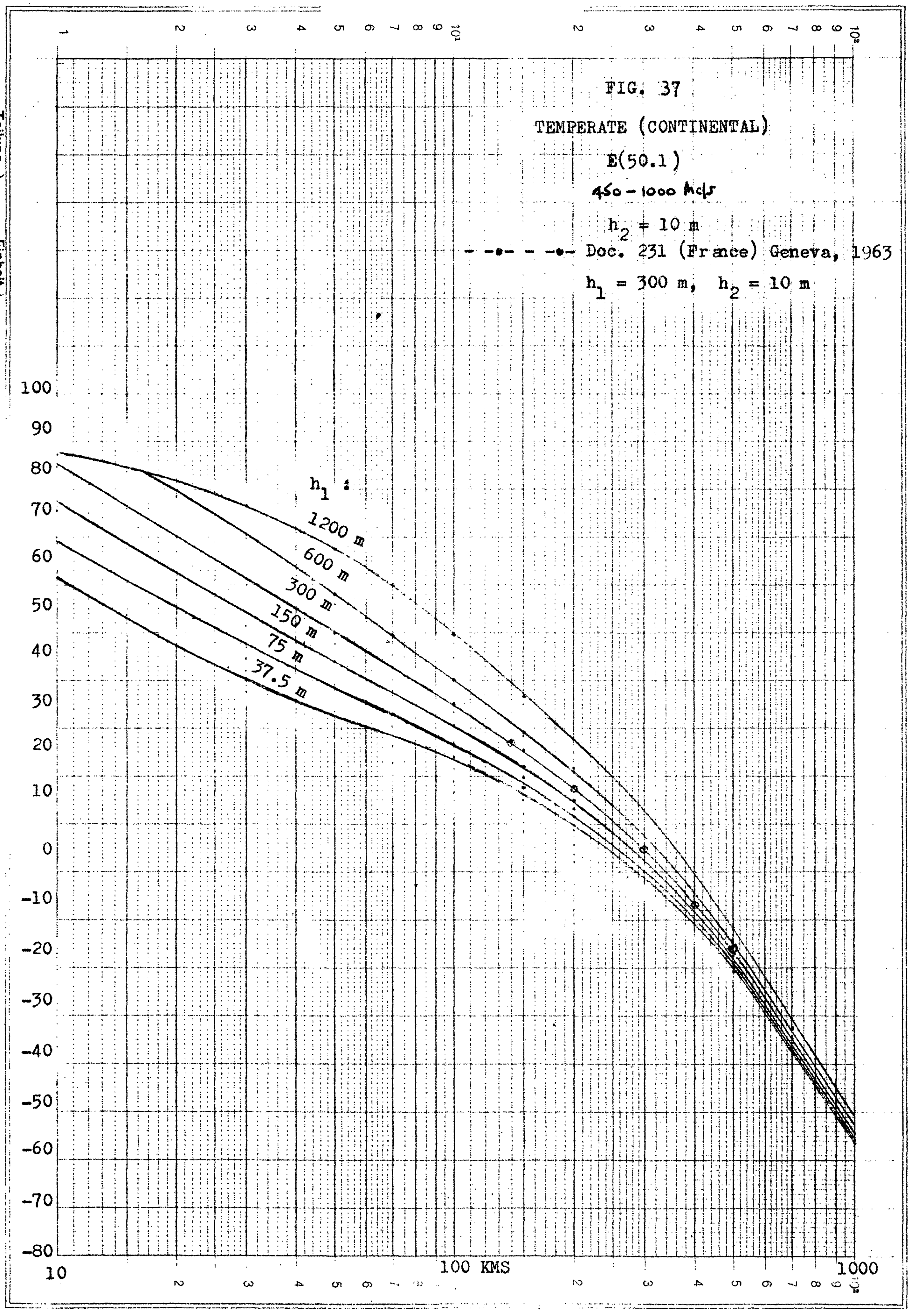
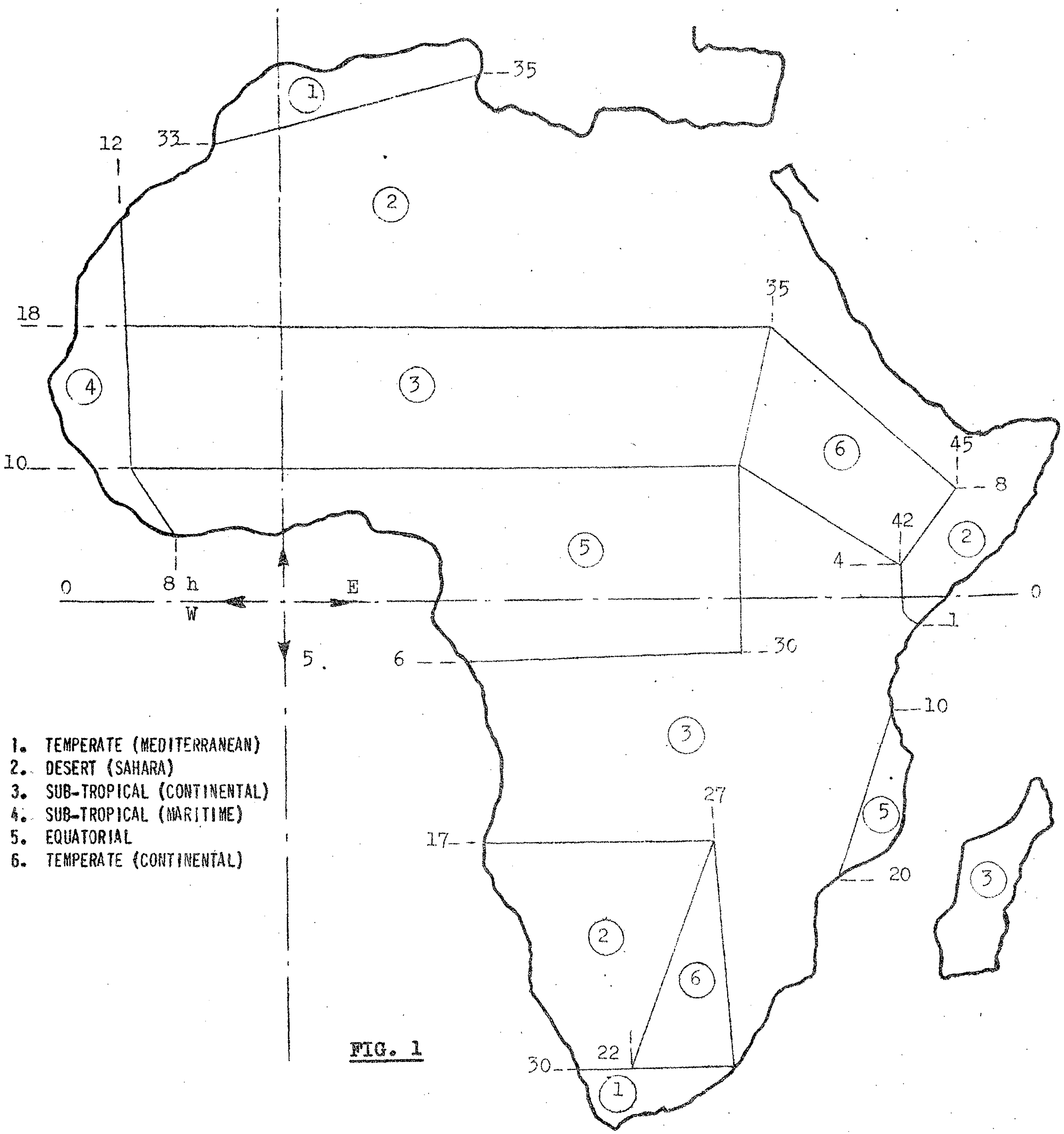


FIG. 36
TEMPERATE (CONTINENTAL)
E (50.10)
450 - 1000 Mc/s
h2 = 10 m
- -o- - -o- Doc. 231 (France) Geneva, 1963
h1 = 300 m, h2 = 10 m
h1 :
1200 m
600 m
300 m
150 m
75 m
37.5 m
E db rel to 1 µV/m
100 kms
1000
Logar. Division } 1-100, Unité } 83,33 mm
Logar. Teilung } 1-100, Einheit
Ed. Aerni-Leuch, Bern Nr. 527

(Corr. to Add. Doc. 560-rev.)





1. TEMPERATE (MEDITERRANEAN)
2. DESERT (SAHARA)
3. SUB-TROPICAL (CONTINENTAL)
4. SUB-TROPICAL (MARITIME)
5. EQUATORIAL
6. TEMPERATE (CONTINENTAL)

FIG. 1

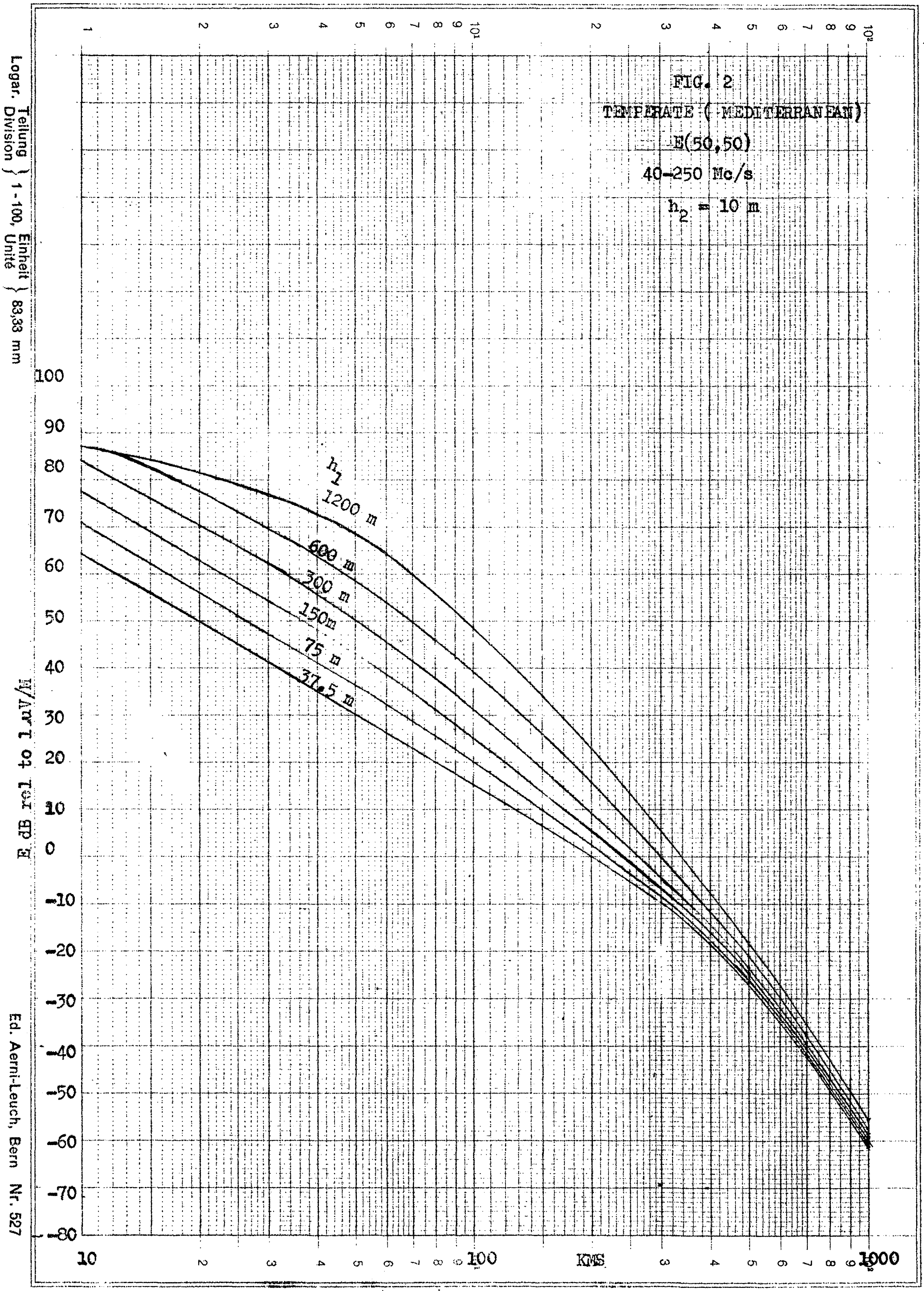


FIG. 2
TEMPERATE (MEDITERRANEAN)
E(50,50)
40-250 Mc/s
h_2 = 10 m
h_1
1200 m
600 m
300 m
150m
75 m
37.5 m
E dB rel to 1 uV/M
KMS
10
100
1000
Teilung Logar. Division } 1-100, Einheit Unité } 83,33 mm
Ed. Aerni-Leuch, Bern Nr. 527

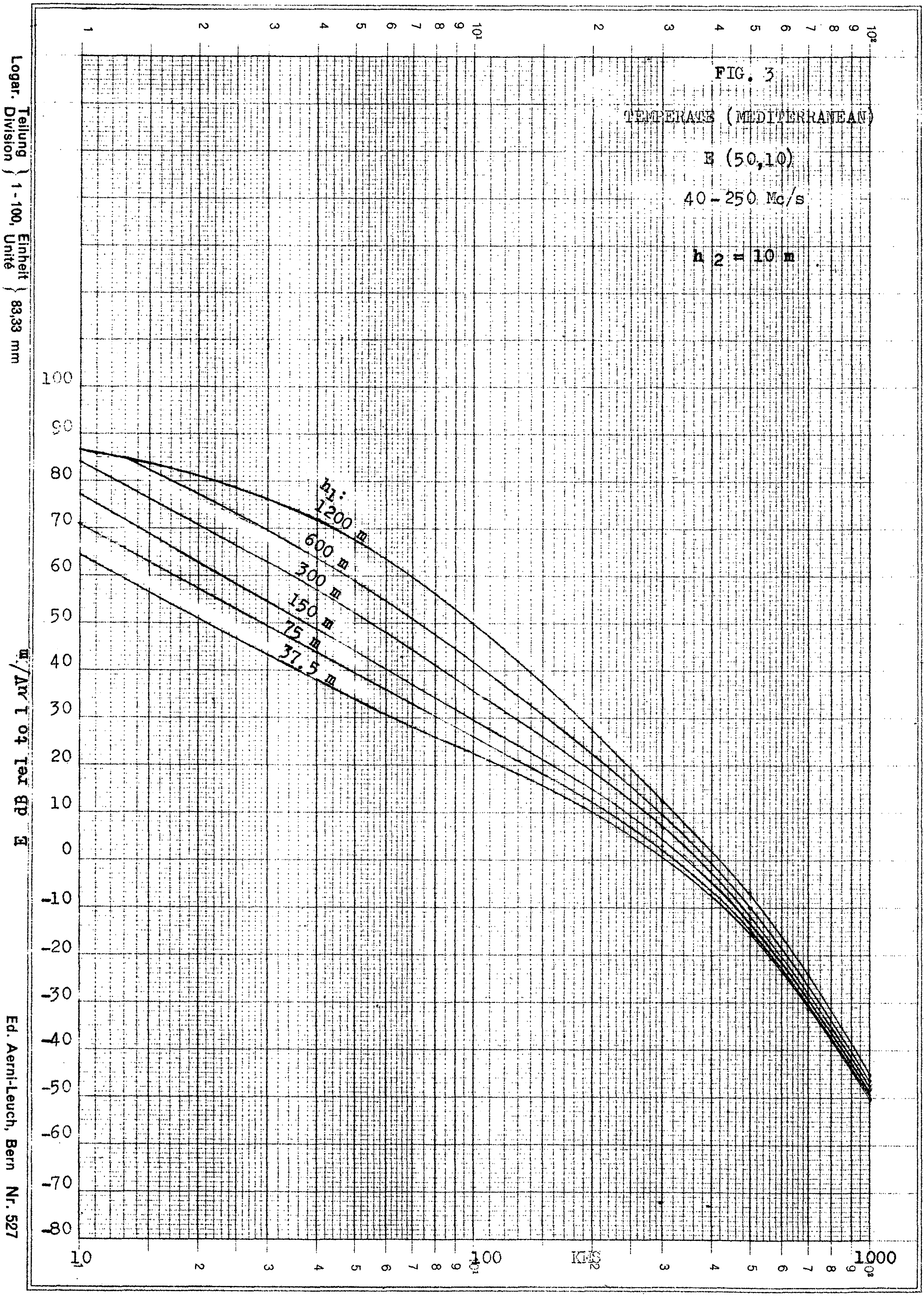


FIG. 3
TEMPERATE (MEDITERRANEAN)
E (50,10)
40 - 250 Mc/s
h 2 = 10 m
h1:
1200 m
600 m
300 m
150 m
75 m
37.5 m
E dB rel 1 μV/m
KMS
10
100
1000
Logar. Teilung } 1-100, Einheit } 83,33 mm
Division } Unité
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h 2 = 10 m

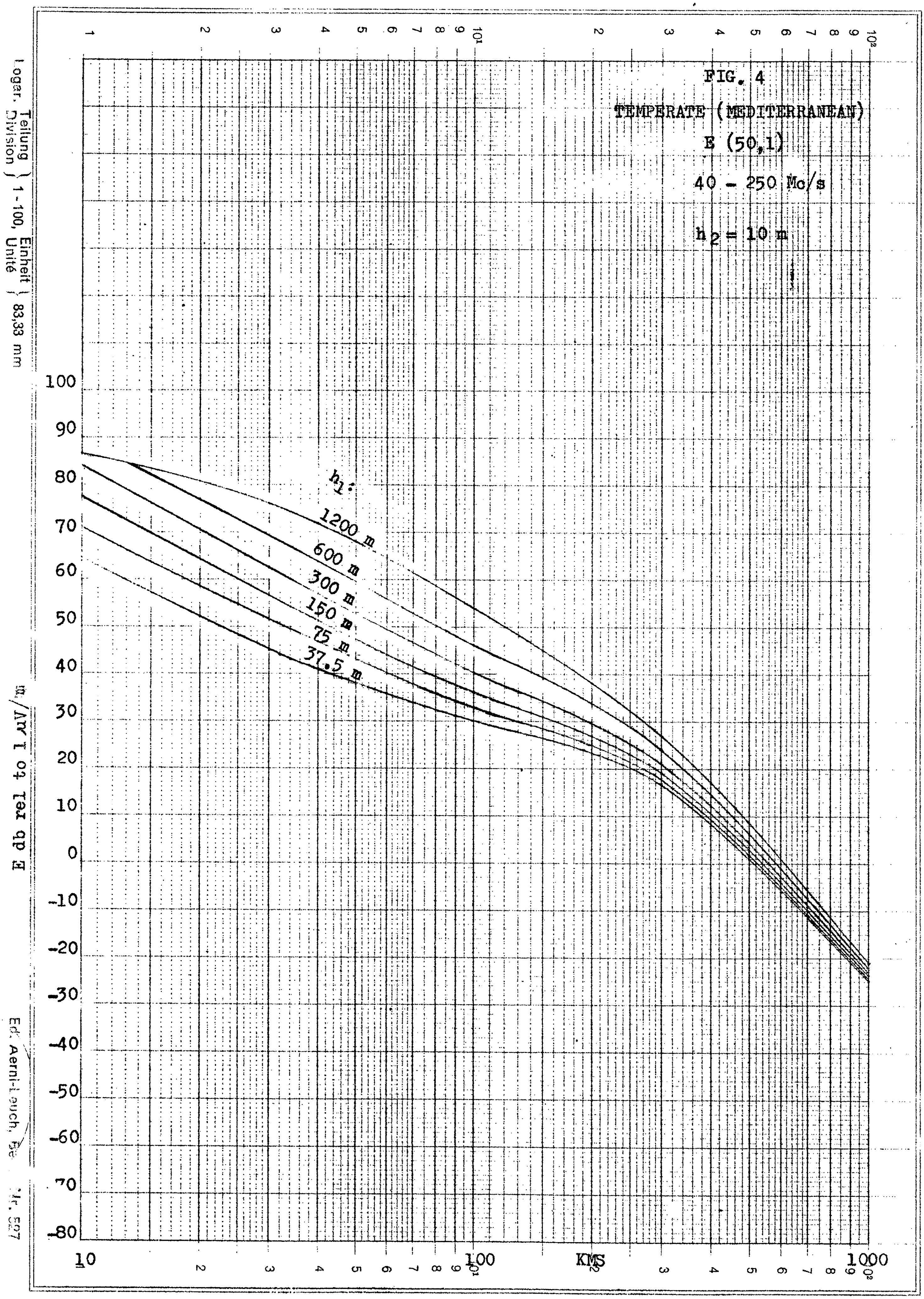
FIG. 4
TEMPERATE (MEDITERRANEAN)
E (50,1)
40 - 250 Mc/s
h_2 = 10 m
h_1:
1200 m
600 m
300 m
150 m
75 m
37.5 m
E db rel to 1 μV/m
KMS
Logar. Teilung Division } 1-100, Einheit Unité } 83,33 mm
Ed. Aerni-Leuch, Be
Nr. 527

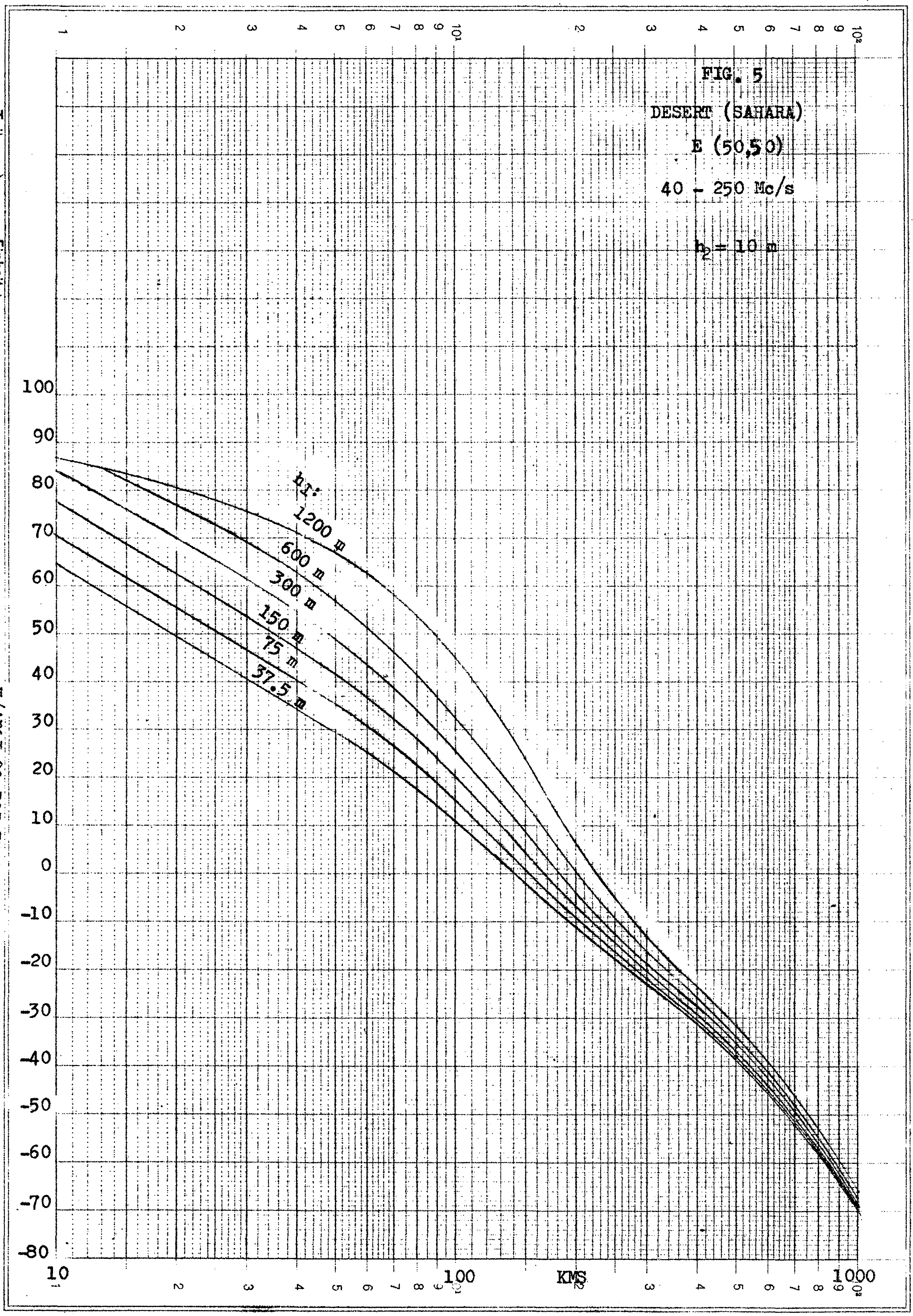
FIG. 5
DESERT (SAHARA)
E (50,50)
40 - 250 Mc/s
h_2 = 10 m
h1:
1200 m
600 m
300 m
150 m
75 m
37.5 m
E dB rel to 1 μV/m
KMS
Logar. Teilung / Division } 1-100, Einheit / Unité } 83,33 mm
Ed. Aerni-Leuch, Bern Nr. 527

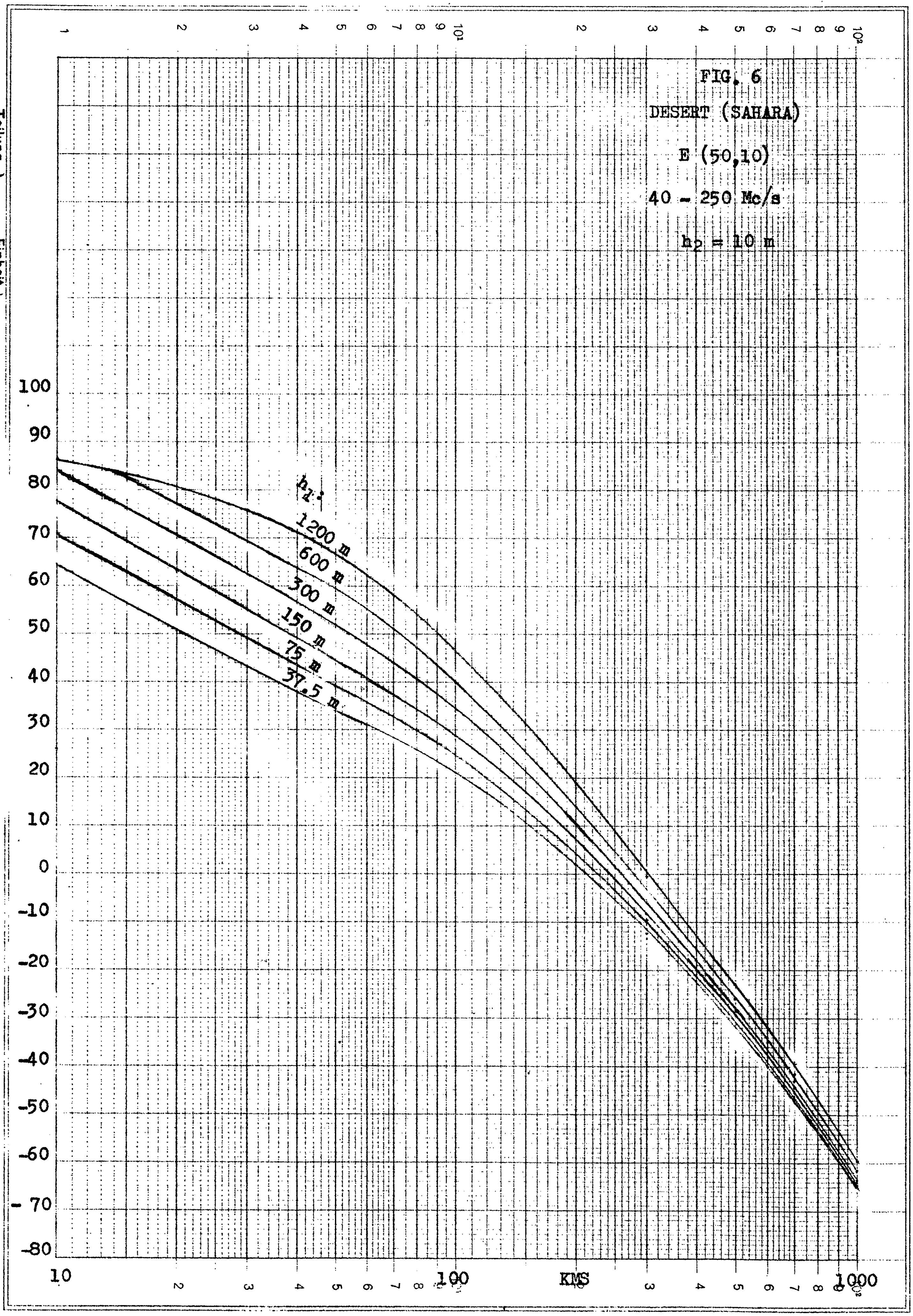
FIG. 6
DESERT (SAHARA)
E (50,10)
40 - 250 Mc/s
h_2 = 10 m
h_1:
1200 m
600 m
300 m
150 m
75 m
37.5 m
E dB rel to 1 µV/m
KMS
Logar. Teilung Division } 1-100, Einheit Unité } 83,33 mm
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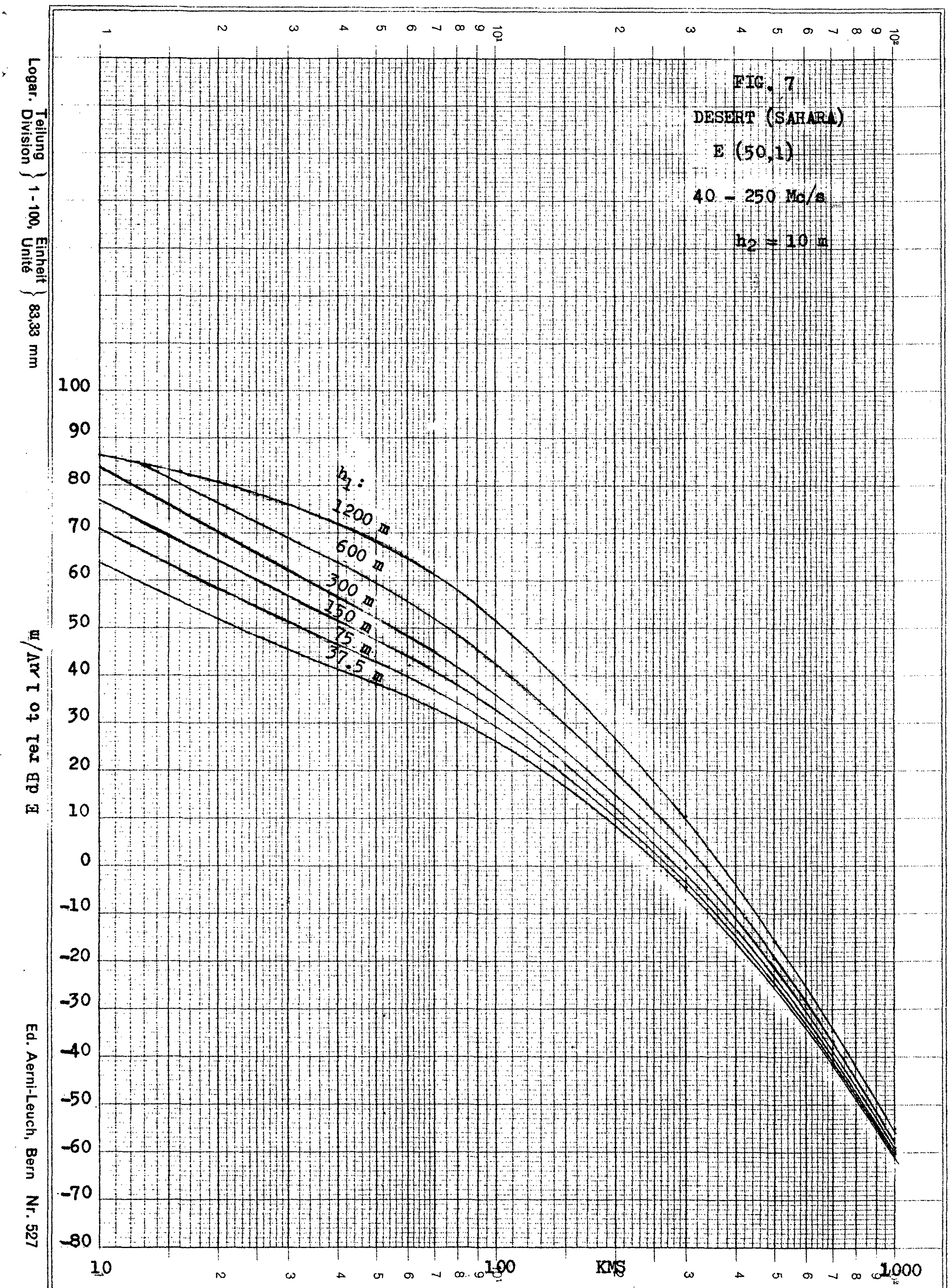
FIG. 7
DESERT (SAHARA)
E (50,1)
40 - 250 Mc/s
h_2 = 10 m
h_1:
1200 m
600 m
300 m
150 m
75 m
37.5 m
E dB rel to 1 μV/m
KMS
10
100
1000
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Logar. Teilung Division } 1-100, Einheit Unité } 83,33 mm
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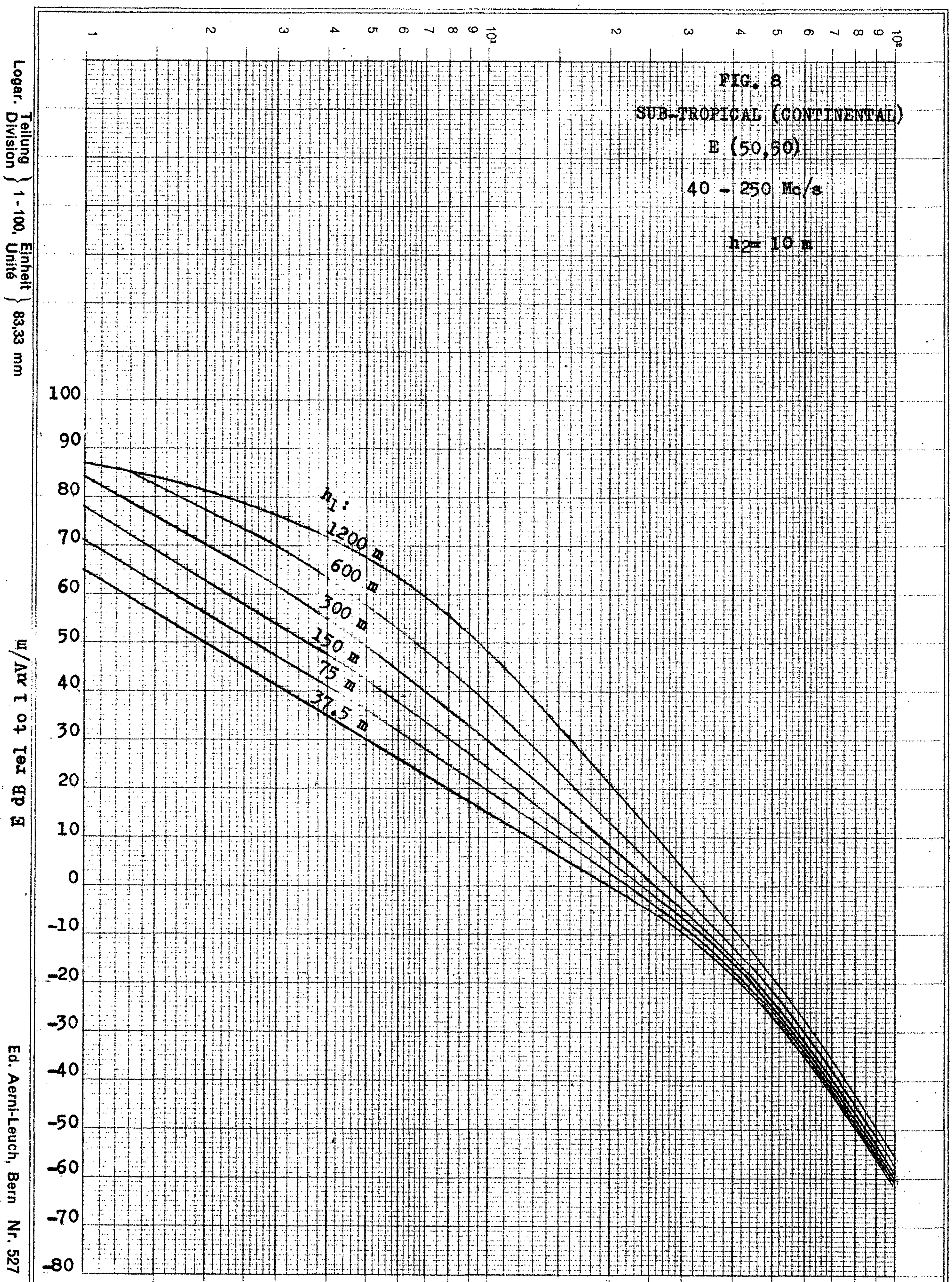
FIG. 8
SUB-TROPICAL (CONTINENTAL)
E (50,50)
40 - 250 Mc/s
h_2= 10 m
h_1:
1200 m
600 m
300 m
150 m
75 m
37.5 m
E dB rel to 1 µV/m
KMS
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
10
100
1000
Logar. Teilung } 1-100, Einheit } 83,33 mm
Division } 1-100, Unité } 83,33 mm
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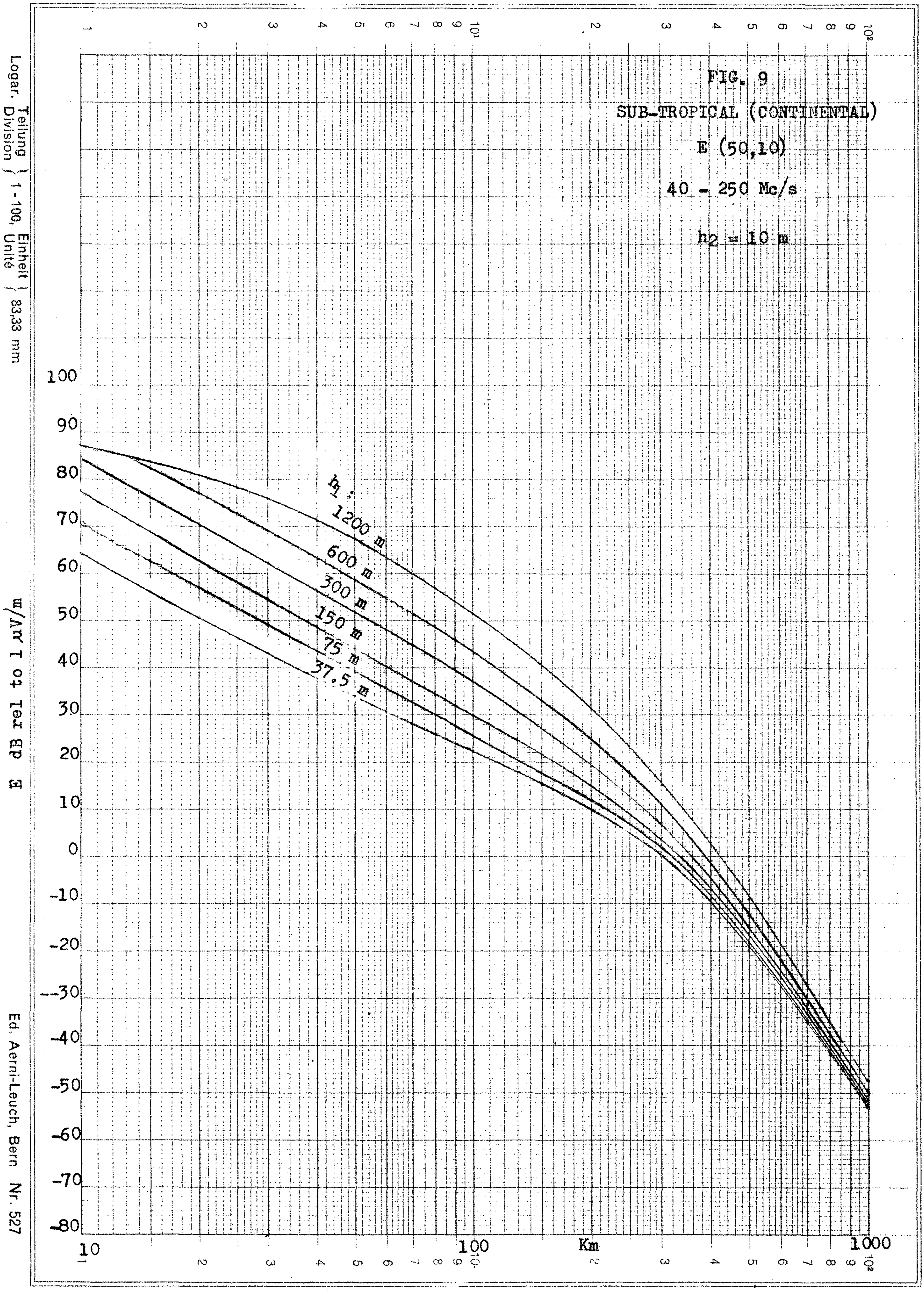
FIG. 9

SUB-TROPICAL (CONTINENTAL)

E (50,10)

40 - 250 Mc/s

$h_2 = 10$ m



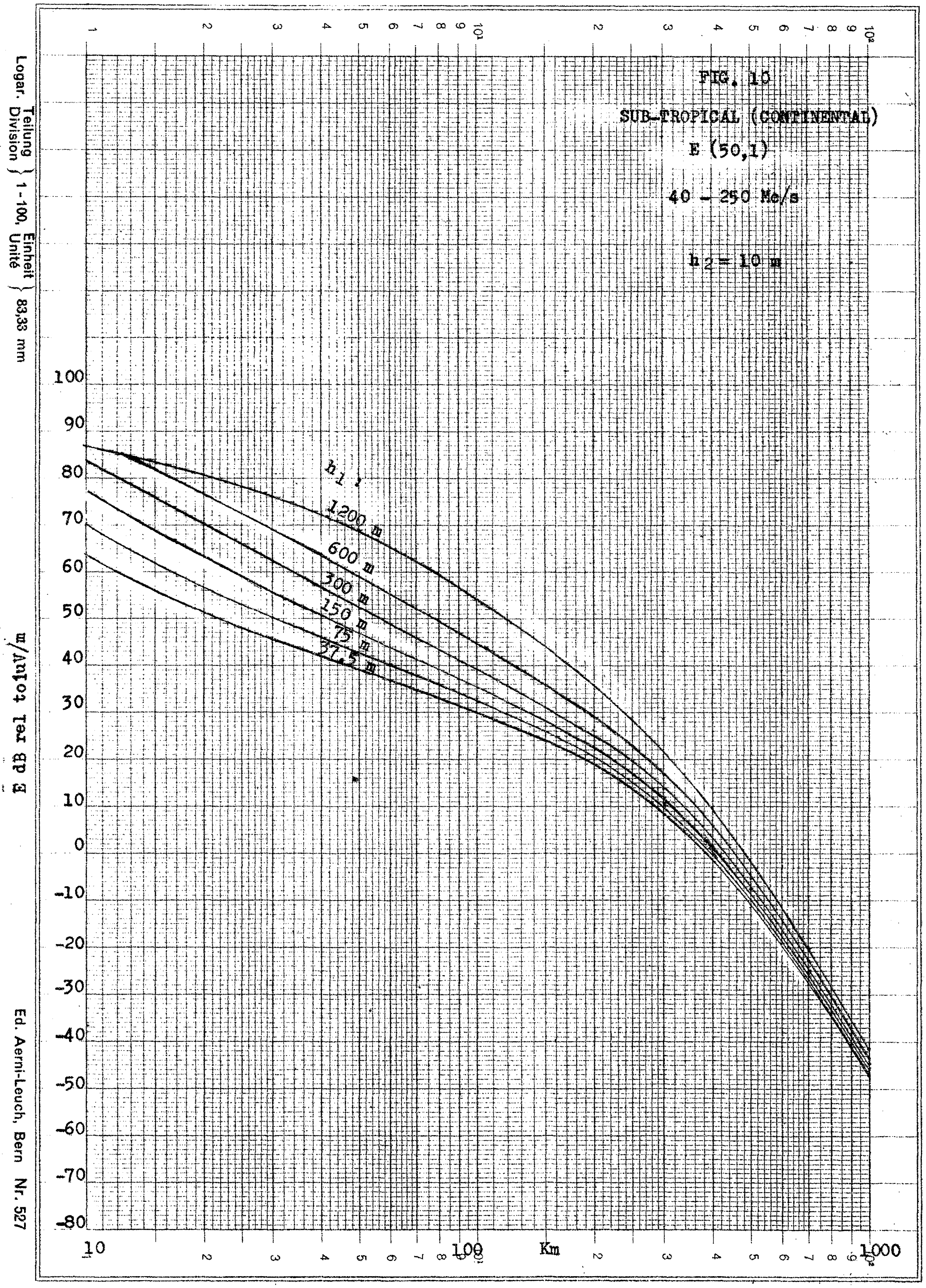


FIG. 10
SUB-TROPICAL (CONTINENTAL)
E (50,1)
40 - 250 Mc/s
h_2 = 10 m
h_1
1200 m
600 m
300 m
150 m
75 m
37.5 m
E dB rel 1 µV/m
Km
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
10
100
1000
Logar. Teilung / Division } 1-100, Einheit / Unité } 83,33 mm
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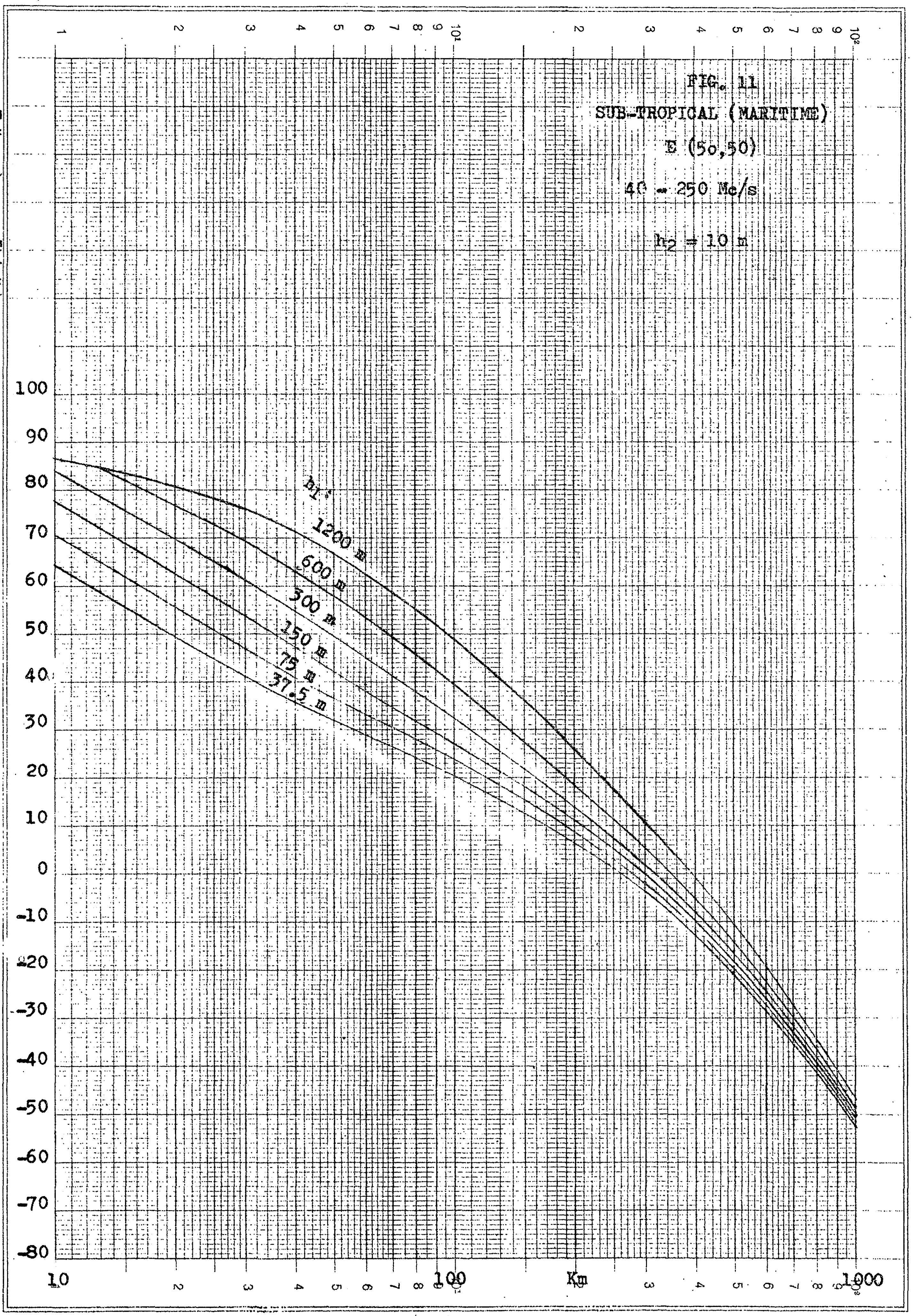
FIG. 11
SUB-TROPICAL (MARITIME)
E (50,50)
40 - 250 Mc/s
h_2 = 10 m
h_1:
1200 m
600 m
300 m
150 m
75 m
37.5 m
E dB rel to 1 μV/m
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
10
100
Km
1000
Teilung } 1-100, Einheit } 83,33 mm
Logar. Division } 1-100, Unité } 83,33 mm
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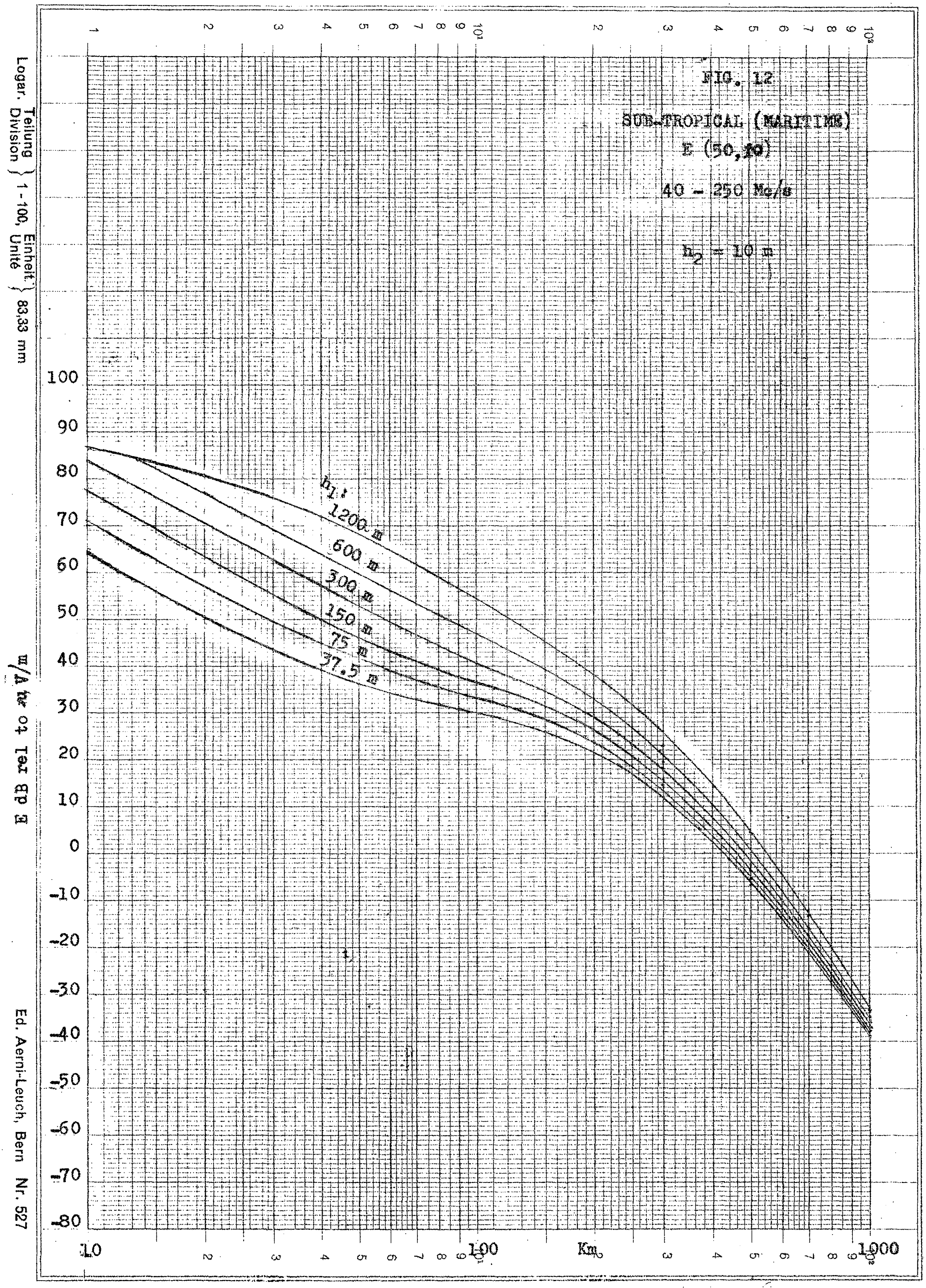
FIG. 12
SUB-TROPICAL (MARITIME)
E (50,10)
40 - 250 Mc/s
h2 = 10 m
h1:
1200 m
600 m
300 m
150 m
75 m
37.5 m
E db rel 10 µV/m
Km
10
100
1000
Teilung Division } 1-100, Einheit Unité } 83,33 mm
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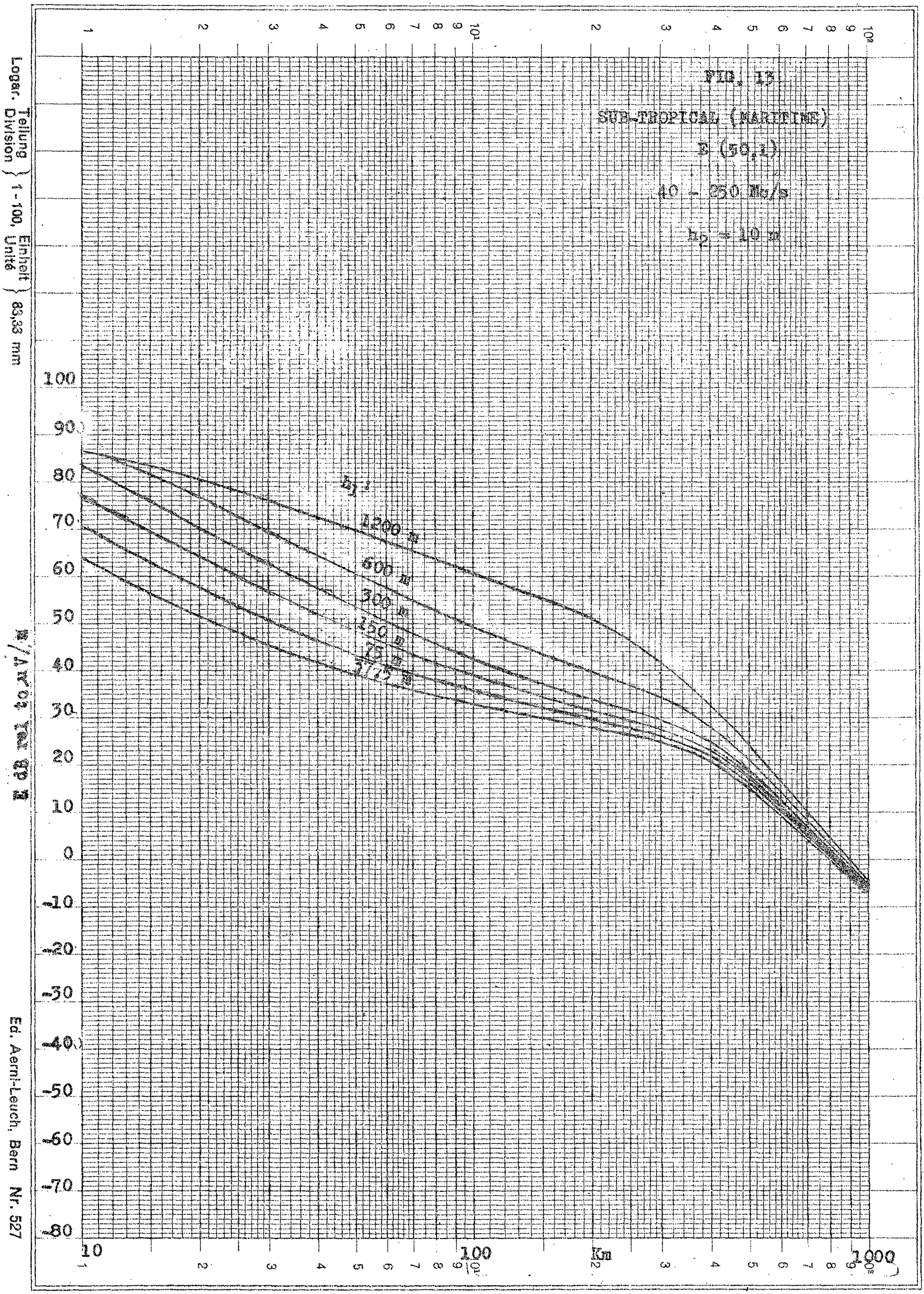
FIG. 13
SUB-TROPICAL (MARITIME)
E (50,1)
40 - 250 Mc/s
h_2 = 10 m
h_1:
1200 m
600 m
300 m
150 m
75 m
37.5 m
Km
10
100
1000
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Logar. Teilung Division } 1-100, Einheit Unité } 83,33 mm
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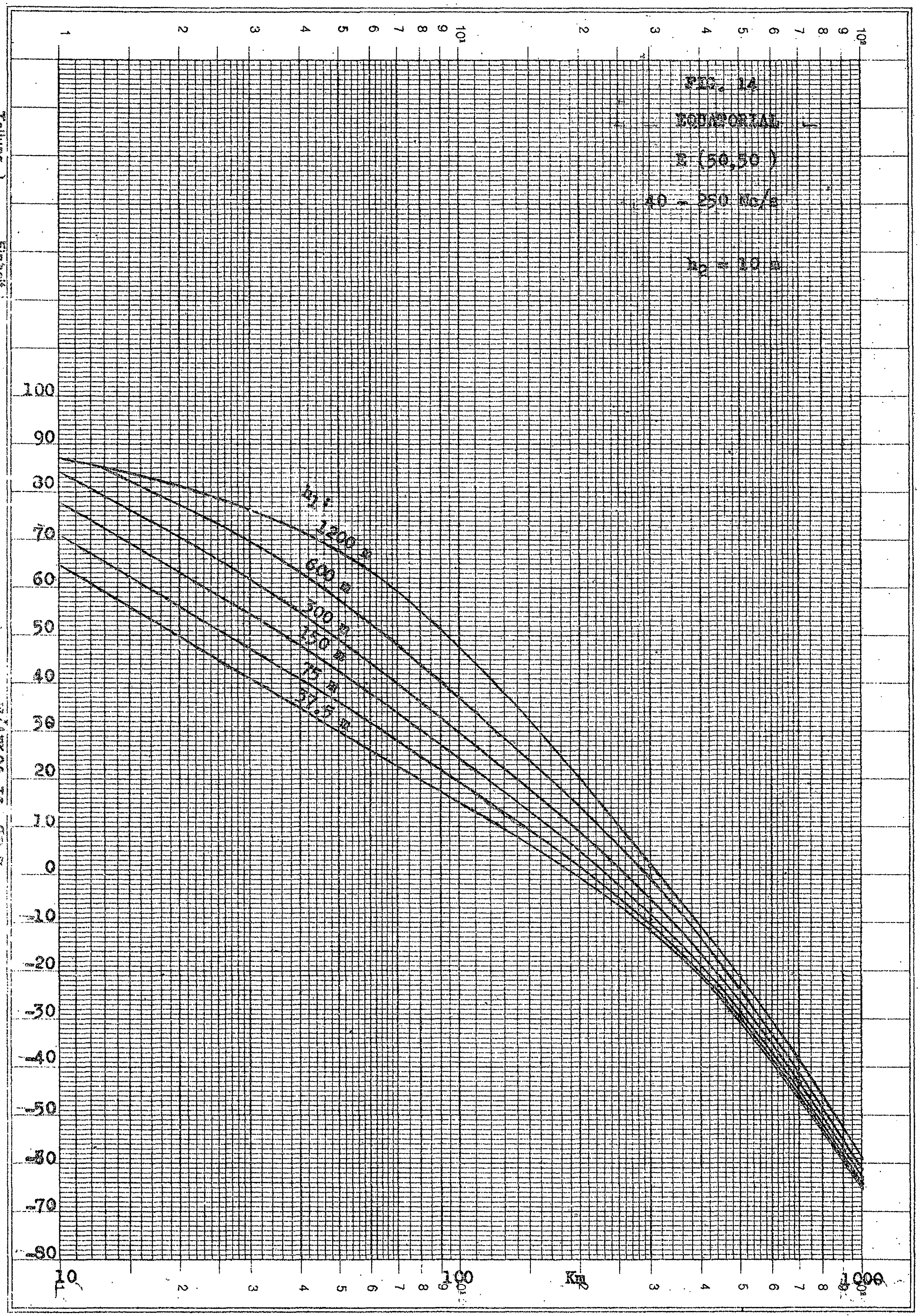
FIG. 14
EQUATORIAL
E (50,50)
40 - 250 Mc/s
h2 = 10 m
h1
1200 m
600 m
300 m
150 m
75 m
37.5 m
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
10
100
Km
1000
Logar. Teilung 1-100, Einheit } 63,33 mm
Division } 1-100, Units
Ed. Aerni-Leuch, Bern Nr. 527

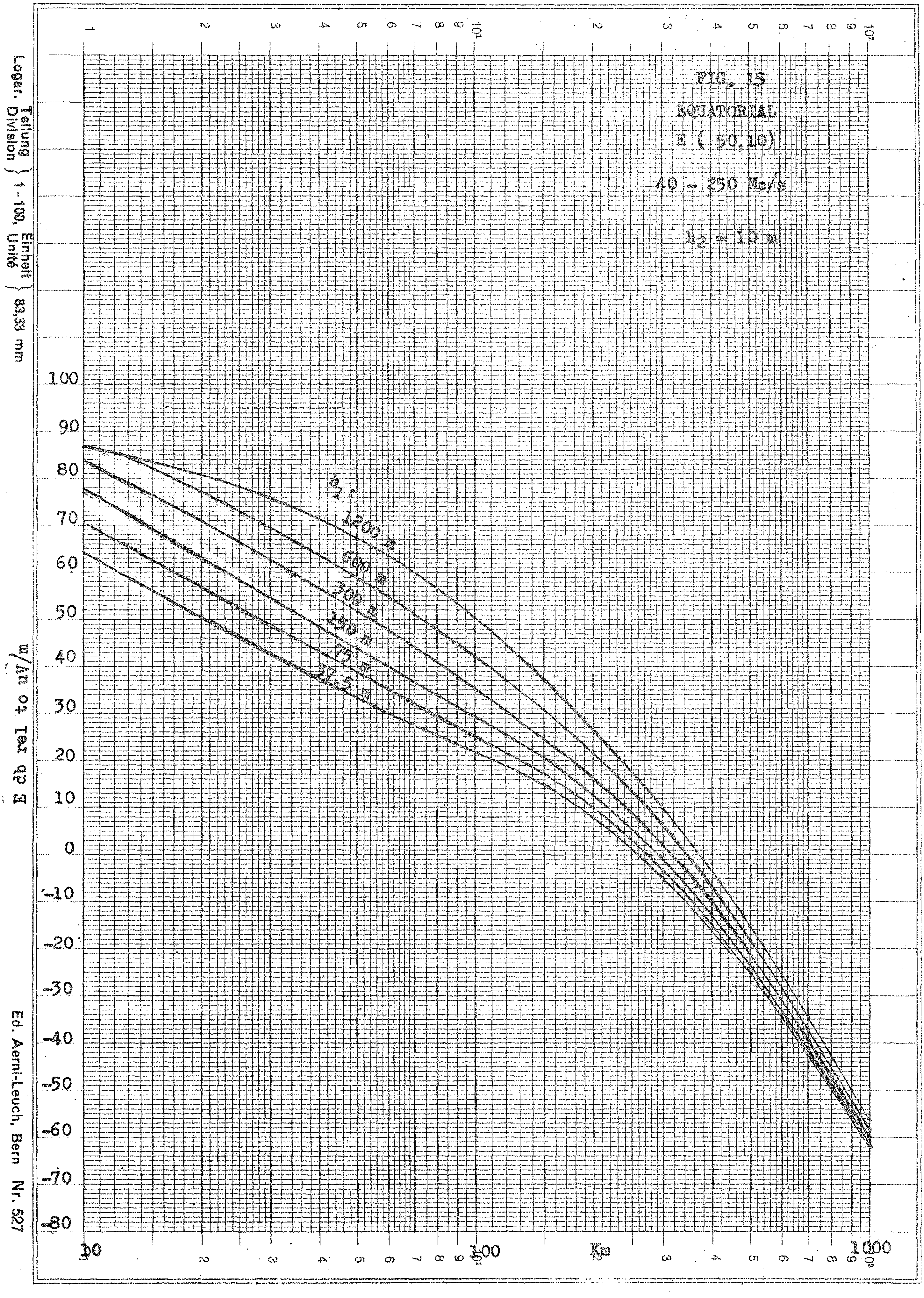
FIG. 15
EQUATORIAL
E (50,10)
40 - 250 Mc/s
h_2 = 10 m
h_1 =
1200 m
600 m
300 m
150 m
75 m
37,5 m
E db rel to μV/m
Km
10
100
1000
Logar. Teilung Division } 1-100, Einheit Unité } 83,33 mm
Ed. Aerni-Leuch, Bern Nr. 527

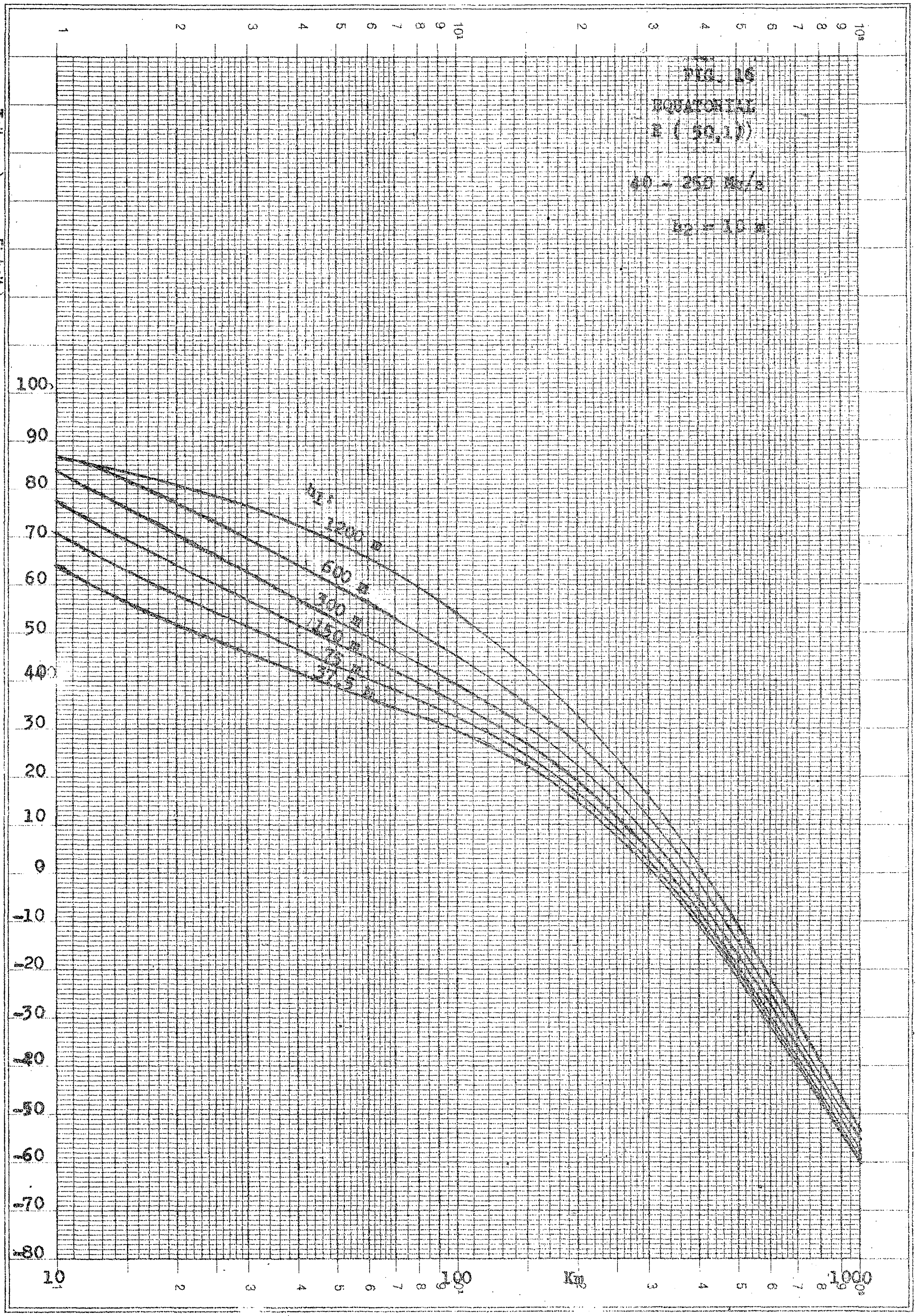
FIG. 16
EQUATORIAL
E (50,10)
40 - 250 Mc/s
h2 = 10 m
ht = 1200 m
600 m
300 m
150 m
75 m
37.5 m
E db rel to uV/m
Km
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
10
100
1000
Logar. Teilung Division } 1-100, Einheit Unité } 83,33 mm
Ed. Aerni-Leuch, Bern Nr. 527

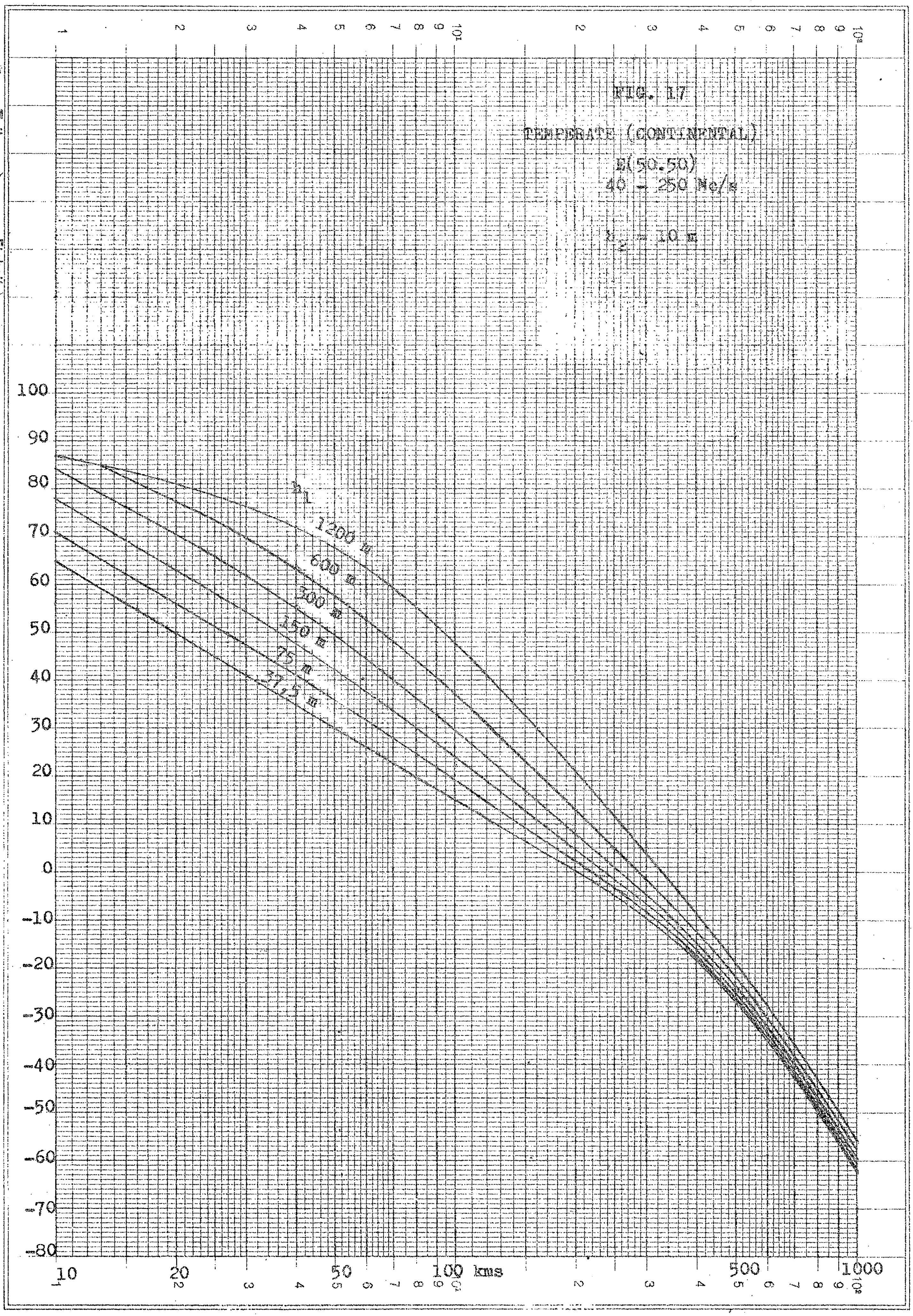
FIG. 17
TEMPERATE (CONTINENTAL)
E(50.50)
40 - 250 Mc/s
h_2 = 10 m
h_1
1200 m
600 m
300 m
150 m
75 m
37,5 m
E dB rel 1 µV/m
10
20
50
100 kms
500
1000
Logar. Teilung / Division } 1-100, Einheit / Unité } 83,33 mm
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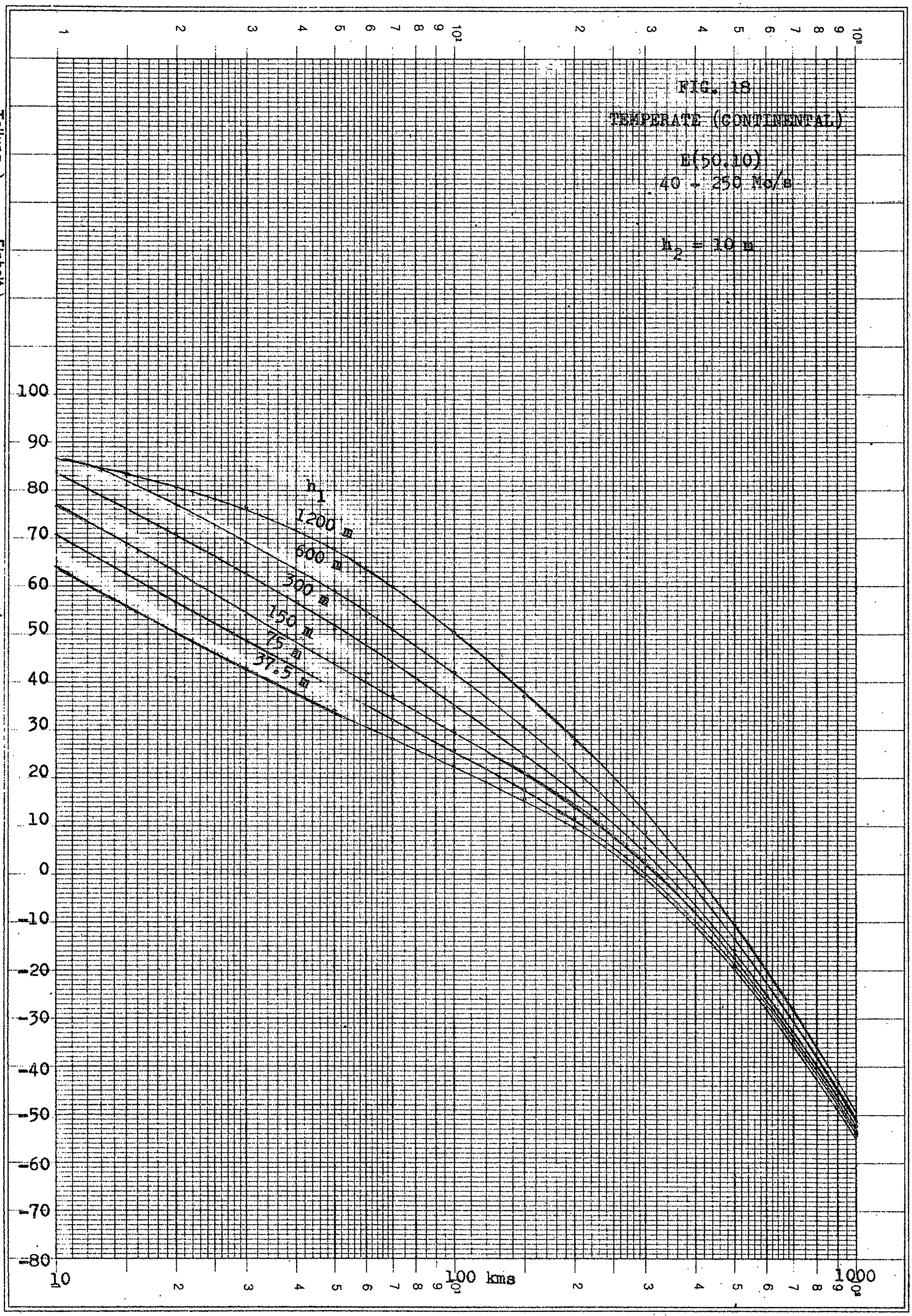
FIG. 18
TEMPERATE (CONTINENTAL)
E(50.10)
40 - 250 Mc/s
h_2 = 10 m
h_1
1200 m
600 m
300 m
150 m
75 m
37.5 m
E dB rel 1 to μV/m
100 kms
Logar. Teilung Division } 1-100, Einheit Unité } 83,33 mm
Ed. Aerni-Leuch, Bern Nr. 527

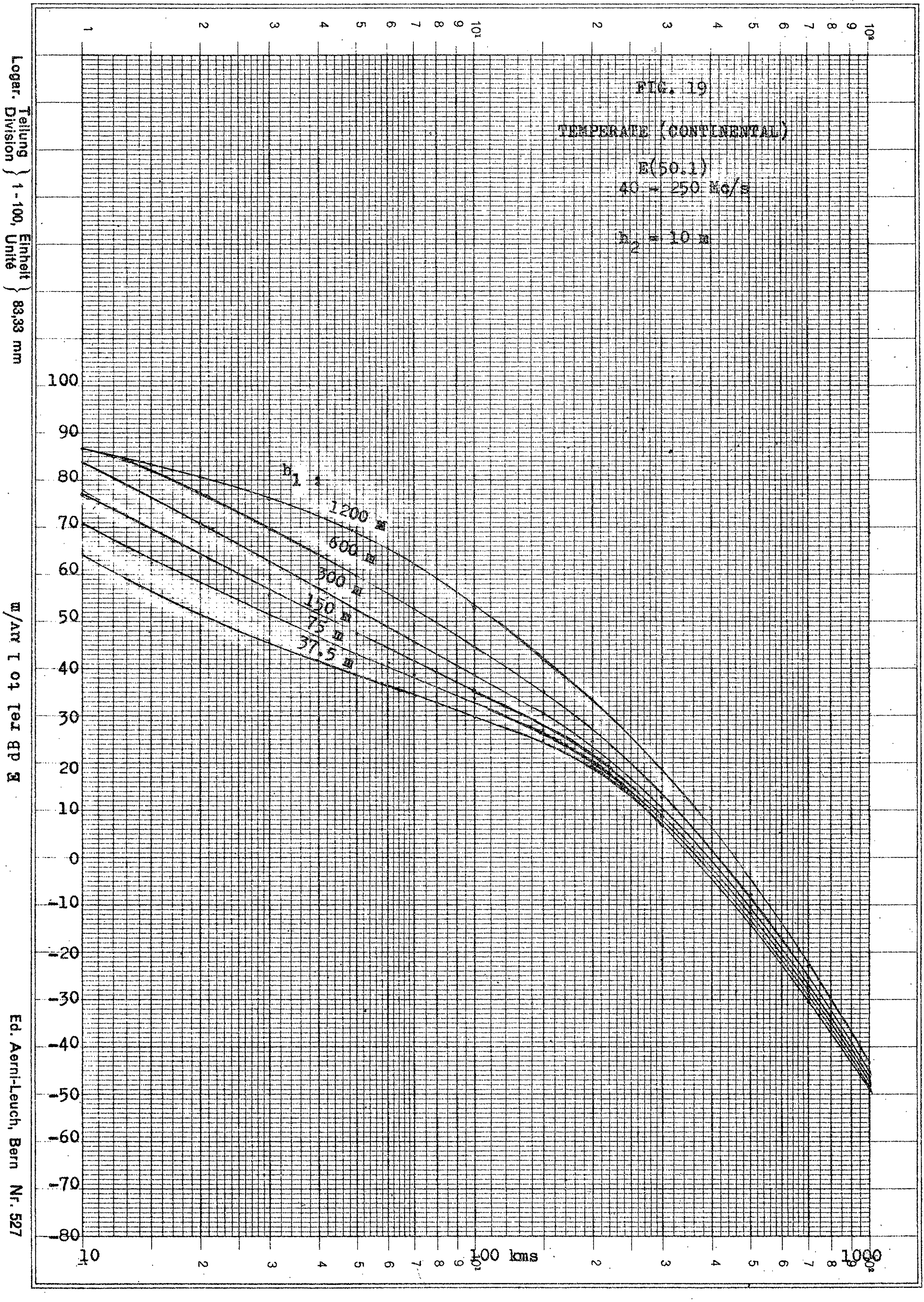
FIG. 19
TEMPERATE (CONTINENTAL)
E(50.1)
40 - 250 Mc/s
h2 = 10 m
h1 :
1200 m
600 m
300 m
150 m
75 m
37.5 m
E dB rel 1 to 1 μV/m
100 kms
10
1000
Logar. Teilung } 1-100, Einheit } 83,33 mm
Division } Unité
Ed. Aerni-Leuch, Bern Nr. 527

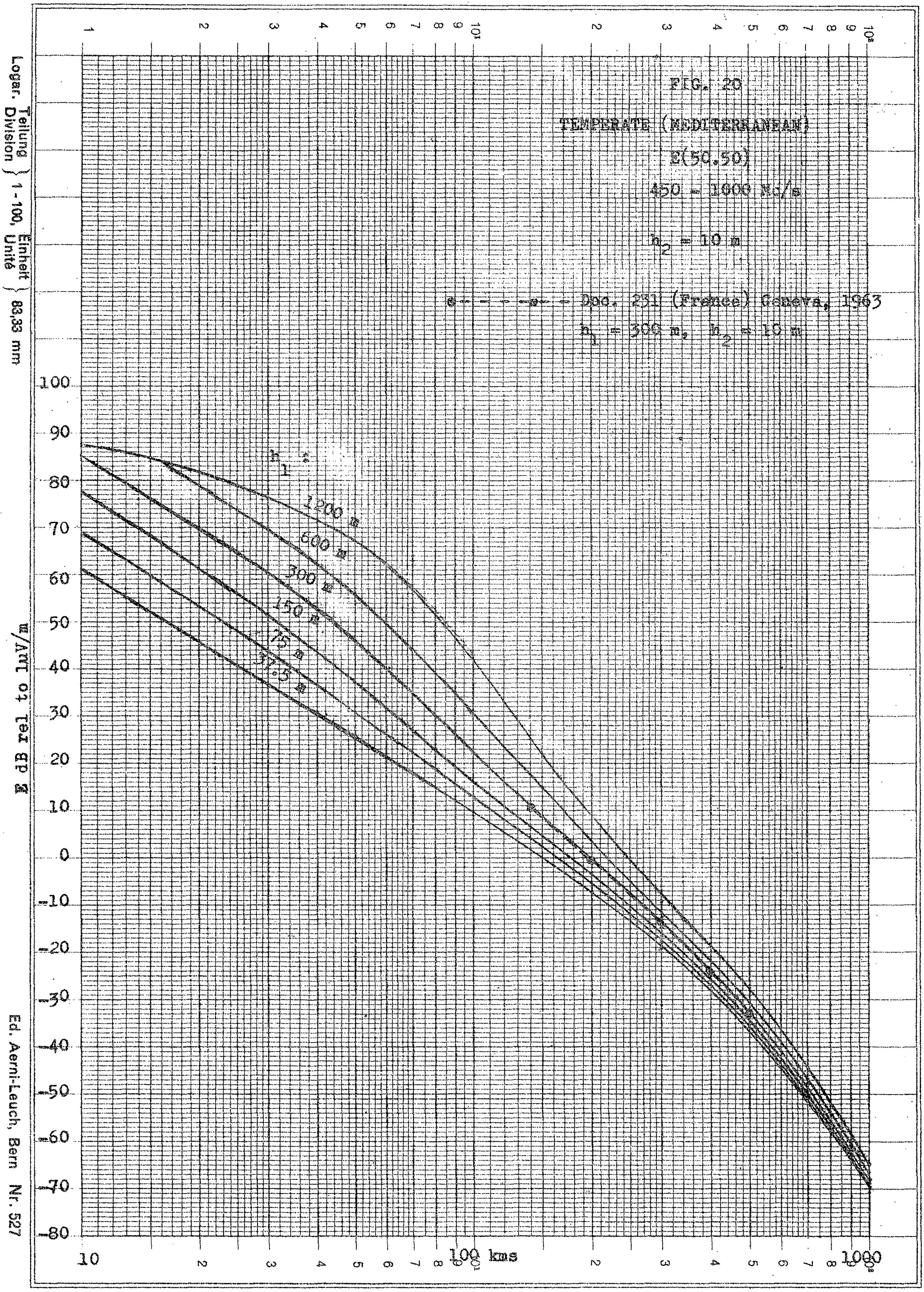
FIG. 20
TEMPERATE (MEDITERRANEAN)
E(50.50)
450 - 1000 Mc/s
h_2 = 10 m
Doc. 231 (France) Geneva, 1963
h_1 = 300 m, h_2 = 10 m
h_1 =
1200 m
600 m
300 m
150 m
75 m
37.5 m
E dB rel to 1µV/m
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
10
100 kms
1000
Teilung Logar. Division } 1 - 100, Einheit Unité } 83,33 mm
Ed. Aerni-Leuch, Bern Nr. 527

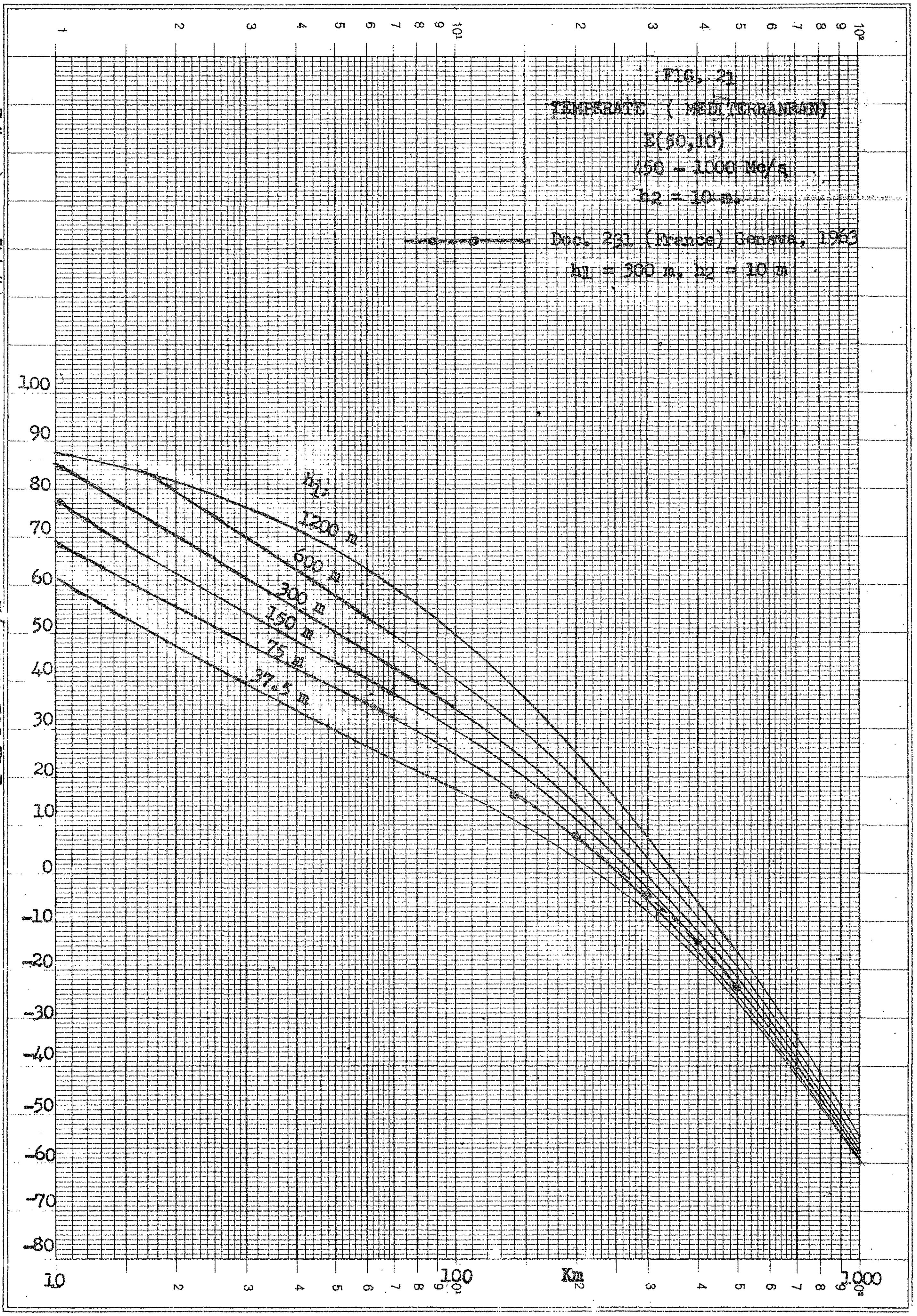
FIG. 21
TEMPERATE (MEDITERRANEAN)
E(50,10)
450 - 1000 Mc/s
h2 = 10 m.
Doc. 231 (France) Geneva, 1963
h1 = 300 m, h2 = 10 m
h1:
1200 m
600 m
300 m
150 m
75 m
37.5 m
E dB rel to 1 µV/m
Km
Logar. Teilung Division } 1-100, Einheit Unité } 83,33 mm
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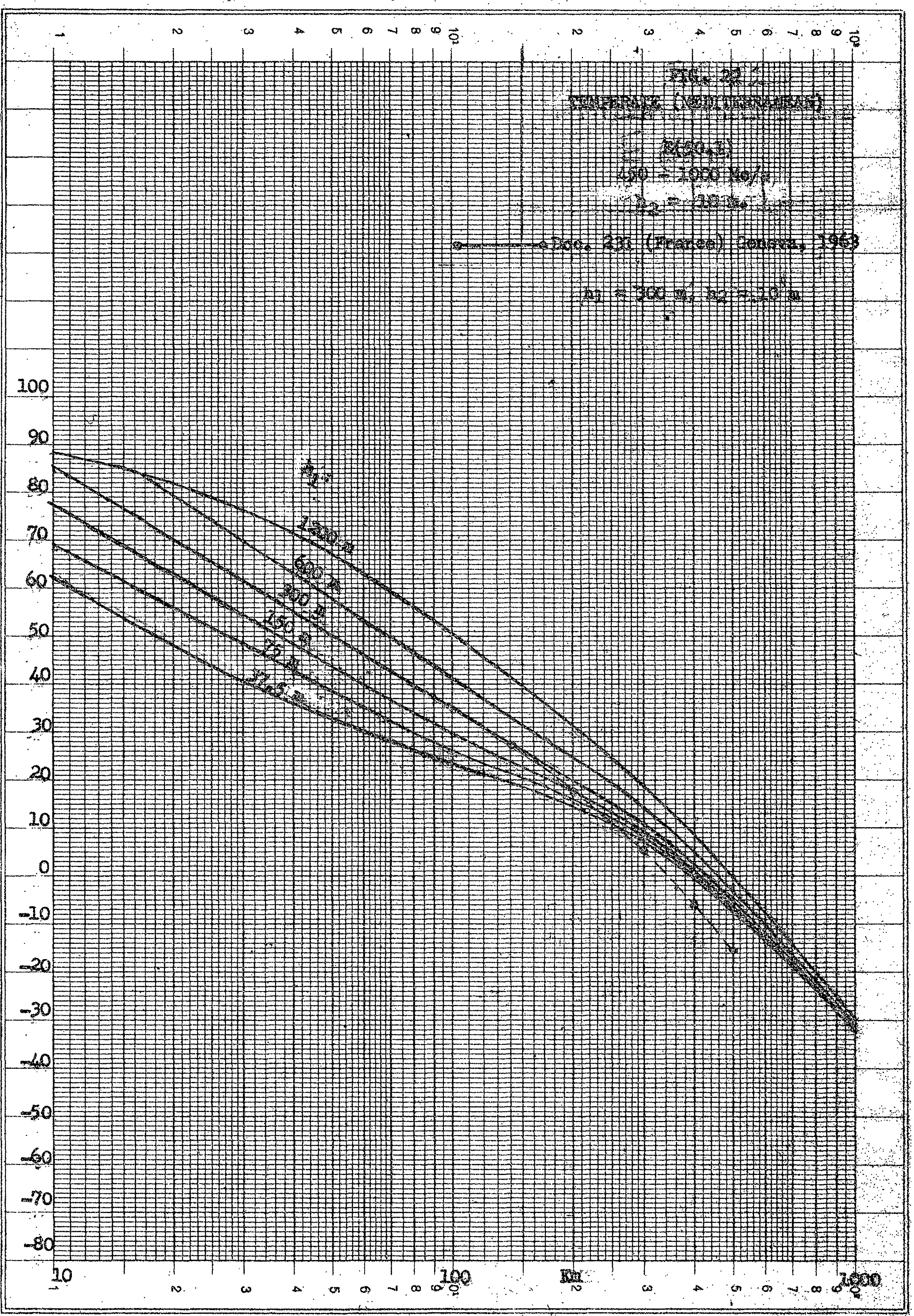
1200 m
600 m
300 m
150 m
75 m
37.5 m
Km
Ed. Aerni-Leuch, Bern Nr. 527

