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(ITU) للاتصالات الدولي الاتحاد في والمحفوظات المكتبة قسم أجراه الضوئي بالمسح تصوير نتاج (PDF) الإلكترونية النسخة هذه والمحفوظات المكتبة قسم في المتوفرة الوثائق ضمن أصلية ورقية وثيقة من نقلاً

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INTERNATIONAL TELECOMMUNICATION UNION

RULES OF PROCEDURE

approved by the Radio Regulations Board for the application, by the Radiocommunication Bureau

of the provisions of the Radio Regulations, Regional Agreements, Resolutions and Recommendations of World and Regional Radiocommunication Conferences

(Edition 1994)

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PREAMBLE

The Rules of Procedure were originally developed by the International Frequency Registration Board (IFRB) in response to provision No.1001 of the Radio Regulations. The Board distributed these Rules and the associated Technical Standards to all Members of the Union, in accordance with RR1001.1.

Following the Additional Plenipotentiary Conference (Geneva, 1992) and the changes in the Structure of the Union, the Radio Regulations Board, on the basis of proposals submitted by the Radiocommunication Bureau, consolidated all the earlier Rules of Procedures into the present document, eliminating outdated Rules an in a small number of cases adopting new Rules. The Rules contained in the present document thus replace and supersede all formerly published IFRB Rules. These rules shall be used by the Director of the Radiocommunication Bureau in the application of the Radio Regulations to register frequency assignments made by ITU Member Administrations and may be of use to Administrations when applying the Radio Regulations and preparing for a World Radio Conference. The Rules of Procedure are presented in two major Parts:

Part A: the rules that relate to one or a limited number of Radio Regulatory provisions; Part B: the rules that relate to a process i.e. a technical examination.

In accordance with provision No. 95 of the Constitution, the Radio Regulations Board has approved the present Rules of Procedure including technical criteria given herein.

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INTRODUCTION

<u>PART A</u>

Part A of the Rules of Procedure is related to the specific provisions of the Radio Regulations and Regional Agreements. The following sections are included:

- A1 RR: Radio Regulations
- A2 ST61: Regional Agreement for the European Broadcasting Area, VHF/UHF Broadcasting, (Stockholm, 1961)
- A3 GE75: Regional Agreement for Regions 1 and 3, LF/MF Broadcasting (Geneva, 1975)
- A4 RJ81: Regional Agreement for Region 2, MF Broadcasting (Rio de Janeiro, 1981)
- A5 GE84: Regional Agreement for Region 1 and part of Region 3, FM Sound Broadcasting in the band 87.5 - 108 MHz (Geneva, 1984)
- A6 GE89: Regional Agreement for the African Broadcasting Area (+), VHF/UHF Television Broadcasting (Geneva, 1989)
- A7 RJ88: Regional Agreement for Region 2, use of the band 1605 1705 kHz (Rio de Janeiro, 1988)
- **A8 GE85 R1**: Regional Agreement for Region 1, MF Maritime Mobile and Aeronautical Radionavigation Services (Geneva, 1985)
- A9 GE85 EMA: Regional Agreement for the European Maritime Area, Maritime Radiobeacons, (Geneva, 1985).

PART B

Part B of the Rules of Procedure contains rules applicable to complex technical procedures of a large scope not directly related to one unique provision of the Radio regulations or Regional Agreements. The following sections are included:

- **B1:** Calculation methodology for "agreement area" (Article 14) or frequency bands below 1 GHz;
- **B2:** Calculation methodology for coordination contours (extended Appendix 28 method);
- **B3:** Calculation methodology for calculation of probability of harmful interference between space networks (C/I ratios);
- **B4:** Technical criteria for calculation of probability of harmful interference between stations in terrestrial services (RR1241/1242);
- **B5:** Calculation methodology for the determination of affected administrations in the context of RR484 and RR487;
- **B6:** Calculation methodology for the determination of affected administrations in the context of RR674, 675, 678, 692, 692A, 704, 705 and 707A.

