RECOMMENDATION ITU-R SM.1049-1*

A METHOD OF SPECTRUM MANAGEMENT TO BE USED FOR AIDING FREQUENCY ASSIGNMENT FOR TERRESTRIAL SERVICES IN BORDER AREAS

(Question ITU-R 47/1)

(1994-1995)

Scope

This Recommendation contains the methods of mutual frequency coordination between neighboring countries in border areas.

Keywords

Frequency coordination, border area, terrestrial service

The ITU Radiocommunication Assembly,

considering

a) that frequency coordination is necessary in border areas;

b) that there is a need to establish guidelines for frequency sharing in border areas;

c) that if administrations develop effective bilateral or multilateral agreements on frequency use in border areas this will aid long-term strategic planning, promote efficient spectrum utilisation and help avoid interference;

d) that the establishment of a mechanism for updating and exchanging appropriate information is required to enable an efficient accomplishment of the coordination process;

e) that coordination methods may vary depending on the services and frequency bands involved,

recommends

1 that neighbouring administrations establish coordination agreements which should include:

1.1 the exchange of appropriate spectrum management data from a national database;

1.2 a means of resolving instances of unexpected harmful interference;

1.3 procedural mechanisms such as the establishment of a *Coordination zone*, within which the coordination agreement applies;

1.3.1 the following definitions apply:

– *Coordination zone*: the area along the border in which a coordination agreement applies;

– *Coordination perimeter*: a line establishing the agreed limit of the *Coordination zone*,

1.3.2 the methods of determining the *Coordination perimeter* are based on typical technical and operational requirements for the concerned radio service;

1.3.3 in reaching any bilateral or multilateral agreements on the creation of a *Coordination zone* administrations should consider the options listed in Annex 1 and examples shown in Annex 2.

ANNEX 1

The following steps provide a guideline for administrations considering entering into a bilateral or multilateral agreement for the establishment of a *Coordination zone*. In developing any agreement administrations should determine the appropriate method of implementation.

NOTE 1 – The terms “database” and “model” used in this Annex do not necessarily refer to computer based systems.

* Radiocommunication Study Group 1 made editorial amendments to this Recommendation in the year 2019 in accordance with Resolution ITU-R 1.

1 Agreements for establishing the *Coordination zone*

1.1 The depth of detail and the items included in bilateral or multilateral agreements for establishing a *Coordination zone* will depend upon the requirements of the individual administrations. Agreements should however cover both the administrative and the technical arrangements and may include standardisation of technical and operational parameters. Agreements may include components such as:

– frequency range(s) to be covered in the agreement,

– authorized bandwidth of service,

– modulation system,

– effective antenna height,

– limiting the service area of transmitters to the area required to be covered,

– the pertinent information to be exchanged e.g. service area, etc.,

– a method for collating, standardising and exchanging information,

– a method for identifying stations requiring coordination,

– the point in the process at which coordination is effected.

1.2 Administrations should also consider the requirements of any existing systems that are within the frequency range covered by the agreement but whose technical and operational parameters do not conform to the parameters in the agreement. Resolution of any difficulties caused by existing systems should be considered by the administrations and an appropriate mechanism incorporated into the agreement, this could include settlement on an evolutionary or case by case basis.

1.3 Within the *Coordination zone* administrations should consider the following frequency sharing options:

– *Allotted frequencies* (see Note 1): frequencies designated to an individual administration on an exclusive or preferential basis which can be assigned by that administration without prior coordination, provided technical characteristics fixed by prior agreement are followed.

– *Shared frequencies* (see Note 1): frequencies which may be shared by administrations without prior coordination provided the characteristics fixed by prior agreement are followed.

– *Coordinated frequencies* (see Note 2): frequencies that can be assigned only after successful coordination.

– *Allotted frequencies used on the basis of geographical network plans*: (e.g. cellular or broadcast allotment plans) frequencies used, in the countries concerned on the basis of a geographical network plan prepared and adopted in advance, taking into account the technical characteristics set out in the plan.

NOTE 1 – Most applicable to area coverage Systems such as VHF/UHF land mobile services.

NOTE 2 – Most applicable to fixed services.

