

final acts

of the Regional Administrative Conference
for the Planning of VHF Sound Broadcasting
(Region 1 and Part of Region 3)

Geneva, 1984



**Published by the
International
Telecommunication Union
GENEVA, 1984**

Copyright International Telecommunication Union/ITU Radiocommunication Sector

TABLE OF CONTENTS

Regional Agreement relating to the Use of the Band 87.5 - 108 MHz for FM Sound Broadcasting (Region 1 and Part of Region 3)

	<i>Page</i>
Preamble	1
Article 1 Definitions	2
Article 2 Execution of the Agreement	2
Article 3 Annexes to the Agreement	3
Article 4 Procedure Concerning Modifications to the Plan	3
Article 5 Compatibility with the Aeronautical Radionavigation Service	8
Article 6 Continued Coordination of Assignments Appearing in the Appendix to the Plan	11
Article 7 Notification of Frequency Assignments	11
Article 8 Accession to the Agreement	12
Article 9 Scope of Application of the Agreement	12
Article 10 Approval of the Agreement	12
Article 11 Denunciation of the Agreement	12
Article 12 Revision of the Agreement	3
Article 13 Entry into Force and Duration of the Agreement	13
Signatures	13
Annex 1 Frequency Assignment Plan for FM Sound Broadcasting Stations in Region 1 and Part of Region 3 in the Band 87.5 - 108 MHz	17
Annex 2 Technical data	19
Chapter 1: Definitions	19
Chapter 2: Propagation	20
Chapter 3: Technical standards and transmission characteristics for the sound broadcasting service	28
Chapter 4: Determination of the usable field strength by the simplified multiplication method	36
Chapter 5: Frequency compatibility between sound and television broadcasting	40
Chapter 6: Analysis of the Plan	45
Chapter 7: Compatibility between the broadcasting service in the band 87.5 - 108 MHz and the aeronautical radionavigation service in the band 108 - 117.975 MHz	46

Annex 3	Basic characteristics of sound broadcasting stations to be submitted for modifications to the Plan in application of Article 4 of the Agreement.....	53
Annex 4	Limits for determining when coordination with another administration is required as a result of a proposed modification to the Plan.....	54
Chapter 1:	Limits relating to sound broadcasting	54
Chapter 2:	Limits relating to television.....	58
Chapter 3:	Limits relating to aeronautical radionavigation services.....	62
Chapter 4:	Limits relating to the land mobile service	62
Chapter 5:	Limits relating to the fixed service.....	62
Chapter 6:	Limits relating to the aeronautical mobile (OR) service	66
Annex 5	Additional technical data which may be used for coordination between administrations.....	67
Chapter 1:	Aeronautical radionavigation service.....	67
Chapter 2:	Fixed and mobile services, except the aeronautical mobile (OR) service.....	69
Chapter 3:	Aeronautical mobile (OR) service.....	70
Chapter 4:	Supplementary propagation data correction factors	70
FINAL PROTOCOL		73

(Figures between parentheses indicate the order in which the statements appear in the Final Protocol)

Afghanistan (Democratic Republic of) (7, 32)	Malta (Republic of) (21)
Albania (Socialist People's Republic of) (23, 39)	Morocco (Kingdom of) (6, 7, 35)
Algeria (People's Democratic Republic of) (7, 22)	Oman (Sultanate of) (7)
Benin (People's Republic of) (18)	Poland (People's Republic of) (24)
Botswana (Republic of) (12)	Portugal (11)
Burkina Faso (13)	Qatar (State of) (7)
Chad (Republic of) (3)	Saudi Arabia (Kingdom of) (7)
Congo (People's Republic of the) (37)	Spain (2, 28)
France (30)	Swaziland (Kingdom of) (12, 14)
German Democratic Republic (17)	Switzerland (Confederation of) (5)
Guinea (Republic of) (1)	Syrian Arab Republic (7)
Iran (Islamic Republic of) (7, 26, 34)	Tanzania (United Republic of) (12, 15)
Iraq (Republic of) (7, 25)	Tunisia (7, 29)
Israel (State of) (33)	Uganda (Republic of) (12)
Italy (20)	Union of Soviet Socialist Republics (8, 9, 10)
Ivory Coast (Republic of the) (19)	United Arab Emirates (7)
Jordan (Hashemite Kingdom of) (7)	Yemen (People's Democratic Republic of) (7)
Kenya (Republic of) (12, 27)	Yemen Arab Republic (7)
Kuwait (State of) (7)	Yugoslavia (Socialist Federal Republic of) (38)
Lesotho (Kingdom of) (12)	Zambia (Republic of) (12, 16)
Libya (Socialist People's Libyan Arab Jamahiriya) (4, 7, 36)	Zimbabwe (Republic of) (12)
Mali (Republic of) (31)	

RESOLUTIONS

Resolution No. 1	Modifications to the Plan Before the Entry into Force of the Agreement.....	83
Resolution No. 2	Procedure Relating to Mobile Services in the Band 87.5 - 88 MHz	83
Resolution No. 3	Procedure relating to the fixed and mobile except aeronautical mobile (R) service in the band 104 - 108 MHz	84
Resolution No. 4	Protection of the Aeronautical Radionavigation Service Operated by non-Contracting Members Outside the Planning Area	85
Resolution No. 5	Convening of a Regional Administrative Conference of the Members of the Union in the European Broadcasting Area and a Regional Administrative Conference of the Members of the Union in the African Broadcasting Area in Accordance with Articles 63 and 62 of the International Telecommunication Convention (Nairobi, 1982)	86
	Annex 1 to Resolution No. 5.....	88
	Annex 2 to Resolution No. 5.....	88
Resolution No. 6	Abbreviated Title of the Regional Agreement Relating to the Use of the Band 87.5 - 108 MHz for FM Sound Broadcasting (Region 1 and Part of Region 3) and the Associated Plan	88

RECOMMENDATIONS

Recommendation No. 1	Approval or Accession to the Agreement by Members in the Planning Area	89
Recommendation No. 2	Optional Procedure for the Early Implementation of Assignments in the Plan	89
	Annex to Recommendation No. 2.....	90
Recommendation No. 3	Mutual and Reciprocal Coordination of Frequency Assignments to Sound Broadcasting Stations in the Plan and to Television Stations not included in the Stockholm Agreement	90
Recommendation No. 4	Continuation of Studies on Compatibility Between the Aeronautical Radionavigation Service in the Band 108 - 117.975 MHz and Sound Broadcasting Stations in the Band 87.5 - 108 MHz.....	91
Recommendation No. 5	Continuation of Studies on Compatibility Between the Aeronautical Mobile (R) Service in the Band 117.975 - 137 MHz and Sound Broadcasting Stations in the Band 87.5 - 108 MHz	92
Recommendation No. 6	Use of the Band 108 - 117,975 MHz by the Aeronautical Radionavigation Service ...	93
Recommendation No. 7	Proposal for the Modification of Appendix 8 to the Radio Regulations.....	94

REGIONAL AGREEMENT

relating to the Use of the Band 87.5 - 108 MHz

for FM Sound Broadcasting

(Region 1 and Part of Region 3)

PREAMBLE

The duly accredited delegates of the following Members of the International Telecommunication Union:

Democratic Republic of Afghanistan, Socialist People's Republic of Albania, People's Democratic Republic of Algeria, Federal Republic of Germany, People's Republic of Angola, Kingdom of Saudi Arabia, Austria, Belgium, People's Republic of Benin, Byelorussian Soviet Socialist Republic, Republic of Botswana, People's Republic of Bulgaria, Burkina Faso, Republic of Cameroon, Republic of Cyprus, Vatican City State, People's Republic of the Congo, Republic of the Ivory Coast, Denmark, Arab Republic of Egypt, Spain, Finland, France, Gabonese Republic, Greece, Republic of Guinea, Hungarian People's Republic, Islamic Republic of Iran, Republic of Iraq, Ireland, State of Israel, Italy, Hashemite Kingdom of Jordan, Republic of Kenya, State of Kuwait, Kingdom of Lesotho, Socialist People's Libyan Arab Jamahiriya, Principality of Liechtenstein, Luxembourg, Republic of Mali, Republic of Malta, Kingdom of Morocco, Monaco, Mongolian People's Republic, Norway, Sultanate of Oman, Republic of Uganda, Kingdom of the Netherlands, People's Republic of Poland, Portugal, State of Qatar, Syrian Arab Republic, German Democratic Republic, Ukrainian Soviet Socialist Republic, Socialist Republic of Romania, United Kingdom of Great Britain and Northern Ireland, Republic of San Marino, Republic of Senegal, Sweden, Confederation of Switzerland, Kingdom of Swaziland, United Republic of Tanzania, Republic of Chad, Czechoslovak Socialist Republic, Togolese Republic, Tunisia, Turkey, Union of Soviet Socialist Republics, Yemen Arab Republic, People's Democratic Republic of Yemen, Socialist Federal Republic of Yugoslavia, Republic of Zambia, Republic of Zimbabwe,

meeting in Geneva for a Regional Administrative Radio Conference convened under the terms of Articles 7 and 54 of the International Telecommunication Convention (Nairobi, 1982) to establish an Agreement incorporating a Plan for sound broadcasting in the band 87.5 to 108 MHz in accordance with Resolution No. 510 of the World Administrative Radio Conference (Geneva, 1979), and No. 584 of the Radio Regulations have adopted, subject to the approval of the competent authorities of their respective countries, the following provisions and the related Plan concerning the broadcasting service in the band 87.5 to 108 MHz in the planning area as defined in Article 1 of this Agreement.