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PRESENTATION

1. The rules are presented with direct reference to the specific paragraph or provision numbers of the Radio Regulations or Regional Agreements. The reference number preceding a rule in the framed box on the left of the page is the provision (or paragraph) number in the Radio Regulations or Regional Agreement, for example:

1042

This means that the rule following the above indication concerns the application of the Radio Regulatory provision RR1042.--

2. To facilitate the reading throughout the present Rules a common system was established in the heading of each page. For example:

Part A1 AR11	page 7	rev
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The page concerned in Part A1 is page No. 7 of the Chapter dealing with Article 11 of the Radio Regulations. The indication "rev. -" means that the page concerns the first version of the Rules. No revision has been effected.

Part A1	AR1	page 1	rev
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Rules concerning

ARTICLE 1 of the RR

25

1. RR25 states that the functions of the Space Operation Service (space tracking, space telemetry, space telecommand) will normally be provided within the service in which the space station is operating. The question thus arises as to the appropriateness of considering frequency assignment notices with classes of stations performing these functions, to be in conformity with the Table of Frequency Allocations when the Table does not contain an allocation to the Space Operation Service.

2. In the RR1503 examinations, notices concerned with space operation functions will be considered in conformity with the Table of Frequency Allocations (favourable Finding) in the case where the assigned frequency (and the assigned frequency band) lies in a frequency band allocated to the:

- Space Operation Service, or
- the main service in which the space station is operating (e.g. FSS, BSS, MSS).

3. In the case where the assigned frequency concerning space operation functions lies in a frequency band allocated to a service in which the space station has no operating function the RR1503 Finding will be unfavourable.

58

When, in a given location or aboard a satellite, transmitters or receivers are used for different radiocommunication services, this constitutes several stations each corresponding to a separate radiocommunication service. This distinction is essential in space radiocommunications when a unique spacecraft is used for several services. (For the symbols of the different classes of station used in the notice forms for the services in which a station is operating, see Table No. 6A1 of the Preface to the IFL.)

60

Transportable Earth station: The Board considers a transportable earth station in the Fixed-Satellite Service (see No. 22) (or in any other space service) to be an earth station to be used only at fixed points. Consequently, its notice form is considered incomplete when it does not contain the geographical coordinates.

106

According to this definition, when a satellite system is composed of only one satellite it is at the same time a satellite network and when it is composed of more than one satellite each of its parts containing one satellite is a satellite network. Section A of Appendix 4 indicates that the information contained in that Appendix shall be provided

Part A1	AR1	page 2	rev
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for each satellite network. Consequently the advance publication procedure is to be applied for each satellite network. According to paragraph B4.b) of Appendix 4 and paragraph 3 of Section I of Appendix 3 one notice can cover more than one satellite in a non-geostationary network if their characteristics are identical.

On the basis of the above the following parts of a space system are considered as satellite networks:

a) a geostationary-satellite system using one satellite and two or more earth stations;

b) in the case of a geostationary-satellite system in which the radio link between two earth stations use two or more satellites communicating through intersatellite-links, each satellite with its associated earth stations is considered as a separate network. The intersatellite links connecting these satellites are to be notified for each of the satellites of the system;

c) a non-geostationary-satellite system composed of more than one satellite having identical characteristics and for which paragraph B4.b) of Appendix 4 and paragraph I.3 of Appendix 3 require the indication of the number of satellites;

d) a combined system consisting of one geostationary satellite and a number of nongeostationary satellites.

Part A1	AR2	page 1	rev

Rules concerning

ARTICLE 2 of the RR

208

In practice, the Radiocommunication Bureau in the application of the Radio Regulations and Regional Agreements does not use the Table indicated in this provision; it applies the following units:

kHz for frequencies up to 28 000 kHz inclusive

MHz for frequencies above 28 000 kHz up to 10 500 MHz inclusive

GHz for frequencies above 10 500 MHz.

Rules concerning

ARTICLE 6 of the RR

1. Use of a frequency in derogation of the Table of Frequency Allocations

1.1 This provision is considered as a direct consequence of the Preamble to the Constitution which recognizes the sovereign right of an administration to regulate its own telecommunications. It allows an administration to use any part of the spectrum in derogation of the Radio Regulations providing no harmful interference is caused to other services operating in accordance with the provisions of the Constitution, Convention and Radio Regulations. For terrestrial services it can be seen from RR1267, RR1271, RR1357, RR1419 and RR1420 that the recording of an assignment with a reference to RR342 includes the commitment by the notifying administration to eliminate any harmful interference which is actually caused to other uses operated in accordance with the Radio Regulations as soon as it is reported. The underlined part serves to indicate that this limitation on the use of an assignment notified with a reference to RR342 is valid only when the two assignments concerned are in use.