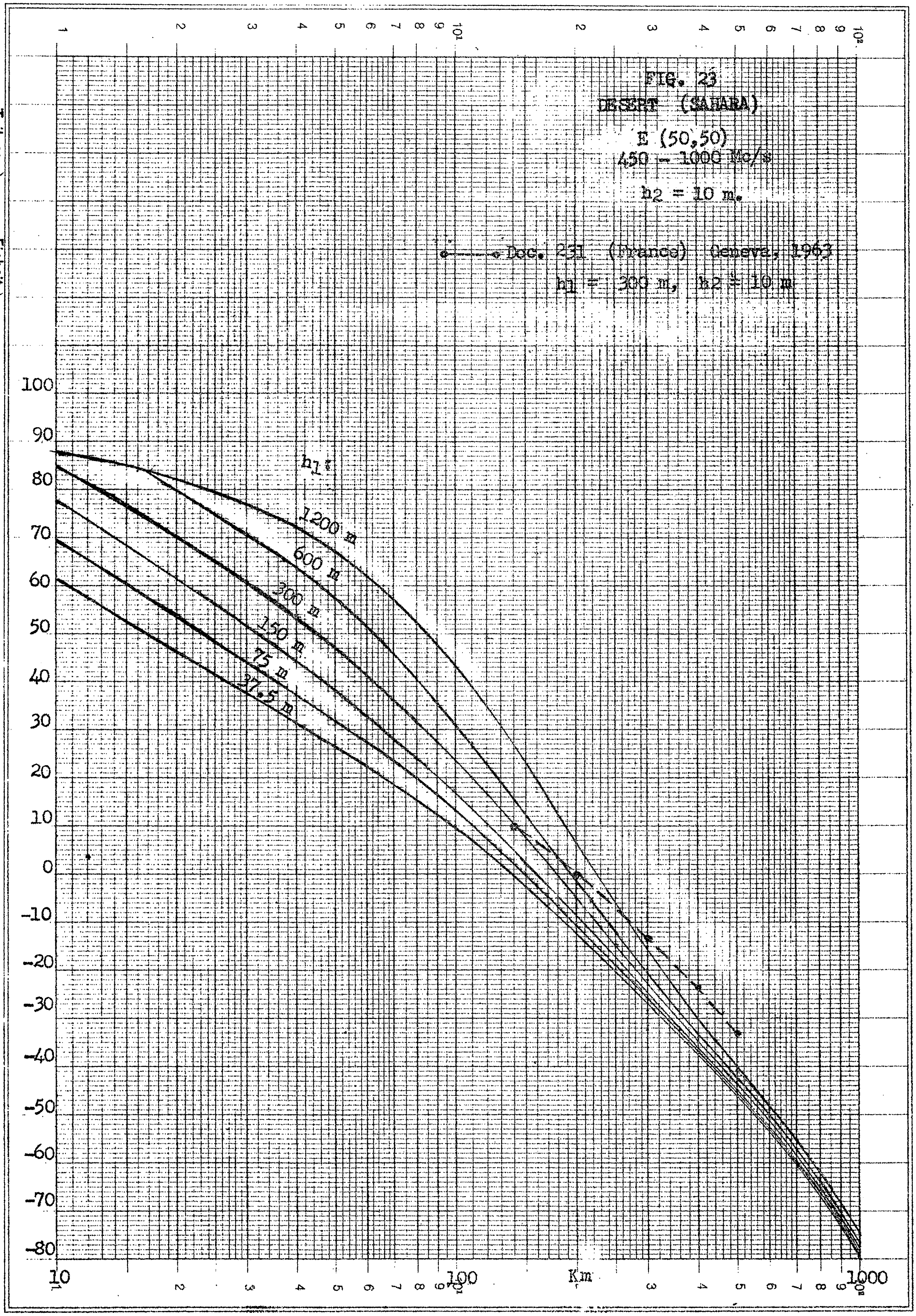
FIG. 23
DESERT (SAHARA)
E (50,50)
450 - 1000 Mc/s
h2 = 10 m.
Doc. 231 (France) Geneva, 1963
h1 = 300 m, h2 = 10 m
h1 :
1200 m
600 m
300 m
150 m
75 m
37.5 m
E dB rel to 1 μV/m
Km
Logar. Teilung Division } 1-100, Einheit Unité } 83,33 mm
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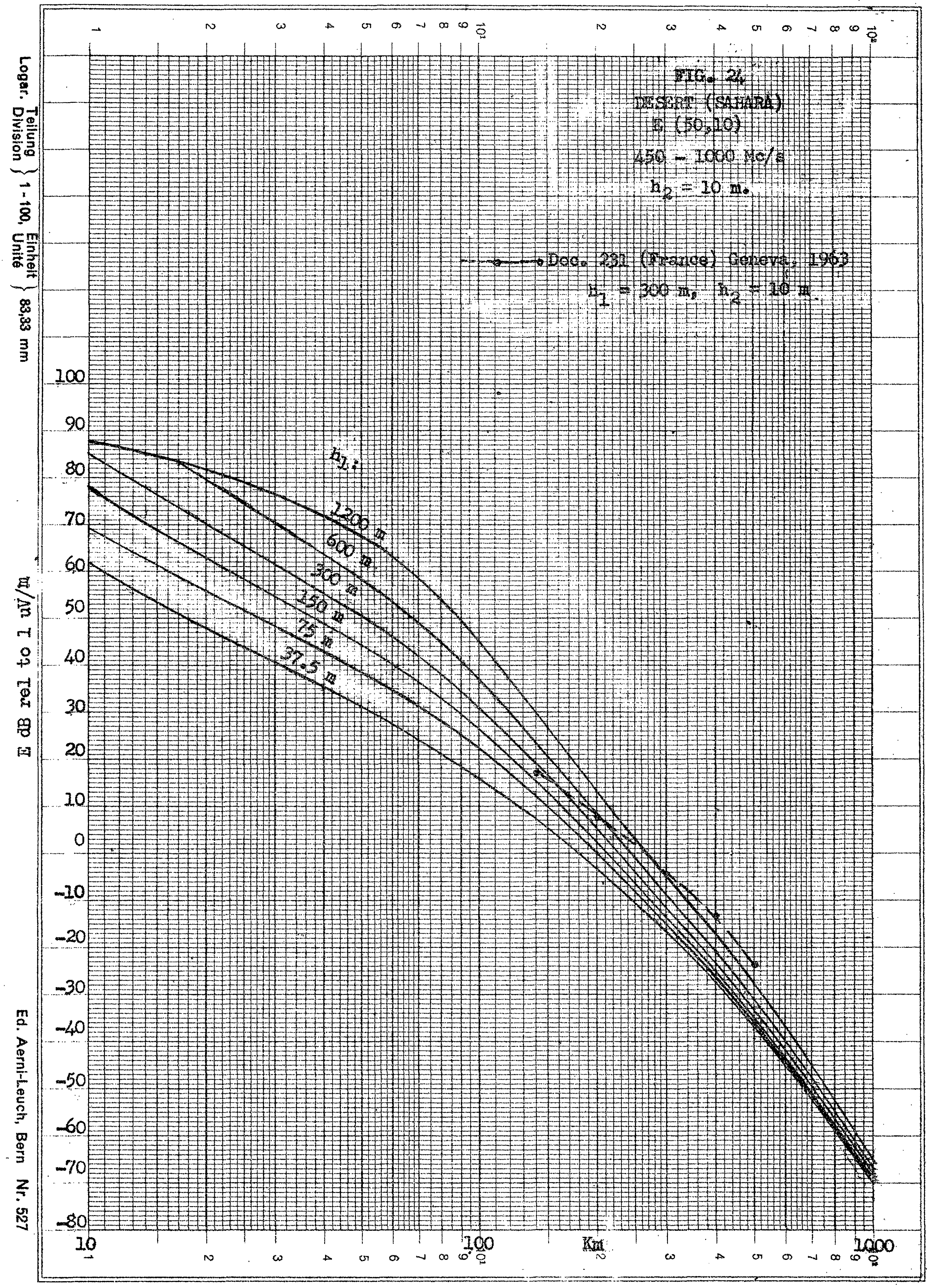
FIG. 24
DESERT (SAHARA)
E (50,10)
450 - 1000 Mc/s
h_2 = 10 m.
Doc. 231 (France) Geneva, 1963
h_1 = 300 m, h_2 = 10 m
h_1:
1200 m
600 m
300 m
150 m
75 m
37.5 m
E dB rel to 1 µV/m
Km
Logar. Teilung / Division } 1-100, Einheit / Unité } 83,33 mm
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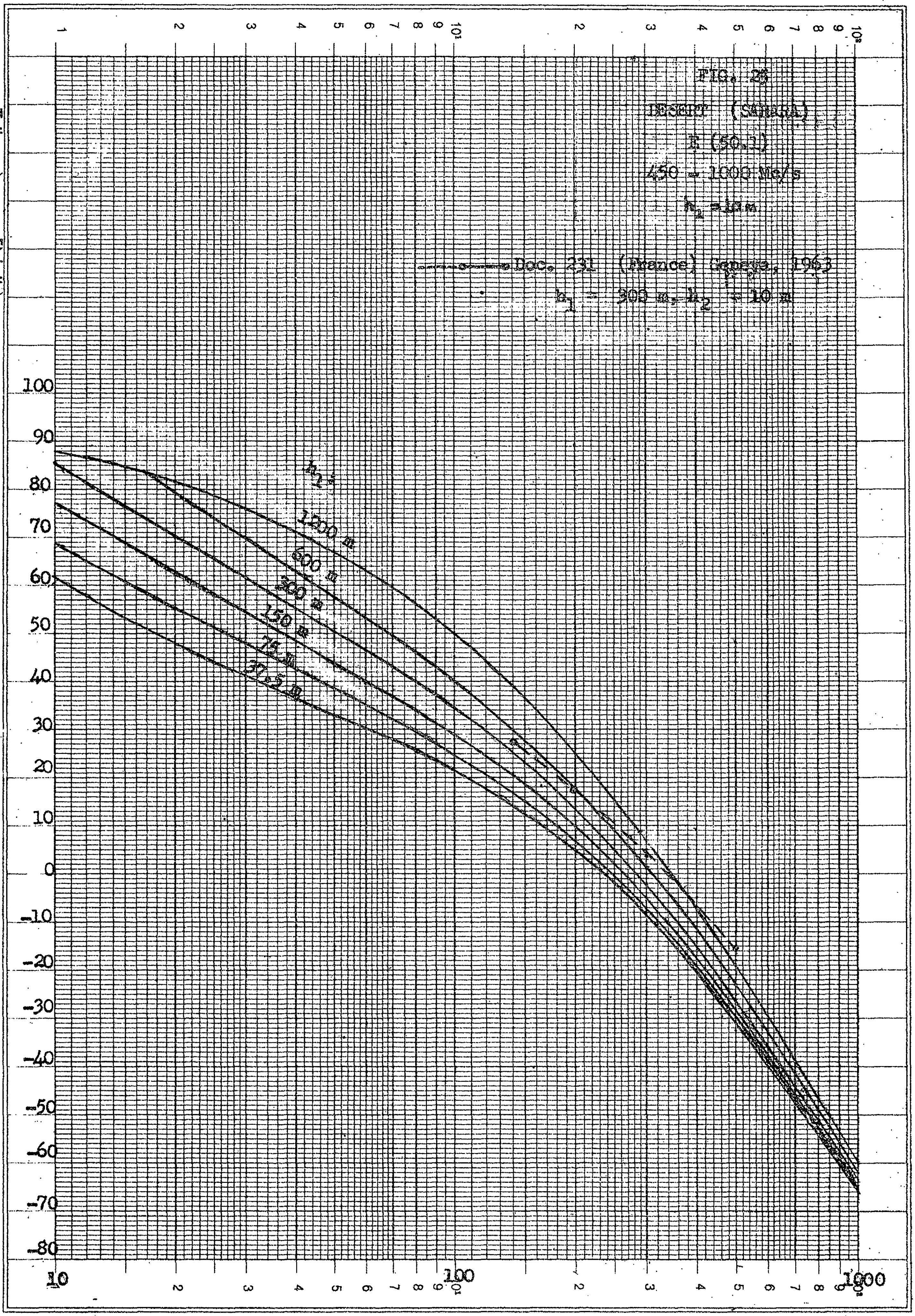
FIG. 23
DESERT (SAHARA)
E (50,1)
450 - 1000 Mc/s
h_2 = 10 m
Doc. 231 (France) Geneva, 1963
h_1 = 300 m, h_2 = 10 m
h_1:
1200 m
600 m
300 m
150 m
75 m
37,5 m
E dB rel to 1 µV/m
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
10
100
1000
Logar. Teilung } 1-100, Einheit } 83,33 mm
Division } Unité
Ed. Aerni-Leuch, Bern Nr. 527

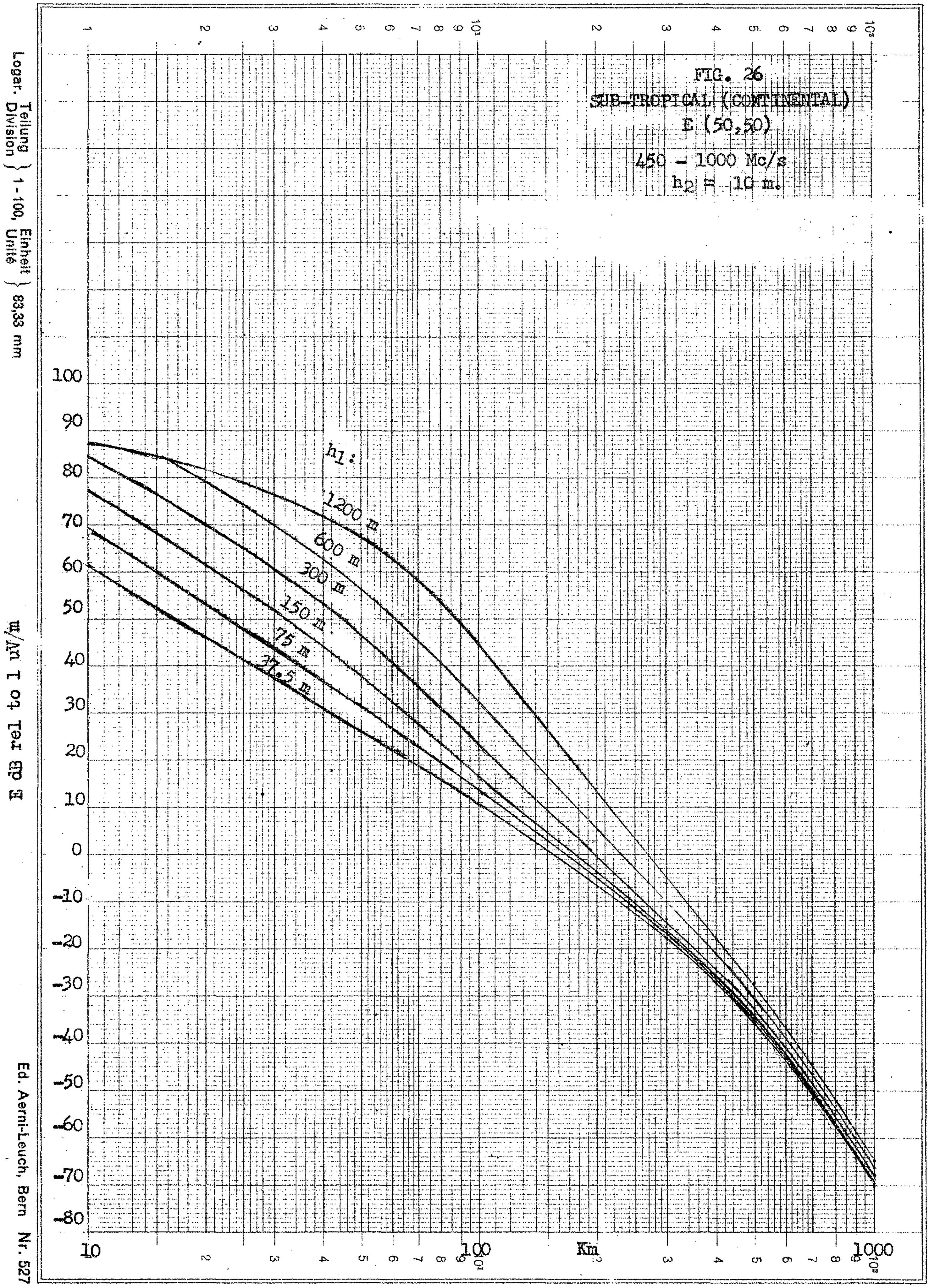
FIG. 26
SUB-TROPICAL (CONTINENTAL)
E (50,50)
450 - 1000 Mc/s
h_2 = 10 m.
h_1:
1200 m
600 m
300 m
150 m
75 m
37.5 m
E dB rel to 1 µV/m
Km
10
100
1000
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Logar. Teilung 1-100, Einheit 83,33 mm
Logar. Division 1-100, Unité 83,33 mm
Ed. Aerni-Leuch, Bern Nr. 527

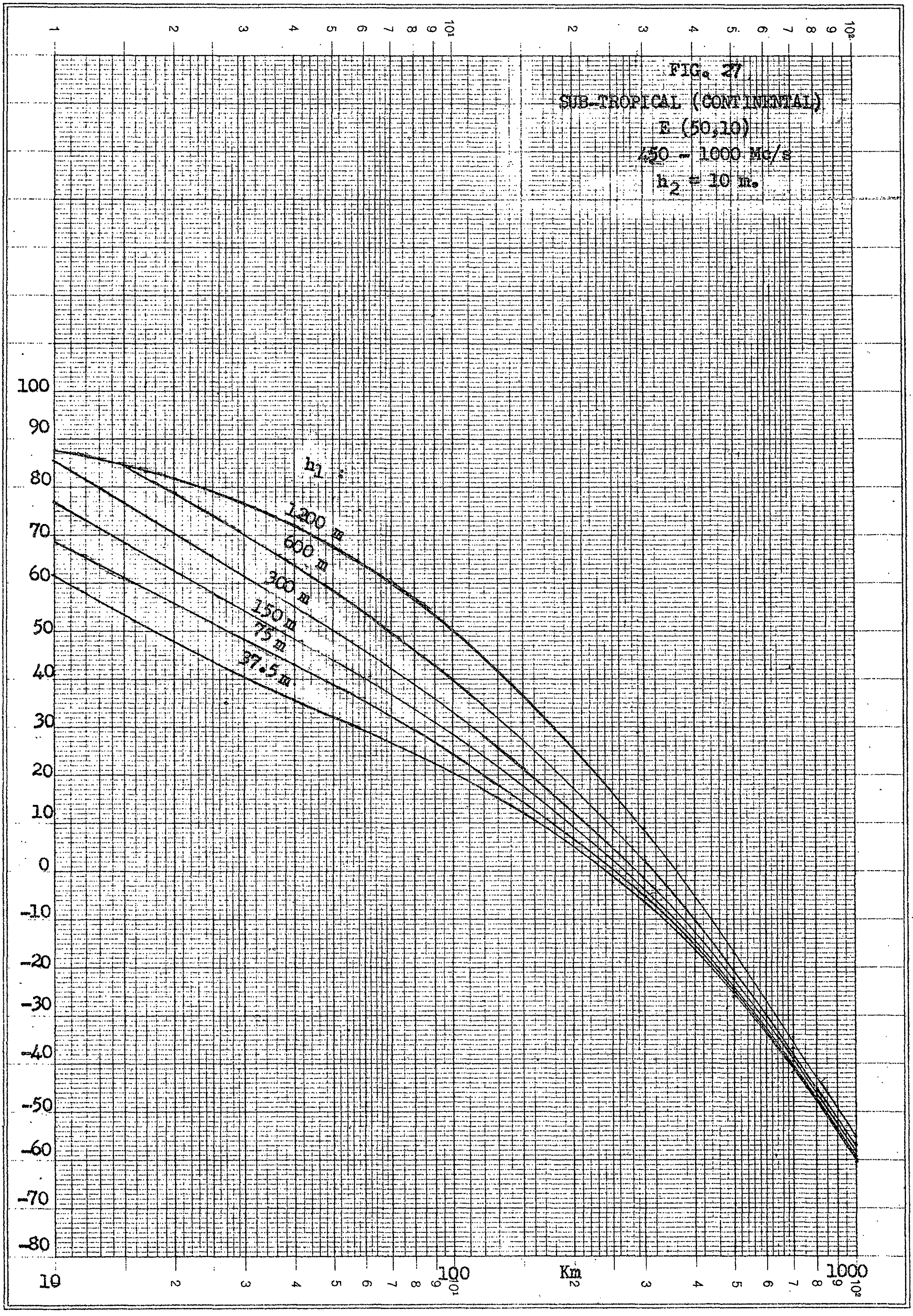
FIG. 27
SUB-TROPICAL (CONTINENTAL)
E (50,10)
450 - 1000 Mc/s
h2 = 10 m.
h1 :
1200 m
600 m
300 m
150 m
75 m
37.5 m
E dB rel to 1 μV/m
Km
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
10
100
1000
Logar. Teilung } 1-100, Einheit } 83,33 mm
Logar. Division } 1-100, Unité } 83,33 mm
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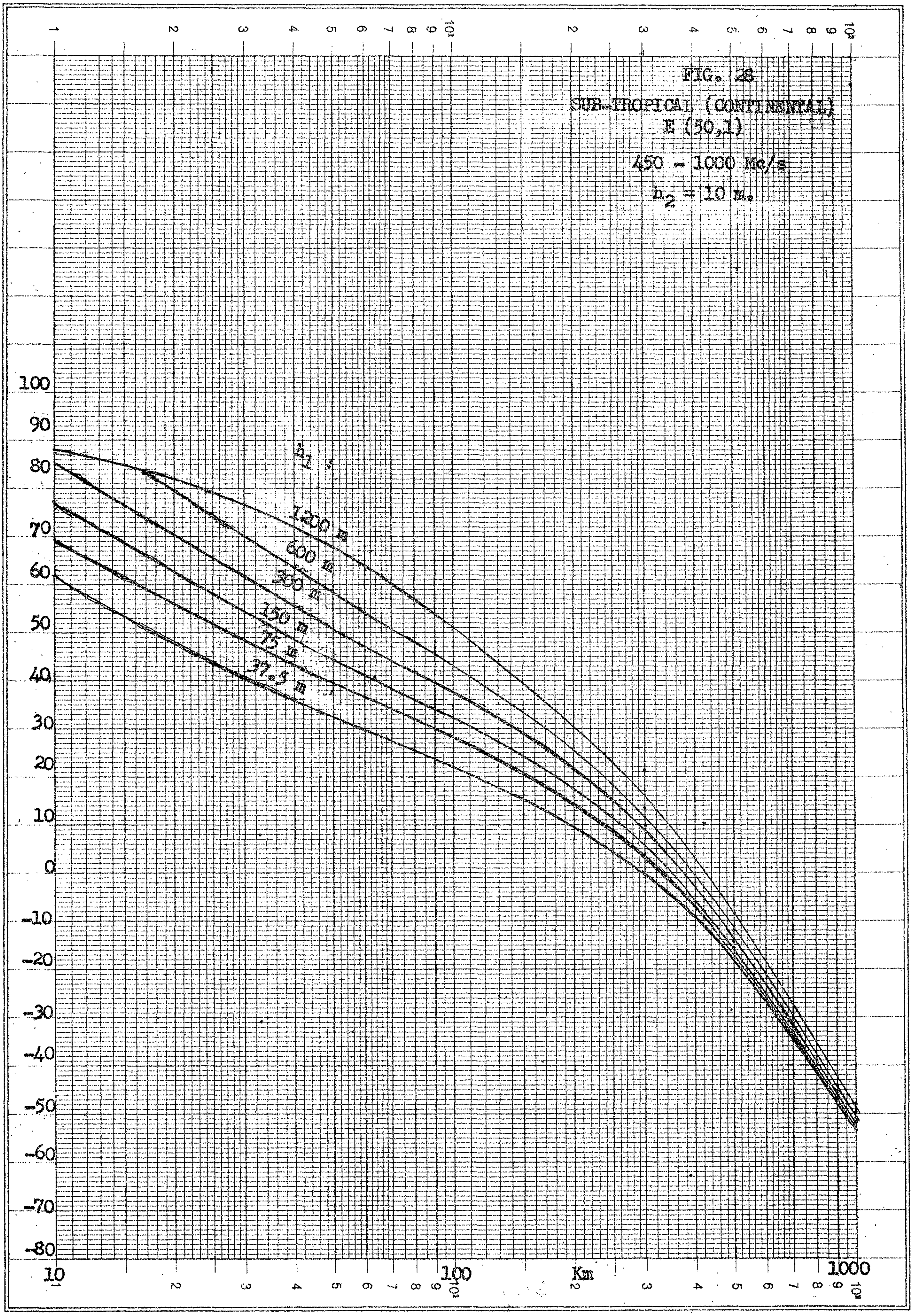
FIG. 28
SUB-TROPICAL (CONTINENTAL)
E (50,1)
450 - 1000 Mc/s
h2 = 10 m.
h1
1200 m
600 m
300 m
150 m
75 m
37.5 m
E dB rel to 1 μV/m
Km
Logar. Teilung Division } 1-100, Einheit Unité } 83,33 mm
Ed. Aerni-Leuch, Bern Nr. 527

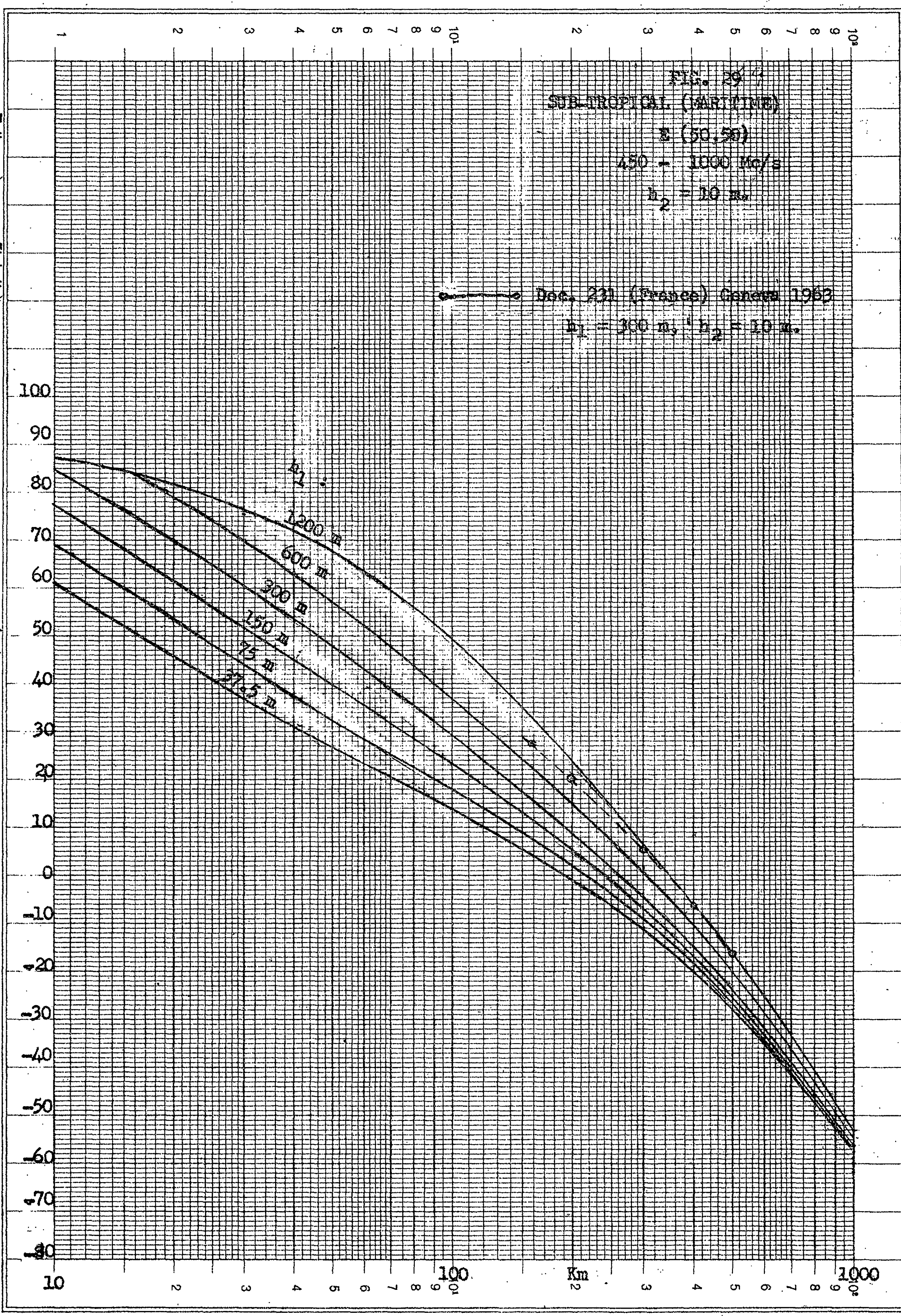
FIG. 29
SUB-TROPICAL (MARITIME)
E (50,50)
450 - 1000 Mc/s
h2 = 10 m.
Doc. 231 (France) Geneva 1963
h1 = 300 m, h2 = 10 m.
h1 :
1200 m
600 m
300 m
150 m
75 m
37.5 m
E dB rel to 1 µV/m
Km
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
10
100
1000
Teilung Logar. Division } 1-100, Einheit Unité } 83,33 mm
Ed. Aerni-Leuch, Bern Nr. 527

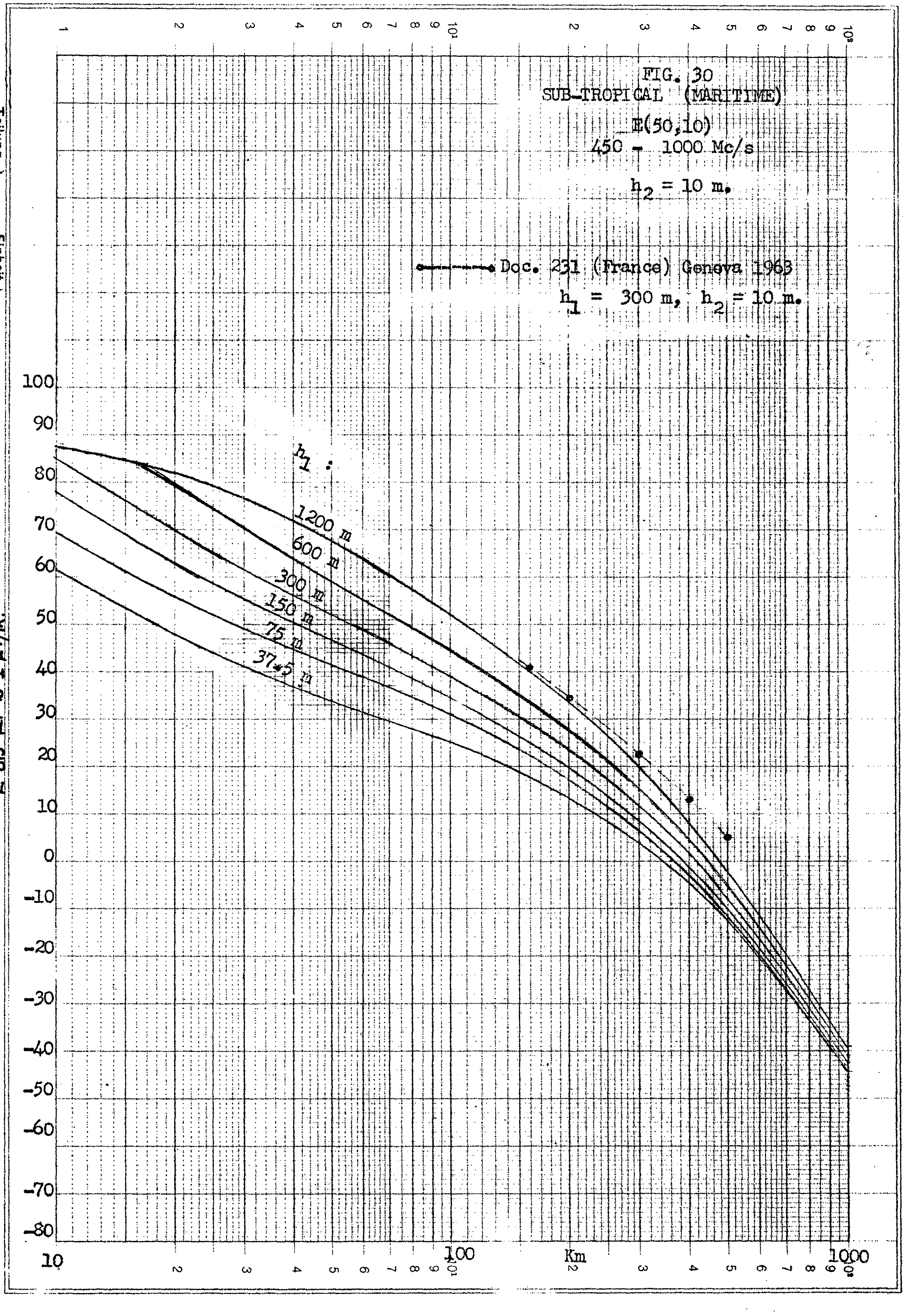
FIG. 30
SUB-TROPICAL (MARITIME)
E(50,10)
450 - 1000 Mc/s
h2 = 10 m.
Doc. 231 (France) Geneva 1963
h1 = 300 m, h2 = 10 m.
h1 :
1200 m
600 m
300 m
150 m
75 m
37.5 m
E dB rel 1 µV/m
Km
Logar. Teilung 1-100, Einheit 83,33 mm
Logar. Division 1-100, Unité 83,33 mm

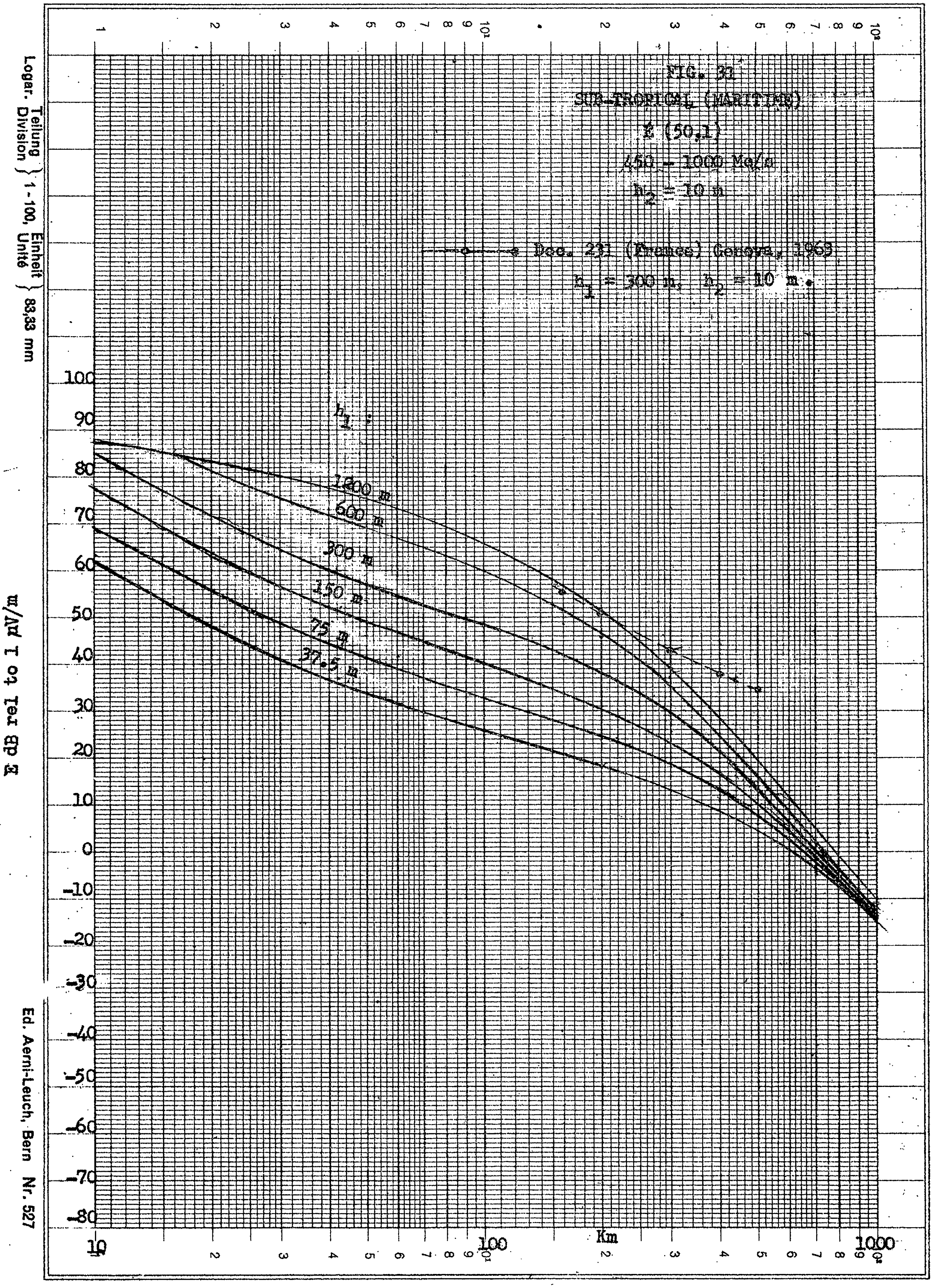
FIG. 31
SUB-TROPICAL (MARITIME)
E (50,1)
450 - 1000 Mc/s
h2 = 10 m
Doc. 231 (France) Geneva, 1963
h1 = 300 m, h2 = 10 m.
h1 :
1200 m
600 m
300 m
150 m
75 m
37.5 m
E dB rel to 1 µV/m
Km
Logar. Teilung } 1-100, Einheit } 83,33 mm
Logar. Division } 1-100, Unité } 83,33 mm
Ed. Aerni-Leuch, Bern Nr. 527

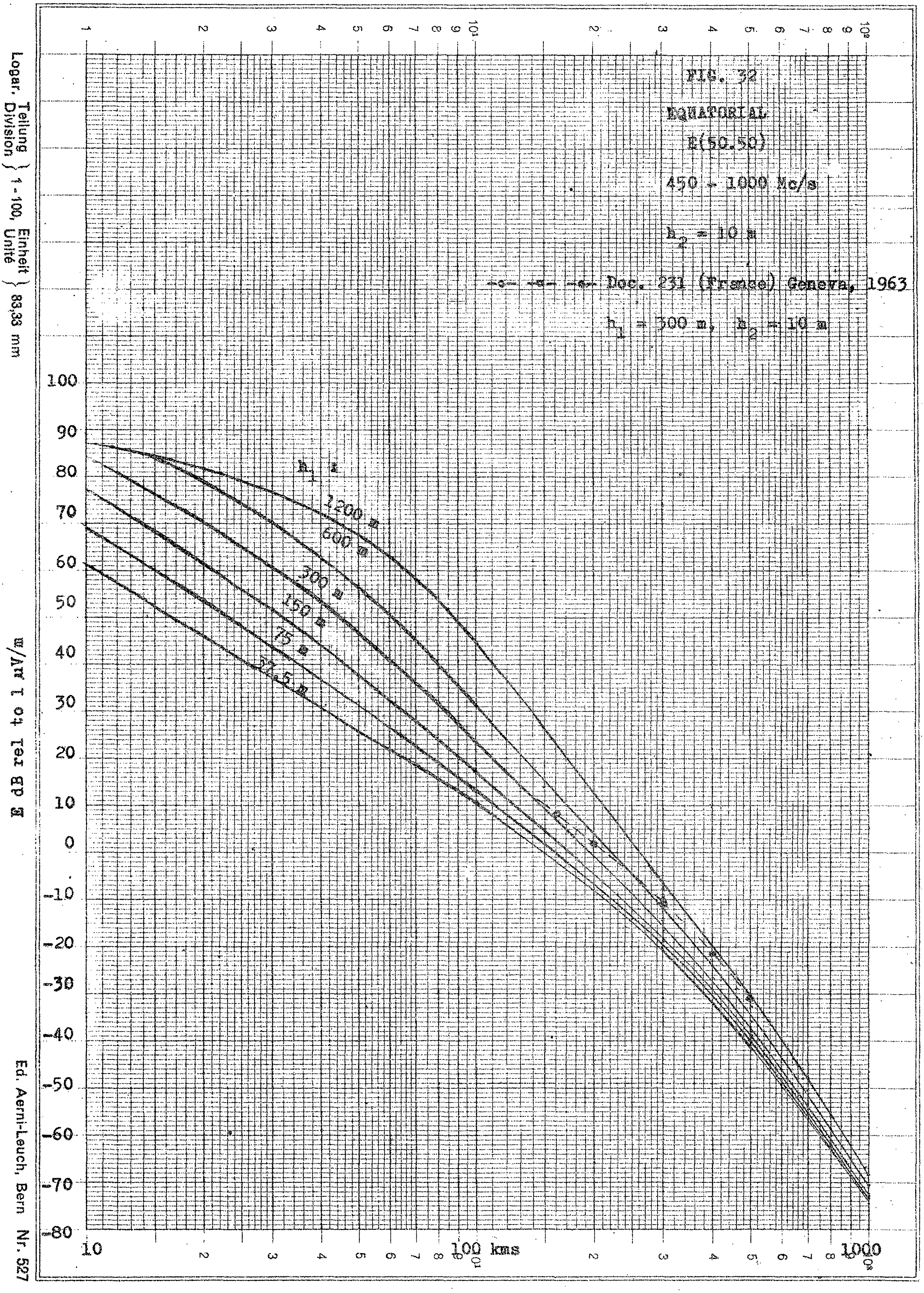
FIG. 32
EQUATORIAL
E(50.50)
450 - 1000 Mc/s
h2 = 10 m
Doc. 231 (France) Geneva, 1963
h1 = 300 m, h2 = 10 m
h1 =
1200 m
600 m
300 m
150 m
75 m
37.5 m
E dB rel to 1 µV/m
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
10
100 kms
1000
Logar. Teilung 1-100, Einheit 83,33 mm
Logar. Division 1-100, Unité 83,33 mm
Ed. Aerni-Leuch, Bern Nr. 527

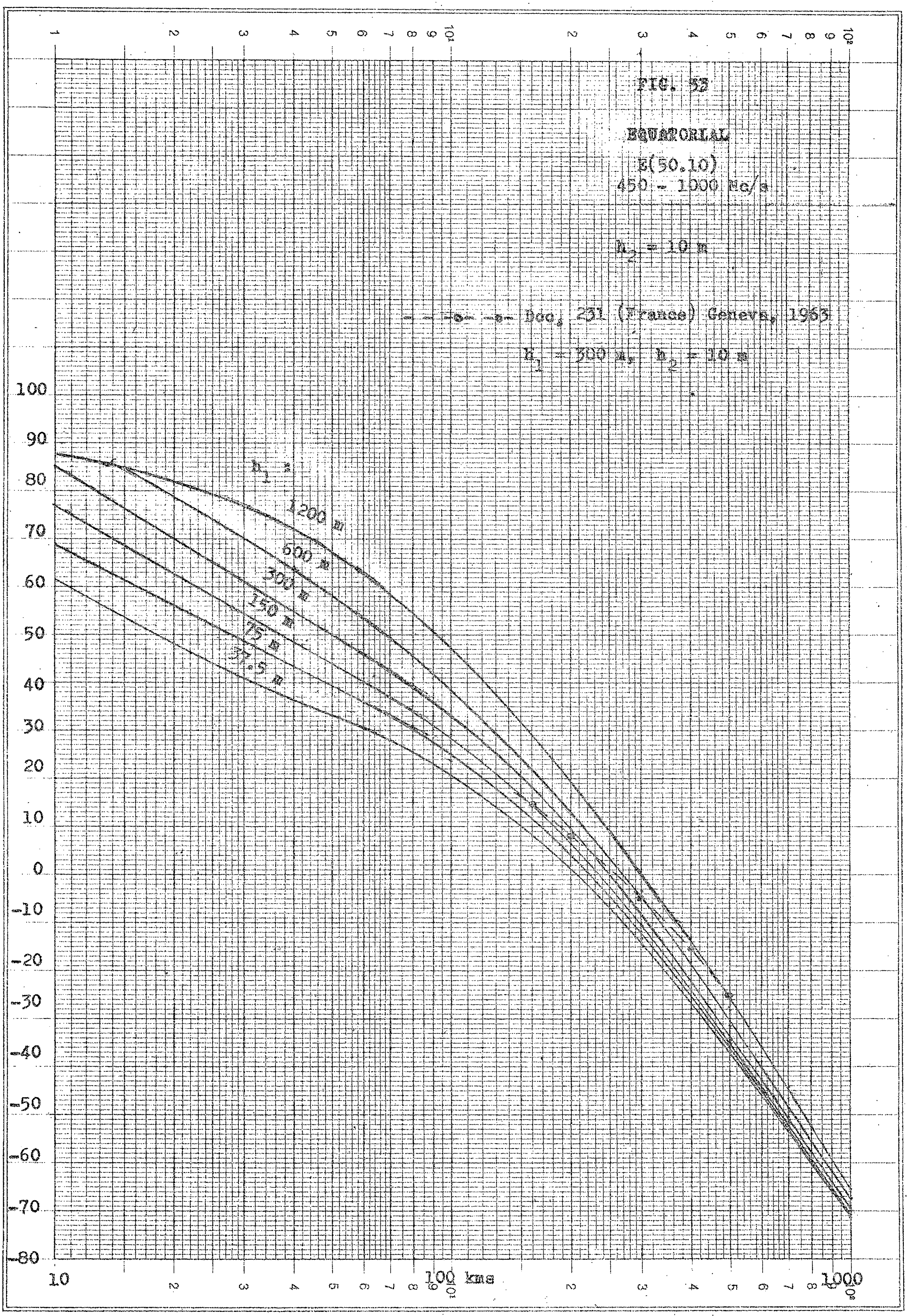
FIG. 53
EQUATORIAL
E(50.10)
450 - 1000 Mc/s
h_2 = 10 m
Doc. 231 (France) Geneva, 1963
h_1 = 300 m, h_2 = 10 m
h_1 =
1200 m
600 m
300 m
150 m
75 m
37.5 m
dB rel to 1 μV/m
100 kms
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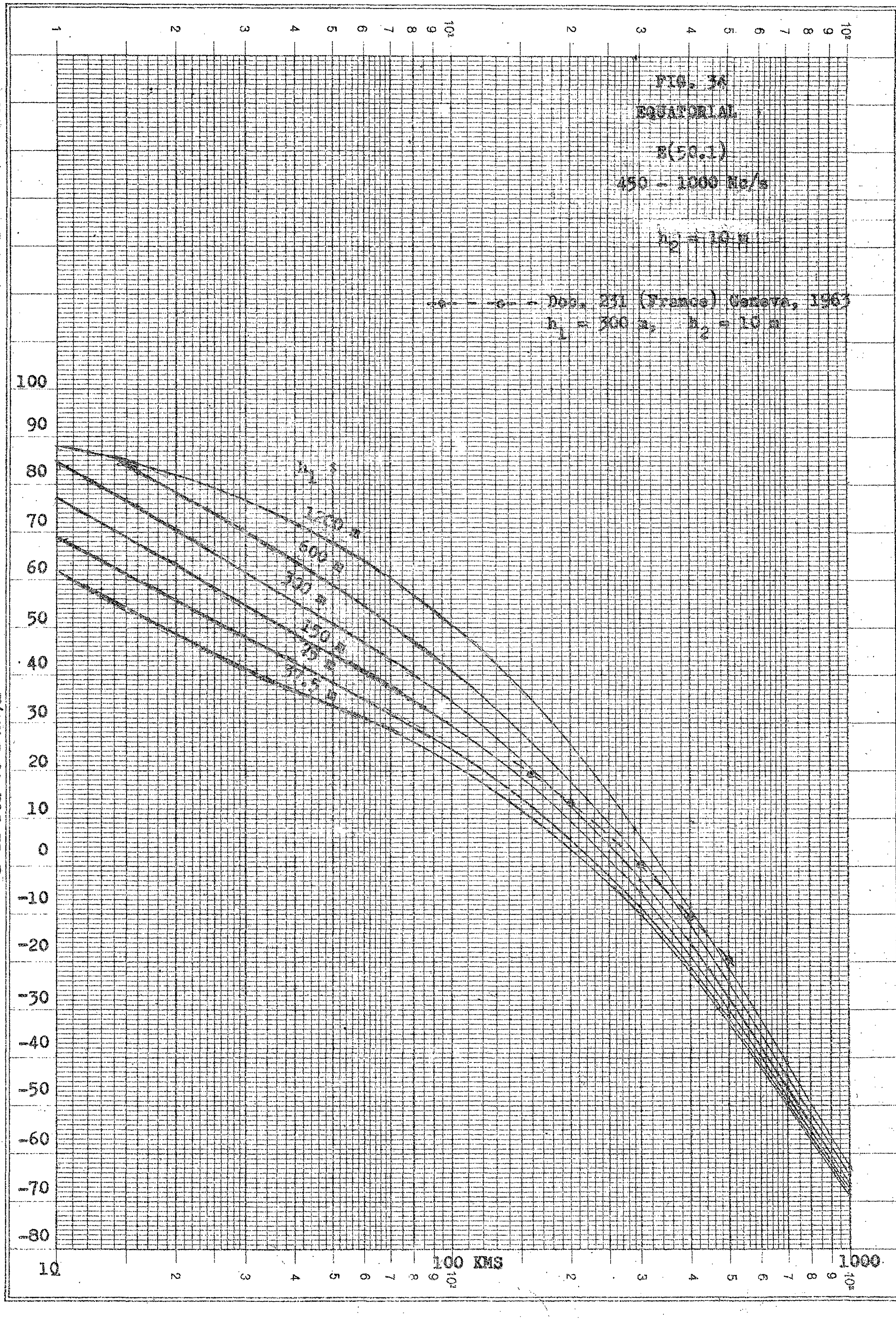
EQUATORIAL
E(50.1)
450 - 1000 Mc/s
h_2 = 10 m
Doc. 231 (France) Geneva, 1963
h_1 = 300 m, h_2 = 10 m
h_1 =
1200 m
600 m
300 m
150 m
75 m
37.5 m
100 KMS
1000
E dB rel 1 µV/m
Logar. Teilung 1-100, Einheit 83,33 mm
Division 1-100, Unité 83,33 mm
Ed. Aerni-Leuch, Bern Nr. 527

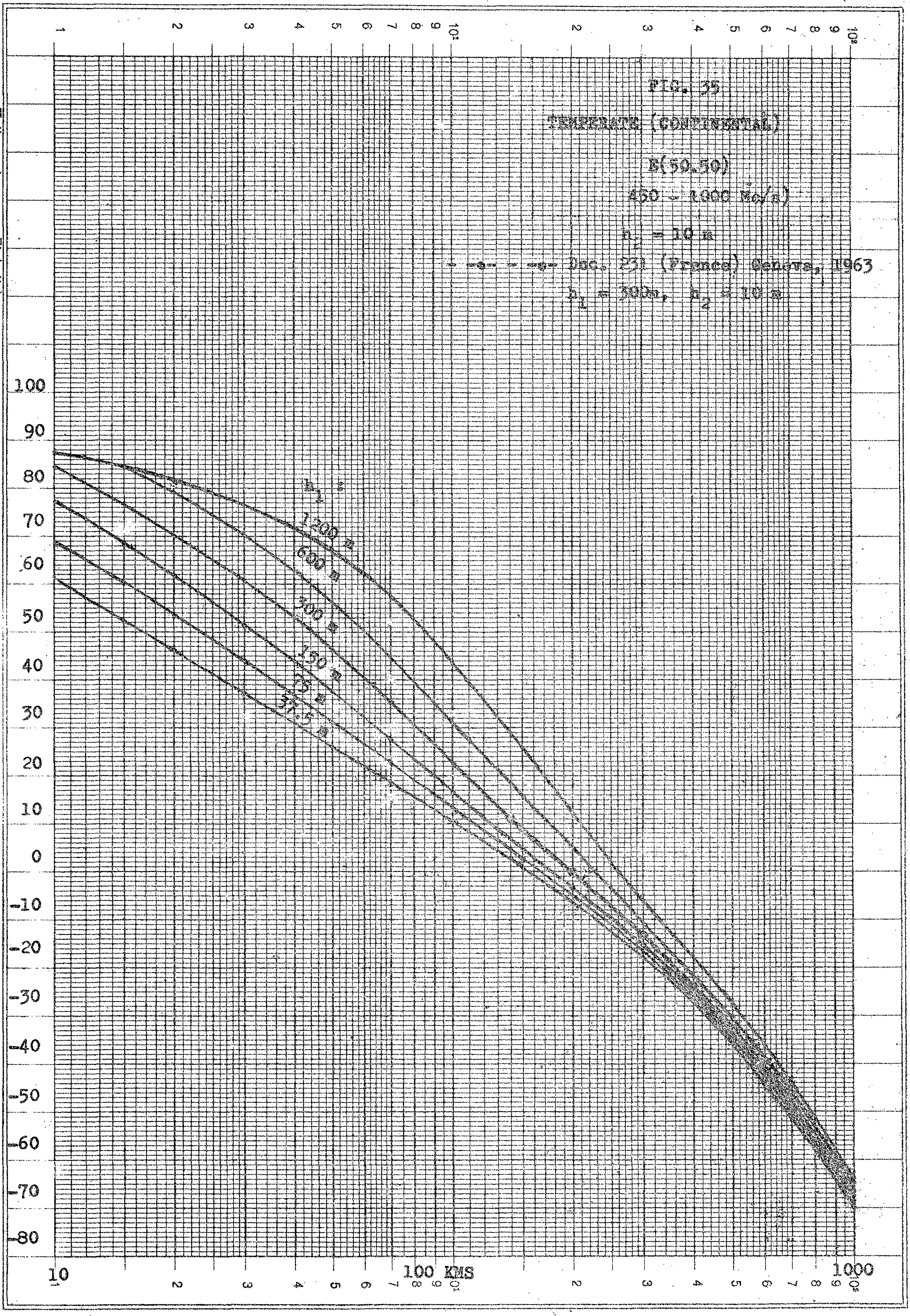
FIG. 35
TEMPERATE (CONTINENTAL)
E(50,50)
450 - 1000 Mc/s)
h_2 = 10 m
Doc. 231 (France) Geneva, 1963
h_1 = 300m, h_2 = 10 m
h_1 =
1200 m
600 m
300 m
150 m
75 m
37.5 m
E dB rel to 1 µV/m
100 KMS
Logar. Teilung 1-100, Einheit 83,33 mm
Division 1-100, Unité 83,33 mm
Ed. Aerni-Leuch, Bern Nr. 527

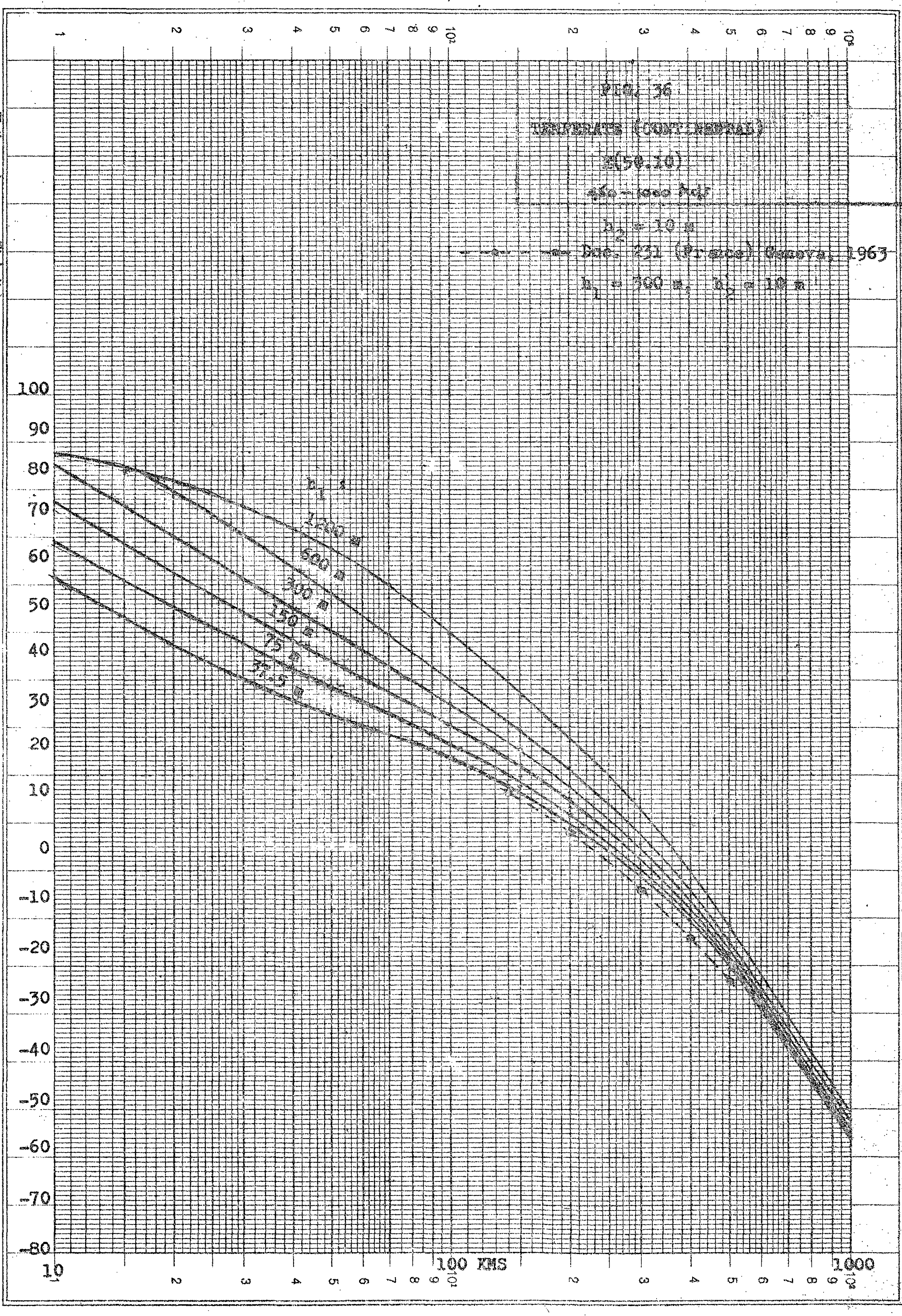
FIG. 36
TEMPERATE (CONTINENTAL)
E(50.10)
450 - 1000 Mc/s
h_2 = 10 m
Doc. 231 (France) Geneva, 1963
h_1 = 300 m, h_2 = 10 m
h_1 =
1200 m
600 m
300 m
150 m
75 m
37.5 m
dB rel 1 µV/m
100 KMS
Teilung Logar. Division } 1-100, Einheit Unité } 83,33 mm
Ed. Aerni-Leuch, Bern Nr. 527

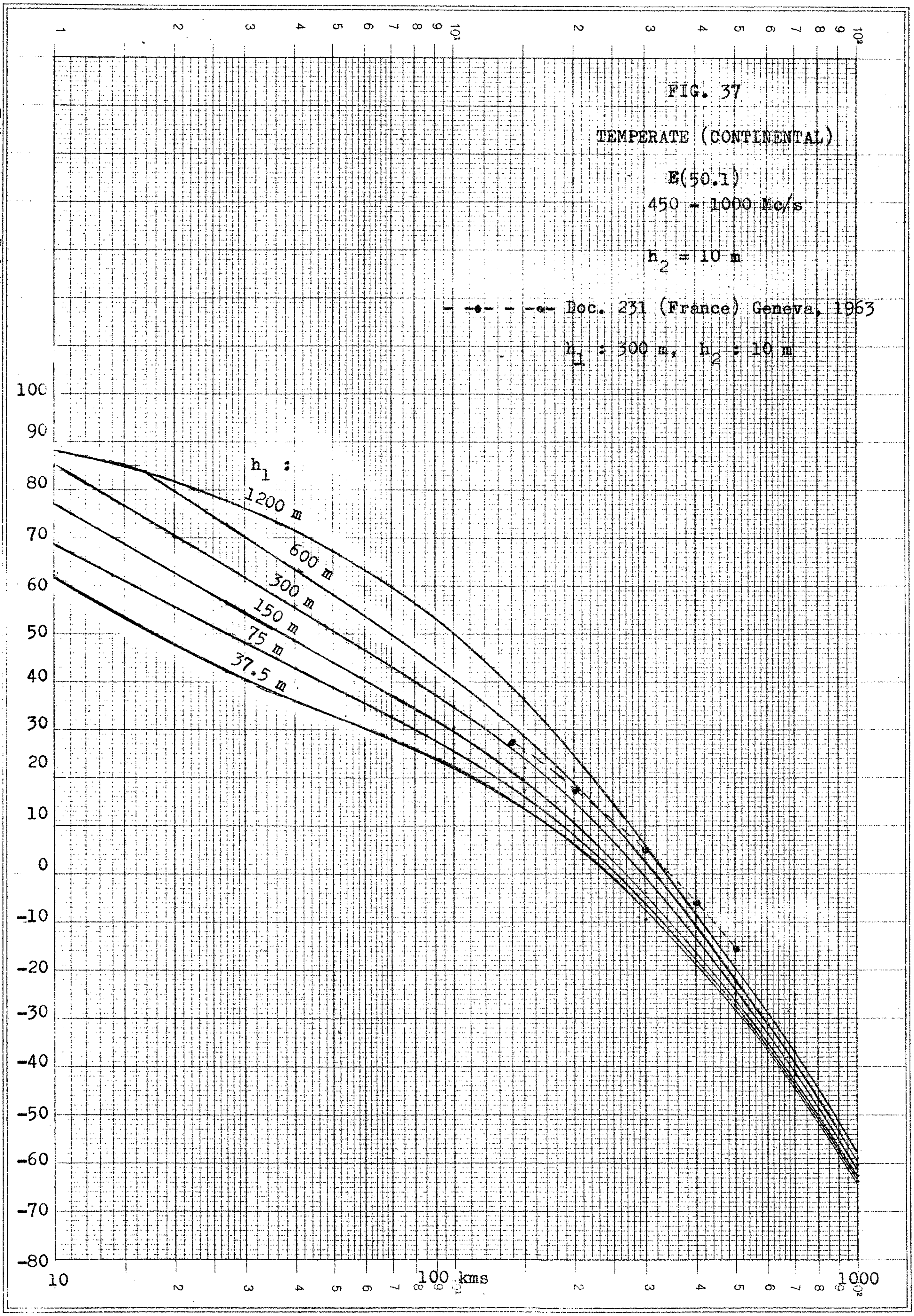
FIG. 37
TEMPERATE (CONTINENTAL)
E(50.1)
450 - 1000 Mc/s
h_2 = 10 m
Doc. 231 (France) Geneva, 1963
h_1 : 300 m, h_2 : 10 m
h_1 :
1200 m
600 m
300 m
150 m
75 m
37.5 m
E dB rel to 1 µV/m
100 kms
10
1000
Logar. Teilung Division } 1-100, Einheit Unité } 83,33 mm
Ed. Aerni-Leuch, Bern Nr. 527

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF/UHF
BROADCASTING CONFERENCE

GENEVA, 1963

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PLANNING OF TELEVISION IN BANDS IV and V

The annex to this document is an extract from the publication "Technical data used by the European VHF/UHF Broadcasting Conference, Stockholm, 1961". It is reproduced here for the information of the Delegations.

Annex : 1

PART 5

PLANNING OF TELEVISION IN BANDS IV AND V

5.1 Data to be taken into consideration in establishing a theoretical pattern of channel distribution

For planning purposes the following data have to be taken into consideration :

(a) total number of channels available;

(b) channel separations for co-sited transmitters;

(c) separation between channels likely to cause interference.

The types of separation between channels likely to cause interference are :

- co-channel without offset,
- co-channel with offset,
- channels giving rise to interference by radiation from local oscillators,
- adjacent channels,
- second (image) channels,
- channels giving rise to an intermediate frequency beat.

Differing views were expressed concerning the relative importance of these types of interference, but it was agreed that the separation distances for local oscillator, adjacent channel and image channel conditions should be of the same order of magnitude.

The table below indicates the channel separations which may give rise to interference in different cases.

Conditions necessary for the establishment of a theoretical lattice

System	Difference in channel numbers									
	2	3	4	5	6	7	8	9	10	11
K		i	o,i	i		od,s	s	s	od	
L	i	w	o	i	w		i	s		
H (Italy)			i	o,i	o,i			s		s
I		w		o	w			s	w	
G, H (others)		w	i	o,i	w			s		

o - oscillator

w - wanted separation for co-sited transmitters

s - second-channel

i - IF beat

d - double frequency-change

Note : The I.B.T.O. stress that the data in the table, line K, are for example only and would need to be confirmed.

5.2 Theoretical lattices used for planning in Bands IV and V

5.2.1 The attached Fig. 30 is the theoretical apportionment pattern for channels in Bands IV and V which was used as a basis for the preparation of a regional plan for channel use by the following countries: the Bielorussian Soviet Socialist Republic, the People's Republic of Bulgaria, the Hungarian People's Republic, the People's Republic of Poland, Eastern Germany, the Roumanian People's Republic, the Czechoslovak Socialist Republic, the Ukrainian Soviet Socialist Republic, and the Union of Soviet Socialist Republics.

5.2.2 After a comparison of the I.B.T.O. theoretical lattice and that of Fig. 31 (E.B.U. proposal), the experts of countries not belonging to the I.B.T.O. and those of Finland considered that the lattice in Fig. 31 might be a very suitable basis for planning.

The French experts consider that the lattice in Fig. 31 is also acceptable to France, since the lattice proposed by France could be deduced from it by changing a few details.

The Delegate of the United Kingdom also expressed the view that it would not be too difficult to meet the requirements of his country if the lattice in Fig. 31 were used as the basis for the preparation of a plan applicable to the whole of the continent.

5.2.3 The practical planning stage will have to be awaited for the matching of the I.B.T.O. and E.B.U. lattices, since no theoretical solution has been found. Sacrifices are necessary on both sides of the dividing line.

5.3 Practical application of theoretical patterns of channel distribution

The theoretical patterns for planning in Bands IV and V were used in the following way. The European Broadcasting Area is divided into quadrilaterals which meet certain conditions; one of these is that the number of transmitters (not transmitter sites) in each quadrilateral must not exceed the number of channels available in that region. By arranging for the number of transmitters to be 10% to 20% less, depending on the severity of conditions to be met (such as may be imposed by population density, topography or other factors) the flexibility required can be achieved. For instance, for regions in which a large number of satellites and low-powered transmitters are projected, the actual amount of this margin between the number of transmitters and the number of frequencies available would be greater than in other regions.

5.4 Definition of service area

The boundaries of a service area are given by the distances from the transmitter at which the field strength of the wanted signal at 50% of locations and 50% of the time has a value equal to that of the so-called "protected field strength", as determined by the method of Section 3.4.

The value of the protected field strength depends upon the grade of service chosen.

Three different grades of service : A, B and C were considered :

Grade	Percentage	
	Locations	Time
A	70%	99% *
B	50%	99% *
C	45%	90%

* If oversea propagation occurs, the value of 95% of the time may be taken instead of 99% of the time.

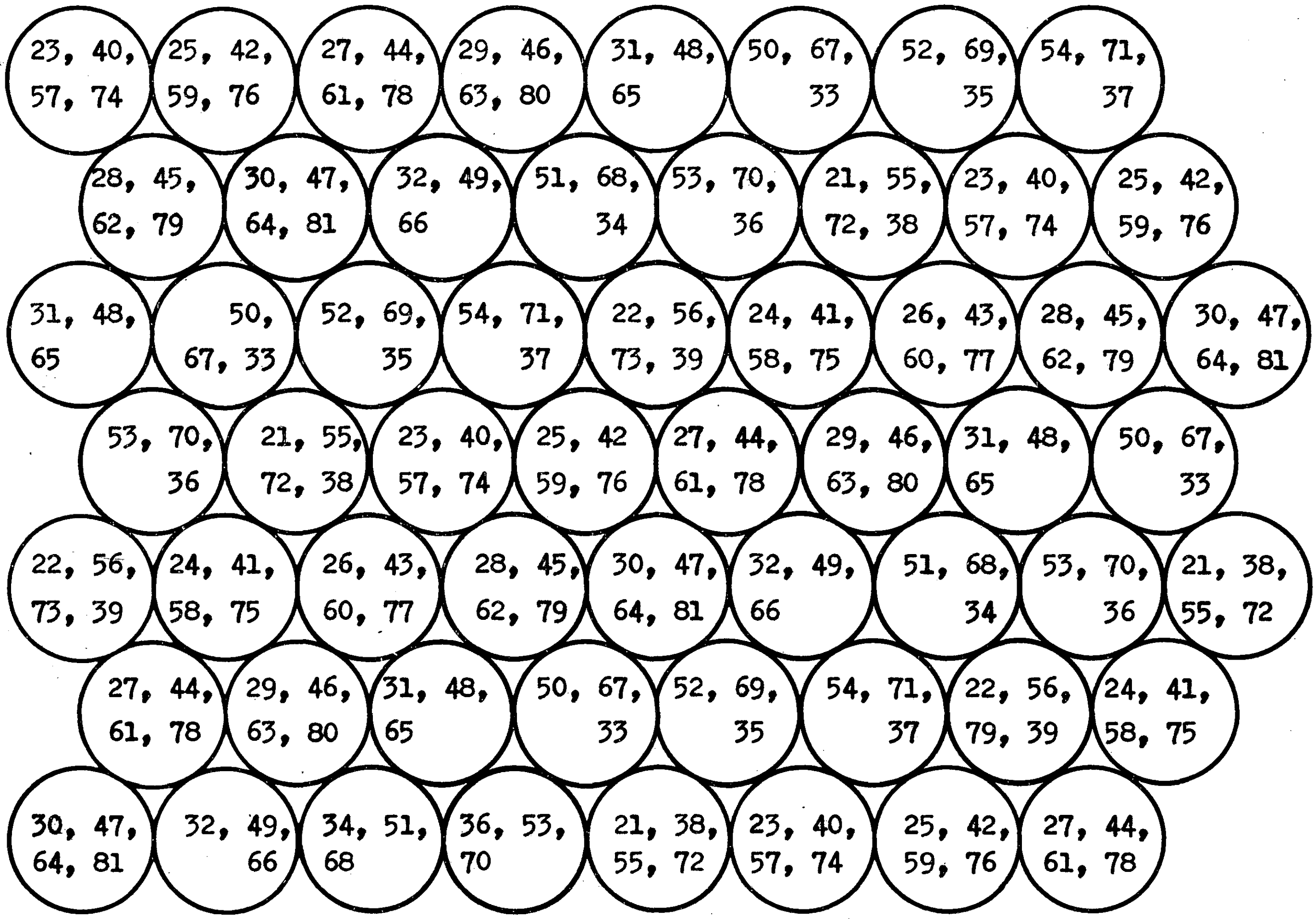

FIGURE 30

Theoretical apportionment of channels in Bands IV and V, in countries using the I.B.T.O. standard

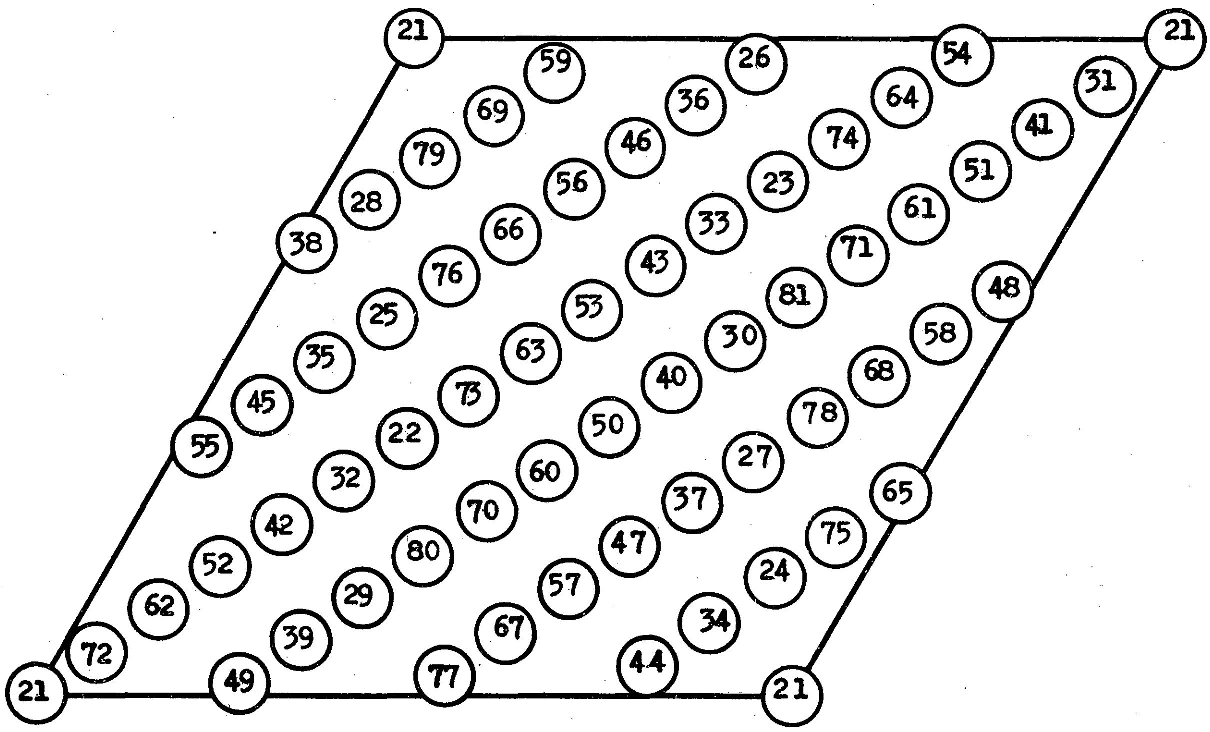

FIGURE 31

Theoretical apportionment of channels in Bands IV and V, proposed by the E.B.U.

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TECHNICAL DATA FOR USE IN THE PLANNING OF BROADCASTING SERVICES IN THE VHF (METRIC) AND UHF (DECIMETRIC) BANDS

The annexes to this document are extracts from the publication "Technical Data used by the European VHF/UHF Broadcasting Conference, Stockholm, 1961". They are reproduced here for the information of the Delegations.

Annexes : 2

ANNEX I

REPORT No. 122 *

ADVANTAGES TO BE OBTAINED BY USING ORTHOGONAL WAVE POLARIZATIONS IN THE PLANNING OF BROADCASTING SERVICES IN THE VHF (METRIC) AND UHF (DECIMETRIC) BANDS

Television and sound

(Question No. 101)
(Study Group No. XI)

(Warsaw, 1956 - Los Angeles, 1959)

Investigations have been conducted in several countries to ascertain the advantages which can be obtained in sound and television broadcasting by using polarization discrimination in reception. The results of extensive studies made in Europe by the Federal German Republic, France, Italy and the United Kingdom and also in the United States of America, have been made available in documents at Warsaw (1956) and Geneva (1958); and a reasonably definite answer may now be given to the question.

1. VHF (metric) band

In this band of frequencies between 30 and 300 Mc/s, the median value of discrimination that can be achieved at domestic receiving sites by the use of orthogonal polarization may be as much as 18 db, and under these conditions, the values exceeded at 90% and 10% of the receiving sites are about 10 db and 25 db respectively.

The values of discrimination are likely to be better in open country and worse in built-up areas or places where the receiving antenna is surrounded by obstacles. For domestic installations in densely populated districts the median values of 18 db will usually only be realized at roof level; and this value may be reduced to 13 db or less at street level.

No significant changes in the polarization of metric waves due to transmission through the troposphere have been observed over distances exceeding 200 km. Furthermore, there have been no reports of systematic changes in polarization effects with frequency in the metric band, nor with distance nor type of terrain.

It must be emphasized, however, that in order to realise the discrimination ratios mentioned above, certain precautions are necessary at both the transmitting and receiving installations; cases have been reported in which for a transmitter of horizontally polarized waves, some 7% of the radiated power was

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* This Report, which replaces Report No. 85, was adopted unanimously.

vertically polarized. It is clear that if the best discrimination is to be obtained for co-channel operation, the transmitters and antenna systems must be designed and installed so as to radiate as much as possible of the total power on the assigned polarization.

In the same way, in order to achieve the desired discrimination at the home receiving installation, the reception of the undesired orthogonally polarized waves on the antenna feeder and on the receiver itself must be reduced to the minimum practicable value.

2. UHF (decimetric) band

Experiments have been conducted in the United Kingdom using horizontally polarized radiation on a frequency of about 500 Mc/s. Systematic measurements were made to determine the polarization discrimination at typical urban and rural sites at distances up to about 55 km from the transmitter. The results showed that the discrimination obtained is similar to that already described above for frequencies in the VHF band, although the factor exceeded for 90% of the receiving sites was only 8 db (as compared with 10 db for VHF). It is to be noted, however, that the transmitting antenna in use had considerable directivity, and there was a marked decrease in the polarization discrimination for directions of reception some 40° away from the direction of maximum radiation.

As in the VHF band, care is necessary to ensure that the transmitter and receiver respectively do not emit or receive radiation of the undesired polarization. Apart from this, however, experience indicates that in the UHF band, the use of horizontal polarization offers advantages, because of the greater directivity obtainable at the receiving antennae; this reduces the effect of reflected waves, particularly in town areas. The European Broadcasting Union, therefore, considers that frequency assignments in these bands should be based on the general use of horizontal polarization, though exceptions may be made in cases where orthogonal polarization is necessary to achieve the desired protection.

3. Conclusion

From the studies described above, it is clear that the use of orthogonal polarization for broadcasting stations operating in the same frequency channel is of material assistance in discriminating against the reception of undesired signals. Worth-while advantages are obtainable over the whole band of frequencies from 40 to 500 Mc/s and within the normal broadcasting service ranges. From the uniformity of the discrimination obtained over these frequencies, it is considered to be almost certain that the advantages will extend to the top of the UHF broadcasting band at nearly 1000 Mc/s.

This Report is considered to provide a sufficient answer to Question No. 101 for practical use, and this Question should now be concluded.

Bibliography : Documents Nos. 267, 435 and 512 (Warsaw, 1956)
Documents Nos. V/1, V/6, V/12, V/23 and V/27 (Geneva, 1958).

ANNEX II

THE INFLUENCE ON PROTECTED FIELD STRENGTH AND COVERAGE OF REDUCING THE CARRIER FREQUENCY SPACING IN A VHF SOUND BROADCASTING NETWORK

The following is a summary of theoretical and practical work carried out in the Federal Republic of Germany:

The protected field strengths and coverage for a series of hypothetical VHF sound broadcasting networks of regular geometrical shape, with various separations of the channel carrier frequencies, have been calculated. A constant value for the power of the transmitters has been assumed, but this has no influence on the result if the extent of the service area is determined by interference from other transmitters rather than by receiver noise. Four different distances between transmitters (30, 35, 40 and 45 km) and four aerial heights (75, 150, 300 and 600 m) were used for these calculations.

Similar calculations were subsequently carried out for the 168 VHF transmitters in the Federal Republic of Germany, using the powers, distances between transmitters and aerial heights actually existing.

If a smaller separation between the carrier frequencies of adjacent channels is used, the number of channels available in a given frequency band is increased. Thus, if the frequency separation is decreased from 300 kc/s, at present used in the Federal Republic of Germany, to 100 kc/s, the number of channels available is multiplied by a factor of three, and this implies that, on average, the distance between co-channel transmitters may be increased by a factor $\sqrt{3}$, and interference between these transmitters will be decreased accordingly. On the other hand, interference from stations in channels separated by 100 or 200 kc/s from the wanted channel will arise.

The result of these calculations is to show a considerable decrease of the protected field strength, and therefore an important improvement of coverage when the carrier frequency separation is reduced from 300 kc/s to a smaller value. The optimum spacing was found to be of the order of 100 kc/s but the exact value is not critical.

In order to verify this theoretical work, a frequency plan, using separations of 100 kc/s was drafted, and 25 transmitters in the Federal Republic of Germany were assigned frequencies in the range of ± 500 kc/s relative to the frequency of one of them which was considered to be the wanted station. The frequencies of these transmitters were changed in accordance with the 100 kc/s plan during the night hours for a period of two weeks. To make allowance for interference from transmitters situated in neighbouring countries, the power of certain transmitters near the borders was increased.

All transmitters were modulated with normal programme material, except the wanted transmitter, which transmitted a special programme particularly susceptible to interference. This transmitter was situated approximately in the centre of the network used for the tests, and its service area is practically flat to the north and hilly or mountainous to the south.

Field strengths were measured and subjective assessments of the quality of the received programme were made throughout the whole service area of the wanted station. The calculated increase of the service area was confirmed by these measurements and observations, and no additional interference effects were observed.

INTERNATIONAL TELECOMMUNICATION UNION

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BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 10-E
29 April 1963
Original: English

COMMITTEE 4

CONTRIBUTION OF THE C.C.I.R.

During the Xth Plenary Assembly of the C.C.I.R., Geneva, 1963, a draft Report was prepared containing propagation curves for VHF/UHF broadcasting in the African continent. This draft was passed through the Drafting Committee and presented to the Plenary Assembly for approval as Document 2292. This document was not formally approved by the Plenary Assembly as certain differences of opinion were found to exist with regard to certain of the curves.

To resolve this divergence of opinion, a small Working Party was set up to prepare curves which were mutually satisfactory to all parties and to prepare a revised version of Document 2292 for circulation to all Administrations with a view to its adoption by correspondence.

This revised document was received in the C.C.I.R. Secretariat on the 26 April 1963.

Since the African Broadcasting Conference is scheduled to begin on 29 April, it will of course be impossible for the C.C.I.R. to have this document formally approved in time for submission to the Conference. However, in view of the importance of the contents of this document, and the improbability that any significant modifications will be made to it during the course of its approval by correspondence, the Director of the C.C.I.R. has requested the issue of this text as a document of the Conference.

Annex: 1

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ANNEX

Xth Plenary Assembly
C.C.I.R.
GENEVA, 1963

Doc. 2292-E(Rev.)
3 April, 1963
page 1

REPORT 240

PROPAGATION CURVES FOR VHF/UHF BROADCASTING IN THE AFRICAN CONTINENT

(Geneva, 1963)

1. Introduction

It is now well known that radio field strengths depend upon climatic conditions. The C.C.I.R. curves (Recommendation 370) refer primarily to temperate continental climates and will therefore only apply in limited regions of the African continent. Although data for other types of climate are somewhat sparse it is possible to give an estimate of the modifications to the above C.C.I.R. curves required to make them applicable, at least approximately, to other parts of Africa.

2. African climates

For convenience Africa has been divided into regions, as shown in Fig. 1, each of which corresponds to a fairly well defined type of climate. The classification is as follows:

1. Temperate (Mediterranean)
2. Desert (Saharan)
3. Sub-tropical (Continental)
4. Sub-tropical (Maritime)
5. Equatorial
6. Temperate (Continental)

It should be noted that these divisions are somewhat arbitrary and that the classification of radio climates is not necessarily the same as that of meteorological climates even though the terminology is comparable. Furthermore, it is clear that the boundaries between the various regions will be ill-defined; and guidance on the estimation of propagation conditions for paths near to a boundary or covering more than one climatic region, can be obtained from Report 233. A precise definition of these climates depends on an average of available data. In the preparation of propagation curves, some random path-to-path differences have undoubtedly been ascribed to climatic differences. Each set of curves is, however, the best estimate presently available.

3. Presentation of curves

Figs. 2 to 37 present curves of field strength as a function of distance for the VHF/UHF broadcasting bands, and give for 50% of receiving locations the field strength exceeded for at least 50%, 10% and 1% of the time. The curves have been drawn for a power of 1 kW radiated from a half-wave dipole*. In using these curves for practical planning, the general considerations contained in Annexes I and II to Recommendation 370 and in Report 233 may be considered applicable.

When a transmission path crosses one of the climatic boundaries, interpolation may be made between the curves corresponding to the two regions proportionally (in db) according to the fractions of the path contained in each of the regions.

With respect to the VHF bands (450-1000 Mc/s), the experimental data contained in Doc. 5/45 (France) of Geneva 1962, and the curves of Doc. 231 (France) of Geneva 1963, were normalized and extrapolated by theoretical methods, taking into account information about meteorological conditions in Africa.

The curves corresponding to the UHF band (Figs. 20-37) have been drawn for a frequency close to 700 Mc/s, considered representative of the whole of the band 450-1000 Mc/s, since the available experimental results are insufficient to justify separate predictions for different frequencies in the band.

With respect to the VHF band (40-250 Mc/s), experimental data for Africa are even less numerous. Measurements have been made by the French Administration at a frequency close to 100 Mc/s, but only along the west coast of Africa between approximately the 10th and 22nd parallels. The estimates for the VHF band were deduced from radiometeorological considerations and comparisons with data from other regions of the world.

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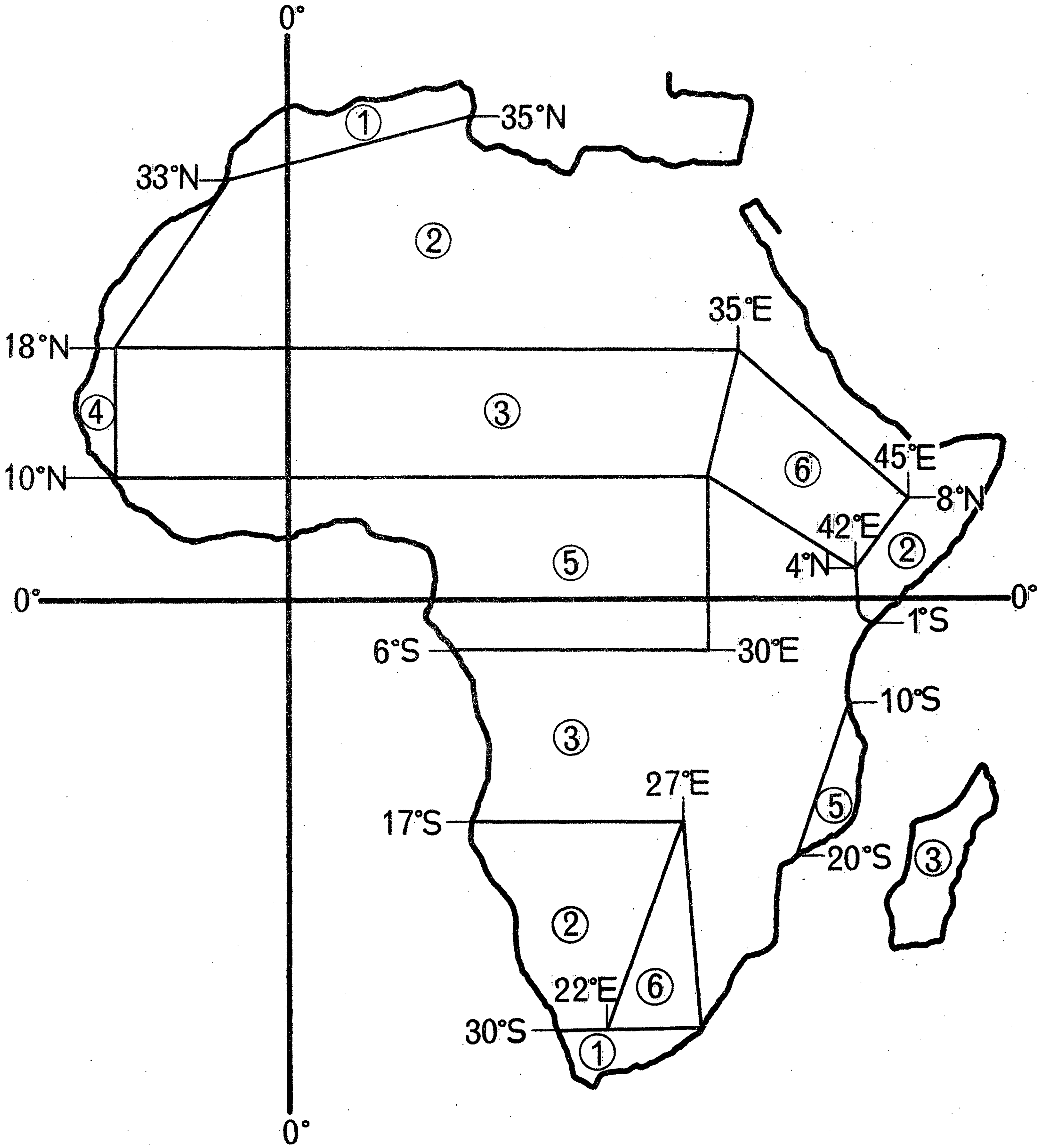
* Each figure also shows the free space field strength, $E = 106{,}9 - 20 \log_{10} d$, d being expressed in kilometres.