ARTICLE 1

Definitions

For the purposes of this Agreement, the following terms shall have the meanings defined below:

- 1.1 *Union*: The International Telecommunication Union.
- 1.2 *Secretary-General*: The Secretary-General of the Union.
- 1.3 *IFRB*: The International Frequency Registration Board.
- 1.4 *CCIR*: The International Radio Consultative Committee.
- 1.5 *Convention*: The International Telecommunication Convention (Nairobi, 1982).
- 1.6 *Radio Regulations*: The Radio Regulations (Geneva, 1979) annexed to the Convention.
- 1.7 *Conference*: The Regional Administrative Conference for FM Sound Broadcasting in the VHF Band (Region 1 and certain countries concerned in Region 3)¹ (Geneva, 1984), also called the Regional Administrative Conference for the Planning of VHF Sound Broadcasting (Region 1 and part of Region 3) (Geneva, 1984).
- 1.8 *Planning area*: The countries of Region 1 as defined in No. 393 of the Radio Regulations together with the Democratic Republic of Afghanistan and the Islamic Republic of Iran.
- 1.9 *Agreement*: This Regional Agreement and its Annexes.
- 1.10 *Plan*: The Plan forming Annex 1 to this Agreement, and its Appendix.
- 1.11 *Contracting Member*: Any Member of the Union which has approved or acceded to this Agreement.
- 1.12 *Administration*: Unless otherwise indicated, the term *administration* designates an administration, as defined in the Convention, of a Contracting Member.
- 1.13 *Assignment in conformity with this Agreement*: Any assignment appearing in the Plan, or for which the procedure of Article 4 has been successfully applied.

ARTICLE 2

Execution of the Agreement

- 2.1 The Contracting Members shall adopt for their sound broadcasting stations in the planning area operating in the band 87.5 - 108 MHz the characteristics specified in the Plan.
- 2.2 The Contracting Members shall not modify these characteristics or establish new stations, except under the conditions provided for in Article 4 of this Agreement.
- 2.3 The Contracting Members undertake to study and, in common agreement, to put into practice the measures necessary to eliminate any harmful interference that might result from the application of this Agreement.
- 2.4 Should agreement, as envisaged in section 2.3, above, prove impossible, the Contracting Members concerned may, in accordance with Article 35 of the Convention resort to the procedure laid down in Article 22 of the Radio Regulations.
- 2.5 The transitional procedures for bringing into service the assignments in the Plan in order to enable normal operation of stations of other services to which parts of the band 87.5 - 108 MHz are also allocated in accordance with Radio Regulations Nos. 581, 587, 588, 589 and 590, under the conditions specified therein, are contained in Resolutions Nos. 2 and 3.

¹ This Conference was held in two Sessions:

- the First Session, responsible for preparing a report to the Second Session, was held in Geneva from 23 August to 17 September 1982;
- the Second Session, responsible for drawing up a Plan and associated provisions was held in Geneva from 29 October to 7 December 1984.

ARTICLE 3

Annexes to the Agreement

The Agreement contains the following Annexes:

3.1 *Annex 1: The Plan*

Frequency Assignment Plan for FM Sound Broadcasting Stations in Region 1 and Part of Region 3 in the band 87.5 - 108 MHz.

3.1.1 The Plan contains frequency assignments and associated characteristics of sound broadcasting stations in the band 87.5 - 108 MHz, coordinated either during the Conference or by the application of provisions contained in the Agreement, and comprises two parts.

3.1.1.1 The first part includes frequency assignments in the band 87.5 - 100 MHz for all countries in the planning area. The provisions of this Agreement are applicable to these assignments in the relations between all Contracting Members in the planning area. This part is intended to replace, when it is so decided by competent conferences, the corresponding sound broadcasting Plans appearing in the Regional Agreements, Stockholm (1961) and Geneva (1963), with regard to the Contracting Members parties to these Agreements.

3.1.1.2 The second part contains frequency assignments in the band 100 - 108 MHz for all countries in the planning area in order to permit all countries of Region 1 to use this band for sound broadcasting in conformity with No. 584 of the Radio Regulations. The provisions of this Agreement are applicable to these assignments in the relations between all Contracting Members in the planning area. In the absence of provisions applicable to all countries in Region 1, non-Contracting Members in the planning area are being recommended to apply the provisions of this Agreement (see Recommendation No. 1).

3.1.2 The Plan also includes, for a fixed term (see Article 6), a list of the assignments for which coordination remains to be effected; these assignments are listed in the Appendix.

3.2 *Other Annexes*

Annex 2: Technical Data

Annex 3: Basic Characteristics of Sound Broadcasting Stations to be Submitted for Modifications to the Plan in Application of Article 4 of the Agreement

Annex 4: Limits for Determining when Coordination with Another administration is Required as a Result of a proposed Modification to the Plan

Annex 5: Additional Technical Data which may be used for Coordination Between administrations

ARTICLE 4

Procedure Concerning Modifications to the Plan

4.1 *Modifications to the Plan*

When an administration proposes to make a modification to the Plan, i.e.:

- to modify the characteristics of a frequency assignment to a sound broadcasting station shown in the Plan, whether or not the station has been brought into use; or
- to bring into use an assignment to a sound broadcasting station not appearing in the Plan; or
- to modify the characteristics of a frequency assignment to a sound broadcasting station for which the procedure in this Article has been successfully applied, whether or not the station has been brought into use, or
- to cancel a frequency assignment to a sound broadcasting station,

the procedure contained in this Article shall be applied before any notification is made under Article 7 of this Agreement.

4.2 *Initiation of the modification procedure*

4.2.1 Any administration proposing to modify the characteristics of an assignment appearing in the Plan or to add a new assignment to the Plan shall obtain the agreement of any other administration whose services are likely to be affected.

4.2.2 a) The sound broadcasting stations of an administration are likely to be affected by a proposed modification to the Plan if the distance from the station under consideration to the nearest point on the boundary of the country of that administration is less than the limit indicated in Annex 4, Chapter 1.

4.2.2 b) The television stations of an administration in the band 87.5 - 100 MHz which are in conformity with the Stockholm Agreement (1961) are likely to be affected by a proposed modification to the Plan if the distance from the station under consideration to the nearest point on the boundary of the country of that administration is less than the limit indicated in Annex 4, Chapter 2.

4.2.2 c) The stations in the fixed and mobile services of an administration of a Contracting Member in Region 3 in the band 87.5 - 100 MHz are likely to be affected by a proposed modification to the Plan if the appropriate limits indicated in Annex 4, Chapters 4 and 5, are exceeded.

4.2.2 d) The stations in the land mobile service of an administration in Region 1 in the band 87.5 - 88 MHz, coordinated under Article 14 of the Radio Regulations, are likely to be affected by a proposed modification to the Plan if the limits indicated in Annex 4, Chapter 4, are exceeded.

4.2.2 e) The stations of the fixed and mobile services, except the aeronautical mobile (R) service, of an administration in Region 1, operating in the band 104 - 108 MHz in conformity with the Radio Regulations on a permitted basis until 31 December 1995, are likely to be affected by a proposed modification to the Plan if the appropriate limits indicated in Annex 4, Chapters 4, 5 and 6, are exceeded.

4.2.2 f) The stations in the aeronautical radionavigation service of an administration in the band 108 - 117.975 MHz are likely to be affected by a proposed modification to the Plan if the distance from the station under consideration to the nearest point on the boundary of the country of that administration is less than the limit indicated in Annex 4, Chapter 3. In this case, the procedure to be applied is contained in Article 5.

4.2.3 Administrations shall seek the agreement of other administrations preferably directly or, when this is not possible, by applying the procedure contained in this article.