2 The Coordination zone

2.1 For a service a smaller Coordination zone may permit an administration to coordinate fewer assignments in the operational planning of the service, whilst keeping the risk of interference to an acceptable level. Refining the *Coordination perimeter* map would require administrations to have more complex arrangements for regulating the operation of the agreement and achieve greater precision in determining interference levels. To refine the *Coordination perimeter* map and minimise the *Coordination zone* the *Coordination perimeter* may be estimated by propagation prediction methods. These methods may vary in complexity and precise applicability to the actual terrain and climatic conditions. In essence the aim is to improve on the “simple line” approach by using prediction methods to estimate the excess losses introduced by intervening hills and similar features and to assess the degree of risk that anomalous propagation conditions will mitigate against these excess losses. It may also be necessary to agree measurement strategies by which the accuracy and applicability of the prediction methods or models may be verified.

2.2 To determine the *Coordination perimeter*, mutual agreement on a number of factors is required:

– the maximum permitted interference field strength for each service/frequency band;

– the maximum values of transmitter power, effective antenna height and gain allowed or a method of including these in the calculations;

– an agreed method of prediction calculation;

– methods for allowing each administration to verify the correct or accepted use of the model(s) on a case-by-case basis.

For a more detailed model a terrain database covering relevant parts of each administrations territories may be required.

In addition it may be necessary to agree on a strategy for performing actual measurements to verify the applicability of the model and give confidence in the chosen procedures. This measurement strategy will need to consider a number of factors:

– the selection of test points at which transmitters and measurement receivers will be located;

– the conditions, such as climate and signal-to-noise ratios, over which results will be considered valid;

– the mechanism for witnessing measurement programmes and resolving any difficulties;

– the duration of measurements, in which context two issues need to be addressed:

  – the duration of measurements needed to validate terrain loss predictions under “normal” climatic conditions;

  – the extended duration required to assess the time probability that anomalous propagation will significantly enhance propagation and received signal levels;

– the method of relating measured results to the prediction models and the conditions under which the applicability and accuracy of the model can be considered proven.

ANNEX 2

EXAMPLE 1

Agreement between country X and country Y concerning the use of the bands 932 to 932.5 MHz and 941 to 941.5 MHz along the X-Y border for point to multipoint

1 This agreement between country X on the one hand, and country Y on the other hand, covers the coordination and use of the bands 932-932.5 and 941-941.5 MHz for point-to-multipoint communications systems in the vicinity of the X-Y border.

2 Agreement for point-to-multipoint systems in the band segments 932.0-932.5 MHz and 941.0-941.5 MHz.

2.1 Notwithstanding any other provisions of this agreement, beyond the Coordination zone each country shall have full use of the entire 932.0-932.5 and 941.0-941.5 MHz bands.

2.2 The Coordination zone is defined as the area adjacent to the X-Y border extending a distance of 50 km within either country.

2.3 In the Coordination zone, the frequencies shall be used as follows, consistent with the technical criteria of Appendix 1:

2.3.1 932.0-932.25 MHz and 941.0-941.25 MHz

Country Y has full use of frequencies within these bands. Country X may also use these frequencies on an unprotected basis, provided its stations are limited to a power flux-density (pfd) of –100 dB(W/m^2) at or beyond the Country Y border for the frequency band 932-932.25 MHz and –94 dB(W/m^2) at or beyond the Country Y border for the band 941.0-941.25 MHz.

2.3.2 932.25-932.50 MHz and 941.25-941.50 MHz

Country X has full use of frequencies within these bands. Country Y may also use these frequencies on an unprotected basis, provided its stations are limited to a pfd of –100 dB(W/m^2) at or beyond the Country X border for the frequency band 932.25-932.5 MHz and –94 dB(W/m^2) at or beyond the Country X border for the band 941.25-941.50 MHz.

2.4 Wherever this agreement provides that a power flux-density may be met in lieu of a distance separation, free space propagation may initially be assumed to determine whether the required power flux-density has been met. If the new applicant fails to meet a required pfd limit using free space propagation, the administration seeking use of the frequency may apply other methods, as appropriate, to demonstrate that the required pfd limit has, in fact, been met. On frequencies primarily assigned for use by the other country, the pfd limit must be met at and anywhere beyond the border.