Especially as regards curves for the VHF band (Figs. 2-19), it must be emphasized that they apply only to propagation by tropospheric mechanisms. Particularly in equatorial regions, propagation by way of the ionosphere is important at the lower frequencies in the VHF band. It is therefore likely that higher field strengths will occur at long ranges more often at frequencies below about 60 Mc/s than is indicated by the curves in this Report; and this factor must be borne in mind in planning broadcasting for such frequencies.



0°
①
35°N
33°N
②
35°E
18°N
④
③
45°E
10°N
⑥
8°N
42°E
⑤
②
4°N
0°
0°
1°S
6°S
30°E
10°S
③
27°E
17°S
⑤
20°S
③
②
22°E
⑥
30°S
①
0°

Fig. 1

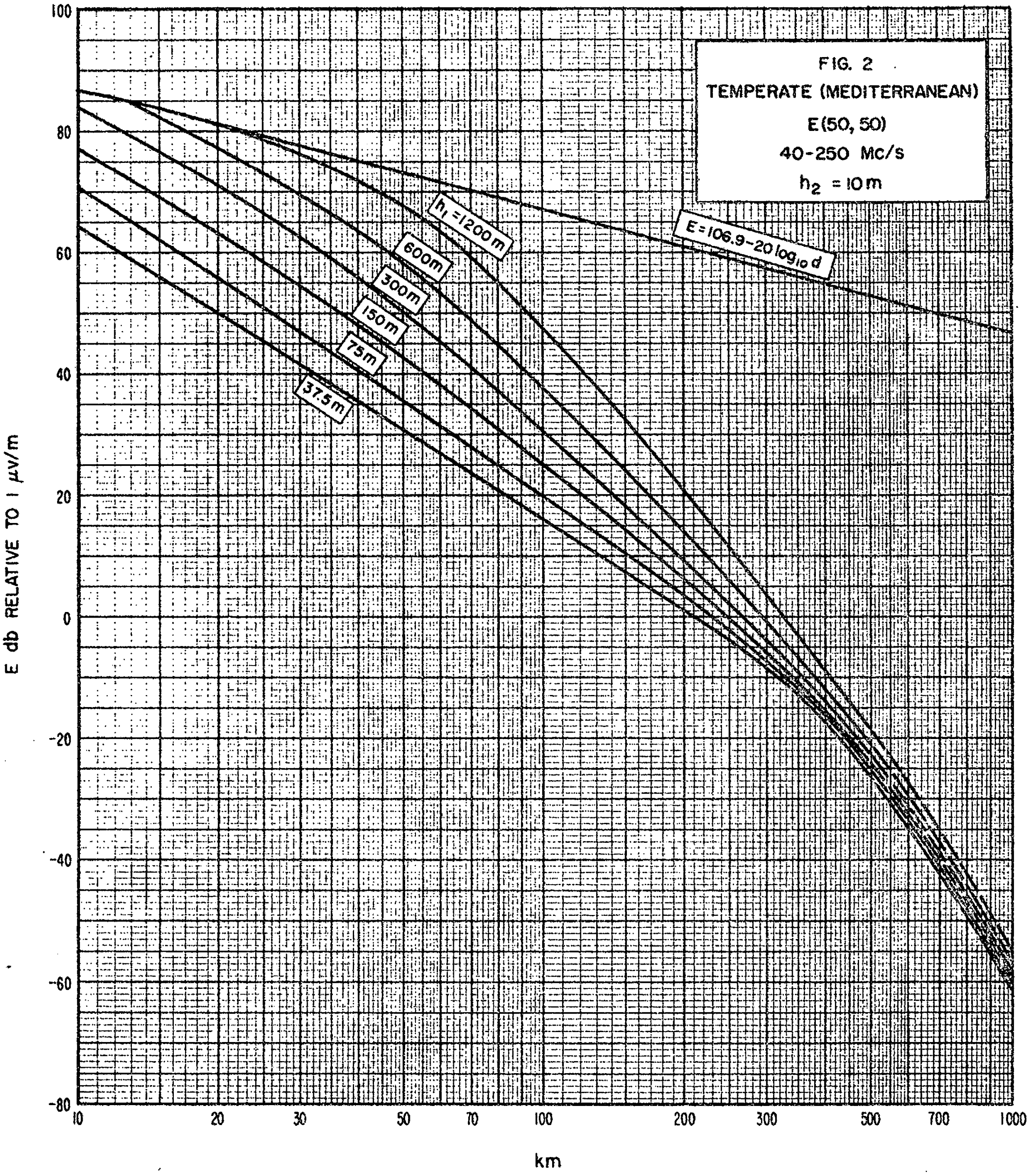


FIG. 2
TEMPERATE (MEDITERRANEAN)
E(50, 50)
40-250 Mc/s
h_2 = 10 m
$E = 106.9 - 20 \log_{10} d$
h_1 = 1200 m
600m
300m
150m
75m
37.5m
E db RELATIVE TO 1 μv/m
100
80
60
40
20
0
-20
-40
-60
-80
10
20
30
50
70
100
200
300
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km

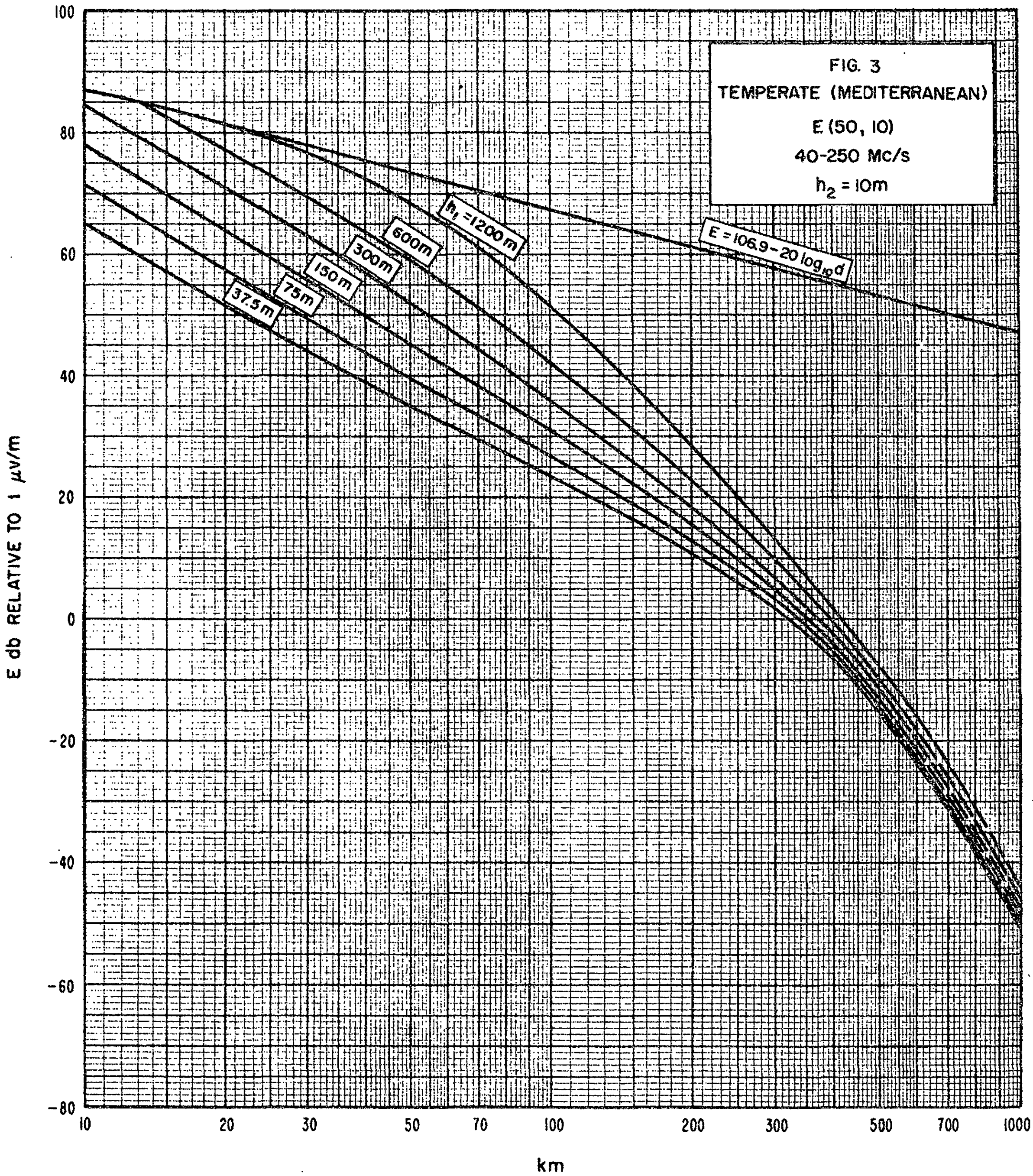

FIG. 3
TEMPERATE (MEDITERRANEAN)
E (50, 10)
40-250 Mc/s
h_2 = 10m
h_1 =1200 m
600m
300m
150m
75m
37.5m
$E = 106.9 - 20 \log_{10} d$
E db RELATIVE TO 1 μv/m
100
80
60
40
20
0
-20
-40
-60
-80
10
20
30
50
70
100
200
300
500
700
1000
km

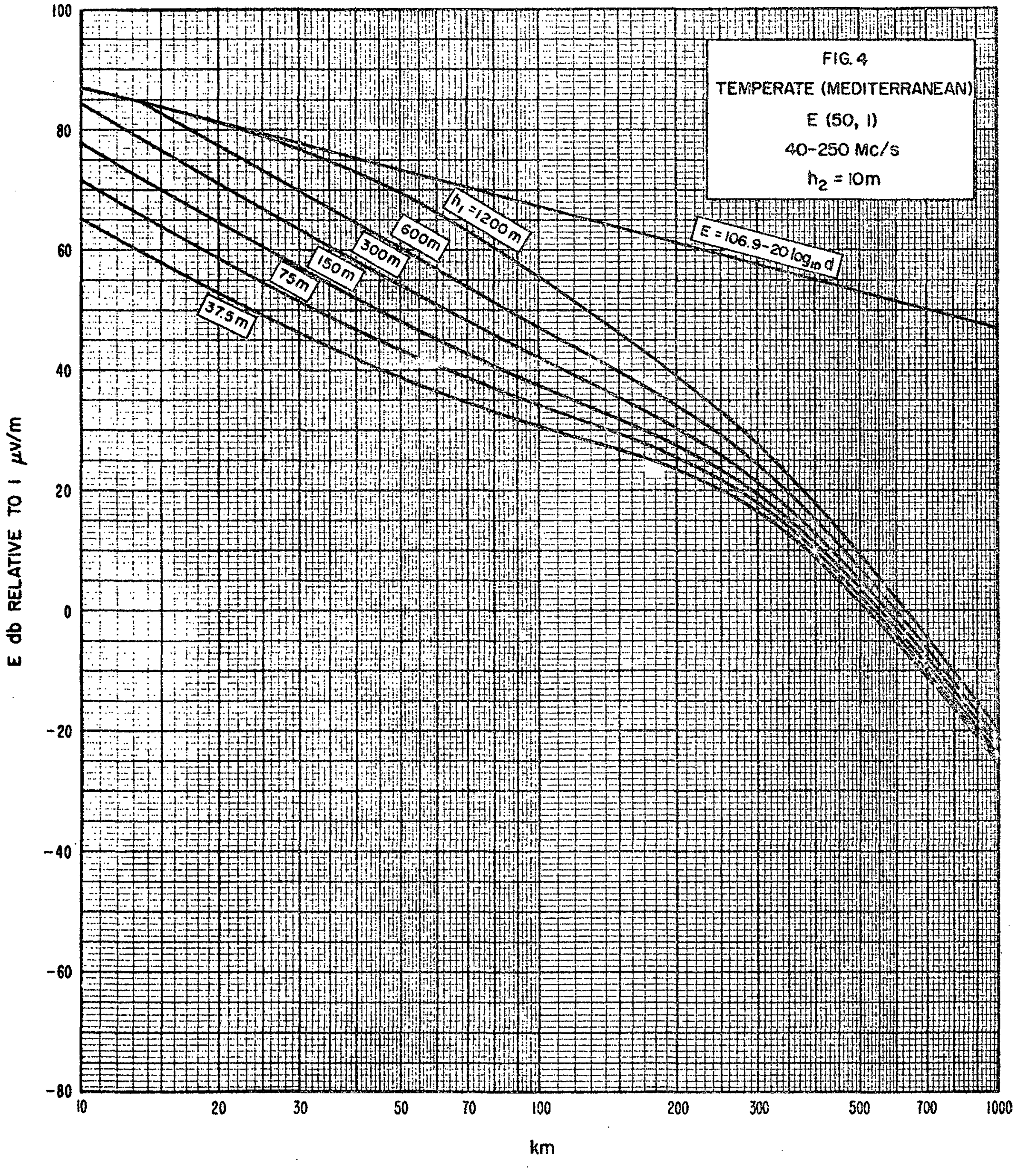
FIG. 4
TEMPERATE (MEDITERRANEAN)
E (50, 1)
40-250 Mc/s
h_2 = 10m
h_1 = 1200 m
600m
300m
150m
75m
37.5m
$E = 106.9 - 20 \log_{10} d$
E db RELATIVE TO 1 μV/m
km
100
80
60
40
20
0
-20
-40
-60
-80
10
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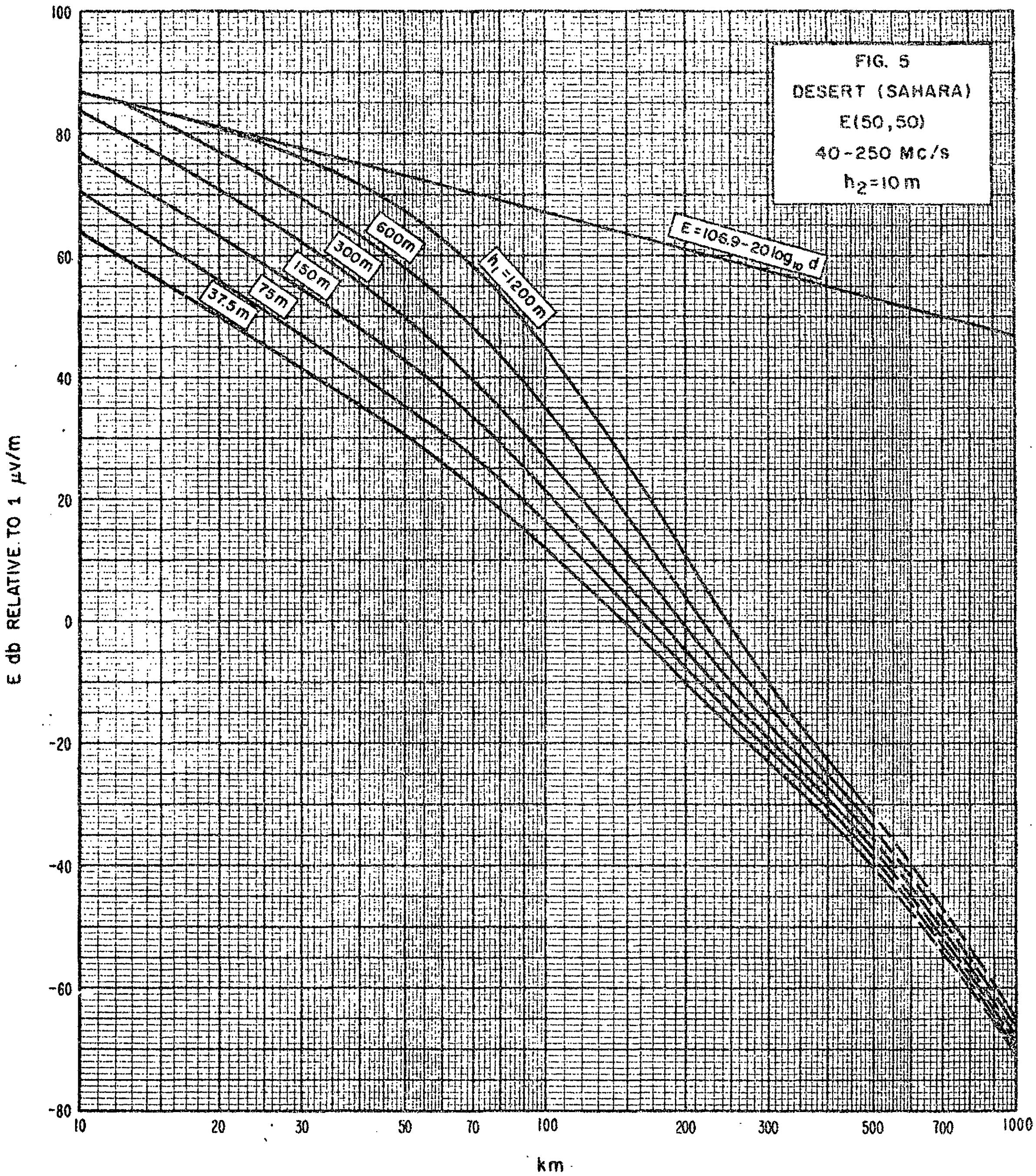
FIG. 5
DESERT (SAHARA)
E(50,50)
40-250 Mc/s
h2=10 m
E=106.9-20 log10 d
h1=1200 m
600m
300m
150m
75m
37.5m
E db RELATIVE TO 1 μv/m
km
100
80
60
40
20
0
-20
-40
-60
-80
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500
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1000

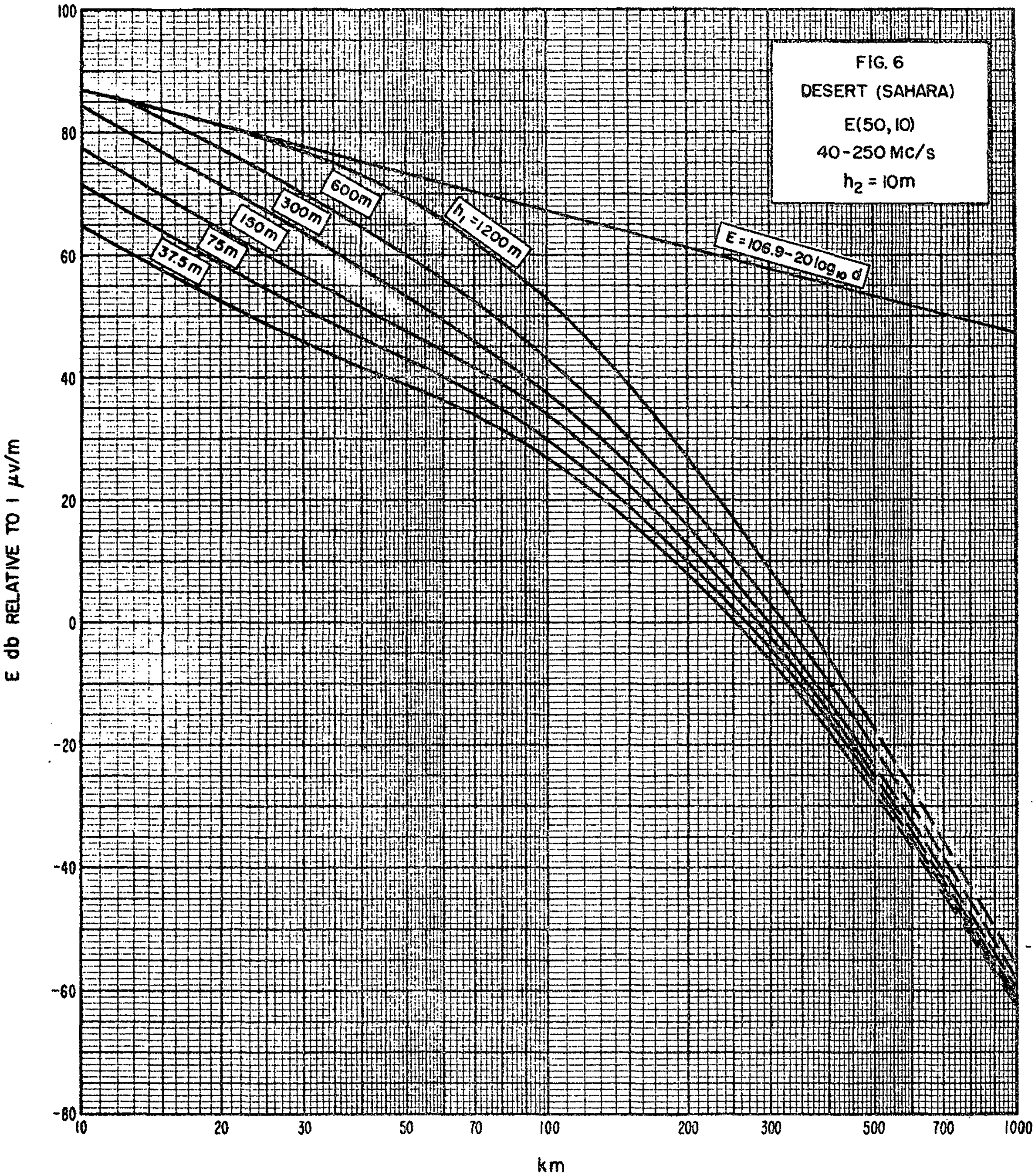
FIG. 6
DESERT (SAHARA)
E(50, 10)
40-250 Mc/s
h_2 = 10m
h_1 = 1200 m
600m
300m
150m
75m
37.5m
$E = 106.9 - 20 \log_{10} d$
E db RELATIVE TO 1 μv/m
km
100
80
60
40
20
0
-20
-40
-60
-80
10
20
30
50
70
100
200
300
500
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1000

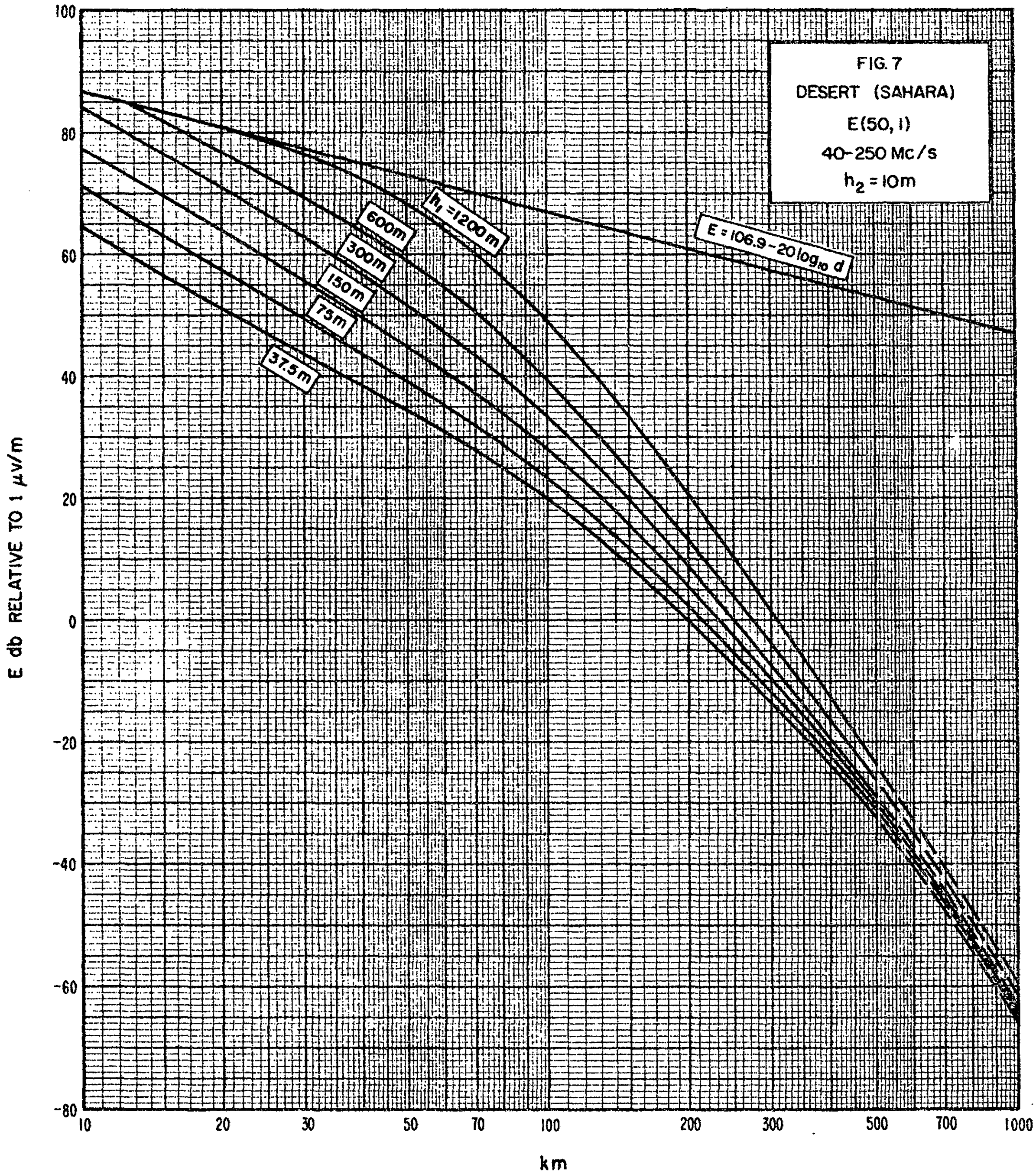
FIG. 7
DESERT (SAHARA)
E(50, 1)
40-250 Mc/s
h_2 = 10m
h_1 = 1200 m
600m
300m
150m
75m
37.5m
E = 106.9 - 20 $\log_{10}$ d
E db RELATIVE TO 1 µv/m
km
100
80
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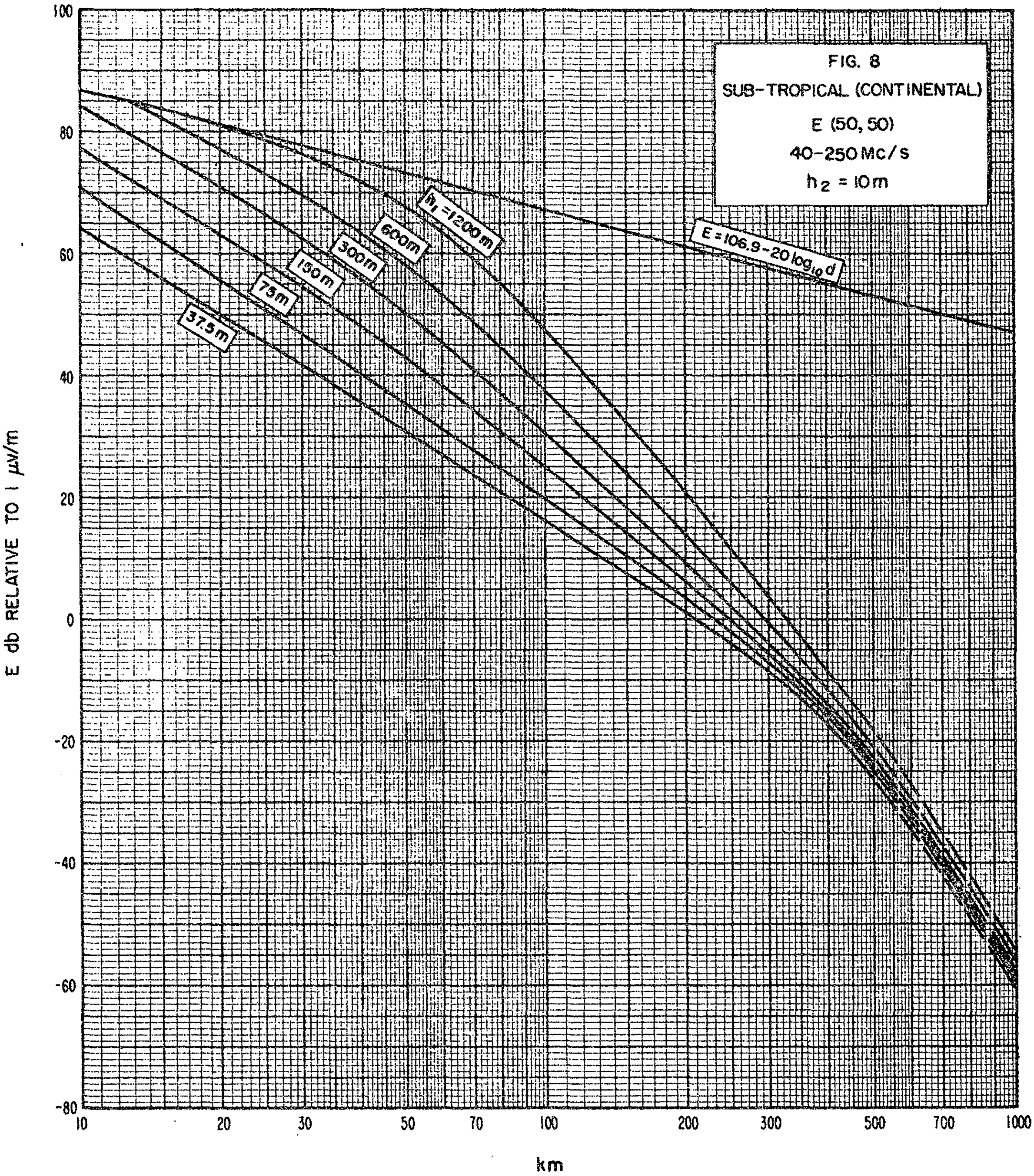
FIG. 8
SUB-TROPICAL (CONTINENTAL)
E (50, 50)
40-250 Mc/s
h2 = 10 m
h1 = 1200 m
600 m
300 m
150 m
75 m
37.5 m
E = 106.9 - 20 log10 d
E db RELATIVE TO 1 μv/m
km
100
80
60
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-20
-40
-60
-80
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50
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700
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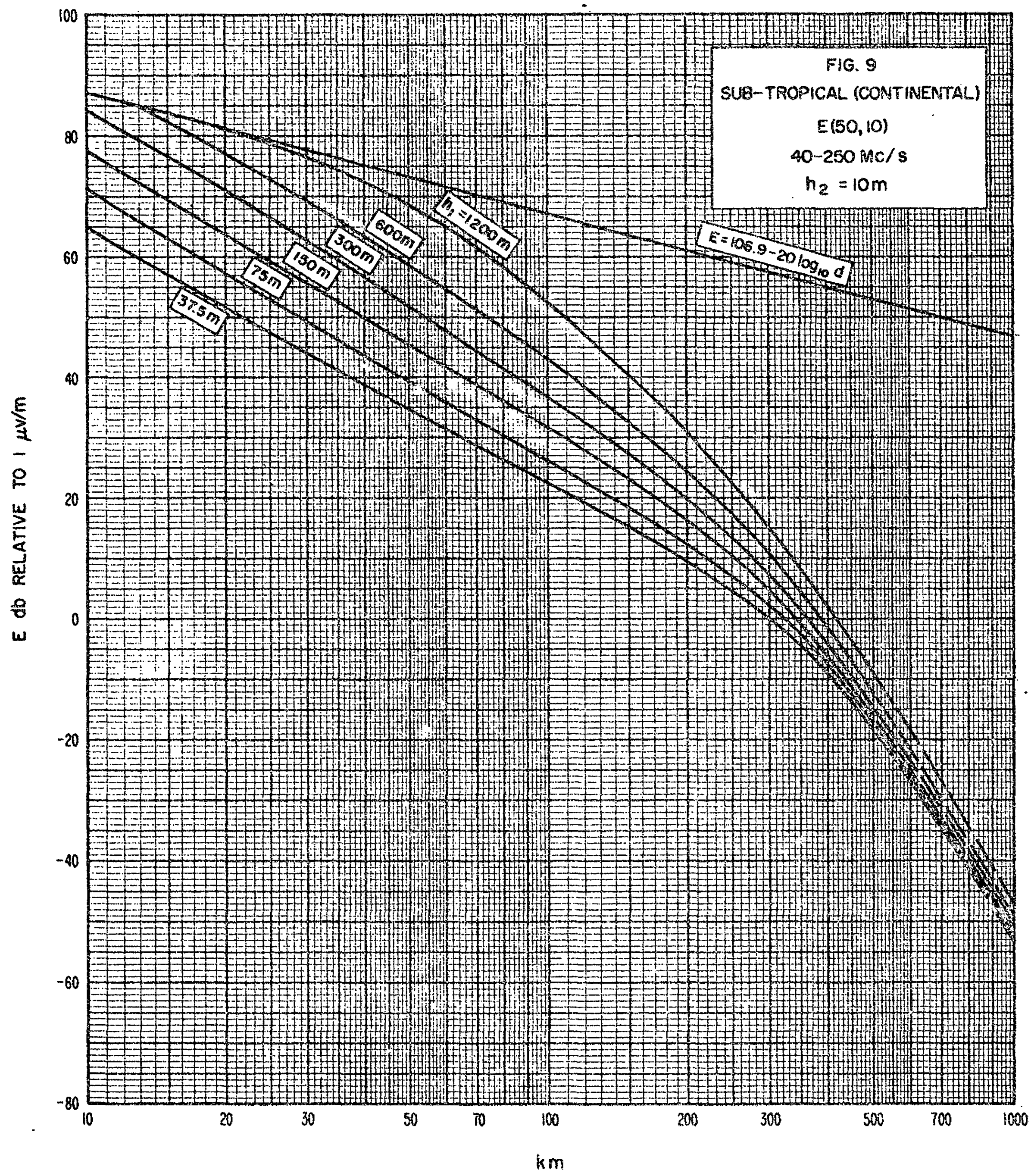
FIG. 9
SUB-TROPICAL (CONTINENTAL)
E(50,10)
40-250 Mc/s
h2 = 10m
h1 = 1200m
600m
300m
150m
75m
37.5m
E = 106.9 - 20 log10 d
E db RELATIVE TO 1 μv/m
100
80
60
40
20
0
-20
-40
-60
-80
10
20
30
50
70
100
200
300
500
700
1000
km

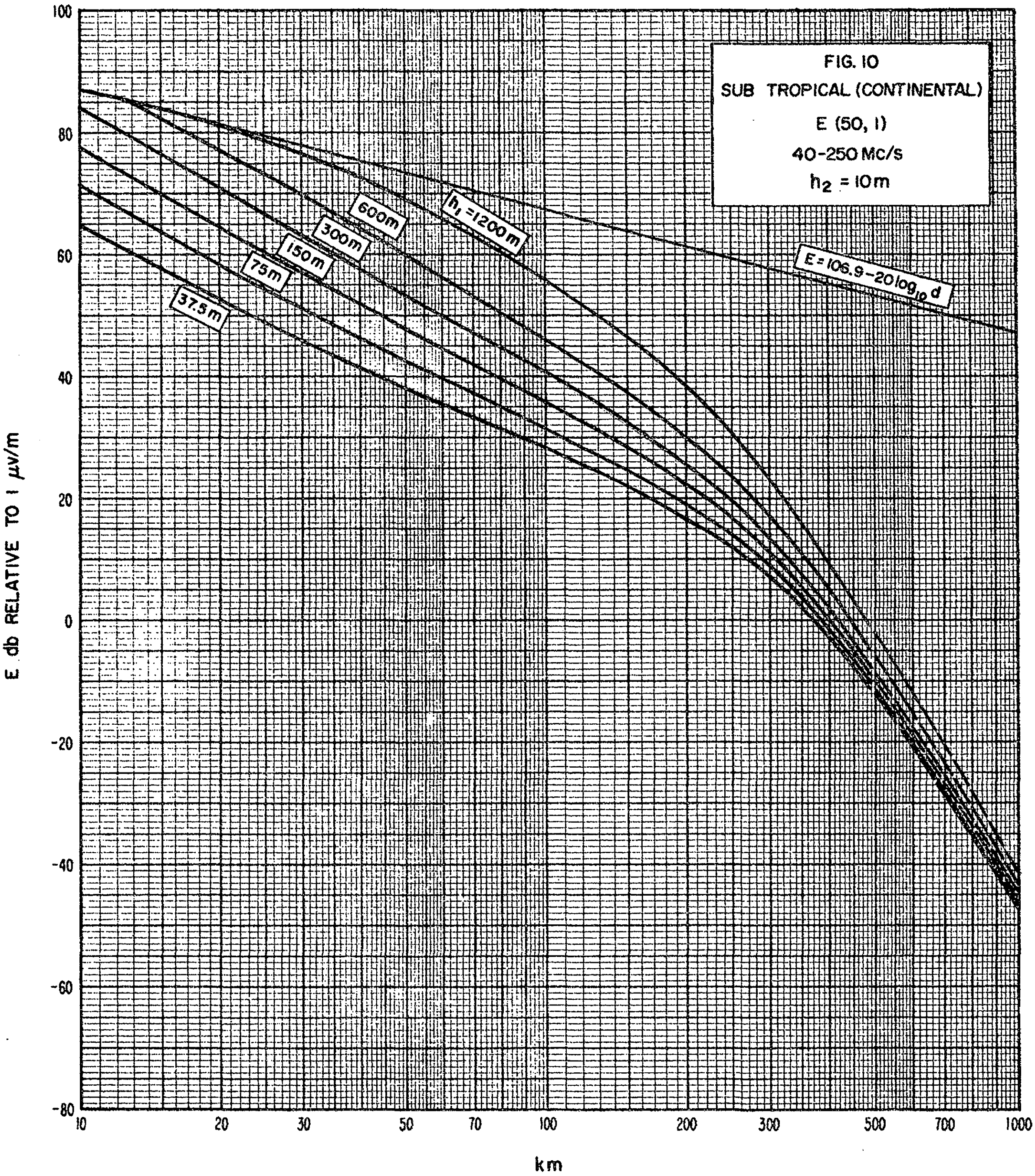
FIG. 10
SUB TROPICAL (CONTINENTAL)
E (50, 1)
40-250 Mc/s
h_2 = 10 m
h_1 = 1200 m
600 m
300 m
150 m
75 m
37.5 m
$E = 106.9 - 20 \log_{10} d$
E db RELATIVE TO 1 μv/m
km
100
80
60
40
20
0
-20
-40
-60
-80
10
20
30
50
70
100
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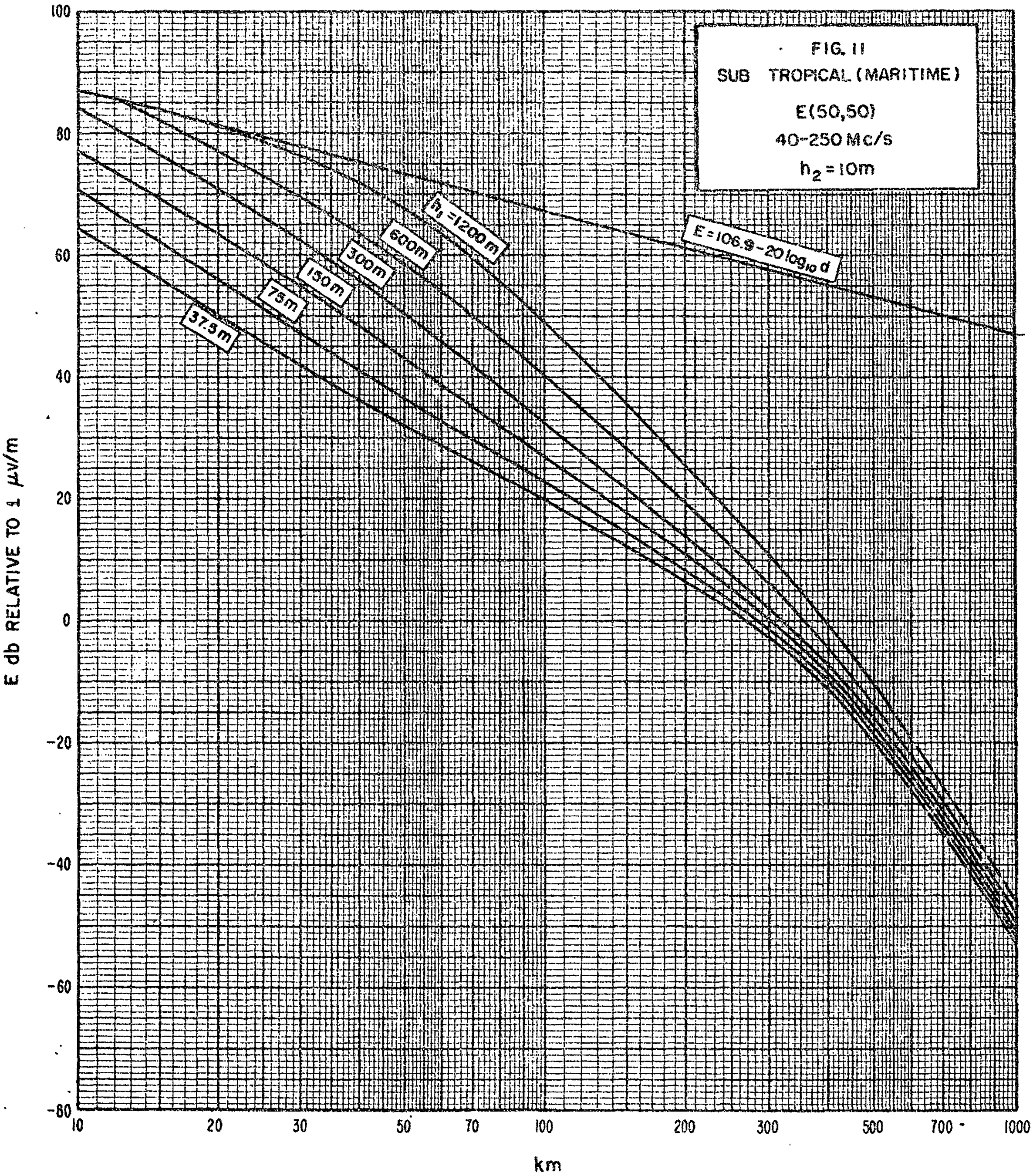
FIG. 11
SUB TROPICAL (MARITIME)
E(50,50)
40-250 Mc/s
h_2 = 10m
h_1 = 1200 m
600m
300m
150m
75m
37.5m
E = 106.9 - 20 $\log_{10}$ d
E db RELATIVE TO 1 μv/m
100
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km

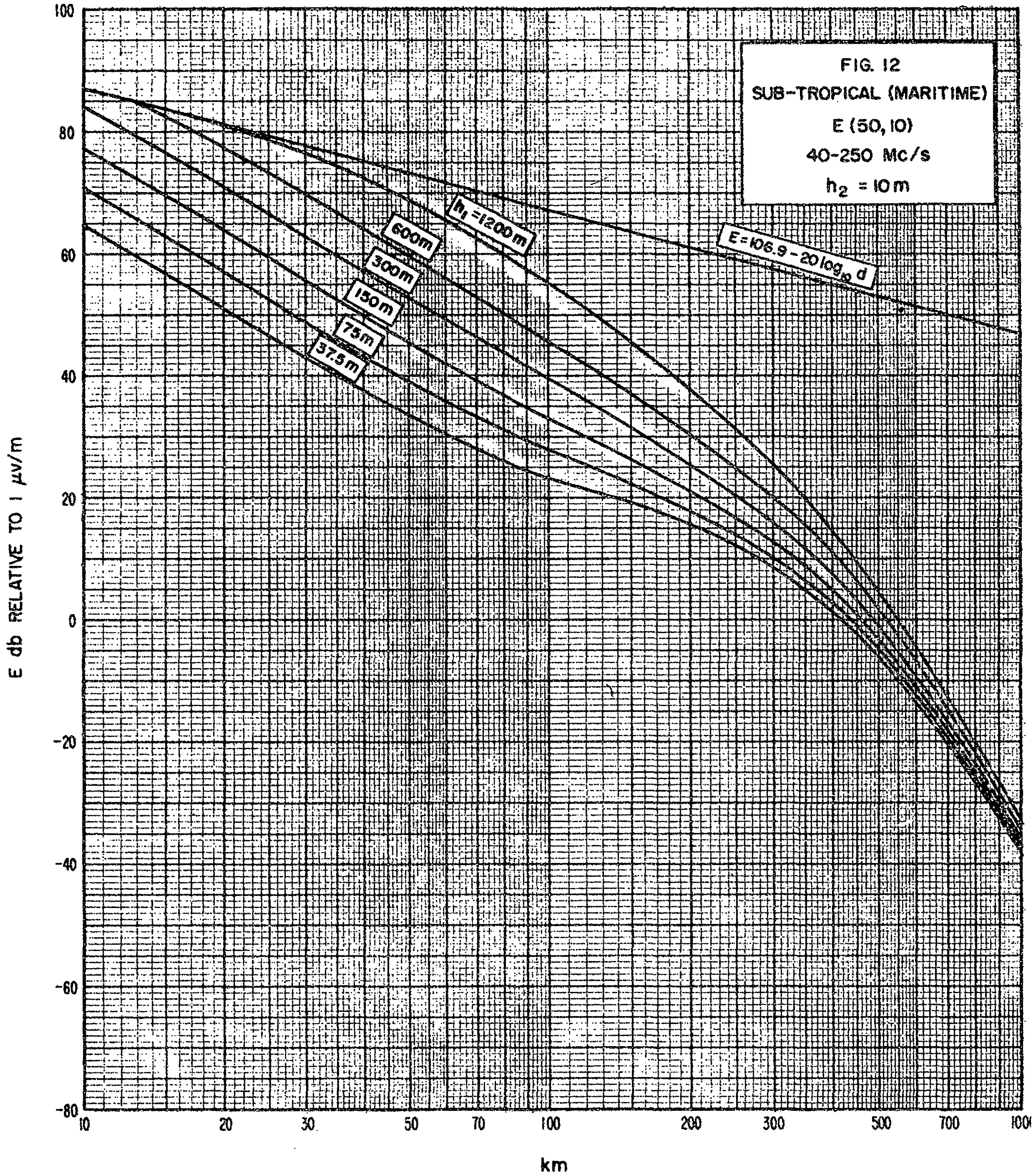
FIG. 12
SUB-TROPICAL (MARITIME)
E (50, 10)
40-250 Mc/s
h_2 = 10 m
h_1 = 1200 m
600 m
300 m
150 m
75 m
37.5 m
$E = 106.9 - 20 \log_{10} d$
E db RELATIVE TO 1 µv/m
km
100
80
60
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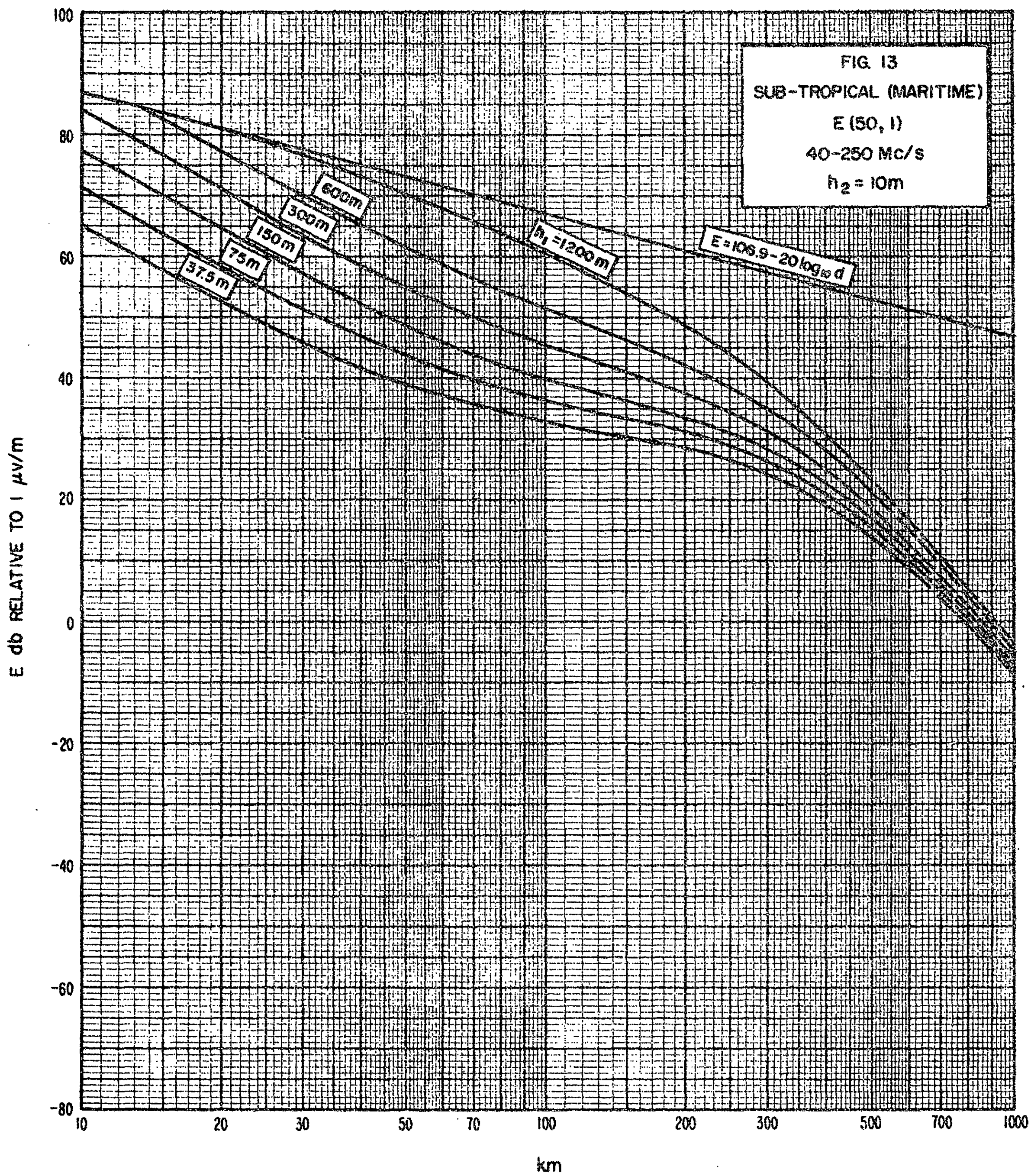

FIG. 13
SUB-TROPICAL (MARITIME)
E (50, 1)
40-250 Mc/s
h_2 = 10m
600m
300m
150m
75m
37.5m
h_1 =1200m
$E = 106.9 - 20 \log_{10} d$
E db RELATIVE TO 1 μv/m
100
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km

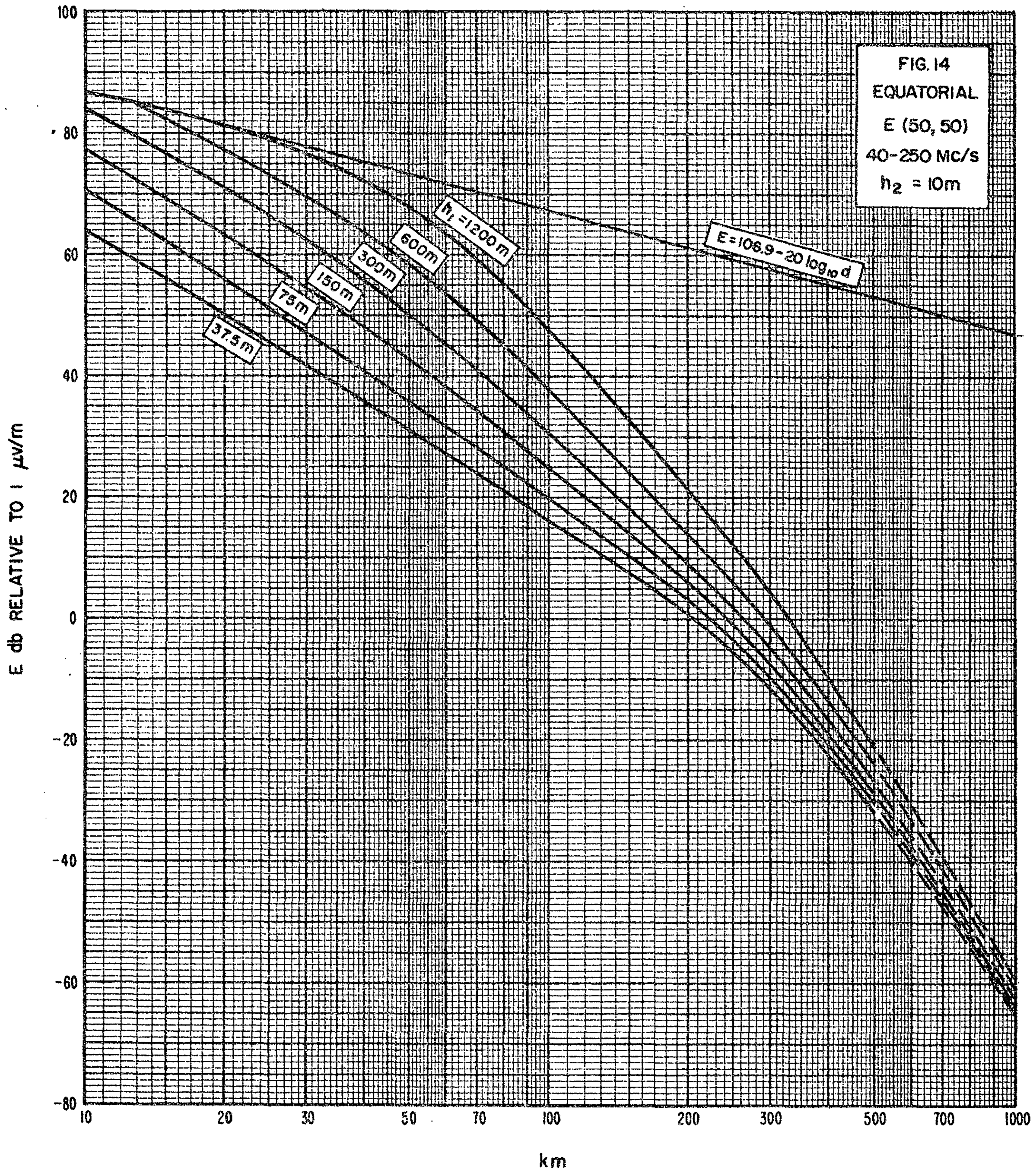
FIG. 14
EQUATORIAL
E (50, 50)
40-250 Mc/s
h_2 = 10m
h_1 = 1200 m
600m
300m
150m
75m
37.5m
E = 106.9 - 20 $\log_{10}$ d
E db RELATIVE TO 1 μV/m
km
100
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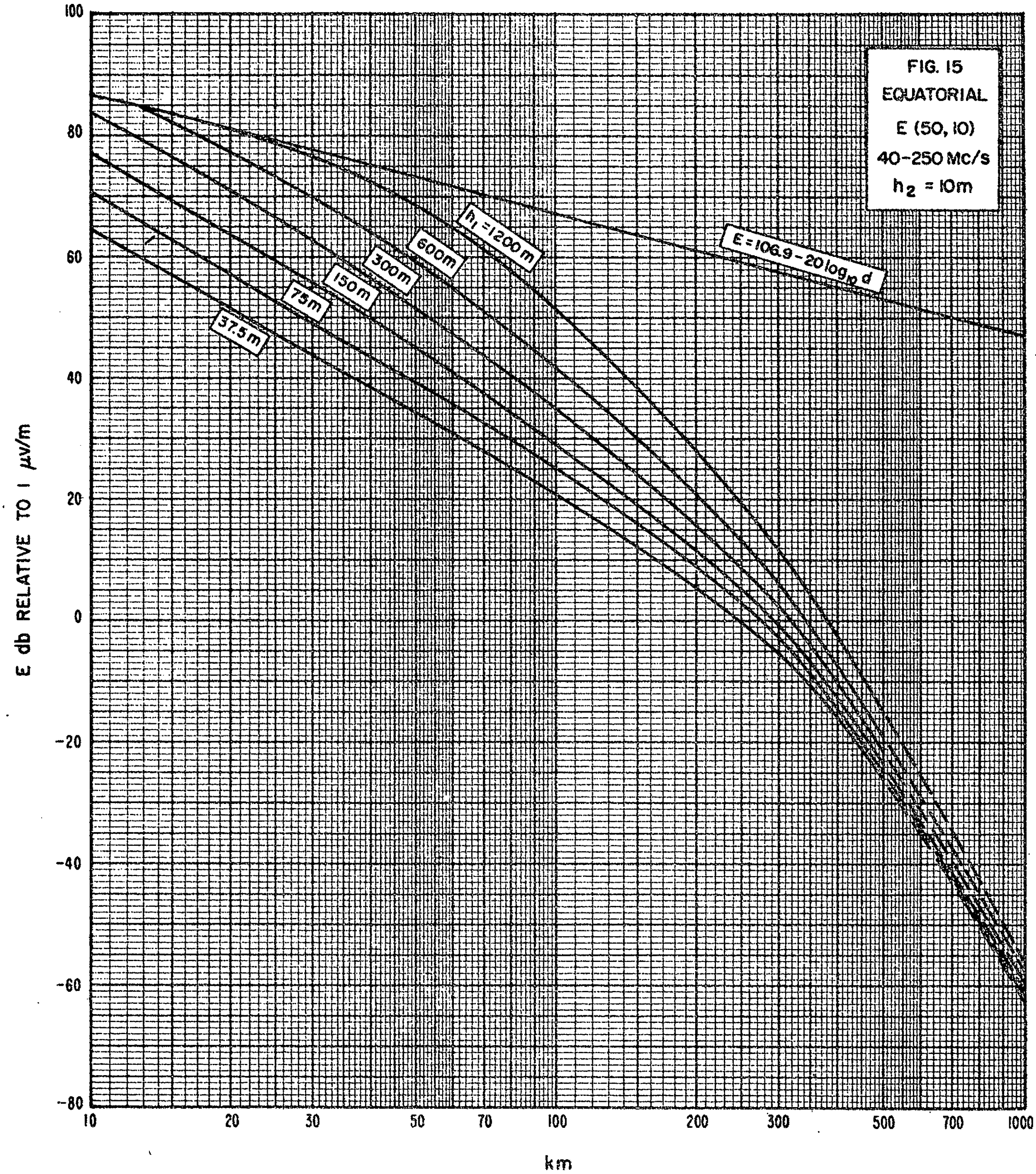
FIG. 15
EQUATORIAL
E (50, 10)
40-250 Mc/s
h_2 = 10m
$E = 106.9 - 20 \log_{10} d$
h_1 = 1200 m
600m
300m
150m
75m
37.5m
E db RELATIVE TO 1 μv/m
100
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km

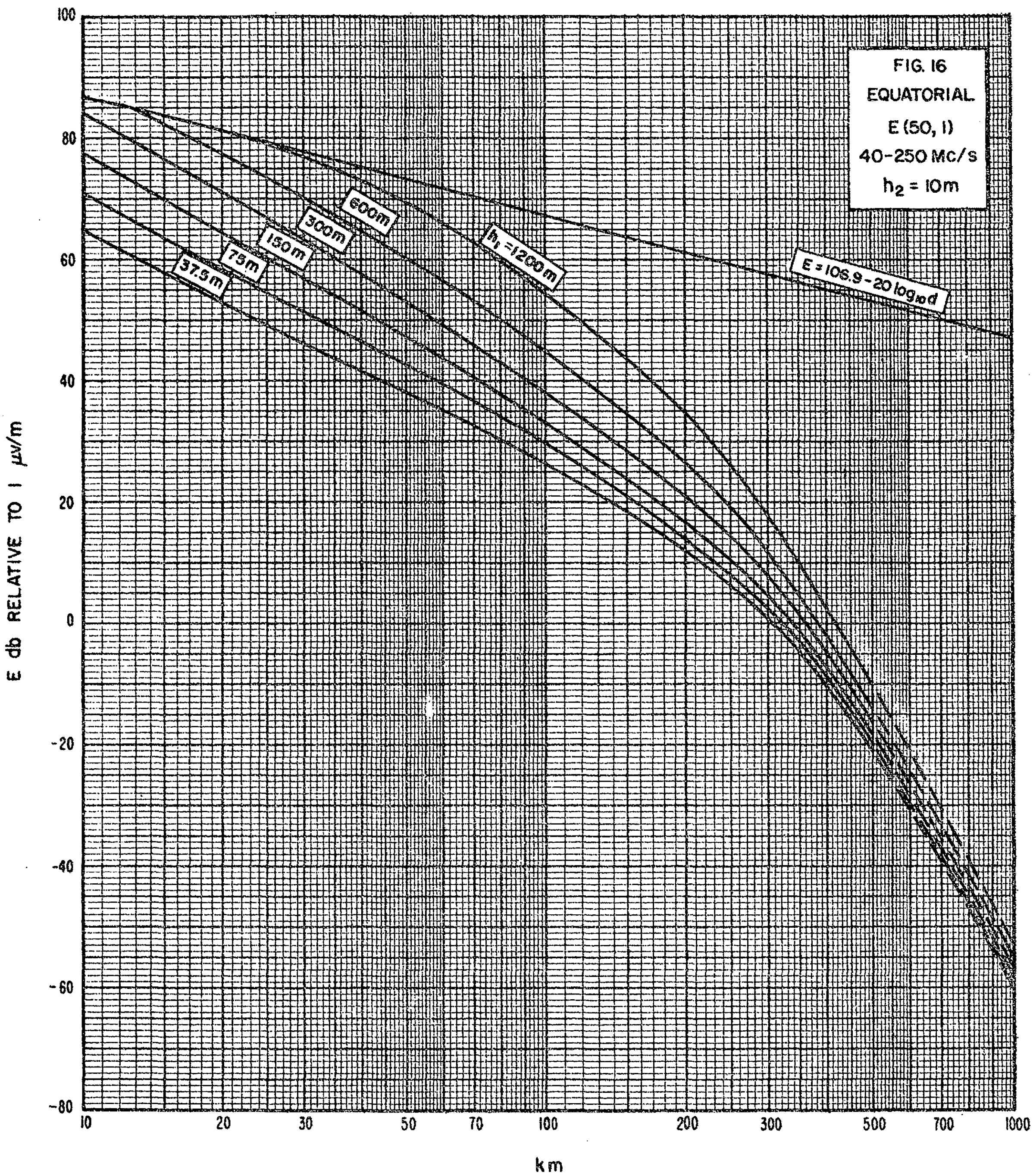

FIG. 16
EQUATORIAL
E (50, 1)
40-250 Mc/s
h_2 = 10m
h_1 = 1200 m
600m
300m
150m
75m
37.5m
$E = 106.9 - 20 \log_{10} d$
E db RELATIVE TO 1 μv/m
km
100
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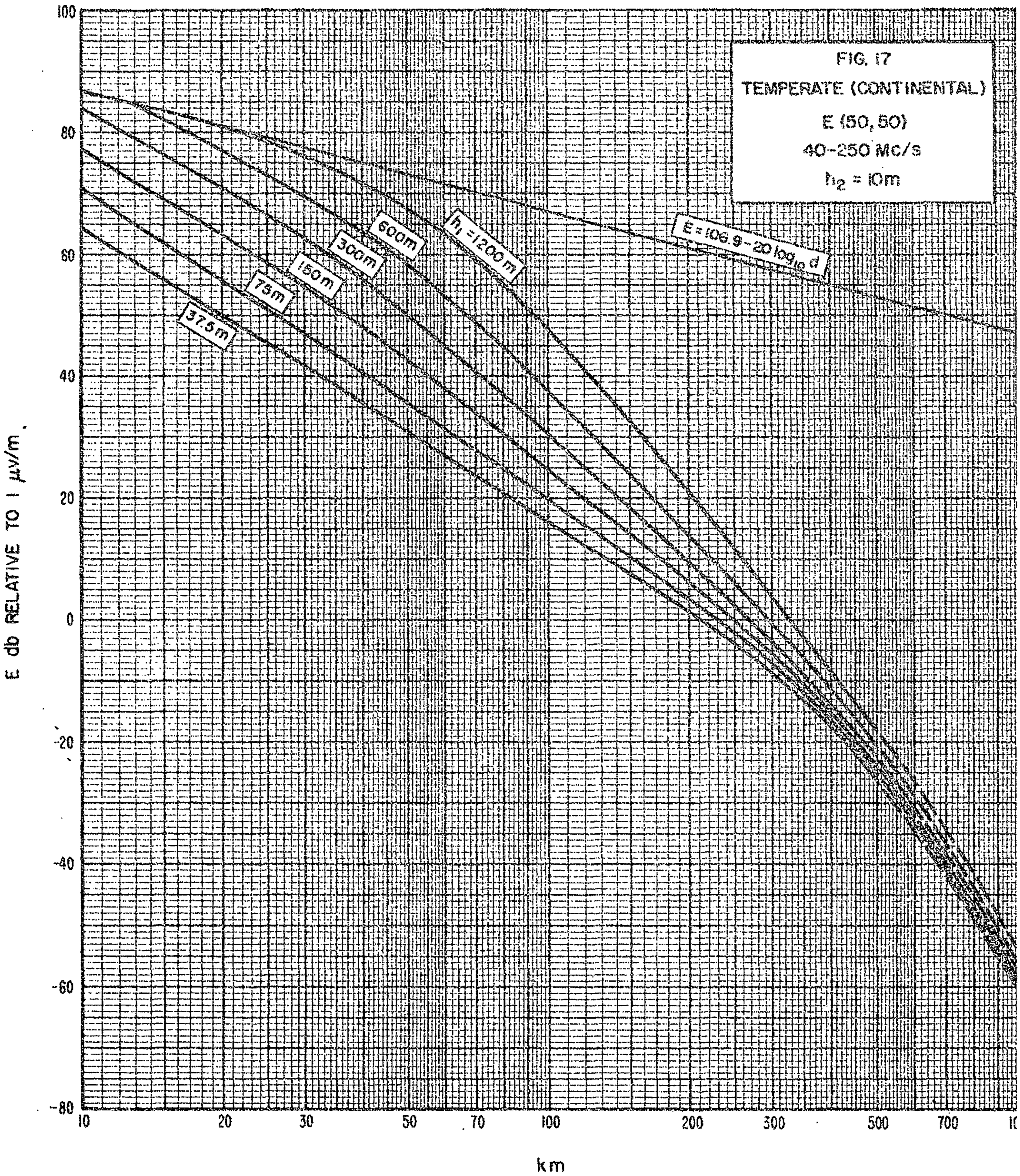
FIG. 17
TEMPERATE (CONTINENTAL)
E (50, 50)
40-250 Mc/s
h_2 = 10m
$E = 106.9 - 20 \log_{10} d$
h_1 = 1200 m
600m
300m
150m
75m
37.5m
E db RELATIVE TO 1 μv/m
km
100
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-80
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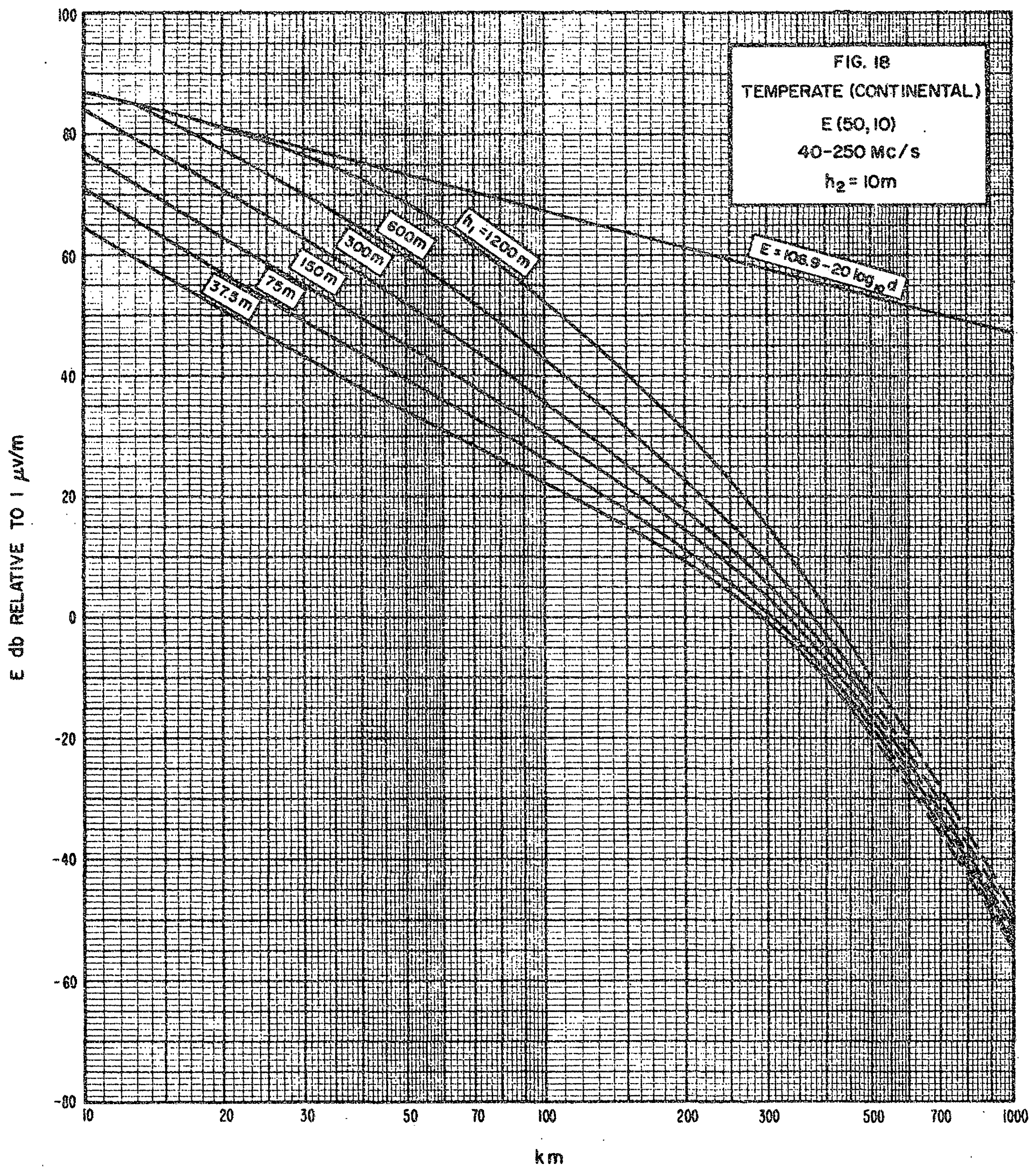
FIG. 18
TEMPERATE (CONTINENTAL)
E (50, 10)
40-250 Mc/s
h_2 = 10m
E db RELATIVE TO 1 μv/m
km
h_1 =1200 m
600m
300m
150m
75m
37.5m
E = 106.9 - 20 $\log_{10}$ d
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-80
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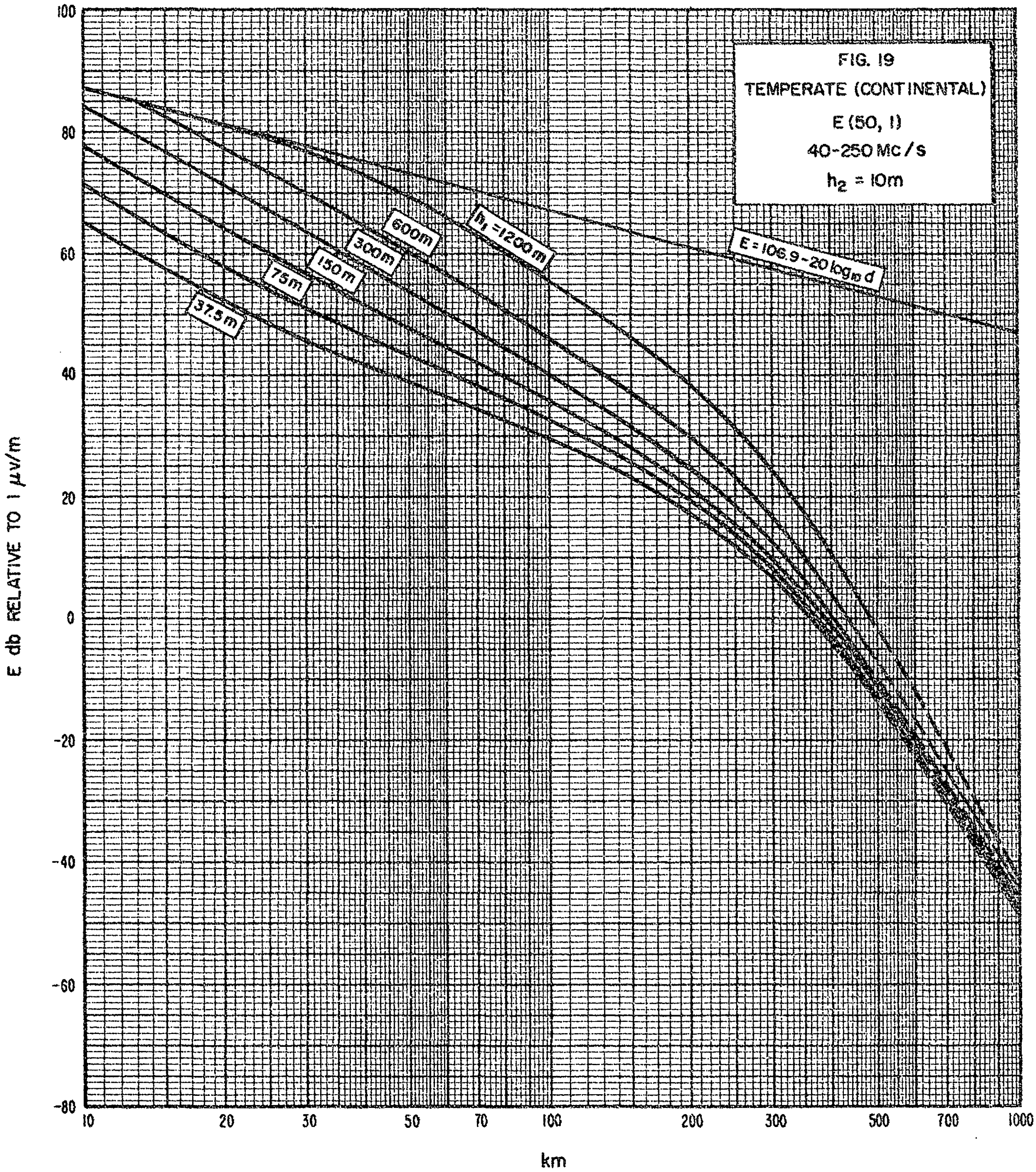

FIG. 19
TEMPERATE (CONTINENTAL)
E (50, 1)
40-250 Mc/s
h_2 = 10m
h_1 =1200 m
600m
300m
150 m
75m
37.5m
E = 106.9 - 20 $\log_{10}$ d
E db RELATIVE TO 1 µv/m
km
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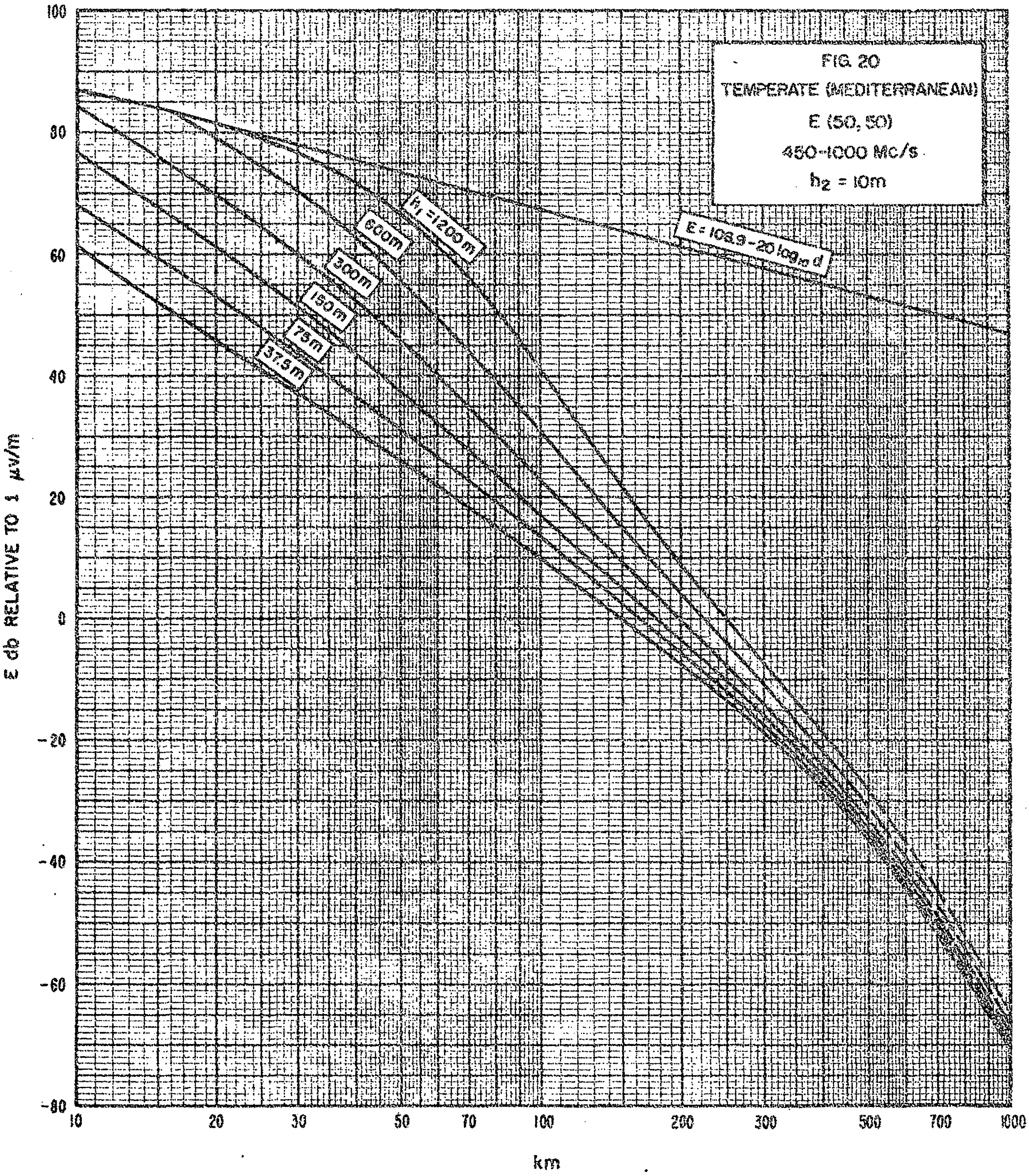
FIG. 20
TEMPERATE (MEDITERRANEAN)
E (50, 50)
450-1000 Mc/s
h2 = 10m
E = 108.9 - 20 log10 d
h1 = 1200 m
600m
300m
150m
75m
37.5m
E db RELATIVE TO 1 µv/m
km
100
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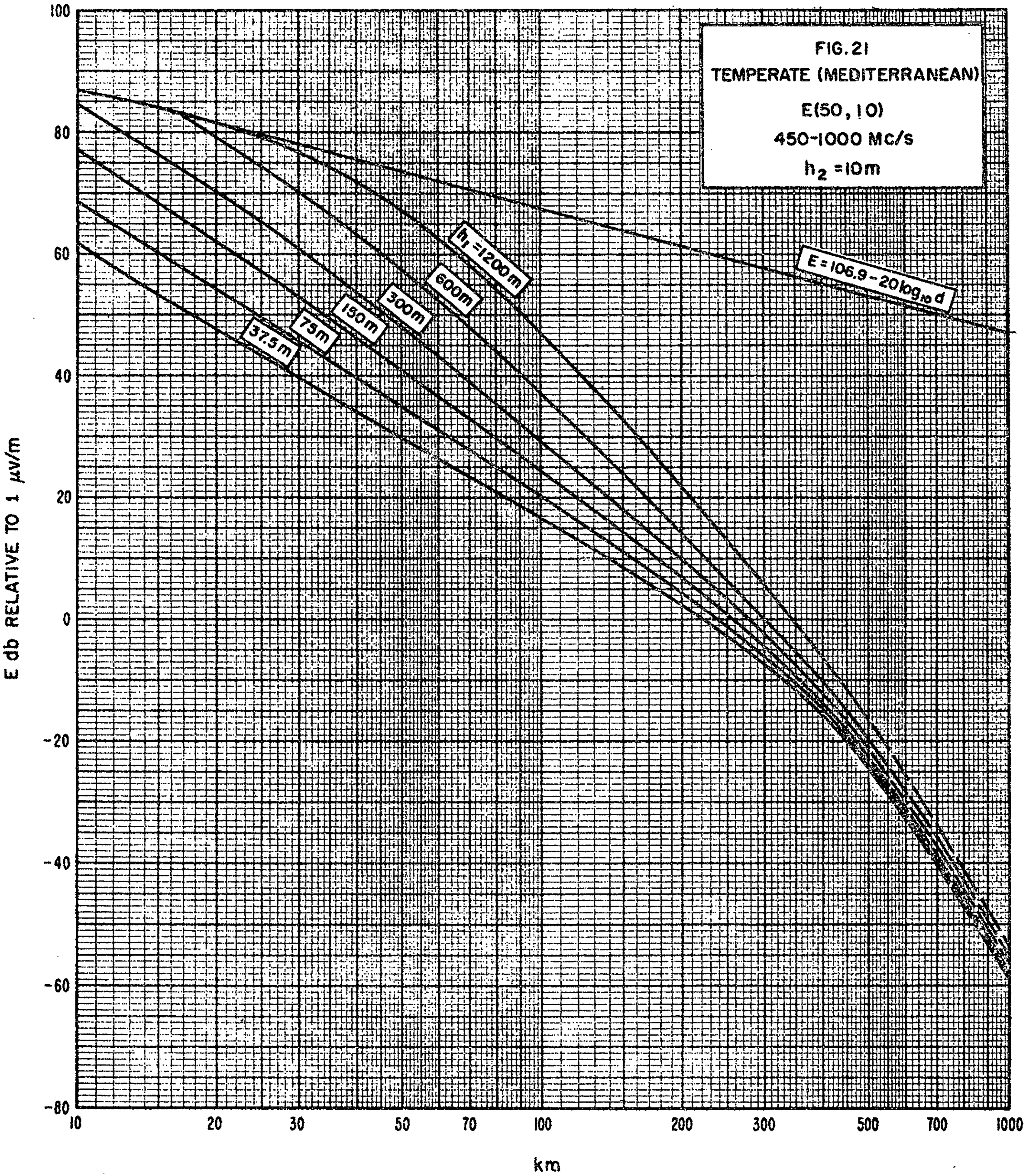
FIG. 21
TEMPERATE (MEDITERRANEAN)
E(50, 10)
450-1000 Mc/s
h2 = 10m
E = 106.9 - 20log10 d
h1 = 1200 m
600m
300m
150m
75m
37.5m
E db RELATIVE TO 1 μV/m
100
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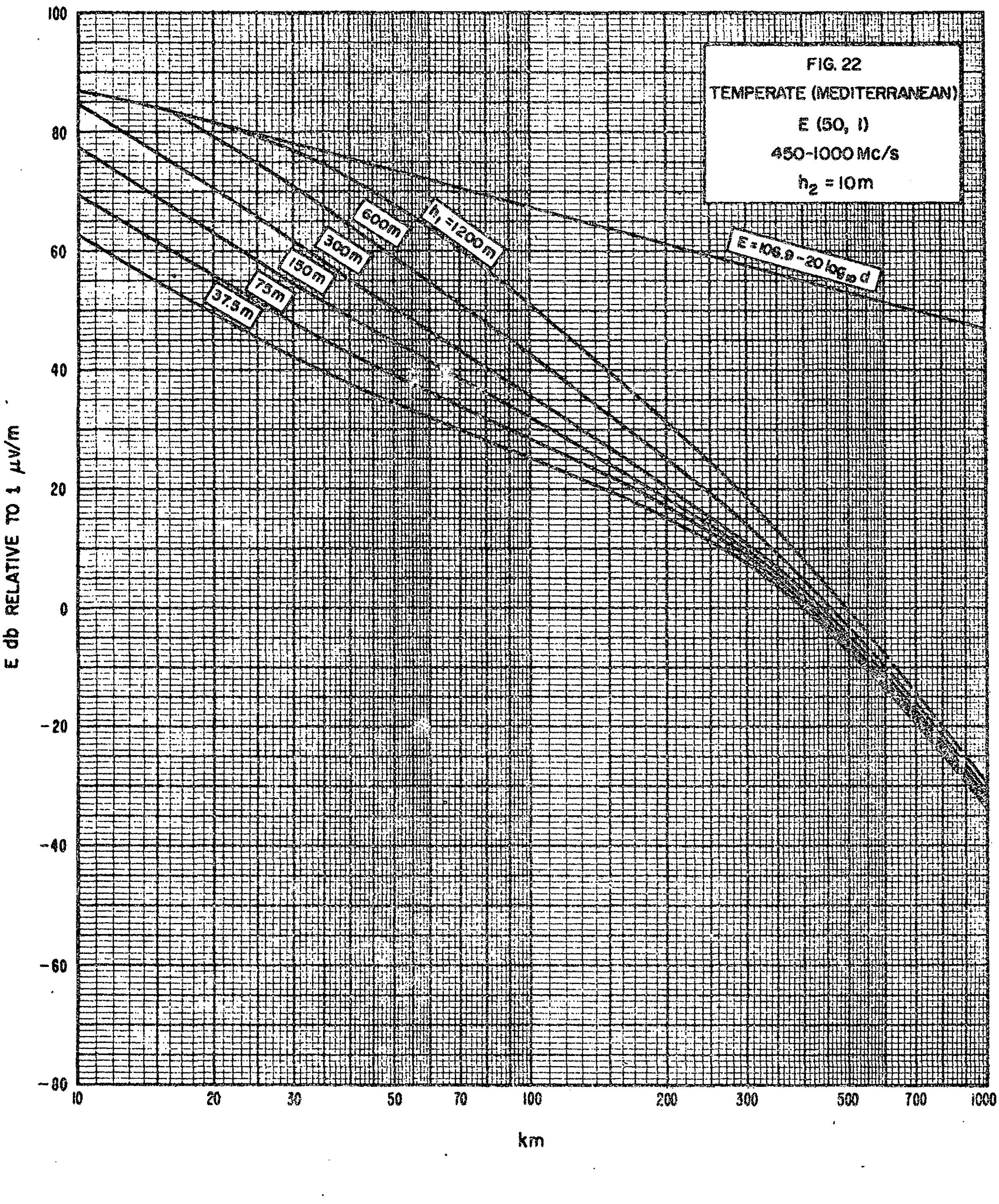
FIG. 22
TEMPERATE (MEDITERRANEAN)
E (50, 1)
450-1000 Mc/s
h2 = 10m
h1 = 1200 m
600m
300m
150m
75m
37.5m
E = 106.9 - 20 log10 d
E db RELATIVE TO 1 µv/m
100
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km