4.2.4 The agreement mentioned in section 4.2.1 is not required if:

- a) the proposed modification relates to a reduction in effective radiated power or to other changes which would not increase the level of interference to services of other countries; or
- b) the distances from the station under consideration to the nearest points on the boundaries of other countries, the administrations of which are Contracting Members, are equal to or greater than the limits indicated in Annex 4; or
- c) the proposed modification relates to a change in the site of the station and the distance between the actual site of the transmitter and the site indicated in the Plan is no greater than:
 - 15 km for transmitters having a total e.r.p. greater or equal than 1 kW;
 - 5 km for transmitters having a total e.r.p. less than 1 kW;

provided that the change in topographical conditions does not increase the probability of interference caused to the stations of other countries.

4.2.5 An administration proposing to modify the Plan shall communicate to the IFRB the information listed in Annex 3 and shall also indicate, if appropriate:

- a) that the agreement referred to in section 4.2.1 is not required with any administration; or
- b) the name of any administration which has already agreed to the modification proposed on the basis of the characteristics communicated to the IFRB.

4.2.6 When requesting the agreement of another administration, the administration proposing to modify the Plan may also communicate any additional information relating to proposed methods and criteria to be used as well as other details concerning the terrain, particular propagation conditions, etc. (see also Annex 5).

4.2.7 On receipt of the information referred to in section 4.2.5 above, the IFRB shall:

- a) identify the administrations whose services are likely to be affected in conformity with sections 4.2.2 and 4.2.4;
- b) send immediately a telex to those administrations identified in a) above which have not yet given their agreement, drawing their attention to the information contained in the special section of a forthcoming weekly circular and indicating the nature of the modification to the Plan;
- c) publish the information received in the special section of this weekly circular, together with the names of the administrations identified, indicating those whose agreement has been obtained.

4.3 *Consultation of the administrations whose stations may be affected*

4.3.1 The special section of the IFRB weekly circular, referred to in 4.2.7 c), constitutes the formal request for agreement addressed to those administrations whose agreement remains to be obtained.

4.3.2 Any administration which considers that it should have been included in the list of administrations whose frequency assignments are likely to be affected may, within 28 days from the date of publication of the weekly circular, request the IFRB by telex to include its name. A copy of the request shall be sent to the administration proposing the modification to the Plan.

4.3.3 On receipt of the telex, the IFRB shall consider the matter and, if it finds that the name of this administration should have been included in the list, it shall:

- inform the administrations concerned by telex; and
- publish the name of the administration in an addendum to the special section of the weekly circular referred to in 4.2.7 c).

For this administration, the overall period of 100 days specified in section 4.3.10 shall run from the date of publication of the addendum to the special section of the weekly circular referred to above.

4.3.4 An administration receiving a telex from the IFRB sent in accordance with sections 4.2.7 or 4.3.3 above shall acknowledge receipt within 50 days.

4.3.5 If the IFRB has not received an acknowledgement after 50 days, it shall send a reminder telex and inform the administration that, if no reply is received within 10 days, it will be deemed to have received the request for agreement.

4.3.6 On receipt of the special section of the IFRB weekly circular referred to in sections 4.2.7 c) and 4.3.3, any administration listed therein shall determine the effect produced on its assignments by the proposed modification to the Plan, using any of the additional information referred to in section 4.2.6 which it finds acceptable.

4.3.7 If the administration consulted is responsible for:

4.3.7.1 a sound broadcasting station, it should normally accept the proposed modification provided that:

- the resulting usable field strength is not greater than 54 dB(μ V/m); or
- the resulting usable field strength is greater than 54 dB(μ V/m), but is increased by 0.5 dB or less compared with the reference usable field strength. An increase of more than 0.5 dB is open to negotiations, in which more detailed calculation methods may be used.

The values referred to above shall be calculated by the method contained in Annex 2, Chapter 4, at the transmitter site or at specific points of the service area of the stations which are likely to be affected. The reference usable field strength of an assignment to be protected is the field strength which results from the Plan adopted by the Conference or, for an assignment entered in the Plan after the Conference following the application of this procedure, the field strength which results from the Plan at the time this assignment was first recorded in the Plan. If, due to deletions or modifications, the usable field strength becomes lower, then this lower value becomes the new reference usable field strength. The actual geographical conditions should be taken into account, whenever practicable.

4.3.7.2 a television station, it should normally accept an increase in the usable field strength at the transmitter site, provided that:

- the resulting usable field strength is not greater than 52 dB(μ V/m), or
- the resulting usable field strength is greater than 52 dB(μ V/m), but is increased by 0.5 dB or less compared with the usable field strength resulting from the Plan adopted by the Conference and from the television stations in accordance with the Stockholm Agreement at the date of the Conference. An increase of more than 0.5 dB is open to negotiations, in which more detailed calculation methods may be used.

4.3.7.3 a station in the mobile, except aeronautical mobile (OR), service in Region 3 in the frequency band 87.5 - 100 MHz, it should normally accept the following interfering field strength:

- 18 dB(μ V/m) if the sound broadcasting station uses horizontal polarization;
- 0 dB(μ V/m) if the sound broadcasting station uses vertical or mixed polarization. In the case of mixed polarization, only the vertical component of the total effective radiated power of the sound broadcasting station should be taken into account if at least one-tenth of the total effective radiated power is radiated in the vertical component.

These limits apply when the frequency of the sound broadcasting station coincides with the frequency of the station of the mobile service. If they do not coincide, an appropriate allowance should be made (see Annex 5, Chapter 2).

The interfering field strengths are calculated using the method contained in Annex 4, Chapter 4 at 10 m above ground at the site of the base station assuming the use of vertical polarization.

4.3.7.4 a station in the fixed service, it should normally accept an interfering field strength of 0 dB(μ V/m) at 10 m above ground, calculated in accordance with the method in Annex 4, Chapter 5.

This limit applies when the frequency of the sound broadcasting station coincides with the frequency of the station of the fixed service. If they do not coincide, an appropriate allowance should be made (see Annex 5, Chapter 2).

4.3.7.5 a station in the land mobile service in Region 1 in the band 87.5 - 88 MHz, it should normally accept the following interfering field strengths:

- 14 dB(μ V/m) for mobile stations using amplitude modulation if the sound broadcasting station uses horizontal polarization;
- 24 dB(μ V/m) for mobile stations using frequency modulation if the sound broadcasting station uses horizontal polarization;
- 6 dB(μ V/m) for mobile stations using amplitude modulation if the sound broadcasting station uses vertical or mixed polarization;
- 16 dB(μ V/m) for mobile stations using frequency modulation if the sound broadcasting station uses vertical or mixed polarization.

In the case of mixed polarization, only the vertical component of the total effective radiated power of the sound broadcasting station should be taken into account if at least one-tenth of the total effective radiated power is radiated in the vertical component.

These limits apply when the frequency of the sound broadcasting station coincides with the frequency of the station of the land mobile service. If they do not coincide, an appropriate allowance should be made (see Annex 5, Chapter 2).

The interfering field strengths are calculated using the method contained in Annex 4, Chapter 4 at 10 metres above ground at the edge of the service area.

4.3.7.6 a station in the mobile, except aeronautical mobile (OR), service in Region 1 in the frequency band 104 - 108 MHz, it should normally accept the following interfering field strengths:

- 18 dB(μ V/m) if the sound broadcasting station uses horizontal polarization;
- 0 dB(μ V/m) if the sound broadcasting station uses vertical or mixed polarization. In the case of mixed polarization, only the vertical component of the total effective radiated power of the sound broadcasting station should be taken into account if at least one-tenth of the total effective radiated power is radiated in the vertical component.

These limits apply when the frequency of the sound broadcasting station coincides with the frequency of the station of the mobile service. If they do not coincide, an appropriate allowance should be made (see Annex 5, Chapter 2).

The interfering field strengths are calculated using the method contained in Annex 4, Chapter 4 at 10 m above ground at the site of the base station assuming the use of vertical polarization.

4.3.8 An administration receiving a telex from the IFRB sent in accordance with sections 4.2.7 or 4.3.3 may request the IFRB to calculate as indicated in section 4.3.7 above the increase in the usable field strength resulting from the proposed modification.

4.3.9 An administration may ask the administration proposing the modification to the Plan for any additional information it considers necessary to calculate the increase in the usable field strength. Similarly, the administration proposing the modification may ask any administration whose agreement it seeks for any additional information it considers necessary. The administrations shall inform the IFRB of such requests.

4.3.10 An administration which is not in a position to give its agreement to the proposed modification shall give its reasons within 100 days from the date of the weekly circular referred to in section 4.2.7 c).

4.3.11 Seventy days after the publication of the weekly circular mentioned in section 4.2.7 or 4.3.3, the IFRB shall request by telex any administration which has not yet given its decision in the matter to do so and shall inform it that, if no reply is received within an overall period of 100 days following the date of publication of this weekly circular, it is deemed to have agreed to the proposed modification to the Plan. This time limit may be extended by 14 days in the case of an administration which has requested additional information or which has asked the IFRB to carry out technical studies.