APPENDIX 1

TO ANNEX 2

Technical criteria applicable to point-to-multipoint stations operating in accordance with this agreement

1 Example values

1.1 Maximum radiated power:

TABLE 1

Class of station	Band (MHz)	Maximum e.i.r.p.		Maximum e.r.p.	
		(W)	(dBW)	(W)	(dBW)
Master	941.0-941.5	1 000	30	600	27.8
Fixed remote and master	932.0-932.5	50	17	30	14.8

1.2 The maximum antenna height above average terrain for master stations operating at maximum power shall not exceed 150 m. Above 150 m, the power of master stations shall be in accordance with Table 2.

TABLE 2

Antenna height above average terrain (m)	e.i.r.p.		e.r.p.	
	(W)	(dBW)	(W)	(dBW)
Above 305	200	23	120	20.8
275-305	250	24	150	21.8
245-275	315	25	190	22.8
215-245	400	26	240	23.8
180-215	500	27	300	24.8
150-180	630	28	380	25.8

1.3 Terms and definitions

e.i.r.p. equivalent isotropically radiated power (dBW)

e.r.p. effective radiated power (reference dipole antenna) (dBW)

$$e.r.p. = e.i.r.p. - 2.2$$

1.4 Formula used for calculating free space propagation losses

$$pfd \ (\mathrm{dB(W/m^2)}) = 10 \log \left(\frac{e.i.r.p.}{4\pi D^2} \right)$$

pfd is the power flux-density where e.i.r.p. (W), D in (M) and power is relative to an isotropic radiator.

EXAMPLE 2

Arrangement between country X and country Y concerning the use of the bands 821-824 MHz and 866-869 MHz along the X-Y border for land-mobile service

1 Scope

1.1 This arrangement between country X and country Y covers the establishment and operation of land mobile radio services operating in the bands 821-824 MHz and 866-869 MHz along the X-Y border.

1.2 This arrangement is subject to review at any time at the request of either country.

1.3 Special coordination arrangements may be initiated under this arrangement by either country and implemented subject to the approval of both countries.

2 Sharing arrangements

The frequency bands covered by this arrangement are to be shared along the border as indicated below.

2.1 a) Country X

Country X has the unrestricted use of the frequency bands 821.000-822.500 MHz and 866.000-867.500 MHz in the Coordination zone within country X.

b) Country Y

Country Y has the unrestricted use of the frequency bands 822.500-824.000 MHz and 867.500-869.000 MHz in the Coordination zone within country Y.

c) Shared channels

Both countries agree that the following paired channels are to be available as public safety mutual aid channels (Mutual aid channels are to be used only for coordination of tactical communications between different public safety organizations, or for other similar emergency communications.):

821.0125 MHz	866.0125 MHz
821.5125 MHz	866.5125 MHz
822.0125 MHz	867.0125 MHz
822.5125 MHz	867.5125 MHz
823.0125 MHz	868.0125 MHz

These channels are available to both countries in all areas. Usage of these channels in the border area shall be coordinated between the radio system users. These channels are to be 25 kHz wide, and within the Coordination zones. Neither country shall assign any frequencies closer than 25 kHz to any of these mutual aid channels.

2.2 Coordination zone

The Coordination zone is the area adjacent to the X-Y border extending a distance of 100 km within either country. Within this zone, the countries may use their allotted portions of spectrum subject to the effective radiated power (e.r.p.) and effective antenna height (EAH) limits of Table 3.

TABLE 3

Limits of effective radiated power and effective antenna height

Example values

Effective radiated power (e.r.p.) is defined as the product of the power supplied to the antenna and its gain relative to a half-wave dipole in a given direction.

For base stations in the protection zone and sharing zone, this Table lists the limits of e.r.p. corresponding to the EAH ranges shown.

Effective antenna height (EAH)		e.r.p. (maximum) (W)
(m)	(ft)	
0-152	0-500	500
153-305	501-1 000	125
306-457	1 001-1 500	40
458-609	1 501-2 000	20
610-762	2 001-2 500	10
763-914	2 501-3 000	10
915-1 066	3 001-3 500	6
1 067-1 219	3 501-4 000	5
Above 1 219	Above 4 000	5

2.3 Two frequency channelling arrangements

Everywhere within the Coordination zones, the countries will use the spectrum on the basis of a two frequency channelling plan with mobile station transmitters in the 821-824 MHz band and base station transmitters in the 866-869 MHz band. A mobile station may also transmit on any frequency assigned to its associated base station.