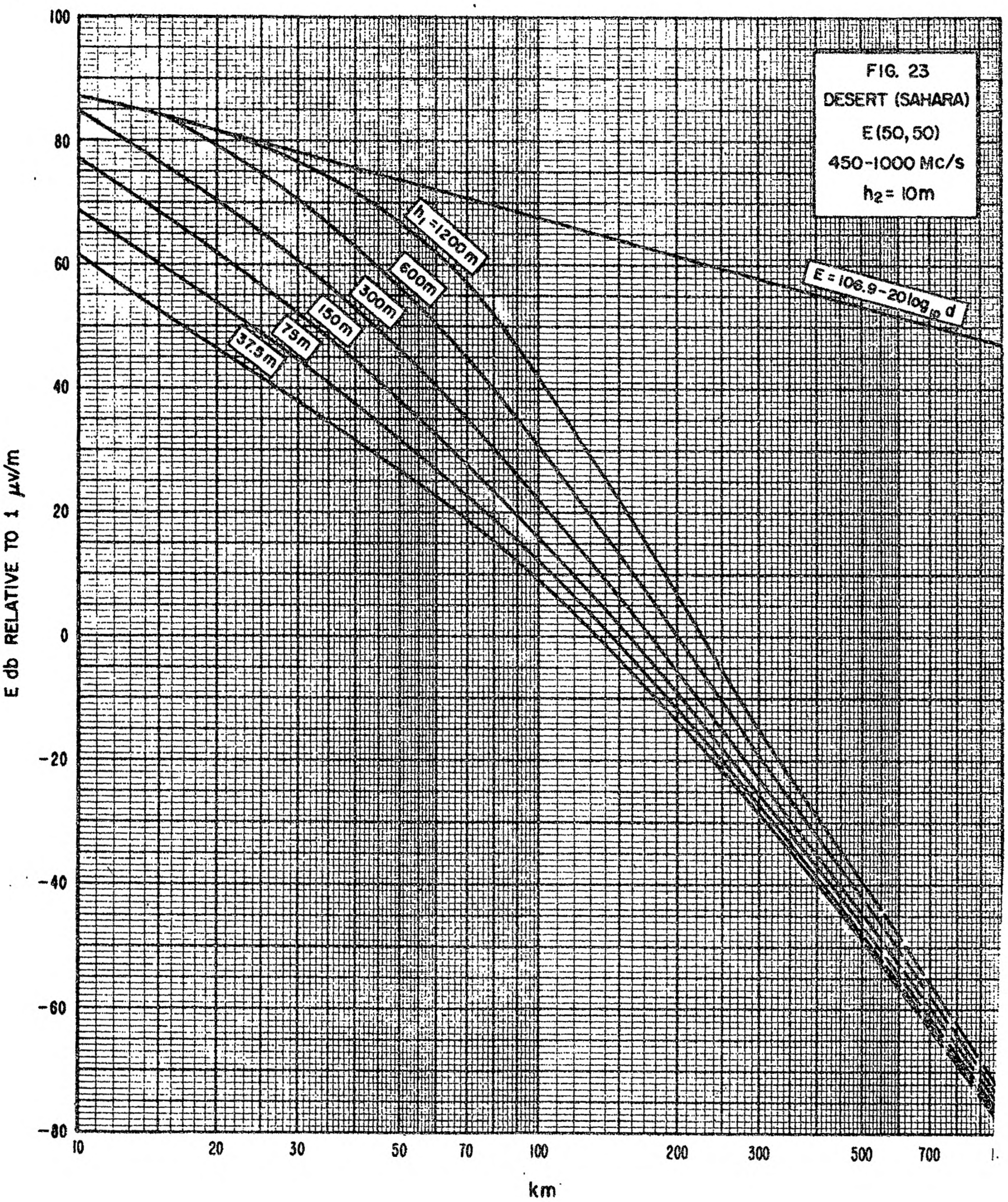
FIG. 23
DESERT (SAHARA)
E(50,50)
450-1000 Mc/s
h_2= 10m
h_1 =1200 m
600m
300m
150m
75m
37.5m
$E = 106.9 - 20 \log_{10} d$
E db RELATIVE TO 1 μv/m
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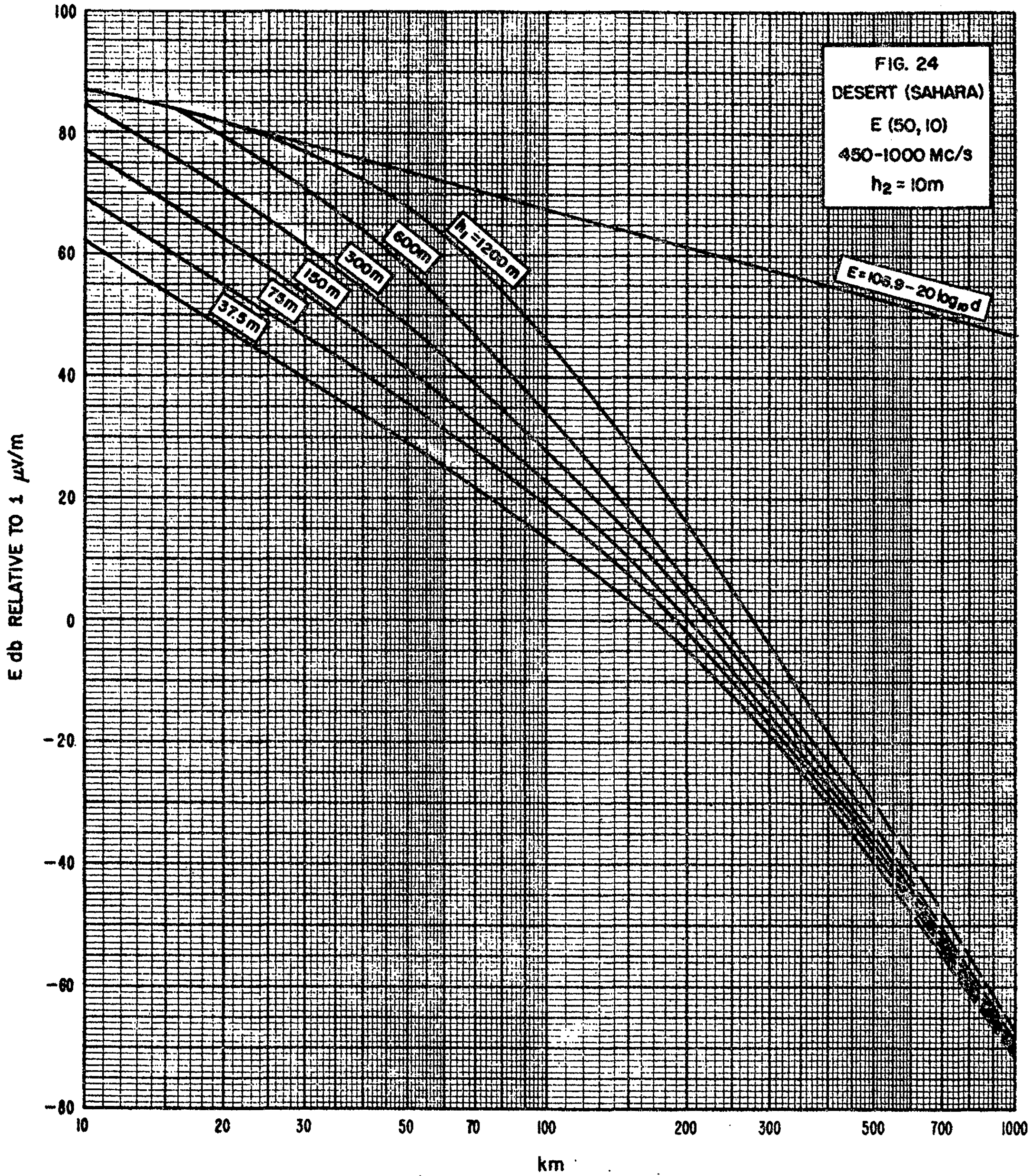
FIG. 24
DESERT (SAHARA)
E (50, 10)
450-1000 Mc/s
h2 = 10m
E = 106.9 - 20 log10 d
h1 = 1200 m
600m
300m
150m
75m
37.5m
E db RELATIVE TO 1 μv/m
km
100
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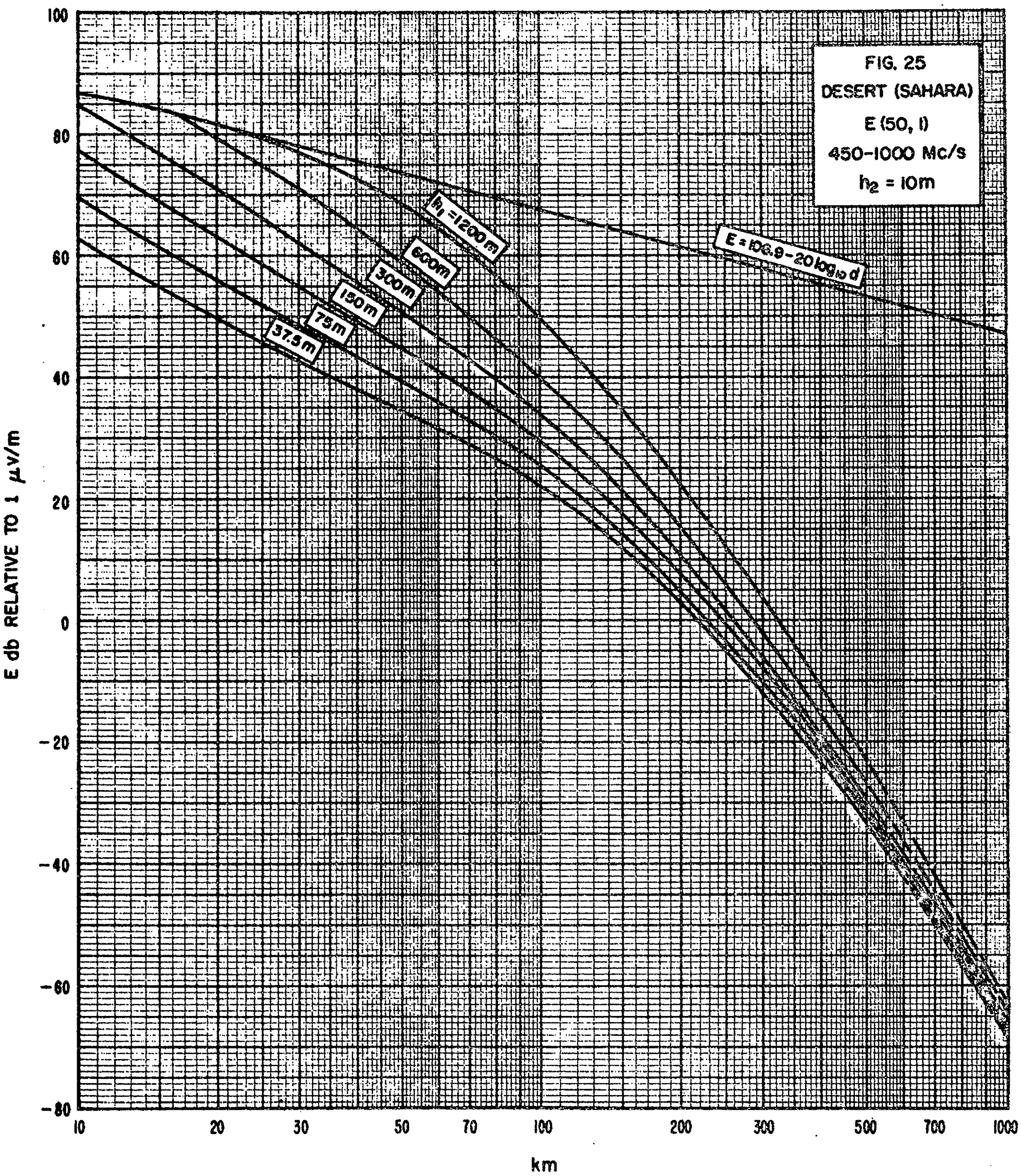
FIG. 25
DESERT (SAHARA)
E (50, 1)
450-1000 Mc/s
h_2 = 10m
h_1 =1200 m
600m
300m
150m
75m
37.5m
$E = 106.9 - 20 \log_{10} d$
E db RELATIVE TO 1 μV/m
100
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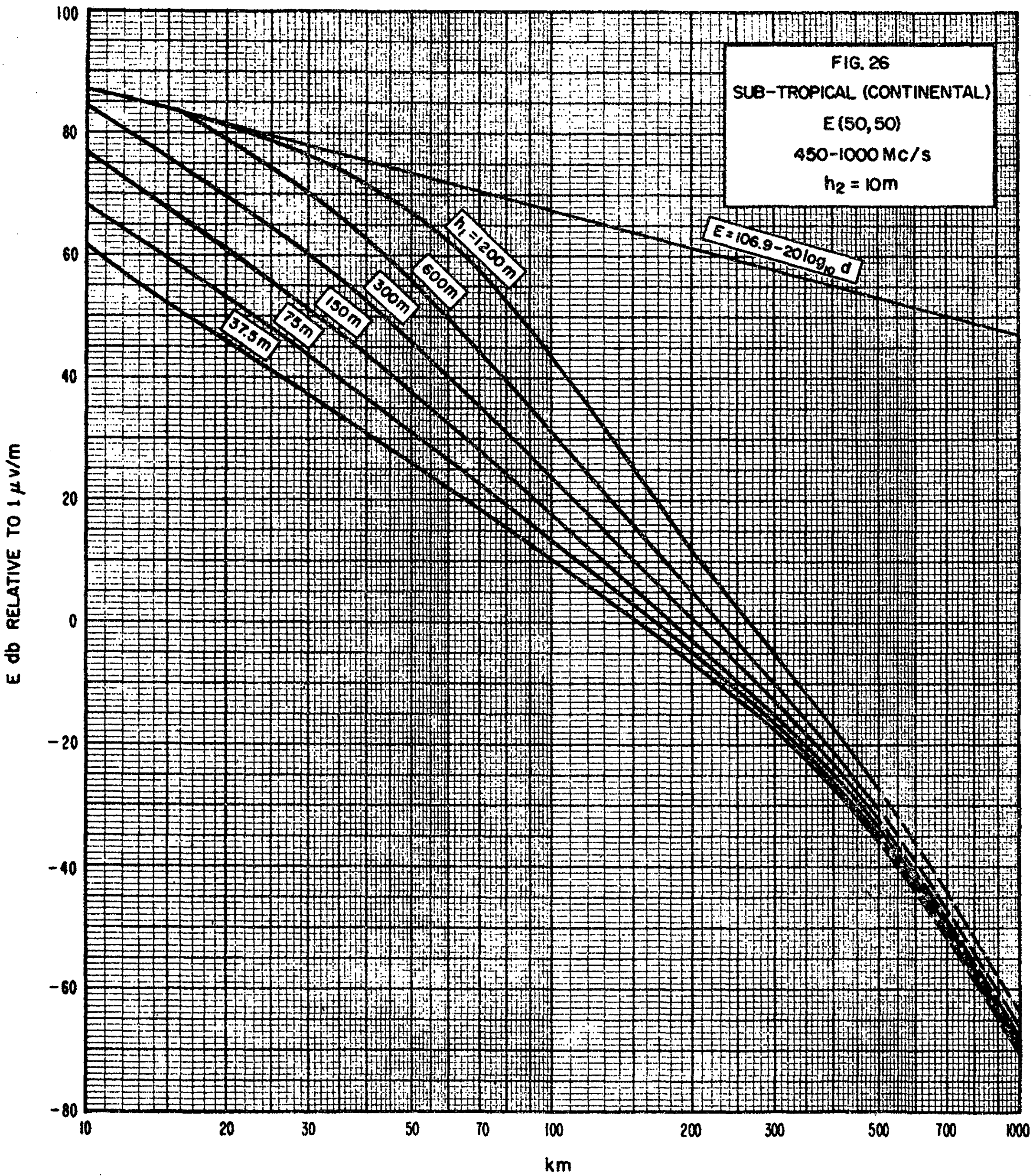

FIG. 26
SUB-TROPICAL (CONTINENTAL)
E (50, 50)
450-1000 Mc/s
h2 = 10m
E = 106.9 - 20 log10 d
h1 = 1200 m
600m
300m
150m
75m
37.5m
E db RELATIVE TO 1 μv/m
100
80
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km

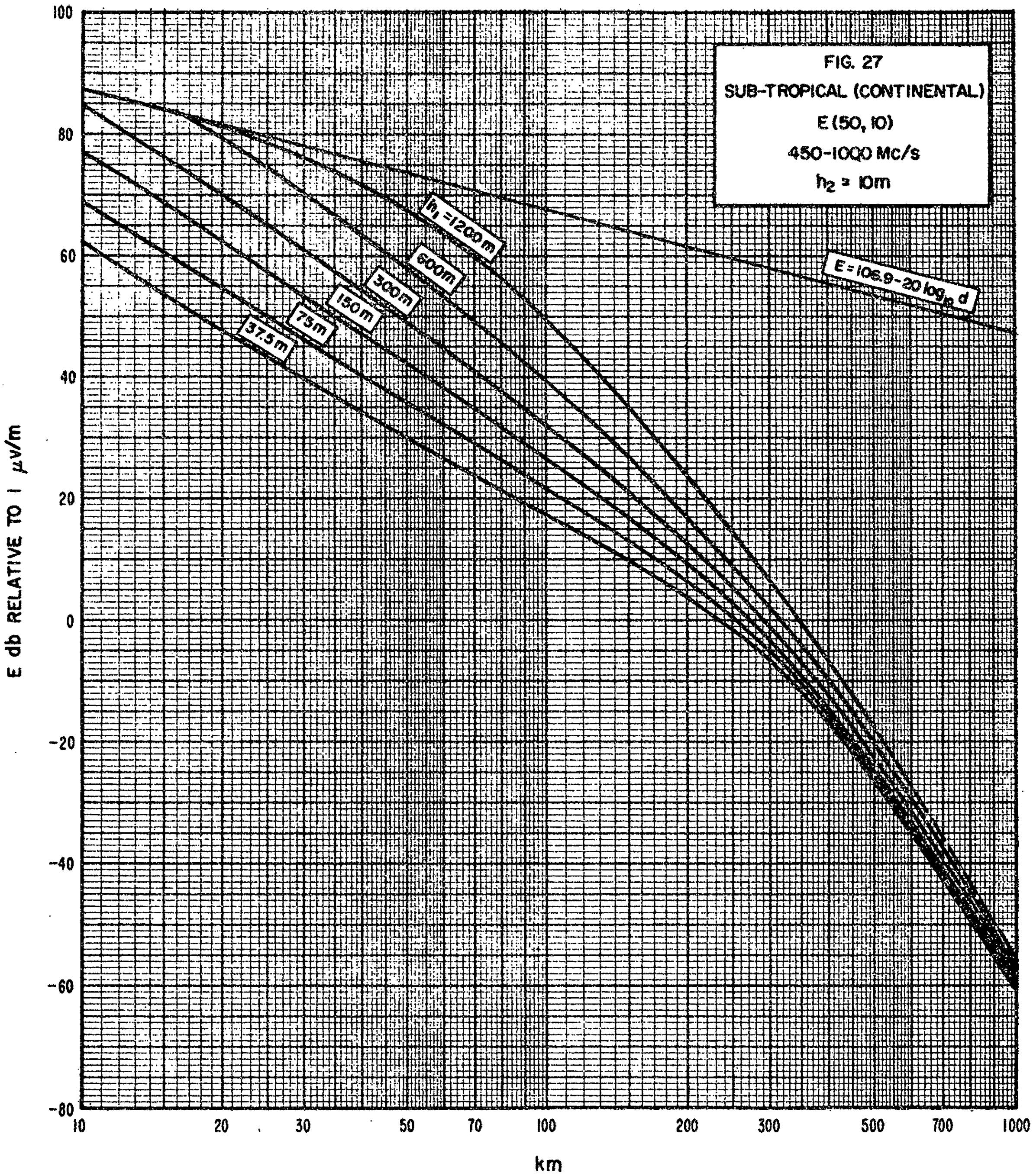
FIG. 27
SUB-TROPICAL (CONTINENTAL)
E (50, 10)
450-1000 Mc/s
h2 = 10m
h1 = 1200 m
600m
300m
150m
75m
37.5m
E = 106.9 - 20 log10 d
E db RELATIVE TO 1 μv/m
km
100
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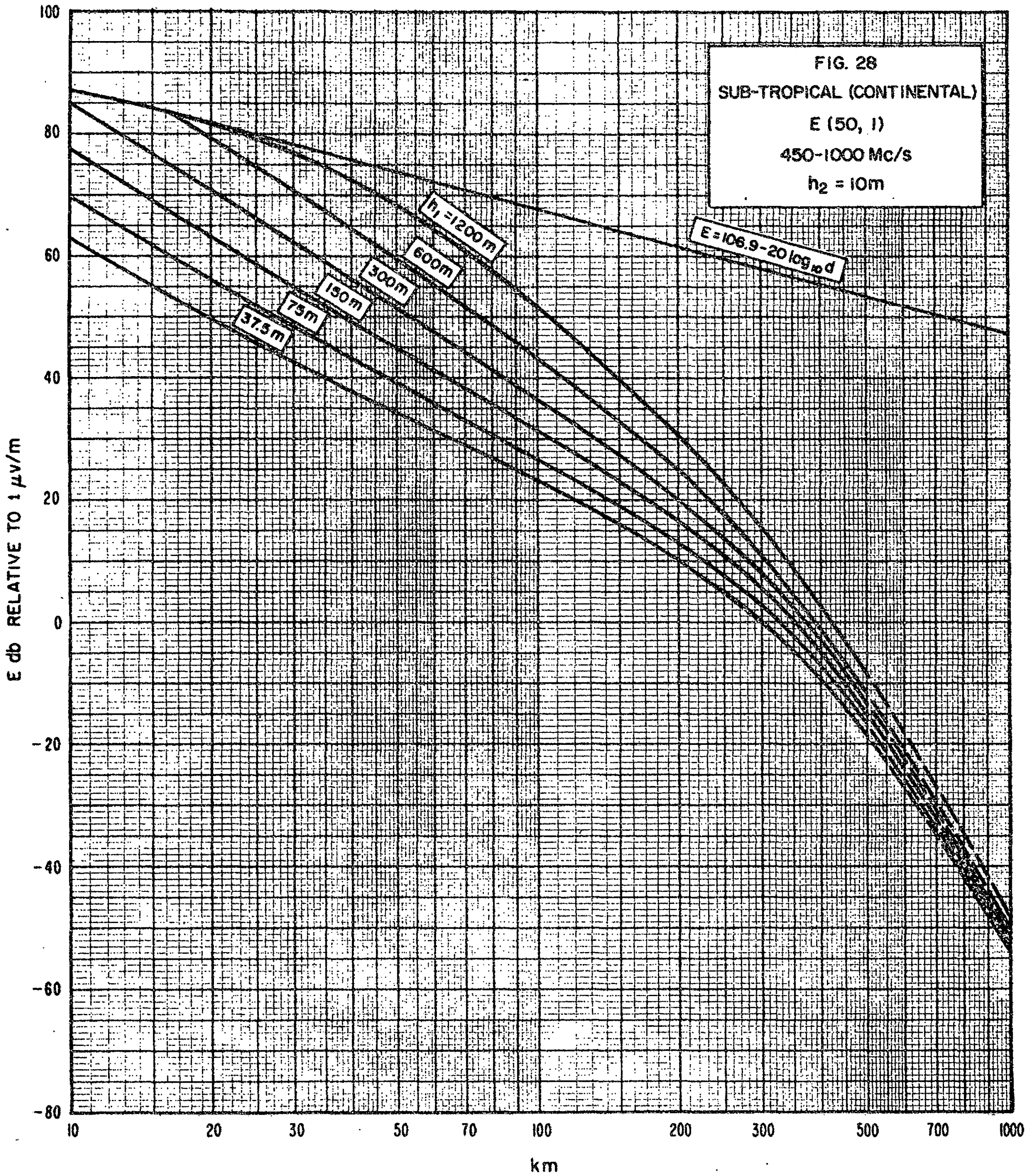
FIG. 28
SUB-TROPICAL (CONTINENTAL)
E (50, 1)
450-1000 Mc/s
h2 = 10m
h1 = 1200 m
600m
300m
150m
75m
37.5m
E = 106.9 - 20 log10 d
E db RELATIVE TO 1 μv/m
100
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km

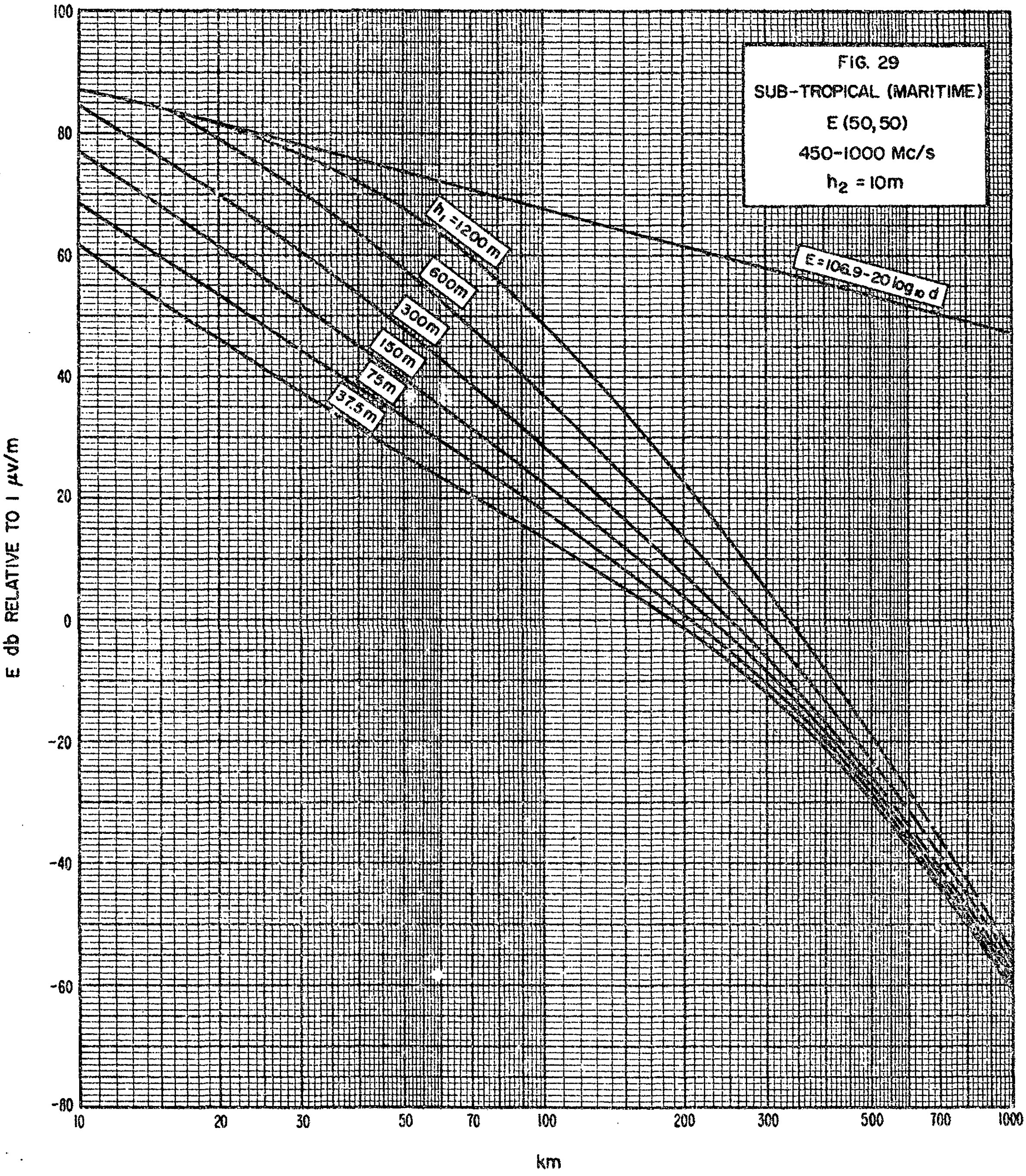

FIG. 29
SUB-TROPICAL (MARITIME)
E (50,50)
450-1000 Mc/s
h2 = 10m
h1 = 1200 m
600m
300m
150m
75m
37.5m
E=106.9-20 log10 d
E db RELATIVE TO 1 μv/m
100
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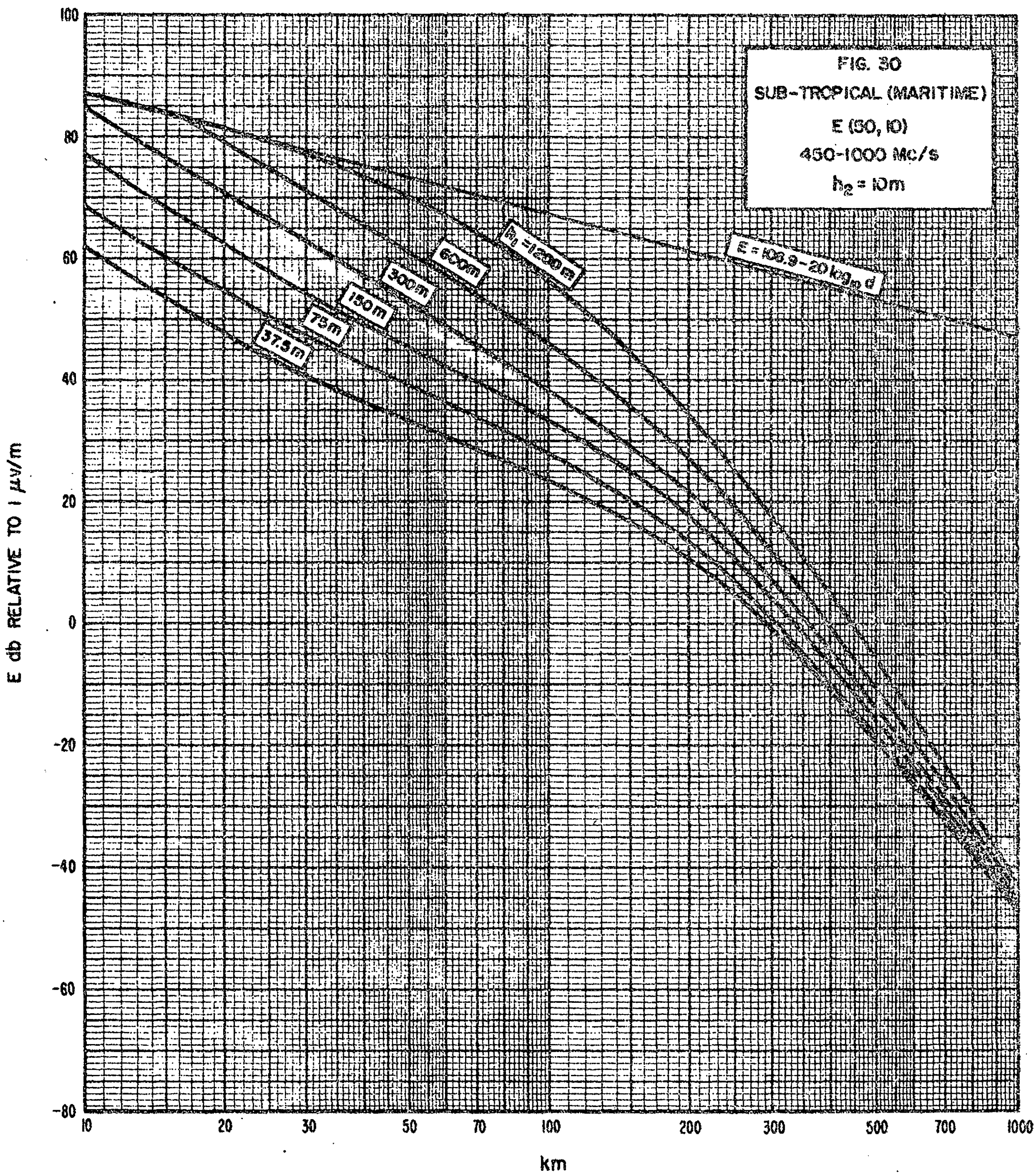
FIG. 30
SUB-TROPICAL (MARITIME)
E (50, 10)
450-1000 Mc/s
h_2 = 10m
h_1 = 1200 m
600m
300m
150m
75m
37.5m
E = 106.9 - 20 $\log_{10}$ d
E db RELATIVE TO 1 μv/m
km
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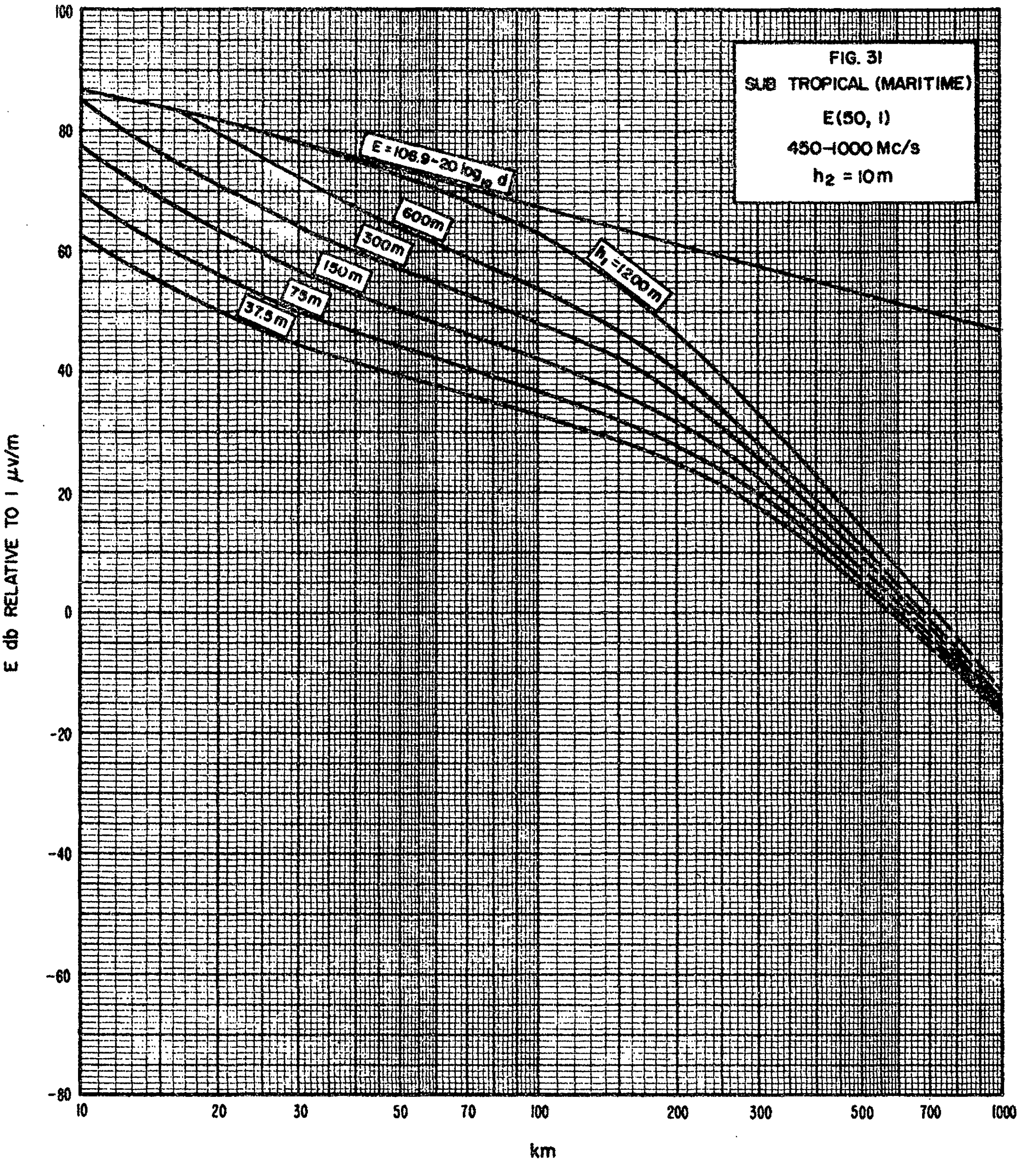
FIG. 31
SUB TROPICAL (MARITIME)
E(50, 1)
450–1000 Mc/s
h2 = 10 m
E = 106.9 − 20 log10 d
h1 = 1200 m
600 m
300 m
150 m
75 m
37.5 m
E db RELATIVE TO 1 μv/m
km
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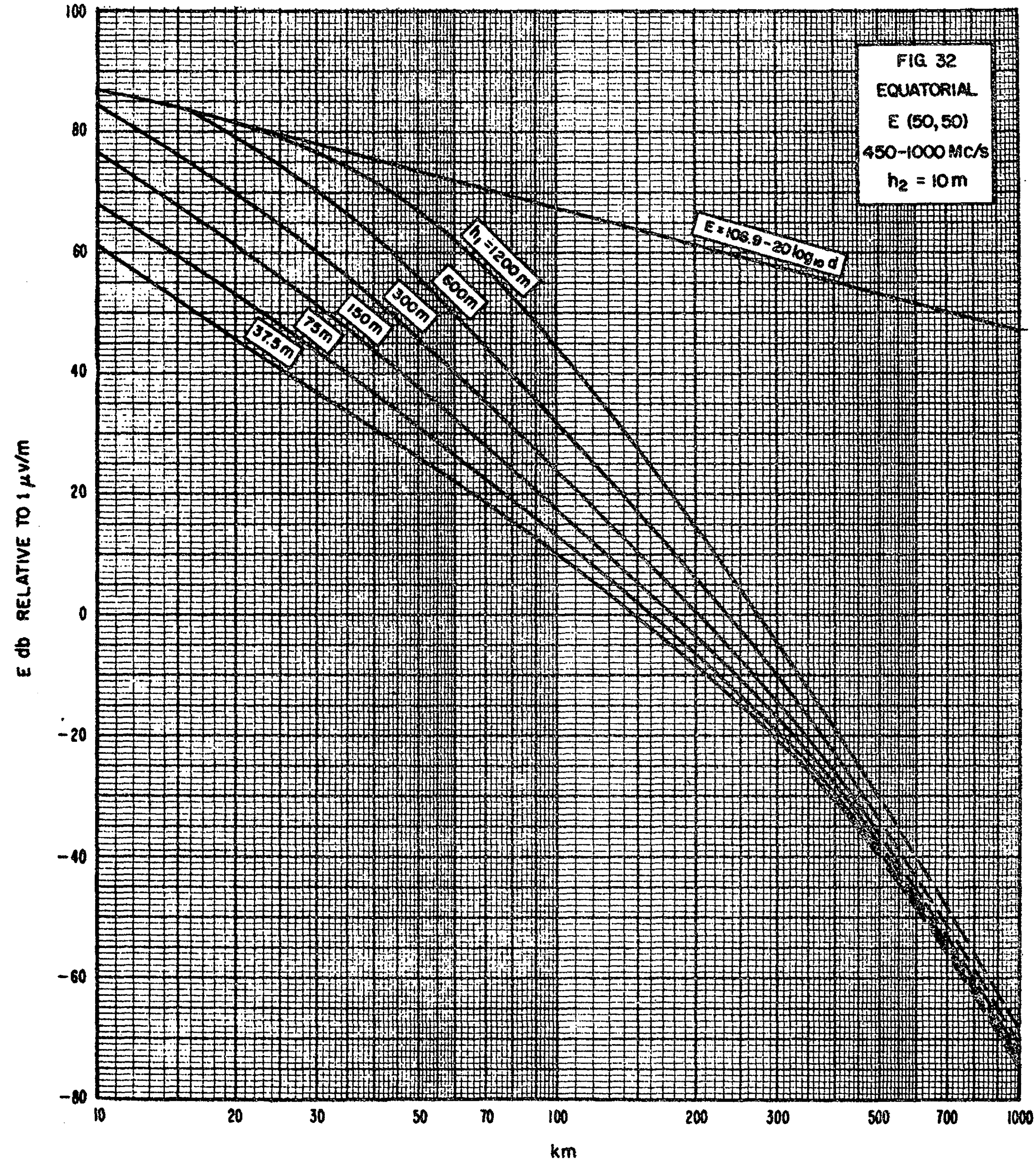
FIG. 32
EQUATORIAL
E (50, 50)
450-1000 Mc/s
h_2 = 10 m
E = 106.9 - 20 $\log_{10}$ d
h_1 = 1200 m
600m
300m
150m
75m
37.5m
E db RELATIVE TO 1 μv/m
km
100
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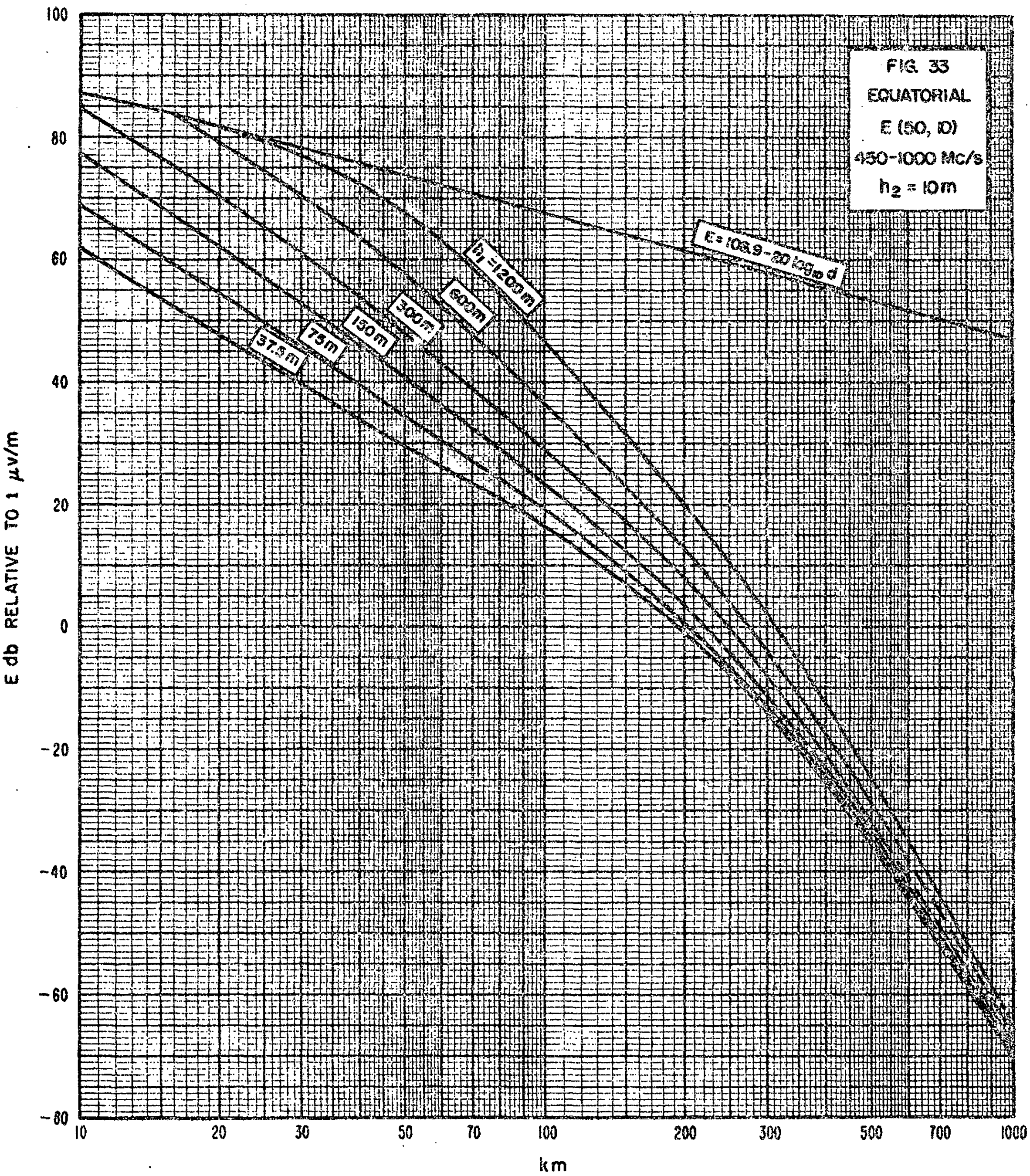

FIG. 33
EQUATORIAL
E (50, 10)
450-1000 Mc/s
h2 = 10m
E = 106.9 - 20 log10 d
h1 = 1200 m
600m
300m
150m
75m
37.5m
E db RELATIVE TO 1 μv/m
100
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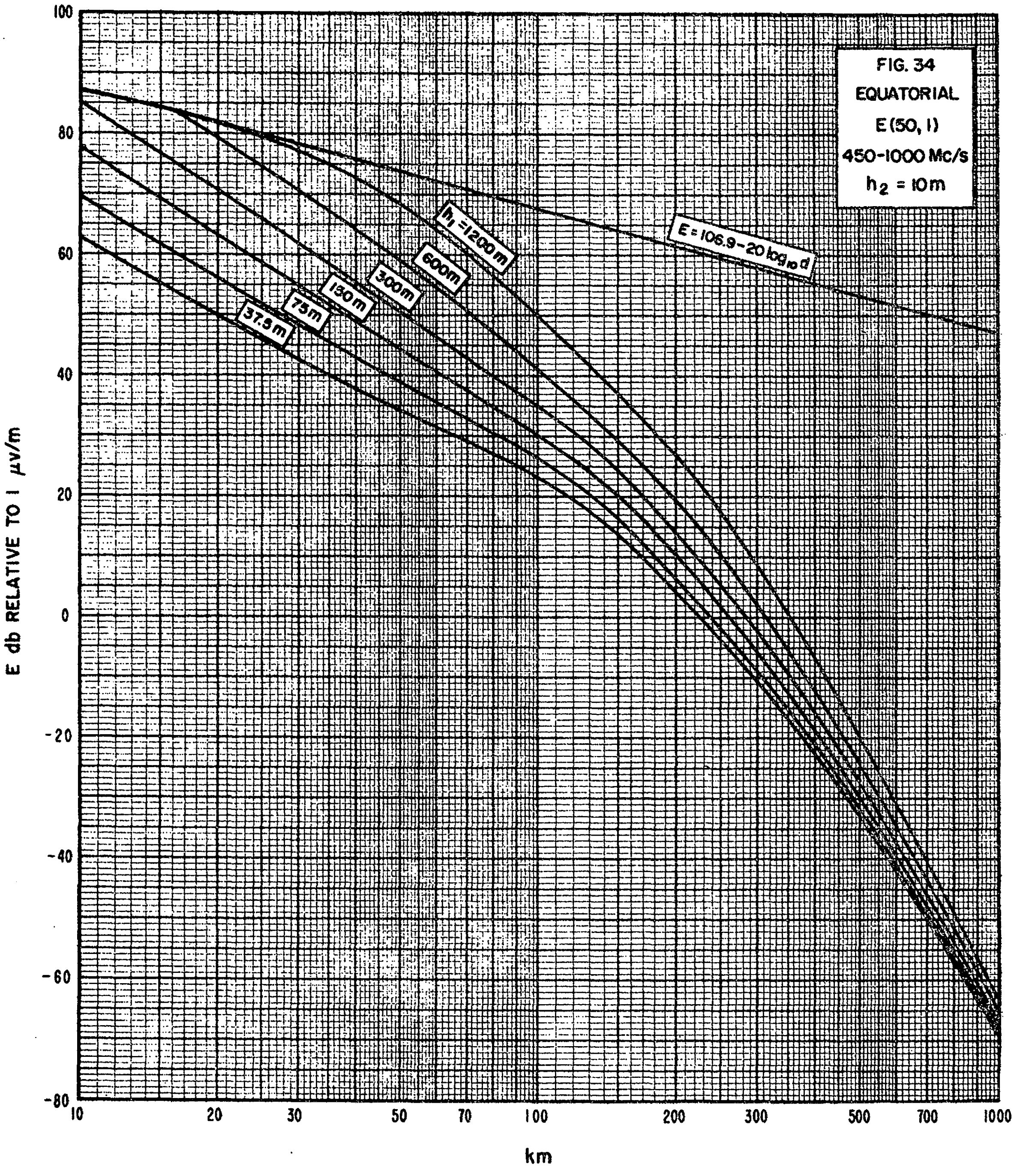
FIG. 34
EQUATORIAL
E (50, 1)
450-1000 Mc/s
h_2 = 10 m
$E = 106.9 - 20 \log_{10} d$
h_1 = 1200 m
600 m
300 m
150 m
75 m
37.5 m
E db RELATIVE TO 1 μv/m
100
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km

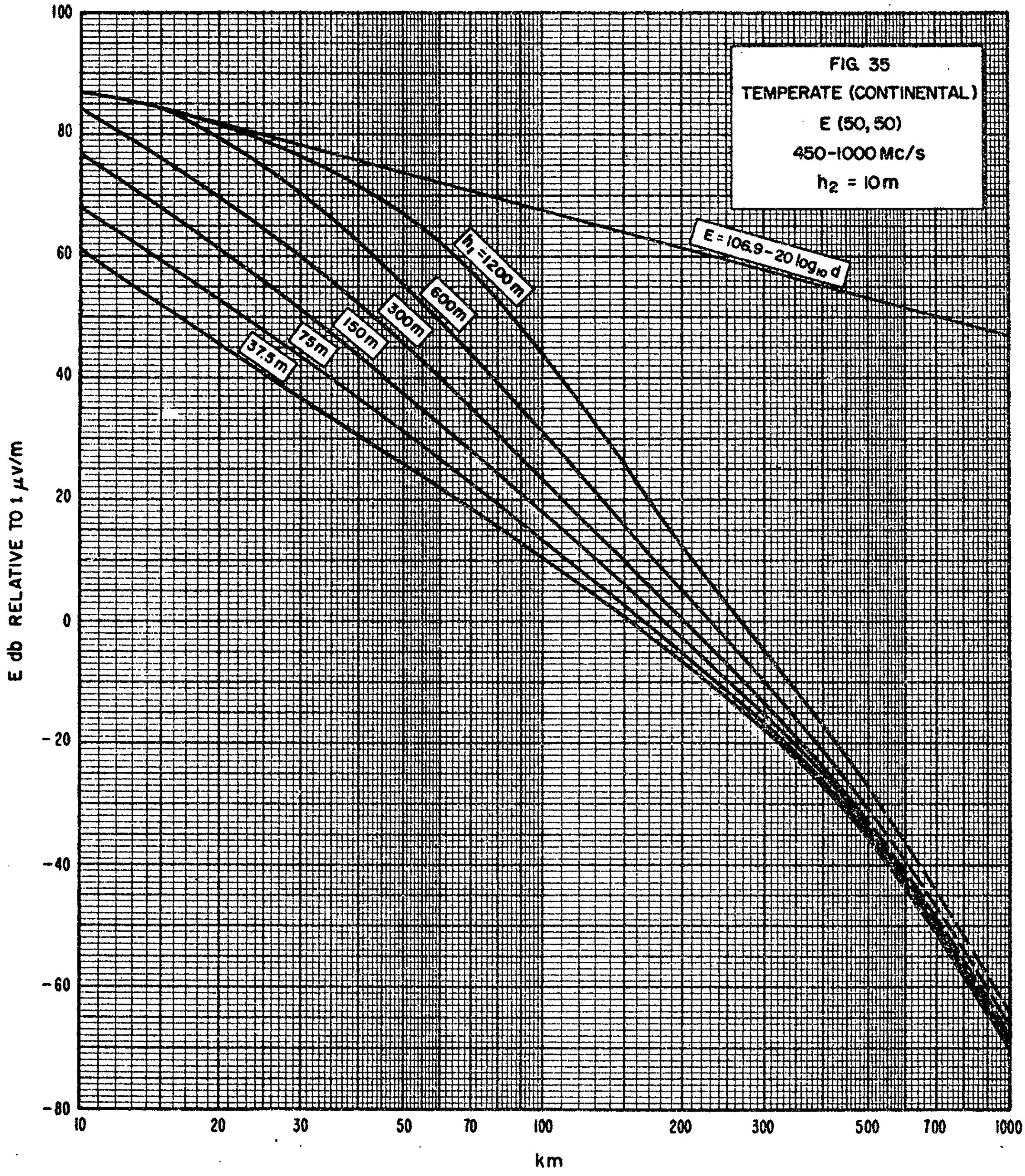

FIG. 35
TEMPERATE (CONTINENTAL)
E (50, 50)
450-1000 Mc/s
h2 = 10 m
E = 106.9 - 20 log10 d
h1 = 1200 m
600 m
300 m
150 m
75 m
37.5 m
E db RELATIVE TO 1 µv/m
km
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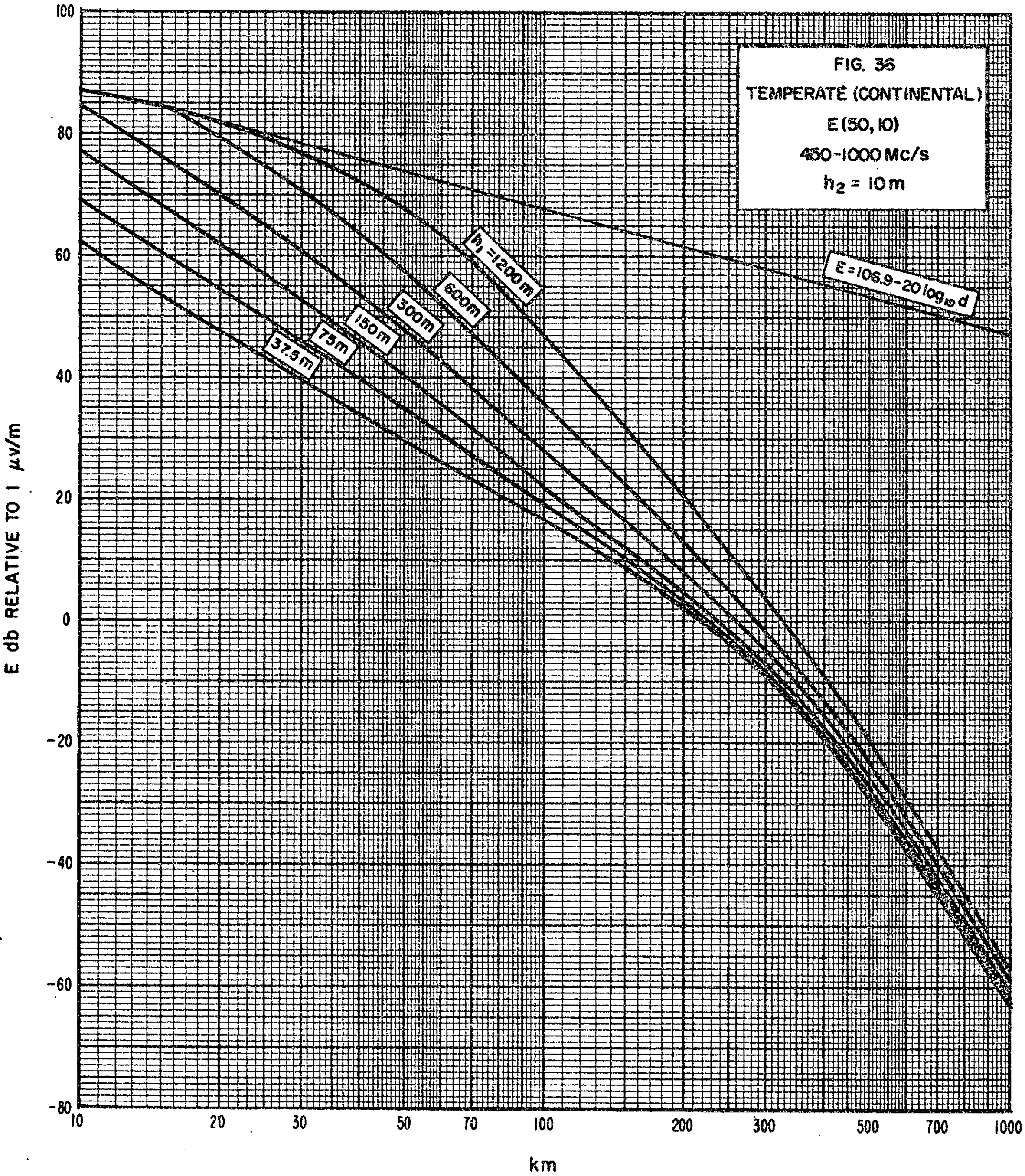
FIG. 36
TEMPERATE (CONTINENTAL)
E (50, 10)
450-1000 Mc/s
h2 = 10 m
h1 = 1200 m
600 m
300 m
150 m
75 m
37.5 m
E = 106.9 - 20 log10 d
E db RELATIVE TO 1 μv/m
100
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km

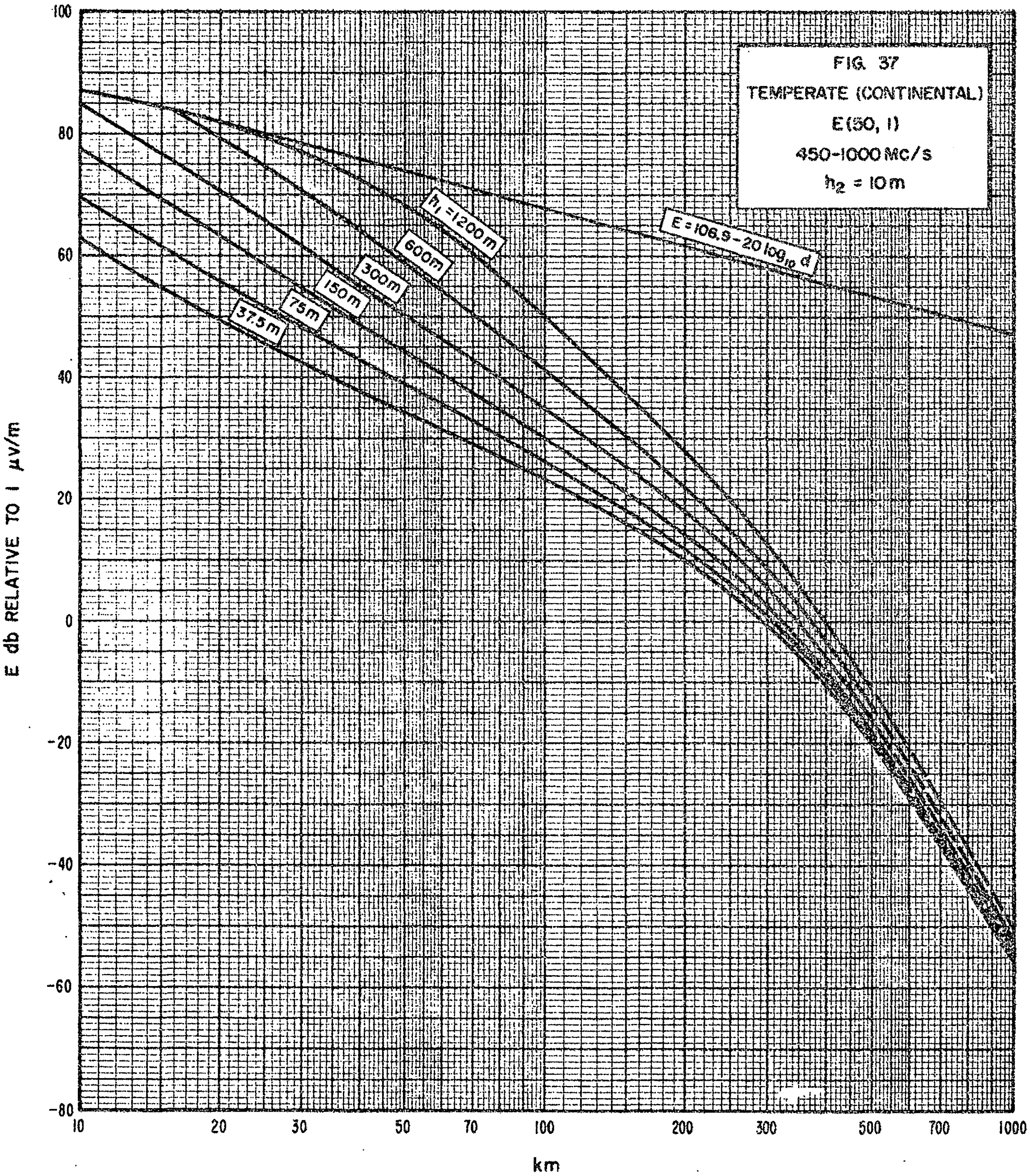

FIG. 37
TEMPERATE (CONTINENTAL)
E(50, 1)
450-1000 Mc/s
h_2 = 10 m
E = 106.9 - 20 $\log_{10}$ d
h_1 = 1200 m
600 m
300 m
150 m
75 m
37.5 m
E db RELATIVE TO 1 µv/m
km

INTERNATIONAL TELECOMMUNICATION UNION

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AFRICAN VHF/UHF
BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 11-E
29 April 1963
Original: English

COMMITTEE 4

Contribution by the Federal Government of Cameroun

PROPAGATION CHARACTERISTICS OF RADIO FREQUENCY PATHS IN WEST AFRICA

SECTION D: FREQUENCIES BETWEEN 30 AND 300 MEGACYCLES PER SECOND

Annex: 1

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ANNEX

PROPAGATION CHARACTERISTICS OF RADIO FREQUENCY PATHS IN WEST AFRICA

Section D: Frequencies between 30 and 300 megacycles per second

1. Introduction
2. Description of Measuring Equipment
3. Path Attenuation Characteristics
4. Anomalous Propagation

Introduction

The data presented in this Paper has been compiled from ground surveys and observations of trunk telephone radio path records conducted in West Africa over a period of ten years from 1951 to 1961. Data obtained from ground surveys in this Paper refers to non optical paths in general and data from trunk telephone radio path records to optical or quasi-optical paths.

The frequency of observation is 180 megacycles per second with additional information from transmissions at a frequency of 80 megacycles per second.

It will be noted that there is a great divergence of fading characteristics which are caused by large variations in climatic conditions, and a notable feature is the occurrence of very high signal strengths which sometimes exceed free space value, particularly at night.

It is considered that the information contained in this Paper will be of use to this Conference for reference purposes, and the Delegation of the Federal Government of Cameroun will be pleased to discuss any points in the Paper informally.

Description of Measuring Equipment

The survey equipment comprised small portable crystal controlled continuous wave transmitters with a controlled power output of 2 watts at 180 megacycles per second and crystal controlled superheterodyne receivers with an output meter so connected to give a reading approximately proportional to the received signal in decibels above one microvolt.

The output power of the transmitter was monitored and a record of the power output maintained. The received level was continuously recorded and by means of a calibrated signal generator, the gain of the receiver was checked at regular intervals.

The receiving apparatus was designed to cover signal levels between one microvolt and one volt at the aerial input terminals of the receiver. Thus, with the aerial systems in use, received signals at the aerial of minus six decibels with respect to one microvolt could be measured.

The aerial arrays used were six element yagi arrays with a known gain of eight decibels over a half wave dipole, and the feeders had an overall loss of nine decibels.

The measured path attenuation was therefore calculated from the relationship /149 - S/ decibels where S is the recorded signal level measured in decibels above one microvolt.

Measuring equipment on the trunk telephone radio paths comprised recording meters connected to DC amplifiers controlled by the AGC system of the receivers, and data obtained in this way covers longer periods than the information obtained from surveys. But data from trunk telephone radio paths is related to optical or quasi-optical paths and is not as valuable as the data from survey sources for Television and Broadcast purposes.

Path Attenuation Characteristics

The most noteworthy feature of the propagation of signals in the band is the most frequent occurrent of marked diurnal variations usually characterised by steady daytime signals consistent with normal refraction; and very strong nocturnal signals compatible with intense super refraction often equivalent to an effectively concave earth.

Nocturnal signal strengths occasionally exceed the free space value, but such high levels are usually interspersed with deep fades and on other occasions nocturnal fading occurs (with respect to normal received levels). A disturbed nocturnal condition usually ends abruptly between 0800 and 1000 local time and is followed by normal propagation until about 1800; after which, the nocturnal state develops again. The evening change is slower than the morning change.

The signal range characteristics attached clearly show the above effects and the intensity is seen to vary with time and place. The level of free state signals is indicated on these characteristics which shows that the difference between normal daytime propagation and the free state signal is of the order of twenty decibels.

The effects described are consistent with the regular development of strongly refracting layers comprising surface ducts or incipient states thereof, nocturnally. Such surface conditions are familiar in meteorology and are caused by nocturnal cooling of heated land with a clear sky. The low level temperature inversion thereby produced is occasionally assisted by a humidity lapse, the combined influences conspiring to produce a strong lapse in the refractive index which is later cleared by morning convection. Such meteorological conditions are favoured by high night temperatures, as these allow a high humidity lapse rate; and the weather conditions in West Africa are consistent with the conditions deduced.

The frequent nightly occurrence of very high signal strengths implies that the radio terminals are situated within surface ducts at these times and the characteristic fading is considered to be due to complex interference effects at the upper boundary of the layer.

The occasional occurrence of nocturnal fading from normal levels is explainable by the "ray" theory on the assumption that the base of the layer sometimes rises above the aerials, in which position it could cause strong reflections capable of destructive interference with the signal propagated below the layer. Such conditions are again well known in meteorology and it can be shown that the layer base need not rise far above the aerials to produce the observed effects.

It should be emphasised that, although results often indicated the existence of ducts, trapping of waves does not occur at these frequencies; (a duct in this sense comprises a layer having a region of negative M-gradient). It can be shown that for the surface ducts revealed by the measurements true trapping is impossible on frequencies below 350 megacycles per second. Nevertheless, the ducts may conceivably cause interference at night between distant stations using identical frequencies, by virtue of these stations being brought into radio intervisibility and a reversal of wave polarisation is considered necessary at stations which may suffer from the effects indicated.

Anomalous Propagation

In the region of tropical rain forest unexpectedly high median attenuations take place for no apparent reason and it is noted that the influence of irregular terrain near the transmitter and receiver particularly with low aerial heights causes discrepancies which are unpredictable.

Transmissions taking place between sea level and very high points, such as the Cameroun Mountain, over comparatively long optical paths are more constant than transmissions taking place between stations with similar altitude and the path attenuation is of the order of ten decibels greater than the equivalent free space attenuation.

Non reciprocal paths can exist where there is an obstruction nearer to one terminal where the path is non optical under poor ground conductivity conditions.

Electrical Interference

As the countries in West Africa develop and industry spreads afield, the emphasis on electrical interference changes from the purely atmospheric to man made interference due to the widespread use of overhead power lines for distribution of electrical energy and the increased use of motor vehicles.

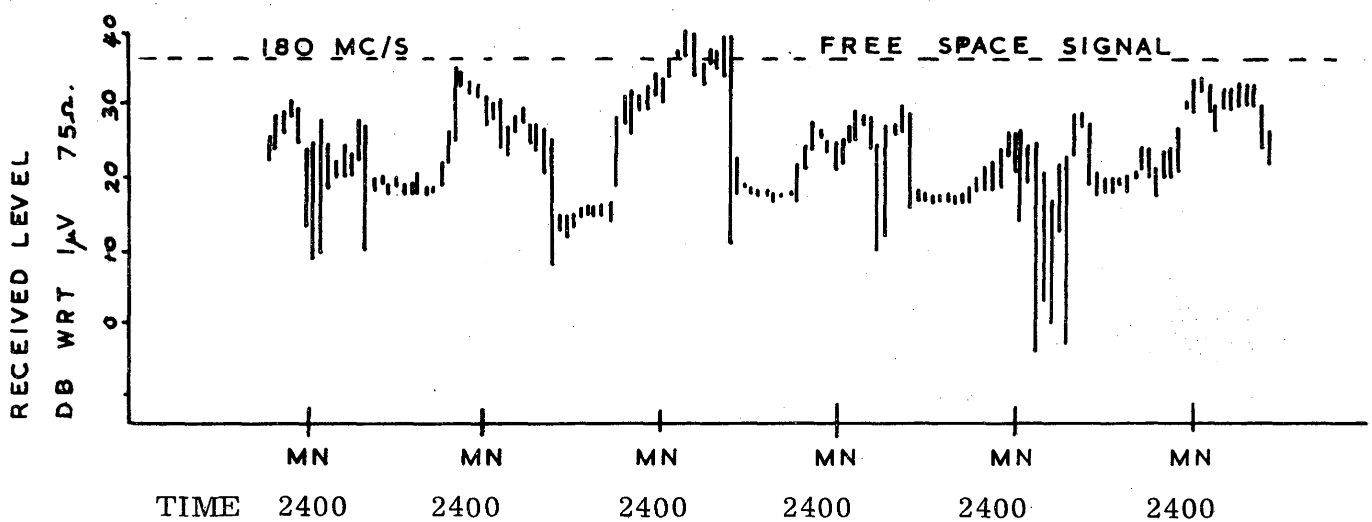
In towns, the average noise level is of the order of 14 db wrt 1 microvolt at a frequency of 180 megacycles per second; whereas it is of the order of 25 db wrt 1 microvolt at a frequency of 80 megacycles per second. This noise measurement refers to a bandwidth of four kilocycles per second.

Strong atmospheric interference is always experienced in the neighbourhood of thunderstorms, and the rate of lightning in the Republic of Cameroun is one of the highest in the world. Peak noise measurements on a frequency of 88 megacycles per second at the Mountain Repeater Station show that lightning flashes can produce levels of the order of thirty to forty decibels with respect to 1 microvolt for a period of one to two seconds; again the bandwidth of the receiver is four kilocycles.

These crashes are followed by a whistle of varying pitch having a fairly steady amplitude of about twenty decibels with respect to one microvolt across seventy-five ohms. It has been observed that, in storm conditions, reception of television pictures is difficult even at relatively short distances from the transmitter and frequency modulated sound is impaired to some extent due to the peculiar after effects of lightning flashes.

Annexes

FIG. I

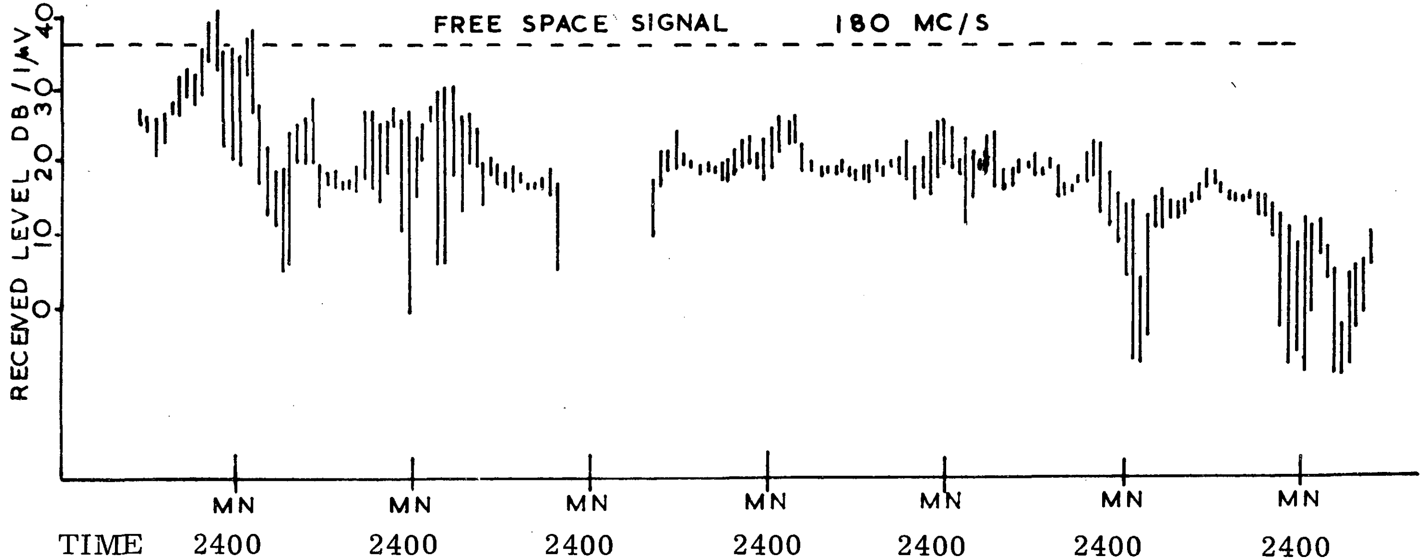


<u>SIGNAL RANGE CHARACTERISTIC</u>

PATH LENGTH	98 KM
TIME OF YEAR	JANUARY
WEATHER	HARMATTAN
TERRAIN	ORCHARD BUSH

FEDERAL GOVERNMENT OF CAMEROUN

FIG. 2

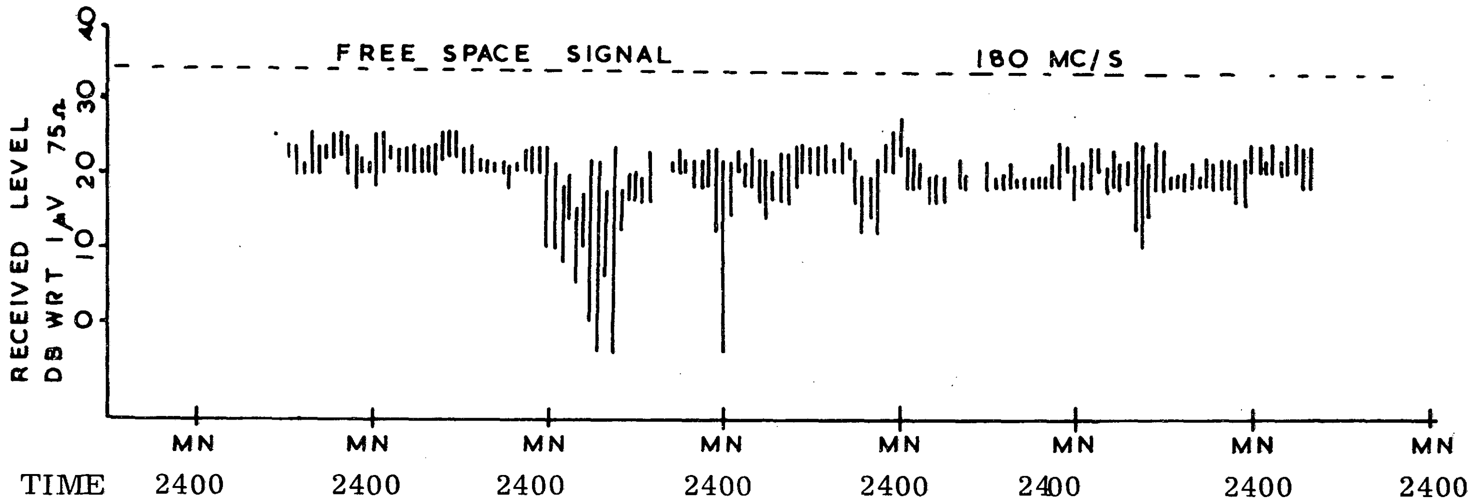


<u>SIGNAL RANGE CHARACTERISTIC</u>

PATH LENGTH	93 KM.
TIME OF YEAR	MAY.
WEATHER	RAIN.
TERRAIN	TROPICAL RAIN FOREST

FEDERAL GOVERNMENT OF CAMEROUN

FIG. 3

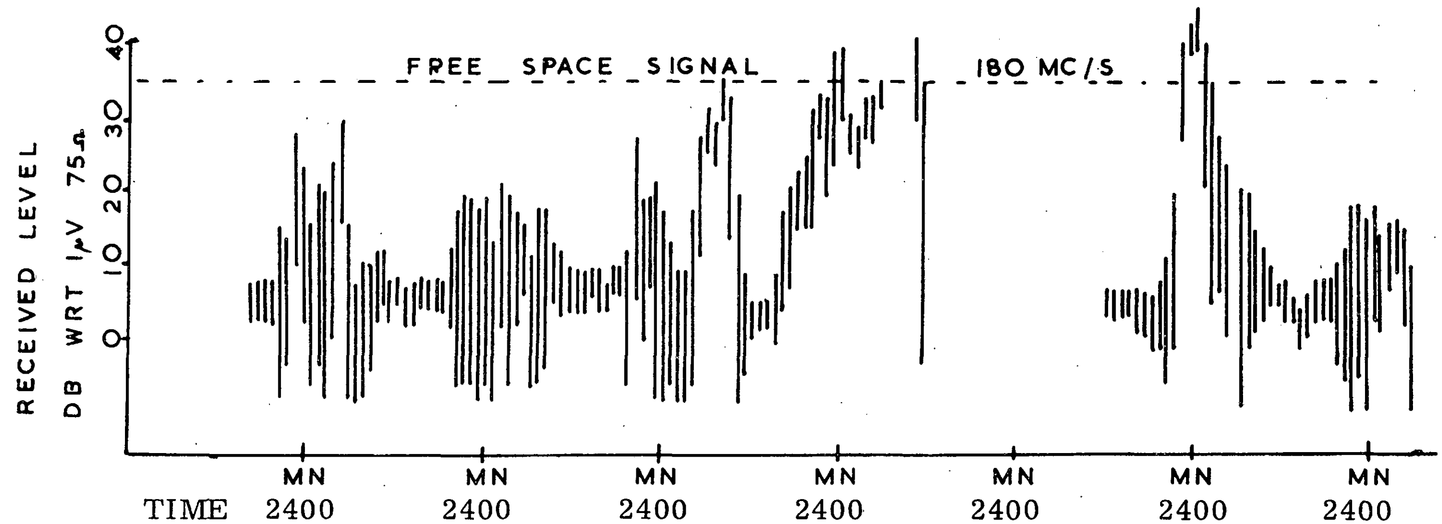


SIGNAL RANGE CHARACTERISTIC

PATH LENGTH	74 KM
TIME OF YEAR	MAY
WEATHER	RAIN
TERRAIN	LATERITE OPEN CULTIVATION

FEDERAL GOVERNMENT OF CAMEROUN

FIG. 4



<u>SIGNAL RANGE CHARACTERISTIC</u>

PATH LENGTH	136 KM
TIME OF YEAR	MAY
WEATHER	RAIN
TERRAIN	FOREST & ROCK (GRANITE OUTCROPS)

FEDERAL GOVERNMENT OF CAMEROUN

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UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS

F

CONFÉRENCE AFRICAINE DE RADIODIFFUSION SUR ONDES MÉTRIQUES ET DÉCIMÉTRIQUES

GENÈVE, 1963

Document N° 12-F/E(Rev.)
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UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS

F

CONFÉRENCE AFRICAINE DE RADIODIFFUSION SUR ONDES MÉTRIQUES ET DÉCIMÉTRIQUES

GENÈVE, 1963

Document N° 12-F/E
29 avril 1963
Original : français/anglais

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Organisation de radiodiffusion et de télévision (O.I.R.T.)
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Union of African National Sound Broadcasting and Television Organizations

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INTERNATIONAL TELECOMMUNICATION UNION

AFRICAN VHF/UHF
BROADCASTING CONFERENCE

GENEVA, 1963

E

Document No. 13-E(Rev.)
1 May, 1963
Original: French

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Vice-Chairman : Mr. G. TEDROS (Ethiopia)

2. Credentials Committee

Chairman : Mr. Y. KAZIBURE (Tanganyika)
Vice-Chairman : Mr. J. LALUNG-BONNAIRE (Republic of Rwanda)

3. Budget Supervision Committee

Chairman : Mr. G. EKUE (Republic of Togo)
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4. Technical Committee

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Vice-Chairman : Mr. M. N'DIAYE (Republic of Mali)

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Chairman : Mr. A. LABAYE (Republic of Gabon)
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Chairman : Mr. J. FOALEM FOTSO (Republic of the Cameroons)
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INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF/UHF
BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 13-E
29 April 1963
Original: French

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2. Credentials Committee

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INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF BROADCASTING CONFERENCE

GENEVA, 1963

Corrigendum to
Document No. 14-F/E
2 May, 1963
Original : French

COMMITTEE 4

In the list of countries enumerated on page 1 add (after Republic of Dahomey)

Group of Territories represented by the French
Overseas Post and Telecommunication Agency
(Comoro Islands, French Somaliland)

France (French Department of Reunion)

This Corrigendum concerns the English text only.

(Ce Corigendum ne concerne que le texte anglais)

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF/UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 14-E
30 April 1963
Original: French

COMMITTEE 4

The International Frequency Registration Board (I.F.R.B.)

TELEVISION SIGNALS

From the information recieved by the I.F.R.B. in answer to letter No. 20/0.28929 dated 21 September, 1962, it appears that the Administrations of the following countries intend to adopt the standards set forth overleaf for their television services.

Republic of Cameroon
Central African Republic
Republic of the Congo (Brazzaville)
Republic of the Ivory Coast
Republic of Dahomey
Republic of Gabon
Republic of the Upper Volta
Malagasy Republic (Madagascar)
Islamic Republic of Mauretania
Republic of the Niger
Republic of Ruanda
Republic of Senegal
Republic of Chad

Annex: 1

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ANNEX

TELEVISION SIGNALS

INDEX

TELEVISION SIGNALS

Black and white (monochrome) system

I. CHARACTERISTICS OF SYSTEM

I.1 General characteristics

1)	Frame interlacing	2 : 1
2)	Scanning sequence : line frame	left to right top to bottom
3)	Nominal number of fields per second F_t	50
4)	Is the system capable of operating with the frame frequency not synchronized to the power supply frequency	Yes
5)	Nominal frame frequency per second F_i	25
6)	Total number of lines per frame N_o	625
7)	Nominal line frequency The tolerances on F_t and F_i are given in section para. 1.2 below	15.625 c/s
8)	Aspect ratio	$\frac{4}{3}$
9)	Video frequency bandwidth effectively radiated $(0 - f_c)$	0 - 6 Mc/s
10)	Shape of television waveform	See Fig. 1

I.2 Scanning Rate

11) The time interval elapsing between "reference points" is denoted by T_1 for a line and T_t for a frame.

A frame is composed of two interlaced fields.

The nominal values of T_1 and T_t are the inverse of the line and frame frequencies respectively

T_1 (/us)	64.0
T_t (ms)	20

12) The difference in time of the duration of any line and the following line or with a line in the next frame should not exceed — 30 ns

13) The time difference in the duration of any two lines in the same frame should not exceed — 130 ns

14) When the systems not synchronised to its power supply, the tolerance to the nominal value of the line and frame frequencies should be within — ± 0.1 %

The tolerance with respect to time of these frequencies shall not exceed — $\pm 10^{-6}$ per sec.

15) Are working conditions noraml with synchronous power supply operation when the power supply frequency lies between 48 and 51 c/s? — Yes

II. CHARACTERISTICS OF VIDEO SIGNAL AND CONNECTION CABLES BETWEEN EQUIPMENT UNITS

II.1 Definition of the term "programme chain"

In the present document the term "programme chain" means groups of separate equipment units associated with the same function. Adjustments, measurements etc., can be made to signals between the individual groups.

Examples

- a camera chain i.e. camera and camera control unit and power supply,
- the synchronising pulse generator, a video mixer and associated amplifiers,
- the transmitter,
- interconnecting cables, and terminating equipment,
- maintenance test equipment.

II.2 Definition relating to the signal

a) The reference points of a rectangular signal are the half amplitude points (midway between edges) (Fig. 2).

b) The active duration time of a rectangular signal is the time between two consecutive half amplitude points separated by a reference level edge.

c) The rise time of a signal is the time taken for the signal to build up from 0.1S to 0.9S amplitude with respect to its starting and final levels. S represents the change in amplitude with respect to the level of the signal preceding the leading edge to the level following the change.

d) Transient overshoot ratio s of a signal step is the ratio of the maximum displacement duration beyond the theoretical level d to the amplitude S defined above. (See Fig. 3, S equals the greater of $\frac{d}{s}$ or $\frac{d'}{s}$).

Expressed as a percentage the ratio $s = 100 \frac{d}{s} \%$ is called the transient overshoot ratio.

e) The polarity of a rectangular signal is termed positive when, taking the potential with reference to the potential at the sheath of a coaxial connector carrying the signal the transition from a high level to a low level of the signal involves an algebraic increase in the potential of the centre conductor.

The polarity is termed negative when the reverse occurs.

f) The polarity of a picture signal is termed positive if, in the same conditions as above, the transition from a signal representing black to a signal representing white involves an algebraic potential increase. It is termed negative under the reverse conditions.

II.3 Interstage characteristics

Connection between two equipment units is made by means of coaxial cables of 75 ohms nominal characteristic impedance. At the connection point the nominal input impedance of the driving stage is 75 ohms pure resistive.*)

The relevant connection details will be shown in each case.

The d.c. component superimposed on the signal will not exceed 6 volts, in such a way that the total energy dissipated in the input impedance of the driven stage never exceeds 0.5 watts. In addition, in the case of an open circuited input to an equipment unit the d.c. voltage appearing across its output terminals will not exceed 60 V.

*) Exception: The case of the reference voltage signal (see para. 2.7).

The signal at a terminal will always without exception be one of the standardised signals defined below.

II.4 Standard Signals

The standard signals are:

a) basic signals:

line blanking signal, rectangular in shape

frame blanking signal, rectangular in shape

synchronising pulse signal, the sum of two square waves and

camera chain test signal, rectangular in shape and comprising two successive lines:

- a triggering signal
- a uniform white line signal (Fig. 9)

b) video signals:

the picture signal which in the absence of the blanking signal represents the light intensity of successive points of the image scanned;

composite video signal, which is the algebraic sum of the above signal plus the synchronising signal;

c) reference voltage signal, of square form for amplitude reference.

II.5 Video signals

The following characteristics apply to signals sent to line from studios or coming from the networks where they are produced and whose transmission characteristics at video frequency over co-axials cables is of such quality that distortion is negligible with respect to the indicated tolerances.

Size: (the letters refer to figure 1)			Unit	
	1.	General characteristics		
		Amplitude peak to peak	v	1 ± 0.05
*)		Amplitude of synchronisation pulse	v	0.3 ± 0.02
		Polarity		positive
		D.C. and very low frequency components		not transmitted
	2.	Basic signals		
		Line blanking period	μs	12.1 ± 0.3
*)	-	Interval between time datum (OH) and trailing edge of line blanking	μs	10.7 ± 0.3
*)	-	Front porch	μs	1.5 ± 0.2
*)	-	Line synchronisation duration	μs	4.8 ± 0.2
		Rise time line blanking	ns	300 ± 100
*)	-	Rise time line synchronisation signal	ns	150 ± 50
		Rise time frame blanking signal	μs	0.2 to 2
T*)	-	Duration of frame synchronisation pulse	μs	27.2 ± 0.4
R*)	-	Period between synchronisation pulses	μs	32-T being 4.8 μs
P*)	-	Duration equalisation pulses	μs	2.3 ± 0.1
S*)	-	Rise time frame synchronising pulses	ns	150 ± 50
	3.	Video signal		
		Gamma value		0.5
		Black level with respect to blanking as a percentage of composite signal		7 ± 3
		Transition black/white depends on type of signal		
		Build up time (ns) : $\theta = \frac{1}{2f_c}$ (nominal value)		83
		Amplitude of spurious signal with respect to amplitude of video signal (note 2) (%)		< 2

*) These values only apply to composite video.

Notes:

1. Measurements should be made on a signal containing white points at each end of the line.

2. The maximum duration of spurious signals superimposed on the video. A reference test signal is taken from a test channel. The figures are therefore independent of the basic camera noise.

3. Maximum ratio of transient overshoot: 0.05

4. When the leading edge of a frame synchronisation coincides with the leading edge of a line the tolerances applicable to the latter apply.

5. Whatever the video signal content, the signal should always decrease during the front porch period. No spurious oscillation or increase in amplitude is tolerable during this time.

II.6 Line test

A composite video test signal produced from a picture source consists of two camera test lines.

The composite test signal fed to the network is composed of two test lines called network test lines. These test lines are substituted for the camera test lines at the output of the originating studio. They can be completely or selectively suppressed from the transmission. This use is limited to the requirements of the Television Centre.

The figure 4 shows the composition of the camera test signal.

The figure 5 shows the composition of the line test.

II.7 Standard volt signal

The standard signal volt peak to peak is the reference amplitude standard signal used to calibrate control equipment.

It is fed to co-axial line from a generator of very low internal impedance. The cable is not matched and the relevant units have an input impedance above 20,000 ohms.

The amplitude is 1 ± 0.02 volts.

III. CHARACTERISTICS OF BROADCAST R.F. SIGNALS

III.1 Frequency bands allocated to broadcasting :

Band I	41 - 68 Mc/s
Band III	174 - 223 Mc/s*)
Band IV-V	470 - 960 Mc/s*)

III.2 Characteristics of radiated signal

The complete radiated television signal is composed of two carriers, one for picture and one for sound, both of the same polarisation and which may be either horizontal or vertical.

The sound carrier is frequency modulated with a deviation of $\pm$ 50 kc/s. The pre-emphasis characteristic is identical to the admittance/frequency curve of a parallel RC circuit with a time constant of 50 μs.

The picture carrier is negative amplitude modulated, that is an increase in light intensity of the scanned subject causes a reduction in the radiated power.

One of the modulation side bands of this carrier wave is radiated at full amplitude, the other is attenuated and is called the vestigial side band.

The following table sets out the principal characteristics of the broadcast signal.

*) Certain parta of these bands are shared with other services.

Reference	Description	
A*)	Separation of similar carriers in spectrum Mc/s	8 Mc/s
B*)	Separation between sound and vision carrier of the same emission (Mc/s)	6.5
C*)	Nominal width of main side band (Mc/s)	6
D*)	Nominal width of vestigial side band (Mc/s)	1.25
E*)	Nominal channel bandwidth (Mc/s)	8.5
	Ratio of the modulated amplitude to peak amplitude (expressed as a percentage)	
	Peak white	0
	Blanking level	70 ± 2
	Difference between black level and blanking level ("set up")	5 ± 2
	Synchronisation level	100
	Effective picture/sound (power ratio)	5 : 1

III.3 Channel details

The following tables refer as follows:

The first to bands I and III and the second to bands IV and V, and set out the essential characteristics of the various channels.

No. of channel	Picture carrier	Sound carrier
1*)	43.25 Mc/s	49.75 Mc/s
2	52.25	58.75
3	60.25	66.75
4	175.25	181.75
5	183.25	189.75
6	191.25	197.75
7	199.25	205.75
8	207.25	213.75
9	215.25	221.75

*) See figure 6 for references
**) As an exception to the general rule the separation between similar carriers for channels 1 and 2 is 9 Mc/s instead of 8 Mc/s.