1.2 For the space services, Articles 11 and 13 treat the transmitting frequencies differently from the receiving frequencies. While in the case of transmitting frequencies RR342 and RR1560 apply literally, there is no provision similar to RR342 that is appropriate for application to receiving frequencies. On the basis of the Preamble to the Convention and taking account of RR342 as well as of RR435, receiving frequencies not in conformity with the Radio Regulations are recorded with a symbol which includes the indication that the notifying administration cannot claim protection from any harmful interference that may be caused by frequency assignments operated in accordance with the Radio Regulations (see Preface to the IFL, Column 13B1, symbol RR342, RR1419/1420/1560).

2. Emissions in bands where uses other than those authorized are prohibited

2.1 The provisions listed below relating either to frequencies or bands to be used for safety and distress communications or allocated for passive usage prohibit any other use.

a) Provisions relating to safety and distress communications:

RR3010, RR3018, RR3023, RR3031B, RR3033.

b) Provisions relating to passive usage:

342

RR649A, RR721, RR768, RR833, RR864, RR880, RR888 (Region 2), RR905, RR917, RR921.

2.2 The Board considers that, in view of this prohibition, a notification concerning any other use than those authorized in the band or on the frequencies concerned cannot be accepted even with a reference to RR342; furthermore the administration submitting such a notice is urged to abstain from such usage.

Part A1	AR6	page 2	rev
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3. For space services, see also comments under Rules of Procedure concerning RR1527.

343

1. The application of this provision involves the case of an adjacent band not allocated to the service concerned as well as the case of an adjacent band allocated to the service concerned with a different category of allocation.

1.1 A frequency assignment, of which the assigned frequency band overlaps a band not allocated to the service concerned, shall receive an unfavourable finding RR1240/1352/1503.

1.2 A frequency assignment, of which the assigned frequency band overlaps a band allocated with a lower category of service will be considered as having the lower category of service and, when recorded, will bear a symbol to this effect. (See symbols R and S in Table 13B - Column 13B2 of the Preface to the IFL.)

2. To resolve cases of harmful interference between services in adjacent bands it was decided that, irrespective of the phenomena at the origin of the interference (outof-band emission, intermodulation products, etc.), the administration responsible for the emission overlapping a non-allocated band shall use appropriate means to eliminate the interference.

346

The first sentence of this provision establishes the equality of right between allocations in different Regions or sub-Regions. In the Board's view the second sentence should be understood as a general rule applicable in all cases, even to stations of the same service; and it should not be interpreted in the meaning of RR435.

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Rules concerning

ARTICLE 7 of the RR

380

When an agreement of an administration which was not identified in application of procedures of Article 11 is indicated on the notice form, such agreement is recorded as having been effected under this provision.

Part AI AKO page i	rev
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Rules concerning

ARTICLE 8 of the RR

392.1

Several footnotes of the Table of Frequency Allocations contain a reference to "subregional" uses (for example RR839) with a small "r". The Board considered such footnotes on the basis of this provision together with RR412 and reached the following conclusions:

- Where the allocation is made to one Region only, the term "sub-Regional" is interpreted in the meaning of RR412, i.e. sub-Regional applies only within a Region.
- When the allocation is made to more than one Region, the term "sub-regional" may cover territories in different Regions.
- A "sub-region" or "sub-Region" is not necessarily limited to bordering countries.

412

See comments under the Rules of Procedure concerning RR392.1.

419

1. The exact rights of primary and permitted services are not defined in the Radio Regulations; they have to be deduced from the rights that other categories of services do not have. This provision implies that the only difference which exists between a primary service and a permitted service is in some kind of priority during a planning process involving these two services or only one of them.

2. In the Board's view, the conditions applicable in accordance with RR419 to bands where the primary service is to be planned and the permitted service is not to be planned are the following:

2.1 <u>Prior to the Conference</u>, primary and permitted services have equal rights.