2.4 Use of 821-824 MHz and 866-869 MHz bands outside of the Coordination zones

Beyond 100 km from the border, the countries have unrestricted use of these bands.

3 Use of frequencies allotted to one country by the other country

Frequencies primarily allotted for unrestricted use of one country may be assigned by the other country for use within the Coordination zone in its country under the following conditions:

– the maximum power flux-density (pfd) at the border of the primary user’s country does not exceed the limits specified in Table 4 (the spreading loss shall be calculated using the free space formula taking into account any antenna discrimination in the direction of the border);

– authorizations for stations using these frequencies will include a clause on the authorization documents issued by each country stating that any such authorization is subject to the condition that in the event the actual signals exceed the values in Table 4 at or beyond the border, the country granting the authorization will take immediate action to eliminate any harmful interference. This action could include revocation of the authorization;

– such authorizations will not be entitled to protection from stations in the country that has the primary use of the authorized frequency.

TABLE 4

Limits of power flux-density (pfd) corresponding to EAHs of base stations in the sharing zone

Example values

Effective antenna height (EAH)		pfd (Maximum) ($dB(W/m^2)$)
(m)	(ft)	
0-152	0-500	–84
153-305	501-1 000	–90
306-457	1 001-1 500	–95
458-609	1 501-2 000	–98
610-762	2 001-2 500	–101
763-914	2 501-3 000	–101
915-1 066	3 001-3 500	–103
1 067-1 219	3 501-4 000	–104
Above 1 219	Above 4 000	–104

4 Exchange of assignment information

The countries shall exchange information indicating their assigned frequencies every three months. As far as practical, proposed or planned assignments should be included at a minimum of once per year. Each country shall supply the following information.

– Licensee identifier

– Class of station

– Number of stations – base and mobile

– Frequency

– Location and coordinates

– Locality or area of reception

– Class of emission and necessary bandwidth

– Power (mean) delivered to the antenna

– Antenna gain (dB) and azimuth, when available

– Antenna elevation above mean sea level (M.S.L.).

EXAMPLE 3

Vienna Agreement (version of 3 December, 1993) on the coordination of frequencies between 29.7 and 960 MHz for fixed services and land mobile services

This example contains an Agreement actually in use between the telecommunications authorities of 14 European countries.

The following text contains the original version of the Agreement with the exception of the comments and additions in *italic* letters. These comments and additions are made in order to give additional information to the reader, and to avoid reference to country names.

With the exception of Annex 1, the Annexes and the Addendum are not given because of their size. The Agreement is notified to ITU, where the whole text is available.

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Addendum*

Technical provisions for the transition period.

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* *With the exception of Annex 1, the other Annexes and Addendum listed above are not attached to Example 3 because of their size.*

Preamble

The representatives of the telecommunication authorities *of 14 European countries* have concluded the present Agreement, under Article 7 of the Radio Regulations, on the coordination of frequencies between 29.7 MHz and 960 MHz for the purposes of preventing mutual harmful interference to the fixed- and land-mobile services and optimizing the use of the frequency spectrum above all on the basis of mutual agreements.

The application of the provisions of this Agreement by the signatory administrations does not imply any comment by these administrations on the sovereignty of a country or a territory.

1 Definitions

The definitions used in this Agreement shall be those of Article 1 of the Radio Regulations as well as those listed in this section.

1.1 Administrations

(Here the ITU names of the signatory Administrations are given.)

1.2 Frequencies

1.2.1 Frequencies in the following bands used in the countries concerned for fixed- and land-mobile services shall be coordinated under the terms of this Agreement.

29.7 - 47 MHz
68 - 74.8 MHz
75.2 - 87.5 MHz
146 - 149.9 MHz
150.05 - 174 MHz
406.1 - 430 MHz
440 - 470 MHz
862 - 960 MHz

1.2.2 For these services in other frequency bands between 29.7 and 960 MHz, for all other services in this frequency band as well as for all services in the frequency bands between 1 350 and 2 690 MHz, the coordination procedure set out in this Agreement may be used, and, if necessary, the technical parameters shall be agreed separately.

1.3 Frequency classes

1.3.1 Frequencies requiring coordination

Frequencies which administrations are required to coordinate with the other administrations affected before a station is put into service.