4.3.12 If at the end of the 100-day period (possibly extended by 14 days) there is continuing disagreement, the IFRB shall make any study that may be requested by these administrations; it shall inform them of the result of the study and shall make such recommendations as it may be able to offer for the solution of the problem.

4.3.13 An administration may request the assistance of the IFRB in the following cases:

- in seeking the agreement of another administration;
- in applying any stage of the procedure described in this Article;
- in carrying out technical studies in relation to this procedure;
- in applying the procedure with respect to other administrations.

4.4 *Comments of other administrations*

4.4.1 On receipt of the special section of the IFRB weekly circular published pursuant to section 4.2.7, administrations may send their comments to the administration proposing the modification either directly or through the IFRB. In any event the IFRB shall be informed that comments have been made.

4.4.2 An administration which has not notified its comments either to the administration concerned or to the IFRB within a period of 100 days following the date of the weekly circular referred to in section 4.2.7 c) shall be understood to have no objection to the proposed change. This time limit may be extended by 14 days in the case of an administration which has requested additional information or which has asked the IFRB to carry out technical studies.

4.5 *Cancellation of an Assignment*

When an assignment in conformity with this Agreement is cancelled, whether or not as a result of a modification (for instance, in connection with a change of frequency), the administration concerned shall immediately inform the IFRB, which shall publish this information in a special section of its weekly circular.

4.6 *Updating of the Plan*

4.6.1 An administration which has obtained the agreement of the administrations whose names were published in the special section referred to in sections 4.2.7 and 4.3.3, may bring the assignment in question into use and shall inform the IFRB, indicating the final agreed characteristics of the assignment together with the names of the administrations with which agreement has been reached.

4.6.2 The IFRB shall publish in the special section of its weekly circular the information received under sections 4.2.5 or 4.6.1 together with the names of any administrations with which the provisions of this article have been successfully applied. With respect to Contracting Members, the assignment concerned shall enjoy the same status as those appearing in the Plan.

4.6.3 The IFRB shall maintain an up-to-date master copy of the Plan, taking account of any modifications, additions and deletions made in accordance with the procedure of this Article.

4.6.4 The Secretary-General shall publish an up-to-date version of the Plan in an appropriate form as and when the circumstances justify and in any case every three years.

4.7 *Elimination of harmful interference*

If a change, although made in accordance with the provisions of this Article, causes harmful interference to services of other Contracting Members, the administration which has made the change shall take the requisite action to eliminate such interference.

4.8 *Settlement of disputes*

If, after application of the procedure described in this Article, the administrations concerned have been unable to reach agreement, they may resort to the procedure described in Article 50 of the Convention. They may also agree to apply the Optional Additional Protocol to the Convention.

ARTICLE 5

Compatibility with the Aeronautical Radionavigation Service

5.1 *General*

5.1.1 The Plan adopted by the Conference has identified the cases of potential interference to the aeronautical radionavigation stations, at a limited number of test points selected by administrations (see Annex 2, Chapter 7). Unresolved cases of A1, A2 and B2 type interference shall be dealt with by application of the procedures in section 5.2.1 below, and those of B1 type interference by application of the procedures in section 5.2.2 below, in both cases on the basis of the criteria contained in Annex 2, Chapter 7 (see also Annex 5).

5.1.2 Assignments in the Plan which may cause interference of any of these types to stations in the aeronautical radionavigation service are identified by the following symbols¹ :

A1/. . . type A1 interference

A2/. . . type A2 interference

B2/. . . type B2 interference

followed by the symbols of the countries whose aeronautical radionavigation stations may be affected, or:

B1/. . ./ . . type B1 interference

followed, after the first oblique stroke, by the symbol of the country whose aeronautical radionavigation stations may be affected and, after the second oblique stroke, by the symbols of the countries whose sound broadcasting stations contribute to the interference.

¹ Note: For an explanation of the symbols, see the text concerning the remarks in the Plan (Annex 1).

5.2 *Implementation of the Plan*

5.2.1 *Type A1, A2 and B2 interference*

5.2.1.1 Before bringing into use an assignment in the Plan which bears a symbol A1/. . ., A2/. . . or B2/. . ., the administration responsible for the sound broadcasting station shall inform the administration designated after that symbol, not later than 120 days before the date of bringing into use, indicating the dates and conditions under which the sound broadcasting station intends to arrange test experimental transmissions.

5.2.1.2 The administrations concerned shall agree on the dates, duration and conditions of the test period.

5.2.1.3 The administration of the territory on which the aeronautical radionavigation station is operated shall verify the interference situation resulting from the experimental transmission. If this administration finds that the level of interference exceeds the level indicated in Annex 2, Chapter 7, it shall inform the administration of the territory on which the sound broadcasting station is to be operated.

If there is disagreement on the level of interference caused to the aeronautical radionavigation station, this level will be verified at other test points to be determined by the administration responsible for the aeronautical radionavigation station. If that level still exceeds the level indicated in Annex 2, Chapter 7, the administration of the territory on which the sound broadcasting station is to be operated shall be informed, with a copy to the IFRB.

5.2.1.4 The administration of the territory on which the sound broadcasting station is to be operated shall immediately adopt appropriate measures to reduce the interference to the aeronautical radionavigation station to or below the level indicated in Annex 2, Chapter 7.

5.2.1.5 If, despite the full application of the foregoing provisions, the administrations concerned fail to reach an agreement, and if experimental test transmissions show that the operation of the sound broadcasting station would actually cause harmful interference to an aeronautical radionavigation station, the broadcasting station shall not be brought into service. However, the status of this assignment, although not in use, shall be maintained with regard to all other assignments in the Plan.

5.2.1.6 When notifying the assignment of the sound broadcasting station in accordance with Article 7 of this Agreement, the administration responsible for this designated station shall indicate the agreement of the administration designated after the symbols A1/. . ., A2/. . . or B2/. . .

5.2.2 *Type B1 interference*

5.2.2.1 If all sound broadcasting stations contributing to the incompatibility case belong to the country operating the aeronautical radionavigation station, this case shall be resolved on a national basis. The IFRB shall offer assistance to the country concerned if it cannot resolve the case itself.

5.2.2.2 If all sound broadcasting stations contributing as “primary interferer”¹ to the incompatibility case belong to the country operating the aeronautical radionavigation station, this case shall be dealt with as in section 5.2.2.1 after section 5.2.2.4 has been applied in respect of the foreign broadcasting station contributing as “secondary interferer”¹ to the incompatibility.

5.2.2.3 Before bringing into use an assignment in the Plan which bears the symbol B1/. . ./. . ., the administration responsible for the sound broadcasting station shall consult all the administrations whose stations are likely to suffer interference, indicating the date at which it intends to bring this assignment into use.

5.2.2.4 Each administration whose sound broadcasting stations contribute to the interference shall reduce, in the direction of the test point considered, the effective radiated power of its sound broadcasting stations contributing to the incompatibility, where this is possible without reducing their service areas.

5.2.2.5 If this is insufficient, the administrations concerned shall take such appropriate measures as they may agree upon in order to avoid B1 interference.

¹ See paragraph 5.2.2.9.

5.2.2.6 In case of disagreement, the following measures shall be envisaged:

- a) reduction of power of all sound broadcasting stations contributing to the incompatibility in the direction of the test point considered (by reducing the transmitter output power, by reducing the effective radiated power by means of an appropriate antenna diagram, or both);
 - b) seeking an alternative frequency for one of the sound broadcasting stations;
 - c) in exceptional cases seeking an alternative frequency for the aeronautical radionavigation station.
- a) to c) are not given in order of priority. The most appropriate measure will depend on the particular case.

5.2.2.7 If, despite the full application of the foregoing provisions, the administrations concerned fail to reach an agreement, the bringing into use of any sound broadcasting assignment contributing to the interference shall be subject to experimental test transmissions to be carried out as indicated in sections 5.2.1.1 to 5.2.1.3 above.

If the experimental test transmissions show that the operation of the broadcasting assignment under test will give rise to a level of interference to the aeronautical radionavigation station concerned in excess of that indicated in Annex 2, Chapter 7, the administration responsible for the sound broadcasting assignment shall immediately adopt appropriate measures to reduce the interference to the aeronautical radionavigation station to or below the level indicated in Annex 2, Chapter 7. If this is not possible, there are two cases to be considered:

- a) if the assignment to be brought into use belongs to an administration which has more than one assignment contributing to the interference, this administration shall decide which of its assignments shall not operate. However, the status of this assignment, although not in use, shall be maintained with regard to all other assignments in the Plan;
- b) if the sound broadcasting stations contributing to the interference belong to different administrations, the sound broadcasting station whose assignment is to be brought into use shall not be brought into service. However, the status of this assignment, although not in use, shall be maintained with regard to all other assignments in the Plan.