2.2 <u>During the Conference</u> (i.e. period of preparation of plans) the primary service has 'prior choice of frequencies'. When a conference is assigning frequencies to stations of one service, it should decide how to satisfy and protect the requirements of other services.

2.3 <u>After the Conference</u>, primary and permitted services have equal rights.

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Footnote RR535 illustrates this provision. When the transmitting and the receiving stations are both located within one of the countries listed in the footnote, the fixed service has equal rights with the amateur service. This is also the case when one station is located in one country and the other in another country, both countries being listed in RR535. When either station is not within one of the countries listed in the footnote, the assignment is out of band.

428

WARC-79 adopted the procedure of Article 14 together with a number of footnotes of the Table of Frequency Allocations stipulating that an additional or alternative allocation is made "subject to agreement obtained under the procedure set forth in Article 14". The Board had to decide under which category of allocation an assignment in the service to which the procedure of Article 14 had been successfully applied and where the footnote did not indicate the category of allocation, should be recorded. This conclusion was reached on the basis of the following:

- a) When a footnote allocates a frequency band to a service on a secondary basis or on a non-interference basis, this indication is considered by the Board as a restriction imposed on the allocation.
- b) RR429 stipulates that "If restrictions are imposed on an additional allocation ... this is indicated in the footnote of the Table".
- c) Therefore, when a footnote does not contain such restrictions, the allocation is necessarily on a primary basis.

432

The interpretation given under RR428 for additional allocations when Article 14 is required applies also in this case to alternative allocations.

435

1. As this provision is similar in its wording to RR421 and RR422, very often allocations on a non-interference basis are considered equivalent to a secondary service. This is correct when only a primary or a permitted service is concerned, but this is not the case when a secondary service is concerned, because this provision refers to "services to which the band is allocated" and consequently an allocation on a non-interference basis shall not cause interference to or claim protection from even a secondary service. The respective statuses of the different allocations are summarized in the following table.

Assignment	has equality of rights with	shall not cause interference to or claim protection from
primary/permitted	primary/permitted	
secondary	secondary	primary/permitted
RR435	RR435	primary/permitted secondary
RR342	RR342	primary/permitted secondary RR435

2. This provision covers only the case of allocations which are made subject to not causing harmful interference. In some cases, such as RR779, the allocation is made without the right to claim protection. The Board is of the view that such allocations are also deemed not to cause harmful interference and this provision applies to them.

440

Several footnotes, mainly those relating to allocations to mobile services, restrict allocations to a type of operation or to some specific systems. The Board had no means to examine the extent to which these restrictions are respected and this was noted by WARC-MOB-87. Consequently the Board decided that all symbols relating to these types of restrictions should be deleted from Column 13C of the MIFR.

466

Two aspects are covered by this footnote:

1. The meaning of narrow-band: based on the information in the ITU-R Recommendation No. 476-4, the Board considered that 500 Hz represents a reasonable limit for narrow-band techniques and set this value as a regulatory limit to be checked in the examinations of the conformity of the notified bandwidth in the context of this provisions. Therefore, the Bureau shall formulate an unfavourable regulatory finding, in the application of RR466, if thus limit is exceeded for notified classes of emission F1B or G1D.

2. A significant degradation of the prime function of the beacon: the Board assumed that it is for the notifying administration to ensure that the prime function of the beacon is not significantly degraded, when it authorizes radiobeacon stations to transmit supplementary navigational information pursuant to this provision. Therefore, the Bureau will disregard this question in its examinations, since the Bureau has no means of identifying whether the prime function of the beacon is significantly degraded or not.

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1. This provision applies to parts of the frequency bands to which RR519 also applies; both were adopted by WARC-79 as a revision of former footnotes RR208 and RR209. For their application, the Board has considered that:

- RR519, which pertains to a worldwide allocation, does not exclude the countries listed in RR518;
- previous provisions permitted a maximum radiated power of 1 kW p.e.p. under certain conditions (former footnote RR208), and
- several assignments were notified before 1979 and were recorded with this power.