1.3.2 Preferential frequencies*

Frequencies which the administrations concerned may assign, without prior coordination, on the basis of bi- or multilateral agreements under the terms laid down therein.

1.3.3 Shared frequencies

Frequencies which may be shared, without prior coordination, on the basis of bi- or multilateral agreements under the terms laid down therein.

1.3.4 Frequencies for planned radiocommunication networks

Frequencies which the administrations must coordinate with a view to the subsequent introduction of coherent radiocommunication networks.

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* *Similar to allotted frequency.*

1.3.5 Frequencies used on the basis of geographical network plans

Frequencies used, in the countries concerned on the basis of a geographical network plan prepared and adopted in advance, taking into account the technical characteristics set out in that plan.

1.4 Frequency Register

The Frequency Register shall be made up of lists set out by every administration indicating its coordinated frequencies, its assigned preferential frequencies, its shared frequencies, its frequencies coordinated for planned radiocommunication networks and its frequencies used on the basis of geographical network plans. A list of the details to be included in the Frequency Register is given in Annex 2 *(not attached)*.

1.5 Harmful interference

Harmful interference shall be construed as any emission which causes serious degradation in the quality of the traffic of a radiocommunication service, or repeatedly disrupts or interrupts that service by exceeding the maximum permissible interference field strength specified in Annex 1 *(attached)*.

1.6 Administration affected

Any administration whose station could suffer from harmful interference as a result of the planned use of a frequency, or whose station could cause harmful interference to a planned receiving station of the requesting administration.

2 General

2.1 This Agreement shall in no way affect the administrations' rights and obligations arising out of the International Telecommunication Convention, the Regulations and Agreements of the International Telecommunication Union as well as other pertinent inter-governmental agreements.

2.2 Administrations shall assign frequencies exclusively in accordance with the provisions of this Agreement. If coordination is required, it shall be done prior to the taking into operation of the radio station affected.

2.3 If necessary, the administrations may agree on provisions that are different or supplementary to the provisions of this Agreement, which, however, must not adversely affect administrations that are not concerned.

2.4 The fixed- and land-mobile services which do not come under the responsibility of the signatory administrations, shall not be governed by the provisions of this Agreement unless otherwise provided for.

2.5 The effective radiated power and the effective antenna height of stations shall be chosen so that their range is confined to the area to be covered. Excessive antenna heights and transmitter outputs shall be avoided by using several locations and low effective antenna heights. Directional antennas shall be used in order to minimize the potential of interference to the neighbouring country. The maximum cross-border ranges of harmful interference for frequencies requiring coordination are given in Annex 1 *(attached)*.

3 Technical provisions

The request for coordination of a station and the evaluation of this request shall be made in accordance with the following technical provisions:

3.1 The maximum permissible interference field strength is given in Annex 1 *(attached)*.

3.2 Where the nominal frequencies are different, the permissible interference field strength shall be increased as indicated in Annex 3 *(not attached)*.

3.3 The interference field strength shall be determined in accordance with Annex 5 *(not attached)*.

3.4 For the purpose of protecting stations covered by this Agreement from emissions from other radiocommunication services, the calculations on mutual interference shall be based on the international agreements and relevant standards applicable to such services.

3.5 Administrations may agree to apply parameters other than the set values.

4 Procedures

4.1 Frequencies requiring coordination

A transmitting frequency shall be coordinated if the transmitter produces a field strength, at the border of the country of the administration affected, which, at a height of 10 m above ground level, exceeds the maximum permissible interference field strength as defined in Annex 1 *(attached)*. A receiving frequency shall be coordinated if the receiver requires protection.

4.1.1 Any administration wishing to take into operation a station shall circulate a request for coordination to all administrations affected for their comment. This request shall include the characteristics in accordance with Annex 2 *(not attached)*.

4.1.2 If, for the purpose of technically evaluating this request, the administration affected requires information that is lacking or needs to be supplemented in accordance with Annex 2 *(not attached)*, it shall ask for this information within 30 days upon receipt of the request for coordination.

4.1.3 Having received complete information concerning a request for coordination, the administration affected shall evaluate this information in accordance with the provisions of this Agreement. It shall notify the requesting administrations of the outcome within 45 days.

4.1.4 If the administration which initiated the coordination procedure does not receive a reply within 45 days, it may send a reminder. The administrations affected shall respond to this reminder within 20 days.