5.2.2.8 When notifying the assignment of the sound broadcasting station in accordance with Article 7 of this Agreement, the administration responsible for this station shall indicate the agreement of the administrations whose stations were likely to suffer interference.

5.2.2.9 For the purpose of these provisions, a primary interferer is a sound broadcasting station the power of which at the input to the aeronautical radionavigation receiver located at the test point is equal to or above the trigger value, and a secondary interferer is a sound broadcasting station the power of which at the input to the aeronautical radionavigation receiver located at the test point is equal to or above the cut-off value but below the trigger value (see Annex 2, Chapter 7).

5.3 *Modifications to the Plan*

5.3.1 Any administration wishing to modify the Plan shall obtain the agreement of any other administration whose aeronautical radionavigation stations are likely to be affected.

5.3.2 The aeronautical radionavigation stations of an administration are likely to be affected if the distance from the sound broadcasting station under consideration to the nearest point on the boundary of that country is less than the limit indicated in Annex 4, Chapter 3.

5.3.3 The administrations concerned shall agree on the criteria and methods to be used, taking into account those developed during the Conference (see Annex 2) and use the updated Plan and updated lists of the aeronautical radionavigation stations as well as any criteria appearing in the latest relevant CCIR Recommendations.

5.3.4 Administrations may request the IFRB to carry out this coordination on their behalf, including any calculations required for the protection of the aeronautical radionavigation stations, provided they supply the necessary information to the IFRB.

ARTICLE 6

Continued Coordination of Assignments Appearing in the Appendix to the Plan

6.1 The requirements concerning assignments which cause a nuisance field strength higher than 60 dB/μV/m to other assignments and which have not secured all the necessary agreements during the Conference are contained in the Appendix to the Plan. They will remain in this Appendix until 1 July 1992. Exceptionally, at the request of one or more of the administrations concerned, an assignment may remain in the Appendix until 31 December 1993; a copy of this request shall be sent to the IFRB.

6.2 Until the dates indicated in section 6.1 above, these assignments have the same status as the other assignments in the Plan as regards the application of the provisions of Article 4.

6.3 Administrations should continue coordination of these assignments, taking account of the geographical conditions and other relevant factors to the extent that the necessary data are available, and inform the IFRB of the agreements obtained.

6.4 When the IFRB finds that:

- all the necessary agreements have been obtained, or
- the assignment appearing in the Appendix to the Plan has been modified in such a way that its nuisance field strength caused to the stations of the administrations whose agreement is still required is 60 dB/μV/m or less,

it shall publish the assignment concerned in a special section of its weekly circular and shall transfer it to the appropriate part of the Plan.

6.5 For the purpose of applying Article 4, the reference usable field strength to be used shall be:

- for an assignment appearing in Part 1 or Part 2 of the Plan, the usable field strength resulting from the other assignments appearing in those parts of the Plan;
- for an assignment appearing in the Appendix, the usable field strength resulting from all the assignments appearing in the Plan including the Appendix.

6.6 Each time an assignment is transferred from the Appendix to the appropriate part of the Plan, the reference usable field strength of the stations concerned shall be calculated again and the result obtained shall be used for the application of the provisions of Article 4.

ARTICLE 7

Notification of Frequency Assignments

7.1 When an administration of a Contracting Member proposes to bring into use an assignment in conformity with this Agreement, it shall notify the assignment to the IFRB in accordance with the provisions of Article 12 of the Radio Regulations. (See also Article 5 of this Agreement and Resolutions Nos. 2 and 3.)

7.2 In relations between Contracting Members, assignments thus brought into service and entered in the Master International Frequency Register will have the same status, irrespective of the date on which they are brought into service.

ARTICLE 8

Accession to the Agreement

8.1 Any Member of the Union in the planning area which has not signed the Agreement may at any time deposit an instrument of accession with the Secretary-General, who shall immediately inform the other Members of the Union. Accession to the Agreement shall be made without reservations and shall apply to the Plan as it stands at the time of accession.

8.2 Accession to the Agreement shall become effective on the date on which the instrument of accession is received by the Secretary-General.

ARTICLE 9

Scope of Application of the Agreement

9.1 The Agreement shall bind Contracting Members in their relations with one another but shall not bind those Members in their relations with non-Contracting Members¹.

9.2 If a Contracting Member enters reservations with regard to any provision of this Agreement, other Contracting Members shall be free to disregard such provision in their relations with the Member which has made such reservations.

ARTICLE 10

Approval of the Agreement

10.1 Members signatory to the Agreement shall notify their approval of this Agreement, as promptly as possible, to the Secretary-General, who shall at once inform the other Members of the Union.

ARTICLE 11

Denunciation of the Agreement

11.1 Any Contracting Member may denounce this Agreement at any time by a notification sent to the Secretary-General, who shall inform the other Members of the Union.

11.2 Denunciation shall become effective one year after the date on which the Secretary-General receives the notification of denunciation.

11.3 On the date on which the denunciation becomes effective, the IFRB shall delete from the Plan the assignments in the band 87.5 - 108 MHz entered in the name of the Member denouncing the Agreement. (See Recommendation No. 1.)

¹ For relations with non-Contracting Members with respect to the band 100 - 108 MHz, see Article 3 of this Agreement (see also Resolution No. 4 and Recommendation No. 1).

ARTICLE 12

Revision of the Agreement

12.1 No revision of this Agreement shall be undertaken except by a competent administrative radio conference convened in accordance with the procedure laid down in the Convention, to which at least all the Members of the Union in the planning area shall be invited.

ARTICLE 13

Entry into Force and Duration of the Agreement

13.1 This Agreement shall enter into force on 1 July 1987, at 0001 hours UTC.

13.2 On that date, with the exception of stations operating in conformity with No. 342 of the Radio Regulations, sound broadcasting stations in operation with frequency assignments which do not appear in Parts 1 and 2 of the Plan referred to in Article 3, paragraph 3.1, shall cease transmitting. Such stations may resume operation provided the necessary agreements are obtained.

13.3 This Agreement and the annexed Plan have been established with a view to meeting the requirements of the broadcasting service (sound) in the band 87.5 - 108 MHz for a period of 20 years from the date of entry into force of the Agreement.

13.4 This Agreement shall remain in force until it is revised in accordance with Article 12.

IN WITNESS WHEREOF, the undersigned delegates of the Members of the Union mentioned above have, on behalf of the competent authorities of their respective countries, signed this Agreement in a single copy in the Arabic, English, French, Russian and Spanish languages; in case of dispute, the French text shall be authentic. This copy shall remain deposited in the archives of the Union. The Secretary-General shall forward one certified true copy to each Member of the Union in the planning area.

Done at Geneva, 7 December 1984

For the Democratic Republic of Afghanistan:

M. AKBAR KHERAD
MIR AZIZULLAH BURHANI

In the name of the Federal Republic of Germany:

ERWIN SAUERMANN
KLAUS OLMS

For the Socialist People's Republic of Albania:

RIFAT KRYEZIU
PANDELI PAPALILO
FREDERIK KOTE
GARIP PALUSHI

For the People's Republic of Angola:

JOÃO PEDRO LUBANZA
JOSÉ ALVES SARAIVA

For the People's Democratic Republic of Algeria:

N. BOUHIRED
A. HOYOU
R. BOUNAB
M. DERRAGUI
M. MEHNI

For the Kingdom of Saudi Arabia:

SULEIMAN M. GHANDOURAH
HABEEB K. ALSHANKITI
SAED A. ALGHAMDI AL-FARHA
SAUD A. ALRASHEED
YOUSSEF S. ALDEHAIM
MOHAMMAD H. ABDULMOHSIN
ABDULRAHMAN A. ALYAMI

For Austria:

LETTNER G.
PRULL F.

For Belgium:

TASTENOY R.
GEWILLIG M.
HAUSEUX R.