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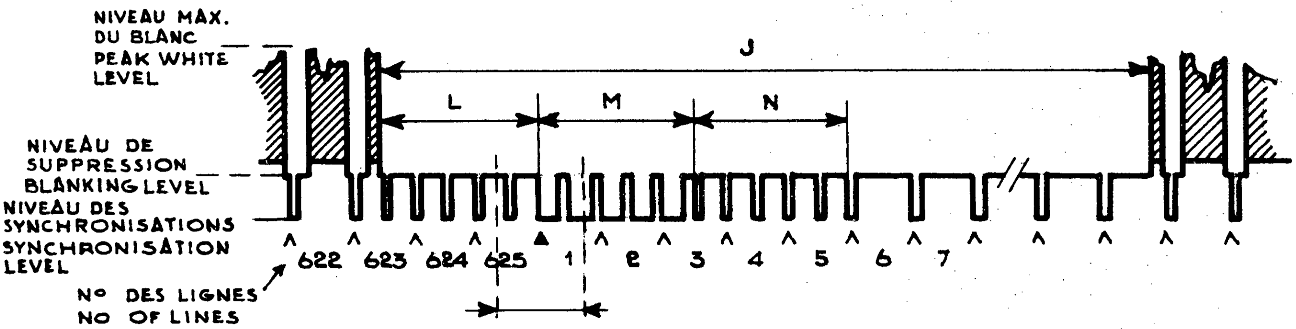
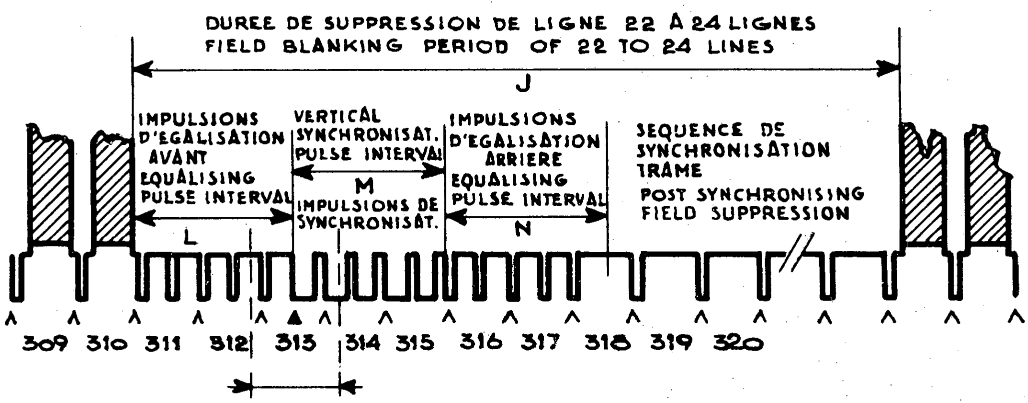
IV. INTERMEDIATE FREQUENCIES OF RECEIVER ON WHICH THE FREQUENCY ALLOCATION PLANS ARE BASED

The i.f. values of the receivers are :

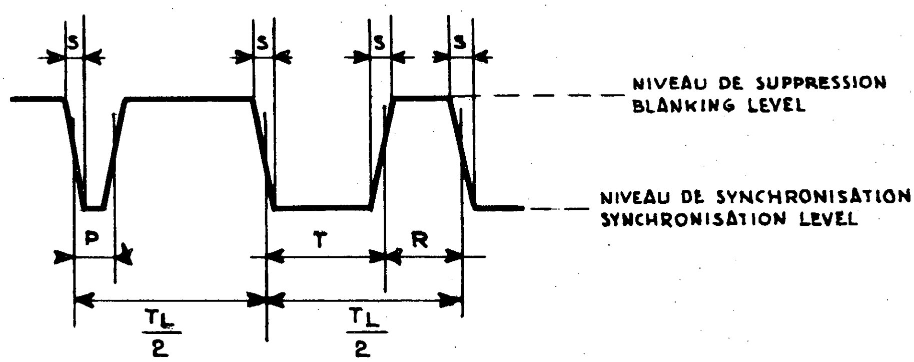
picture	40.2 Mc/s
sound	33.7 Mc/s



SIGNAL AU DEBUT DES TRAMES IMPAIRES (Λ ET ▲ COINCIDENT)
SIGNAL AT END OF ODD FIELDS



SIGNAL AU DEBUT DES TRAMES PAIRES (Λ ET ▲ COINCIDENT)
SIGNAL AT END OF EVEN FIELDS



DETAIL A - SIGNAUX DE LA SEQUENCE DE SYNCHRONISATION DE TRAME
FRAME SIGNE PULSE SEQUENCE

Fig. 1 - ALLURE GENERALE DU SIGNAL VIDEO
SYNCHRONISING SIGNALS

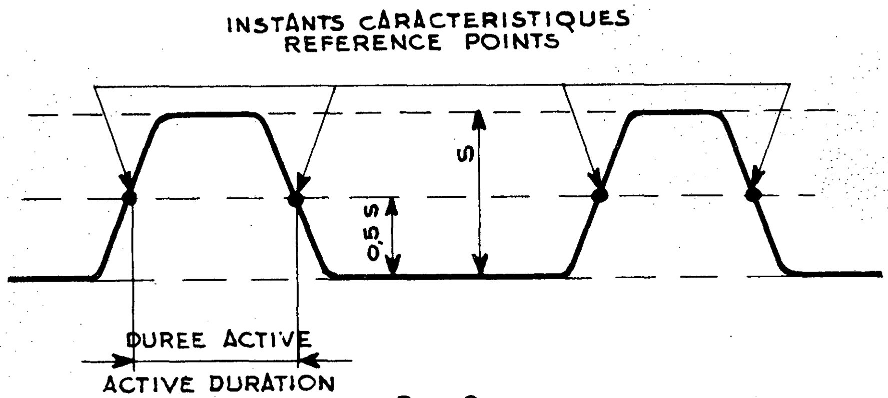


Fig. 2

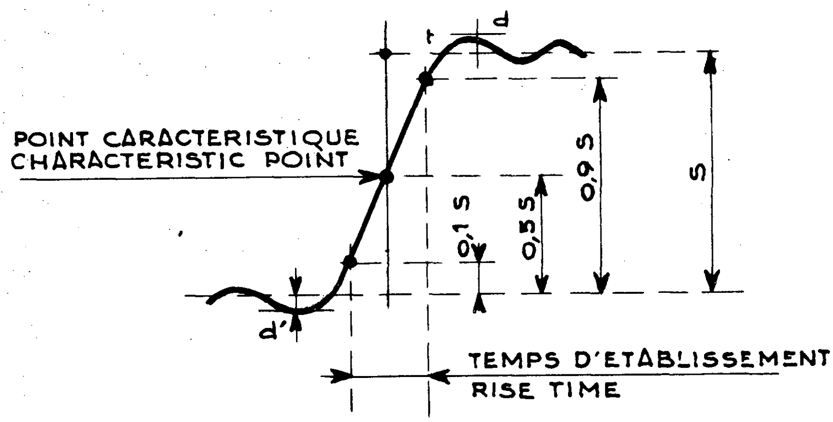


Fig. 3

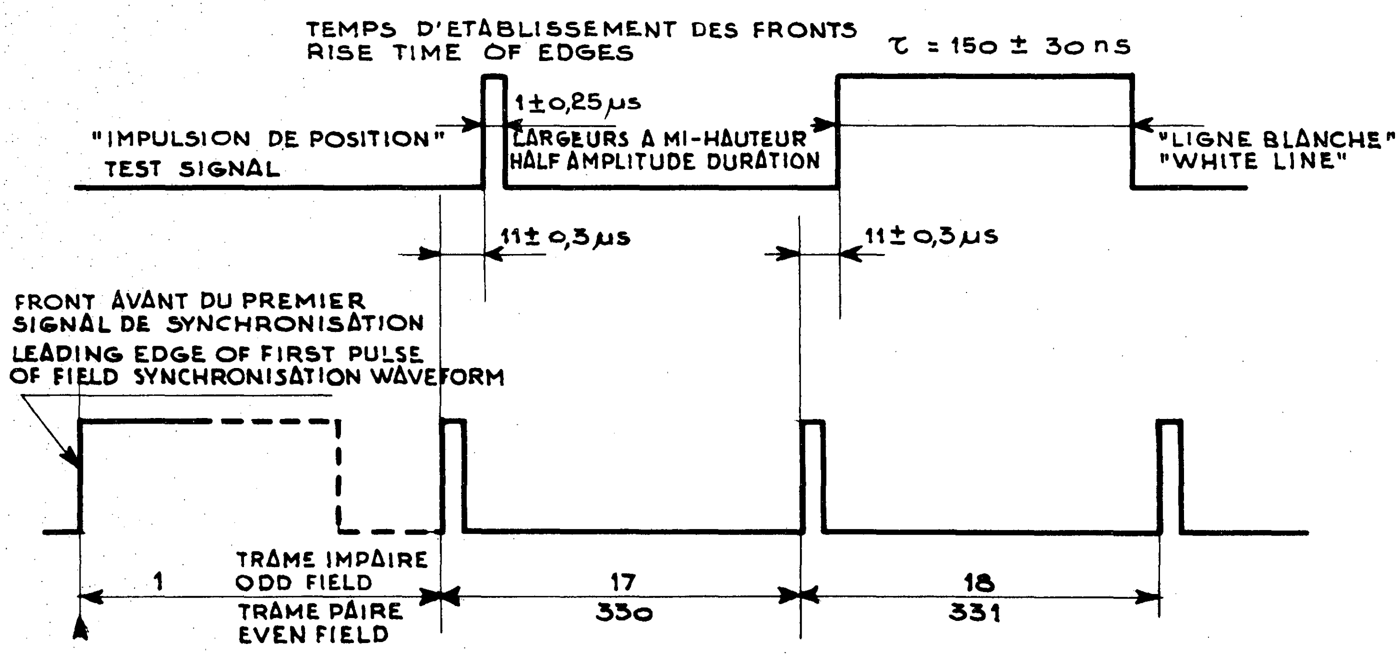
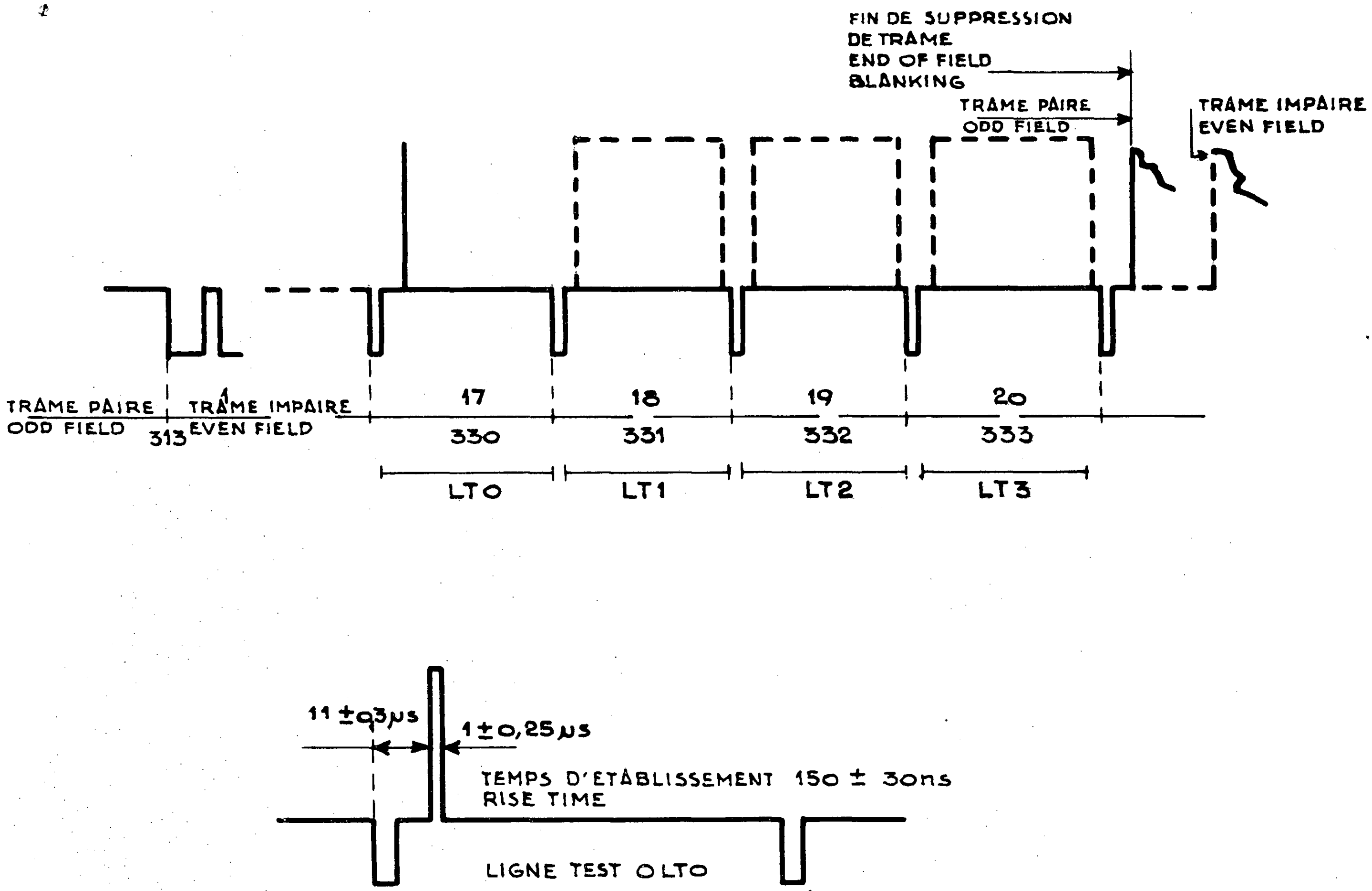


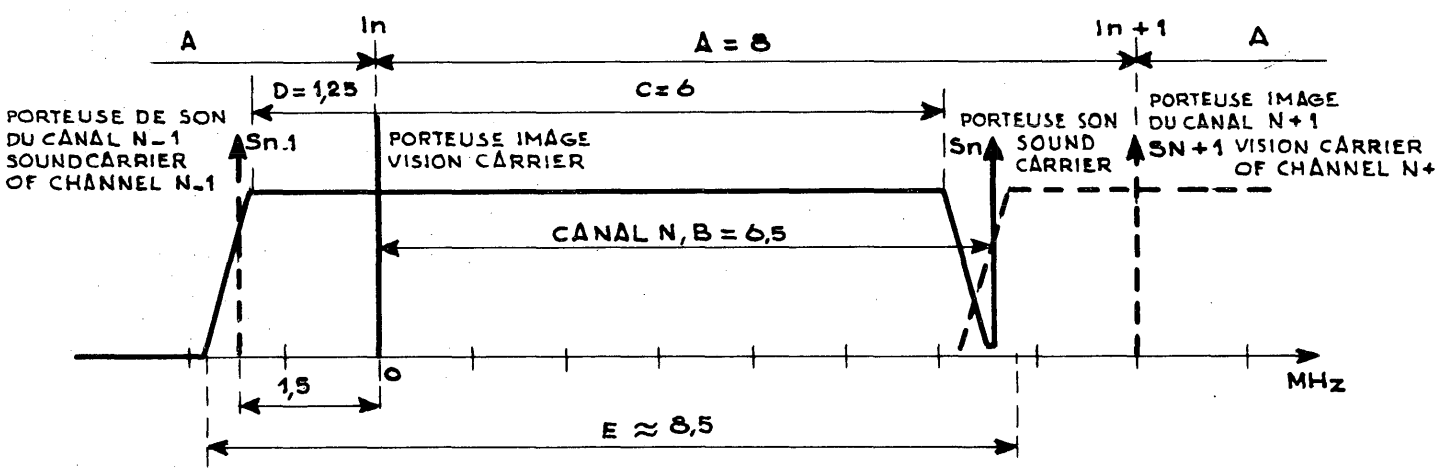
Fig. 4

SIGNAUX DE LIGNE TEST CAMERA
CAMERA LINE TEST SIGNALS



LT1, LT 2 ET LT3 - LE CONTENU DE CES LIGNES TEST SERA PRECISE ULTERIEUREMENT
DETAILS OF THESE LINE WILL BE ESTABLISHED LATES

Fig. 5 CARACTERISTIQUES DES LIGNES TEST-RESEAU
CHARACTERISTICS OF TEST LINES - NETWORK



NOTA : TOUTES LES VALEURS NUMERIQUES SONT EXPRIMEES EN MHz
ALL NUMERICAL VALUES ARE EXPRESSED IN Mc/s

Fig-6 OCCUPATION DU SPECTRE PAR LE CANAL
CHANNEL OCCUPANCY

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 15-F/E (Rev.)
2 May, 1963

COMMISSION 4
COMMITTEE 4

Comité international d'enregistrement des fréquences (I.F.R.B.)

RESUME DES DEMANDES POUR LA RADIODIFFUSION A ONDES METRIQUES ET DECIMETRIQUES

(Radiodiffusion sonore et télévision)

Le tableau ci-annexé est un résumé des demandes présentées par les Administrations des pays de la région africaine en réponse à la lettre de l'I.F.R.B. No 20/0.28929 du 21 septembre 1962 et mises à jour d'après les derniers renseignements reçus jusqu'au 2 mai 1963.

International Frequency Registration Board (I.F.R.B.)

SUMMARY OF REQUIREMENTS FOR VHF/UHF BROADCASTING

(Sound and television)

The table annexed to this Document is a summary of the requirements presented by Administrations of countries in the African region in answer to I.F.R.B. letter No. 20/0.28929 of 21 September 1962 and brought up to date in the light of the latest information received up to 2 May 1963.

Annexe : 1

Annex: 1

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ANNEXE - ANNEX

RESUME DES DEMANDES POUR LA RADIODIFFUSION A ONDES METRIQUES ET DECIMETRIQUES (Emissions sonores et visuelles)
SUMMARY OF REQUIREMENTS FOR VHF/UHF BROADCASTING (Sound and television)

NOTES : - K* indique le standard K avec une largeur de bande latérale résiduelle de 1,25 MHz
K* denotes standard K with 1.25 Mc/s vestigial sideband
- L'abréviation "insuf" signifie que les renseignements reçus étaient insuffisants
The abbreviation "insuf" denotes that the information received was insufficient
- Le symbole "x" signifie que les renseignements ont été fournis
An "x" denotes that the information has been provided

ADMINISTRATION		Nombre total des emplacements Total no. sites	Coordonnées géographiques Coordinates	Hauteurs équivalentes Effective heights	Coefficients du sol Ground Co-efficients	Polarisation	Zone climatique CCIR proposée Proposed CCIR Climatic Zone	Puissance (PAR) Power (ERP)	Directivité de l'antenne Antenna Directivity	Qualité du service Service Grade	Nombre d'assignations préférées dans les bandes (si spécifié) Number of assignments in Bands preferred (when specified)				Système System	
											I	II	III	IV V	BC	TV
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
ALGERIE	ALG	1	x	x	x	H	2	x	N.D.	B	-	3	1	2	F3	
BURUNDI (Royaume du)	BDI	1	-	-	-	-	5	-	N.D.		-	1	-	-	180F3	
CAMEROUN (Rép. du)	CME	128	x	x	x	-	5	x	N.D. & insuf.	A & B	14	138	28	256	F3	K.*
CENTRAFRICAINE (Rép.)	CAF	111	x	x	x	H	5	x	N.D. & insuf.	A & B	13	148	29	222	F3	K.*
CONGO (Rép. du) (Brazzaville)	COG	96	x	x	x	H	5	x	N.D.	A & B	9	103	20	198	F3	K.*

1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CONGO (Rép. du)(Léopoldville)	CGO	747	x	x	–	H	3,5	x	N.D.	A & B	55	865	119	1494	F3	–
DAHOMEY (Rép. du)	DAH	32	x	x	x	H	3,5	x	N.D.& insuf.	A & B	2	32	7	64	F3	K.*
Ensemble des Territoires représentés par l'Office français des postes et télécommunications d'Outre-Mer																
COMORES	COM	9	x	x	x	H	–	x	N.D.	A	2	27	7	18	F3	K.*
Côte française des SOMALIS	SMF	3	x	x	x	H	2	x	N.D.	A & B	–	9	3	6	F3	K.*
ESPAGNE : Canaries	CNR	8	x	x	–	H	4	x	N.D.	B	1	14	2	3	F3	B & G
ETHIOPIE	ETH	63	x	insuf.	–	–	2,3,6	x	–	–	–	126	63	–	180F3	G ou H
FRANCE Département français de la Réunion	REU	12	x	x	x	H	1	x	N.D.	A	–	36	12	24	F3	K.*
GABONAISE (Rép.)	GAB	70	x	x	x	H	5	x	N.D.& insuf.	B	8	83	16	140	F3	K.*
GHANA	GHA	3	x	insuf.	–	–	3,5	x	x	–	3	–	–	–	–	B.
GUINEE (Rép. de)	GUI	82	x	x	x	H	3,4	x	N.D.& insuf.	A & B	8	25	17	164	–	–
COTE D'IVOIRE (Rép. de)	CTI	78	x	x	x	H	–	x	N.D.& insuf.	A & B	8	76	15	156	F3	K.*
HAUTE-VOLTA (Rép. de)	HVO	66	x	x	x	–	3,5	x	N.D.& insuf.	A & B	7	71	12	122	F3	K.*
LIBERIA	LBR	9	x	–	–	–	4,5	–	–	–	2	–	–	–	200F3	525 lignes 60 Hz
LIBYE (Royaume Uni de)	LBY	5	x	x	–	H	2	x	N.D.& insuf.	B & G	–	5	5	5	180F3	Go2H
MALGACHE (Rép.)	MDG	209	x	x	x	H	3	x	N.D.& insuf.	A & B	14	207	42	418	F3	K.*

1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MALI (Rép. du)	MLI	163	x	x	x	H	2,3	x	N.D.& insuf.	A & B	16	188	37	326	F3	K.*
MAURITANIE (Rép. Islamique de)	MTN	60	x	x	x	H	2,3,4	x	insuf.	A & B	15	149	29	120	F3	K.*
NIGER (Rép. du)	NGR	87	x	x	x	H	2,3	x	N.D.& insuf.	A & B	14	125	21	174	F3	K.*
NIGERIA (Fédération de)	NIG	53	x	–	–	H	3,5	x	N.D.	–	4	52	15	–	F3	G.
PROVINCES ESPAGNOLES D'AFRIQUE :																
PROVINCES ESPAGNOLES D'AFRIQUE OCCIDENTALE	AOE	18	x	x	–	H	4	x	N.D.	B	–	8	5	5	F3	B et G
PROVINCES ESPAGNOLES DU GOLFE DE GUINEE	GNE	20	x	x	–	H	5	x	N.D.	B	1	11	2	6	F3	B et G
PROVINCES PORTUGAISES D'OUTRE-MER																
ANGOLA	AGL	36	x	x	–	H	2,3	x	N.D.	B	9	160	4	–	F3	G.
CAP-VERT (Iles du)	CPV	10	x	x	–	H	–	x	N.D.	B	–	21	–	–	F3	–
GUINEE PORTUGAISE	GNP	8	x	x	–	H	4	x	N.D.	B	1	21	–	–	F3	G.
MOZAMBIQUE	MOZ	27	x	x	–	H	3,5	x	N.D.	B	6	126	4	–	F3	G.
S. TOME ET PRINCIPE	STP	2	x	x	–	H	–	x	N.D&	B		6	–	–	F3	–
REPUBLIQUE ARABE UNIE	EGY	45 1)	x	x	–	H	2	x	insuf.	B	11	44	33	65	180F3	625 lignes, 7 MHz
REPUBLIQUE SOMALIE	SOM	28	x	insuf.	–	V & H	2	x	N.D.& insuf.	–	–	81	28	28	180F3	B.

1) Y compris 30 emplacements au-dessus du parallèle 30°N

1) Including 30 sites above 30°N

1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
RHODESIA ET NYASSALAND (Fédération)																
NYASSALAND	NYA	6	x	–	–	–	2,3,6	–	–	–	–	18	–	12	F3	–
RHODESIE DU NORD	RHN	46	x	–	–	–	2,3,6	–	–	–	1	132	–	88	F3	B.
RHODESIE DU SUD	RHS	25	x	–	–	–	3	–	–	–	2	72	–	48	F3	B.
RWANDAISE (Rép.)	RRW	6	x	x	x	H	3,5	x	N.D.& insuf.	A & B	1	8	1	12	F3	K.*
SENEGAL (Rép. du)	SEN	39	x	x	x	H	4	x	N.D.& insuf.	A & B	4	63	15	78	F3	K.*
SIERRA LEONE	SRL	7	x	x	–	H	4,5	x	N.D.et insuf.	B	1	21	7	14	180F3	B ou I
SOUDAN (Rép. du)	SDN	1	x	–	–	–	2,3,5,6	–	–	–	–	–	–	–	–	–
SUDAFRICAINE (Rép.) et Territoire de l'AFRIQUE DU SUD-OUEST	AFS	151	x	–	–	H	1,2,3,6	x	insuf.	B	–	648	83	364	F3	G ou I
TANGANYIKA	TGK	1	–	–	–	–	3,5	–	–	–	1	1	–		F3	B.
TCHAD (Rép. du)	TCD	115	x	x	x	H	3,5	x	N.D.	B	18	185	34	230	F3	K.*
OUGANDA	UGA		–	–	–	–	3,5	–	–	–	1	1	–	–	F3	B.
Territoires d'Outre-Mer dont les relations internationales sont assurées par le Gouvernement du Royaume-Uni de la Grande-Bretagne et de l'Irlande du Nord																
ADEN	ADN	4	x	x	–	H	2	x	N.D.	B	2	12	2	8	180F3	B ou I
ASCENSION	ASC	1	x	x	–	H	–	x	N.D.	B	1	3	–	2	180F3	B ou I
BASUTOLAND	BAS	2	x	x	–	H	1,6	x	N.D.	B	1	6	1	4	180F3	B ou I
BECHUANALAND	BCH	3	x	x	–	H	2,6	x	N.D.	B	2	9	1	6	180F3	B ou I

1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
GAMBIE	GMB	5	x	x	-	H	4	x	N.D.	B	2	12	2	10	F3	B ou I
MAURICE (Ile)	MAU	2	x	x	-	H	-	x	N.D.	B	1	6	1	4	180F3	B ou I
SEYCHELLES	SEY	2	x	x	-	H	-	x	N.D.	B	1	5	1	4	180F3	B ou I
S. HELENE	SHN	1	x	x	-	H	-	x	N.D.	B	-	3	1	2	180F3	B ou I
SWAZILAND	-	1	x	x	-	H	3	x	N.D.	B	1	3	-	2	180F3	B ou I
ZANZIBAR	ZAN	2	x	x	-	H	3	x	N.D.	B	2	6	-	4	180F3	B ou I
TOGOLAISE (Rép.)	TGO	16	x	x	-	H	3,5	x	N.D.	A et B	2	18	3	32	F3	K.*
TUNISIE	TUN 1)	18	x	x	x	H	1,2	x	insuf.	B	1	10	9	19	-	-
AFRIQUE ORIENTALE BRITANNIQUE																
KENYA	KEN		-	-	-	-	3	-	-	-	1	1	-	-	F3	B.

1) Tous emplacements au-dessus du parallèle 30°N

1) All sites above 30°N

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 15-E
30 April 1963
Original : English

COMMITTEE 4

International Frequency Registration Board (I.F.R.B.)

SUMMARY OF REQUIREMENTS FOR VHF/UHF BROADCASTING

(Sound and television)

The table annexed to this Document is a summary of the requirements presented up to 30th April 1963 by Administrations of countries in the African region in answer to I.F.R.B. letter No. 20/0.28929 of 21st September 1962.

Annex : 1

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ANNEXE - ANNEX

RESUME DES DEMANDES POUR LA RADIODIFFUSION A ONDES METRIQUES ET DECIMETRIQUES (Emissions sonores et visuelles)
SUMMARY OF REQUIREMENTS FOR VHF/UHF BROADCASTING (Sound and television)

NOTES : - K* indique le standard K avec une largeur de bande latérale résiduelle de 1,25 MHz
- K* denotes standard K with 1.25 Mc/s vestigial sideband
- L'abréviation "insuf" signifie que les renseignements reçus étaient insuffisants
- The abbreviation "insuf" denotes that the information received was insufficient
- Le symbole "x" signifie que les renseignements ont été fournis
- An "x" denotes that the information has been provided

ADMINISTRATION		Nombre total des emplacements / Total no. sites	Coordonnées géographiques / Coordinates	Hauteurs équivalentes / Effective heights	Coefficients du sol / Ground Co-efficients	Polarisation	Zone climatique CCIR proposée / Proposed CCIR Climatic Zone	Puissance (PAR) / Power (ERP)	Directivité de l'antenne / Antenna Directivity	Qualité du service / Service Grade	Nombre d'assignations préférées dans les bandes (si spécifié) / Number of Assignments in Bands preferred (when specified)					Système / System
											I	II	III	IV V	BC	TV
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
BURUNDI (Royaume du)	BDI	1	-	-	-	-	5		N.D.		-	1	-	-	180F3	
CAMEROUN (Rép. du)	CME	128	x	x	x	-	5	x	N.D. & insuf.	A & B	14	137	28	258	F3	K.*
CENTRAFRICAINE (Rép.)	CAF	111	x	x	x	H	5	x	N.D. & insuf.	A & B	11	42	29	111	F3	K.*
CONGO (Rép. du) (Brazzaville)	COG	96	x	x	x	H	5	x	N.D.	A & B	9	103	20	198	F3	K.*

1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CONGO (Rép. du) (Leopoldville)	CGO						3,5									
DAHOMEY (Rép. du)	DAH	32	x	x	x	–	3,5	x	N.D.& insuf.	B	2	9	7	32	F3	K.*
Ensemble des Territoires représentés par l'Office français des postes et télécommunications d'Outre-Mer																
COMORES	COM	9	x	x	x	H	–	x	N.D.	A	2	27	7	18	F3	K.*
Côte française des SOMALIS	SMF	3	x	x	x	H	2	x	N.D.	A & B	–	9	3	6	F3	K.*
ETHIOPIE	ETH	63	x	insuf.	–	–	2,3,6	x	–	–	–	126	63	–	180F3	G ou H
FRANCE Département français de la Réunion	REU	12	x	x	x	H	1	x	N.D.	A	–	36	12	24	F3	K.*
GABONAISE (Rép.)	GAB	70	x	x	x	H	5	x	N.D.& insuf.	B	8	83	16	140	F3	K.*
GHANA	GHA	3	x	insuf.	–	–	3,5	x	x	–	3	–	–	–	–	B.
GUINEE (Rép. de)	GUI	82	x	x	x	H	3,4	x	N.D.& insuf.	A & B	8	25	16	82	–	–
COTE D'IVOIRE (Rép. de)	CTI	78	x	x	x	H	–	x	N.D.& insuf.	A & B	8	23	15	78	F3	K.*
HAUTE-VOLTA (Rép. de)	HVO	66	x	x	x	–	3,5	x	N.D.& insuf.	B	7	19	12	66	F3	K.*
LIBERIA	LBR	9	x	–	–	–	4,5	–	–	–	2	–	–	–	200F3	525 lignes, 60 Hz
MALGACHE (Rép.)	MDG	210	x	x	x	H	3	x	N.D.& insuf.	A & B	14	208	42	410	F3	K.*

1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MALI (Rép. du)	MLI	163	x	x	x	H	2,3	x	N.D.& insuf.	A & B	14	53	37	163	F3	K.*
MAURITANIE (Rép. Islamique de)	MTN	64	x	x	x	H	2,3,4	x	insuf.	A & B	10	150	280	120	F3	K.*
NIGER (Rép. du)	NGR	87	x	x	x	H	2,3	x	N.D.& insuf.	A & B	14	125	21	174	F3	K.*
NIGERIA (Fédération de)	NIG	53	x	-	-	H	3,5	x	N.D.	-	4	52	15		F3	G.
PROVINCES ESPAGNOLES D'AFRIQUE :																
PROVINCES ESPAGNOLES D'AFRIQUE OCCIDENTALE	AOE	21	x	x	-	H	4	x	N.D.	-	1	14	7	-	180F3	B.
CANARIES	CNR	8	x	x	-	H	-	x	N.D.	B	1	14	-	-	180F3	B.
PROVINCES ESPAGNOLES DU GOLFE DE GUINEE	GNE	2	x	x	-	-	5	x	N.D.	-	-	2	-	-	180F3	-
PROVINCES PORTUGAISES D'OUTRE-MER																
ANGOLA	AGL	36	x	x	-	H	2,3	x	N.D.	B	9	160	4	-	F3	G.
CAP-VERT (Iles du)	CPV	10	x	x	-	H	-	x	N.D.	B	-	21	-	-	F3	-
GUINEE PORTUGAISE	GNP	8	x	x	-	H	4	x	N.D.	B	1	21	-	-	F3	G.
MOZAMBIQUE	MOZ	27	x	x	-	H	3,5	x	N.D.	B	6	126	4	-	F3	G.
S. TOME ET PRINCIPE	STP	2	x	x	-	H	-	x	N.D&	B		6	-	-	F3	-
REPUBLIQUE ARABE UNIE	EGY	45 1)	x	x	-	H	2	x	insuf.	B	11	44	33	65	180F3	625 lignes, 7 MHz
REPUBLIQUE SOMALIE	SOM	28	x	insuf.	-	V.& H	2	x	N.D.& insuf.	-	-	81	28	28	180F3	B.

1) Y compris 30 emplacements au-dessus du parallèle 30°N

1) Including 30 sites above 30°N

1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
RHODESIA ET NYASSALAND (Fédération)																
NYASSALAND	NYA	6	x	–	–	–	2,3,6	–	–	–	–	18	–	12	F3	–
RHODESIE DU NORD	RHN	46	x	–	–	–	2,3,6	–	–	–	1	132	–	88	F3	B.
RHODESIE DU SUD	RHS	25	x	–	–	–	3	–	–	–	2	72	–	48	F3	B.
RWANDAISE (Rép.)	RRW	6	x	x	x	H	3,5	x	N.D.& insuf.	A & B	1	2	1	6	F3	K.*
SENEGAL (Rép. du)	SEN	39	x	x	x	H	4	x	N.D.& insuf.	A & B	4	62	15	78	F3	K.*
SIERRA LEONE	SRL	1	x	insuf.	–	H	4,5	x	insuf.	–	1	–	–	–	–	B.
SOUDAN (Rép. du)	SDN	1	x	–	–	–	2,3,5,6	–	–	–	–	–	–	–	–	–
SUDAFRICAINE (Rép.) et Territoire de l'AFRIQUE DU SUD-OUEST	AFS	151	x	–	–	H	1,2,3,6	x	insuf.	B	–	648	83	364	F3	G ou I
TANGANYIKA	TGK	1	–	–	–	–	3,5	–	–	–	1	1	–	1	F3	B.
TCHAD (Rép. du)	TCD	115	x	x	x	H	3,5	x	N.D.	B	18	185	34	230	F3	K.*
OUGANDA	UGA		–	–	–	–	3,5	–	–	–	1	1	–	–	F3	B.
Territoires d'Outre-Mer dont les relations internationales sont assurées par le Gouvernement du Royaume-Uni de la Grande-Bretagne et de l'Irlande du Nord																
ADEN	ADN	4	x	x	–	H	2	x	N.D.	B	2	12	2	8	180F3	B ou I
ASCENSION	ASC	1	x	x	–	H	–	x	N.D.	B	1	3	–	2	180F3	B ou I
BASUTOLAND	BAS	2	x	x	–	H	1,6	x	N.D.	B	1	6	1	4	180F3	B ou I
BECHUANALAND	BCH	3	x	x	–	H	2,6	x	N.D.	B	2	9	1	8	180F3	B ou I

1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
GAMBIE	GMB	5	x	x	-	H	4	x	N.D.	B	2	12	2	10	F3	B ou I
MAURICE (Ile)	MAU	2	x	x	-	H	-	x	N.D.	B	1	6	1	4	180F3	B ou I
SEYCHELLES	SEY	2	x	x	-	H	-	x	N.D.	B	1	5	1	4	180F3	B ou I
S. HELENE	SHN	1	x	x	-	H	-	x	N.D.	B	-	3	1	2	180F3	B ou I
SWAZILAND	-	1	x	x	-	H	3	x	N.D.	B	1	3	-	2	180F3	B ou I
ZANZIBAR	ZAN	2	x	x	-	H	3	x	N.D.	B	2	6	-	4	180F3	B ou I
TOGOLAISE (Rép.)	TGO	12	x	x	-	-	3,5	x	-	-	9	12	3	-	F3	K.*
TUNISIE	TUN 1)	18	x	x	-	V& H	1,2	x	insuf.	B	1	10	9	19	-	-
AFRIQUE ORIENTALE BRITANNIQUE																
KENYA	KEN		-	-	-	-	3	-	-	-	1	1	-	-	F3	B.

1) Tous emplacements au-dessus du parallèle 30°N

1) All sites above 30°N

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF
BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 16-E
30 April 1963
Original : French

COMMITTEE 4

INTERIM REPORT OF WORKING GROUP 4A

Chairman : Mr. LALUNG-BONNAIRE (Republic of Rwanda)

It was recalled that the terms of reference of Working Group 4A were :

1. Study of television standards.
2. Frequency modulation standards and characteristics.
3. Protection ratio in band 3 between different types of services.
4. Minimum field strength to be protected for television and the protection ratio in television.

Working Group 4A 1 was set up under the chairmanship of Mr. A. LATIF AHMED (U.A.R.), with the following countries and organizations as members :

ETHIOPIA

FRANCE

GABON REPUBLIC

GHANA

KENYA

NIGERIA

European Broadcasting Union

International Radio and Television Union

The original terms of reference were extended as follows : The Group should, when indicating the various television standards obtaining in Africa, specify for each standard the countries possessing equipment answering such standards, whether in service, on order or planned, and indicate the number of receivers in service. The Group should then endeavour to establish a comparative picture showing the advantages and disadvantages of the standards using 7 and 8 Mc/s channels.

Point 2 of the terms of reference would be dealt with by means of a reply by each delegation to a questionnaire to be circulated by the Chairman of Working Group 4A.

A Working Group 4A 2 under the chairmanship of Mr. Kilvington, representative for the Overseas Territories, for the International Relations of which the Government of the United Kingdom of Great Britain and Northern Ireland is responsible, and consisting of :

FRANCE

KENYA

UGANDA

TANGANYIKA

was set up to deal with Point 3 of the terms of reference.

Mr. Kilvington would issue as soon as possible a document on the subject, and call a meeting of the Group in due course.

It was considered that Point 4 of the terms of reference would be settled automatically with the help of C.C.I.R. documents when each of the first three points had been dealt with.

The I.F.R.B. and the C.C.I.R. would co-operate fully with Groups 4A 1 and 4A 2.

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF
BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 17-E
30 April 1963
Original: English

COMMITTEE 4

Contribution of the United Kingdom Overseas Territories

PROTECTION RATIOS BETWEEN TELEVISION AND MULTI-CHANNEL FREQUENCY-MODULATION FIXED SERVICES IN BAND III

1. In certain countries fixed communications systems are in operation within the Broadcasting Band III. These are multi-channel frequency-modulated systems carrying 12, 48 or 120 telephone channels.

2. Where it is desired to introduce television broadcasting in Band III in the same areas, it is necessary to plan the service so that mutual interference between the television and fixed services is reduced to negligible proportions.

3. As far as is known, no direct experimental evidence of the protection ratios required is available. However, it is believed that protection ratios which should be satisfactory for planning purposes can be derived theoretically from existing information.

4. For interference from the fixed service transmission to the television service, the ratios laid down for the protection of television against a frequency-modulated sound signal should also prove adequate for protection against fixed-service signals. These protection ratios are given in C.C.I.R. Recommendation No. 418 (C.C.I.R. Document No. 2322, included in Document No. 7 of this Conference).

5. For interference from the television service transmissions to the fixed service, the protection ratios given in the attached figure are suggested for planning purposes. The preparation of these curves has been based on the work of Dr. Hamer (Proc. I.E.E., Part C, Vol. 108, No. 1, 1961). It is assumed that:

a) 60 db weighted signal-to-interference ratio is required in the worst telephone channel. (If a different standard is desired the db scale may be adjusted accordingly.)

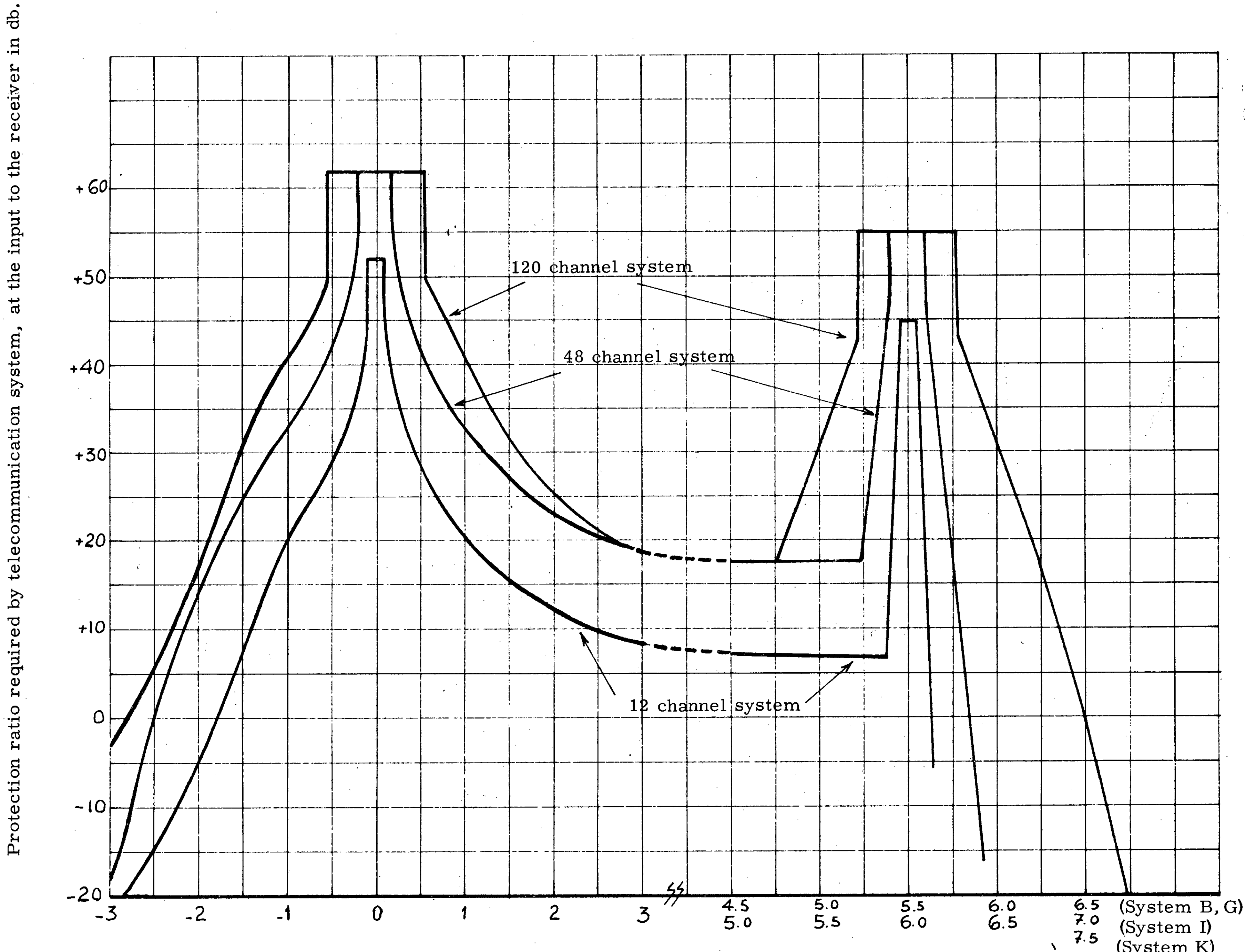
b) A 625-line television system is used with alternative vision/sound carrier spacings of 5.5 (systems B and G), 6.0 (system I) and 6.5 Mc/s (system K).

c) The power spectrum of a 625-line television system is similar to that of a 405-line signal, which has been measured, scaled up to the higher standard.

6. In assessing the protection ratio obtained in a given situation due allowance should be made for the directivity of the aerials used.

7. It is believed that the protection ratios given are based on a reasonably pessimistic estimate of the conditions applying and can therefore safely be used for planning purposes.

Protection ratio required by multi-channel telephone systems operating within 625 line television channels.



Frequency separation of carrier of telecommunication system in relation to vision carrier of television channel (Mc/s)

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document N° 18-F/E
1er mai/May 1963
Original : français/English

COMMISSION
COMMITTEE 4

MM. les délégués sont priés de bien vouloir remplir le questionnaire ci-joint et le remettre au Secrétaire de la Conférence (casier N° 129) le jeudi 2 mai à 09.00 heures au plus tard.

Delegates are kindly requested to fill in the attached questionnaire and to return it to the Secretary of the Conference (pigeon-hole No. 129), not later than Thursday 2nd May at 09.00 hours.

Annexe : 2 exemplaires du questionnaire
Annex : 2 copies of the questionnaire

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QUESTIONNAIRE

Pays - Country	
	Projets déjà mis en vigueur - Projects already implemented
	Bande Band / Système System / Nbre de récepteurs au 1.1.1963 Number of receivers on 1.1.1963
	I . . . . / . . . .
	II . . . . / . . . .
	III . . . . / . . . .
	IV . . . . / . . . .
	V . . . . / . . . .
	Projets dont l'exécution est décidée - Projects on order
	Bande Band / Système System / Date prévue pour la mise en vigueur - Planned date of implementation
	I . . . . / . . . .
	II . . . . / . . . .
	III . . . . / . . . .
	IV . . . . / . . . .
	V . . . . / . . . .
	Projets encore au stade de la planification Projects under planning
	Bande Band / Système System / Date probable de mise en vigueur Probable date of implementation
	I . . . . / . . . .
	II . . . . / . . . .
	III . . . . / . . . .
	IV . . . . / . . . .
	V . . . . / . . . .
Remarques - Remarks	

NOTE :

K = Norme K avec une largeur nominale de la bande latérale résiduelle de 0,75 MHz
K Standard with nominal width of vestigial sideband of 0,75 Mc/s

K* = Norme K avec une largeur nominale de la bande latérale résiduelle de 1,25 MHz
K Standard with nominal width of vestigial sideband of 1,25 Mc/s.

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF/UHF BROADCASTING CONFERENCE

GENEVA, 1963

Corrigendum to
Document No. 19-E
2 May, 1963
Original : English

COMMITTEE 4

Replace point 6 of Document No. 19 by the following :

6. Experts, including Mr. Hayes, the Adviser to the Director, C.C.I.R., state that for the ordinary viewer using a home receiver the increase in the picture definition of the IBTO system would not generally be appreciable. Mr. Hayes believed however that experts with high-grade monitors would be able to appreciate the higher horizontal definition of which the IBTO system is capable.

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF/UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 19-E
1 May, 1963
Original : English

COMMITTEE 4

Contribution of the United Arab Republic

ADVANTAGES OF THE C.C.I.R. GERBER STANDARDS (625 LINES) VIDEO BANDWIDTH 5 Mc/s INTERCARRIER SEPARATION 5.5 Mc/s

1. This system is used by a large number of countries throughout the world, especially in Europe and even in Africa. If Afrovision is to be linked one day with Eurovision it would be much simpler if African countries adopted the same C.C.I.R. system.

2. For Band III, adoption of the C.C.I.R. standard gives one more channel (7 channels as compared with only 6 channels with the I.B.T.O. standard). As is well known, Band III is the most suitable band for Television from the point of view of both good propagation and less interference.

3. Equipment for the C.C.I.R. standard - whether studio, transmitting or receiving - is manufactured by a great number of firms over all the world. The user of such a standard will benefit from a world-wide organization, both in the matter of price and technical progress. Such large manufacturers can always afford high research costs for the improvement of the C.C.I.R. equipment.

4. Video tape recording has become a vital medium for the exchange of programmes and outside broadcasts. Manufacturers of C.C.I.R. video tape recording machines are by far the most advanced and have several years' experience.

5. The C.C.I.R. TV standard is adaptable to colour. Very successful tests in Europe and in England have shown that the C.C.I.R. system, with the 7 Mc/s channel bandwidth, gives very good results for colour television. At the same time a successful commercial colour TV service is in operation at present in the U.S.A. and Japan on the R.T.M.A. standard which is similar in its major aspects to the C.C.I.R. standard, with a channel bandwidth of only 6 Mc/s.

6. Experts, including Mr. Hayes, the Adviser to the C.C.I.R., state that for the ordinary viewer the increase in bandwidth in the I.B.T.O. system is not appreciable. In Mr. Hayes' opinion the C.C.I.R. and I.B.T.O. systems give the same picture quality.

7. The above definite advantages have led some countries to decide to change their standard, in spite of the high cost, for the sake of adopting the C.C.I.R. international standard. One of these countries is the United Kingdom, where the cost of changing over to the C.C.I.R. system is estimated to be 11 million pounds sterling! East Germany has already changed over to the C.C.I.R. system.

8. TV programmes received through active satellites using the C.C.I.R. standard will be available to all countries which adopt the C.C.I.R. system.

9. In Africa there are more than 500,000 TV receiver sets of the C.C.I.R. standard in operation, while only a very few TV receiving sets of the I.B.T.O. standard are in present use.

10. It can be stated that the C.C.I.R. equipment (studio, transmitting and especially receiving) is less costly than I.B.T.O. equipment.

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF/UHF
BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 20-E
1 May, 1963
Original: French

PLENARY MEETING

MINUTES

OF THE FIRST MEETING OF THE HEADS OF DELEGATIONS

Monday, 29 April 1963, at 11. a.m.

Chairman: Mr. Gerald C. GROSS, Secretary-General, for the opening of the meeting,

Mr. LALUNG-BONNAIRE (Republic of Rwanda) (during consideration of Items 1 and 2)

Mr. alpha DIALLO (Republic of Guinea)

Vice-Chairman: Mr. GABRIEL TEDROS (Ethiopia)

Subjects discussed :

1. Organization of the Conference and setting-up of Committees (Document No. 5)
2. Proposals concerning the Chairman and Vice-Chairman of the Conference
3. Setting-up of a Secretariat
4. Agenda of the first plenary meeting (Document No. 4)
5. Other business

Present: the Heads of Delegation of the following countries :

Members :

Cameroon (Republic of the); Congo (Republic of the) (Leopoldville); Ivory Coast (Republic of the); Dahomey (Republic of); Group of Territories represented by the French Overseas Post and Telecommunication Agency; Spain; Ethiopia; France; Gabon Republic; Ghana; Guinea (Republic of); Upper Volta (Republic of); Italy; Liberia; Libya (United Kingdom of); Malagasy Republic; Mali (Republic of); Mauritania (Islamic Republic of); Niger (Republic of the); Uganda; Portugal; Spanish Provinces in Africa; Portuguese Oversea Provinces; United Arab Republic; Somali Republic; Rhodesia and Nyasaland (Federation of); Rwanda (Republic of); Senegal (Republic of the); South Africa (Republic of) and Territory of South-West Africa; Tanganyika; Chad (Republic of the); Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible; Togolese Republic.

Associate Member:

Kenya.

Observer:

People's Democratic Republic of Algeria

United Nations and Specialized Agencies:

Economic Commission for Africa; UNESCO.

International Organizations:

International Broadcasting and Television Organization (I.B.T.O.); European Broadcasting Union (E.B.U.).

General Secretariat :

Mr. Gerald C. GROSS, Secretary-General
Dr. Manohar B. SARWATE, Deputy Secretary-General, assisted by
Mr. C. STEAD, Head of the Department of Internal Affairs.

I.F.R.B.

Mr. John H. GAYER, Chairman
Mr. Mohamed N. MIRZA, Vice-Chairman

C.C.I.R.

Dr. Ernst METZLER, Director
Mr. Leslie W. HAYES, Adviser to the Director.

Mr. Gerald C. Gross opened the meeting and spoke of the pleasure it gave him to welcome the Heads of Delegation of all the countries in the great continent of Africa to the I.T.U. headquarters. He gave some practical explanations on the use of the simultaneous interpretation channels. He would be making a longer speech of welcome at the first plenary meeting which was to be held in the afternoon.

He then read out No. 560 of the International Telecommunication Convention (Chapter 9 of the General Regulations concerning the rules of procedure for conferences): "When there is no inviting government, it (the Conference) shall be opened by the oldest Head of Delegation." That provision applied not only to the opening meeting of a conference but also to the meeting of Heads of Delegation.

At the invitation of the Secretary-General, the oldest Head of Delegation was asked to identify himself. It appeared to be Mr. Lalung-Bonnaire, Head of the Delegation of the Republic of Rwanda.

The Secretary-General invited Mr. Lalung-Bonnaire to take the Chair.

(Applause)

Mr. Lalung-Bonnaire said he was both surprised and honoured by the appointment. To be honest he did not consider himself old and therefore concluded that all the delegates present were young; he expressed the hope that they would work with a will and show proof of their experience. He then suggested that the meeting should study the agenda of the meeting (Document No. 2).

1. Organization of the Conference and setting-up of Committees (Document No. 5)

The Secretary-General said that Document No. 5 had been prepared by the Secretariat on the basis of experience acquired at similar conferences over a period of years, starting with the Stockholm Conference in 1952, the 1961 Conference and others held throughout the world. He quoted the six Committees specified in Document No. 5, which in his opinion constituted the most logical and reasonable division of the work. The task of the Credentials Committee could be completed within a fortnight or so. He pointed out that the Conference was free to sub-divide the various committees into Working Parties, as it wished. He ended by recommending the Heads of Delegation to approve the organization of the Conference as set out in Document No. 5, but was nevertheless, of course, prepared to fall in with any amendments that might be proposed.

The Chairman saw no reason why the document, based as it was on old I.T.U. customs, should be changed, and suggested that it should be adopted. The proposal was supported by Mr. Gabriel Tedros (Ethiopia) and Mr. de Alcambar-Pereira (Portuguese Oversea Provinces).

Document No. 5 was adopted and the organization of the Conference was unanimously approved.

2. Proposals concerning the Chairman and Vice-Chairman of the Conference

Replying to a question by the Chairman, the Secretary-General pointed out that it was not for him to make proposals concerning the Chairmanship of the conference. It often happened that delegations who wished to raise certain specific points at a meeting used the Secretary-General's office as a sounding board. He was happy to tell the Heads of Delegation that this year the Chairman and Vice-Chairman of the Administrative Council of the I.T.U. were representatives of two African countries. The Administrative Council was the governing body of the Union which, in the interval between the plenipotentiary conference, was responsible for the general supervision of the Union's activities. It happened that the Chairman of the Council, Mr. Gabriel Tedros, of Ethiopia, was the Head of his country's delegation to the African Broadcasting Conference. He pointed out that he was giving those details merely as objective information. He could, of course, express no view as to who should be the Chairman

Mr. Foalem-Fotso (Cameroon) proposed that the Chair should be taken by Mr. Alpha Diallo of the Republic of Guinea, who was Chairman of a very important broadcasting body in Africa, and that Mr. Gabriel Tedros, of Ethiopia, should be elected vice-Chairman.

The proposal was seconded by Mr. Jean-Louis (Upper Volta), Mr. Luseko (Republic of the Congo, Leopoldville), Mr. Mills (Ghana) and Mr. Lucas (Republic of the Niger).

Mr. Foalem-Fotso's proposal having been unanimously adopted. Mr. Diallo was appointed Chairman and Mr. Gabriel Tedros Vice-Chairman of the Conference.

(Applause)

Mr. Lalung-Bonnaire congratulated the newly-elected officers and invited them to take their places on the rostrum.

The Chairman thanked the Heads of Delegation from the bottom of his heart for the honour they had bestowed on the Republic of Guinea. He looked to everyone for help in seeing that the work of the conference proceeded rapidly and that valuable results were achieved for the African continent.

The Vice-Chairman wished to be the first to congratulate Mr. Diallo on his election as Chairman of the first broadcasting and telecommunication conference for the African region. The Conference would have a difficult task, but would fortunately benefit from the experience of its Chairman, who already had to his credit some important achievements for his own country and for Africa as a whole. That experience would guarantee the success of the Conference. He thanked the Heads of Delegation for the honour done to him and assured them, and the Chairman, that he would do his best to help them.

3. Setting-up of the Secretariat

The Secretary-General explained that it was for the I.T.U. General Secretariat to supply the Conference Secretariat. He suggested that it be composed as follows:

Mr. Jean Kunz, Secretary of the Conference

Mr. A. Winter Jensen, Assistant Secretary

Mrs. M.M. Pauli, Head of Delegates' Service

Mrs. L. Jeanmonod, Head of Documents Service

The other conference services would be supplied by the various departments and divisions of the I.T.U. headquarters.

He drew attention to the fact that originally a much larger conference budget had been envisaged than the present one. By organizing the conference at the Union headquarters it had been possible to reduce expenditure by 290,000 Swiss francs.

He said that the room for the plenary meetings of the Conference had been designed to house the Administrative Council - the representatives of 25 governments Members of the I.T.U. The plenary meetings were likely to be somewhat overcrowded, so he suggested that attendance at such meetings should be limited to the Heads of Delegation and one member per delegation - that was to say a total of two people per delegation. That limitation naturally applied only to the central tables in the meeting room; there would be enough room for all the delegates round the walls of the room, where extra chairs had been placed. However, the plenary meetings would not be very numerous and there would be many working parties, so the problem of attendance at the meetings was not a serious one. He concluded by suggesting that the meeting should approve his proposal concerning the composition of the Conference Secretariat.

That proposal, supported by the Chairman, was adopted.

The Secretary-General suggested the following time-table:

9.30 a.m. to 12.30 p.m. 3 p.m. to 6 p.m.	Monday to Friday inclusive

Experience had shown that if meetings were too long, delegations did not have time to study documents and undertake the necessary preliminary discussions. It was normal to have a 15-minute refreshment break in each meeting.

Mr. Jean-Louis (Upper Volta) suggested that work should begin at 8.30 in the morning and that there should be meetings on Saturdays. The Secretary-General said that the Secretariat would find no difficulty in complying, for the staff would work in two shifts.

There was some discussion about working hours. The Vice-Chairman, Mr. Ekue (Republic of Togo), Mr. Foalem-Fotso (Cameroon), and Mr. Lucas (Republic of the Niger) took part. It was decided, in accordance with the Chairman's compromise proposal, supported by Mr. Lalung-Bonnaire (Republic of Rwanda), Mr. Foulam-Fotso (Cameroon), Mr. Jean-Louis (Upper Volta) and Mr. Butler (Liberia), to work the following hours:

9 h. - 12 h. 30 15 h. - 18 h.	from Monday to Friday, with no work on Saturday

4. Agenda of the first plenary meeting (Document No. 4)

The Secretary-General said that the draft agenda in Document No. 4 was in the classic, traditional form for opening meetings. The inaugural plenary meeting would have to elect a Conference Chairman and Vice-Chairman, since the meeting of the Heads of Delegation was an unofficial meeting for the purpose of presenting the opening plenary meeting, if possible, with a proposal that had been unanimously adopted by the Heads of Delegation. Before the election, the opening meeting would be chaired by the senior delegate.

Document No. 4 was adopted.

5. Other business

Mr. Jean-Louis (Upper Volta) wished to know whether a provisional closing date for the Conference had been fixed.

The Secretary-General said the matter had been the subject of lengthy debates in the Administrative Council whose session had ended the previous Friday. In fact, the conference budget hung on that question. The Administrative Council had eventually decided to base the budget on a maximum of four weeks. The Conference would therefore have to end on Saturday, 25 May, at the latest, since no credits had been provided beyond that date.

Mr. Gayer, Chairman of the I.F.R.B., told the Heads of Delegation that the I.F.R.B. had done some very thorough preparatory work for the Conference. When the time came he would inform the delegates of the results of those studies. He added that the technical staff of the I.F.R.B. would be at the disposal of the Committees to help them in their work. He would supply more detailed information at the opening plenary meeting.

He also announced that the I.F.R.B. invited all the delegates and their wives to a reception in their honour which would be held in the bar of the I.T.U. building that evening at 6 p.m. or later, depending on how long the opening plenary meeting lasted. The reception would enable the responsible officials of the I.F.R.B. to become better acquainted with the delegates, who might let them have specific suggestions as to how the Board could help with the work of the conference.

The meeting rose at 12.30 p.m.

Rapporteur:	Secretary-General:	Chairman:
M. BRODSKY	Gerald C. GROSS	Alpha DIALLO

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 21-E
1 May 1963
Original : French

COMMITTEE 3

BUDGET OF THE CONFERENCE

Annex 1 to the present document contains, for the information of Committee 3, the budget of the African VHF/UHF Broadcasting Conference, as approved by the 18th Session of the Administrative Council, Geneva 1963.

In accordance with No. 199 of Article 15 of the International Telecommunication Convention (Geneva 1959), the expenses incurred by the conference must be borne by all the Members and Associate Members of the African Region, according to their class of contribution and by any Members and Associate Members of other regions which may have participated in such a regional conference.

Annex 2 below contains a first list of participants in the expenditure of the African Broadcasting Conference.

Annexes : 2

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ANNEX 1

BUDGET OF AFRICAN BROADCASTING CONFERENCE
(in the VHF and UHF bands)

Estimated duration : 4 weeks Place : Geneva	Swiss francs
Article I. Staff	
9.201 Administration	55,000
9.202 Languages	210,000
9.203 Reproduction	30,000
9.204 Insurance	2,000
Article II. Premises and equipment	
9.205 Premises, furniture, machines	12,000
9.206 Document production	60,000
9.207 Office supplies and overheads	15,000
9.208 Simultaneous equipment and other technical equipment	-
9.209 Unforeseen	4,000
Article III. Preparatory work	
9.210 Preparatory work by the I.F.R.B.	30,000
Article IV. Interest	
9.211 Interest accruing to the Union for funds advanced	10,000
	428,000

9.201 Administration

In accordance with Article 17, paragraph 2, of the I.T.U. Financial Regulations, all expenses in connection with permanent staff of the Union detached for special conferences are debited to those conferences.

A credit of 65,000 Swiss francs has been entered in the draft budget for the seconding of permanent staff and the recruitment of additional staff. The following figures are for this staff :

	Number of Officials (1)	(2)	Swiss francs
Secretariat	2	2	12,726
Delegates' reception and information office	1	-	1,260
Telephonist	-	1	1,224
Messengers	-	4	3,906
Document service - registration and distribution	2	8	14,170
Supplies	-	1	1,296
Technical services	2	-	5,730
			40,312
Travel expenses on recruitment and repatriation			500
Margin to meet increases in the salary scales and overtime			14,188
			55,000

(1) Permanent staff detached

(2) Additional staff

9.202 Languages

The provision for an expenditure of 221,000 Swiss francs is based on the following staff requirements :

	Number of officials (1)	(2)	Swiss francs
Interpreters F E S	-	12	52,488
Translators F E S	7	5	68,720
Shorthand-typists for translators	4	-	5,832
Typing pool	5	24	45,515
Draughtsman	-	1	1,326
Technical operators	-	3	3,213
			177,094
Travel expenses on recruitment and repatriation			10,000
Margin to meet increases in salary scales and overtime			22,906
			210,000

9.203 Reproduction

It is expected that 10 extra officials will be required, and for these a credit of 13,196 Swiss francs has been provided. In addition, the work to be done by the Offset Workshop is estimated to cost 10,000 Swiss francs. The total - 23,196 Swiss francs - has been increased to 30,000 Swiss francs to meet any increase in the salary scale for short-term officials and to cover payment of overtime.

9.204 Insurance

2,000 Swiss francs has been provided to meet the cost of accident insurance for staff and other insurances.

9.205 Premises, furniture, machines

Under this heading, the budget estimates are based on the following :

Lease of the Maison des Congrès for some of the African Conference working parties	2,000
Miscellaneous equipment	1,000
Lease and upkeep of typewriters, roneo machines and hiring of furniture	4,000
Other expenses	5,000
	12,000

9.206 Document production

A credit of 60,000 Swiss francs has been set aside for this purpose. This amount is to cover the cost of roneographed documents, and the use of the electronic computer and perforated cards.

9.207 Office supplies and overheads

The estimated expenditure under this heading is as follows :

	Swiss francs
Stamps	3,000
Office supplies and equipment	10,000
Guide-book, badges, etc.	2,000
	15,000

9.209 Miscellaneous and unforeseen	4,000
9.210 I.F.R.B. preparatory work	30,000

9.211 Interest accruing to the Union for funds advanced

The estimated interest on expenditure for the African Conference account is 10,000 Swiss francs. This provision is made in accordance with Article 34, paragraph 1 a) iii) of the Financial Regulations of the Union.

ANNEX 2

LIST OF PARTICIPANTS IN THE AFRICAN VHF/UHF BROADCASTING CONFERENCE, GENEVA 1963

1. Members	Contributory Unit
Burundi (Kingdom of)	½
Cameroon (Republic of the)	1
Central African Republic	½
Congo (Republic of the) (Brazzaville)	½
Congo (Republic of the) (Leopoldville)	1
Ivory Coast (Republic of the)	½
Dahomey (Republic of)	½
Group of territories represented by the French Overseas Post and Telecommunication Agency	5
Spain	3
Ethiopia	1
France	30
Gabon Republic	½
Ghana	1
Guinea (Republic of)	1
Upper Volta (Republic of)	1
Italy	8
Liberia	3
Libya	½
Malagasy Republic	½
Mali (Republic of)	1
Mauritania (Islamic Republic of)	½
Niger (Republic of the)	1
Nigeria (Federation of)	2
Uganda	½
Spanish Provinces in Africa	1
Portuguese Oversea provinces	8
United Arab Republic	5

Somali Republic	1
Rhodesia and Nyasaland (Federation of)	1
Rwanda (Republic of)	½
Senegal (Republic of the)	1
Sierra Leone	½
Sudan (Republic of the)	1
South Africa (Republic of) and Territory of South-West Africa	8
Tanganyika	½
Chad (Republic of the)	½
Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible	1
Togolese Republic	½
2. Associate Member	
British East Africa	½
3. Non-Member	
Algeria (Democratic and Popular Republic of)	3
4. United Nations and Specialized Agencies	
United Nations	-
UNESCO	-
5. International organizations which have requested admission to the Conference (exempted from contribution)	
International Council of Scientific Unions	-
International Broadcasting and Television Organization	-
European Broadcasting Union	-
African and Malagasy Post and Telecommunication Union	-
Union of African National Sound Broadcasting and Television Organizations	-
6. Total number of contributory units :	97½

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 22-E
1 May, 1963
Original : French

COMMITTEE 4

International Frequency Registration Board (I.F.R.B.)

BANDS IV AND V

MAXIMUM NUMBER OF FREQUENCY ASSIGNMENTS REQUESTED FOR EACH TRANSMISSION SITE

The attached table indicates the maximum number of frequency assignments requested in bands IV and V for each transmission site, according to information supplied by Administrations in reply to I.F.R.B. letter No. 20/0.28929, dated 21 September, 1962.

Annex : 1

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A N N E X

BANDS IV AND V

I. Administrations which have requested a maximum of 1 frequency assignment for each transmission site :

Spain :
    Canary Islands
Libya (United Kingdom of)
Spanish Provinces in Africa
Somali Republic

II. Administrations which have requested a maximum of 2 frequency assignments for each transmission site :

Cameroon (Republic of the)
Central African Republic
Congo (Republic of the) (Brazzaville)
Congo (Republic of the) (Leopoldville)
Dahomey (Republic of)
Group of Territories represented by the French Overseas Post and Telecommunications Agency :
    Comoro Islands
    French Somaliland
France (French Département of Réunion)
Gabon Republic
Guinea (Republic of)
Ivory Coast (Republic of the)
Upper Volta (Republic of)
Malagasy Republic
Mali (Republic of)
Mauritania (Islamic Republic of)
Niger (Republic of the)
United Arab Republic (1)
Rhodesia and Nyasaland (Federation of)
Rwanda (Republic of)
Senegal (Republic of the)
Sierra Leone
Chad (Republic of the)
Overseas territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible :
    Aden, Ascension Island, Basutoland, Bechuanaland, Gambia, Mauritius, Seychelles, St. Helena, Swaziland, Zanzibar.

III. Administrations which have requested a maximum of 3 frequency assignments for each transmission site :

South Africa (Republic of) and Territory of South-West Africa

(1) Sites situated south of parallel 30°N

INTERNATIONAL TELECOMMUNICATION UNION

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AFRICAN VHF/UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 23-E
2 May 1963
Original : English

COMMITTEE 4

REPORT OF WORKING GROUP 4 A 1

Chairman : Mr. A. LATIF AHMED (U.A.R.)

This working group was set up as in document 16 with the presence of I.F.R.B., E.B.U. and O.I.R.T. representatives.

Two terms of reference were discussed :

1. The state of television to-day in Africa. This means drawing up of a list of countries in Africa which either :

   a) have projects already implemented;

   b) have projects under way

   c) projects planned.

indicating which standard has been or will be adopted in the various bands and how many receivers there already are (if any).

A questionaire (Document No. 18) has been circulated among delegates asking for this information by Thursday, May 2. The I.F.R.B. will then publish a document summarizing all the data collected.

2. The second item in the terms of reference was to endeavour to establish a comparative picture showing the advantages and disadvantages of the standards using 7 and 8 Mc/s channels.

2.1 It was noted that the system proposed to be used by the group favouring the O.I.R.T. system (8 Mc/s) was the K^* system with a vestigial sideband of 1.25 Mc/s instead of 0.75 Mc/s.

It was also noted that the K^* system requires a bandwidth of 8.5 Mc/s which is larger than the 8Mc/s channel width proposed for preliminary planning.(Opinion of Mr. Gressman, E.B.U.).

It was agreed that these facts would require very careful planning because of the greater protection needed between the channels of the K^* system within each band.

It was claimed by some members that the inconvenience in planning was more than balanced by the better video reproduction, the better possibilities for colour television and simpler receiver design.

2.2 The following observations were made by the delegate of Kenya and amplified by the delegate of Nigeria and other delegates in favour of the C.C.I.R. B system.

1. The C.C.I.R. B system has been in use for some years in Africa with great success.

2. More than 500,000 receivers in use. One or two countries have now over quarter of a million sets.

3. No complaints have been made by African television organisations about the operation of this system.

4. Successful operation of colour television has been made on 7 Mc/s. Telefunken of Germany has shown that bandwidth is not a limiting factor.

5. It is easier to plan for Africa using 7 Mc/s; trying to plan for 8 Mc/s and 8½ Mc/s widths might be impossible because of the protection required. There would also be a shortage of channels in bands I and III.

6. The majority of the European countries have expressed a desire to help Africa culturally and educationally using C.C.I.R. 7 Mc/s systems and if Africa uses the same standards, advantage could be taken to exchange programs by tape or other means.

7. If 8 Mc/s is used for planning, countries using 7 Mc/s' will be victimized as the number of channels will be fewer.

8. Economic considerations are important. Receivers can be converted fairly easily but it would still be relatively expensive.

9. A well-developed video tape recording system permitting recording of C.C.I.R. standard video signals has been developed, whereas only for the past two years have similar operations been performed in Eastern Europe to record the 6 Mc/s video bandwidth of the O.I.R.T. system.

2.3 In view of the fact that there was no discernible difference between picture quality of the two systems the question was raised by Mr. Gabriel Tedros (Etheopia) : "On what grounds the French Administration was able to persuade 14 African countries to choose a new system, namely the K* system, in view of the fact that there was only one system operating in Africa, which fact was perfect for planning, especially as a K* system would make a planning system very difficult?".

The Representative of France: stated that France would have adopted K* if not already committed to an earlier system. Also the recommendations were based on the colour possibilities and the fact that maintenance of K* system transmitters and receivers was much easier; those advantages were greater than the disadvantage of using a larger bandwidth.

Careful thought and consideration had been given to the problem of introduction of another system but as only a few countries had actually introduced television the problem only affected a few frontier areas and it should be fairly easy to solve in each case.

Mr. Gressman, (E.B.U.) summarized the television situation in Europe in bands I and III. There were 4 basic systems : France and the United Kingdom had decided to change their standard but after long discussion and experiment opinion was still divided. In his opinion if France and the United Kingdom could not agree and if the C.C.I.R. could not issue a recommendation, then the conference could not be expected to do so.

The I.F.R.B. was requested to prepare a complete list of details of the standards proposed for use in Africa.

Chairman :

LATIF AHMED

INTERNATIONAL TELECOMMUNICATION UNION

AFRICAN VHF / UHF
BROADCASTING CONFERENCE

GENEVA, 1963

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Document No. 24-E
2 May, 1963
Original: English

PLENARY MEETING

MINUTES
of the
INAUGURAL PLENARY MEETING

Monday, 29 April, 1963, at 4 p.m.

Acting Chairman: Mr. LALUNG-BONNAIRE (Republic of Rwanda)

Chairman: Mr. A. DIALLO (Republic of Guinea)

Vice-Chairman: Mr. GABRIEL TEDROS (Ethiopia)

Subjects discussed:

1. Address by the Secretary-General
2. Election of Chairman and Vice-Chairman of the Conference
3. Setting up of a Secretariat for the Conference
4. Organization of the Conference and Setting-up of Committees (Document No. 5)
5. Hours of work
6. Statement by the Chairman, International Frequency Registration Board
7. Any other business

Present:

Members:

Republic of Cameroon; Republic of the Congo (Leopoldville); Republic of the Ivory Coast; Republic of Dahomey; Group of territories represented by the French Overseas Post and Telecommunication Agency; Spain; Ethiopia; Gabon Republic; Ghana; Republic of Guinea; Republic of Upper Volta; Italy; Liberia; United Kingdom of Libya; Malagasy Republic; Republic of Mali; Islamic Republic of Mauritania; Republic of the Niger; Uganda; Spanish Provinces in Africa; Portuguese Overseas Provinces; United Arab Republic; Somali Republic; Republic of Rwanda; Federation of Rhodesia and Nyasaland; Republic of Senegal; Republic of South Africa and Territory of South Africa; Tanganyika; Republic of the Chad; Overseas Territories for the International Relations of which the Government of the United Kingdom of Great Britain and Northern Ireland is responsible; Republic of Togo.

Associate members:

Kenya

United Nations and specialized agencies:

United Nations
UNESCO

International organizations:

International Broadcasting and Television Organization
European Broadcasting Union
Union of African National Sound Broadcasting and Television Organizations

General Secretariat:

Mr. Gerald C. Gross
Dr. Manohar B. Sarwate
Mr. C. Stead

International Frequency Registration Board

Mr. John H. Gayer
Mr. Mohamed N. Mirza
Mr. Alfonso H. Catá
Mr. Nicolai I. Krasnosselski
Mr. René Petit
Mr. J. Millot

International Radio Consultative Committee

Dr. E. Metzler
Mr. Leslie W. Hayes
Dr. M. Joachim
Mr. A. Kachel
Mr. Y. Pouliquen

Conference Secretariat

Mr. J. Kunz
Mr. A. Winter

Mr. Lalung-Bonnaire (Republic of Rwanda), Acting Chairman, declared open the inaugural plenary meeting of the African VHF/UHF Broadcasting Conference, and gave the floor to the Secretary-General.

1. Address by the Secretary-General

The Secretary-General made the following statement :

"Ladies and Gentlemen,

" May I welcome you all most cordially to Geneva and to the Headquarters of the I.T.U. Some of you have been here before and are familiar with this beautiful city and with the workings of our organization. Many of you, however, are here for the first time, and I should like to take this opportunity of assuring you that we are entirely at your disposal for any help or information which you require.

" This Conference, which is opening to-day, is a new and very important departure for our organization with its 98 years of experience in international telecommunications. This meeting brings representatives of the Governments of your great continent together outside Africa to discuss measures and, I hope, to adopt decisions which will improve the possibilities of broadcasting for the benefit of all your peoples. I will not say that this is the first Conference on African telecommunications to be held within the framework of the I.T.U., for, as you know, the Plan Sub-Committee for Africa met in Dakar in January of last year and produced some vitally important work. I shall have more to say about the Plan Sub-Committee in a few moments.

" It is recognized to-day throughout the world that one of the most significant international developments of the last 10 years or so has been the emergence of the nations of Africa into independence. It is a development which has in many ways changed the face of the world. The Councils of the nations have now, in the space of a few years, been increased by some 30 new and independent states. But the strongest impact of this change has, of course, been felt by those states themselves. Almost overnight most of your countries have had to set about building new, independent economies in order to bring about the transformation of the social life and standards of living of your peoples.

" I am sure that all of you who are here to-day are fully aware that the healthy economic and social life of a nation is dependent - to an extent which is not always, unfortunately, sufficiently recognized - on effective telecommunications. Without a satisfactory telecommunication system, industry and commerce have their hands tied; vital public services, such as health and transport cannot function properly; and the dissemination of the spiritual, educational and cultural resources of a people can hardly be carried out at all.

" It is, I am sure, a recognition of these fundamental truths which has now led the Governments of your countries to become active in building up and improving your telecommunication systems. It is clear, of course, that in Africa, as elsewhere, this cannot be successfully carried out by nations acting individually or in isolation. For one thing, your international communications are as important as your internal ones - and perhaps in some cases at present more important. Another factor is that, where a limited amount of money is available, it is more profitable - as well as being more humanly satisfying - to work in partnership with one's neighbours. It is for these reasons of both practical efficiency and friendly solidarity that the countries of your continent are setting out to build up telecommunications on an international basis. Such an approach leads you naturally to the I.T.U.

" Let me recall to you some of the steps which have been taken within the framework of the I.T.U. towards the future of telecommunications in Africa. As you know, the second Plenary Assembly of the C.C.I.T.T., which met in New Delhi in December 1960, decided to set up, within the framework of the joint C.C.I.T.T. - C.C.I.R. Plan-Committee, a Sub Plan-Committee for Africa. It was laid down that the principal task of the Sub-Committee would be "to establish a General Plan for development of the international network to help administrations and recognized private operating agencies when they conclude mutual agreements to organize and improve the international services between their respective countries".

" The Sub-Committee elected as its Chairman Mr. Gabriel Tedros, the distinguished representative of Ethiopia who is this year's Chairman of the I.T.U. Administrative Council. It immediately started collecting the necessary information from all African countries for the preparation of a draft plan for establishing a Pan-African telecommunication network and for interconnecting it with the world-wide network.

" In January 1962, the Plan Sub-Committee held its first meeting in Dakar, which, attended as it was by qualified technicians from nearly 30 African countries, may justly be regarded as a decisive turning point in African telecommunications. From this meeting, and on the basis of the forecasts made by the participants for the next 5 years, emerged the draft Plan for a Pan-African telecommunication network now known as the "Dakar Plan".

" As many of you will know, I recently completed an extremely important and interesting mission in Africa, in the course of which I visited several of your countries. It was also in the course of this mission that I attended the 5th Session of the Economic Commission for Africa in Leopoldville, where I had the pleasure of meeting Mr. Robert Gardiner, who was formerly the Head of the United Nations' Civilians Operations in the Congo and who has now resumed his post as Executive Secretary of the Economic Commission for Africa. Mr. Gardiner, who is an extremely able, conscientious and dynamic official, made a proposal to me for the cooperation of the I.T.U. with the Economic Commission in the preparation of a draft plan for a Pan-African telecommunication network. This was clearly an extremely important initiative - an outstanding example, I might say, of inter-Agency cooperation - and, after giving the whole matter urgent consideration, I brought it before the 18th Session of our Administrative Council which ended last Friday. The Council decided to transmit immediately a copy of the Dakar Plan to Mr. Gardiner and commissioned Mr. Tedros to attend the 6th Session of E.C.A. in order to present it formally. The Council decided also that two of our experts, who are now on mission in Africa, would be made available to the headquarters of the Economic Commission for Africa as from next month to advise and help the African countries to implement the Dakar Plan, and instructed as to conclude a protocol agreement with E.C.A. on the most efficient way in which these and other experts who might be needed can be used. Finally, the Council decided that a Circular-letter would be addressed to all African countries who are Members of the I.T.U. inviting them to collaborate to the full with E.C.A. in the sphere of telecommunications.

" You will thus see that substantial measures have now been taken to forward the cause of telecommunications in Africa. I am particularly happy that it is at this juncture that you are now meeting for this African Broadcasting Conference. In view of the spirit of cooperation which has been shown by African countries in telecommunication matters, I am confident that the results of your work will be positive and extremely fruitful and that this whole Conference will come to be regarded as a "launching pad" - if I may use an expression more appropriate to our space age and our work than the traditional expression "landmark" - for African development in telecommunications. You can rest assured that we at I.T.U. Headquarters are, and will continue to be, actively concerned to lend you whatever assistance we can that may help to lighten the difficult but challenging task that awaits you.

" Thank you very much."

The Acting Chairman, in thanking the Secretary-General for his interesting statement, said that the convening of the African VHF/UHF Broadcasting Conference was one further proof of the important work being carried out by the I.T.U.

2. Election of Chairman and Vice-Chairman of the Conference

The Acting Chairman, after appealing to all participants to respect the recommendation of Heads of Delegations that morning with regard to the need for speeding up the work of the Conference, called for comments on the proposal of Heads of Delegations that Mr. Diallo (Republic of Guinea) should be elected Chairman, and Mr. Gabriel Tedros (Ethiopia) Vice-Chairman of the Conference.

Mr. Diallo (Republic of Guinea) was elected Chairman, and Mr. Gabriel Tedros (Ethiopia) Vice-Chairman, by acclamation, and took their places on the podium.

The Chairman thanked the participants for the confidence they had placed in him in entrusting him with the chairmanship of the Conference, an honour of which he was deeply conscious. He drew attention to the importance of the Conference and to the legitimate desire of African governments and peoples for the successful outcome of its work, which he hoped would be completed before the time-limits set down.

The Vice-Chairman expressed his thanks to the Conference for the honour paid to his country and himself by his election as Vice-Chairman. He congratulated the Chairman on his election and said that he would do all in his power to assist him in his difficult task. Mr. Diallo was well known throughout Africa not only for work in his own country but as President of the Union of African National Broadcasting and Television Organizations, and it was most fitting that he had been elected as Chairman.

3. Setting-up of a Secretariat for the Conference

The Secretary-General said that the Heads of Delegations had unanimously recommended the designation of the following staff :

Mr. Jean Kunz, Secretary
Mr. A. Winter, Executive Secretary
Mrs. M. M. Pauli, Chief, Delegates' services
Mrs. L. Jeanmonod, Chief, Documents services

He added that other services would be supplied by the permanent Secretariat.

The proposal was approved by acclamation.

4. Organization of the Conference and Setting-up of Committees (Document 5)

The Secretary-General explained that the suggestions in Document No. 5, for the establishment of six committees, had been unanimously approved by the Heads of Delegations, and were based on the traditional pattern for the organization of conferences. It was within the competence of the Planning Committee to set up further working parties, apart from those mentioned in the document, should the need arise.

Mr. Foalem-Fotso (Republic of Cameroon) suggested that, in order to save time, the election of Chairmen and Vice-Chairmen of Committees 2, 3, 4, 5 and 6 should be made by global nomination.

The Secretary-General explained that the composition of the Steering Committee was the only restricted one because it was concerned with the co-ordination of committee work, the schedule of meetings and so on. On the other hand, each delegation had the right to be a member of the other committees. The setting up of smaller groups in the interest of speeding up business was a matter for decision by the committees themselves.

In reply to a request for clarification by Mr. Ould Sidya (Islamic Republic of Mauritania), the Secretary-General explained that the five main committees would not be meeting at the same time in order to enable participants to attend all meetings should they so wish.

The Vice-Chairman, speaking as representative of Ethiopia, proposed that the Chairman and Vice-Chairmen of Committees should be nominated committee by committee.

Dr. Arto Madrazo (Spain) supported the proposal of the representative of Ethiopia.

He stated that since there were only two Spanish-speaking delegates, his country would waive its right to be supplied with documents in Spanish. He made that proposal with a view to facilitating the work of the Conference but pointed out that Spain in no way relinquished its right to Spanish as a working language, with particular emphasis on the use of spoken Spanish at this conference.

Mr. Jean-Louis (Republic of Upper Volta), Mr. Sabau Bergamin (Spanish Provinces in Africa), Mr. Camara (Republic of Guinea) and Mr. Lalung-Bonnaire (Republic of Rwanda) also supported the proposal of the representative of Ethiopia.

Mr. Foalem-Fotso (Republic of Cameroon) explained that his proposal had been made in the interest of speeding up the work but, he was now prepared, in the light of the discussion, to withdraw it.

The Chairman expressed his thanks to the representative of the Republic of Cameroon.

The procedure proposed by the representative of Ethiopia for the election of Chairmen and Vice-Chairmen of committees was adopted.

Credentials Committee

The Chairman called for nominations for the office of Chairman and Vice-Chairman. Noting that no nominations were forthcoming from the floor, he himself proposed that Mr. Kazibure (Tanganyika) should be elected Chairman, and Mr. Lalung-Bonnaire (Republic of Rwanda) Vice-Chairman.

The Chairman's proposal was unanimously adopted.

Budget Supervision Committee

Election of Chairman

Mr. Jean-Louis (Republic of Upper Volta), supported by Mr. Lucas (Republic of the Niger) proposed that Mr. Ekue (Republic of Togo) should be elected Chairman.

The proposal was adopted by acclamation.

Election of Vice-Chairman

Mr. Foalem-Fotso (Republic of Camerooon), supported by Mr. Jean-Louis, (Republic of Upper Volta), proposed the nomination of Mr. Mills, Head of the Ghana Delegation.

The proposal was unanimously adopted.

Technical Committee and Planning Committee

After a number of varied proposals had been made for the nomination of Chairmen and Vice-Chairmen, during which it was recognized that they should possess the highest technical qualifications, it was agreed, on the proposal of Mr. Foalem-Fotso (Republic of Camerooon), to proceed first to the homination of officers for the Drafting Committee.

Drafting Committee

Mr. Ahmed (United Arab Republic), supported by Mr. Jean-Louis (Republic of Upper Volta), Mr. Luseko (Republic of the Congo (Leopoldville)), Mr. N'Diaye (Republic of Mali) and Mr. Arebi (United Kingdom of Libya), proposed the nomination of Mr. Foalem-Fotso (Republic of Cameroon as Chairman and Mr. Butler (Liberia) as Vice-Chairman.

The proposal was adopted by acclamation.

The meeting was adjourned at 5.15 p.m. for the purpose of an informal talk with a view to reaching agreement on the proposals for the election for the Technical Committee and the Planning Committee. The Meeting was resumed at 5.30 p.m.

Technical Committee

The Chairman informed the meeting of the unanimous agreement reached during the informal talk, namely, that Mr. Latif Ahmed (United Arab Republic) should be elected Chairman, and Mr. N'Diaye (Republic of Mali) as Vice-Chairman.

The proposal was adopted by acclamation.

Planning Committee

The Chairman said that unanimous agreement had been reached during the informal talk that Mr. Labaye (Gabon Republic) should be elected Chairman, and that the Head of the Delegation of the Federation of Nigeria (who would be present on the following day) should be elected Vice-Chairman.

The proposal was adopted by acclamation.

5. Hours of work

The Chairman said that the Heads of Delegations, after a short debate, had suggested the following time-table:

Monday through Friday from 9 a.m. to 12.30 p.m., and from

3 p.m. to 6.00 p.m.

The proposed time-table was adopted.

6. Statement by the Chairman, International Frequency Registration Board

Mr. Gayer, Chairman of the I.F.R.B., made the following statement :

"I wish, on behalf of the I.F.R.B., to welcome you to Geneva and to congratulate the Chairman, the Vice-Chairman, and the Chairmen and Vice Chairmen of the Committees. We are pleased to have you here at the I.T.U. headquarters. The African VHF/UHF Broadcasting Conference which opened to-day is the first conference held in Genevy according to the new 1959 I.T.U. Convention. In fact, it is the first such conference to assist the development of radio communications in the Continent of Africa.

" Africa is well represented here. The I.F.R.B. is very anxious to assist you in every way possible in the establishment of compatible operation of broadcasting services. We are pleased to note that Africa is tackling this problem of vital importance at an opportune time, that is, before the service is well established on an individual country basis, which would have hindered the development of the service on a unified compatible basis.

" The rapid extension of broadcasting, both sound and television in Africa, and the need for such information media in your continent, makes it imperative that a sound technical plan be drawn up which will facilitate the complete development in all areas. Through such a plan, interference and neighbouring conflicts can be avoided and the interest of all nations preserved. We, in the I.F.R.B., have been encouraged by the forecast of television and sound broadcasting of the area as indicated by the frequency requirements submitted to the I.F.R.B. for consideration in this conference. We note that you look forward to full broadcast coverage to all African peoples and that extensions of the service are contemplated. Such complete coverage envisaged indicates that this conference will need to evolve a comprehensive development plan which will ensure an interference-free service and a means for international co-ordination between administrations of the African continent.

" The development of the television and sound broadcasting services in Africa at this time will not only provide interference-free frequencies but also an agreement according to which any interference which develops can be eliminated. With the development of this information medium, programmes can be exchanged and a compatible broadcasting service facilitated - a major step in the implementation of the goals set forth in the I.T.U. Convention.

" Your presence and the attention which you have given to the development of television indicates the importance of the problems and the necessity of finding solutions. I wish to assure you that I.F.R.B. is ready to give you every assistance possible and will render its full co-operation in assisting you in obtaining your goals in the most effective, efficient and expeditious manner. A large amount of relevant information has been collected by the I.F.R.B. and it is available for your use. We will participate in your meetings and assist you in your deliberations. In addition to myself, Mr. Mirza, Vice-Chairman of the I.F.R.B., and members Mr. Cata, Mr. Krasnosselski, and Mr. Petit are anxious to help in every way possible. Furthermore, staff have been assigned who are experts in various fields to assist particularly in the committees and working groups. This staff will work, under the direction of Mr. Millot, whom I propose as your Technical Secretary.

"   While on the subject of expert assistance, I draw your attention to the technical aspects of the VHF/UHF propagation characteristics appropriate for your early consideration. Information is now available on the long-range propagation that occurs in the tropics on frequencies in band I. If use of Band I is envisaged, the I.F.R.B. recommends you most seriously to consider the technical information and the possibility of long-distance interference. Two sets of VHF/UHF propagation curves have been distributed. The data that was discussed at the Tenth Plenary Assembly of the C.C.I.R. has been annexed to Document No. 7 and distributed by the I.F.R.B. The revised curves which the C.C.I.R. working group prepared are now being distributed and represent the most up-to-date information available on the subject.

"   May I remark that, with such a representative gathering as we have for this conference, and in view of the serious consideration and preparatory work devoted to it, there is no doubt that the results will be successful and will produce a sound, technical frequency plan and broadcasting agreement. This is, of course, a necessary step in the development of the Radio and Television Services throughout Africa.

"   In respect to other steps, I note that a preparatory meeting for the African LF/MF Broadcasting Conference will be held in Geneva next January and that the Conference itself will be convened in Madrid in September 1964. We are anxious to help you in preparing for these conferences and will ask you to arrange for an informal meeting during the present conference so that we can discuss with you how the preparatory work and the submission of requirements is to be undertaken.

"   I know that not many of you have heard a great deal about the I.F.R.B. and its work. Perhaps the I.F.R.B. Seminars which were organized according to the decision of the Administrative Council - on the proposal of Mr. Gabriel Tedros, your Vice-Chairman - have extended greatly knowledge about the I.F.R.B. and its work.

"   May I hope that this Conference will give you and the I.F.R.B. an opportunity to get to know one another. We in the I.F.R.B. are eager to find out how best we can help you in solving your routine radio-communication problems, as well as with the conference work itself.

"   My best wishes for a very successful conference."

Dr. Metzler, Director of the C.C.I.R., thanked the Chairman of the I.F.R.B. and the Secretary-General for having invited the C.C.I.R. to take part in the Conference. Its participation was both useful and necessary because the C.C.I.R., according to the Convention, was concerned with the studies of the technical basis for telecommunication in general.

He regretted that he himself would be unable to be present for part of the Conference but would be represented by Mr. Hayes, Adviser to the Director and former Vice-Director. He said that Mr. Hayes was internationally known for his vast experience in the technique of broadcasting.

With regard to the preparation by the C.C.I.R. of the technical basis for propagation curves, he mentioned the difficulties encountered in reaching agreement at the Xth Plenary Assembly of the C.C.I.R. in Geneva. He also mentioned the creation of a Working Group set up to study those difficulties, the results of which had been passed to the Secretary-General last week. That paper, prepared by the C.C.I.R., would be distributed within a day or two.

Finally, appreciating the importance of the work of the Conference, he wished it every success.

The Chairman thanked Mr. Gayer and Mr. Metzler for their constructive statements.

The Chairman, noting that a number of international organizations were represented, first invited the Information Officer from the United Nations Economic Commission for Africa to address the meeting.

Mr. Rawson, Information Officer, E.C.A., conveyed the best wishes of E.C.A. and its Executive Secretary, Mr. Gardiner, for a successful outcome of the work of the Conference. All were aware of the vital importance of clear telecommunications for economic and social development. The E.C.A. was proud of its close relationship with the I.T.U. and hoped that a practical broadcasting plan would be developed with the help of E.C.A. economists and the technicians of the I.T.U.

At the invitation of the Chairman, Mr. Cassirer, Head of the Radio/TV Section, UNESCO, made the following statement :

" It is a great pleasure for me to address this meeting on behalf of UNESCO, for it is evidence of the close cooperation between the International Telecommunication Union and UNESCO in implementing the hopes and recommendations of the meeting on the development of information media in Africa, which took place at UNESCO headquarters in January/February 1962. I am happy to be able to greet at this Conference a number of colleagues and friends who participated so constructively in the earlier meetings. This meeting, as well as the meeting on Educational Broadcasting held at Moshi, Tanganyika, in September 1961, stressed that radio and television are of primary importance for the development of the countries of Africa. At the same time they underlined that the use of the broadcast media is seriously hampered by the present inadequate allocation of broadcast frequencies and the lack of standardization in the field of television. For this reason the Paris meeting recommended that the I.T.U. convene a regional meeting to re-examine the distribution of frequencies and to assure African countries adequate access to the broadcast spectrum. The I.T.U. has responded to these recommendations with a two-phased plan; we are witnessing to-day the implementation of its first phase.