The Board therefore decided to apply the two provisions as follows:

a) In all countries, administrations may exceptionally use, for stations of the fixed service, frequencies in the bands 4 063 - 4 123 kHz and 4 130 - 4 438 kHz, with a mean power not exceeding 50 W (this limit may be exceeded in the band and countries listed in b) below), on condition that the communications are within the boundary of the country concerned.

b) AFG, ARG, AUS, BOT, BFA, CAF, CHN, IND, MLI, NGR, TCD and URS^{*)} may exceptionally use mean power greater than 50 W but less than 1 kW on frequencies in the bands 4 063 - 4 123 kHz, 4 130 - 4 133 kHz and 4 408 - 4 438 kHz when the transmitting stations of the fixed service are situated at least 600 km from the coast and the communications are within the boundary of the country concerned.

2. Both provisions RR518 and RR519 make the additional allocation "on condition that harmful interference is not caused ...". Therefore, RR435 applies in all cases.

519

See comments under the Rules of Procedure concerning RR518.

554

Literal interpretation of this provision for an assignment to a land-mobile station in a country listed in the footnote would require recording:

- a symbol to indicate that the assignment is permitted with respect to the countries listed in this footnote,
- a symbol to indicate that the assignment is secondary with respect to the broadcasting service for other countries,
- a symbol to indicate that the assignment is permitted with respect to fixed and mobile services in countries listed in RR555 and RR561,

^{*)} Country symbol URS designates all countries that belonged to the ex-U.R.S.S.

- a symbol to indicate that the assignment is permitted with respect to the amateur service in countries listed in RR559,

- etc.

The Board decided to have such assignments recorded with symbol R in Column 13B2 and a reference to the footnote concerned in Column 13B1.

562

The French Overseas Departments in Region 2 are the territories indicated in the Preface of the IFL under the following symbols:

GDL (including Saint Barthélemy and the French part of Saint Martin), GUF, MRT, SPM.

591

1. This is one of the few provisions of this type, where the allocation is made on a secondary basis subject to the application of the procedure of Article 14. Considering the low status that an assignment may obtain from the application of this complex procedure, one might question the usefulness of applying it.

2. It is to be noted that in accordance with RR1617 any administration may object to the planned use on the basis of its existing or planned stations (without limitation of date) and that RR1618 stipulates that "any administration not having commented ... shall be regarded as unaffected by the planned assignment". An administration may consider that the application of the Article 14 procedure will result in a secondary status, and assume that there is no need for it to comment, since the secondary service is required to not cause harmful interference to a primary service. Consequently an assignment for which the Article 14 procedure was applied shall be considered secondary with respect to administrations which have given their agreement as well as to administrations which have not commented upon it within the time-limits specified in Article 14. Any other arrangement between administrations when reaching agreement in application of Article 14 is considered only in the relations between those administrations.

3. So far as the fixed, the land mobile, the maritime and the aeronautical mobile (OR) services in the band 136-137 MHz are concerned, the successful application of Article 14 to the aeronautical mobile-satellite (R) service gives it the same rights as these services.

619

1. The band mentioned in this provision is allocated in the frame of the Table for Region 3 to three services, i.e. fixed, mobile and broadcasting. The Board interpreted this situation as follows:

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- a) The successful application of Article 14 to the space services will give them the same status as the fixed and mobile services, i.e. primary.
- b) In respect of the broadcasting service, irrespective of the result of the application of the procedure of Article 14, the space services can be operated only under RR435.

2. In accordance with the comments made under RR554, when an assignment is primary with respect to one service (or country) and secondary with respect to one service (or country), it will be recorded with symbol R in Column 13B2 indicating this situation and a reference to the appropriate footnote in Column 13B1.

635

1. In the band 223-230 MHz, in Region 1, the frequency allocation is shown in the Table as follows:

BROADCASTING

Fixed

Mobile

Additionally, in the same band and in accordance with RR635, the broadcasting service in Botswana, Lesotho, Malawi, Namibia, South Africa, Swaziland, Zimbabwe and Zambia is an alternative allocation on a primary basis subject to agreement obtained under the procedure set forth in Article 14 of the Radio Regulations.