For the People's Republic of Benin:

B. AGNAN

For the Byelorussian Soviet Socialist Republic:

V. GREKOV

For the Republic of Botswana:

JOSEPH MODIMOETSHO BVOSIE
SEKETE
HABUJI SOSOME

For the People's Republic of Bulgaria:

YANEV YANKO

For Burkina Faso:

KABA YOUSOUF
ONADIA L. RAPHAËL

For the Republic of Cameroon:

YANZE EMMANUEL
SONFACK PIERRE
MELONGO BISSO JACOB

For the Republic of Cyprus:

PAUL T. ASTREOS
R. MICHAELIDES
ANDREAS MICHAELIDES

For the Vatican City State:

SABINO MAFFEO
PIER VINCENZO GIUDICI

For the People's Republic of the Congo:

POUEBA PAUL ALBERT

For the Republic of the Ivory Coast:

TIEMELE KOUANDE CHARLES
COULIBALY ADAMA
NGUESSAN KOFFI EUGENE
YAO KOUAKOU JEAN-BAPTISTE

For Denmark:

JØRN BACH
ARNE FOXMAN
J. A. HEEGAARD
JØRN ANDERSEN
JØRGEN WEBER

For the Arab Republic of Egypt:

M. FAWZY YASSIN
OLFAT A. SHAWKAT
MAHMOUD ABDEL WANIS KABEIL

For Spain:

FRANCISCO VIRSEDA BARCA
PASCUAL MENENDEZ
FRANCISCO MOLINA NEGRO
LORENZO CHAMORRO SANTA CRUZ

For Finland:

K. TERÄSVUO
CHRISTER NYKOPP

For France:

P. H. GASCHIGNARD
H. BERTHOD

For the Gabonese Republic:

IMOUNGA FRANCIS
LEGNONGO JULES

For Greece:

C. HAGER
A. KASMAS
TH. KOKOSSIS
D. ANGELOGIANNIS

For the Republic of Guinea:

MAMADOU SALIOU DIALLO
ABDALLAH CAMARA

For the Hungarian People's Republic:

VALTER FERENC
HORVÁTH LAJOS

For the Islamic Republic of Iran:

KAVOUSS ARASTEH MOGHADDAM
BARZEGAR-MARVASTI HOSSEIN
YAGHOOB ASLANI BALICINI

For the Republic of Iraq:

KHALID AMIN
N. Y. ABACHI
A. M. HINDI



For Ireland:

SEAMUS MORAN
THOMAS A. DEMPSEY
MICHAEL J. C. CURLEY

For the State of Israel:

E. NISSIM
J. NITSAN

For Italy:

A. PETTI

For the Hashemite Kingdom of Jordan:

OSAMA ASFOURA

For the Republic of Kenya:

JOED NGARUIYA
ISAAC N. ODUNDO
J. P. KIMANI
STEPHEN M. CHALLO

For the State of Kuwait:

JAWAD A. ALMAZEEDI
ABDUL AZIZ M. S. AL-FURAIHI
ABDULWAHAB ALI ALSUNAIN

For the Kingdom of Lesotho:

F. L. LETELE

For the Socialist People's Libyan Arab Jamahiriya:

WALID A. LUTFI
ALI MOHAMED ENAYLI
SALEM ABDALHADE SALEM
MOHAMED SALEH ALSABEY
MOKTAR A. ABUSHAALA
SAADALLA A. BENSAUD
ABDURRAZAGH ALI LAKLUK
KHALIFA Y. GOUGILAH
YOUSSEF S. MEGIRAB

For the Principality of Liechtenstein:

Count M. VON LEDEBUR

For Luxembourg:

M. HEINEN

For the Republic of Mali:

TRAORÉ DIADIÉ

For the Republic of Malta:

ALFRED FALZON
JOSEPH BARTOLO
ANTHONY VELLA
ALEXANDER BONNICI

For the Kingdom of Morocco:

ALI SKALLI
MOHAMMED HAMMOUDA
AHMED TOUMI

For Monaco:

CÉSAR SOLAMITO

For the Mongolian People's Republic:

SH. YUMJAV

For Norway:

THORMOD BØE
TORE ØVENSEN

For the Sultanate of Oman:

HAMED YAHYA AL-KINDY

For the Republic of Uganda:

HAMALA YONA

For the Kingdom of the Netherlands:

F. R. NEUBAUER
H. K. DE ZWART

For the People's Republic of Poland:

J. FAJKOWSKI

For Portugal:

FERNÃO MANUEL HOMEM DE
GOUVEIA FAVILA VIEIRA
JOAQUIM FERNANDES PATRÍCIO
DURVAL DE LUCENA BELTRÃO DE
CARVALHO

For the State of Qatar:

ABDULLA AHMED AL-MOHANADI
AHMAD AL-SOUJ

For the Syrian Arab Republic:

BARA MICHEL



For the German Democratic Republic:

HANS-J. HAMMER

For the Ukrainian Soviet Socialist Republic:

YOURI MALKO

For the Socialist Republic of Romania:

ANDREI CHIRICA

For the United Kingdom of Great Britain and Northern Ireland:

ALAN MARSHALL
R. A. BEDFORD
G. J. PHILLIPS
G. C. STEMP
ALFRED L. WITHAM

For the Republic of San Marino:

PIETRO GIACOMINI
IVO GRANDONI

For the Republic of Senegal:

ABOUBAKARY NDIONGUE

For Sweden:

PERCY PETTERSSON
BERTIL OLSTRUP

For the Confederation of Switzerland:

STEFFEN CHARLES
SCHWARZ ERNST

For the Kingdom of Swaziland:

CYPRIAN SIPHO MOTSA

For the United Republic of Tanzania:

ELIAH ALI HIMA MKONGWE

For the Republic of Chad:

HAMID KANTE
BENDOLEM TABA

For the Czechoslovak Socialist Republic:

JÍRA JIŘÍ

For the Togolese Republic:

GNASSOUNOU-AKPA KOUASSI ELE
AKPAKI KOFFI OSSANDJOU

For Tunisia:

CHAFFAI MONGI
BCHINI MOHAMED SALEM
BETTAËB BÉCHIR

For Turkey:

HAYRETTIN GÜRSOY

For the Union of the Soviet Socialist Republics:

A. ISAEV

For the Yemen Arab Republic:

ABDULLAH MOHAMED FARHAN

For the People's Democratic Republic of Yemen:

MOHAMED ALI AZZANI

For the Socialist Federal Republic of Yugoslavia:

ANDREJ GRAHOR
DRAŽKO MARIN

For the Republic of Zambia:

CHURCHILL FLOYD MUTALE

For the Republic of Zimbabwe:

D. WOODWARD

ANNEX 1

**Frequency Assignment Plan for FM Sound Broadcasting Stations
in Region 1 and Part of Region 3 in the Band 87.5 - 108 MHz**

Information included in the columns of the Plan

Note by the General Secretariat: The Plan, as described in Article 3 of the Agreement, is published in the form of microfiches placed in the pocket at the end of this volume. The Plan, except for the information in columns 14 and 16 and the notes relating to compatibility with the aeronautical radionavigation service, has also been published in Conference documents 190(Rev.1) and 191(Rev.1).

Column

1. Assigned frequency (MHz)
2. Country symbol
3. Name of transmitting station
4. Symbol of the geographical area in which the station is located (see Table No. 1 of the Preface to the International Frequency List)
5. Geographical coordinates, in degrees and minutes, of the transmitting antenna site
6. Altitude of site of transmitting antenna above sea level (m)
7. Height of the antenna above ground level (m)
8. Polarization (H, V or M)
9. System (1, 2, 3, 4 or 5)¹
10. Total effective radiated power (dBW)
11. Maximum effective radiated power of the horizontally polarized component (dBW)
12. Maximum effective radiated power of the vertically polarized component (dBW)
13. Directivity of antenna (ND or D)
14. Effective radiated power of the horizontal component and the vertical component in different azimuths (dBW)
15. Maximum effective antenna height (m)
16. Effective antenna height at different azimuths
17. Sectors or directions of restricted e.r.p. (in degrees)
 - 17.1 Sector No. 1
 - 17.2 Sector No. 2
 - 17.3 Sector No. 3
 - 17.4 Sector No. 4
18. Attenuation in the sector concerned (dB)
 - 18.1 Attenuation in sector No. 1
 - 18.2 Attenuation in sector No. 2
 - 18.3 Attenuation in sector No. 3
 - 18.4 Attenuation in sector No. 4
19. Remarks²

The above information from column 1 to column 19 is an integral part of the Plan. In case of divergence between indications in columns 17 and 18 on the one hand and column 14 on the other, the information in column 14 should be used.

¹ See paragraph 3.1 of Annex 2 to the Agreement.

² See the following page.