The importance of radio in Africa to-day needs hardly to be stressed. It is the one medium able to reach literate and illiterate populations alike wherever they live, far into the remotest villages. Its contribution to national unity, to social and economic development, to school and adult education, can be immense. In fact, however, we find that large parts of Africa are still inadequately covered by broadcast transmissions and that people lack the receivers to receive these transmissions. No less significant is the importance of television, despite its higher cost and more limited range. It is so effective as a total medium of audio-visual communication that it can play a crucial role in the cultural, social and educational revolution which Africa is undergoing. At a time when as many as 20 African countries either have television or plan its introduction, it is urgent that the technical basis be established for an orderly development.

What has been stressed at the UNESCO meeting of broadcasting, as well as at the recent meeting on News Agencies held in Tunis, is that planning is required, not only on the national but on the regional level. The Paris meeting therefore emphasized the need to envisage not only radio relays, but also a regional television network. The Tunis meeting on news agencies added a new dimension by drawing attention to the future potential importance of artificial satellites. It pointed out "that space communication was of special interest in a developing region such as Africa where land-based telecommunication and links with other regions were very limited. It also emphasized that space communication should in any case be considered in the context of land-based services and indeed as an extension of them.

" The UNESCO meetings on Broadcasting in Africa have repeatedly drawn attention to the need for radio and television receivers suited to the climatic and technical conditions of the region and available at relatively low cost. This is a field which UNESCO is pursuing in cooperation with the I.T.U., and the Regional Economic Commissions of the United Nations. The I.T.U. has drawn up specifications for home and community receivers which could be produced and assembled on a large scale. But it is pointless to envisage the production of receivers as long as the broadcast standards and frequencies have not been determined. Here again your Conference will lay the groundwork for future action.

UNESCO and its Member States therefore eagerly look forward to the results of this and the subsequent conferences, so that radio and television broadcasting may finally come into their own as major forces in the social, economic and educational development of Africa."

The representative of the International Broadcasting and Television Organization (I.B.T.O.) expressed his pleasure at the invitation extended to his organization to be represented at the Conference. The I.B.T.O. had prepared standards and methods of planning for television and broadcasting and would be glad to give any assistance in its power in furthering the objectives of the Conference.

The representative of the European Broadcasting Union (E.B.U.) expressed his organization's thanks for the invitation to attend the Conference, and said that the technical experience acquired since the earliest days of broadcasting was entirely at the disposal of all participants to the Conference.

The Chairman thanked the previous speakers for their helpful statements.

7. Any other business

The Secretary-General, referring to the request by the People's Democratic Republic of Algeria for permission to take part in the Conference, contained in Document No. 6, explained that the P.D. Republic of Algeria had been admitted to the United Nations and had submitted an instrument of accession to the International Telecommunication Convention. Pending the deposit of the instrument of ratification, he proposed that the P.D. Republic of Algeria should be admitted as an Observer to the Conference.

Mr. Latif Ahmed (United Arab Republic) could not agree to the statement in Document No. 6 that Algeria was not within the African Region. Algeria, like the United Arab Republic, Libya and Morocco, had territories in Africa, Algerian territories even extending to 20° above the Equator.

The Secretary-General said that the matter was for decision by the Conference itself. In the meantime, Algeria should be admitted as an Observer, leaving the point raised by Mr. Latif Ahmed for consideration at a later meeting.

The proposal to admit the P.D.R. of Algeria as an Observer to the Conference was adopted by acclamation.

The Secretary-General, referring to Document No. 3, proposed that the Union of African National Sound Broadcasting and Television Organizations should be added to the list of international organizations attending the Conference.

The proposal was adopted by acclamation

The Secretary-General thought the Conference would be happy to know that at its last session the Council had agreed to exonerate the African and Malagasy Union of Posts and Telegraphs and the Union of African National Sound Broadcasting and Television Organizations from contributions to the expenses of I.T.U. Conferences.

Referring to the Credentials Committee, he proposed that a period of two weeks should be allowed for the deposit of credentials.

It was agreed.

The meeting rose at 6.30 p.m.

Rapporteur :	Secretary-General :	Chairman :
H. OTTEN	Gerald C. GROSS	A. DIALLO

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 25-E
2 May, 1963
Original : English

PLENARY MEETING

PROVISIONAL

MINUTES

OF THE SECOND PLENARY MEETING

Tuesday, 30 April 1963, at 12.30 p.m.

Chairman : Mr. Alpha DIALLO (Republic of Guinea)

Vice-Chairman : Mr. GABRIEL TEDROS (Ethiopia)

A statement by Mr. Gerald C. GROSS, Secretary-General, on the provisions of the Convention, with especial reference to conferences.

Present :

Administrations, Members of the Union :

Cameroon (Republif of the); Congo (Republic of the) (Leopoldville); Ivory Coast (Republic of the); Dahomey (Republic of); Group of Territories represented by the French Overseas Post and Telecommunication Agency; Spain; Ethiopia; France; Gabon Republic; Ghana;Guinea (Republic of); Upper Volta (Republic of); Liberia; Libya (United Kingdom of); Malagasy Republic; Mali (Republic of); Mauritania (Islamic Republic of); Niger (Republic of the); Uganda; Spanish Provinces in Africa; Portuguese Overseas Provinces; United Arab Republic, Somali Republic; Rhodesia and Nyasaland (Federation of); Rwanda (Republic of); Senegal (Republic of the); South Africa (Republic of) and Territory of South-West Africa; Tanganyika; Chad (Republic of the); Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible; Togolese Republic.

Administrations, Associate Members of the Union :

Kenya.

Observers :

People's Democratic Republic of Algeria.

United Nations and Specialized Agencies :

U.N., UNESCO.

International Organizations :

International Broadcasting and Television Organization (I.B.T.O.); European Broadcasting Union (E.B.U.); Union of African National Sound Broadcasting and Television Organization (U.R.T.N.A.)

International Telecommunication Union :

General Secretariat; I.F.R.B.; C.C.I.R.

Statement by the Secretary General

The Chairman gave the floor to Mr. Gerald C. Gross, Secretary-General of the Union, who made a statement on the provisions of the Convention with particular reference to conferences, at the request of the Steering Committee.

The Secretary-General said that he would be quite brief and would welcome questions from the delegates.

The basic rules for procedure for Conferences had been worked out over numerous years by the I.T.U. at many conferences and these were included in Annex 5 to the Telecommunication Convention of Geneva, 1959. These general provisions started on page 76 of the Convention and the Rules of Procedure of Conferences were to be found commencing page 83 in chapter 9. The first point of that chapter dealt with the order of seating, which was in the alphabetical order of the French names of the countries represented. He then went on to discuss other procedural rules.

He understood that one of the points discussed in the office of the Chairman yesterday concerned the type of credentials which should be made available. These were covered by nos. 529 - 533 of the Convention. He had been asked what the procedure had been in previous conferences of this type and referred to the Agreements which had been signed as a result of both the European regional conferences held in Stockholm in 1952 and in 1961. At the end of each volume, it could be seen that each country was listed followed by the signature of the accredited representative of that country. He therefore supposed that it was the intention of the present conference to conclude an Agreement of this kind.

There was usually in the Agreement a statement as to how it was to be implemented, and usually, depending upon the type of Agreement, there was a provision for approval. The approval procedure - or ratification in some cases - depended to a considerable extent on the internal legislation of each country. In some countries, for instance, an Agreement of this kind required the approval of Parliament prior to ratification; in other cases, it could be done by simple decree by the Head of State. It was usual for an Agreement of this kind to indicate when and how it would be approved.

The rules for debates began on page 88 of the Convention with indications of points of order, motions, etc. All of these by reference would be suitable for application to the present Conference and the Secretary-General therefore recommended that the provisions contained in Annex 5 be noted and that the Conference could apply them forthwith.

The Chairman thanked the Secretary-General for his statement in particular, concerning the work of the Credentials Committee.

The Delegate of the U.K. Overseas Territories understood that, in the case of an Administrative Conference, such as the present one, no. 534 on page 80 of the Convention covered the credentials.

The Secretary-General agreed that this was correct. It was possible for the Minister of Communications, for example, to accredit a delegation and empower it to take part in the work and to sign the Final Acts.

The Chairman confirmed that many delegations present were, in fact, accredited in this manner. There was a time limit of two weeks for the Credentials Committee to present its Report.

The Secretary-General wished to underline the stipulation contained in no. 532 that powers sent by telegram were not acceptable but he was confident that, with the excellent airmail service which existed, the credentials could be received in sufficient time.

There was one other point of which the Chairman of the Conference and all Committee Chairmen must be aware, and that was that delegations representing countries which had not formally ratified the Convention or had not adhered thereto and deposited the instruments of ratification or adhesion in Geneva; no longer had the right to vote, as of 1 January 1963. They might participate in all discussions but their name could not be included in any valid roll-call vote or in a vote by show of hands. Only two delegations were present to whom this applied and he understood that steps were being taken to try to correct this situation.

The Vice-Chairman wanted to clarify one point: the aim of the present conference was to prepare an Agreement between African countries. It was not a matter of holding a Meeting and returning home to give advice. The result of the Conference should be an Agreement signed by the delegates present and their countries would then be expected to conform to this Agreement.

The Chairman summed up by requesting those delegates with valid credentials to deposit them with the Secretariat and those who were not yet in possession of them to send a telegram to their Administrations asking for them to be sent within the two weeks' time limit.

The Delegate of the Republic of Upper Volta wished to know whether a precise text for such credentials could be given, and the Secretary-General replied that they reached the Union in many different forms, but the essential was that these credentials must conform to nos. 527 and 532 of the Convention if delegates were to be able to exercise their right to vote and to sign the Final Acts. The credentials could be in the form of a letter signed by the Authorities and even though the letters might vary, they would be acceptable as long as they contained the above-mentioned provisions.

On a further question by the Delegate of the Republic of Upper Volta, the Chairman confirmed that Mission Order was insufficient as a credential.

The Meeting rose at 12.50 p.m.

Rapporteur	The Secretary	Chairman
R. UMBERG	J. KUNZ	Alpha DIALLO

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF
BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 26-E
3 May 1963
Original : English

COMMITTEE 4

CONTRIBUTION BY THE DELEGATION OF THE GABON REPUBLIC

In accordance with the wish expressed at the meeting of Group 4B on 2 May at 10 a.m., the delegation of the Gabon Republic is submitting a theoretical lattice which can be used in Band II (87.5 to 100 Mc/s).

This lattice is based on :

1) a spacing of 100 Kc/s between adjacent channels

2) a total of 124 channels (the channels 0 : 87.5 Mc/s and 125 : 100 Mc/s are not used)

3) 5 frequency assignments at the same transmission point except for 1 point where there are only 4.

The numbers entered at the top of the equilateral triangles represent the channel-numbers. These channels are numbered in ascending order :

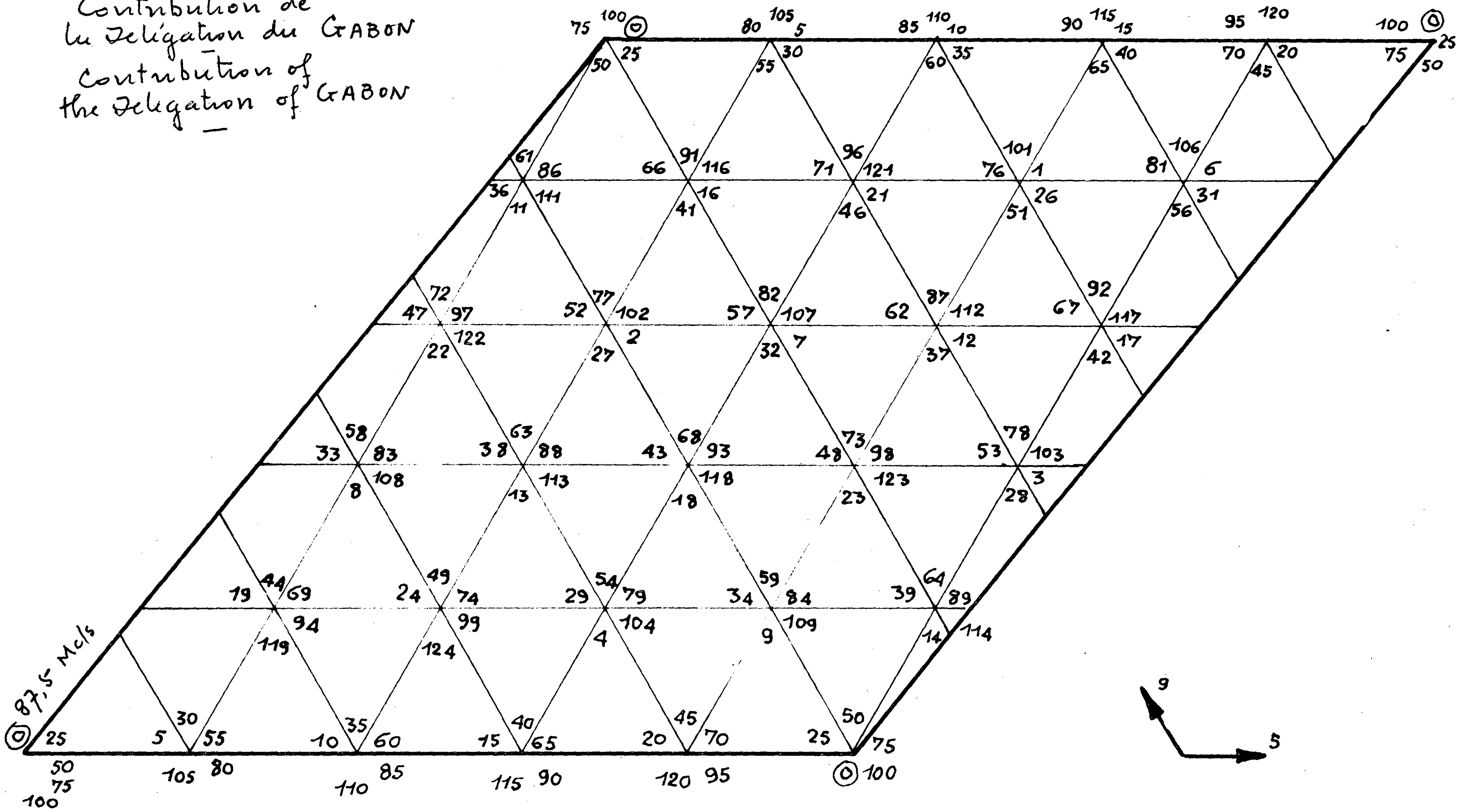
1 : 87.6 Mc/s, 2 : 87.7 Mc/s ...... etc. 124 = 99.9 Mc/s

The triplet used is : 9 - 5 - 110

Annex : 1

Contribution de la Délégation du GABON

Contribution of the Delegation of GABON



BANDE II - Réseau Théorique possible

BAND II - Possible Theoretical Lattice

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF
BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 27-E(Rev.)
4 May 1963
Original : French

COMMITTEE 4

SUMMARY RECORD

OF THE FIRST MEETING OF THE TECHNICAL COMMITTEE

(Committee 4)

(30 April, 1963, 9 a.m. - 12.15 p.m.)

Chairman : Mr. A. LATIF AHMED (United Arab Republic)

Vice-Chairman : Mr. M. N'DIAYE (Republic of Mali)

Mr. M.A. Latif Ahmed (United Arab Republic), Chairman of the Committee, specified its tasks :

1. To define propagation curves
2. To establish protection ratios
3. To determine television and radio standards for the various bands
4. To define the minimum protected field intensity
5. To prepare theoretical lattices for all bands

Mr. Hayes (C.C.I.R.) recalled that Document No. 7/22.92 of the C.C.I.R. gave propagation characteristics for the African Continent. Report 240/C.C.I.R. was the revised version of Document No. 22-92, the adoption of which was recommended.

The Chairman said that there appeared to be two systems of standards : the C.C.I.R. and the I.B.T.O. (plus system I). The countries already operating on networks insisted on maintaining their original standards. The Chairman requested that an inventory be drawn up showing the respective advantages of the two systems.

Mr. Lalung-Bonnaire (Republic of Rwanda) felt that the C.C.I.R. should not be opposed to the I.B.T.O. since, in fact, both were C.C.I.R. standards, one with 8 Mc/s spacing between channels, and the other with 7 Mc/s.

Mr. Krasnosselski (I.F.R.B.) said that the main task was to study how both standards could be used together in Africa. They should endeavour to draw up plans taking account of both systems.

Mr. G. Tedros (Ethiopia) pointed out that it had been almost impossible to draw up plans at Stockholm because of the many standards, that also appeared to be the case at present. He insisted that the conference seek to establish a single standard in view of the early stage of television development in Africa.

Some delegates agreed with him and commented that they should try to find a standard for the future, giving maximum guarantees.

Mr. Lalung-Bonnaire (Republic of Rwanda) was in favour of basing the plan on bands I, III, IV and V with 8 Mc/s, since the latter spacing was preferable for the future and could accommodate the 7 Mc/s spacing. The 8 Mc/s system offered greater choice.

The Chairman pointed out that band III could contain only 6 channels if the 8 Mc/s spacing was adopted.

The Chairman of the Union of African National Sound Broadcasting and Television Organizations recalled that one of the main concerns of that Union, particularly at the preliminary conference in Cairo, was to find a single standard; they very much hoped that the technicians would reach an agreement on the subject.

Mr. Hayes, C.C.I.R., referred to C.C.I.R. Report 2329 and said that a considerable number of television standards existed. Due to the interruption of C.C.I.R. work during World War II it had not been possible to study a single standard and several had grown up. All one could say was that the number of standards had not been increased and that there was a welcome sign that the number was now being reduced. He pointed out that there were a number of advantages in having a single standard, possibly the most important of which was that a single line and frame standard greatly facilitated the interchange of programmes since image converters would not be necessary. As far as this was concerned, the position in Africa was very satisfactory since only a 625 line 50 frame standard was proposed.

One standard would also reduce somewhat the cost of receivers. Mr. Hayes did not think that many viewers using ordinary home television sets would be able to appreciate whether a 5.5 or 6.5 Mc/s video band was being used. Indeed many might not appreciate the difference between either of these and the 3 Mc/s band of the 405 line system. Experts using high quality monitors would of course appreciate the difference. Mr. Hayes stressed that whether they decided to use a 7 or 8 Mc/s channel it was important that in any one channel the video carriers and any colour subcarriers should be on the same nominal frequencies.

A discussion ensued as to whether a 7 Mc/s or 8 Mc/s spacing should be adopted and some confusion resulted; Mr. G. Ekue (Togolese Republic) asked that Mr. Lalung-Bonnaire's proposal should be put to the vote. That request was supported by the delegates of Upper Volta, Malagasy Republic and Ghana, the latter reserving its position with regard to band I.

The representative of the I.B.T.O. recalled that all the European countries adopted 8 Mc/s spacing for bands IV and V at Stockholm. The representative of the E.B.U. confirmed that statement.

The French delegate said that his country had chosen 8 Mc/s for the stations planned in the French Overseas Territories.

The proposal by Mr. Lalung-Bonnaire was finally adopted.

The delegate of the United Arab Republic reserved his position with regard to bands I and III and the delegate of Ghana with regard to band I.

The Chairman, introducing the subject of protection ratios, pointed out the need to know the standards used by all countries.

Mr. Hayes (C.C.I.R.) pointed out that the protection ratios given in Document No. 2324 were those for monochrome television. The document had become C.C.I.R. Recommendation No. 418.

After an exchange of views on probable protection ratios and possible improvements due to the adoption of frequency modulation for sound, a group was set up to study those matters in detail, composed of : Ethiopia, U.A.R., France, Gabon Republic, Ghana, Kenya and Nigeria, with experts from I.T.U. and E.B.U.

Mr. Lalung-Bonnaire was appointed Chairman

Any other delegates who so wished could participate in the work of that group.

The Chairman specified that the terms of reference of the group (4A) were :

1. To study TV standards

2. Frequency modulations standards and characteristics

3. Protection ratio in band III between different types of service

4. Minimum field intensity to be shared for TV and TV protection ratio.

After an interval, Committee 4 resumed its meeting and the mandate of the group was extended as follows :

- it should specify the different television standards for Africa, indicating in each case which countries possessed equipment for those standards, either already in operation, on order, or planned, at the same time mentioning the number of receivers in service.

The group would endeavour later to make a comparison of the advantages and disadvantages of standards using channels of 7 and 8 Mc/s.

Rapporteur :

V. JEAN-LOUIS

Chairman :

A. LATIF AHMED

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF/UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No.27 - E
2 May, 1963
Original: French

COMMITTEE 4

SUMMARY RECORD

OF THE FIRST MEETING OF THE TECHNICAL COMMITTEE
(Committee 4)

(30 April, 1963 9 a.m. - 12.15 p.m.)

Chairman: Mr. A. LATIF AHMED (United Arab Republic)
Vice-Chairman: Mr. M. N'DIAYE (Republic of Mali)

Mr. M.A. Latif Ahmed (United Arab Republic), Chairman of the Committee, specified its tasks:

1. To define propagation curves
2. To establish protection ratios
3. To determine television and radio standards for the various bands
4. To define the minimum shared field intensity.

Mr. Hayes (C.C.I.R.) recalled that Document No. 7/22.92 of the C.C.I.R. gave propagation characteristics for the African Continent. Report 240/C.C.I.R. was the revised version of Document No. 22-92, the adoption of which was recommended.

The Chairman said that there appeared to be two systems of standards: the C.C.I.R. and the I.B.T.O. (plus, of course, the French 819 line system). The countries already operating on networks insisted on maintaining their original standards. The Chairman requested that an inventory be drawn up showing the respective advantages of the two systems.

Mr. Lalung-Bonnaire (Republic of Rwanda) felt that the C.C.I.R. should not be opposed to the I.B.T.O. since, in fact, both were C.C.I.R. standards, one with 8 Mc/s spacing between channels, and the other with 7 Mc/s.

Mr. Krasnosselski (I.F.R.B.) said that the main task was to study how both standards could be used together in Africa. They should endeavour to draw up plans taking account of both systems.

Mr. G. Tedros (Ethiopia) pointed out that it had been impossible to draw up plans at Stockholm since there had been insufficient time; that also appeared to be the case at present. He insisted that the conference seek to establish a single standard.

Some delegates agreed with him and commented that they should try to find a standard for the future, giving maximum guarantees.

Mr. Lalung-Bonnaire (Republic of Rwanda) was in favour of basing the plan on bands I, III, IV and V with 8 Mc/s, since the latter spacing was preferable for the future and could accommodate the 7 Mc/s spacing. The 8 Mc/s system offered greater choice.

The Chairman pointed out that band III could contain only 6 channels if the 8 Mc/s spacing was adopted.

The Chairman of the Union of African National Sound Broadcasting and Television Organizations recalled that one of the main concerns of that Union, particularly at the preliminary conference in Cairo, was to find a single standard; they very much hoped that the technicians would reach an agreement on the subject.

Mr. Hayes (C.C.I.R.) referred to Report 23-29 and said that a considerable number of standards existed and it had not been increased for several years. Among the advantages of a single standard he pointed out that it would facilitate the exchange of programmes (converters would not be necessary) and reduce the cost of receivers, although the quality of the image was not affected, at least insofar as the public was concerned. 625 lines for Africa was sufficient to enable the exchange of programmes. It was merely important to ensure that the picture carrier was put in the same places in the spectrum.

A discussion ensued as to whether a 7 Mc/s or 8 Mc/s spacing should be adopted and some confusion resulted; Mr. G. Ekue (Togolese Republic) asked that Mr. Lalung-Bonnaire's proposal should be put to the vote. That request was supported by the delegates of Upper Volta, Malagasy Republic and Ghana, the latter reserving its position with regard to band I.

The representative of the I.B.T.O. recalled that all the European countries adopted 8 Mc/s spacing for bands IV and V at Stockholm. The representative of the E.B.U. confirmed that statement.

The French delegate said that his country had chosen 8 Mc/s for the stations planned in the French Overseas Territories.

The proposal by Mr. Lalung-Bonnaire was finally adopted.

The delegate of the United Arab Republic reserved his position with regard to band III and the delegate of Ghana with regard to band I.

The Chairman, introducing the subject of protection ratios, insisted on the need to know the standards used by all countries.

Mr. Hayes (C.C.I.R.) pointed out that Document No. 23-24 was adopted at Stockholm for black-and-white.

After an exchange of views on probable protection ratios and possible improvements due to the adoption of frequency modulation for sound, a group was set up to study those matters in detail, composed of: Ethiopia, France, Gabon Republic, Ghana, Kenya, and Nigeria, with experts from I.T.U. and E.B.U.

Mr. Lalung-Bonnaire was appointed Chairman.

Any other delegates who so wished could participate in the work of that group.

The Chairman specified that the terms of reference of the group (4 A) were:

1. To study TV standards
2. Frequency modulations standards and characteristics
3. Protection ratio in band III between different types of service
4. Minimum field intensity to be shared for TV and TV protection ratio.

After an interval, Committee 4 resumed its meeting and the mandate of the group was extended as follows:

It should specify the different television standards for Africa, indicating in each case which countries possessed equipment for those standards, either already in operation, on order, or planned, at the same time mentioning the number of receivers in service.

The group would endeavour later to make a comparison of the advantages and disadvantages of standards using channels 7 and 8.

Rapporteur:	Chairman:
V. JEAN-LOUIS	A. LATIF AHMED

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF/UHF
BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 28-E
2 May, 1963
Original : French

COMMITTEE 4

Contribution by the Upper Volta

NOTE ON THE VARIOUS ASPECTS OF STANDARD K*

The International choice of an 8 Mc/s channel provides the framework for the optimum choice of 625-line definition and the main problem - if no condition of compatibility with an existing situation happens to limit the choice - is to seek the best possible use of the spectrum.

It has often been said that the frequency spectrum is extremely valuable and that the best possible use must be made of it. This amounts to saying that as the 8 Mc/s channel has been chosen, it is essential to make the best use of it, i.e. to work out the standard giving the best picture quality in these conditions.

The problem has several aspects.

1. The quality of the black-and-white picture depends on the video pass-band and on the width of the attenuated sideband.

2. The quality of the colour television picture depends on the quality of the band set aside for the chrominance signal in the luminance band.

3. The economcy of a frequency plan depends on the limitation of the protection distance between channels.

4. The economy of a television receiver depends on the requirements imposed on adjustment tolerances for a given picture quality.

Point 1 - Video passband

For the 625-line definition, passing from a video band of 5 Mc/s to 6 Mc/s improves the horizontal detail by about 20 % (i.e. an increase of about a hundred points). This is certainly not negligible and the effect on a good receiver which is receiving a good transmission is very appreciable. Another aspect of the problem is noted under point 4.

Magnetic recording machines and modern radio relay systems are capable of correctly recording or transmitting a video band of 6 Mc/s. It would be illogical not to make effective use of this possibility which costs nothing on the material level.

In particular, certain existing magnetoscopes permit of such recordings if they are suitably adjusted (buttons to be turned).

Point 2

Since the chrominance sub-carrier has now been fixed at 4.43 Mc/s, the spectrum of the chrominance signal is limited for the upper sideband to the limit of the video spectrum fixed by the position of the sound carrier.

With standard G, the sound at 5.5 Mc/s leaves only 500 kc/s to the chrominance band, which is very little.

For the NTSC system, the chrominance signal I must be transmitted with an attenuated upper sideband. The best possible picture quality in the best possible reception conditions is inferior to that offered by standard K*.

The 1 Mc/s band (6 Mc/s carrier of standard I) may be considered as a minimum

Standard K* (6.5 Mc/s) offers the possibility of a symmetrical band with ± 1.5 Mc/s which offers colour pictures of better quality without having resort to possible, but costly, corrections, or to difficult adjustments. In particular, this standard permits of a greater measure of independence from accidental wrong adjustment of the receiver oscillator.

3rd Point

Frequency economy in the broadcasting bands used for television is obtained by reducing one of the sidebands of the modulated signal. This reduction cannot, however, be achieved without repercussion. The essential factor in favour is the ratio between the video band and the width of the base section. If the ratio is too high, defects appear in the transient states owing to an exaggeration of the component known as the squared component; these defects are practically impossible to correct in the receiver.

The defects are so apparent in the picture with standards B and G that they have to be remedied, as well as can be, by difficult phase correction on emission.

A base section width of 1.25 Mc/s would appear to be a correct value.

It should be noted that the choice of this value also has some effect on the design of the receiver.

This choice, coupled with the choice of the picture-sound frequency difference has repercussions on the frequency plan. In a simplified theoretical case it might be said that an 8 Mc/s channel should have :

- a picture-sound difference of 5.5, 6 or 6.5 Mc/s
- a margin on the sound side of 0.25 Mc/s in all cases
- a flat attenuated band over 1.25 Mc/s or 0.75 Mc/s with a gradual attenuation over approximately 0.5 Mc/s

In other words :

For system G : 5.5 + 0.25 + 0.75 + 0.5 = 7 Mc/s

For system K*: 6.5 + 0.25 + 1.25 + 0.5 = 8.5 Mc/s

System K* "overflows" from the channel in its endeavour to benefit from the advantages of both the video quality (6.5 Mc/s) and the attenuated band (1.25 Mc/s).

The acceptance of this obvious defect is justified by the fact that the real advantages exercised on the possible quality of the picture do not entail any serious disadvantages for the majority of receivers.

The spectrum overflow in the theoretical channel has no consequences in practice except on protection between the neighbouring channels N and N + 1. The protection between channels N and N + 1 with the K* standard should be greater than that required for other standards, but in serious cases a very simple and cheap filter may be inserted in the receiver to eliminate any interference likely to arise.

Moreover, when establishing a frequency plan, account is taken of the conditions of protection limits at the edges of the reception zones. In practice, the transmitters are located near large towns and at a radius of the order of half the maximum effective radius and an increase in the effective field strength ensures a corresponding protection from the interfering channels. Thus, even if the protection at the limit of the zone is "tangential", it is possible to ensure a more sufficient protection for the basic primary zone around the transmitter. It will be found that, in most cases, it is in this zone that most of the population served by the transmitter is located.

Thus, the improvement in quality, will in any event be felt by a great majority of the population while some slight deterioration due to inadequate protection may become apparent - and that not systematically - only in the marginal ones. In serious cases, such as those of towns at the zone limit, a local re-transmitter will be required.

Thus, despite appearances to the contrary, the spectrum overflow into the neighbouring channel is not a disadvantage and is, in any event, of benefit to all.

Point 4

The above considerations refer to the radiated signal on the assumption that the receiver is perfect. In practice, serious consideration should be given to the tolerances normally admitted in commercial receivers. The customer obviously has to pay for close tolerances conditioned by the general design of the receiver, the cost of factory controls, and the consequences of continuous deviation and deterioration through wear and tear.

In a black-and-white receiver, two factors are of importance :

a) - The response curve in the overall video band which results from the HF circuits and particularly from the IF and video circuits.

The presence of sound makes it necessary to filter at frequency S (5.5, 6 or 6.5 Mc/s). If a correct video quality is required at N Mc/s ($\pm$ 2 db for instance), S - N Mc/s remains for circuit cut-off.

The consequences of a greater or lesser steepness of the cut-off edge are :

a) a greater precision of circuits (shift and tuning, in particular)

b) an increase in phase distortions in the video band.

If it is assumed that N = 5 Mc/s (a good commercial receiver), it can be seen that :

S - N = 0.5 to 1.5 Mc/s, according to the system.

It is easy to see that system K* will "tolerate" a greater amount of freedom in the quality of circuits.

System G is very rigorous in this respect and tolerates no weakness.

b) - The response on the "Nyquist flank".

Adjustment of this edge is all the easier in that the drop is slower; hence the great width of the base is an advantage. Moreover :

- phase distortions are smaller,

- the consequences of natural shift of the receiver's local oscillator are smaller. This point is important in bands IV and V, where oscillator stability is very worthwhile.

Thus, for a receiver of average quality, adjustment tolerances are markedly greater for standard K* than for standard G. The price, if all the other factors are equal, should be affected thereby.

For colour television, the problem is the same as regards the chrominance band. The admissible tolerance for system K* is fairly wide. For system G on the other hand, simultaneous conditions of flat band in the chrominance and sound filter zone lead to design difficulties which appear to be quite serious.

Conclusion

The spectral composition of the HF channel for system K* gives, in theory, the best possible picture on 625 lines both for black-and-white and for colour. It also permits of wider tolerances in the manufacture of receivers.

On the other hand, it calls for a somewhat more accurate study of the frequency plan since it calls for supplementary protection between neighbouring channels.

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF/UHF
BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 29-E
3 May 1963
Original: French

PLENARY MEETING

FIRST REPORT
OF
COMMITTEE 2
(Credentials Committee)

Committee 2 met on 2 May 1963 at 11.00 a.m. under the Chairmanship of Mr. Y. KAZIBURE (Tanganyika).

The provisions of Chapter 5 of the General Regulations annexed to the International Telecommunication Convention were examined and it was decided to accept the credentials signed by the competent authorities when they were:

a) full credentials

b) credentials indicating that the delegation is representing its country

c) credentials indicating that the delegation may participate, vote and sign the Final Acts.

After examining the credentials received as at 2 May, the Committee drew up the attached list showing the position of each country represented at the Conference.

Delegations whose credentials have not been accepted are urged to approach the competent authorities of their countries as soon as possible.

A. WINTER
Rapporteur

Y. KAZIBURE
Chairman

Annex: 1

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A N N E X

SITUATION, ON 2 MAY 1963, OF CREDENTIALS OF THE REPRESENTATIVES OF COUNTRIES TAKING PART IN THE AFRICAN VHF/UHF BROADCASTING CONFERENCE

Country	Has handed in credentials authorizing		Credentials not acceptable	Has no credentials	Remarks
	Vote	Signature of Final Acts			
1	2	3	4	5	6
Members					
Burundi (Kingdom of)					Not represented
Cameroun (Republic of the)				x	
Central African Republic					Not represented
Congo (Republic of the) (Brazzaville)				x	
Congo (Republic of the) (Léopoldville)	x	x			
Ivory Coast (Republic of the)	x	x			
Dahomey (Republic of)				x	
Group of Territories represented by the French Overseas Post and Telecommunication Agency	x	x			
Spain	x	*)			*) credentials authorizing signature will follow
Ethiopia	x	x			
France	x	x			
Gabon Republic	x*)	x*)			*) provisionally, subject to confirmation
Ghana				x	

1	2	3	4	5	6
Guinea (Republic of)	x	x			
Upper Volta (Republic of)				x	
Liberia					Has not acceded to the Convention
Malagasy Republic	x	x			
Mali (Republic of)	x	x			
Mauritania (Islamic Rep. of)				x	
Niger (Republic of the)				x	
Nigeria (Federation of)	x	x			
Uganda	x	x			
Spanish Provinces in Africa	x				
Portuguese Overseas Provinces	x	x			
Somali Republic				x	
Rhodesia and Nyasaland	x	x			
Rwanda (Republic of)	x	x			
Senegal (Republic of the)				x	
Sierra Leone			x		
Sudan (Republic of the)					Not represented
South Africa (Republic of) and Territory of South-West Africa	x*)	x*)			Provisionally
Tanganyika	x				
Chad (Republic of the)	x	x			
Overseas Territories for the international relations of which the Government of Great Britain and Northern Ireland are responsible	x	x			
Togolese Republic	x	x			
<u>Observers</u>					
Italy				x	
Libya				x	
United Arab Republic				x	
<u>Associate Member</u>					
Kenya					Accredited to take part as an observer

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF
BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 30-E
2 May, 1963
Original : English

COMMITTEE 4

International Frequency Registration Board (I.F.R.B.)

CHARACTERISTICS OF MONOCHROME TELEVISION SYSTEMS G, H, I, K*

To facilitate the work of the African VHF/UHF Broadcasting Conference the Annex to the present document has been prepared in a convenient form for reference. This information has been taken from C.C.I.R. Report 308 and has been already published in Document No. 7-E (C.C.I.R. Document No. 2329).

Annex : 1

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ANNEX

TABLE 1

CHARACTERISTICS OF MONOCHROME TELEVISION SYSTEMS G, H, I, K*

ITEM	CHARACTERISTICS	SYSTEM G	SYSTEM H	SYSTEM I	SYSTEM K*
Video characteristics (See also Tables II and III for details of line and field synchronizing signals respectively)					
1	Number of lines per picture (frame)..	625	625	625	625
2	Field frequency (fields/second)......	50	50	50	50
3	Interlace..........................	2/1**	2/1**	2/1**	2/1**
4	Picture (frame) frequency (pictures/ second).........................	25	25	25 ± .001%	25
5	Line frequency and tolerance when operated non-synchronously (lines/ second).........................	15.625 ± 0.1%	15.625 ± 0.1%	15.625 ± .001%	15.625 ± 0.05%
6	Aspect ratio (width / height)........	4/3**	4/3**	4/3**	4/3**
7	Scanning sequence......... (Line) (Field)	Left to right* Top to bottom*	Left to right* Top to bottom*	Left to right* Top to bottom*	Left to right* Top to bottom*
8	System capable of operating independently of power supply frequency.........................	Yes**	Yes**	Yes**	Yes**
9	Approximate gamma of picture signal..	0.5	0.5	0.5	0.5
10	Nominal video bandwidth (Mc/s).......	5	5	5.5	6
Radio frequency characteristics (See also Table IV for ideal sideband characteristics of vision transmitters)					
11	Nominal radio-frequency bandwidth (Mc/s)............................	8	8	8	8
12	Sound carrier relative to vision carrier (Mc/s).....................	+5.5**	+5.5**	6	+6.5**
13	Sound carrier relative to nearest edge of channel (Mc/s).............	-0.25**	-0.25**	-0.25**	-0.25**
14	Nominal width of main sideband (Mc/s)	5	5	5.5	6
15	Nominal width of vestigial sideband (Mc/s)	0.75	1.25	1.25	0.75(4)
16	Type of polarity of vision modulation	A5* negative, asymmetric sideband**	A5* negative, asymmetric sideband**	A5* negative, asymmetric sideband**	A5* negative, asymmetric sideband**
17	Synchronizing level as a percentage of peak carrier........................	100	100	100	100
18	Blanking level as a percentage of peak carrier........................	72.5-77.5	72.5-77.5	77	72.5-77.5
19	Difference between black level and blanking level as a percentage of peak carrier........................	3-6.5	3-6.5	0	3-5
20	Peak white level as a percentage of peak carrier........................	10-12.5	10-12.5	18-20	10
21	Type of sound modulation.............	F3, ± 50 kc/s 50 μs pre-emphasis	FB, ± 50 kc/s 50 μs pre-emphasis	F3, ± 50 kc/s 50 μs pre-emphasis	F3, ± 50 kc/s 50 μs pre-emphasis
22	Ratio of effective radiated powers of vision and sound (1)	5/1	5/1	5/1	2/1 - 5/1

NOTES: See page 4

NOTES :

** These characteristics are in accordance with C.C.I.R. Recommendation 212

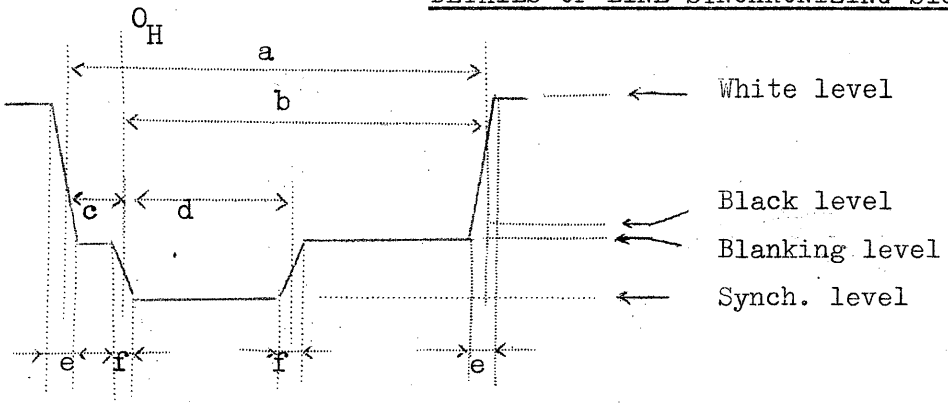
(1) The values to be considered are :

- the r.m.s. value of the carrier at the peak of the modulation envelope for the vision signal;

- the r.m.s. value of the unmodulated carrier for amplitude-modulated and frequency-modulated sound transmissions.

TABLE II

DETAILS OF LINE SYNCHRONIZING SIGNALS



Item	Characteristic	Durations (Measured between half-amplitude points on the appropriate edges) for system					
		H, G (1)		I		K*	
		% H	µs	% H	µs	% H (3)	µs
H	Line period	100	64	100	64	100	64
a	Line blanking interval	18.5-19.2	11.8-12.3		12.05 ±0.25	18.4-19.5	11.8-12.5
b	Interval between time datum (O_H) and back edge of line blanking signal					16.1-17.3	10.3-11.3 (2)
c	Front porch	2-2.8	1.3-1.8		1.55 ±0.25	1.9-2.35	1.2-1.5
d	Synchronizing pulse	7-7.7	4.5-4.9		4.7 ±0.2	7-8.3	4.5-5.3
e	Build-up time (10-90%) of the edges of the line blanking signal	0.31-0.62	0.2-0.4		0.3 ±0.1	0.3-0.7	0.2-0.45
f	Build-up time (10-90%) of line synchronizing pulses	0.31-0.62	0.2-0.4		0.3 ±0.1	0.2-0.4	0.13-0.26

(1) The primary values are those given in µs
(2) Calculated values
(3) The values given in %H are rounded-off

TABLE III

DETAILS OF FIELD SYNCHRONIZING WAVEFORMS

1. Diagrams applicable to systems G, H, I, K*

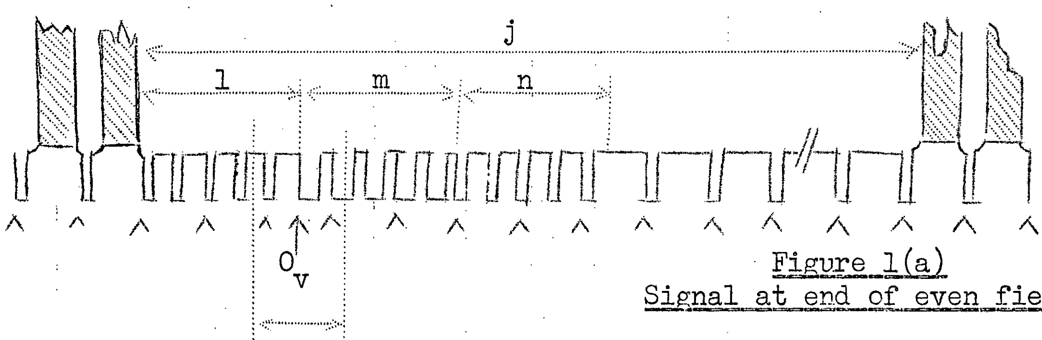


Figure 1(a)
Signal at end of even fields

See Fig. 1(c)

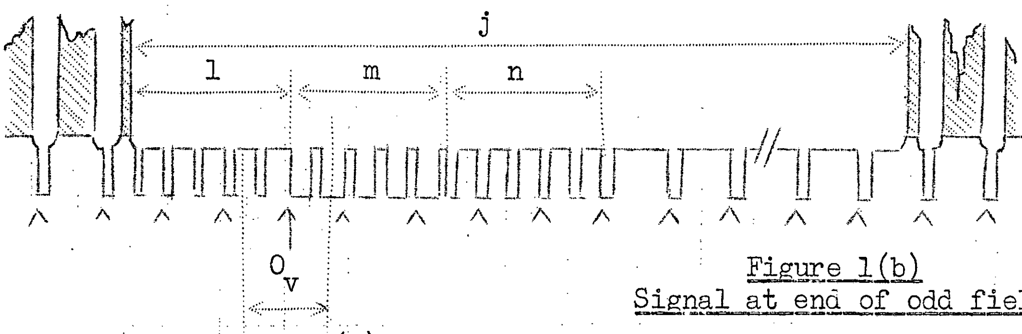


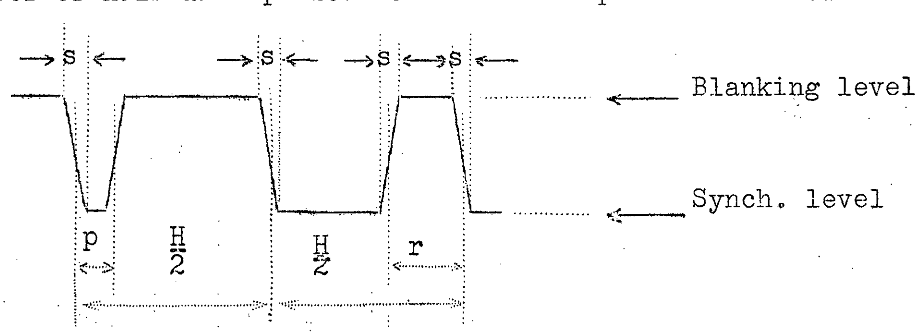
Figure 1(b)
Signal at end of odd fields

See Fig. 1(c)

Note 1: ∧∧∧ indicates an unbroken sequence of edges of line synchronizing pulses throughout the field blanking period.

Note 2: At end of even fields, the edge of the field synchronizing pulse (O_v) falls midway between the edges of two line synchronizing pulses if ℓ is an odd number of half-line periods as shown.

Note 3: At end of odd fields, the edge of the field synchronizing pulse (O_v) coincides with the edge of a line synchronizing pulse if l is an odd number of half-line periods of half-line periods as shown.



Note: The durations measured to the half-amplitude points on the appropriate edges

Figure 1(c)

Details of equalizing and synchronizing pulses

TABLE III (contd.)

Item	Characteristic	System					
		H, G (2)		I		K*	
V	Field period......................(ms)	20		20		20	
H	Line period.....................(μs)	64		64		64	
j	Field-blanking period...........(μs)	(18-22) H + 12		(18-22) H + 12.05		(23-27) H	
k(1)	Build-up times (10-90%) of the edges of field-blanking pulses...........(μs)	$\leqslant$ 6		$\leqslant$ 6		0.2-6.4	
ℓ	Duration of first equalizing pulse sequence............................	2.5 H		2.5 H		2.5 H or 3 H	
m	Duration of synchronizing pulse sequence	2.5 H		2.5 H		2.5 H or 3 H	
n	Duration of second sequence of equalizing pulses............................	2.5 H		2.5 H		2.5 H or 3 H	
		% H	μs	% H	μs	%H (3)	μs
p	Duration of equalizing pulse............	3.4-3.75	2.2-2.4		2.3 ± 0.1	3.5-4.15	2.25-2.65
q	Duration of field synchronizing pulse...				27.3 ± 0.2		
r	Interval between field synchronizing pulses............................	7-7.7	4.5-4.9		4.7 ± 0.2	7-8.3	4.5-5.3
s	Build-up times (10-90%) of the edges synchronizing signals..................	0.31-0.62	0.2-0.4		0.3 ± 0.1	0.2-0.4	0.13-0.26

(1) Not indicated on diagram

(2) The primary values are those given in μs

(3) The values given in %H are rounded-off

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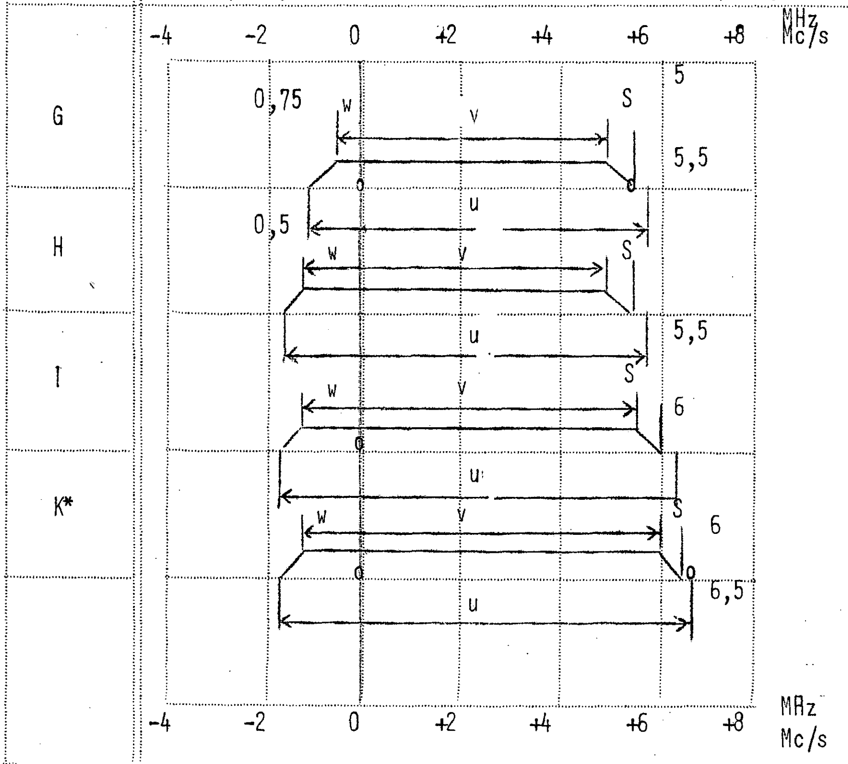
Système System	Ecart de fréquence en MHz par rapport à la fréquence de la porteuse image Frequency relative to the vision carrier-frequency



S: porteuse son
sound carrier

u: limites du canal radioélectrique
limits of radio frequency channel

v: largeur nominale de la bande latérale non atténuée
nominal width of main sideband

w: largeur nominale de la bande latérale atténuée
nominal width of vestigial sideband

<u>CARACTERISTIQUES DE FREQUENCE IDEALES DES EMETTEURS IMAGE</u>

(Voir Tableau I pour les espacements de fréquence précis)

<u>IDEAL FREQUENCY-CHARACTERISTICS FOR VISION TRANSMITTERS</u>

(See Table I for precise frequency spacings)

<u>TABLEAU IV - TABLE IV</u>

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 31-E
2 May, 1963
Original : English

COMMITTEE 4

The International Frequency Registration Board (I.F.R.B.)

TELEVISION STANDARDS
FOR BANDS I AND III

In addition to the information contained in Documents Nos. 7, 14 and 30, this document is now distributed, on the position of Administrations in respect to 7 Mc/s channelling systems.

The Administrations which have indicated that they use or plan to use a 7 Mc/s channelling system are given in the attached Annex. The characteristics of the system according to which there would be 11 channels available, are given in the Technical Data Book of the Stockholm Conference. These channels and the frequency limits are as follows:

Channel Number	7 Mc/s channel limits	Channel Number	7 Mc/s channel limits
1	41 - 48*	5	174 - 181
2	47*- 54	6	181 - 188
3	54 - 61	7	188 - 195
4	61 - 68	8	195 - 202
		9	202 - 209
		10	209 - 216
		11	216 - 223

* The adjacent channel protection ratio between these channels would be similar to those encountered with the system described in Document No. 14, whereas the adjacent channel protection ratio for all other channels would be through those for the "B" (or G) system given in the Technical Data Book of the Stockholm Conference.

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A N N E X

United Arab Republic

Rhodesia and Nyasaland (Federation of)

Nigeria (Federation of)

Kenya

Ghana

Tanganyika

Uganda

Spanish Provinces in Africa

Spain (for Canaries)

Somali Republic

Sierra Leone

Overseas Territories for the International Relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible

Ethiopia

Libya

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF/UHF
BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 32-E
3 May, 1963
Original : English

COMMITTEE 4

DRAFT RECOMMENDATION

This draft recommendation has been prepared by the Delegate of Cameroun and the Chairman of the I.F.R.B. in accordance with the meeting of the Technical Committee taken on Wednesday, 1 May, 1963.

The African VHF/UHF Conference convened in Geneva on the 29 April,

notes :

a) that certain African countries are using frequencies in Band III for services other than broadcasting as provided for in the allocation table, (Article 5) and numbers 291, 293, 294, 297 and 301 of the Radio Regulations;

b) that Band III is the optimum one for the use for the television services in that it permits the best service area coverage and long-distance interference does not hinder the sharing of the frequencies;

c) that full use of this band should be encouraged for the television services, consistent with the use of other services;

d) that care should be taken to ensure that no mutual interference exists between the established other services and the television service established, in accordance with plans proposed by the conference;

recommends :

to Administrations of countries in the African region that :

1. Bands III whenever possible be cleared of services other than broadcasting.

2. during the interim, every effort should be made to ensure that other authorized uses of this band do not cause interference to the broadcasting service and vice versa.

3. During the interim, no new service other than broadcasting should be established in Band III and in fact every effort be made to provide for the operation of other services in other bands, so that at the next Administrative Radio Conference competent to consider allocations of bands, Band III can then be allocated exclusively to the broadcasting service for which it then will be fully available.

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document N° 33-F/E
2 mai 1963
Original : français/anglais

COMMISSION 4

COMITE INTERNATIONAL D'ENREGISTREMENT DES FREQUENCES (I.F.R.B.)

Le tableau ci-joint est le résumé, demandé par le Groupe de travail 4A 1, des réponses au questionnaire annexé au Document N° 18.

INTERNATIONAL FREQUENCY REGISTRATION BOARD (I.F.R.B.)

The attached table is a summary of the answers to questionnaire annexed to Document No. 18, as requested by Working Group 4A 1.

Annexe : 1
Annex : 1

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ANNEXE - ANNEX

REPONSES AU QUESTIONNAIRE (Doc. N° 18)

ANSWERS TO THE QUESTIONNAIRE (Doc. No. 18)

Administrations	Projets déjà en vigueur Projects implemented					Projets décidés Projects on order					Projets à l'étude Projects under planning					Observations Remarks
	Système System				N° de récept. No. of receiv. 1.1.63	Système System				Date prévue Planned Date	Système System				Date probable Probable Date	
	I	II	III	IV/V		I	II	III	IV/V		I	II	III	IV/V		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
					x 1000											
ALGERIE ALG		180F3	E		67											
BURUNDI BDI																
CAMEROUN CME											K*	F3	K*	K*	1-1966	
CENTRAFRICAINE (Rép.) CAF																
CONGO (BRAZZAVILLE) COG	K*	F3	K*	K*	0,250											
CONGO (LEOPOLDVILLE) CGO																
COTE D'IVOIRE CTI						K*	FM	K*	K*	(*)						(*) Voir/See Note (1)
DAHOMEY DAH											K*	FM	K*	K*		
TERRITOIRES :																
Comores COM											K*	180F3	K*	K*		
Côte française des Somalis SMF												180F3	K*	K*		
ESPAGNE :																
Canaries CNR						B				1963	B		B	G		
ETHIOPIE											B	F3	B	*	(II:1964 (I, III: (1966/67	* non décidé undecided

1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
						x 1000											
FRANCE - REUNION	REU												180 F3	K*	K*		(2)
GABON	GAB	K*	F3	K*	K*	0,300											
GHANA	GHA																
GUINEE	GUI																
HAUTE VOLTA	HVO						K*	FM	K*	K*	(I,IV,V (1964 (III (8.1963 (II 1965						
LIBERIA	LBR													(*)		1.1964((	(*) R.T.M.A. (3)
LIBYE	LBY		180F3											B	G		
MALGACHE (Rép.)	MDG											K*	F3	K*	K*	1965	
MALI	MLI											K*	F3	K*	K*		
MAURITANIE	MTN											K*	(*)	K*	K*	1964	(*) 75 MHz 50 μs
NIGER	NGR						K*		K*	K*	1965		F3				
NIGERIA	NIG	B		B		250	B		B		1963/64	B		B	B/G	1967	(4)
OUGANDA	UGA								B		8.1963			B		1964/65	(5)
PROVINCES ESPAGNOLES D'AFRIQUE												B		B	G		

1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
						X 1000											
PROVINCES PORTUGAISES OUTRE-MER			3(*)				B		B		1965	B		B	G	après 1 after 1965	((*)±75KHz (50/us (10,7KHz
REPUBLIQUE ARABE UNIE	EGY	B	180F3	B	H/G	230											
REPUBLIQUE SOMALIE	SOM											B	75KHz	B	G		
RHODESIE ET NYASSALAND	RHO/NYA	B				17						(See Remarks)					(6)
REP. RWANDAISE	RRW																
SENEGAL	SEN						K*	F3	K*	K*	1965						
SIERRA-LEONE	SRL	B/1				0,5								B/1	B/1	(*)	((*)III (1964/65 (IV/V (1968
SOUDAN	SDN																
REP. SUDAFRICAINE	AFS		F3			200								I	I	(III (1967/70 (IV/V (1970	(7)
TANGANYIKA	TGK																
TCHAD	TCD											K*	F3	K*	K*	1966	
TERRITOIRES ROYAUME-UNI:																	
ADEN	ADN						B		B		7.1963		180 F3		B/1	(II (1965 (IV/V (1970	
ASCENSION	ASC											B/1	180 F3	B/1	B/1	1968	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
TERRITOIRES ROYAUME-UNI (suite)					X 1000											
BASUTOLAND BAS											B/1	180 F3	B/1	B/1	1972	
BECHUANALAND BCH											B/1	180 F3	B/1	B/1	1972	
GAMBIE GMB											B/1	180 F3	B/1	B/1	1968	
MAURICE (ILE) MAU						B		B		9.1963		180 F3	B/1	B/1	II 1965 IV/V 1970	
SEYCHELLES SEY											B/1	180 F3	B/1	B/1	1968	
S. HELENE SHN											B/1	180 F3	B/1	B/1	1968	
SWAZILAND SWZ											B/1	180 F3	B/1	B/1	1972	
ZANZIBAR ZAN											B/1	180 F3	B/1	B/1	(I II III (1965 (IV/V (1970	
TOGO TGO																
AFRIQUE ORIENTALE BRITANNIQUE:																
KENYA KEN																

OBSERVATIONS - REMARKS

Note (1) - Côte d'Ivoire :

La date prévue pour la mise en vigueur ne fait pas l'objet de cette Conférence; elle ne regarde que le Gouvernement de la République de Côte d'Ivoire.

The date envisaged for entry into force is not the subject of this Conference; it is the sole concern of the Government of the Republic of the Ivory Coast.

Note (2) - France :

Date de mise en vigueur indéterminée, mais peut-être prochaine. Le Gouvernement français a publié un texte précisant que le système K* sera utilisé dans les départements français d'Outre-Mer.

Date of entry into force not specified but may be soon. The French Government has published a paper specifying that system K* will be used in French Overseas Departments.

Note (3) - Liberia :

Comme le système à 625 lignes est généralement alimenté par une source à 50 Hz et le système à 525 lignes par une source à 60 Hz, on envisage actuellement la mise en oeuvre de ce dernier système, avec des paramètres qui seront fixés ultérieurement. La planification est faite pour une zone de service de 100 km.

As the 625-line system operates normally on 50 c/s power supply and the 525-line system on 60 c/s power supply, the latter system is presently under consideration with such parameters that may be decided. Planned for 100 km service area.

Note (4) - Nigeria :

On peut estimer que le nombre de récepteurs de télévision atteindra 500.000 en décembre 1963.

It is estimated that the number of television receivers will reach the half million mark by December, 1963.

Note (5) - Ouganda :

L'Ouganda est disposé à considérer l'adoption d'une séparation de 8 MHz, système I ou G.

Uganda is willing to consider a change to 8 Mc/s channel separation, system I or G.

OBSERVATIONS - REMARKS (cont.)

Note (6) - Rhodésie & Nyasaland :

Il n'existe pas actuellement de travaux de planification pour des systèmes de radiodiffusion sonore à modulation de fréquence sur ondes métriques (bande II).

Il est vraisemblable que l'étape suivante du développement de la télévision sera marqué par l'utilisation du système B dans la bande I ou dans la bande III, après quoi on utilisera la bande IV avec un système qui n'a pas encore été déterminé.

No VHF/FM sound broadcasting system (Band II) under planning, at present.

Next stage of television development likely to be by use of system B in Band I or Band III, followed by use of Band IV with system not yet decided.

Note (7) - Rép. Sudafricaine :

Bande I - Il n'est pas envisagé d'utiliser cette bande pour la radiodiffusion. Les autres services fonctionneront avec une puissance plus faible 100 watts ou moins).

Bande II - On a effectué la planification de la radiodiffusion à modulation de fréquence à l'échelle nationale; il est prévu que toutes les installations du pays seront terminées dans les 4 années à venir.

Bande III - Les limites de fréquences dans la République Sudafricaine et dans le Territoire de l'Afrique du Sud sont 174 - 238 MHz et 245 - 253 MHz, soit 9 canaux de 8 MHz.

Band I - It is not proposed to use this band for broadcasting. Other services will all be low power (100 watts or less).

Band II - FM broadcasting has been planned on a nation-wide basis and all nation installations are scheduled to be completed within four years.

Band III - The frequency limits in South Africa and the Territory of South-West Africa are 174-238 and 245-253 Mc/s, i.e. 9 x 8 Mc/s channels.

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF/UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 34-E (Rev)
4 May, 1963
Original : French/English

COMMITTEE 4

SUMMARY RECORD

OF THE 2nd MEETING OF COMMITTEE 4

(Technical Committee)

Wednesday, 1 May, 1963, 3.30 p.m.

Chairman : Mr. LATIF AHMED (U.A.R.)

Vice-Chairman : Mr. N'DIAYE (Republic of Mali)

The Chairman first requested that the propagation curves proposed by the C.C.I.R. (Document No.10) be examined and asked whether they could be adopted.

Mr. Boithias (France), as a member of the Group of Experts appointed by the C.C.I.R. to prepare the curves, introduced the document. The tests had been limited and it had not been possible to take account of the data in Document No. 11 which had not been yet published.

The measurements had been made using 100 Mc/s and 450 Mc/s; which permits extrapolation into other bands.

The reference climatic division was a first approximation. In addition, it had been noted that between the 7th and the 14th parallels, the stable ionospheric layers seemed to have a beneficial effect on propagation in band I and were consequently a source of long distance interference.

Cameroon noted that Document No. 11 had been prepared on the basis of quasi optical ranges and the height of the transmitting and receiving antennae could not be specified accurately.

Mr. Hayes (C.C.I.R.), recalled that the original curves in Document No. 7 had been revised and that those revised curves were contained in Document No. 10. That was the best possible compromise.

The curves were adopted unanimously

The Chairman then asked that Working Parties be set up to work out planning principles.

Various delegates, including the Delegate of the Togolese Republic, expressed surprise that Working Parties should need to be set up within Committee 4 to study planning, which was a matter falling within the competence of Committee 5.

Mr. Krasnosselski (I.F.R.B.), said that it was for the Technical Committee to work out the bases for the plan. A network plan should be submitted to Committee 5.

Mr. Labaye (Gabon) was designated Chairman of the Working Group 4B entrusted with the preliminary study.

A large number of delegates intimated their intention of participating in its work.

The Deputy Secretary-General of the I.T.U. said that the Working Groups' work did not require the presence of reporters since it was for the Chairman to make a note of the conclusions adopted.

Mr. Hayes (C.C.I.R.), then made a number of proposals which were all approved by the Committee, to the effect that the African States should have in common :

1. In Planning Bands IV and V, the channel separation should be 8 Mc/s.

2. These channels should be the same as in the Stockholm Plan.

3. The numbering of the channels should be the same as in the Stockholm Plan (i.e. the lowest channel (470 - 478 Mc/s) is designated Channel 21).

4. In each 8 Mc/s channel, all the video carriers should have the same nominal frequency, no matter what system is used.

5. The frequency of any colour sub-carrier should be the video carrier frequency + 4.43 Mc/s.

6. The sound carrier should always be higher in frequency than the video carrier.

7. Frequency modulation should be used for sound.

8. There should be protection for radioastronomy frequencies in bands IV and V.

(Nigeria noted that protection was ensured from 582 to 614 Mc/s).

There was some disagreement regarding point (9), choice of the vestigial sideband:

-	For standards	G	the	vestigial	sideband	was	0.75	Mc/s
-	" "	H	"	"	"	"	1.25	"
-	" "	K	"	"	"	"	0.75	"
-	" "	K*	"	"	"	"	1.25	"

Cameroon proposed 1.25 and asked whether there were any objections.

Ethiopia did not think that the question could be dealt with in the Committee.

Gabon thought that 1.25 should be adopted for planning and that the number of programmes should be determined so as to prepare the lattice for bands IV and V.

Mr. Krasnosselski would supply the information on the number of programmes.

Cameroon reverting to the position of the chrominance sub-carrier (+ 4.43 Mc/s in bands IV and V) asked whether there were any objections to adopting that value for bands I and III.

There were no objections; there were likewise no objections to extending points 6 and 7 to apply to bands I and III.

Nigeria then asked whether band II could be reserved exclusively for FM broadcasting.

There were no objections; the I.F.R.B. thanked the meeting for taking that decision.

Cameroon asked that band III should be reserved exclusively for television.

Since several countries use part of this band for fixed services (Nigeria, Kenya, Rhodesia, Nyasaland and Uganda), a discussion ensued.

Mr. Petit (I.F.R.B.), specified that present use of band III for fixed transmissions constituted an acquired right and that those who had acquired this right could refuse to give it up.

The Representative of Spain, for his part, considered that this question did not fall within the terms of reference of the Conference.

The Representative of Cameroon then proposed the following text to the Committee, which adopted it unanimously.

DRAFT RECOMMENDATION

adopted unanimously by the Technical Committee.

The African VHF/UHF Broadcasting Conference, meeting in Geneva from 29 April 1963 to ... May 1963, having noted that, in accordance with Nos. 291, 293, 297 and 301 of the Radio Regulations, certain African countries use frequencies in band III for services other than broadcasting,

recommends all African countries

to refrain from installing new stations in this band for services other than broadcasting and, when it becomes practicable, to clear band III of other services and reserve it exclusively for television.

Mr. Hayes (C.C.I.R.), resuming his series of observations, requested whether all the delegates were in agreement on a negative image modulation and a ratio between the power of image and sound transmitters of 5 to 1.

These points were also unanimously adopted and Mr. Gayer (Chairman of the I.F.R.B.) and several delegates congratuled Mr. Hayes on his contribution to the conference.

Mr. Gayer recalled, in this connection, I.F.R.B. letter No. 27/031436, which had been sent by the I.F.R.B. to Administrations and proposed that paragraph 6.3 on page 4 thereof be discussed regarding use of 8 Mc/s for bands I and III.

The U.A.R. made some reservations concerning the use of 7 Mc/s spacing in bands I and III. (21 transmitters are in use with this 7 Mc/s spacing).

Rhodesia-Nyasaland (3 transmitters with 7 Mc/s spacing and 1,700 receivers already in operation).

Nigeria (17 stations in bands I and III, now 250,000 receivers, soon 500,000 with the same spacing).

Kenya made a reservation similar to the one formulated by the U.A.R.

Mr. Gayer (I.F.R.B.), pointed out that the stations of the U.A.R. were mostly in the European area and that they would have to be planned in coordination with that area. However, there might be individual consultations with each of the delegates who had made reservations.

Mr. Hayes explained that it was always possible to draw up a plan with both 7 Mc/s and 8 Mc/s. In fact in the Stockholm Plan in bands I and III there were 5, 7 and 8 Mc/s channelling systems in the different countries. He did not hold that up as an example to be followed in Africa. The important thing was to fix the same frequency in each channel for the video carrier and any colour sub-carrier.

The U.A.R. said that it used the following channels: 5, 6, 7, 8, 9, and 10. In channel 5, the carrier was 175.25 Mc/s and channel 6 is + 7 Mc/s above. Channel 10 was on 210.25 Mc/s, while the sound is + 5.5 Mc/s above.

Nigeria gave the following data:

channels : 2, 3, 4, 5, 7, 8, 9 and 10
spacing 7, sound + 5.5 Mc/s higher than picture.

Rhodesia : channels 3 and 4
video 55.25 and 62.25 Mc/s
sound 60.75 Mc/s and 67.75 Mc/s.

Kenya : channels 2 and 4.

All the above countries which have adopted the same standards in practice asserted that they could not go to another standard.

The Chairman then proposed the following draft decision :

"The African VHF/UHF Broadcasting Conference, meeting in Geneva, having noted that four African countries are already operating transmitters in bands I and III, in accordance with standards involving 7 Mc/s channels spacing proposes that all other countries which have not made a reservation should prepare their plans with 8 Mc/s channels."

Being no objection it was adopted as a Decision by Committee 4.

The meeting was adjourned at 6.10 p.m.

Rapporteur : Chairman :

V. JEAN-LOUIS A. LATIF AHMED

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 34-E
2 May, 1963
Original : French/English

COMMITTEE 4

SUMMARY RECORD

OF THE 2nd MEETING OF COMMITTEE 4

(Technical Committee)

Wednesday, 1 May, 1963, 3.30 p.m.

Chairman : Mr. LATIF AHMED (U.A.R.)

Vice-Chairman : Mr. N'DIAYE (Republic of Mali)

The Chairman first requested that the propagation curves proposed by the C.C.I.R. (Document No. 10) be examined and asked whether they could be adopted.

Mr. Boithias (France), as a member of the Group of Experts appointed by the C.C.I.R. to prepare the curves, introduced the document. The tests had been limited and it had not been possible to take account of the data in Document No. 11 which had not been yet published.

The measurements had been made using 100 Mc/s and 450 Mc/s; which permits extrapolation into other bands.

The reference climatic division was a first approximation. In addition, it had been noted that between the 7th and the 14th parallels, the stable ionospheric layers seemed to have a beneficial effect on propagation in band I and were consequently a source of long distance interference.

Cameroon noted that Document No. 11 had been prepared on the basis of quasi optical ranges and the height of the transmitting and receiving antennae could not be specified accurately.

Mr. Hayes (C.C.I.R.), recalled that the original curves in Document No. 7 had been revised and that those revised curves were contained in Document No. 10. That was the best possible compromise.

The curves were adopted unanimously.

The Chairman then asked that Working Parties be set up to work out planning principles.

Various delegates, including the Delegate of the Togolese Republic, expressed surprise that Working Parties should need to be set up within Committee 4 to study planning, which was a matter falling within the competence of Committee 5.

Mr. Krasnosselski (I.F.R.B.), said that it was for the Technical Committee to work out the bases for the plan. A network plan should be submitted to Committee 5.

Mr. Labaye (Gabon) was designated Chairman of the Working Group 4B entrusted with the preliminary study.

A large number of delegates intimated their intention of participating in its work.

The Deputy Secretary-General of the I.T.U. said that the Working Groups' work did not require the presence of reporters since it was for the Chairman to make a note of the conclusions adopted.

Mr. Hayes (C.C.I.R.), then made a number of observations, which were all approved by the Committee, to the effect that the African States should have in common :

1. the 8 Mc/s channel for bands IV and V;

2. the same definition of channels as adopted at Stockholm;

3. the same numbering of channels (in IV and V); as in Stoclholm plan;

4. the same location of picture carriers, irrespective of standards;

5. the chrominance subcarrier to be placed at 4.43 Mc/s above the picture carrier;

6. sound at a frequency higher than the picture frequency;

7. FM for sound;

8. protection for radioastronomy frequencies in IV and V at 600 Mc/s; (Nigeria noted that protection was ensured from 582 to 614 Mc/s).

There was some disagreement regarding point (9), choice of the vestigial sideband :

- For standards G the vestigial sideband was 0.75 Mc/s
- " " H " " " " 1.25 "
- " " K " " " " 0.75 "
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Cameroon proposed 1.25 and asked whether there were any objections.

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Being no objection it was adopted as a Decision by Committee 4.

The meeting was adjourned at 6.10 p.m.

Rapporteur
V. JEAN-LOUIS

Chairman
A. Latif AHMED

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF/UHF
BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 35-E
3 May, 1963
Original : English

COMMITTEE 4

Contribution by Republic of South Africa

NOTES ON BAND II SOUND BROADCASTING
LATTICE IN SOUTH AFRICA

The lattice adopted for use in South Africa for Band II Sound Broadcasting is shown on the attached Figure 1.

The lattice consists of 46 channels which are spaced apart by 86 kc/s, occupying a band of 3.956 Mc/s. For a total available bandwidth of 20.5 Mc/s (87.5-108 Mc/s), five sets of frequencies are available at each point of the lattice, with a sixth frequency available at seven of these points.

Where Band II is restricted to 12.5 Mc/s (87.5-100 Mc/s), three sets of frequencies would be available at each point of the lattice, with a fourth frequency at 5 points.

At each transmitting station, the transmitter frequencies are separated by a frequency of 3.956 Mc/s, which is sufficiently large to allow the use of moderately simple and economical band-pass filters to combine the outputs of the transmitters to feed a single wide-band transmitting aerial. Using a bandpass filter of this type, it is possible to reduce spurious radiated components to levels of at least 100 db below carrier level.

With this lattice the frequency separations between the stations forming the corners of the elementary triangle, are 774 kc/s, 1376 kc/s and 1806 kc/s, as shown in Figure 2.

These frequencies of separation are important where the programmes to the transmitters are received from adjacent stations using the "radio relay" or "ballemplane" principle. When a receiving antenna of a suitable type is mounted on the mast used to support the transmitting antenna at each station, the attenuation between transmitting and receiving antennae allows the use of moderately simple receiving equipment, even in the presence of low values of median field strengths.

Lattices with channel numbers ranging from 9 to 164 were investigated, and the best five arrangements were chosen for final choice by electronic computation, which was carried out by the IRT, Hamburg, making use of the BESK computer at Stockholm.

Figures 3, 4, 5, 6, 7, respectively, show the interference limited service radii possible for 100 kc/s, 86 kc/s, 60 kc/s, 42 kc/s and 35 kc/s channel spacings, for a group of 5 transmitting stations located at the centre of the lattice, when using a receiving antenna having a front-to-back ratio of 6 decibels. Average transmitter spacings are 100-110 kms. and smooth earth is assumed.

It will be seen that the largest interference-limited service areas are obtained for channel spacings of 86 kc/s and 42 kc/s, but bearing in mind the possible use of stereophony in the future the 86 kc/s channel spacing, having C = 46, is better.

In planning the Band II Sound Broadcasting System for South Africa, it was decided that transmitting stations would operate completely unattended, but would report continuously to the Supervisory Centre dealing with each group of transmitting stations, making use of 30 kc/s sub-carriers for the purpose.

With the 35 kc/s lattice, the possibility exists that the supervisory system sub-carriers may interfere with adjacent channels; therefore it was discarded in favour of the 86 kc/s lattice, where this problem does not arise.

Annexes : 7

Annexe 1 au Document N° 35/F-E
Annex 1 to Document No. 35/F-E

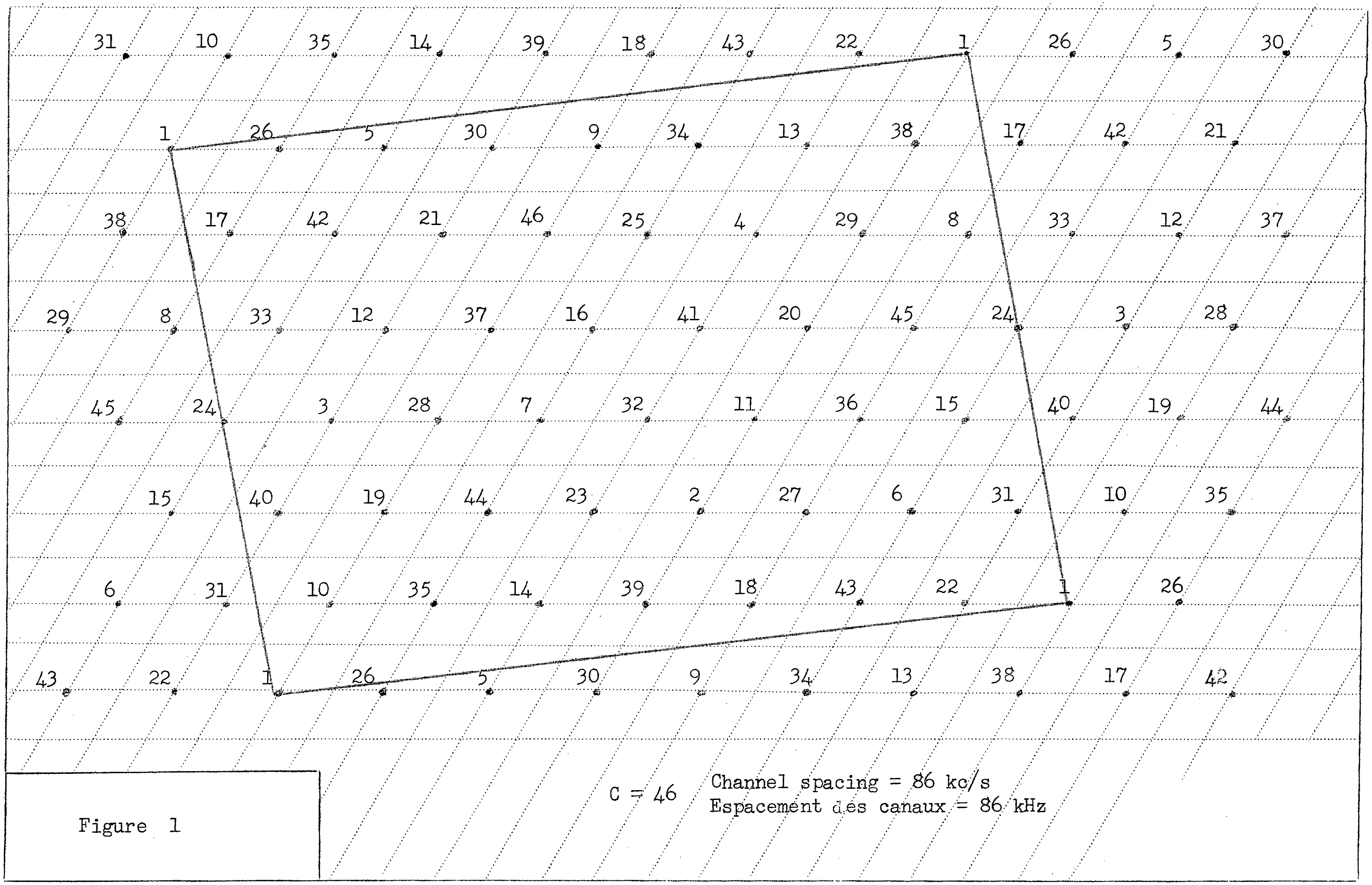


Figure 1

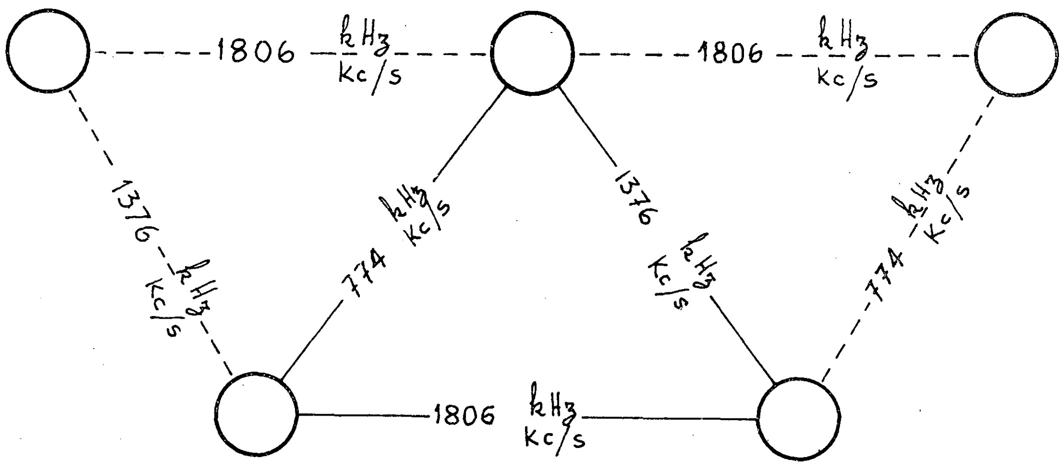
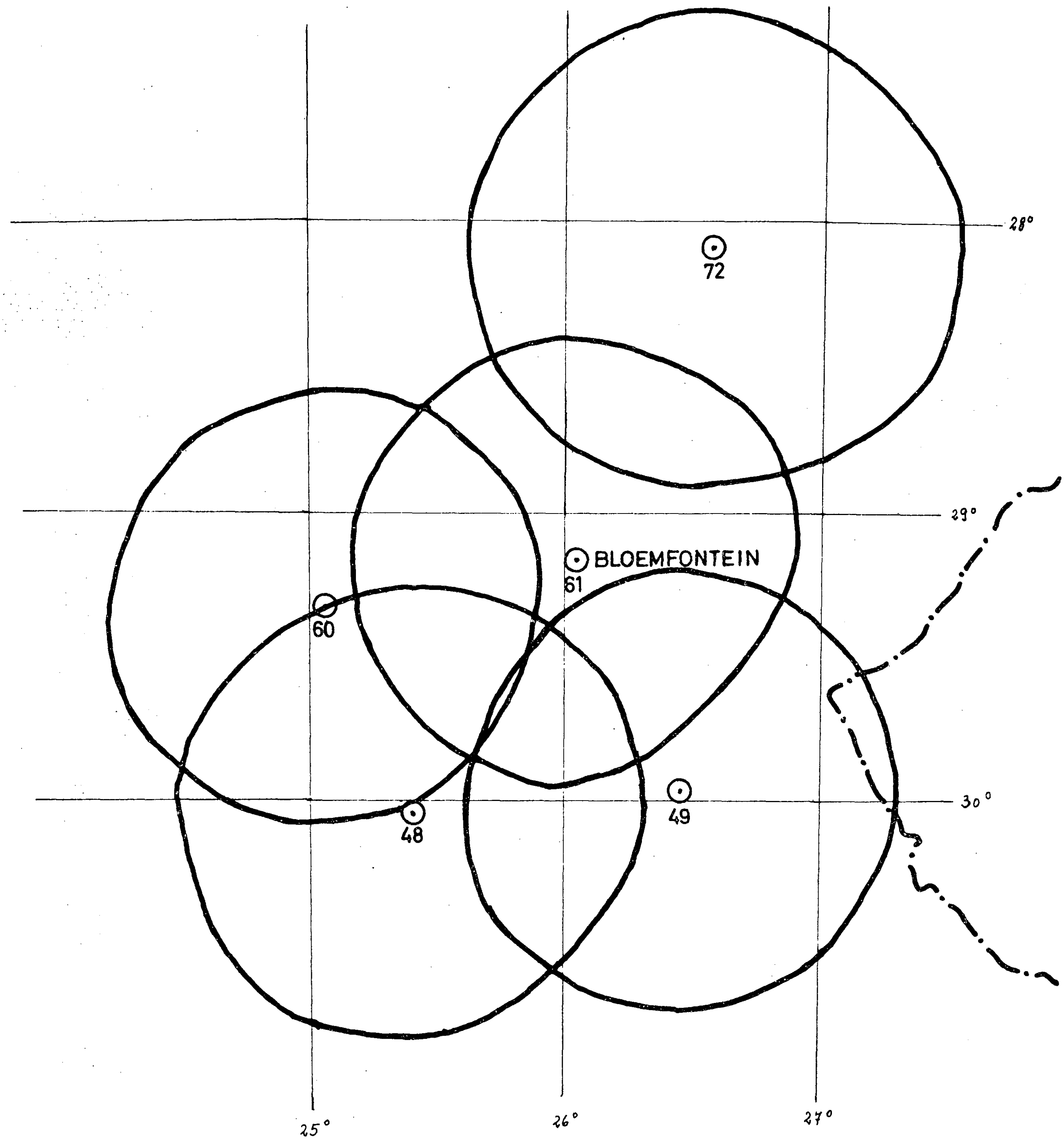

1806 kHz
kc/s
1806 kHz
kc/s
1376 kHz
kc/s
774 kHz
kc/s
1376 kHz
kc/s
774 kHz
kc/s
1806 kHz
kc/s

Fig. 2



Interference limited service areas of 5 FM-sound broadcasting station in the Republic of South Africa.
Channel spacing Δf= 100 kc/s

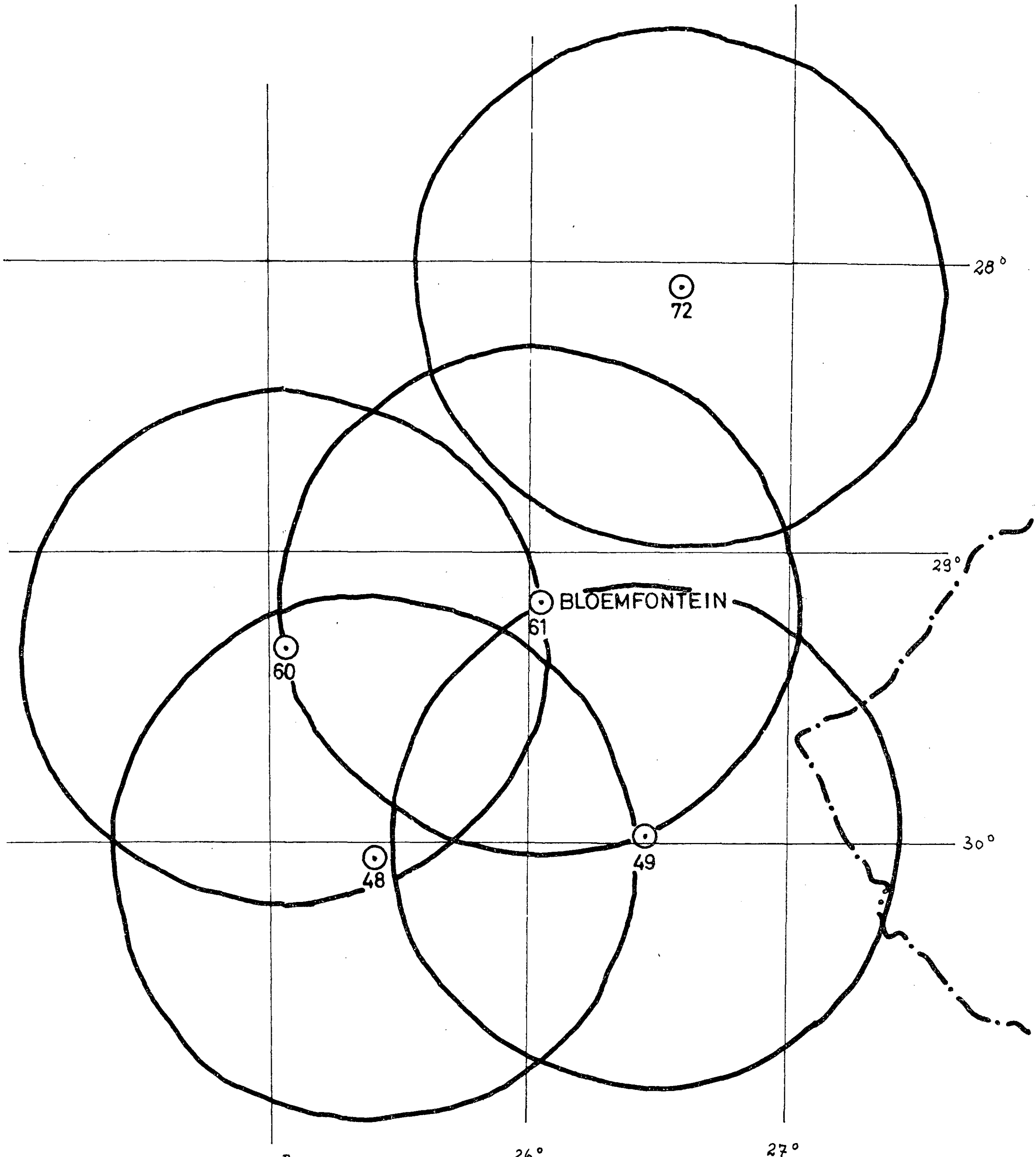
Zones de service limitées par le brouillage pour 5 stations de radiodiffusion sonore à modulation de fréquence en République Sudafricaine.
Espacement des canaux = Δf = 100kHz

Fig. 3

Scale 1:1500 000

0 20 40 60 80 100 Miles

IRT Hamburg 12.61. Köhn



Interference service areas of 5FM-sound-broadcasting stations in the Republic of South Africa.
Channel spacing Δ f = 86 kc/s

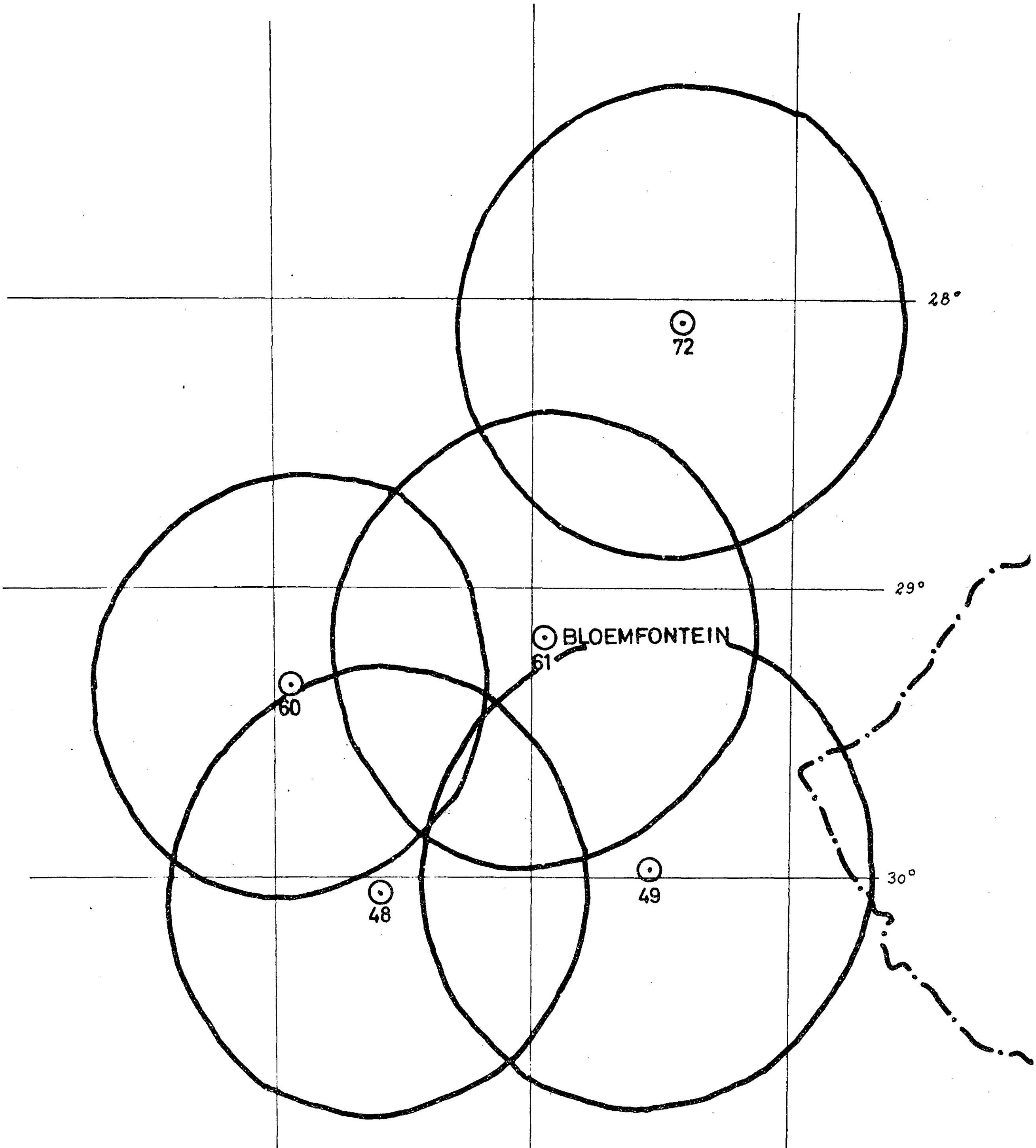
Zones de service limitées par le brouillage pour 5 stations de radiodiffusion sonore à modulation de fréquence en République Sudafricaine.
Espacement des canaux = Δ f = 86 kc/s

Fig. 4

Scale 1: 1500 000

0 20 40 60 80 100 Miles

IRT Hamburg 12.61. Köhn

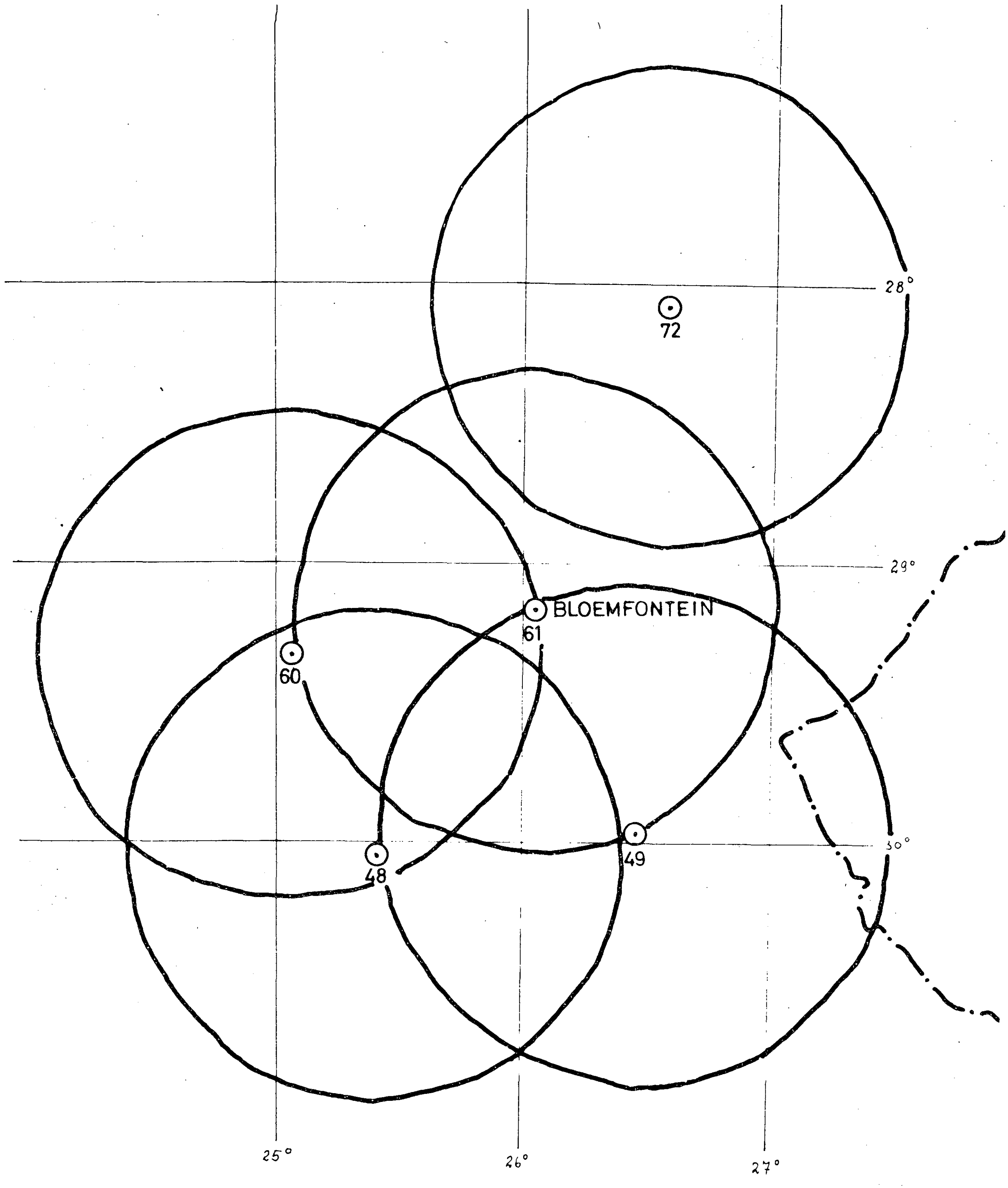


Interference limited service areas of 5FM-sound-broadcasting stations in the Republic of South Africa.
Channel spacing Δf = 60 kc/s

Zones de service limitées par le brouillage pour 5 stations de radiodiffusion sonore à modulation de fréquence en République Sudafricaine.
Espacement des canaux = Δ f = 60 kHz

Fig. 5

IRT Hamburg 1.2.61. Köhn



Interference limited service areas of 5FM-sound-broadcasting stations in the Republic of South Africa.
Channel spacing Δ f = 42 kc/s

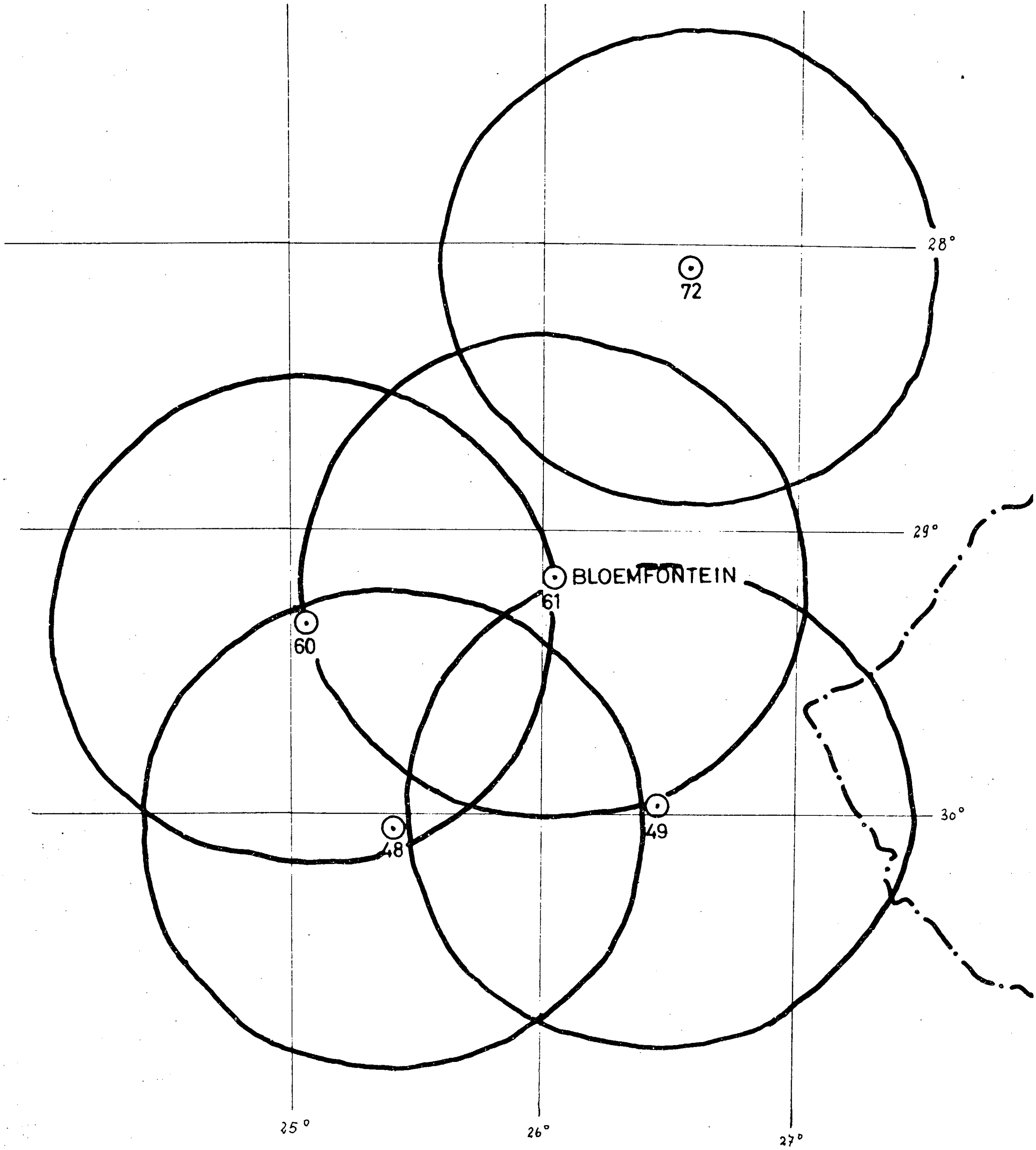
Zones de service limitées par le brouillage pour 5 stations de radio-diffusion sonore à modulation de fréquence en République Sudafricaine.
Espacement des canaux =Δ f = 42kHz

Fig. 6

Scale 1: 1500 000

0 20 40 60 80 100 Miles

IRT Hamburg 1.2.61. Köhn



Interference limited service areas of 5 FM-sound-broadcasting stations in the Republic of South Africa.
Channel spacing Δ f = 35 kc/s

Zones de service limitées par le brouillage pour 5 stations de radiodiffusion sonore à modulation de fréquence en République Sudafricaine.
Espacement des canaux = Δ f = 35 kc/s

Fig. 7

Scale 1: 1500 000

0 20 40 60 80 100 Miles

IRT Hamburg 1.2.61. Köhn

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 36-E
3 May, 1963
Original : French

COMMITTEE 3

SUMMARY RECORD

OF THE 1st MEETING OF THE BUDGET SUPERVISION COMMITTEE

Thursday, 2 May 1963, at 5.0 p.m.