4.1.5 If the administration affected again fails to respond within the period fixed in § 4.1.4, it shall be deemed to have given its consent and the station shall be considered as coordinated.

4.1.6 The periods specified in § 4.1.3 and 4.1.4 may be changed by mutual consent.

4.1.7 Any frequency assignment made after a positive coordination shall be notified to the administrations affected within 180 days upon approval. Following such notification of assignment the frequency shall be entered in the Frequency Register.

If no assignment is granted within 180 days, the administration affected shall send a reminder to the administration that has asked for coordination. If no notification of assignment is given within another 30 days, the request for coordination shall be deemed null and void.

No notification shall be required if the frequency registers are exchanged semi-annually in accordance with § 4.7.1.

4.1.8 The administration wishing to change the technical characteristics of stations registered in the Frequency Register, shall notify the administrations affected of its intentions. Coordination shall be required if this change causes the probability of interference to increase in the neighbouring country. If the situation remains unchanged with regard to interference or if it improves, the administrations affected shall only be informed of such change. The entry in the Frequency Register shall be corrected accordingly.

4.1.9 In special cases, the administrations may assign frequencies for temporary use (up to 45 days) without coordination provided this does not cause harmful interference to coordinated stations. As soon as possible, the administration affected shall be notified of the planned taking into operation. Such stations shall immediately be taken out of operation if they cause harmful interference to coordinated stations of the neighbouring country.

4.2 Preferential frequencies

4.2.1 Frequencies in the frequency bands specified in § 1.2 may be defined by prior bi- or multilateral agreements as preferential frequencies for given administrations.

4.2.2 The administration which has been granted a preferential right may put stations operating on preferential frequencies into use without prior coordination.

4.2.3 Preferential frequencies granted to an administration shall have priority rights over assignments made to other administrations.

4.2.4 The entry into service of stations using preferential frequencies shall be notified to the administrations affected, including the characteristics as set out in Annex 2 *(not attached)*. These frequencies and their technical characteristics shall be entered in the Frequency Register.

4.2.5 Preferential frequencies to be assigned on conditions other than those agreed in § 1.3.2 shall be coordinated in accordance with § 4.1.

4.2.6 Following a positive coordination procedure in accordance with § 4.1, administrations may bring into use another administration's preferential frequencies. These shall have the same rights as frequencies coordinated in accordance with § 4.1.

4.2.7 If the existing radio networks of one administration cause harmful interference to the stations operated by another administration on frequencies to which it has a preferential right, or if, in particular cases, frequency assignments not enjoying preferential rights have to be adjusted, the administrations concerned shall determine the transitional period by mutual consent.

4.3 Frequencies for planned radiocommunications network

4.3.1 Prior to the coordination of a planned radiocommunications network the administrations may embark on a consultative procedure in order to facilitate the taking into operation of this new network. The request for consultation shall include the planning criteria as well as the following data:

- planned frequencies (transmitting and receiving frequency of the base station);
- coverage area of the entire radiocommunications network;
- class of the station;
- radius of the coverage area of a base station;
- effective radiated power;
- maximum effective antenna height;
- designation of the emission;
- network development plan.

The administration affected shall acknowledge receipt of the request for consultation and communicate its reply within 60 days.

In complicated planning issues this consultation may require a bi- or multilateral consultation meeting in order to assist the administration planning a radiocommunications network in coming to a quicker solution.

4.3.2 To coordinate frequencies for a planned radiocommunications network the administrations affected shall apply, no sooner than three years prior to the planned taking into operation of the network, the procedure described in § 4.1 together with the following changes:

4.3.2.1 The receipt of the request for coordination shall be acknowledged.

4.3.2.2 If there is no prior consultation the administrations affected shall submit their reply within 180 days from the day of the receipt of the request for coordination. Any request for coordination following a consultation process shall be responded to within 120 days.

4.3.2.3 The administration requesting coordination shall notify to the administrations affected the date at which the radiocommunications network will be taken into operation.

4.3.3 Stations forming part of the radiocommunications network shall be entered in the Frequency Register together with the date of the termination of the coordination procedure, and enjoy the same rights as the stations coordinated in accordance with § 4.1.

4.3.4 Coordination shall be null and void for those coordinated stations which have not been taken into operation within five years of the termination of the coordination procedure.