2. The effect of footnote 635 is to require the eight administrations listed therein to apply the supplementary procedure of Article 14 in order to be able to operate the broadcasting service in a band which is already allocated on a primary basis to this service in the Table for Region 1. If the Bureau were to request the above administrations to apply the Article 14 procedure to their broadcasting assignments, these administrations would have no allocation in the band 223-230 MHz. The other consequence, i.e. the cancellation of the allocation to secondary services, fixed and mobile, is not significant.

3. On the basis of the above considerations, the Board is of the view that the inclusion of the band 223-230 MHz in RR635 is due to an oversight during WARC-79. As a consequence, the Board decided that the above administrations will not be requested to apply the Article 14 procedure to their broadcasting assignments in the band 223 - 230 MHz.

641

The Board understands that the successful application of the Article 14 procedure will lead to a status restricted to operation on a non-interference basis (see RR435). The mobile-satellite service shall not cause harmful interference to the services appearing in the Table, including the space operation service (space-to-Earth) in the band 267-272 MHz. In other respects, paragraphs 1 and 2 in the comment made under RR591 apply.

1. As indicated in the comments under the Rules of Procedure concerning RR127, space telemetry is limited to measurements made in the spacecraft which may be

- either made by a sensor to detect phenomena outside the spacecraft
- or related to the functioning of the spacecraft.

The first type normally pertains to services such as the earth exploration-satellite service or the space research service, while the second type pertains to the space operation service. This provision does not indicate the service to which the additional allocation is made. The Board understands it as being limited to space telemetry in the space operation service. Consequently, frequency assignments for telemetry (space-to-Earth) in the space operation service in the band 267 - 272 MHz may be used on a secondary basis without any condition. They may obtain a primary status within the territory of the notifying administration following the successful application of the procedure of Article 14.

2. The qualification "in their countries" can be easily checked when an earth station is concerned, but it is unclear for a space station. The Board considers that this provision will apply to those space stations having a service area mainly limited to the territory of the notifying administration.

663

With respect to the French Overseas Departments in Region 2, see comments under the Rules of Procedure concerning RR562.

673

This footnote is similar to RR619; the same rule applies.

710

Assignments to stations of the radionavigation-satellite service if recorded need to indicate that they shall not cause harmful interference to assignments to stations of the radionavigation service of the countries listed in RR712 (Symbol R in Column 13B2 and reference to RR710 in Column 13B1).

713

This provision refers to "radiolocation stations installed on spacecraft..." without specifying to which space service such a space station pertains. As the provision refers only to the space research service and to the earth exploration-satellite service,

Part A1	AR8	page 8	rev
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the Board concluded that radiolocation stations may be located on board space stations of these services. Consequently this provision is considered an additional allocation to the earth exploration- satellite and space research services on a secondary basis.

718

This provision implies that there exists an allocation to the radio astronomy service in this band, which is not the case. As there is no such allocation, the Board considers that this provision indicates the intention of administrations to make observations in the band mentioned and the need to protect such observations. Notification of frequency assignments to radio astronomy stations in this band will be considered by the Bureau not to be in conformity with the Radio Regulations.

721

The comments made under the Rules of Procedure concerning RR342 apply.

726A

1. This provision permits, in derogation of the definitions contained in RR71 and RR77, the use of the bands allocated to a mobile-satellite service by a station at a specified fixed point (without being a coast earth station or an aeronautical earth station).

2. The exceptional circumstances referred to in this provision cannot be evaluated by the Bureau.

729

The terrestrial uses authorized by this provision appear to be closely related to the operational conditions within a combined aeronautical system using space and terrestrial radiocommunications. The Bureau has no means to verify such uses and considers this provision an additional allocation to the aeronautical mobile (R) service.

732

This provision is considered an additional allocation to the aeronautical radionavigation-satellite service. The comments made under RR440 apply. However, when the Special Section AR14/C is to be published it shall contain an indication that the assignment is for use on a worldwide basis for "airborne electronic aids to air navigation and any directly associated ground-based or satellite-borne facilities".

The comments made under the Rules of Procedure concerning RR729 apply.

753

The Board has no means to identify the administrations concerned and decided to treat notices from France as follows:

- Complete notices from France will receive a favourable Finding RR1240, assuming that, when the agreement of a country B is not indicated in the notice, that agreement is not required.

- If, following the publication of the assignment, country B objects to the notified use, the Board will modify its Finding and request France to seek the agreement of B.