Chairman : Mr. EKUE (Togolese Republic)

Vice-Chairman : Mr. MILLS (Ghana) - absent

Present : The Delegates of Congo (Leopoldville), Ivory Coast, Dahomey, Guinea, Liberia, Mali, Senegal, Sierra Leone, Chad, Togo.

The Chairman opened the meeting and asked that a rapporteur be appointed.

At the Chairman's suggestion, Mr. Pierre Mabré (Chad) was unanimously appointed rapporteur of the Committee.

The Chairman read out Numbers 572, 573, 574 and 575 of the International Telecommunication Convention, defining the tasks of the Budget Supervision Committee, and Document No. 21, Committee 3, which dealt with the budget of the conference.

Mr. Stead (of the General Secretariat of the I.T.U.) said that the expenses should be supervised in such a way as not to exceed the budget. Since the budget had been established broadly to cover 4 weeks, it would be difficult to extend that period.

He recalled that all countries, even if they did not take part in the work of a conference, were obliged in accordance with Number 199 of the 1959 Convention, to contribute financially to the expenditure incurred. It was on that basis that Document No. 21 had been prepared.

He cited the cases of the Sudan and of Algeria which, as observers, would be called upon to contribute towards defraying the costs of the conference. He was ready to asnwer any questions.

The Chairman wished to go over the estimated expenditure as set out in Annex 1 to Document No. 21.

Mr. Diallo Alpha (Guinea) asked for an explanation as to how the budget had been established.

Mr. Stead said that each conference was different. Account had to be taken of the number of delegates, the duration of the work, the staff required, the documents to be used and so forth.

The budget thus established was submitted to the Administrative Council which amended it if it thought fit. The document as approved by the Administrative Council was before the conference. The delegates were merely required to examine the rhythm of the estimated expenses.

The original budget had been much higher than the present one since at that time it had not been known whether there would be 50 or 100 delegations present at the Conference. In addition, there had been the intention of renting another building (Maison des Congrès).

In actual fact, there were 71 delegates and the meeting room of the Administrative Council equipped with simultaneous interpretation equipment, had been chosen in the end.

The Chairman proposed that the estimated expenses on page 4 of Document No. 21 should be examined in detail.

The delegate of Sierra Leone, referring to items 9.207 "Office supplies and overheads" and 9.209 "Miscellaneous and unforeseen" asked for an additional explanation.

Mr. Stead said that the sum of 4,000 Swiss francs under item 9.209 had nothing to do with the figures under item 9.207.

The Chairman said that it was in the interests of clarity that he had suggested that the expenditure set out on page 4 should be examined in detail. He had in mind particularly the last paragraph of item 9.201 "Margin to meet increases in the salary scales and overtime". He thought that salary increases could only be accorded to permanent staff.

Mr. Stead said that the budget had been established, using the standard terminology, several months before the conference; if the conference had been scheduled for October the budget would have been established six months earlier by the Administrative Council of the I.T.U. Account had been taken of any possible increases which might have been accorded in the meantime to United Nations staff.

Mr. Luseko (Congo - Léopoldville) did not think that the Committee could make a useful study until after the conference had been in session for a full week; the delegates would then have some idea of the expenses incurred during one week and that could serve as a reference.

Mr. Diallo Alpha (Guinea) supported the suggestion made by the delegate of Congo-Leopoldville. He regarded the first meeting as being for information while subsequent meetings should make it possible to examine the estimated expenditure with more accuracy. He would suggest that the Chairman should keep in touch with the Secretariat and convene a meeting of the Committee as soon as he had been able to collect sufficient information for an evaluation.

The Chairman thanked the delegates of Congo-Leopoldville and Guinea and said that he did not question the care with which the Secretariat had prepared or managed the budget. However, the Committee should have information at its disposal so as to enable it to inform, in turn, the other delegates. He wondered whether it was not possible to cut down on expenses since there was no need for the Conference documents to be issued in Spanish and since the plan to rent the Maison des Congrès had been abandoned.

Mr. Stead (General Secretariat) said that it would be difficult to envisage cutting down expenses in that way, but he referred to items 9.202, 9.205 and 9.206 as being possible sources of economy.

The Chairman thanked the representative of the Secretary-General and said that he would keep closely in touch with him with a view to convening the following meeting as soon as the appreciation data became available. Before closing the meeting he stated that a contributory share amounted to approximately 4,400 Swiss francs.

The meeting rose at 6.05 p.m.

Rapporteur:	Chairman:
P. MABRE	G. EKUE

INTERNATIONAL TELECOMMUNICATION UNION

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AFRICAN VHF/UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 37-E
5 May 1963
Original : French

COMMITTEE 4

SUMMARY RECORD
OF THE THIRD MEETING OF COMMITTEE 4
(TECHNICAL COMMITTEE)

Friday, 3 May 1963 at 10.45 a.m.

Chairman: Mr. LATIF AHMED (U.A.R.)

Vice-Chairman: Mr. N'DIAYE (Republic of Mali)

The Technical Committee (C 4) met under the chairmanship of Mr. Latif Ahmed (U.A.R.) on Friday, 3 May 1963 at 10.45. It examined the summary records of the 1st and 2nd meetings (Documents Nos. 27 and 34), Document No. DT 2 and heard the oral report of Mr. Lalung-Bonnaire, Chairman of Working Group 4.

Mr. Stead (General Secretariat) announced amidst general applause that the Democratic People's Republic of Algeria had become a full member of the I.T.U. the instrument of accession having been deposited that very morning. Documents Nos. 27 and 34 were then examined by the Chairman and the delegates. Important errors were discovered and the Chairman invited the delegates to transmit their corrections to the Secretariat.

Mr. Hayes (C.C.I.R.) considered that the contents of the record represented what had been said and that it could not be re-written in a different form but should be re-issued with the necessary amendments.

Document No. DT 2 was then examined point by point. After certain amendments to paragraphs had been made, the document was adopted unaminously. See Document No. DT 2 (rev.).

Several delegates stimulated by the suggestion of the delegate of Ethiopia, asked that henceforward precise Minutes of Meetings writers should be assigned to cover the meetings. The matter was referred to the Steering Committee.

Mr. Lalung-Bonnaire made an oral report on the work of Working Group 4A of which he was Chairman. The report was provisionally approved and subsequently set forth in Document No. DT 3.

Rapporteur:
V. JEAN LOUIS

Chairman:
A. LATIF AHMED

INTERNATIONAL TELECOMMUNICATION UNION

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AFRICAN VHF / UHF
BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 38-E
5 May, 1963
Original : English

COMMITTEE 4

SUMMARY RECORD

OF THE FOURTH MEETING OF COMMITTEE 4
(Technical Committee)

Friday, 3 May 1963, at 5 p.m.

Chairman: Mr. LATIF AHMED (United Arab Republic)

Vice-Chairman: Mr. N'DIAYE (Republic of Mali)

1. Summary Records of First and Second Meetings (Documents Nos. 27 revised and 34 revised)
2. Verbal report of Working Group 4B
3. Consideration of draft recommendations prepared by the delegate of the Republic of Cameroon and the Chairman of the International Frequency Registration Board (Document No. 32)

1. Summary Records of First and Second Meetings of Committee 4 (Documents Nos. 27 and 34) (Rev.)

The Chairman requested delegates to send any amendments to Documents Nos. 27 and 34 to Mr. Kung, Secretary of the Conference, not later than 10 a.m. on Saturday, 4 May. The documents would then be reissued after the incorporation of proposed amendments.

He would propose a short meeting on Monday afternoon, 6 May, to consider the final version of Documents Nos. 27 and 34, the reports of Working Groups 4 A and 4 B and the final report of Committee 4.

He then invited the Chairman of Working Group 4 B to present a verbal report.

2. Verbal report of Working Group 4 B 1

Mr. Labaye (Gabon) recalled that Working Group 4 B had been divided into three groups to study inter alia the lattice for Bands IV and V. He would ask Mr. Krasnosselski (I.F.R.B) to report on the results of the work of Working Groups 4 B1 and 4 B3.

Mr. Krasnosselski (I.F.R.B.) said that the Group had held two meetings on 2 and 3 May, a report on which would be distributed on the following day. The possibility of establishing a theoretical lattice for Bands I and III, taking into account the needs of channels to be used in Bands IV and V, had been considered. The Group had considered the channelling system proposed for systemK* the characteristics of which are contained in Document No. 14. The task of the Group was to prepare a theoretical lattice for 9 channels (3 in Band I and 6 in Band III). Some difficulty had been encountered in preparing a theoretical lattice for both Bands because Bands I and III were separated by about 120 Mc/s so that there was no continuity between the Bands, as was the case with Bands IV and V. It had therefore been decided to prepare first a theoretical lattice for six channels in Band III the Group had decided to recommend that a table should be prepared based on the method of limiting distances, as decided at the Stockholm Conference. The Chairman asked Mr. Krasnosselski to prepare the necessary limiting distance tables.

An exchange of views took place between the Chairman, Mr. Krasnosselski, Mr. Labaye (Gabon) and Mr. Grossmann (E.B.U.) with regard to the earliest date for the submission of the proposed table on limiting distances, and the report on a theoretical lattice for Band II.

It was finally agreed that a report on all points on which agreement had been reached would be submitted at the following meeting, on the understanding that Mr. Labaye would submit a preliminary report on a theoretical lattice if the final report could not be completed in time.

3. Consideration of draft recommendation prepared by the delegate of the Republic of Cameroon and the Chairman of the International Frequency Registration Board (Document No. 32)

The Chairman, in inviting comments on the draft recommendation, congratulated the delegate of Cameroon and the Chairman of the I.F.R.B. on the excellent text they had prepared.

Mr. Oyebolu (Nigeria) made the following comments: he objected to the word "optimum" in sub-paragraph b), since the question of whether Band III was the optimum one had not been discussed; sub-paragraph d) was covered in the recommendation part of the draft recommendation and was unnecessary; the word "cleared" in parapgraph 1 was not altogether appropriate and might be replaced by the word "reserved"; the wording of paragraph 3 was too mandatory and should be re-drafted in the form of an appeal.

Mr. Miles (Rhodesia and Nyasaland) associated himself generally with the comments of the previous speaker. He could not accept the wording of paragraph 3, which implied that, after the next Administrative Radio Conference, Band III would no longer be available for fixed services. His Administration could not clear the Band before ten to fifteen years.

Mr. Gayer (Chairman of the I.F.R.B.), replying to the comments of the delegates of Nigeria and Rhodesia and Nyasaland, said that clearly Band III was the optimum one for use in television services because it permitted the best service area coverage with no long distance interference as in Band I without the restricted limits and other problems in Bands IV and V. As to the redundancy of sub-paragraph d), in his view, there should even be an agreement to the effect that no interference should exist between the established other services and the television service to be planned by the present Conference.

As to the word "cleared" in paragraph 1, what was wanted was to move services other than broadcasting to other Bands whenever possible. The word "reserved" is stronger than "cleared", and paragraph 1 should be read in the context of sub-paragraph d). The purpose of paragraph 3 was that Band III should become available to the television service without limitation by other services. If that could not be achieved by the next Administrative Radio Conference, then it would be necessary to insert an explanatory footnote.

Mr. Boithias (France) said that sub-paragraph b) was not clear in the French text and that the words "le brouillage" should be replaced by "le phenomène atmosphérique". With regard to paragraph 3, the word "Service" in the first line should be replaced by "stations"; the words "the next Administrative Radio Conference" replaced by "at a future Administrative Radio Conference"; and the word "fully" in the last line deleted.

Mr. Foalem-Fotso (Cameroon) shared the views of the Chairman of the I.F.R.B. to some extent, but suggested that the last sentence of paragraph 3 should be deleted. Paragraph 1 was flexible enough and should remain unchanged. Sub-paragraph b) could be amended to read "and that there is no danger of long distance interference".

Mr. Kilvington (United Kingdom Overseas Territories) could not altogether agree that there was no danger of long distance interference in Band III although there was less than in Band I.

Commenting on the draft recommendation in general, he said that sub-paragraphs a) and b) were statements of fact which could be noted; sub-paragraphs c) and d) were recommendations and, as such, should rightly be included in the operative part. In that case, there was an overlap between sub-paragraph d) and paragraph 2 but in any case those recommendations were covered in the Radio Regulations. The wording of paragraph 3 as at present drafted was too mandatory.

Mr. Jean-Louis (Upper Volta) endorsed the views of the United Kingdom delegate with regard to sub-paragraph b).

Mr. Gayer suggested that the last phrase of sub-paragraph b) should be amended to read: "and there is no great risk of long distance interference."

The Chairman summarized the amendments proposed during the discussion:

Sub-paragraph a)

unchanged.

Sub-paragraph b)

amended to read: "that Band III is the optium one for the television services in that it permits the best service coverage and there is no great risk of long distance interference".

Sub-paragraph c)

unchanged

Sub-paragraph d)

unchanged, the delegates of Nigeria and the United Kingdom Territories having withdrawn their objections.

Paragraph 1

unchanged, the delegate of Nigeria having withdrawn his objection to the word "cleared".

Paragraph 2

Unchanged

Paragraph 3

The Chairman read the wording of the paragraph as amended :

"3. During the interim, no new stations other than broadcasting would be established in Band III and in fact every effort would be made to provide for the operation of other services in other bands, so that a future Administrative Radio Conference competent to consider allocations of bands, may consider making an exclusive allocation in Band III for broadcasting service."

The draft recommendation contained in Document No. 32, as amended, was adopted.

The meeting rose at 6.15 p.m.

Rapporteurs: Chairman:

V. JEAN-LOUIS A. LATIF AHMED

H. OTTEN

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF/UHF
BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 39-E
3 May 1963
Original : English

COMMITTEE 4

Contribution from I.B.T.O

TELEVISION STANDARD "K"

1. Fundamental data concerning the television standard of the International Broadcasting and Television Organization were adopted at the VIIIth Plenary Assembly of the C.C.I.R. in Warsaw 1956. These characteristics were published in the final documents of the Assembly in Report No. 83. These basic data also correspond to C.C.I.R. Recommendation No. 212 adopted unanimously by the VIIIth Plenary Assembly of the C.C.I.R.

The European Broadcasting Conference, Stockholm 1961, called this standard, the standard "K".

2. At the present time, with television becoming an ever more important means of culture and education of the general public, the problem of television transmission assumes particular importance. Apart from this, when selecting the television system it is necessary to take into account the economic aspect of the question and the possibilities afforded by the system considered for the adoption of parameters of colour television.

3. When determining the basic characteristics' of the system, qualitative factors such as the picture sharpness, the number of reproduced brightness degrees and the degree of contrast were taken into account. The study of qualitative characteristics has been based on data concerning physiological characteristics of the human eye. By the term "picture sharpness" the number of small details discernible by the eye in a given object is meant. This criterion was adopted because an evaluation based on the number of discernible elements gives complete information on the picture sharpness, whereas criteria such as the numbers of lines or the transmitted bandwidth allow only an approximate and incomplete evaluation.

From considerations taken into account in the determination of the basic values of the standard, it appears that with a black and white television system with 625 lines and 50 fields per second, and with the transmitted band of 5 Mc/s, 436 (statistically) discernible horizontal lines alternately black and white are obtained. With a 6 Mc/s transmitted frequency band there are 630 discernible vertical lines and 275,000 discernible elements in the whole picture (see Document No. 341, C.C.I.R., London 1953). The horizontal resolution is then 1.08 times greater than the vertical resolution. In view of the necessity of partial transmission of the lower sideband and in order to prevent inadmissible phase distortion of the upper margin of the transmitted frequency spectrum the HF transmission of the picture signal of this system requires a total bandwidth of 8 Mc/s.

The table gives the fundamental values of the main systems used at present, for comparison. The values were calculated in exactly the same way for all the systems concerned. From the comparison table it appears that with standard "K" it is possible to achieve a great picture sharpness in both scanning directions with maximum utilisation of the transmitted band. Under normal conditions of observation, the interfering line structure can be neglected.

4. Experience gained over a long period of time in the manufacture of transmitters and receivers using this system shows that it is economically acceptable, as it represents the best compromise between quality possibilities and the price of receivers and operates with TV receivers accessible (from the point of view of their price) to the general public.

5. At the same time, high quality pick-up, transmission and relay equipment for this system can be produced in acceptable economic conditions.

6. This standard also allows for elaboration of a high-quality compatible colour television system and facilitates the solution of a number of difficult problems, arising in this connection. This affords the possibility of applying a wider channel for transmission of colour components.

7. Standard "K" has found wide appreciation in many countries in which several hundreds of television stations work according to this standard, and there are millions of TV sets.

8. A full set of television equipment is manufactured on standard "K" in many countries of the I.B.T.O. and in West Europe. These are: transmitters, mobile television services, studio equipment, monitoring-measurement apparatus, TV sets for about the same market price as the equipment for standard "B".

9. These aspects of standard "K" mean definite progress and open up wide perspectives in the development of high-quality black-and-white and colour television systems in the countries where it is applied and will be applied.

COMPARISON TABLE OF THE BASIC CHARACTERISTICS OF THE MAIN TELEVISION SYSTEMS USED AT THE PRESENT TIME

	Number of lines	Field frequency	HF band width	Number of discernible vertical lines	Number of discernible horizontal lines	Total number of elements	Horizontal-to-vertical resolution ratio	Number of elements per 1 Mc/s of the HF band
System "A"	405	50	5	487	283	138,000	1.26	27,600
System "M"	525	60	6	417	367	153,000	0.853	25,600
System "B"	625	50	7	525	436	230,000	0.9	32,800
System "K"	625	50	8	630	436	275,000	1.08	34,400
System "F"	819	50	14	835	573	480,000	1.09	34,300

INTERNATIONAL TELECOMMUNICATION UNION

AFRICAN VHF/UHF BROADCASTING CONFERENCE

GENEVA, 1963

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Document No. 40-E
6 May 1963
Original : English

COMMITTEE 5

SUMMARY RECORD

OF THE

FIRST MEETING OF COMMITTEE 5 (PLANNING)

Friday 3 May 1963, at 3 p.m.

Chairman : Mr. A. LABAYE (Republic of Gabon)

Vice-Chairman : Mr. P.B. OYEBOLU (Nigeria)

Subjects discussed

1. Constitution of Working Groups
2. Organization of the work of these Groups

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1. Constitution of Working Groups

The Chairman proposed that three Working Groups be set up, to deal with the establishment of plans in the following bands :

Working Group 5-A : Bands I and III

Working Group 5-B : Band II

Working Group 5-C : Bands IV and V.

He suggested that membership of these Groups remain fairly restricted, and requested delegations to volunteer to assume the Chairmanship.

After some discussion about the advisability of centralizing the work in a Group of Experts, it was agreed that the three Groups should be constituted.

The following Chairmen were nominated :

Mr. Foalem-Fotso (Republic of Cameroon) : Working Group 5-A

Mr. D.M.T. Oke (Federation of Nigeria) : Working Group 5-B

Mr. J.L. Mills (Ghana) : Working Group 5-C

Mr. Gayer, Chairman of the I.F.R.B., said that a Member of the Board and an Engineer would be available to assist in the work of each of these Groups.

Mr. Terzani, representing the Somali Republic, said that a representative of that country would participate in the work of all three Groups.

Mr. Gressmann (E.B.U.), recalling experience acquired at the Stockholm Broadcasting Conferences, pointed out that it would be difficult to make a satisfactory Plan unless all countries were represented in the work of the Groups.

Mr. Gabrield Tedros (Ethiopia) considered it very important that the Working Groups should take into account all aspects of the problems, and therefore felt that countries should be represented which had different types of system, as the coexistence of such systems was essential to successful planning. He proposed therefore that representatives of the U.K. Territories and the French Overseas Territories be available for consultation by all three Groups.

Mr. Sheffield (U.K. Territories) supported this suggestion, and said that a member of his delegation would participate in the work of each Group.

Miss Huet (France) made a similar statement for the delegation of the French Overseas Territories.

Mr. Stephenson (Uganda) spoke on behalf of the three East African Delegations present, and stated that they would also like to have one delegate in each of the Groups.

Mr. Hayes, Adviser to the Director of the C.C.I.R., said that the Chairman of each Group should be able to call upon the various delegations when the requirements of each had to be known.

Mr. Krasnosselski, Member of the I.F.R.B., felt that it was encumbent upon each delegation to acquaint the Groups with their requirements, and to ascertain how these requirements would be transformed upon the lattices. To avoid any misunderstanding, he therefore invited any country to join the Group to see how the work was carried out.

This was agreed, the Chairman pointing out that it was to the advantage of each delegation to participate in the work.

2. Organization of the Work of these Groups

The Chairman proposed that each Group make plans following a geographical division of Africa into South, East and West. He explained, by a diagram on the blackborad, how the work of each Group for each region could be staggered, so that there would be no clash in their work, and believed that in this manner each delegate could be represented in the Group in which he was interested from a geographical point of view.

This was agreed.

Mr. Gressmann (E.B.U.) drew attention to the fact that the present situation was different from that which existed in Stockholm in 1952, when it had merely been a question of drawing up plans for Bands IV and V, taking into account existing plans for Bands I, II and III. At present it was a question of drawing up a basic plan for all bands. He stressed the danger that existed of interference caused to adjacent bands by harmonic radiation from oscillators. As this matter was one which it was imperative to take into consideration, he proposed that the Plan should not be made too rigorous, and all bands should not be studied at the same time. He therefore proposed beginning with the most difficult question: the subject of Television in Bands I and III, followed, in a few days, with the study of Band II, and finally a review of the least difficult: Bands IV and V. Much time would be saved in this manner, as it would otherwise prove very difficult to make changes afterwards. He would be glad to give any help and advice that the thre Groups might need and added that it would be extremely helpful if the theoretical lattices could already be drawn and the maps prepared.

Mr. Gayer, Chairman of the I.F.R.B., assured him that this had already been done, on a preliminary basis. In order to be able to finalize these maps, he urgently requested all delegations to hand in their requirements by noon on Saturday, 4 May, at latest.

Mr. Gressmann pointed out that it would be necessary to have maps covering all regions of Africa and all bands under review, as there were considerable differences in distances between channels, some involving 1,000 km, some only 300 or 400 km.

The Vice-Chairman raised the point of the answers to the Questionnaire sent by the I.F.R.B. and contained in Document No. 15. From these he had seen that, while some Administrations had not yet made any decisions about the number of services they would require in each of the bands, other Administrations had cited very high figures. He hoped that this would not bias the planning, and would not jeopardize the situation for those with modest requests, if at some future date, they wished to increase their requirements.

Mr. Gayer, Chairman of the I.F.R.B., again stressed the necessity of making requirements known as early as possible, as it would be difficult to make changes later and would retard the work.

Mr. Gabrield Tedros (Ethiopia) wondered what period of time was foreseen for the Plan to remain effective - 10, 20 or 50 years? This would be a factor to consider when presenting future requirements.

Mr. Gayer replied that this could not be clearly specified. The Agreement itself should contain a clause stating how it could be modified. It was not for the I.F.R.B. to lay down how long the various requirements could remain valid. This was for each individual country to decide.

Mr. Terzani, representing the Somali Republic, agreed that the point raised by Mr. Gabriel Tedros was closely linked with the number of channels to be planned.

Mr. Foalem-Fotso (Republic of Cameroon) pointed out that each delegation had received instructions from its own Government, and it would not be possible for anyone to attempt to impose a change of plan upon any Government.

Mr. Diallo (Republic of Guinea) thought that the question had been thoroughly studied at the Cairo Conference, and all countries had been asked to review their needs and send them to the I.F.R.B. He agreed with Mr. Gayer that it was for the Conference itself to decide upon the duration of the Agreement.

Mr. Krasnosselski, Member of the I.F.R.B. said that the task of the Conference was to find out the best way of utilizing the limited volume of the radio spectrum. Once this had been ascertained the Plan would still be valid even in 20 years time; only the requirements would change for each country.

Mr. Gressmann (E.B.U.) proposed that the Conference be asked to decide whether it would be possible to fix the number of agreed programmes foreseeable in Band II. South Africa had already a plan for 5 programmes in the 8.5 - 108 Mc/s band. This would correspond almost exactly to a ratio of 5/3 for other regions of Africa.

The Vice-Chairman returned to the question of the varying requests received, and felt there should be some common denominator, such as the geographical size of a country, the density of its population, etc.

Mr. Lalung-Bonnaire (Republic of Rwanda) explained that when the plan was drawn up on the basis of the lattices, it would be perfectly possible for countries later to increase their requests for various services without entailing the drawing up of a new Plan. This should be envisaged by special Provisions annexed to the Agreement, as had been done at Stockholm. Any country making a short-term plan would see its extensions automatically covered by the systematic lattice plan.

Mr. Gressmann (E.B.U.) pointed out that if lattices were established limited to only three programmes, certain incompatibilities could, in some cases give rise to the possibility of only two programmes being transmitted. He therefore proposed that three programmes be stated as a minimum number in all cases. It would then be possible to start with a Plan for 5 programmes.

He remarked that the opinion of the specialists in Working Group 4B 2 was not yet known on this subject.

Mr. Diallo (Republic of Guinea) said that Committee 4 could be expected to have finished its work in this respect that afternoon, and suggested that Committee 5 adjourn until the results of the work of the former Group were known.

Agreed.

Mr. Gayer, Chairman of the I.F.R.B., requested the Chairmen of the three Working Groups to meet with him and other Members of the I.F.R.B. at 4 p.m. on Saturday, 4 May.

Agreed.

Mr. Stead, Head of the Department of Internal Affairs, drew attention to the fact that the General Secretariat had put Minute Writers at the disposal of Committees 4 and 5. As these people were, however, not technicians, it would be necessary for them to have someone to whom to refer on technical matters, and he therefore requested that a Rapporteur be appointed also for Committee 5, as for Committee 4, thus avoiding violation of Article 7 of the Rules of Procedure of Conferences. It was agreed that this would be done at the next meeting of Committee 5.

The Meeting rose at 4.30 p.m.

Rapporteur

R. UMBERG

Chairman

A. LABAYE

AFRICAN VHF/UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 41-E
5 May, 1963
Original : English

PLENARY MEETING

DRAFT RECOMMENDATION

ADOPTED BY THE TECHNICAL COMMITTEE

The African VHF/UHF Conference convened in Geneva on the 29 April,

notes :

a) that certain African countries are using frequencies in Band III for services other than broadcasting as proveded for in the allocation table, (Article 5) and numbers 291, 293, 294, 297 and 301 of the Radio Regulations;

b) that Band III is the optimum one for the use for the television services in that it permits the best service area coverage and that there is no great risk of long-distance interference.

c) that full use of this band should be encouraged for the television services, consistent with the use of other services;

d) that care should be taken to ensure that no mutual interference exists between the established other services and the television service established, in accordance with plans proposed by the conference;

recommends :

to Administrations of countries in the African region that :

1. Bands III whenever possible be cleared of services other than broadcasting.

2. during the interim, every effort should be made to ensure that other authorized used of this band do not cause interference to the broadcasting service and vice versa.

3. During the interim, no new stations other than broadcasting would be established in Band III and in fact every effort would be made to provide for the operation of other services in other bands, so that a future Administrative Radio Conference competent to consider allocations of bands, may consider making an exclusive allocation in Band III for the broadcasting service.

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF BROADCASTING CONFERENCE

GENEVA, 1963

Addendum to
Document No. 42-E(Rev.)
14 May 1963
Original : English

PLENARY MEETING

NOTE
FROM THE
CHAIRMAN OF COMMITTEE 4

Attached is the report of the Sub-Group 4A2 on protection ratios on fixed services which was not finished by the time the Final Report of Committee 4 was submitted (Document No. 42 (Rev.), paragraph 4.2)

Annex: Report with 2 annexes

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A N N E X

REPORT

FROM THE SUB-WORKING GROUP 4A2

Sub-Working group 4A2, under the Chairmanship of Mr. Kilvington adjourned without reaching agreement as to the protection to be recommended for the fixed services in the case of interference due to television signals (see Doc. No. 42 (Rev.)). Further study of the problems involved in conjunction with discussion with the delegates of the other countries involved in the Sub-Working Group 4A2, France, Ghana, Kenya, Nigeria, Uganda, and Tanganyika resulted in an agreement on the protection ratios for the fixed services which could be recommended for planning purposes at this Conference.

The revised document and recommended protection ratios are given in Annexes I and II to this document.

Annexes: 2

Annex I

Protection Ratios Between Television and Multi-Channel Frequency-Modulation Fixed Services in Band III

1. In certain countries in the African Broadcasting Area fixed communications systems are in operation within the Broadcasting Band III. These are multi-channel frequency-modulated systems carrying up to 48 telephone channels.

2. Where it is desired to introduce television broadcasting in Band III in the same areas, it is necessary to plan the service so that mutual interference between the television and fixed services is reduced to negligible proportions.

3. No direct experimental evidence of the protection ratios required is available. However, it is believed that protection ratios which should be satisfactory for planning purposes can be derived theoretically from existing information.

4. For interference from the fixed service transmission to the television service, the ratios laid down for the protection of television against a frequency-modulated sound signal should also prove adequate for protection against fixed-service signals. These protection ratios are given in C.C.I.R. Recommendation No. 418.

5. For interference from the television service transmissions to the fixed service, the protection ratios given in the attached figures are suggested for planning purposes. The preparation of these curves has been based on the following assumption:-

a) 53 db weighted signal-to-interference ratio is required in the worst telephone channel.

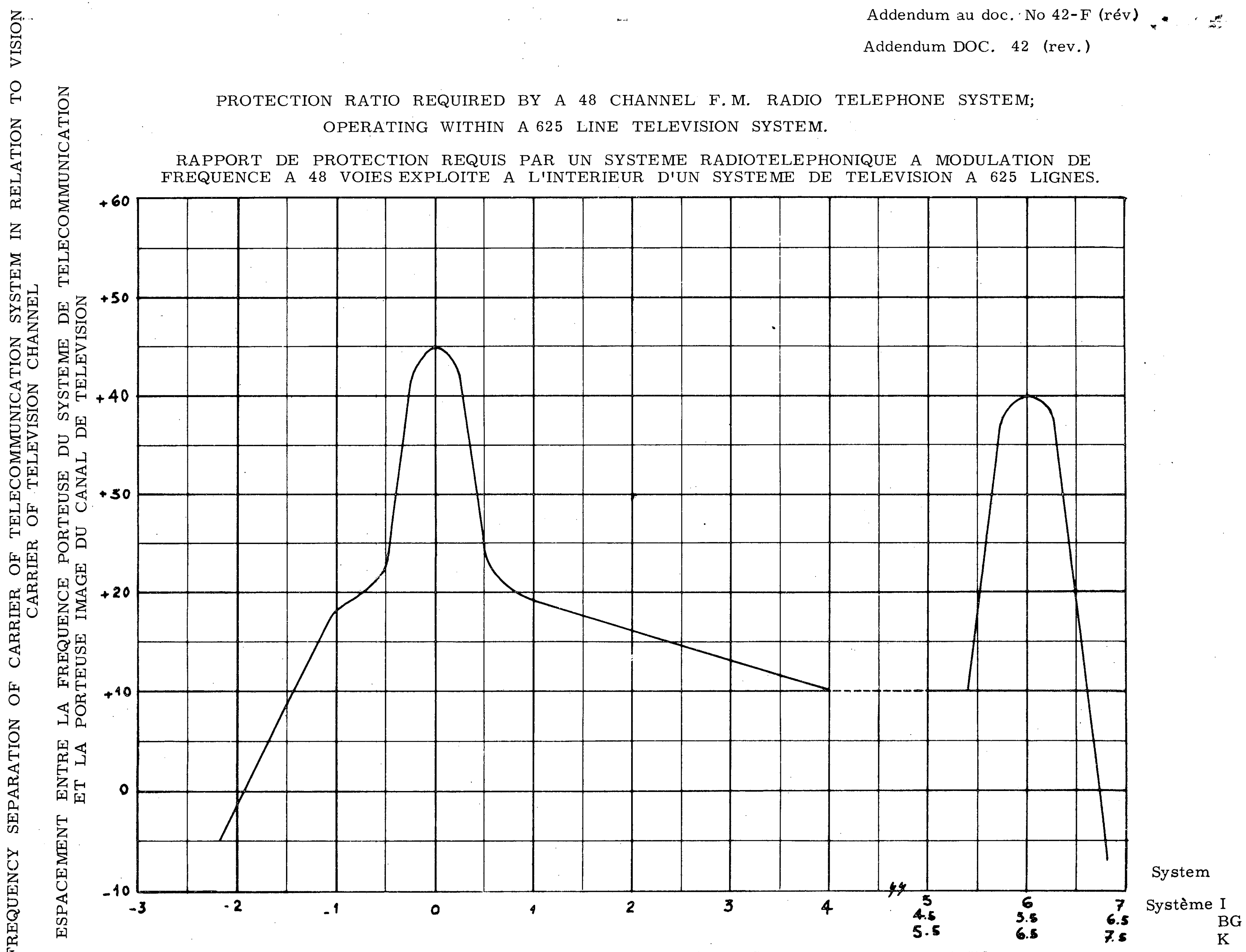
b) A 625-line television system is used with alternative vision/sound carrier spacings of 5.5 Mc/s (System B and G), 6.0 Mc/s (System I) and 6.5 Mc/s (System K).

6. In assessing the protection ratio obtained in a given situation due allowance should be made for the directivity of the aerials used.

7. In the case of telecommunication systems operating with standards inferior to those assumed, the required protection ratio should be adjusted accordingly.

PROTECTION RATIO REQUIRED BY A 48 CHANNEL F.M. RADIO TELEPHONE SYSTEM; OPERATING WITHIN A 625 LINE TELEVISION SYSTEM.

RAPPORT DE PROTECTION REQUIS PAR UN SYSTEME RADIOTELEPHONIQUE A MODULATION DE FREQUENCE A 48 VOIES EXPLOITE A L'INTERIEUR D'UN SYSTEME DE TELEVISION A 625 LIGNES.



PROTECTION RATIO REQUIRED BY TELECOMMUNICATION SYSTEM AT THE INPUT TO THE RECEIVED IN db.

RAPPORT DE PROTECTION REQUIS PAR LE SYSTEME DE TELECOMMUNICATION A L'ENTREE DU RECEPTEUR (en db)

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF BROADCASTING CONFERENCE

Document No. 42-E (Rev.*)
14 May, 1963
Original : English

GENEVA, 1963

PLENARY MEETING

FINAL REPORT OF COMMITTEE 4 (Technical Committee)

Chairman : Mr. A. LATIF AHMED (United Arab Republic)

Vice-Chairman : Mr. M. N'DIAYE (Republic of Mali)

First Reporter : Mr. JEAN LOUIS (Republic of Upper Volta)

Second Reporter : Mr. M. MILLS (Ghana)

Working Group 4A

Chairman : Mr. LALUNG-BONNAIRE (Republic of Rwanda)

Sub-Working Group 4A1

Chairman : Mr. A. LATIF AHMED (United Arab Republic)

Members : Ethiopia, France, Kenya, Ghana, Gabon Republic, Malagasy, E.B.U., Nigeria, I.F.R.B., O.I.R.T.

Sub-Working Group 4A2

Chairman : Mr. KILVINGTON (Overseas Territories for the International Relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible)

Members : France, Kenya, Uganda, Tanganyika

*) Note by the Secretariat: The changes requested at the fifth meeting of the Committee have been embodied in this document.

Working Group 4B

Chairman : Mr. A. LABAYE (Republic of Gabon)

Sub-Working Groups 4B1 and 4B3

Chairman : Mr. KRASNOSSELSKI (I.F.R.B.)

Sub-Working Group 4B2

Chairman : Mr. GRESSMAN (E.B.U.)

Members : United Arab Republic
Republic of Gabon
Republic of South Africa
Overseas territories for the International Relations of which the Government of the United Kingdom are responsible
C.C.I.R.
I.F.R.B.
E.B.U.
I.B.T.O.

Record of Meetings of Committee 4

		Document No.
First Meeting	30 April 1963	27 (Rev.)
Second Meeting	1 May 1963	34 (Rev.)
Third Meeting	3 May 1963	37
Fourth Meeting	3 May 1963	38

Terms of Reference

To define the technical bases to be used in drawing up frequency assignment plans for national sound broadcasting and television stations in the VHF and UHF bands in the African Region.

These technical bases are:

1. TV standards.

2. FM standards.

3. Propagation curves.

4. Protection ratios.

5. Minimum field strengths to be protected.

6. Basic planning principles for the various bands.

7. Preparation of theoretical planning lattices.

1. TV standards (S.W.G. 4A1)

The results are presented in :

a) Document No. 33 : reflecting the TV state in Africa : standards used and number of receivers.

b) Document No. 14 : Characteristics of K* standard.

c) Document No. 30 : Characteristics of standards G, H, I, K*.

d) Document No. 31 : TV standards for Bands I and III.

Reference documents :

a) Document No. 19 and Corrigendum : Contribution of the United Arab Republic : "C.C.I.R. standard".

b) Document No. 28 : Contribution by the Upper Volta K* standard.

c) Document No. 39 : Contribution by I.B.T.O. : "The K standard".

2. FM standards (W.G. 4A)

The results are reflected in Document No. 33 and can be summarized as follows :

i) All countries which replied use a frequency deviation of ± 75 kc/s.

ii) The majority of countries have a pre-emphasis constant of 50 microseconds.

The following countries stated that they use a 75 microsecond pre-emphasis :

LIBERIA
LIBYA
UNITED ARAB REPUBLIC

iii) All countries indicated that they were using a suprahetradyne intermediate frequency of 10.7 Mc/s.

Uganda announced that no decision had yet been reached.

The following countries did not reply :

CENTRAL AFRICAN REPUBLIC
TANGANYIKA

3. Propagation curves (Committee 4)

The C.C.I.R. propagation curves (Report 240) reproduced in Document No. 10 were adopted unanimously by Committee 4.

4. Protection ratios (W.G.4A)

a) The C.C.I.R. relevant documents for the various protection ratios were adopted (see also the Technical Data by the European VHF/UHF Broadcasting Conference, Stockholm 1961, Part 3).

b) For the protection ratios for shared services in Band III, Sub-Working Group 4A2 studied the mutual protection to be ensured between television signals and multichannel fixed frequency-modulation services operating in Band III. The following standards are recommended for adoption when planning :

1. Antenna directivity

Since the antennas used for the fixed services are, in general, of better quality than those used by televiewers, the C.C.I.R. antenna directivity characteristics for Bands IV and V (Recommendation 419) are acceptable for fixed services antennas in Band III.

2. Protection required for television services

The protection necessary for television services can be that given in C.C.I.R. Recommendation No. 418 for frequency modulated sound signals. The curves shown in figures 5 and 7 are applicable according to the television system used.

The Sub-Group has not yet reached agreement as to the protection to be recommended for the fixed services, in the case of interference due to television signals.

5. Minimum field strengths to be protected (W.G.4A)

The C.C.I.R. relevant documents were adopted (see also the Technical Data by the European VHF/UHF Broadcasting Conference, Stockholm 1961, Part 4).

6. Basic planning principles for the various bands

The following decisions (DT/2 Rev.) were adopted by Committee 4.

A. Planning for Bands IV and V

1. In planning Bands IV and V, the channel separation should be 8 Mc/s.

2. These channels should be the same as in the Stockholm Plan.

3. The numbering of the channels should be the same as in the Stockholm Plan, e.g. the lowest channel (470 - 478 Mc/s) is designated Channel 21.

4. In each 8 Mc/s channel, all the video carriers should have the same nominal frequency, no matter what system is used.

5. The frequency of any colour sub-carrier should be the video carrier frequency + 4.43 Mc/s.

6. The sound carrier should always be higher in frequency than the video carrier.

7. Frequency modulation should be used for sound.

8. Picture modulation is to be negative.

9. Video to sound power ratio to be 5 to 1.

10. Radio-astronomy should be protected throughout Africa, at least to the extent that protection is provided in the Stockholm Plan.

B. Planning for Band II (87.5 - 100 Mc/s)

The band should be reserved exclusively for frequency modulation broadcasting, a service which should be used to the greatest extent possible in the area.

C. Planning for Bands I and III

1. That 5, 6, 7, 8 and 9 of section A above were also applicable to the Bands I and III.

2. That, as an attempt to prepare a plan, an 8 Mc/s channel spacing should be considered for Bands I and III. However, this is agreed only in principle. It would have to be mixed with a 7 Mc/s channelling plan to which the following countries are already committed: Ghana, Kenya, Nigeria, Rhodesia and Nyasaland, Sierra Leone and United Arab Republic.

7. Preparation of theoretical planning lattices for the various bands (W.G.4B)

A. Bands I and III (S.W.G. 4B3)

A lattice should satisfy standard K*, with 9 channels : 6 in Band III and 3 in Band I.

A ten-channel lattice should be envisaged in order to take account of a spacing of 7 Mc/s for certain countries.

The Sub-Working Group suggested to make a theoretical lattice for Band III and limiting-distance tables for Band I. It submitted a progress report DT/5 and was charged to provide Committee 5 with the limiting-distance tables as soon as possible.

B. Band II (S.W.G. 4B2)

The group has not yet completed its work, the members of which are the same as for Sub-Working Groups 4B1 and 4B3. However, a solution seems feasible and a working document will be issued.

C. Bands IV and V (S.W.G. 4B1)

This Sub-Working Group has finished its work and represented it in Working Document No. DT/4.

8. Recommendation of the Technical Committee to clear whenever possible Band III of services other than broadcasting has been made in Document No. 41.

Chairman :

A. LATIF AHMED

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF
BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 42-E
5 May, 1963
Original: English

PLENARY MEETING

FINAL REPORT
OF COMMITTEE 4
(Technical Committee)

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Chairman : Mr. A. LATIF AHMED (United Arab Republic)

Members : Ethiopia, Ghana, E.B.U., France, Gabon Republic, Nigeria, O.I.R.T., Kenya, Malagasy, I.F.R.B.

Sub-Working Group 4A2

Chairman : Mr. KILVINGTON (Overseas Territories for the International Relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible)

Members : France, Uganda, Kenya, Tanganyika

Working Group 4B

Chairman : Mr. A. LABAYE (Republic of Gabon)

Sub-Working Groups 4B1 and 4B3

Chairman : Mr. KRASNOSSELSKI (I.F.R.B.)

Sub-Working Group 4B2

Chairman : Mr. GRESSMAN (E.B.U.)

Members : United Arab Republic
Republic of Gabon
Republic of South Africa
Overseas territories for the International Relations of which the Government of the United Kingdom are responsible
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6. Basic planning principles for the various bands.

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The following countries stated that they use a 75 microsecond pre-emphasis :

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LIBYA
UNITED ARAB REPUBLIC

The following country announced that no decision has yet been taken :

ETHIOPIA

iii) All countries indicated that they were using a suprahetradyne intermediate frequency of 10.7 Mc/s.

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TANGANYIKA

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Since the antennas used for the fixed services are, in general, of better quality than those used by televiewers, the C.C.I.R. antenna directivity characteristics for Bands IV and V (Recommendation 419) are acceptable for fixed services antennas in Band III.

2. Protection required for television services

The protection necessary for television services can be that given in C.C.I.R. Recommendation No. 418 for frequency modulated sound signals. The curves shown in figures 5 and 7 are applicable according to the television system used.

The Sub-Group has not yet reached agreement as to the protection to be recommended for the fixed services, in the case of interference due to television signals.

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B. Planning for Band II (87.5 - 100 Mc/s)

The band should be reserved exclusively for frequency modulation broadcasting, a service which should be used to the greatest extent possible in the area.

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1. That 5, 6, 7, 8 and 9 of section A above were also applicable to the Bands I and III.

2. That, as an attempt to prepare a plan, an 8 Mc/s channel spacing should be considered for Bands I and III. However, this is agreed only in principle. It would have to be mixed with a 7 Mc/s channelling plan to which the following countries are already committed: Ghana, Kenya, Nigeria, Rhodesia and Nyasaland, Sierra Leone and United Arab Republic.

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The Sub-Working Group suggested to make a theoretical lattice for Band III and limiting-distance tables for Band I. It submitted a progress report DT/5 and was charged to provide Committee 5 with the limiting-distance tables as soon as possible.

B. Band II (S.W.G. 4B2)

The group has not yet completed its work, the members of which are the same as for Sub-Working Groups 4B1 and 4B3. However, a solution seems feasible and a working document will be issued.

C. Bands IV and V (S.W.G. 4B1)

This Sub-Working Group has finished its work and represented it in Working Document No. DT/4.

8. Recommendation of the Technical Committee to clear whenever possible Band III of services other than broadcasting has been made in Document No. 41.

Chairman :

A. LATIF AHMED

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF/UHF
BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 43-E
5 May 1963
Original: English

COMMITTEE 5

International Frequency Registration Board (I.F.R.B.)

NOTICE OF ARRANGEMENTS FOR THE WORK OF COMMITTEE 5 WORKING GROUPS

In accordance with the organizational meeting of Committee 5 held on Friday, 3 May, 1963, the work of Working Groups 5A (Bands I and III), 5B (Band II), and 5C (Bands IV and V) for three geographical areas, East, South and West, has been planned. The meetings of these Groups will be as follows:

Monday, 6 May 15.00 hours	Working Group 5A for geographical area East
Tuesday, 7 May 09.00 hours	Working Group 5A for geographical area South Working Group 5B for geographical area East
Tuesday, 7 May 15.00 hours	Working Group 5A for geographical area West Working Group 5B for geographical area South Working Group 5C for geographical area East
Wednesday, 8 May 09.00 hours	Working Group 5B for geographical area West Working Group 5C for geographical area South
Wednesday, 8 May 15.00 hours	Working Group 5C for geographical area West

The annex attached shows the countries which are in each of the geographical areas.

With the above schedule it will be possible for the delegations of the different geographical areas to attend the meeting where the plan is being prepared which concerns them. It is, however, to be emphasized that the meetings of all Groups are open to all the delegations and delegates are invited at least to visit each during each half day the meeting of each Group to see for themselves how the planning is being undertaken and progress is being made. Furthermore, border countries are urged to take part to the extent the size of the delegation makes possible, in the meetings of the Groups in which the border area is being planned.

Monday morning will be used to prepare in a practical way the method by which the plans will be prepared and to review the requirements which have been submitted by each country. Each delegation will receive a tabulated copy of the requirements they have submitted on Monday morning which they are invited to check carefully. If they have any questions or wish any explanations, they are invited to give the corrections or to obtain their explanations from the I.F.R.B. For this purpose, Mr. Millot, Mr. Matthey and Mr. Smith will be available in Room D: furthermore, should any delegate wish to see all the requirements, or the requirements of any particular country, they are invited to Room D where there will be a tabulated list of the requirements of all countries.

To assist the different groups, the I.F.R.B. has nominated the following Members and staff:

Group 5A - Bands I and III

Chairman	: Mr. Foalem-Fotso (Republic of Cameroon)
Members	: Mr. Gayer, Mr. Petit
Engineer I.F.R.B.	: Mr. Boyle

Group 5B - Band II

Chairman	: Mr. Oke (Nigeria)
Members	: Mr. Catá, Mr. Mirza
Engineer I.F.R.B.	: Mr. Luraschi

Group 5C - Bands IV and V

Chairman	: Mr. Mills (Ghana)
Members	: Mr. Hase, Mr. Krasnosselski
Engineer I.F.R.B.	: Mr. Widdis

Mr. Millot and Mr. Matthey are available to assist in reference to requirements, and Mr. Smith in reference to the use of the computer for special studies or the calculation of protection ratios.

John H. GAYER
Chairman I.F.R.B.

Annex: 1

A N N E X

DIVISION OF AFRICA INTO THREE REGIONS - EAST, SOUTH, WEST

Eastern Region (E)		Southern Region (S)		Western Region (W)	
Burundi (Kingdom of)	BDI	Congo (Rep. of)(Leopoldville)	CGO	Algeria (D.P.R.)	ALG
French Somaliland	SMF	Comores	COM	Cameroon (Rep. of the)	CME
Ethiopia	ETH	France, French Department of Reunion)	REU	Central African Republic	CAF
Libya (United Kingdom of)	LBY			Congo (Rep. of) (Brazzaville)	COG
United Arab Republic	EGY	Malagasy Republic	MDG	Dahomey (Rep. of)	DAH
Somali Republic	SOM	Angola	AGL	Spain Canaries	CNR
Rwanda (Republic of)	RRW	Mozambique	MOZ	Gabon Republic	GAB
Sudan (Republic of the)	SDN	Nyasaland	NYA	Ghana	GHA
Tanganyika	TGK	Northern Rhodesia	RHN	Guinea (Rep. of)	GUI
Uganda	UGA	Southern Rhodesia	RHS	Ivory Coast (Republic of the)	CTI
Aden	ADN	South Africa (Republic of) and Territory of South-West Africa	AFS	Upper Volta (Republic of)	HVO
Seychelles	SEY			Liberia	LBR
Zanzibar	ZAN			Mali (Rep. of)	MLI
Kenya	KEN	Basutoland	BAS	Morocco (Kingdom of)(1)	MRC
		Bechuanaland	BCH	Mauritania (Islamic Republic of)	MTN
		Mauritius	MAU	Niger (Rep. of the)	NGR
		St. Helena	SHN	Nigeria (Federation of)	NIG
		Swaziland	SWZ	Spanish Province in West Africa	AOE
				Spanish Province in the Gulf of Guinea	GNE
				Cape Verde Islands	CPV
				Portuguese Guinea	GNP
				S. Thome and Principe	STP
				Senegal (Republic of the)	SEN
				Sierra Leone	SRL
				Chad (Republic of the)	TCD
				Acension	ASC
				Gambia	GMB
				Togolese Republic	TGO
				Tunisia (2)	TUN

(1) The Kingdom of Morocco has submitted no requirement for stations below 30°N.

(2) All sites above 30°N.

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF/UHF
BROADCASTING CONFERENCE

GENEVA, 1963

Addendum to
Document No. 44-E
10 May 1963
Original: French

COMMITTEE 5

FRANCE

INTERFERENCE CAUSED IN BANDS II, III, IV and V
BY TELEVISION RECEIVERS TUNED IN BANDS I AND III
AND BY FM SOUND BROADCASTING RECEIVERS TUNED IN BAND II

1. General

This kind of interference may occur in the following two sets of circumstances:

1.1 For televisoon receivers tuned to receive one of the channels of Bands I and III, when one of the harmonics of their oscillators lies in a channel of Bands II, III, IV or V, being a channel used by a transmitter, the reception area of which is in whole or in part common to that of the transmitter in Bands I or III.

1.2 For FM receivers the oscillator frequency of which or its harmonics may lie either in a channel used by an FM transmitter of Band II, or in a channel used by a television transmitter of Bands III, IV or V.

2. Table I

This table shows the interference observed in case 1.1 above.

It has been prepared for a picture intermediate frequency of 40.20 Mc/s, the oscillator being in the supradyne position.

Line 1 of the table shows the bands used by the interfering receivers, while line 2 shows the number of channels on which the same interfering receivers could be tuned. The numbering is that used in Document No. 44 of the African Broadcasting Conference, paragraphs 1.5 and 7.9.

Lines 3, 4 and 5 respectively show, in Mc/s, the frequencies of the picture carrier, the sound carrier, and that of the oscillator, relative to the above channels.

The following lines show, in Mc/s, the oscillator harmonics, in accordance with their degree, which is shown in Column 1.

Orders of harmonics above the fifth have been overlooked. It may be reasonably assumed that they will not be strong enough to cause interference.

The last line shows the position of the interference. Thus, "FM" means that the interference is in frequency modulation, in Band II. "9" means that the interference is found in channel No. 9 of Band III. Numbers in excess of twenty show the interference in a channel of Bands IV or V bearing the same number.

The numbers in circles, placed against the figures for oscillator harmonics, are repeated at the bottom of each column opposite the channel suffering interference.

Sometimes one and the same interference can affect two channels because of the permissible oscillator drift, which has been assumed to be plus or minus 200 kc/s about the nominal figure. The shift in the harmonic is of course equal to that of the fundamental, multiplied by the order of the harmonic.

Figures for interference outside the broadcasting bands are not given.

3. Hence it is recommended that when two transmitters both use a channel subject to restriction, as shown in the two tables hereinafter, there should be no overlap in their service areas. This especially holds good of urban areas, in which there is a greater probability of having two receivers, fairly close together and likely to cause mutual interference, than there would be in the countryside.

Annexes: 3 tables

TABLEAU I - TABLE I

INTERFERENCE DES OSCILLATEURS RELATIFS AUX CANAUX DES BANDES I ET III AVEC LES CANAUX DES BANDES IV ET V

OSCILLATOR INTERFERENCE RELATIVE TO CHANNELS OF BANDS I AND III WITH CHANNELS OF BANDS IV AND V

$\Delta O = \pm$ 0,40 MHz
$FI_v =$ 40,20 MHz

Bande N° - Band No.		I			III					
Canaux N^{os} - Channel No.		1	2	3	4	5	6	7	8	9
Image MHz/Mc/s		43,25	52,25	60,25	175,25	183,25	191,25	199,25	207,25	215,25
Son MHz - Sound Mc/s		49,75	58,75	66,75	181,75	189,75	197,75	205,75	213,75	221,75
Oscillateur - Oscillator	1	83,45	92,45 1)	100,45	215,45 1)	223,45	231,45	239,45	247,45	255,45
	2		184,90 2)	200,90 1)				478,90 1)	494,90 1)	510,90 1)
	3				646,35 2)	670,35 1)	694,35 1)	718,35 2)	742,35 2)	766,35 2)
	4				861,80 3)					
	5			502,25 2)						
Canaux brouillés N^{os} Channels interfered with			FM 1) 5 2)	7 1) 24 2) 25 2)	9 1) 42 2) 43 2) 69 3)	45 1) 46 1)	48 1) 49 1)	22 1) 51 2) 52 2)	24 1) 54 2) 55 2)	26 1) 57 2) 58 2)

Note - Les résultats ci-dessus sont résumés dans le Tableau III avec une représentation plus simple.

Note - The above figures are summarized in Table III, in simpler form.

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TABLEAU II - TABLE II

INTERFERENCES DES OSCILLATEURS DES RECEPTEURS A MODULATION DE FREQUENCE AVEC LES CANAUX DE TELEVISION DES BANDES III, IV ET V

INTERFERENCE OF FM RECEIVER OSCILLATORS WITH BAND III, IV AND V TELEVISION CHANNELS

	FI_{FM} = 10,70 MHz/Mc/s	Canaux brouillés Channels interfered with
Limites de la bande II Limits of Band II	87,50 à/to 100 MHz/Mc/s	-
Limites de variation du fondamental Limits of variation of the fundamental	98,304 à/to 110,602	FM
Limites de variation de l'harmonique 2 Limits of variation of harmonic 2	196,608 à/to 221,204	6 à/to 9
Limites de variation de l'harmonique 3 Limits of variation of harmonic 3	-	-
Limites de variation de l'harmonique 4 Limits of variation of harmonic 4	-	-
Limites de variation de l'harmonique 5 Limits of variation of harmonic 5	491,520 à/to 553,010	23 à/to 31

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TABLEAU III - TABLE III

CANAUX DES BANDES II, III, IV ET V DONT LA RECEPTION EST SUSCEPTIBLE D'ETRE BROUILLEE PAR DES HARMONIQUES DE L'OSCILLATEUR LOCAL DE RECEPTEURS DE TELEVISION ACCORDES SUR DES CANAUX DES BANDES I ET III

CHANNELS OF BANDS II, III, IV AND V RECEPTION OF WHICH IS LIABLE TO SUFFER INTERFERENCE FROM THE HARMONICS OF THE LOCAL OSCILLATER IN TELEVISION RECEIVES TUNED INTO CHANNELS OF BANDS I AND III

Canal des Bandes I et III Channel of Bands I and III reçu received		Canaux des Bandes IV et V dont la réception peut être brouillée Channels of Bands IV and V liable to reception interference
Bande Band I	1	
	2	FM, 5
	3	7, 24, 25
Bande Band III	4	9, 42, 43, 69
	5	45, 46
	6	48, 49
	7	22, 51, 52
	8	24, 54, 55
	9	26, 57, 58

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF / UHF
BROADCASTING CONFERENCE

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COMMISSION 5
COMMITTEE 5

FRANCE

CONTRIBUTION A L'ETUDE DU CHOIX D'UNE FREQUENCE INTERMEDIAIRE
POUR LA TELEVISION SELON LA NORME K*

Sur les figures 2 et 3, dans le texte français, lire:

Canaux et FI directs au lieu de Canaux et FI indirects

En outre, sur les figures 3 et 5, dans le texte français, lire:

68 MHz au lieu de 41 MHz

FRANCE

CONTRIBUTION TO THE STUDY OF THE CHOICE OF AN INTERMEDIATE
FREQUENCY FOR TELEVISION IN ACCORDANCE WITH STANDARD K*

In Figures 3 and 5, read :

68 Mc/s instead of 41 Mc/s.

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AFRICAN VHF / UHF BROADCASTING CONFERENCE

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6 May, 1963
Original : French

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FRANCE

CONTRIBUTION TO THE STUDY OF THE CHOICE OF AN INTERMEDIATE FREQUENCY FOR TELEVISION IN ACCORDANCE WITH STANDARD K*

Summary

14 Figures

1. Reminder concerning the data of the problem and definitions

1.1 Characteristics of the 8 Mc/s channel of Standard K*

Video bandwidth	6 Mc/s
Picture/sound separation	6.5 Mc/s
Residual sideband	1.25 Mc/s
Picture modulation	negative
Sound modulation	FM with 50 kc/s deviation
Frequency of the chrominance sub-carrier	4.43 Mc/s
Picture/sound power ratio	5/1

1.2 Direct channel and indirect channel

A channel is "direct" when the vision carrier frequency is lower than that of the sound carrier.

Example : $F_V = 42.25$ Mc/s $F_S = 48.75$ Mc/s

It is "indirect" when the opposite is the case

Example : $F_V = 47.75$ Mc/s $F_S = 41.25$ Mc/s

1.3 Direct IF and indirect IF

The IF is "direct" when the vision carrier intermediate frequency is lower than the sound carrier intermediate frequency.

Example : $IF_V = 32.70$ Mc/s $IF_S = 39.20$ Mc/s

It is "indirect" when the opposite is the case.

Example : $IF_V = 40.20$ Mc/s $IF_S = 33.70$ Mc/s

1.4 Infradyne and supradyne oscillator arrangements

If :

O is the frequency of the oscillator
F is the frequency of the wanted vision carrier
M is the vision carrier intermediate frequency,

the oscillator has an infradyne arrangement when $O < F$ $(O = F-M)$ and a supradyne arrangement in the opposite case: $O > F$ $(O = F+M)$. In the first case (infradyne), the IF has the same direction (direct or indirect) as the channel. In the second case (supradyne) the IF and the channel are in opposite directions : direct channel with indirect IF or indirect channel with direct IF.

1.5 Channels in Band III

Band III extends from 174 to 223 Mc/s and comprises 6 contiguous direct channels. This arrangement is one of the data of the problem and the corresponding carrier frequencies are as follows (in Mc/s).

Channel number

	4	5	6	7	8	9
Vision	175.25	183.25	191.25	199.25	207.25	215.25
Sound	181.75	189.75	197.75	205.75	213.75	221.75

1.6 Channels in Band I

Channel 1 extends from 41 to 68 Mc/s and the only condition laid down is that there should be 3 channels in this band. They may be all direct, or all indirect, contiguous or not, on the understanding that they do not partially overlap.

As an example, we give below the vision and sound carrier frequencies for direct, contiguous channels in the two extreme cases: tune frequency starting at 41 Mc/s or time frequency starting at 68 Mc/s (in other words, with the sound carrier of Channel 3 at 67.75 Mc/s).

	Tune frequency starting at 41 Mc/s		Tune frequency starting at 68 Mc/s	
	Vision	Sound	Vision	Sound
Channel 1	42.25	48.75	45.25	51.75
Channel 2	50.25	56.75	53.25	59.75
Channel 3	58.25	64.75	61.25	67.75

1.7 Colour

The intermediate frequency must be chosen in such a way that it leaves open the possibility of the future reception of colour television transmissions which may be made on all the channels, using the chrominance sub-carrier whose frequency is fixed at 4.43 Mc/s.

1.8 Stability of the oscillator

In studying the intermediate frequency, it was assumed that the oscillator tuned to receive a channel n in Band I was not, for any reason whatever, to deviate by more than $\pm$ 200 kc/s from its nominal frequency O_n corresponding to that channel.

In Band III, this stability has not been defined since it virtually does not enter into the choice of the IF, it being nevertheless understood that it remains better than $\pm$ 400 kc/s, the value fixed in France for Bands IV and V.

1.9 Reception of FM sound by intercarrier amplification

The intermediate frequency IF_S corresponding to the sound carrier may obviously be chosen as the central frequency of the discriminator. But in this case, because of the relatively low stability of the oscillator, the linear part of the curve of the discriminator will have to be very long to cover both the maximum frequency deviation and the maximum oscillator drift.

For this reason the "intercarrier" method is generally preferred, where we take as the central frequency of the discriminator the difference in frequencies between the vision and sound carriers. This differential frequency - in the present case 6.5 Mc/s - is equivalent to a sub-carrier frequency-modulated by the sound, and it is stable to within a few c/s since its drift is the algebraic sum of the drifts of the two associated carriers. It appears at the video detection, provided that the intermediate frequency IF_S has been amplified with IF_V, but with less gain, by the IF amplifier - hence the expression "intercarrier amplification".

The response curve of the RF + IF circuits of the receiver is generally calculated in such a way that the IF_S frequency has a level about 20 db lower than that of the IF_V frequency.

1.10 Method followed in choosing the IF

In the following calculations, we use these notations :

- x : maximal theoretical heel without spectrum superimposition (in the present case x = 1.25 Mc/s)
- y : maximal video frequency theoretically transmitted without attenuation (in the present case y = 6 Mc/s)
- z : spacing between the vision carrier and the associated sound carrier (in the present case z = 6.5 Mc/s)

We consider successively :

- the theoretical rejection of certain frequencies (for example, sound of the adjacent channel), rejections which normally exist in any receiver of a good make;
- harmonic frequencies of the oscillator falling within the wanted channel or the IF;
- harmonic frequencies of the IF interfering with the wanted channel;
- interference between the harmonic frequencies of the wanted signal and those of the oscillator;
- harmonic frequencies of the spacing between the associated carriers.

When, *a priori*, interference seems to be dangerous, its frequency separation from the wanted vision or sound carrier is calculated, the ratio between the wanted signal and the unwanted signal is assessed and then compared with the requisite protection ratio for the frequency separation in question, on the basis of the technical data of the Stockholm Conference 1961. Moreover, certain experimental checks have been made.

2. Theoretical rejectors

These are the rejection values to be found in any correctly made receiver, regardless of the intermediate frequency adopted.

Table 1 below shows the attenuation values, counted in relation to the vision carrier level. Similarly the frequency separations are counted in relation to the frequency corresponding to the vision carrier, with the + sign if the interfering frequency is on the side of the fully transmitted sideband, and with the - sign if it is on the side of the attenuated band (heel).

Table 1

Interference to be eliminated	Separation (Mc/s)	Minimal attenuation in db
Associated sound	+ 6.5	20 (a) or ≥ 50 (b)
Adjacent sound	- 1.5	14 (c) or ≥ 24 (d)
Adjacent vision	+ 8	≥ 50

(a) when there is intercarrier amplification
(b) when there is separate amplification of the associated carriers.
(c) normal case
(d) with optional additional filter.

The attached Figure 1 gives an example of all the theoretical rejections.

3. Harmonics of the oscillator falling within the wanted channel or the IF

3.1 Infradyne-position oscillator

3.1.1 Formulae

We have, with the notations in § 1.4 :

$$O = F - M$$

The channel and the IF have the same direction.

For the harmonic nO to fall in the wanted channel it is essential that :

$F - x \leqslant nO \leqslant F + z$ if the channel is direct

or $F - z \leqslant nO \leqslant F + x$ if the channel is indirect.

Similarly, for the harmonic nO to fall in the IF, it is essential that :

$M - x \leqslant nO \leqslant M + z$ if the IF is direct

or $M - z \leqslant nO \leqslant M + x$ if the IF is indirect.

For the intervals forbidden to M, this gives the following formulae :

Table 2

	Direct Channel and IF	Indirect channel and IF
For the wanted channel	de $\frac{(n-1)F - z}{n}$ à $\frac{(n-1)F + x}{n}$	de $\frac{(n-1)F - x}{n}$ à $\frac{(n-1)F + z}{n}$
For the IF	de $\frac{nF - z}{n+1}$ à $\frac{nF + x}{n+1}$	de $\frac{nF - x}{n+1}$ à $\frac{nF + z}{n+1}$

It can be seen that these formulae are all of the type

$$\frac{aF \pm x}{b}, \quad \frac{aF \mp z}{b}$$

with $a = n - 1$, $b = n$) in the case of the wanted channel

$a = n$, $b = n + 1$) in the case of the IF

Hence it suffices to trace a single series of graphs, provided that the interference caused in the wanted channel by the nth harmonic has the same relative frequency position as the interference caused in the IF by the $(n + 1)^{th}$ harmonic.

3.1.2 Channels in Band I

Figures 2 to 5 represent the forbidden intervals for M in the case of direct and indirect channels, with tuning starting at 41 and 68 Mc/s.

The only possible region which appears for M, for direct channels adjusted from 68 Mc/s, and which is situated between 31.2 and 32.4 Mc/s, is in fact unusable because of the instability of the oscillator. It is indeed harmonic 4 which intervenes, and assuming a range of ± 200 kc/s for the fundamental, it would be necessary to have ± 800 kc/s, which is not the case.

3.1.3 Channels in Band III

There is no fear of interference of this nature, since the forbidden zones are between the straight lines F = M and F = 2M, and as F is above 174 Mc/s, any value of M below 87 Mc/s may be suitable.

3.2 Supradyne-position oscillator

In this case, O = F + M, and there is no fear of interference of this type.

3.3 Conclusions of this chapter

For Band III, where the channels are direct, a direct IF (infradyne-oscillator) is quite as acceptable as an indirect IF (supradyne-oscillator).

For Band I, an infradyne-position oscillator is out of the question, and the choice is limited to the following two possibilities :

direct channels and indirect IF
or indirect channels and direct IF.

4. Harmonics of the IF interfering with the wanted channel

4.1 General

The source of these harmonics is in the non-linear demodulation units of the receiver, which cause the appearance not only of the intermediate frequencies but also of their harmonics at an important level of the order of some volts for vision. As far as the sound is concerned, this level may be low if there is a separate amplification chain. If the intercarrier amplification system is used, the attenuation is about 20 db in relation to the vision. But then the frequency 6.5 Mc/s (separation between the associated carriers) appears which is then amplified and demodulated to an acceptable level.

For Band III, there is no fear of harmonics of this type, because of their high order for the IF is about 40 Mc/s at the most.

For Band I, independently of the interference with multiples of the frequency 6.5 Mc/s, two types of interference must be avoided :

a) harmonic 2 of the IF interfering with Channel 3. It is this interference which will fix the lower limit of the possible IFs.

b) the IF itself interfering with Channel 1. This interference will fix the upper limit of the possible IFs.

4.2 2nd Harmonic of the IF interfering with Channel 3

4.2.1 General

Since the oscillator is of necessity in the supradyne position, one or other of the following types of interference may occur :

a) direct channel and indirect IF : interference between F_{S3} and 2 IF_S.

We shall assume that it suffices to fulfil the condition :

$$2\ FI_S \geqslant F_{S3} + 1\ \text{Mc/s}.$$

b) indirect channel and direct IF : interference between F_{V3} and 2 IF_V.

To avoid the superimposition of spectra, the separation between F_{V3} and 2 IF_V would have to be at least equal to the sum of the residual sidebands, i.e. to 1.25 + 2 x 1.25 = 3.75 Mc/s.

However, if the optional additional filter (see para. 2, Table 1, note d) is provided at least for Channel 3, the separation can be reduced to 1.5 Mc/s.

4.2.2 Direct channels and indirect IF

4.2.2.1 Channels tuned from 41 Mc/s :

Figure 6 shows that we must have

$2\ FI_S \geqslant 64.75 + 1 = 65.75$

whence $FI_S \geqslant 32.9$

hence $FI_V \geqslant 32.9 + 6.5 = 39.4$

4.2.2.2 Channels tuned from 68 Mc/s :

The same figure shows that we must have

$2\ FI_S \geqslant 67.75 + 1 = 68.75$

whence $FI_S \geqslant 34.4$

hence $FI_V \geqslant 34.4 + 6.5 = 40.9$

4.2.3 .Indirect channels and direct IF

4.2.3.1 Channels tuned from 41 Mc/s

Still according to Figure 6, we must have

$2FI_V \geqslant 63.75 + 1.5 = 65.25$

whence $FI_V \geqslant 32.6$

hence $FI_S \geqslant 32.6 + 6.5 = 39.1$

4.2.3.2 Channels tuned from 68 Mc/s

The same figure shows that we must have

$2\ FI_V \geqslant 66.75 + 1.5 = 68.25$

whence $FI_V \geqslant 34.1$

thence $FI_S \geqslant 34.1 + 6.5 = 40.6$

4.2.4 Summary of the lower limits of the IF carriers

Table 2

Channel-direction	Tuning starting at 41		Tuning starting at 68	
	FI_V	FI_S	FI_V	FI_S
Direct	39.4	32.9	40.9	34.4
Indirect	32.6	39.1	34.1	40.6

4.3 Interference of the IF itself with Channel 1

Figure 7 shows the relative positions of Channel 1 and the IF when the intermediate carriers have the minimal frequencies deduced from Figure 6.

It is the minimum admissible separation between the interfering intermediate carrier and the carrier (vision or sound) of Channel 1 which will fix the admissible upper value for the IF. To determine this separation, experimental checks have had to be made.

4.4 Experimental checks

4.4.1 Interference between 2IF and Channel 3

It was agreed above (para. 4.2.1.a) that, for direct channels, and hence for an indirect IF, the interference occurring between $2IF_S$ and F_{S3} is not serious when the separation of these 2 frequencies exceeds about 1 Mc/s. This assumption was proved to be correct after an experimental check.

On the other hand, for the indirect channels, the separation of 1.5 Mc/s that had been agreed (see para. 4.2.1.b) as adequate between F_{V3} and $2IF_V$ has not been confirmed by experience. A test was made taking IF_V = 32.70 Mc/s (standardized in France for 625-line transmissions) of which the harmonic 2 gives with F_{V3} = 63.75 Mc/s beat of 1.65 Mc/s which, for long-distance receivers, produces serious moirés which can only be eliminated by introducing a supplementary rejection in the receiver of at least 30 db. This eliminating circuit should incidentally be switchable, and reserved for Channel 3 since its presence results in a distortion -

its dip attacks the heel of the Nyquist curve a few hundreds of kc/s away from the wanted video carrier - which should not be retained for the other channels.

Because of this consideration the use of indirect channels has been discarded. Direct channels should, therefore, be used in Band I as in Band III.

4.4.2 Interference between IF and Channel I

The channels being direct, the interference likely to be harmful is the beat between IF_V and F_{VI}. According to Figure 7, the frequency of this beat may lie between :

$$42.25 - 39.4 = 2.85 \text{ Mc/s for } F_{VI} = 42.25 \text{ Mc/s}$$

and $$45.25 - 40.9 = 4.15 \text{ Mc/s for } F_{VI} = 45.25 \text{ Mc/s.}$$

A first experimental check made with $IF_V = 39.9$ (which corresponds to $IF_S = 33.4$, the standard value for 625 lines of standard G) at first led to believe that F_{VI} should be at least equal to 44.25 Mc/s in order to avoid the appearance of moiré without the addition of special rejectors. A second check showed that, with better tuning of existing circuits, the separation between IF_V and F_{VI} could be reduced to approximately 3 Mc/s without producing any visible deterioration.

4.5 Conclusions

The channels in Band I as in Band III will be direct channels. The IF will, consequently, be indirect, with IF_V in the neighbourhood of 40 Mc/s.

The minimum separation to be observed between FI_V and F_{VI} is 3 Mc/s.

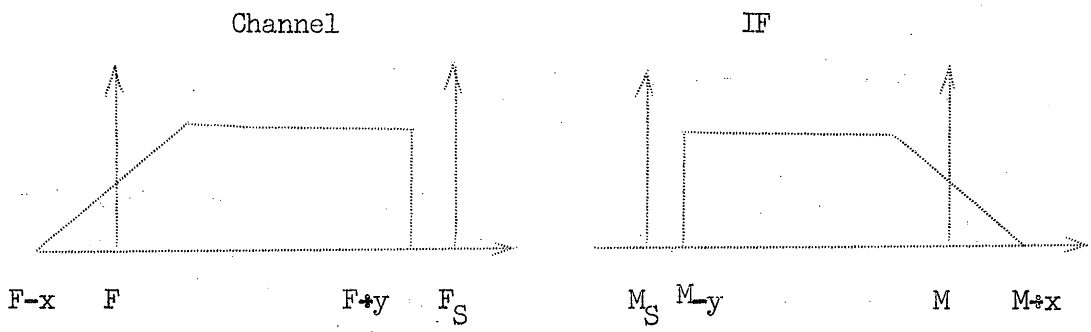
5. Interference between the harmonics of the wanted signal and those of the oscillator

5.1 General

The transmitters themselves very seldom emit wanted carrier harmonics, at least with a power sufficient to interfere with the receivers, even at short distances. It is in the receivers themselves that these harmonics arise owing to a non-linearity in the RF stages due either to the curve of the tubes' characteristics or their saturation.

If n is the harmonic of frequency O of the local oscillator and p that of frequency F of the wanted carrier, the interference produced has, as its frequency, nO - pF, or pF - nO if the first expression is negative.

According to the conclusions drawn from chapters 3 and 4 above, all the channels are direct and the IF is indirect. The frequency distribution is shown below.



F or F_V = video carrier frequency M or M_V = video IF

$F_S = F + z$ = sound carrier frequency $M_S = M - z$ = sound IF

The oscillator is in the supradyne position ($0 = F + M$) and M has a value in the neighbourhood of 40 Mc/s.

That being so, there is a **risk** of disturbance in the following four cases :

a) video interference in vision, abbreviated to V/V :

Harmonic p of the vision carrier F forms with n0 an interference with its frequency situated between $M - y$ and $M + x$, that is in **the video part** of the IF;

b) video interference in sound, abbreviated to V/S:

the same interference is situated this time in the neighbourhood of $M_S = M - z$, the intermediate frequency of the sound;

c) sound interference in vision, abbreviated to S/V:

Harmonic p of the sound carrier $F_S = F + z$, forms with n0 an interference situated between $M - y$ and $M + x$;

d) sound interference in sound, abbreviated to S/S:

the same interference situated this time in the neighbourhood of $M_S = M - z$.

5.2 Calculations and formulae

5.2.1 V/V interference

In this case we have

$$M - y \leqslant n0 - pF \leqslant M + z$$

or $$M - y \leqslant pF - n0 \leqslant M + x$$

By replacing 0 by F + M, the limits of the dangerous interval are obtained; these are respectively :

a) for n0 - pF : $M = \frac{(p-n)F-y}{n-1}$ and $M = \frac{(p-n)F+x}{n-1}$

b) for pF - n0 : $M = \frac{(p-n)F-x}{n+1}$ and $M = \frac{(p-n)F+y}{n+1}$

5.2.2 V/S interference

In this case we have

$$M_S = M - z \simeq n0 - pF \text{ or } pF - n0$$

whence $$M \simeq \frac{(p-n)F-z}{n-1} \text{ or } \frac{(p-n)F+z}{n+1}$$

5.2.3 S/V interference

Here we have

$$M - y \leqslant \left\{\begin{matrix} n0 - pF_S \\ \text{or} \\ pF_S - n0 \end{matrix}\right\} \leqslant M + x$$

with $F_S = F + z$

Whence the respective limits

a) for n0 - pF : $M = \frac{(p-n)F-y + pz}{n-1}$ and $M = \frac{(p-n)F+x + pz}{n-1}$

b) for pF - n0 : $M = \frac{(p-n)F-x + pz}{n+1}$ and $M = \frac{(p-n)F+y + pz}{n+1}$

5.2.4 S/S interference

Similarly we obtain

$$M \simeq \frac{(p-n)F-z + pz}{n-1} \quad \text{for } n0 - pF$$

and $$M \simeq \frac{(p-n)F+z + pz}{n+1} \quad \text{for } pF - n0$$

5.2.5 Recapitulation

Table 3

Type of disturbance	Type of interference	
	nO - pF	pF - nO
V/V	from $\frac{(p-n) F - y}{n - 1}$ to $\frac{(p-n) F + x}{n - 1}$	from $\frac{(p-n) F - x}{n + 1}$ to $\frac{(p-n) F + y}{n + 1}$
V/S	$\frac{(p-n) F - z}{n - 1}$	$\frac{(p-n) F + z}{n + 1}$
S/V	from $\frac{(p-n) F - y + pz}{n - 1}$ to $\frac{(p-n) F + x + pz}{n - 1}$	from $\frac{(p-n) F - x + pz}{n + 1}$ to $\frac{(p-n) F + y + pz}{n + 1}$
S/S	$\frac{(p-n) F - z + pz}{n - 1}$	$\frac{(p-n) F + z + pz}{n + 1}$

5.3 Remarks

5.3.1 For the nO - pF type of interference, the formulae are meaningless when n = 1 because, in that case, M is found to be infinite.

In actual fact, the basic inequalities are written as follows:

$$M - y \leqslant O - pF \leqslant M + x \quad \text{or as } O = F + M$$

$$M - y \leqslant (1-p)\ F + M \leqslant M + x$$

If p = 1, we have normal beat which gives the IF; if $p \geqslant 2$, the middle expression is negative since $F > M$; the formulae no longer hold good and the pF - nO type of interference must then be considered.

Therefore the case where n = 1 need not be examined for the nO - pF type of interference.

5.3.2 In the case where $n \geqslant p$, the coefficient of F becomes negative or zero in the formulae.

For the V/V or V/S type of interference we have :

- either $n0 - pF \geqslant p(0-F) = pM$, which is considerably higher than $M + x$, when $p \geqslant 2$(1)
- or $pF - n0 \leqslant -pM$ which is negative

For the S/V or S/S type of interference we have

- either $n0 - pF_S \geqslant p(0-F) - pz = p(M-z)$ which is also considerably higher than $M + x$ for $p \geqslant 2$(1)
- or $pF_S - n0 \leqslant p\ (z-M)$ which is negative.

Thus the case of $n \geqslant p$ need not be considered for any type of interference.

5.3.3 In view of the rapid diminution in the relative amplitude of the harmonics, which will be evaluated later, we mas confine ourselves to the lower harmonics, for instance $p = 4$ and consequently $n = 3$ since there is no longer any harmful interference for $n \geqslant p$.

Moreover, since M must be of the order of 40 Mc/s, comprised, for example, between 39 and 41 Mc/s, it is useless to examine the combinations $n0 - pF$ or $pF - n0$ which would give for M a dangerous interval not extending to the 39 - 41 Mc/s range. These combinations are those for which, designating the lower limit and the higher limit of the dangerous interval by a and b respectively, we would have :

- either $a > 41$
- or $b < 39$

For interference V/V or V/S, with the combination $n0 - pF$, we have:

$$a = \frac{p-n}{n-1} F - \frac{z}{n-1} = AF - \frac{6.5}{n-1} \quad \text{putting } A = \frac{p-n}{n-1}$$

$$b = AF + \frac{x}{n-1} = AF + \frac{1.25}{n-1}$$

We look for the values of A for which :

$$AF - \frac{6.5}{n-1} > 41$$

$$AF > 41 + \frac{6.5}{n-1}$$

---

(1) With $p = 1$ and $n = 2$, we have $n0 - pF = F + 2M$ and $n0 - pF_S = F + 2M - z$, that is, two frequencies which are already higher than $M + z$.

The maximum value of the second member is obtained for $n = 2$ and should then have :

$$AF > 41 + 6.5 = 47.5$$

$A > \frac{47.5}{F}$. by giving F its nominal value.

In band I we have $42.25 \leqslant F \leqslant 61.25$
and $48.75 \leqslant F_S \leqslant 67.75$

In band III we have $175.25 \leqslant F \leqslant 215.25$
and $181.75 \leqslant F_S \leqslant 221.75$

In this case, we should have :

$A > \frac{47.5}{42.25}$ for band I

and as $\frac{47.5}{42.25}$ is lower than $\frac{48}{42} = \frac{8}{7}$, it is this limit which will be taken; in other words there is no need to examine for V/V and V/S interference the combinations of the nO - pF type for which $\frac{n-p}{n-1} \geqslant \frac{8}{7}$ for band 1.

Table 4 below contains a summary of these limits, covering all types of interference, for bands I and III.