**Meaning of the Symbols in the “Remarks” column
(column 19 of the Plan)**

A1/...	When it is brought into service this assignment may cause type A1, A2, B2 interference to one or more aeronautical radionavigation stations of the countries whose symbols are given after the oblique stroke.
A2/...	
B2/...	The provisions of Article 5 of the Agreement shall be applied before it is brought into service.
B1/.../...	This assignment may contribute to type B1 intermodulation interference to an aeronautical radionavigation station. The provisions of Article 5 of the Agreement shall be applied before it is brought into service. The symbol following the first oblique stroke is that of the country to which these aeronautical radionavigation stations belong. The symbols following the second oblique stroke are those of the countries whose sound-broadcasting stations contribute to the interference.
3/...	The bringing into service of this assignment is contingent on the withdrawal of assignments to television stations belonging to the administrations named after this symbol and may not take place until a date to be agreed with those administrations.
4/...	Up to the date which follows the symbol, this assignment shall be used with the characteristics given in columns 17 and 18. After that date, it may be used with the radiation characteristics given in column 14.
5/...	This assignment may continue to be used until the date which follows the symbol. After that date, it will be deleted from the Plan.
6/...	Coordination of this assignment with the country indicated under this symbol did not take place. The IFRB will study possible solutions for the resolution of this incompatibility and make appropriate recommendations to the countries concerned.
7/...	The Libyan Administration does not agree to the coordinates of this assignment because it is in Libyan territory.
8/...	The Libyan Administration may, in principle, change the ratio between the vertical and the horizontal polarization components as a result of experiments to be carried out on the site.
9/...	The Chad Administration does not agree to the coordinates of this assignment because it is in Chadian territory.
10/...	Agreement to carry out tests in order to determine the acceptable increase in power in relation to the characteristics given in the Plan, for the sector 300° to 340° between Belgium and Luxembourg and for the sector 120° to 140° between France and Luxembourg.
11/...	The e.r.p. is 175 kW or less in the sector 120° to 135°.
12/...	Austria and Switzerland have agreed that a power reduction in the sector 230° to 280° equal to that applicable to frequencies 102.1 MHz and 106.5 MHz will be applied at a date to be fixed after the Conference.
13/...	This assignment is coordinated with the Administration of Algeria with regard to the corresponding frequencies of channel No. 14.
14/...	In the coordination process the Libyan Administration will take into account at first the topography of the terrain.
15/...	The second sub-paragraph of Article 6, paragraph 6.4, does not apply to this assignment.
* 16/...	This assignment causes a nuisance field strength higher than 60 dB/μV/m to other assignments and, in accordance with Article 6, has to secure the agreement of the administrations identified after the oblique stroke.

* *Note by the General Secretariat:* This new symbol for the Remarks column has been included at the request of the IFRB.

ANNEX 2

Technical data

These data were used for the preparation of the Plan.
They shall also be used for Plan modification procedures.

CHAPTER 1

Definitions

The following definitions supplement those contained in the International Telecommunication Convention and in the Radio Regulations.

1.1 *Coverage area*

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

In this area the protection against interference is provided for 99% of time.

Note – The field strength of the wanted transmitter is derived from the propagation curve relating to 50% of locations and for 50% of time.

1.2 *Service area*

The part of the coverage area in which the administration has the right to demand that the agreed protection conditions be provided.

1.3 *Usable field strength (E_u)*

Minimum value of the field strength necessary to permit a desired reception quality, under specified receiving conditions, in the presence of natural and man-made noise and interference, either in an existing situation or as determined by agreements or frequency plans.

Note 1 – The desired quality is determined in particular by the protection ratio against noise and interference and, in the case of fluctuating noise or interference, by the percentage of time during which the required quality must be ensured.

Note 2 – The receiving conditions include, amongst others:

- the type of transmission and frequency band used;
- the receiving equipment characteristics (antenna gain, receiver characteristics, siting);
- receiver operating conditions, particularly the geographical zone, the time and the season, or if the receiver is mobile, the local variations of the field strength due to propagation effects.

Note 3 – The usable field strength can be calculated by the simplified multiplication method¹, or the power sum method². For the application of the Article 4 procedure, the simplified multiplication method is used.

1.4 *Nuisance field*

The field strength of the interfering transmitter (at its pertinent e.r.p.) modified by the relevant protection ratio.

¹ See Chapter 4.

² See CCIR Recommendation 499-2.

CHAPTER 2

Propagation2.1 *Propagation data for the VHF broadcasting service*2.1.1 *General*

The propagation data given in this chapter were used for the planning of the broadcasting service. They relate field strength to path length and the effective transmitting antenna height. They represent the field strength exceeded at 50% of locations for 50% and 1% of the time and apply to both horizontal and vertical polarization.

The data are given for various types of areas and climates, namely, land, cold sea, warm sea and areas subject to extreme super-refractivity. The definition of these categories has to be based on statistical data; it is thus to a certain extent arbitrary, but experience indicates that the following distinctions are appropriate for the application of the data set out in this chapter.

Cold sea

Seas, oceans and other substantial bodies of water at latitudes greater than 23.5° North or South, but excluding the Mediterranean, the Black Sea, the Red Sea and the area extending from the Shatt-al-Arab to and including the Gulf of Oman.

Warm sea

Seas, oceans and other substantial bodies of water at latitudes less than 23.5° North or South, including the Mediterranean and the Black Sea.

Area of extreme super-refractivity

Seas, oceans and other substantial bodies of water in the area extending from the Shatt-al-Arab to and including the Gulf of Oman.

Note – In bilateral and multilateral negotiations during the Conference, some administrations in the Eastern Mediterranean area (East of 30° E) used the criteria described in section 2.3, for the application of the 1% time curves, the sea area was assumed to include also a coastal strip extending up to 50 km inland and for the Nile delta region (from 30° East to 32° East) a coastal strip extending up to 200 km inland.

2.1.2 *Area of extreme super-refractivity*2.1.2.1 *Oversea paths*

For oversea path calculations for 50% of the time, Figure 2.2 was used. For the application of the 1% time curves, the sea area includes also a coastal strip extending up to 50 km inland.

For oversea paths in the area from the Shatt-al-Arab up to and including the Gulf of Oman, calculations for propagation occurring for 1% of the time were based on the following formulae:

$$E = 106.9 - 20 \log d \quad \text{for } 10 \leq d \leq 400$$

$$E = 78.9 - 0.06 d \quad \text{for } d > 400$$

where

d = path length in km,

E = field strength in dB(μV/m).

2.1.2.2 *Overland paths*

For overland path calculations for 50% of the time, Figure 2.1 was used. For overland path calculations for 1% of the time, Figure 2.3 was used, but any coastal strip as defined in section 2.1.2.1 was treated as sea.

2.1.2.3 *Mixed paths*

For both 1% and 50% of the time, mixed paths were evaluated according to the procedure set out in section 2.1.3.5.

2.1.3 *Application of the curves*

2.1.3.1 *Time variability*

The field-strength values given in Figures 2.1 to 2.5, are those exceeded for 50% and 1% of the time. They are expressed in decibels relative to 1 $\mu\text{V/m}$ and correspond to an effective radiated power of 1 kW.

The 50% time curves were used for the determination of coverage areas. The 50% and 1% time curves were used for interference calculations for steady and tropospheric interference respectively.

2.1.3.2 *Effective transmitter antenna height*

The effective height of the transmitting antenna, h_1 , is defined as its height over the average ground level between distances of 3 km and 15 km from the transmitter in the direction of the receiver. The height of the receiving antenna, h_2 , was assumed to be 10 m above ground level.

The curves given in Figures 2.1 to 2.5 correspond to effective transmitter antenna heights, h_1 , from 37.5 to 1200 metres.

For effective antenna heights, h_1 , of 20 m and 10 m, additional curves can be derived from the 37.5 m curve by applying correction factors of –5 dB and –11 dB for distances up to 25 km, and 0 dB in both cases for distances in excess of 250 km, with linear interpolation for intermediate distances. For effective transmitter antenna heights, h_1 , of less than 10 m, the values derived for 10 m are used.

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

2.1.3.3 *Location variability*

The curves given are representative of 50% of locations, the percentage which was used for planning purposes.

2.1.3.4 *Terrain irregularity correction*

The curves for propagation overland refer to the kind of irregular rolling terrain found in many parts of Region 1. No terrain irregularity correction was taken into account in drawing up the Plan.

Note – In bilateral or multilateral coordinations during the Conference, some administrations took account of actual path profiles. This method may also be used for coordination after the Conference.

2.1.3.5 *Mixed land/sea path calculations*

When the propagation path is partially over land and partially over sea, the following method is used for interpolation between the appropriate land and sea curves.

Let:

$E_{L,t}$: field strength for land path equal in length to the mixed path for $t\%$ of the time,

$E_{S,t}$: field strength for sea path equal in length to the mixed path for $t\%$ of the time,

$E_{M,t}$: field strength for mixed path for $t\%$ of the time,

d_S : length of sea path,

d_T : length of total path.

The field strength for the mixed path ($E_{M,t}$) is then determined by using the formula:

$$E_{M,t} = E_{L,t} + \frac{d_S}{d_T} (E_{S,t} - E_{L,t})$$

In the calculations of mixed paths, a computerized approximation of the coastline was employed. It should be borne in mind that in some cases this may give rise to certain inaccuracies when compared to calculations based on the actual coastline.

2.2 *Propagation data for the aeronautical radionavigation service*

The compatibility calculations are based on free space propagation conditions. In drawing up the Plan the calculations were limited to the test points of the aeronautical radionavigation station in line of sight from the broadcasting station, it being assumed that the effective Earth's radius is $4/3$ of the actual radius.