4.4 Frequencies used on the basis of geographical network plans

4.4.1 Geographical network plans covering certain parts of the frequency bands indicated in § 1.2 may be prepared and coordinated, divergence from the defined parameters being permissible, subject to prior agreement reached between the administrations affected. These frequencies shall be entered in the Frequency Register. On the basis of the geographical network plans adopted in this fashion, administrations shall be authorized to put stations into service without prior coordination with the administrations with which the plan has been agreed.

4.4.2 Frequencies used on the basis of geographical network plans and intended to be assigned on conditions other than those agreed in § 1.3.5, shall be coordinated in accordance with § 4.1.

4.5 Evaluation of requests for coordination

4.5.1 In evaluating the requests for coordination, the administration affected shall take into account the following classes of frequencies:

– frequencies entered in the Frequency Register;

– preferential frequencies;

– frequencies awaiting coordination (in chronological order of requests).

4.5.2 A request for coordination of a transmitter may only be rejected if the respective station:

4.5.2.1 exceeds the maximum permissible interference field strength given in Annex 1 *(attached)* at a station entered in the Frequency Register, or

4.5.2.2 intends to use a preferential frequency of the requesting or affected administration without meeting the conditions agreed upon bi- or multilaterally in accordance with § 1.2.3, or

4.5.2.3 exceeds the maximum permissible interference field strength given in Annex 1 *(attached)* in the case of a station awaiting coordination, or

4.5.2.4 does not meet the conditions governing the maximum cross-border ranges of harmful interference as given in Annex 1 *(attached)*.

4.5.3 The protection of a receiver may only be rejected if:

4.5.3.1 one of the coordinated transmitters of the administration affected produces at the respective receiver an interference field strength which is higher than the maximum permissible interference field strength given in Annex 1 *(attached)*, or

4.5.3.2 the protection of the receiver would restrict the use of a preferential frequency of the administrations affected under the conditions agreed upon bi- or multilaterally in accordance with § 1.3.2, or

4.5.3.3 one of the transmitters awaiting coordination of the administration affected produces at the respective receiver an interference field strength which is higher than the maximum permissible interference field strength given in Annex 1 *(attached)*, or

4.5.3.4 the conditions governing the cross-border ranges of harmful interference as given in Annex 1 *(attached)* are not met.

4.5.4 If protection from interference cannot be guaranteed, a request for coordination must be accepted with "G" (Addendum 10 to Annex 2) *(not attached)*.

4.5.5 In case a request for coordination is rejected or a conditional reply is given to such a request, the reasons shall be given for this, indicating, if appropriate, either the radio station to be protected or the radio station which could cause interference to the planned radio station.

4.5.6 An administration making reference to § 2.4 of this Agreement may only respond to a request for coordination by indicating "C" or "G" in accordance with Addendum 10 to Annex 2 *(not attached)*. No reason needs to be given for "G" in accordance with § 4.5.5; reference to § 2.4 shall be sufficient.

4.6 Evaluation in connection with tests

In order to make more efficient use of the radio spectrum, to avoid possible harmful interference and facilitate the enhancement of existing networks, the following procedure may be used.

4.6.1 If the administrations affected arrive at different results in their evaluations of the interference situation or if the request for coordination currently being processed so justifies, they shall agree to open the service on a trial basis.

4.6.2 The provisions on measurement procedures are given in Annex 7 *(not attached)*.

4.6.3 On completion of the tests a final decision shall be communicated to the requesting administration within 30 days, indicating the measured values of the interference field strength.

4.7 Exchange of Frequency Registers

4.7.1 Each administration shall prepare an up-to-date Frequency Register in accordance with § 1.4, to be supplied to each administration coordination procedures are carried out with. These Frequency Registers shall be exchanged bilaterally at least once every six months.

4.7.2 If a frequency appearing in the Frequency Register is no longer used, the competent administration shall notify the administration affected. The entry in the Register shall be deleted.

4.7.3 The administrations shall undertake to use the data appearing in the Frequency Registers of other administrations for service purposes only. These Frequency Registers may not be communicated to other administrations or other third parties without the consent of the administration affected.

5 Report of harmful interference

Any harmful interference which is observed shall be reported to the administration of the country in which the interfering station is located, in accordance with Addendum 2 to Annex 7 *(not attached)*. If harmful interference occurs on frequencies entered in the Frequency Register, the administrations concerned shall endeavour to achieve a mutually satisfactory solution as soon as possible.