Table 4

Bands	Values of A to be considered	
	Type nO - pF $A = \frac{p-n}{n-1}$	Type pF - nO $A = \frac{p-n}{n+1}$
Band I	from 1/3 to 8/7	from 2/5 to 1
Band III	from 1/9 to 1/3	from 1/7 to 1/4

5.3.4 Tables 5 and 6 below give respectively for $n \leqslant 3$ and $p \leqslant 4$ the values of $\frac{p-n}{n-1}$ and $\frac{p-n}{n+1}$. The values to be taken into account are underlined for band 1 and shown in brackets for band III.

The shaded boxes do not require examination.

Table 5

$\frac{p-n}{n-1}$

n \ p	1	2	3	4
1				
2			1	2
3				1/2

Type no - pF

Table 6

$\frac{p-n}{n+1}$

n \ p	1	2	3	4
1		1/2	1	3/2
2			1/3	2/3
3				(1/4)

Type pF - no

5.4 Use of formulae

No conclusions can be drawn from the present section at this stage of the study. In the first place, frequencies must be chosen for the channels of band I; then these frequencies and those already fixed for band III must be used to calculate the limits of the dangerous intervals for M, giving $\frac{p-n}{n-1}$ and $\frac{p-n}{n+1}$ the values indicated in Tables 5 and 6. All these intervals are entered in a graph which will then show whether a possible value or values exist for M. If there is no area free from interference, the value which is apparently least dangerous for M is chosen, and the harmfulness of the interference is then calculated by the method described under 7 below.

6. Harmonics of the intercarrier spacing

6.1 General

In the case of a receiver with common amplification of the intercarrier, the vision signal at frequency M and the sound signal at frequency M_S = M-z are found at the output of the amplifier IF, the former having been amplified, however, by about twenty db more than the latter. The non-linearity of the vision detector shows at its output a signal at frequency z, i.e. at 6.5 Mc/s in the present case, together with its harmonics. All these signals are both amplitude-modulated (by the video) and frequency-modulated (by the sound). The former is applied, after amplification, to the discriminator-limiter and restitutes the sound. The others are disturbing signals, which may interfere with the IF if there is coupling between the vision detector and the IF stages, or even with the wanted signal if there is coupling between the RF stages and the frequency changes.

It will however be noted that screening of the vision detector by means of an elementary low-pass filter placed at its output, will suffice to eliminate this type of interference.

An eliminating circuit (band filter with critical coupling) centred on 6.5 Mc/s is generally found in the video amplifier.

6.2 Harmonics that may prove harmful

If φ represents the rank of the harmonic, the following values are obtained.

φ =	1	2	3	4	5	6	7	8	9	10
f(Mc/s) =	6.5	13	19.5	26	32.5	39	45.5	52	58.5	65

It can be noted that the 6th harmonic is the one which risks interfering with the IF, while the harmonics from 7 to 10 concern channels in band I.

7. Definition and calculation of the harmfulness of interference - choice of an intermediate frequency

7.1 General definition of harmfulness

Once the interference frequency has been calculated, its difference from the wanted carrier (or sub-carrier) is determined in HF or IF, according to the circumstances.

It is then necessary to evaluate the ratio of the amplitudes - or rather the difference in levels expressed in db - between the wanted signal and the interfering signal. Some of the hypotheses developed under 7.4 and 7.6 below are used for this evaluation.

Reference is then made to the booklet entitled "Technical data used by the European VHF/UHF Broadcasting Conference" (Stockholm, 1961) which gives the required protection ratios as a function of the frequency spacing. However, some reservations are listed under 7.7.

The difference between the required protection ratio and the level difference gives what is known as the "harmfulness" of the interference. If the difference in levels is greater than the required ratio, the harmfulness will be negative. In other words, the more negative the number expressing the harmfulness of the interference, the less dangerous will the interference be. Positive harmfulness on the other hand is to be avoided.

7.2 Types of interference to be considered

According to sections 3 and 4 above, since the channels are direct and the IF indirect, i.e. with its oscillator in the supradyne position, there is no reason to concern oneself with the harmonics of the oscillator falling in the wanted channel or in the IF, for this type of interference does not arise in this case.

On the other hand, a study must be made of :

- interference with the IF by combinations of the type nO-pF or pF-nO (interference of the so-called W category)
- interference between the IF itself and channel 1 (interference of the so-called X category)
- interference between the 2nd harmonic of the IF and channel 3 (category Y interference)
- interference, with the IF or with the channels, by the harmonics of the inter-carrier spacing (category Z interference)

7.3 Frequency differences and local oscillator drift

Since the oscillator is assumed to be adjusted to its nominal frequency for the channel under consideration, the difference in frequency between the interfering signal and the wanted carrier is easily calculated. When the latter is a vision carrier (type V/V or S/V interference) the difference will be preceded by a + sign if the interfering signal is situated on the completely transmitted side of the sideband, or by a - sign if the interfering signal is situated on the residual band side (heel).

If the wanted carrier is a sound carrier (type V/S or S/S interference) the difference will be preceded by a + sign if the interference is situated beyond the wanted sound carrier and by a - sign if the interference is on this side of it, i.e. between the wanted sound carrier and vision carrier.

The nominal or mean deviation is calculated in this way.

But the oscillator may drift ± 200 kc/s in band I (see 1.8) and if the interference derives from the nth harmonic of the oscillator (or of the IF), the actual frequency deviation will shift by ± n times 200 kc/s with respect to its nominal value.

The minimum and maximum deviations are therefore calculated and the protection ratio for the most unfavourable case in the frequency range thus delimited is taken.

7.4 Difference between interfering and interfered levels

In a general way, where the fundamentals (also for the IF) are concerned, the initial difference is taken equal to 0 db, which is then corrected in accordance with the circuit response curve as a function of frequency deviation.

However, if the interference is of type V/S or S/V, account must be taken of the radiated power ratio which is 5/1 (vision/sound). Hence, for a type V/S interference, the initial difference will be + 7 db, while for type S/V interference this initial difference will be - 7 db.

7.5 Assumptions concerning the levels of harmonics

The amplitude of the harmonics diminishes with their order. For the harmonics of the oscillator itself, a decrease of 10 db from one to the next will be assumed, in other words, harmonic 2 will be - 10 db with respect to the fundamental, harmonic 3 - 20 db and harmonic n - 10(n-1) db.

A decrease of 20 db from one harmonic to the next will be assumed for the harmonics of the wanted signal, the IF, or the inter-carrier difference.

Note : The above assumptions can be justified by the following considerations : an oscillator giving a rate of harmonics of more than 33% (10 db) has not been correctly established. Similarly, a wanted signal which has a rate of harmonics of 10% (20 db) is abnormally deformed.

7.6 Circuits

The response curve of the HF + IF circuits is given by Figure 1.

This curve applies for interference of categories W, X and Y.

For category Z interference, the response curve (Figure 8) is that of a critically coupled band filter.

7.7 Protection ratios

Part 3 of the "Technical Data used by the European VHF/UHF Broadcasting Conference" (Stockholm, 1961) gives curves that can be used, subject to certain reservations.

For type S/S interference, the interference curve given in Figure 19 (p.35) will be used. This curve really applies to interference between transmitters having a maximum excursion of 75 kc/s. In the present case, the wanted signal has an excursion of 50 kc/s, but the interference which may derive from a combination with a p harmonic may therefore have an excursion of p times 50 kc/s. This is why the curve of Figure 19 has been preferred to that of Figure 20, which gives less severe protection ratios.

For type V/S interference, reference will be made to curve d_3 in Figure 23 (p.43).

For type V/V interference, reference will be made to curve a_4 in the same figure, if the interference is on the side of the residual sideband (heel).

If the interference is situated on the other side, particularly if it is near to the chrominance sub-carrier, use will be made of curve K_3 in Figure 29 (p.52). It will be noted, however, that this curve concerns the NTSC system, in the case where the interference consists of non-modulated waves or frequency-modulated sound signals.

This same curve will be used for type S/V interference, regardless on which side of the carrier the interference is situated.

Finally, it will be noted that the curves in Figures 23 and 29 give protection ratios that are "considered to be acceptable for a small percentage of the time, not precisely defined, but assumed to be between 1% and 10%." In the present case, we are concerned with constant interference.

7.8 Harmfulness

If N (db) is the final (interfered/interfering) level ratio allowing for the harmonics and the circuits, and if P (db) is the protection ratio for the type of interference and the frequency deviation under consideration, the harmfulness will be expressed by P - N (db).

Figures 9 to 14 give examples of calculations.

7.9 Choice of an intermediate frequency IF_V

A set of one intermediate frequency and frequencies of channels in band I which offer the lowest degree of harmfulness will obviously be chosen.

The examples of calculations given have been taken from a series of calculations when other frequencies were under study.

The intermediate frequency of 40.2 Mc/s, associated with the following frequencies for the channels, appeared to be feasible.

	Vision	Sound
Channel 1	43.25	49.75
Channel 2	52.25	58.75
Channel 3	60.25	66.75

This theoretical result was checked experimentally and proved to be satisfactory, although with high-sensitivity receivers the risk of category X interference is not nil a priori, which leads to the formulation of some reservations on the use of channel 1.

In theory, it would have been necessary to make a vast number of calculations with all the possible combinations in order to determine the best one.

Annexes : Figures 1 to 17

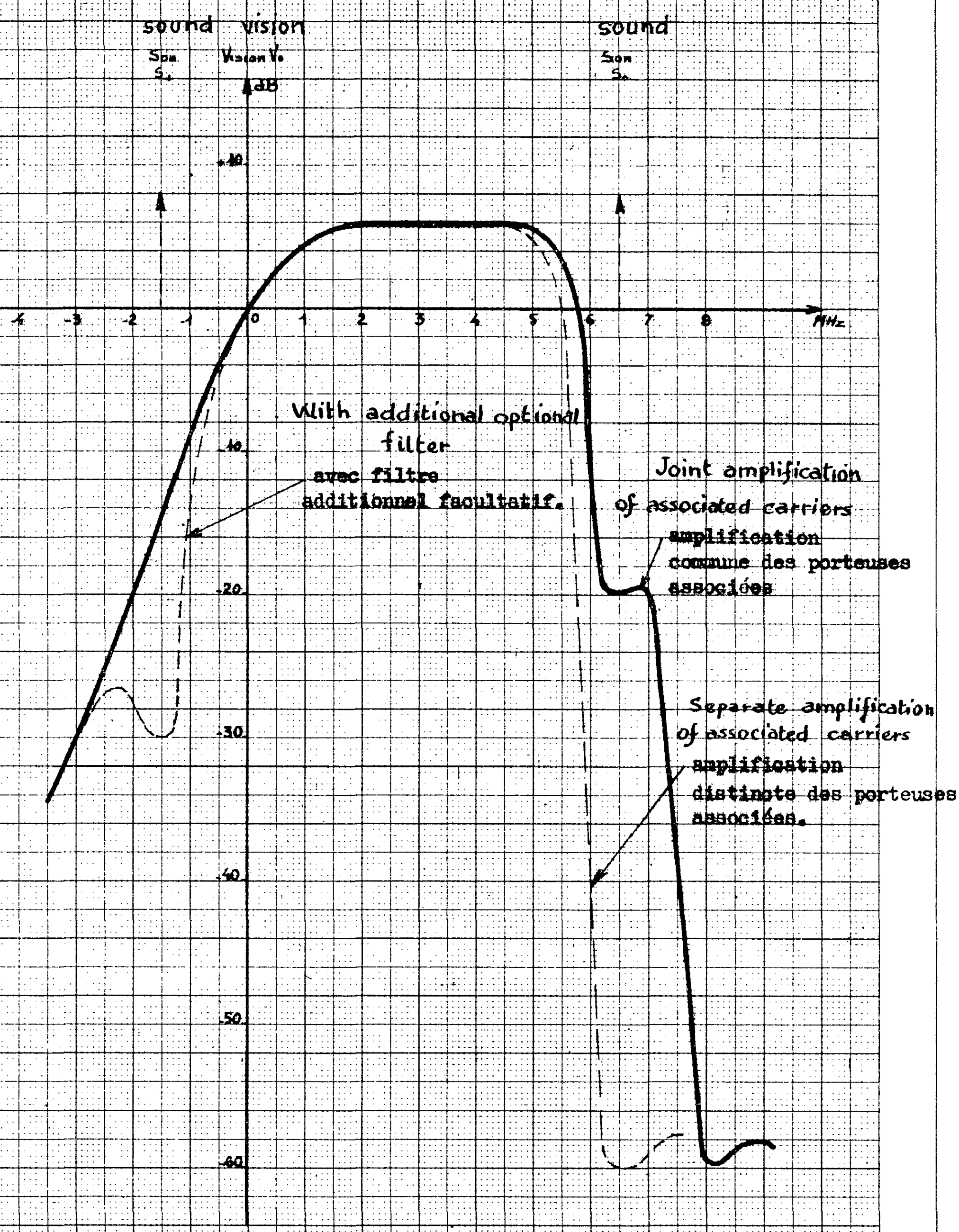

sound
vision
sound
dB
MHz
With additional optional filter
avec filtre additionnel facultatif.
Joint amplification of associated carriers
amplification commune des porteuses associées
Separate amplification of associated carriers
amplification distincte des porteuses associées.

Fig. 1

CANAUX ET FI INDIRECTS

(les canaux de la bande I étant calés a partir de 41 MHz)

Harmoniques n0 tombant { dans le canal désiré / dans la FI

M doit être extérieur aux intervalles $\frac{aF - x}{b}$, $\frac{aF + z}{b}$

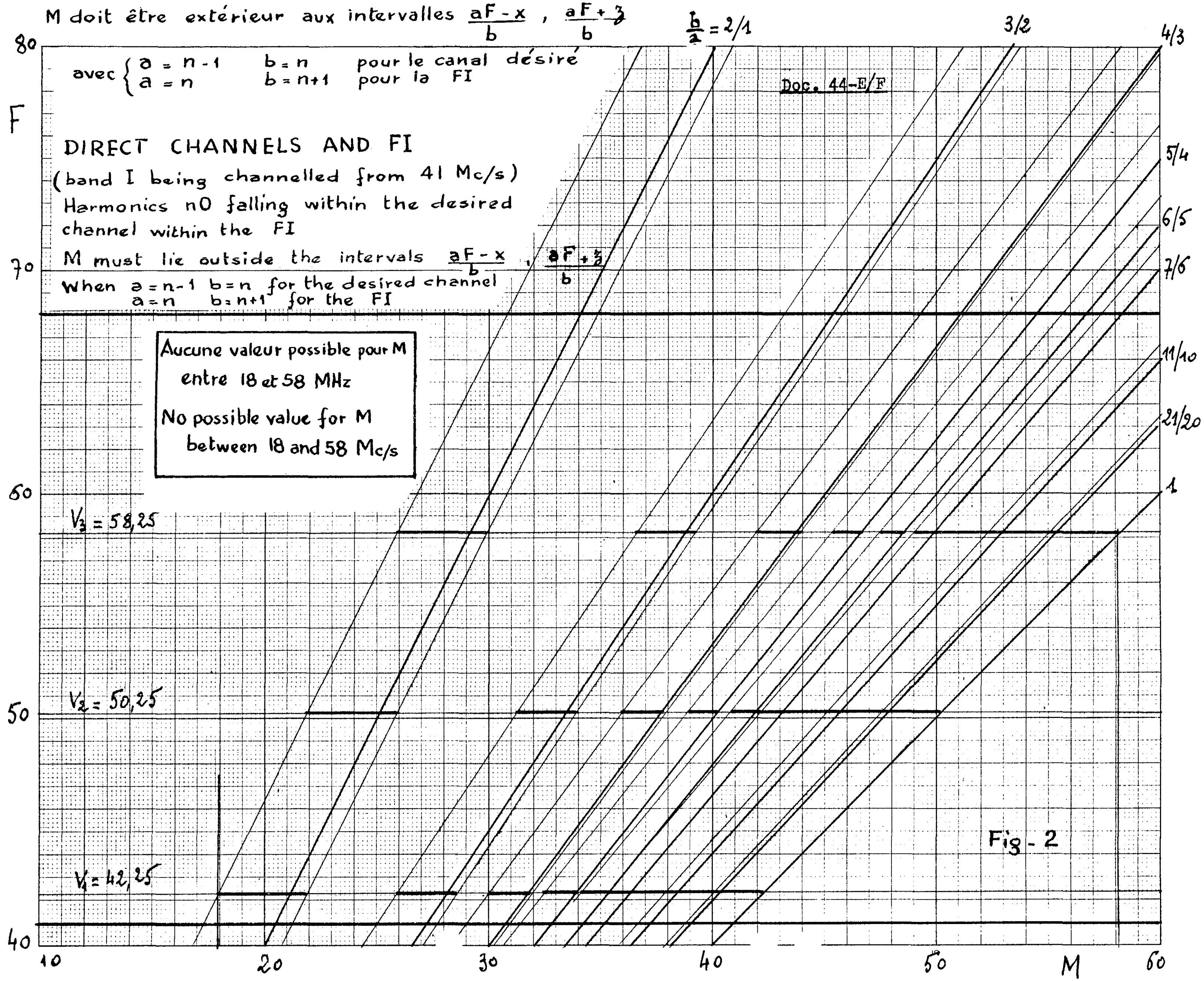


Fig - 2

CANAUX ET FI INDIRECTS

(les canaux de la bande I étant calés à partir de 41 MHz)

Harmoniques n0 tombant $\begin{cases}\text{dans le canal désiré}\\ \text{dans la FI}\end{cases}$

M doit être extérieur aux intervalles $\frac{aF-x}{b}$, $\frac{aF+z}{b}$

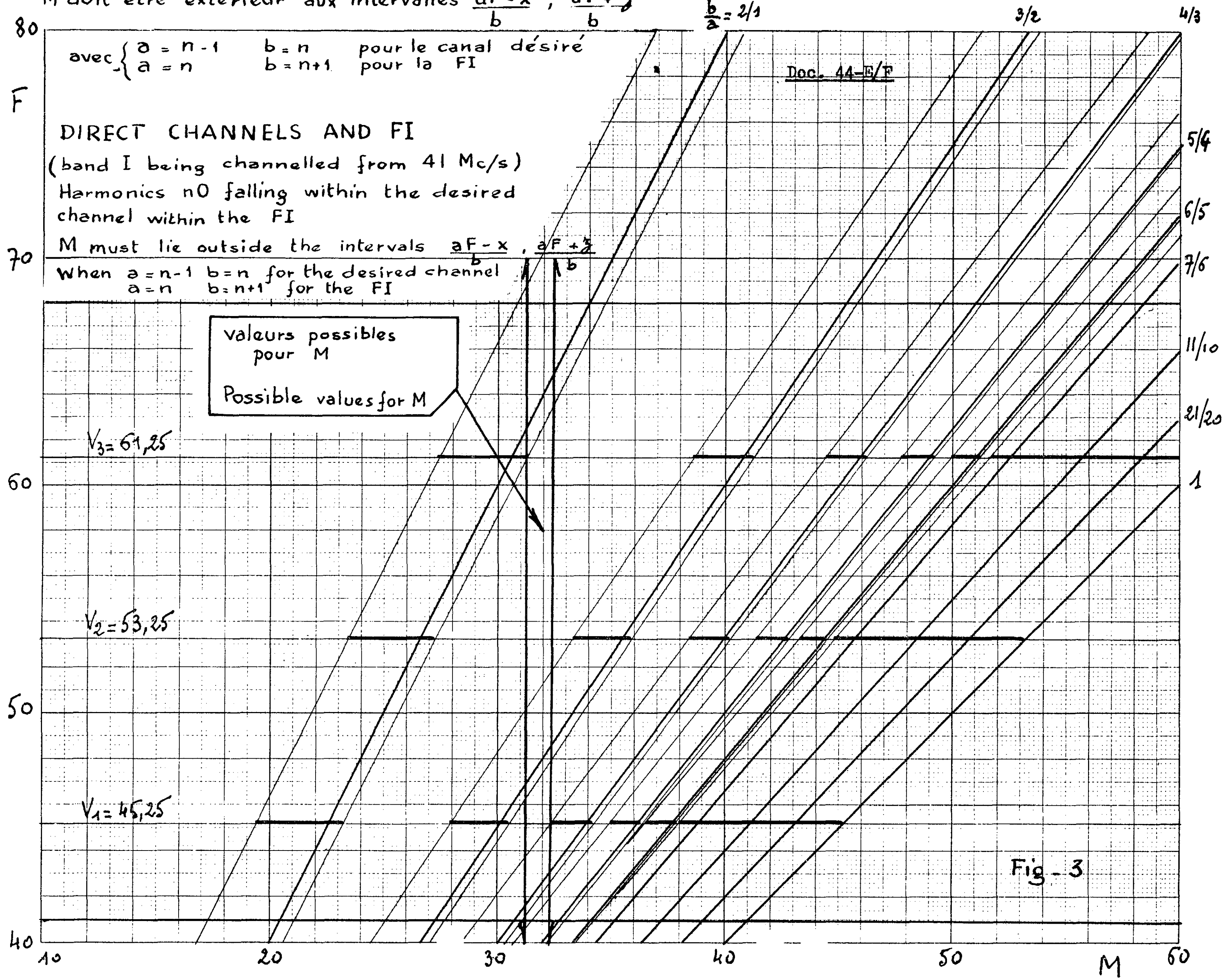


Fig - 3

CANAUX ET FI INDIRECTS

(les canaux de la bande I étant calés à partir de 41 MHz)

Harmoniques nO tombant { dans le canal désiré / dans la FI }

M doit être extérieur aux intervalles $\frac{aF-x}{b}$, $\frac{aF+3}{b}$

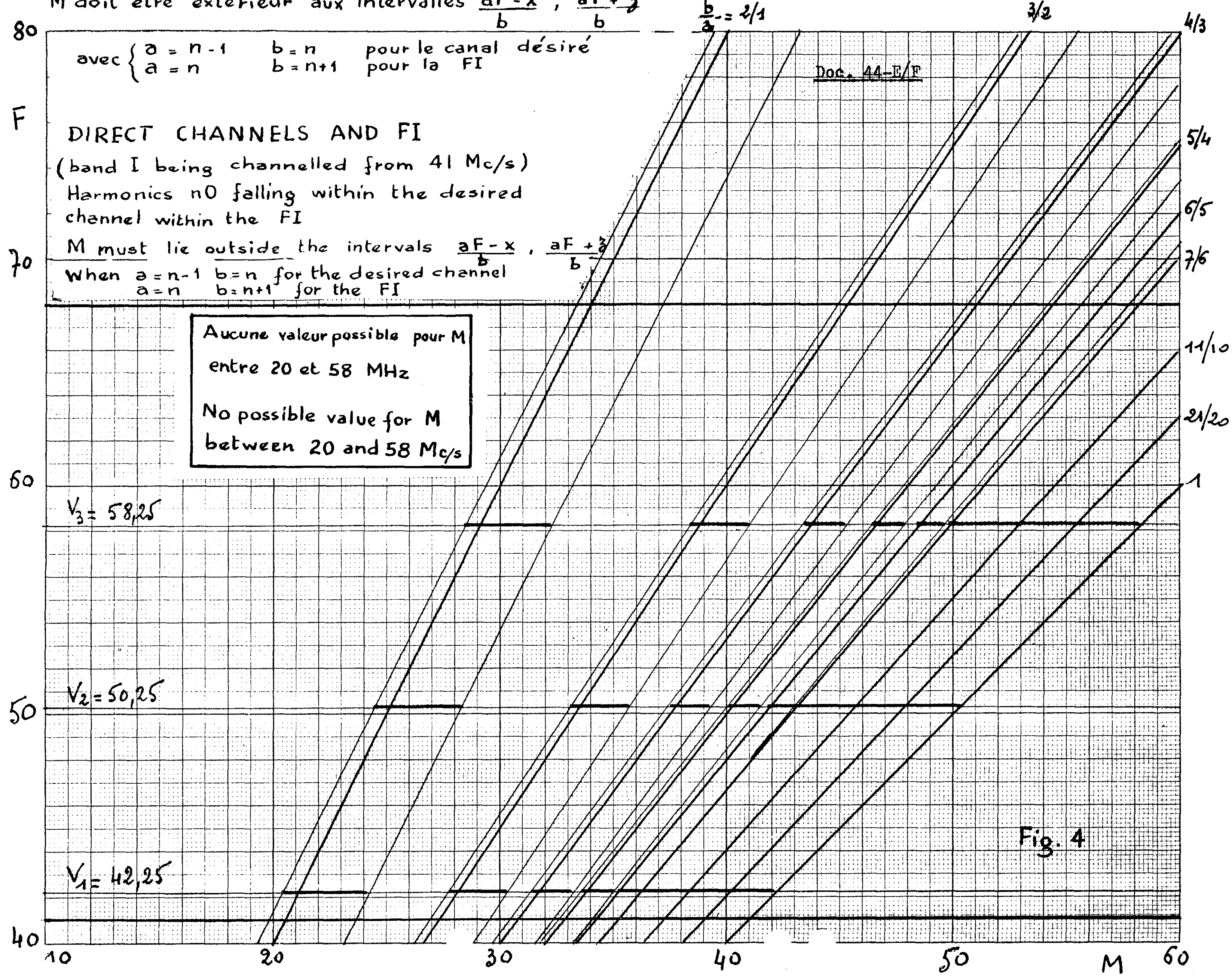
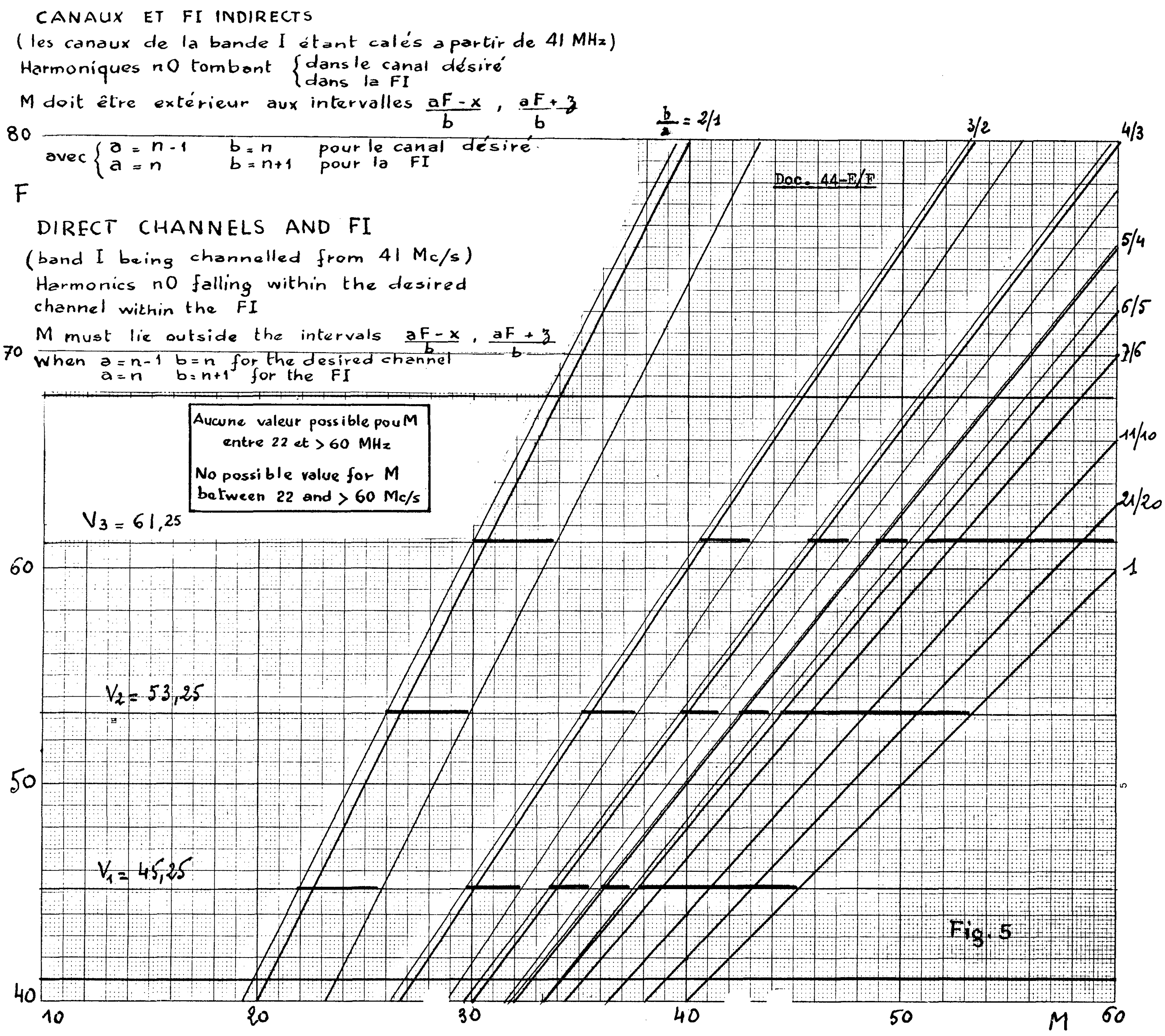


Fig. 4



CANAUX ET FI INDIRECTS
(les canaux de la bande I étant calés à partir de 41 MHz)
Harmoniques nO tombant {dans le canal désiré
dans la FI
M doit être extérieur aux intervalles $\frac{aF-x}{b}$, $\frac{aF+z}{b}$
avec {a = n-1 b = n pour le canal désiré
a = n b = n+1 pour la FI
DIRECT CHANNELS AND FI
(band I being channelled from 41 Mc/s)
Harmonics nO falling within the desired
channel within the FI
M must lie outside the intervals $\frac{aF-x}{b}$, $\frac{aF+z}{b}$
When a = n-1 b = n for the desired channel
a = n b = n+1 for the FI
Aucune valeur possible pou M entre 22 et > 60 MHz
No possible value for M between 22 and > 60 Mc/s
Doc. 44-E/F
V_3 = 61,25
V_2 = 53,25
V_1 = 45,25
$\frac{b}{a}$ = 2/1
3/2
4/3
5/4
6/5
7/6
11/10
21/20
1
F
80
70
60
50
40
M
10
20
30
40
50
60

Fig. 5

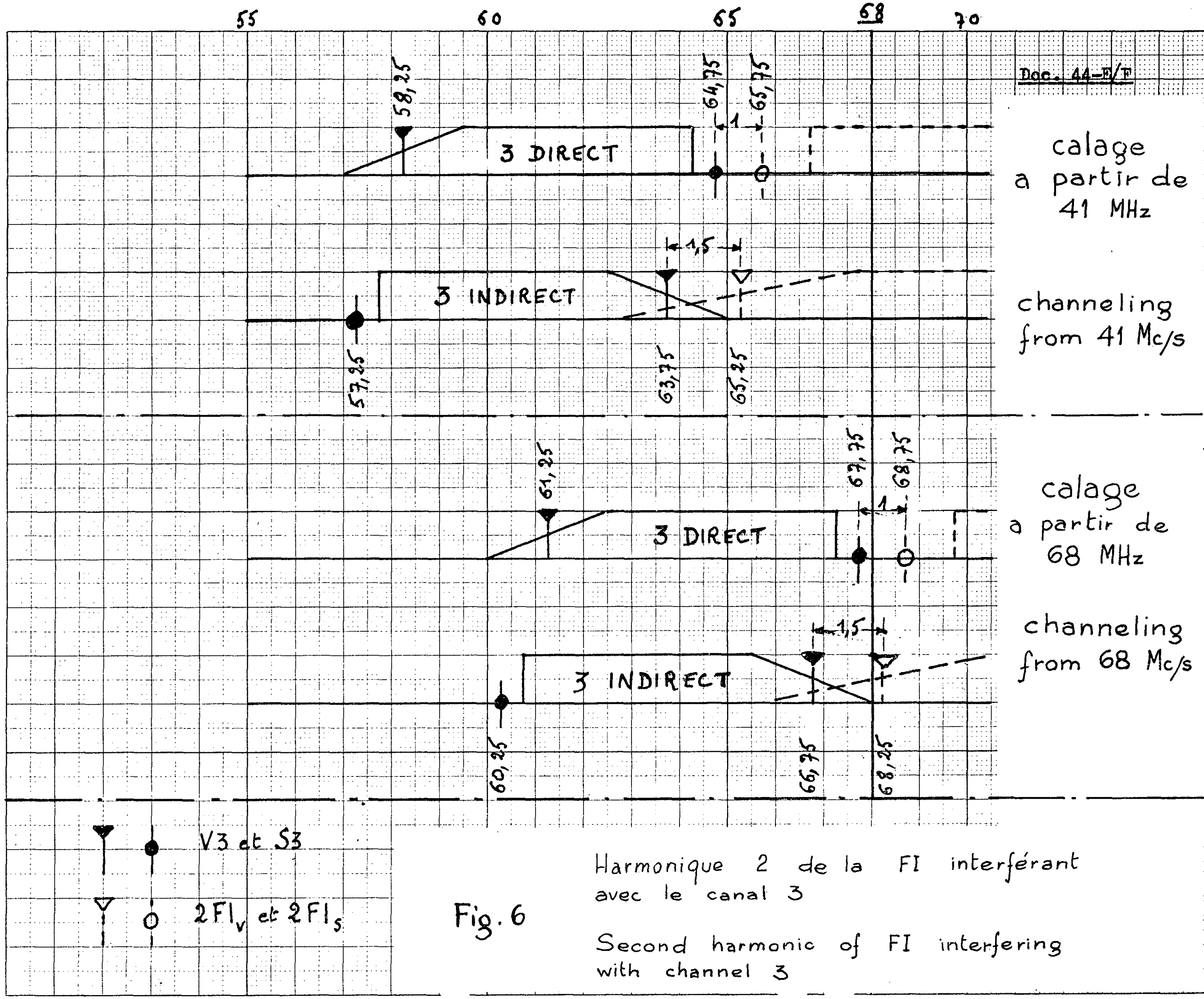


Fig. 6

Harmonique 2 de la FI interférant avec le canal 3

Second harmonic of FI interfering with channel 3

Doc. 44-E/F

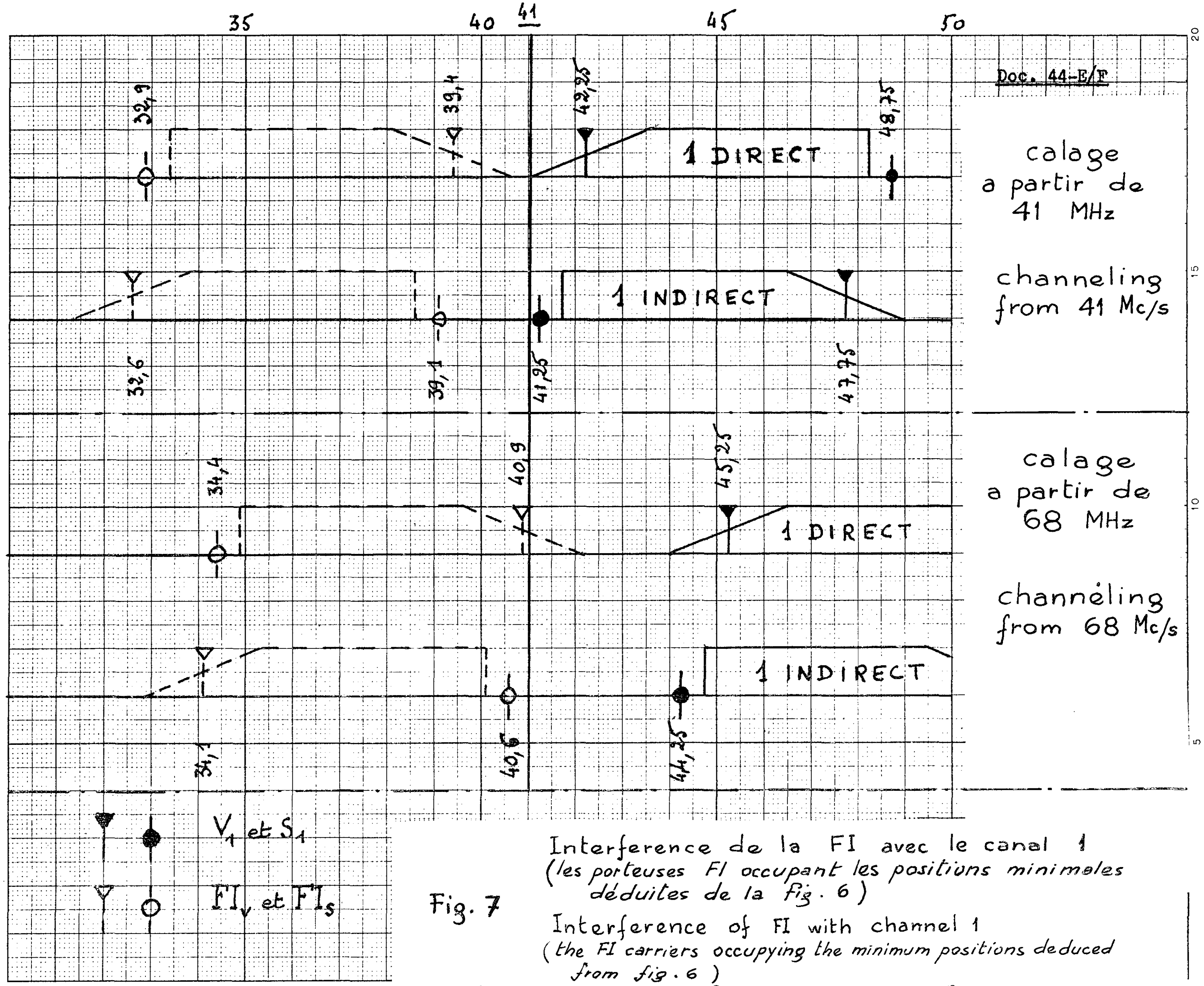


Fig. 7

Interference de la FI avec le canal 1
(les porteuses FI occupant les positions minimales déduites de la fig. 6)

Interference of FI with channel 1
(the FI carriers occupying the minimum positions deduced from fig. 6)

Doc. 44 E/F

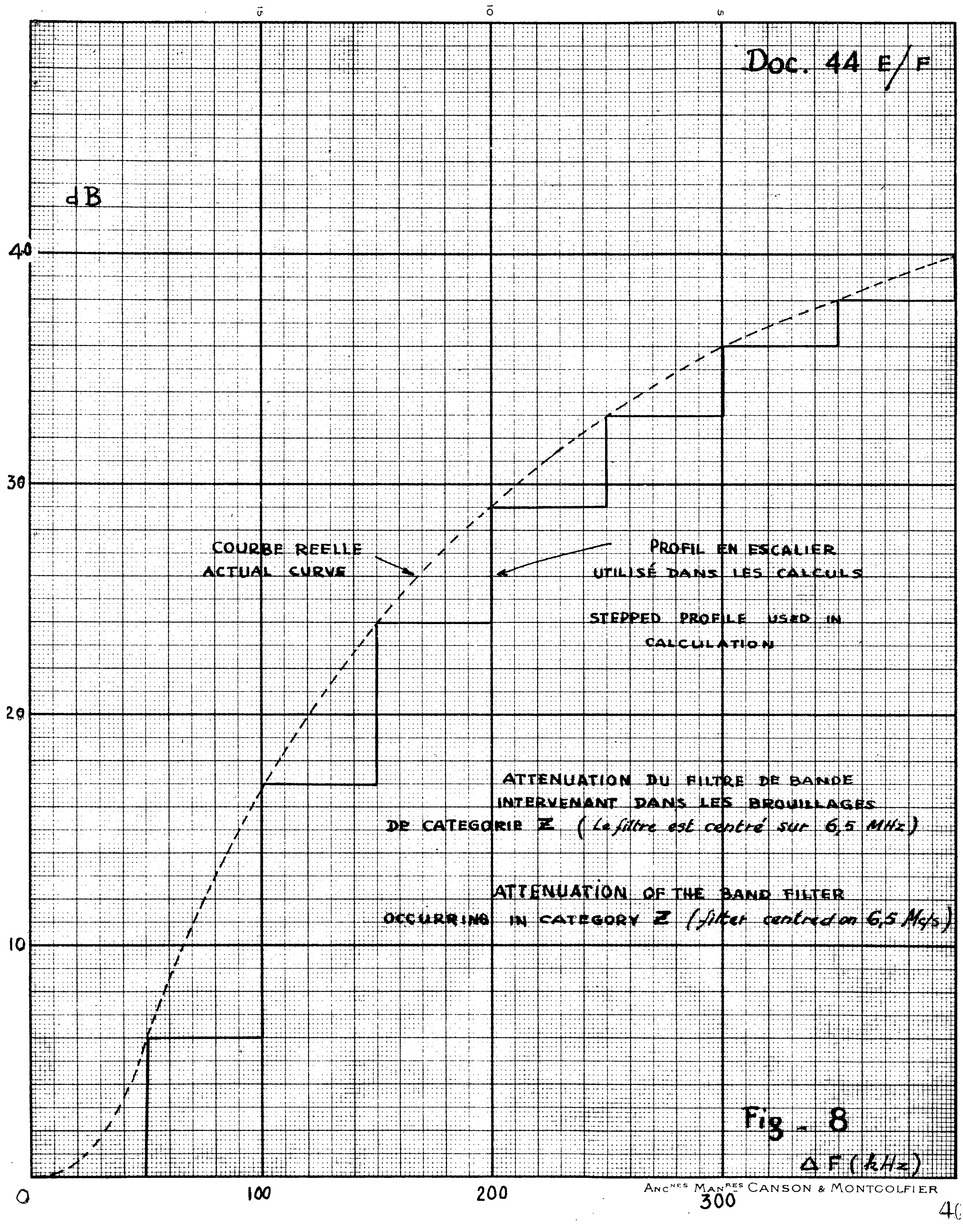


Fig. 8

Doc. 44 E/F

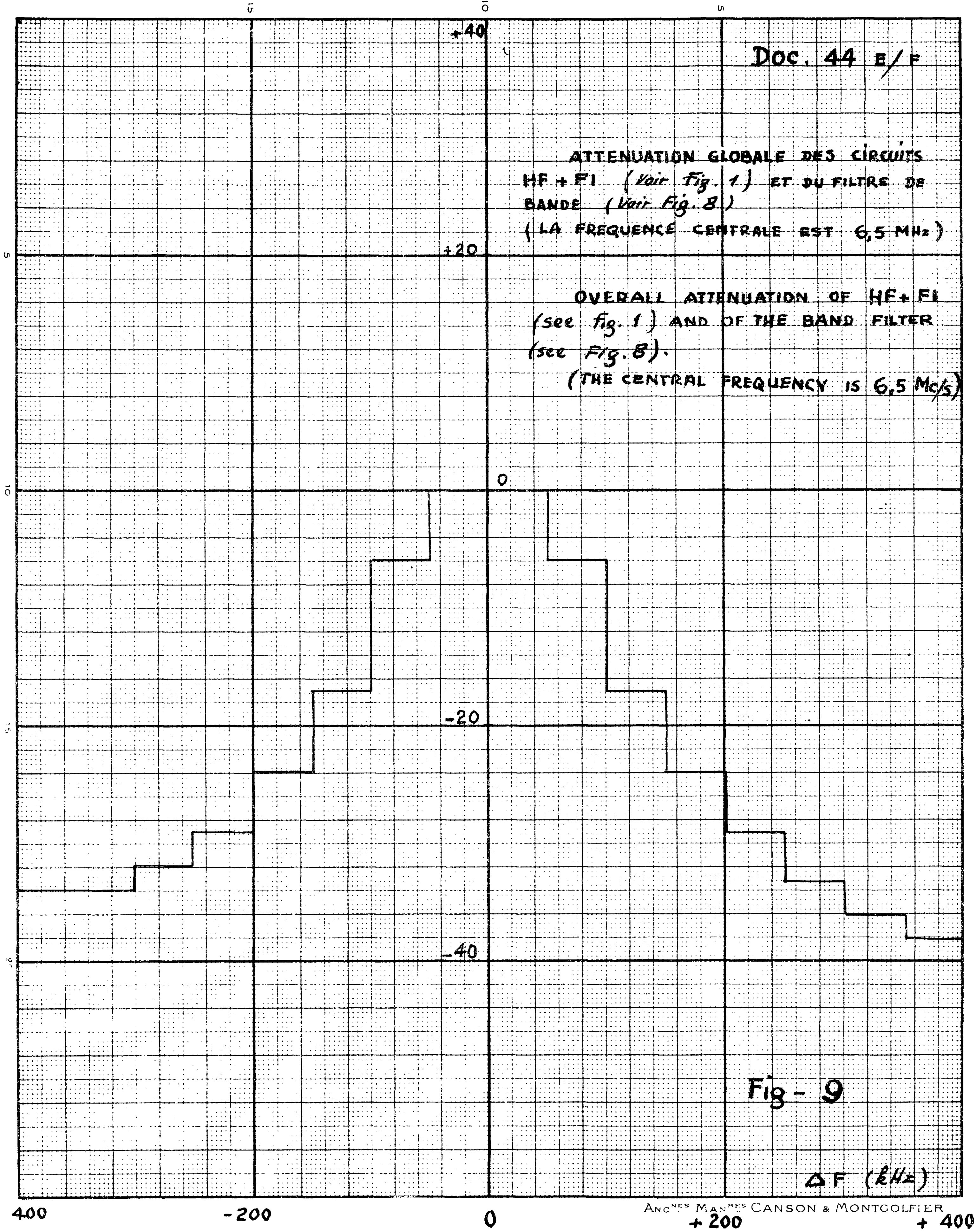


Fig - 9

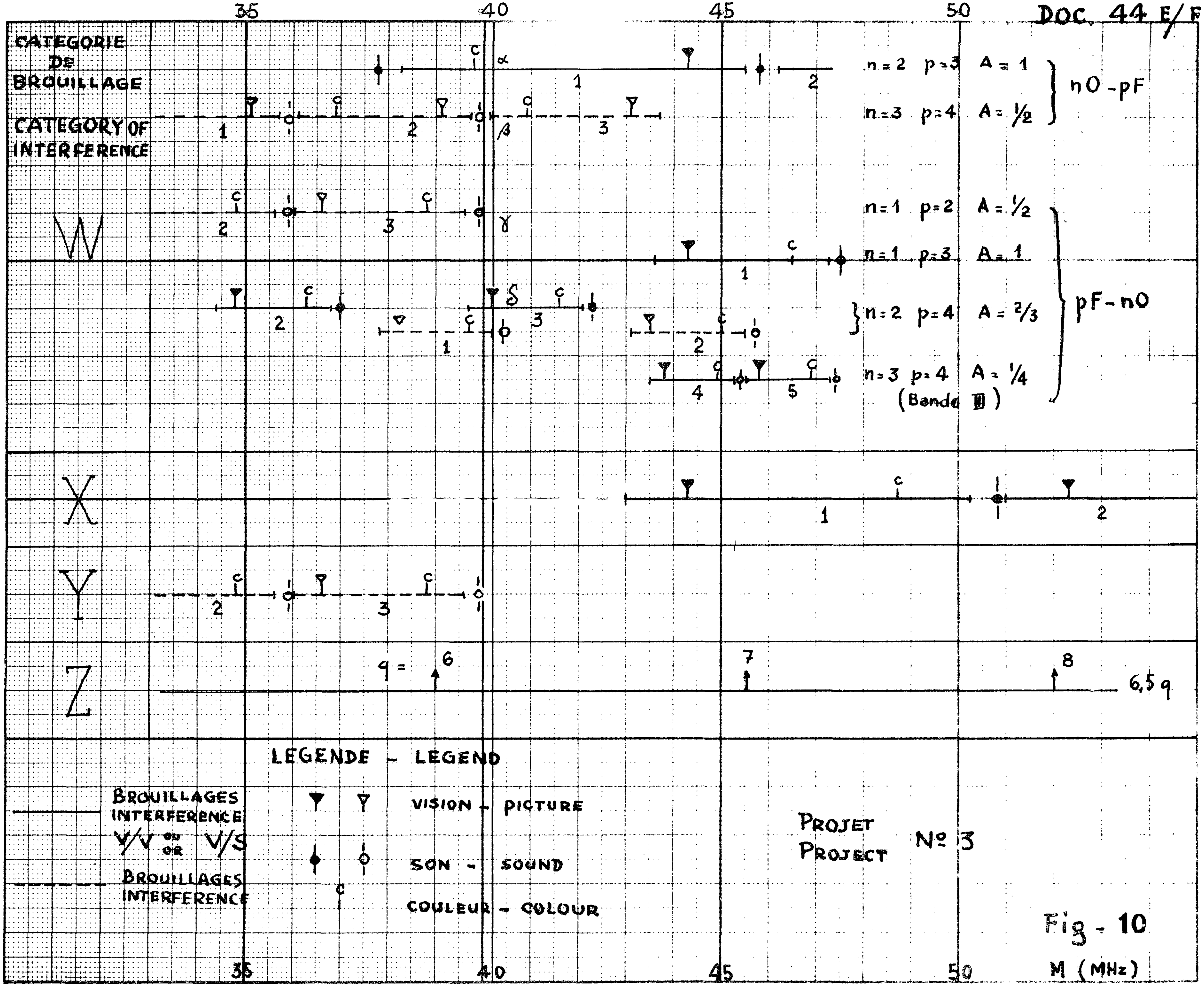

CATEGORIE DE BROUILLAGE
CATEGORY OF INTERFERENCE
35
40
45
50
n = 2 p = 3 A = 1
n = 3 p = 4 A = 1/2
n0 - pF
n = 1 p = 2 A = 1/2
n = 1 p = 3 A = 1
n = 2 p = 4 A = 2/3
n = 3 p = 4 A = 1/4
(Bande III)
pF - n0
W
X
Y
Z
q =
6
7
8
6,5 q
LEGENDE - LEGEND
BROUILLAGES INTERFERENCE V/V ou or V/S
BROUILLAGES INTERFERENCE
VISION - PICTURE
SON - SOUND
COULEUR - COLOUR
PROJET PROJECT No 3
M (MHz)

Fig - 10

PROJET N° 3

Fig. 11

Canaux - Channels :	1	2	3
Fréq.vision - Vision freq. :	44,25	52,25	60,25
Fréq. son - Sound freq. :	50,75	58,75	66,75

CALCUL DE LA NOCIVITE DES BROUILLAGES AVEC M=40,2 MHz (M_s=33,7) - CALCULATION OF THE HARMFULNESS OF INTERFERENCE WITH M=40.2 Mc/s (M_s=33.7)

I. Brouillages de la catégorie W - Category W interference

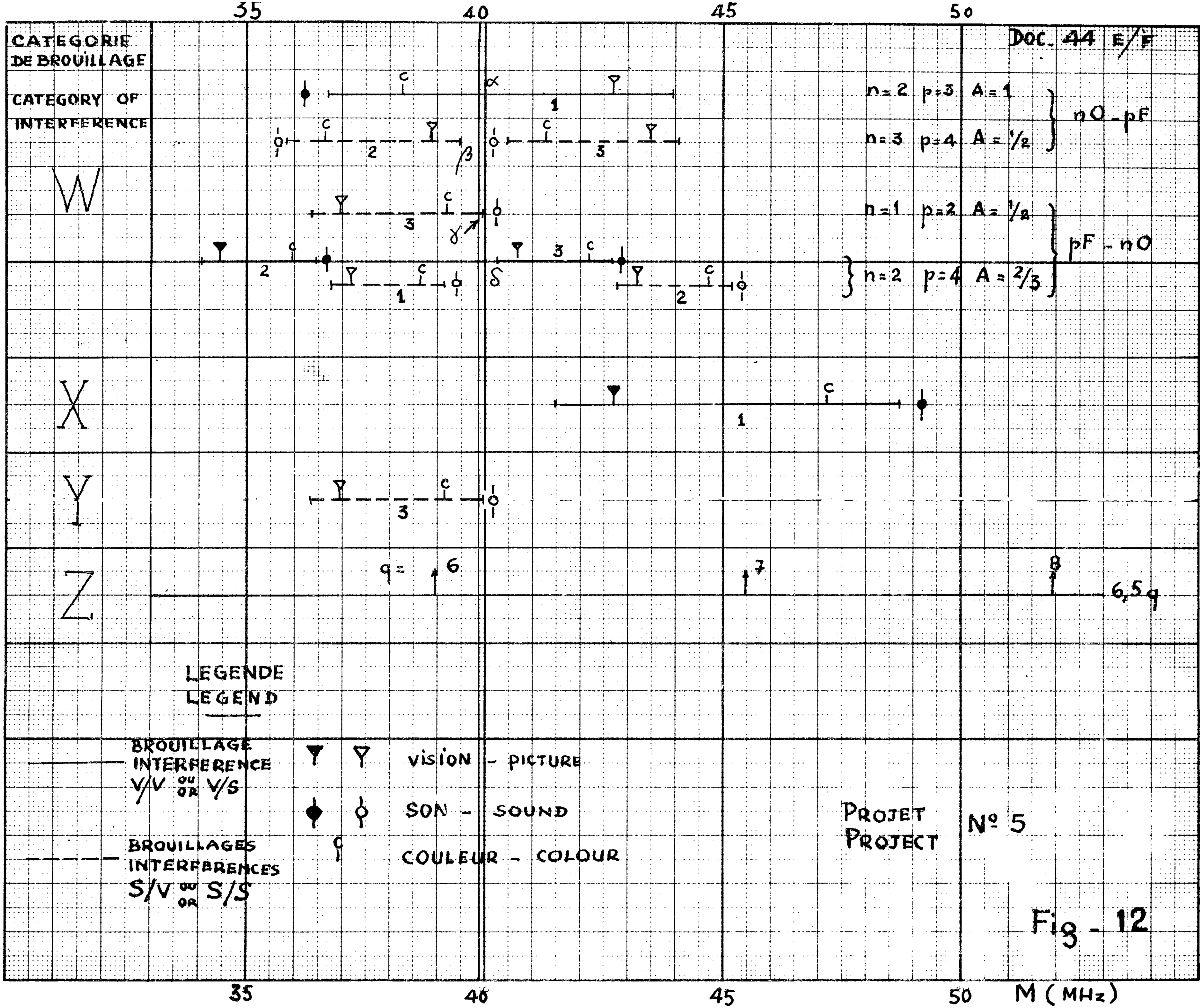
Cas Case	n	p	Type	Canal	Vision	Son Sound	Oscill. Oscillator	n0	pF	Diff.	Δ			Rapp.niveaux / Rapp.ratio brouillé/brouilleur interfered/interfering				Rapp.protection requis - Required protection ratio		Nocivité Harmfulness	Observations Remarks
											Min.	Nomin.	Max.	Initial	Harm.	Circuits	Total	Valeur	Réf. Stockholm		
α	2	3	V/V	1	44,25	-	84,45	168,90	132,75	36,15	+3,65	+4,05	+4,45	0	+50	- 6	+44	+45	29K3	+ 1	Nocivité notable Considerable harmfulness
β_1	3	4	S/V	3		66,75	100,45	301,35	267,00	34,35	+5,25	+5,85	+6,45	+7	+80	- 5	+82	+44	29K3	-38	
β_2	"	"	S/S	"		"	"	"	"	"	-0,05	-0,65	-1,25	0	+80	+ 6	+86	+25	19	-61	
γ	1	2	S/S	"	-	"	"	100,45	133,50	33,05	+0,45	+0,65	+0,85	0	+20	+40	+60	<-20	19	<-80	
δ_1	2	4	V/V	"	60,25	-	"	200,90	241,00	40,10	-0,30	+0,10	+0,50	0	+70	- 3	+67	+47	23a4	-20	
δ_2	"	"	S/V	1		50,75	84,45	168,90	203,00	34,10	+5,70	+6,10	+6,50	+7	+70	- 2	+75	+40	29K3	-35	
δ_3	"	"	S/S	"		"	"	"	"	"	0	-0,40	-0,80	0	+70	0	+70	+36	19	-34	

II. Brouillages de la catégorie X - Category X interference

III. Brouillages de la catégorie Y - Category Y interference

IV. Brouillages de la catégorie Z - Category Z interference

	Min.	Nomin.	Max.	Initial	Harm.	Circuits	Total	Valeur	Réf. Stockholm	Nocivité Harmfulness	Observations Remarks
II. Interférence entre / between F_{v1}= 44,25 et / and Fl_v= 40,20 donc / hence V/V	-3,85	-4,05	-4,25	0	0	> +30	> +30	< 0	23a4	<-30	
III. Interférence entre / between F_{s3}= 66,75 et / and $2Fl_s$= 67,40 donc / hence S/S	+0,25	+0,65	+1,05	[illegible]	+20	+33	+53	+ 2	19	-51	
IV. 1) Interférence entre 6 x 6,5 = 39, modulée en amplitude par la vision et Fl_v= 40,20, donc V/V Interference between 6 x 6.5= 39, amplituded modulated by the vision and Fl_v= 40.20, hence V/V	+1,00	+1,20	+1,40	0	+100*	- 6*	+94*	+47	23a4	-47	* Valeurs indicatives Etude en cours * For information Under study
IV. 2) Interférence entre 6 x 6,5 = 39, modulée en fréquence par le son et Fl_v = 40,20, donc S/V Interference between 6 x 6.5 = 39, frequences modulated by the sound and Fl_v = 40.20, hence S/V	"	"	"	+7	"	"	+101*	+50	29K3	-51	* d°



PROJET PROJECT Nº 5

Fig - 12

Canaux - Channels : 1 2 3
Fréq.vision - Vision freq. : 42,75 51,75 61,00
Son - Sound : 49,25 58,25 67,50

CALCUL DE LA NOCIVITE DES BROUILLAGES AVEC M=39,90 (M_S=33,40) - CALCULATION OF THE HARMFULNESS OF INTERFERENCE WITH M=39,90 (M_S=33,40)

I. Brouillages de la catégorie W - Category W interference

Cas / Case	n	p	Type	Canal	Vision	Son / Sound	Oscill. / Oscillator	nO	pF	Diff.	Δ Min.	Δ Nomin.	Δ Max.	Rapp.niveaux (brouillé / brouilleur) Rapp.ratio (interfered / interfering) Initial	Harm.	Circuits	Total	Rapp.protection requis-Required protection ratio Valeur	Ref. Stockholm	Nocivité Harmfulness	Observations Remarks
α	2	3	V/V	1	42,75		82,65	165,30	128,25	37,05	+2,45	+2,85	+3,25	0	+50	- 6	+44	+37	29K3	- 7	
β	3	4	S/S	3		67,50	100,90	302,70	270,00	32,70	+0,10	+0,70	+1,30	0	+80	+ 17	+97	+13	19	- 84	
γ_1	1	2	S/S	"		"	"	100,90	135,00	34,10	-0,50	-0,70	-0,90	0	+20	+ 36	+56	< -20	19	< -76	
γ_2	"	"	S/V	"		"	"	"	"	"	+5,60	+5,80	+6,00	+7	+20	- 3	+24	+42	29K3	+ 18	nocivité importante considerable harmfulness
δ_1	2	4	V/V	"	61,00		"	201,80	244,00	42,20	-1,90	-2,30	-2,70	0	+70	+ 18	+88	+18	23a4	- 70	
δ_2	"	"	S/S	1		49,25	82,65	165,30	197,00	31,70	+1,30	+1,70	+2,10	0	+70	>+ 70	>140	< -20	19	< -160	

II. Brouillages de la catégorie X - Category X interference

	Δ Min.	Δ Nomin.	Δ Max.	Initial	Harm.	Circuits	Total	Valeur	Ref. Stockholm	Nocivité	Observations
Interférence entre / between F_{V1} = 42,75 et / and FI_V = 39,90 V/V	-2,65	-2,85	-3,05	0	0	+ 27	+27	+ 5	23a4	- 22	

III. Brouillages de la catégorie Y - Category Y interference

	Δ Min.	Δ Nomin.	Δ Max.	Initial	Harm.	Circuits	Total	Valeur	Ref. Stockholm	Nocivité	Observations
1) Interférence entre / between F_{S3}=67,50 et / and 2 FI_S=66,80 donc / hence S/S	-0,30	-0,70	-1,10	0	+20	+ 34	+54	- 7	19	- 61	
2) Interférence entre / between F_{V3}=61,00 et / and 2 FI_S=66,80 donc / hence S/V		+5,80									voir / see γ_2 au § I

IV. Brouillages de la catégorie Z - Category Z interference

	Δ Min.	Δ Nomin.	Δ Max.	Initial	Harm.	Circuits	Total	Valeur	Ref. Stockholm	Nocivité	Observations
1) Interférence entre 6 x 6,5 =39, modulée en amplitude par la vision et FI_V=39,90 donc V/V Interference between 6 x 6.5=39, amplitude modulated by the vision and FI_V=39.90, hence V/V	+0,70	+0,90	+1,10	0	+100*	-5*	+95*	+47	23a4	-48*	*) Valeurs indicatives Etudes en cours For information Under study
2) Interférence entre 6 x 6,5 =39 modulée en fréquence par le son et FI_V=39,90 donc S/V Interference between 6 x 6,5 =39, frequences modulated by the sound and FI_V=39.90, hence S/V	"	"	"	+7	"	"	+102*	+50	29K3	-52*	*) d°

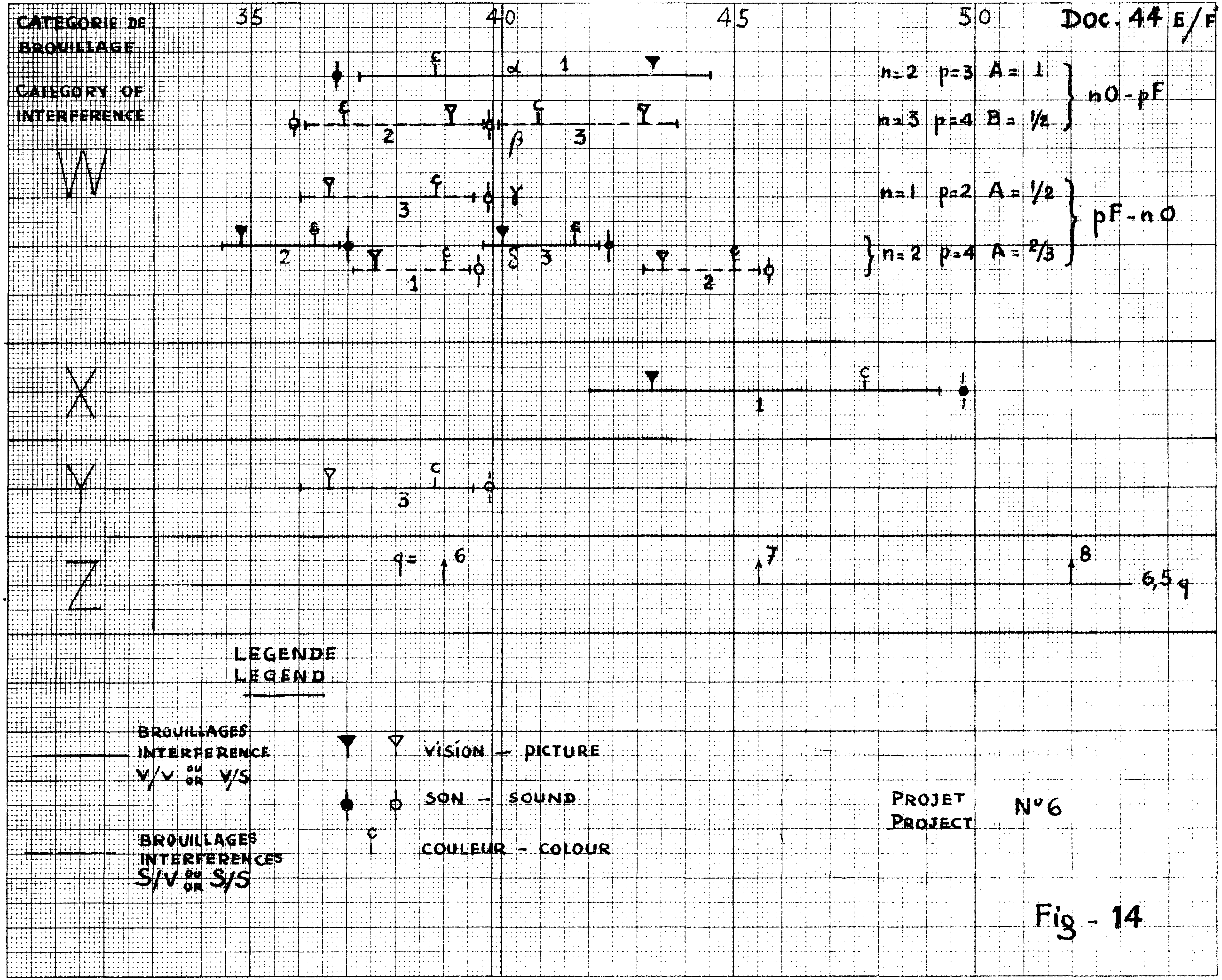

CATEGORIE DE BROUILLAGE
CATEGORY OF INTERFERENCE
35
40
45
50
W
X
Y
Z
n=2 p=3 A= 1
n=3 p=4 B= 1/2
nO-pF
n=1 p=2 A= 1/2
n=2 p=4 A= 2/3
pF-nO
q= 6
7
8
6,5 q
LEGENDE
LEGEND
BROUILLAGES INTERFERENCE V/V ou or V/S
BROUILLAGES INTERFERENCES S/V ou or S/S
VISION - PICTURE
SON - SOUND
COULEUR - COLOUR
PROJET PROJECT
N°6

Fig - 14

Canaux - Channels : 1 2 3
Fréq.vision - Vision freq. : 43,25 52,25 60,25
Son - Sound : 49,75 58,75 66,75

CALCUL DE LA NOCIVITE DES BROUILLAGES AVEC M=40,20 (M_S=33,70) - CALCULATION OF THE HARMFULNESS OF INTERFERENCE WITH M=40,20 (M_S=33,70)

I. Brouillages de la catégorie W - Category W interference

Cas Case	n	p	Type	Canal	Vision	Son Sound	Oscill. Oscil-later	n0	pF	Diff.	Δ			Rapp.niveaux brouillé/brouilleur Rapp.ratio interfered/interfering		Rapp.protection requis-Required protection ratio				Nocivité Harmful-ness	Observations Remarks
											Min.	Nomin.	Max.	Initial	Harm.	Circuits	Total	Valeur	Ref. Stockholm		
α	2	3	V/V	1	43,25		83,45	166,90	129,75	37,15	+2,65	+3,05	+3,45	0	+50	- 6	+44	+40	29K3	- 4	
β 1	3	4	S/V	3		66,75	100,45	301,35	267,00	34,35	+5,25	+5,85	+6,45	+7	+80	- 5	+82	+44	29K3	-38	
β 2	"	"	S/S	"		"	"	"	"	"	-0,05	-0,65	+1,25	0	+80	+ 6	+86	+25	19	-61	
γ 1	1	2	S/S	"		"	"	100,45	133,50	33,05	+0,45	+0,65	+0,85	0	+20	+ 40	+60	< -20	19	-80	
γ 2	"	"	S/V	"		"	"	"	"	"	+6,95	+7,15	+7,35	+7	+20	+ 23	+50	< 0	29K3	< -50	
δ 1	2	4	V/V	"	60,25		"	200,90	241,00	40,10	-0,30	+0,10	+0,50	0	+70	- 2	+68	+47	23a4	-21	
δ 2	"	"	S/V	1		49,75	83,45	166,90	199,00	32,10	+7,80	+8,10	+8,50	+7	+70	> + 60	> +137	< 0	29K3	< -137	
δ 3	"	"	S/S	"		"	"	"	"	"	+1,20	+1,60	+2,00	0	+70	> + 40	> +110	≤ -20	19	< -130	

II. Brouillages de la catégorie X - Category X interference

Interférence entre/between F_{V1} = 43,25 et/and Fl_V = 40,20 donc/hence V/V -2,85 -3,05 -3,25 0 0 + 28 +28 0 23a4 -28

III. Brouillages de la catégorie Y - Category Y interference

Voir les brouillages γ_1 et γ_2 - See interference γ_1 and γ_2

IV. Brouillages de la catégorie Z - Category Z interference

1) Interférence entre 6 x 6,5 = 39, modulée en amplitude par la vision et Fl_V = 40,20 donc V/V
Interference between 6 x 6.5 = 39, amplitude modulated by the vision and Fl_V = 40,20 hence V/V

2) Interférence entre 6 x 6,5 = 39, modulée en fréquence par le son et Fl_V = 40,20 donc V/S
Interference between 6 x 6.5 = 39, fréquences modulated by the sound and Fl_V = 40,20 hence V/V

}

Se reporter au projet N° 3 (Fig. 11) - Refer to draft No. 3 (Fig. 11)

INTERNATIONAL TELECOMMUNICATION UNION

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AFRICAN VHF / UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 45-E
6 May 1963
Original : English

COMMITTEE 5

CONTRIBUTION FROM LIBERIA

Subject : I.F.R.B. Circular No. 20/028929

I. The Liberian Administration proposes to accept for planning purposes the 625 lines standard with parameters that have been unanimously agreed upon. Moreover, as it is advantageous to consider the line frequency of electrical energy in the choice of a television system, the Delegation of Liberia, on behalf of its Government reserves the right to adopt the 525 lines system with the following parameters :

1. the aural center frequency shall be 4.5 Mc/s higher than the visual carrier frequency;

2. the video bandwidth shall be 4.2 Mc/s;

3. the frequency of any colour sub-carrier shall be the video carrier frequency plus 3.58 megacycles per second;

4. the video to sound power ratio shall be 4 to 1.

II. Maximum ERP of vision carrier - Band III

Site	ERP (kW)
Monrovia	200
Greenville	200
Harper	200
Gbarnga	200
Robertsport	100
Buchanan	100
Voinjama	100
Sannaquella	100
Tchien	100

INTERNATIONAL TELECOMMUNICATION UNION

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AFRICAN VHF / UHF
BROADCASTING CONFERENCE

GENEVA, 1963

Addendum to Document No. 46-E
7 May 1963
Original : French

COMMUNICATION FROM THE CHAIRMAN OF THE CONFERENCE

With reference to No. 539 of the General Regulations annexed to the Convention, the delegation of the Republic of the Chad, compelled for urgent reasons to return to its country, gives a mandate to the delegation of the Gabon Republic to vote on behalf of the Republic of the Chad on technical and planning questions.

This mandate does not include the signing of any acts which may be adopted by the Conference.

ALPHA DIALLO
Chairman of the Conference

E

AFRICAN VHF / UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 46-E
7 May 1963
Original: French

A COMMUNICATION FROM THE CHAIRMAN OF THE CONFERENCE

Under No. 539 of the General Regulations annexed to the Convention, the following communications have reached me:

1. Communication dated 3 May, 1963, from the Delegation of the United Kingdom of Libya

This delegation, obliged for most urgent reasons to return home, has given proxy voting rights to the Delegation of the United Arab Republic.

2. Communication dated 3 May, 1963, from the Delegation of the Republic of Somaliland

This delegation is also obliged to leave because of other obligations. It authorizes the Italian Delegation to vote in its stead in all matters concerned with technical questions and planning. The Somali Delegation may just possibly be back for the signature of the Final Acts, so that the above authorization does not extend to such signature.

3. Communication dated 6 May, 1963, by the Delegation of the Group of Territories represented by the French Overseas Posts and Telecommunication Agency

This delegation will be away for a few days. In the meantime, the French Delegation is authorized to act in its stead.

ALPHA DIALLO
Chairman of the Conference

INTERNATIONAL TELECOMMUNICATION UNION

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AFRICAN VHF / UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 47-E
9 May 1963
Original : English

COMMITTEE 4

PROVISIONAL SUMMARY RECORD

OF THE 5TH MEETING OF COMMITTEE 4

Monday, 6 May 1963, at 11.00 a.m.

Chairman : Mr. Abdel-LATIF AHMED (United Arab Republic)

Vice-Chairman : Mr. N'DIAYE (Republic of Mali)

Subjects discussed :

1. Approval of the Summary Records of the 1st, 2nd, 3rd and 4th meetings (Documents Nos. 27 revised, 34 revised, 37 and 38).

2. Approval of the Report of the Chairman of Working Group 4A (Document No. DT 3).

3. Approval of the Report of the Chairman of Working Group 4B (Document No. DT 6).

4. Final Report of Committee 4 (Document No. 42).

5. Draft Recommendation adopted by the Technical Committee (Document No. 41).

6. Explanation of methods of planning.

7. Other business

   a) Withdrawal of documents;

   b) closing of Committee 4.

1. Approval of the Summary Records of the 1st, 2nd, 3rd and 4th meetings (Documents Nos. 27 revised, 34 revised, 37 and 38)

Summary Record of 1st Meeting (Document No. 27 (rev.))

Approved with an amendment by Mr. Hayes, Adviser to the Director of the C.C.I.R. in the last paragraph on page 2, 3rd line, the figures should read "5 Mc/s and 6 Mc/s" respectively.

Summary Record of 2nd Meeting (Document No. 34 (rev.))

Mr. Gabriel Tedros (Ethiopia) referred to page 3 of the document, and was of the opinion that this proposal was of a certain importance and that a decision should not be taken at that particular meeting.

Mr. Miles (Rhodesia-Nyasaland) referred to the last paragraph on page 4 and corrected the figure to read "17,000" instead of "1,700".

With these amendments, document 34 revised was approved.

Summary Record of 3rd Meeting (Document No. 37)

Approved without comment.

Summary Record of 4th Meeting (Document No. 38)

Approved without comment.

2. Approval of the Report of the Chairman of Working Group 4A (Document No. DT 3)

Mr. Gabriel Tedros (Ethiopia) pointed out that the final document which would be issued in the name of Committee 4 should mention in the list shwon on page 1 "I.B.T.O." after "I.F.R.B.".

Agreed.

He further stated that Ethiopia would follow the practice of the majority of countries and have a pre-emphasis constant of 50 microseconds; in consequence, the statement that no decision had yet been taken by Ethiopia could be deleted on page 3.

Following a query by Mr. Foalem-Fotso (Republic of Cameroon), the third paragraph of para. 2, on page 2 was amended to read "that this comparative table".

With these amendments, the document was approved.

3. Approval of the Report on the Chairman of Working Group 4B (Document No. DT 6)

Approved, it being understood, following a statement by the representative of the Portuguese Overseas Provinces, that his countries plan had also been established on a lattice based on a separation of 86 kc/s.

4. Final Report of Committee 4 (Document No. 42)

The Chairman proposed that document No. 39 (Contribution from the I.B.T.O.) be added to the list of documents under section (TV standards) on page 3 of document No. 43.

Mr. Gabriel Tedros (Ethiopia) wondered if document No. 39 was applicable as it gave details of the K system, whereas Africa was only interested in the K* system.

Mr. Ivanov (I.B.T.O.) pointed out that the document had been contributed at the request of the Chairman of Committee 4 and was based on the system used in the I.B.T.O. countries, which already possessed important TV networks consisting of many hundreds of TV stations and millions of receivers. System K* was an improvement on system K and modification of the K system was under study but, due to this wide use, no final decision had yet been taken.

Mr. Foalem-Fotso (Cameroon) did not think that either the I.B.T.O. document or those presented by the UAR and the Upper Volta should be included in the section, as they did not represent results obtained by Sub-Working Group 4A1.

Mr. Diallo (Republic of Guinea) supported the proposal made by the Chairman to include a mention of the I.B.T.O. document, as he considered it a very useful reference.

After some discussion, and following a proposal by Mr. Lalung-Bonnaire (Republic of Rwanda), it was agreed to add the following wording after paragraph d): "and the following documents can be referred to:"; the documents listed thereafter to be renumbered a), b) and c), the last-named being document No. 39 submitted by the I.B.T.O.

With these amendments, document No. 42 was approved.

5. Draft Recommendation adopted by the Technical Committee (Document No. 41)

Approved, with a correction in the penultimate line: the word "used" to read "users".

6. Explanation of methods of planning

The Chairman gave the floor to Mr. Krassnoselski, Member of the I.F.R.B., a specialist in television planning, who started by assuming that the introduction of theoretical lattices was the method which had been adopted by the Conference and continued by explaining how these lattices should be used in the course of planning.

In bands IV and V, it was proposed to use lattices containing linear distribution of 61 TV channels available in those bands. This would permit the countries concerned to have multi-programme television - i.e. several transmitters on the same transmitting site - with three or six channels as desired.

Bands I and III were somewhat more complicated as only nine or ten channels were available and it was quite difficult to assure a linear distribution for all nine channels for the K* system, due to the fact that these channels were situated in completely different bands, with a very wide frequency separation. For this reason, Sub Working Group 4B3 had not been able to propose a universal lattice for these bands but had prepared two separate theoretical lattices, in order to distribute six TV channels.

For band I, he proposed that the conventional method, which had been used at the Stockholm Conference, should be applied, namely, that when distributing the three channels in this band, Administrations should take into account the minimum separating distance between transmitters working in the same channel or in adjacent channels. The Group which had been working on these lattices had been instructed by the Chairman to prepare tables of limiting distances, where such factors as transmission power, antennae heights, and propagation conditions in the various regions of Africa were taken into consideration. These factors should provide delegates with some technical means for the co-ordination and allocation of the three TV channels in band I.

This table would serve only as a first approach to the problem to indicate where it would prove necessary to have discussions with neighbouring countries on the risk of probable interference. Where the distance between two transmitters is greater than that shown on the table, complete freedom would exist to place TV transmitters where desired, without any prior consultation. Where distances were less than those indicated in the table, negotiations would be needed to ascertain how best the risk of interference could be overcome; possibly by reducing power, by lowering the antenna height or by the introduction of offset, which should be done simultaneously for the whole area concerned.

Detailed information on power, antenna height etc. should be supplied when requirements are notified to the I.F.R.B. and the Board would then use the electronic computer to verify this data and to provide additional information as to where interference could be expected.

For bands III, IV and V the Working Group proposed the use of theoretical lattices in order to reach an ideal distribution of TV channels with the aim of reducing harmful interference between co-channel or adjacent channel stations and other types of interference such as second-channel and local-oscillator.

The first stage of operation would be similar for all methods; it would be the task of the delegates to transfer their requirements from paper to the maps, marking the site of proposed television stations.

These maps should be marked out separately for bands I, III, and bands IV/V.

Mr. Krasnosselski then proceeded to demonstrate on the blackboard how tracing paper, showing the theoretical distribution, would be applied to the marked maps. He stressed that the theoretical lattices were not rigid and enabled the shifting or combining of channels, at the same time preserving linear distribution. As each delegate was personally well acquainted with the geography of his own region, it should not be difficult for him to apply this proposed working matter.

Mr. Gressmann (E.B.U.) demonstrated on the blackboard how the theoretical lattices used for television (consisting of rhombi) could also be used to determine the offset conditions of transmitters operating in the same channel; in actual planning it should not be forgotten that certain common-channel transmitters may operate on non-offset frequencies and that in this case a protection ratio of 45 db (instead of 30 db for 2/3 lines-frequency offset) was required.

For frequency-modulation it was not essential to use a lattice based on rhombi; the channel distribution should be such that the geometrical distance between transmitter sites increases with decreasing frequency-separation. It was therefore possible for Working Group 4B2, which was preparing the theoretical network, to agree upon a presentation differing from that for bands I and III. Apart from this point, the principles to be applied for the actual planning were the same as those explained by Mr. Krasnosselski.

In reply to a question by the Chairman, Mr. Krasnosselski explained that the lattices for Band III had originally been prepared on the basis of 7 channels, but could be applied to 6.

Mr. Jean-Louis (Upper Volta) enquired whether there was any relation between the lattices for bands IV/V and for frequency-modulation.

Mr. Gressmann stated that there was no relation between the lattices for bands II, IV/V or III because FM transmitters operating on the same frequency had to be spaced much farther apart than was the case for television in the same channel.

7. Other business

a) Withdrawal of documents :

Mr. Gressmann (E.B.U.) requested that the records clearly indicate that both document 23 and document DT 1 had been withdrawn and were no longer valid.

Mr. Lalung-Bonnaire (Rwanda) confirmed that both these documents had been replaced by document DT 3 which was the final report of Working Group 4A.

b) Closing of Committee 4

The Chairman wished to thank the Chairman of the Conference and his Vice-Chairman, the Vice-Chairman of Committee 4, the Chairman, Vice-Chairman and Members of the I.F.R.B., the Secretary-General, the Deputy Secretary-General, the Adviser to the Director of the C.C.I.R., all the Chairmen of the Working Groups and Sub-Groups, the representatives of the E.B.U. and the I.B.T.O., the Secretary of the Conference and the Secretariat for all their help in his task.

Mr. Gabriel Tedros (Ethiopia) wished to express his appreciation and that of the other members of the Committee to Mr. Abdel-Latif Ahmed for having accepted the chairmanship of Committee 4.

Mr. Ahmed was a representative of a large African territory with a well developed TV system, and the results of the Committee's work would mean quite a lot to his own Administration. Therefore it was probable that Mr. Ahmed would have preferred to have taken an active part in the work of the Committee as an ordinary delegate rather than as the chairman. He would congratulate him on having been such an unbiased Chairman and for having completed the work of the Committee in so few meetings

Mr. Kunz, Secretary of the Conference, recalled that, in accordance with custom, the summary record of the last meeting of a Committee was approved by the Chairman of the Committee.

There was no objection to this procedure.

The Meeting rose at 12.40

Rapporteurs :

V. JEAN-LOUIS
R. UMBERG

Chairman :

A. LATIF AHMED

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF/UHF
BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 48-E
7 May, 1963
Original : French

COMMITTEE 3

EXPENDITURE BY THE AFRICAN BROADCASTING CONFERENCE
UP TO 30 APRIL, 1963

Rule 5, Chapter 9, of the General Regulations annexed to the International Telecommunication Convention (Geneva, 1959) lays down that the Budget Supervision Committee shall approve accounts for expenditure incurred throughout the conference. This Committee also has to submit a report to the Plenary Meeting, with an accurate estimate of how much money will have been spent by the end of the conference.

Accordingly, the following statement of amounts spent on behalf of the African Broadcasting Conference (up to 30 April, 1963) is hereby submitted to the Budget Supervision Committee. It also contains estimates of what total expenditure will be by the time the conference ends.

Roger C. CHATELAIN
Head, I.T.U. Finance Division

Attached : one table

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ANNEX

POSITION UP TO 30 APRIL, 1963

Item	Title	Budget approved by the Council	Amounts disbursed by 30.4.63	Estimated expenditure	Total
			In Swiss francs		
Subhead I.	Staff expenses				
9.201	Administration	55,000.-	1,194.-	48,806.-	50,000.-
9.202	Languages	210,000.-	16,009.55	181,990.45	198,000.-
9.203	Reproduction	30,000.-	956.-	44,044.-	45,000.-
9.204	Insurance	2,000.-	-.-	2,000.-	2,000.-
Subhead II.	Premises and equipment				
9.205	Premises, furniture, machines	12,000.-	-.-	9,000.-	9,000.-
9.206	Document production	60,000.-	975.35	55,024.65	56,000.-
9.207	Office supplies and overheads	15,000.-	933.90	12,066.10	13,000.-
9.208	Simultaneous interpretation and other technical equipment	-	-.-	1,000.-	1,000.-
9.209	Unforeseen	4,000.-	-.-	4,000.-	4,000.-
Subhead III.	Preparatory work				
9.210	Preparatory work by the I.F.R.B.	30,000.-	2,251.25	27,748.75	30,000.-
Subhead IV.	Interest				
9.211	Interest accruing to the Union on advances	10,000.-	-.-	7,000.-	7,000.-
		428,000.-	22,320.05	392,679.95	415,000.-

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF/UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 49-E
8 May 1963
Original : English

COMMITTEE 3

SUMMARY RECORD

of the

SECOND MEETING OF COMMITTEE 3

(Budget Supervision Committee)

Wednesday, 8 May 1963, at 9.00 a.m.

Chairman: Mr. EKUE (Togolese Republic)

Vice-Chairman : Mr. MILLS (Ghana)

Subjects discussed

1. Adoption of the summary record of the first meeting (Document No. 36)

2. Conference budget and expenditure up to 30 April 1963 (Documents Nos. 21 and 48)

Present: The delegates of the Republic of the Cameroon, Republic of the Congo (Leopoldville), Republic of the Ivory Coast, Republic of Dahomey, Ghana, Republic of Guinea, Republic of Rwanda, Republic of the Senegal, and Togolese Republic.

On the Chairman's suggestion, Mr. André Luseko (Republic of the Congo, Leopoldville) was nominated Rapporteur in the place of Mr. Mabré (Republic of the Chad), who had been recalled home on urgent business.

1. Adoption of the summary record of the first meeting (Document No. 36)

The summary record of the first meeting was approved.

2. Conference budget and expenditure up to 30 April 1963 (Documents Nos. 21 and 48)

The Chairman directed attention to the Annex to Document 48 showing an amount of Sw.frs. 428,000 as the budget approved by the Council and the amount of Sw.frs. 415,000 representing actual and estimated expenditure. Provided there was no unforseen expenditure, the original budget would therefore be reduced by Sw.frs. 13,000.

In reply to requests for clarification by Mr. Luseko (Republic of the Congo, Leopoldville) and Mr. Lalung-Bonnaire (Republic of Rwanda), Mr. Prélaz (General Secretariat) explained that the total 415,000 Sw.frs. comprised all expenditures to date, together with estimated expenditures up to the end of the Conference.

The estimated expenditure for the African Broadcasting Conference as set out in Document No. 48 was approved.

The Chairman explained that Information Circular No. 4 showing the United Nations official rate of exchange for the conversion of African currencies into Swiss francs had been issued to assist delegations in calculating their shares in defraying the expenditure of the African Broadcasting Conference, in the light of the class of contribution chosen by their country.

The meeting rose at 10.00 a.m.

Rapporteur:	Chairman:
André LUSEKO	G. EKUE

UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS

F

CONFÉRENCE AFRICAINE
DE RADIODIFFUSION SUR ONDES
MÉTRIQUES ET DÉCIMÉTRIQUES

GENÈVE, 1963

Corrigendum au Document N° 50-F/E
10 mai 1963
Original : français-anglais

LISTE DES DOCUMENTS DE LA CONFERENCE AFRICAINE DE RADIODIFFUSION

(Documents N°s 1 à 50)

Page 2 - N° 28 : lire dans la colonne "Origine" Haute-Volta au lieu de Secr.

Page 2 - No. 28 : read in column "Origin" Upper-Volta instead of Sec.

INTERNATIONAL TELECOMMUNICATION UNION

E

AFRICAN VHF/UHF BROADCASTING CONFERENCE

GENEVA, 1963

Document No. 50-E
10 May 1963
Original :French-English

LIST OF DOCUMENTS OF AFRICAN VHF/UHF BROADCASTING CONFERENCE

(Documents Nos. 1 - 50)

No.	Title	Origin	Destination
1 (Revised)	Invitation to the Conference	Sec. Gen.	Plenary
2	Draft agenda for the first meeting of heads of delegations	Sec. Gen.	Heads of del.
3 (Revised) & Addend.1	International organizations	Sec. Gen.	Plenary
4(Revised)	Draft agenda for the inaugural plenary meeting	Sec. Gen.	Heads of del.
5	Agenda for the Conference	Sec. Gen.	Plenary
6	Request by the people's Democratic Republic of Algeria for permission to take part in the Conference	Sec. Gen.	Plenary
7 & Corr.	International frequency registration board	I.F.R.B.	-
8	Planning of television in bands IV and V	I.F.R.B.	-
9	Technical data for use in the planning of broadcasting services in the VHF (metric) and UHF (decimetric) bands	I.F.R.B.	-
10	Contribution of the C.C.I.R.	C.C.I.R.	Com. 4
11	Propagation characteristics of radio frequency paths in West Africa	Cameroon	Com. 4
12 (Revised)	List of participants	Sec. Gen.	Plenary
13 (Revised)	Chairmen and Vice-chairmen of Committees	Sec. Gen.	-
14 & Corr.	Television signals	I.F.R.B.	Com. 4

No	Title	Origin	Destination
15 (Revised)	Summary of requirements for VHF/UHF broadcasting (Sound and television)	I.F.R.B.	Com. 4
16	Interim report of working group 4A	Working group 4A	Com. 4
17	Protection ratios between television and multi-channel frequency-modulation fixed services in band III	U.K. Overs. Terr.	Com. 4
18	Questionnaire	Sec. Gen.	Com. 4
19 & Corr.	Advantages of the C.C.I.R. Gerber standards (625 lines) video bandwidth 5 Mc/s intercarrier separation 5.5 Mc/s	U.A.R.	Com. 4
20	Minutes of the first meeting of the heads of delegations	Sec.	Plenary
21	Budget of the conference	Sec.	Com. 3
22	Bands IV and V maximum number of frequency assignments requested for each transmission site	I.F.R.B.	Com. 4
23	Report of working group 4A 1	Working group 4A 1	Com. 4
24	Minutes of the inaugural plenary meeting	Sec.	Plenary
25	Provisional minutes of the second plenary meeting	Sec.	Plenary
26	Contribution by the Delegation of the Gabon Republic	I.F.R.B.	Com. 4
27 (Revised)	Summary record of the first meeting of the technical committee (Committee 4)	Sec.	Com. 4
28	Note on the various aspects of standard K*	Sec.	Comm. 4
29	First report of Committee 2	Sec. Gen.	Plenary
30	Characteristics of monochrome television systems G, H, I, K*	I.F.R.B.	Com. 4

No.	Title	Origin	Destination
31	Television standards for bands I and III	I.F.R.B.	Com. 4
32	Draft recommendation	I.F.R.B.	Com. 4
33	Answers to the questionnaire (Doc. N° 18)	I.F.R.B.	Com. 4
34 (Revised)	Summary record of the 2nd meeting of Committee 4	Sec. Gen.	Com. 4
35	Notes on band II sound broadcasting lattice in South Africa	South Africa Rep.	Com. 4
36	Summary record of the 1st meeting of the budget supervision committee	Com. 3	Com. 3
37	Summary record of the third meeting of Committee 4	Com. 4	Com. 4
38	Summary record of the fourth meeting of Committee 4	Com. 4	Com. 4
39	Television standard "K"	I.B.T.O.	Com. 4
40	Summary record of the first meeting of Committee 5 (Planning)	Com. 5	Com. 5
41	Draft recommendation adopted by the technical committee	Com. 4	Plenary
42	Final report of Committee 4	Com. 4	Plenary
43	Notice of arrangements for the work of Committee 5 working groups	I.F.R.B.	Com. 5
44	Contribution to the study of the choice of an intermediate frequency for television in accordance with standard K*	France	Com. 5
45	Answer to the circular No. 20/028929	Liberia	Com. 5
46 & Addend.	Communication from the Chairman of the conference	Chairman	-

No	Title	Origin	Destination
47	Summary record of the 5th meeting of Committee 4	Com. 4	Com. 4
48	Expenditure by the African broadcasting conference up to 30 april, 1963	Sec. Gen.	Com. 3
49	Summary record of the second meeting of Committee 3	Com. 3	Com. 3
50	List of documents of African VHF/UHF broadcasting conference	-	-