2.3 *Additional propagation data for the Eastern Mediterranean*

In bilateral and multilateral negotiations during the Conference, some administrations in the Eastern Mediterranean (East of 30° E) calculated the field strength for 1% of the time for oversea paths using the following formulae:

$$E = 106.9 - 20 \log d - 0.07 d \quad \text{for } 10 \leq d < 100$$

$$E = 99.9 - 20 \log d \quad \text{for } 100 \leq d \leq 568$$

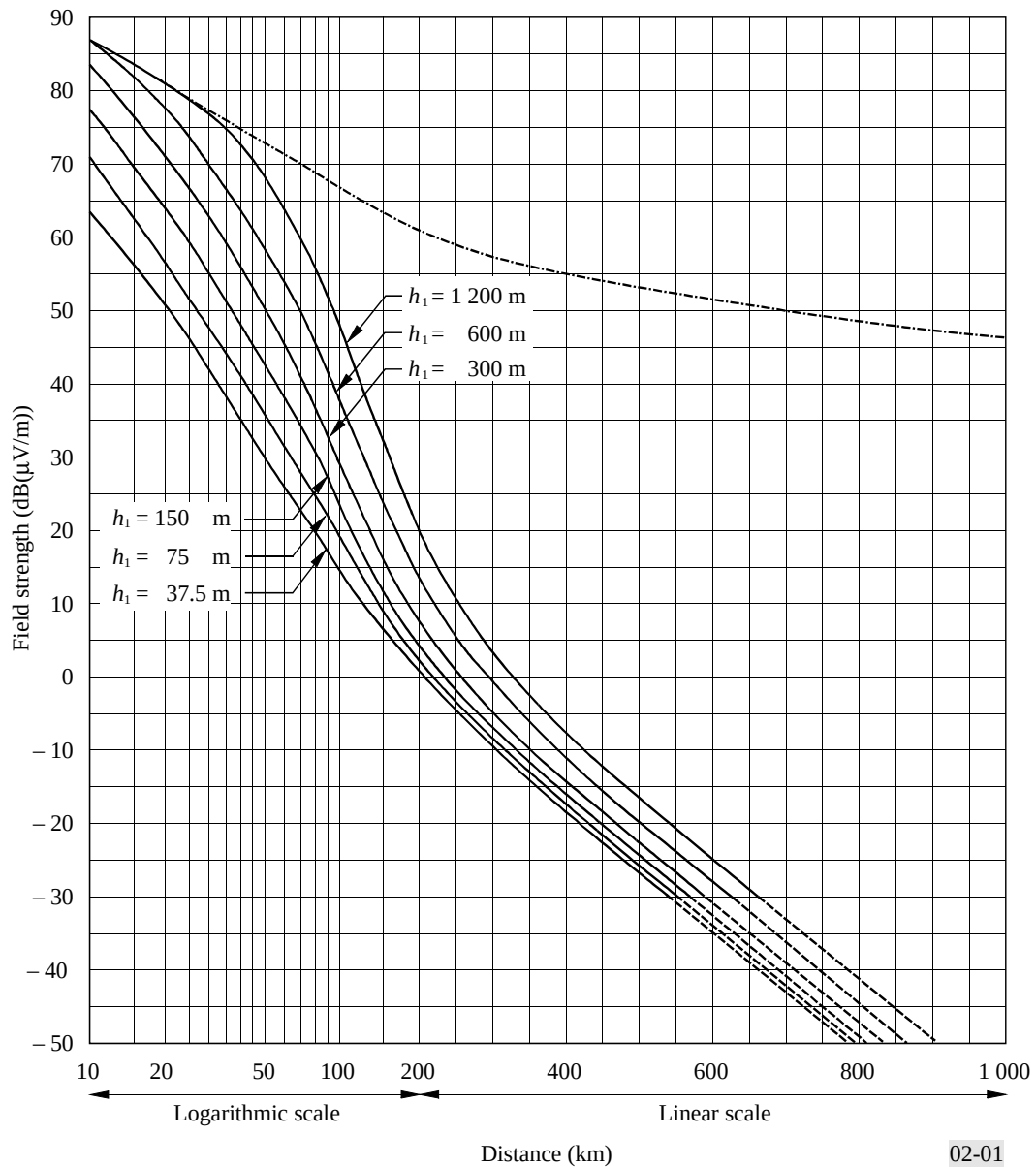
$$E = 78.9 - 0.06 d \quad \text{for } d > 568$$

where

d = path length in km,

E = field strength in dB(μ V/m).

FIGURE 2.1
Field strength (dB(μ V/m)) for 1 kW e.r.p.



Propagation over land

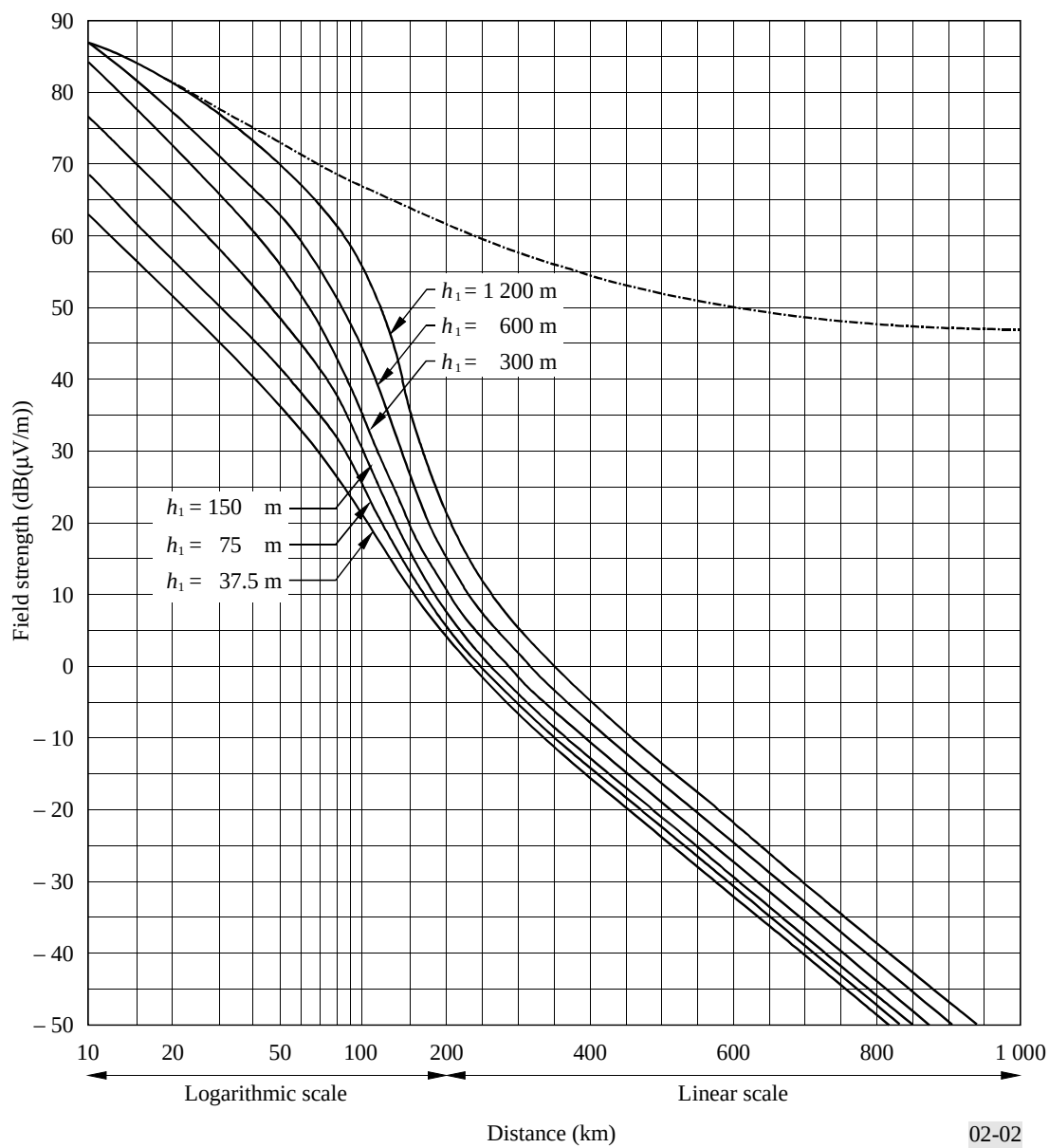
50% of the time; 50% of the locations; $h_2 = 10$ m

----- Free space

Propagation curves for the broadcasting service

02-01

FIGURE 2.2
Field strength (dB(μ V/m)) for 1 kW e.r.p.



02-02

Propagation over sea

50% of the time; 50% of the locations; $h_2 = 10$ m

----- Free space