6 Revision of the Agreement

This Agreement may be expanded or amended at any time at the initiative of any administration, subject to approval by the other administrations. Planned amendments shall be communicated to the administration *keeping the original version of the Agreement***,** which shall undertake to obtain the assent of the other administrations through the appropriate channels.

7 Accession to the Agreement

Any European Administration which adjoins at least one signatory administration may accede to this Agreement. A declaration to that effect shall be addressed to the administration *keeping the original version of the Agreement*. Upon approval by all signatory administrations, the accession shall take effect the day on which the requesting administration signs this Agreement.

8 Withdrawal from the Agreement

Any administration may withdraw from the Agreement by the end of a calendar month by giving notice of its intention at least six months before.

9 Status of prior coordination

The new provisions shall not apply to frequency uses already agreed between signatory administrations prior to this Agreement being concluded. These frequencies shall be recorded in the Frequency Register.

10 Languages of the Agreement

This Agreement shall be made out in three originals in the German, English and French language, each version being equally authentic.

11 Entry into force of the Agreement

Subject to the provisions of § 13, this Agreement shall enter into force on 3 December 1993.

12 Revocation of the Agreement of 24 January 1986

At the same time, the Agreement on the coordination of frequencies between 29.7 and 960 MHz for the fixed- and land-mobile services (Vienna, 24 January 1986), which was concluded between administrations of *12 European countries*, shall cease to be effective.

13 Transitory provisions

13.1 The provisions of Annexes 2, 4 and 5 *(not attached)* to this Agreement shall only be applied after the transition period defined in § 13.2. During this transition period, the remaining provisions in connection with those contained in the Addendum *(not attached)* to this Agreement shall be applied.

Administrations may agree bi- or multilaterally to communicate the data in the new format according to Annex 2 *(not attached)* to this Agreement. In this case, the maximum effective antenna height in the direction to the neighbouring country concerned shall be indicated in the field 13 Z.

13.2 The transition period starts at the date of entry into force of this Agreement and ends at the date of entry into force of a bi- or multilateral Agreement between administrations implied which use a topographical database and the common calculation program. A copy of this Agreement shall be sent to the administration *keeping the original version of the Agreement* which will inform all other signatory administrations.

14 Notification to the Secretary-General of the International Telecommunication Union

The Administration *keeping the original version of the Agreement* shall notify the Secretary-General of the International Telecommunication Union of the conclusion and the content of this Agreement.

Annex 1

Maximum permissible interference field strengths and maximum cross-border ranges of harmful interference for frequencies requiring coordination

1 Maximum permissible interference field strength values

The interference field strength shall not exceed the values given in column 2 of the Table.

2 Cross-border ranges of harmful interference

Administrations shall endeavour to reduce the cross-border range of harmful interference caused by their stations and extending into the territory of a neighbouring country to a minimum as indicated in § 2.5 of the Agreement.

2.1 Limitation of harmful interference caused by transmitters

The cross-border range of harmful interference caused by transmitter stations which have to be coordinated is dependent on the frequency range and shall not exceed the values given in column 3 of the Table.

The values given in column 2 of the Table shall be used as limits for the permissible interference field strength at the distances from the border specified in column 3 of the Table. The values apply to a height of 10 m above ground level.

2.2 Limitation of protection of receivers

Protection for receivers can only be claimed if a reference transmitter, located at the site and the height of the receiver concerned, generates a field strength which does not exceed the values specified in column 2 of the Table at a height of 10 m above ground level and at a distance from the border specified in column 3 of the Table.

The e.r.p. of the reference transmitter is dependent on the frequency range as given in column 4 of the Table.

Example values

(1) Frequency range (MHz)	(2) Permissible interference field strength (relative to 1 μV/m)	(3) Maximum cross-border range of harmful interference (km)	(4) e.r.p. of the reference transmitter (dBW)
29.7-47	0 dB	100	3
68-74.8	+6 dB	100	9
75.2-87.5	+6 dB	100	9
146-149.9	+12 dB	80	12
150.05-174	+12 dB	80	12
406.1-430	+20 dB	50	16
440-470	+20 dB	50	16
862-960	+26 dB	30	13

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