753B

1. This provision does not indicate the frequency band in which it is applicable. The Board understands that it applies in the band 2,483.5-2,500 MHz.

2. The comments made under RR554 apply.

761

1. In this footnote, the allocation "is limited to national and regional systems". The Board understands a national system as a system having a service area limited to the territory of the notifying administration. As a consequence of this, the regional system to which reference is made shall be considered to be an aggregate of two or more national systems; they shall be limited to the territories of the administrations concerned and they shall be notified by one of these administrations on behalf of all the administrations concerned. The Board reached this conclusion keeping in mind RR392.1, relating to the interpretation of the word "regional" without a capital "R".

2. In accordance with this provision, the fixed-satellite service is limited for use by national or regional systems in the band 2,500 - 2,690 MHz in Region 2 and in the bands 2,500 - 2,535 MHz and 2,655 - 2,690 MHz in Region 3. Only those assignments which satisfy the following conditions shall be considered to be in conformity with the Table of Frequency Allocations:

a) The service area for a regional system is within the Region concerned, i.e. in Region 2 only in the band 2,535 - 2,655 MHz or in Regions 2 and 3 in the other bands between 2,500 and 2,690 MHz.

b) In the case of a national system, the service area is limited to the territory under the jurisdiction of the notifying administration.

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c) If the satellite network is operated within the framework of an international system to which other countries pertain, the notice must indicate that the use is limited to the region(s) concerned.

762

- 1. In the band 2,500 2,690 MHz, four provisions are applicable:
- RR762 recommending that administrations do not to develop new tropospheric scatter systems;
- RR763 permitting the use of tropospheric scatter systems in Region 1 subject to the application of the procedure of Article 14;
- RR764 recommending that administrations planning new tropospheric scatter links avoid directing the radiation towards the geostationary-satellite orbit;
- RR2505 (together with RR2509) limiting the e.i.r.p. in Regions 2 and 3 in the band 2,655 2,690 MHz.

2) As indicated above, RR762 and RR764 are considered recommendations to administrations, and the Bureau has no action to take in their respect.

763

See comments under the Rules of Procedure concerning RR762.

764

See comments under the Rules of Procedure concerning RR762.

768

See comments under the Rules of Procedure concerning RR342.

778

There is no allocation to radio astronomy in the bands 3,260-3,267 MHz, 3,332-3,339 MHz and 3,345.8-3,352.5 MHz. The comments under the Rules of Procedure concerning RR718 apply.

792A

1. Article 8 defines, in the band 10.7 -11.7 GHz, a bi-directional allocation for the Fixed-satellite service in Region 1. Two footnotes (RR792A and RR835) further regulate the usage of the bands. The provisions of RR835 apply to the up-link (Earth-to-space) allocation for BSS feeder-links. RR792A (covering parts of the band 10.7 - 11.7 GHz) contains no direct indication of the direction of the allocation, but the reference to Appendix 30B (see Article 3 of AP30B) further clarifies its application for the down-link (space-to-Earth) direction in the bands 10.7 - 10.95 and 11.2 - 11.45 GHz. Footnote 3) to the title of Article 11 and Article 3 of Appendix 30B also indicate clearly that the Plan procedure is applicable only for the given directions (down-link for the present case). These considerations led the Board to the following conclusions:

1.1 the Table of Frequency Allocations defines a bi-directional allocation of the whole band 10.7 -11.7 GHz for the FSS in Region 1. In the sub-bands 10.7 - 10.95 and 11.2 - 11.45 GHz which, for the space-to-Earth direction, are covered by the provisions of Appendix 30B, the up- and down-link allocations are of the same category;

1.2 the applicable Radio Regulatory procedures for the Fixed-satellite service are as follows:

- a) Earth-to-space (RR835): 10.7 11.7 GHz (Region 1): Articles 11 and 13;
- b) Space-to-Earth :
- 10.7 10.95 GHz and 11.2 11.45 GHz: Appendix 30B (& Article 13), (RR792A)

10.95 - 11.2 GHz and 11.45 - 11.7 GHz: Articles 11 and 13.

2. Based on the general principle that the utilization of the spectrum by two internationally recognized applications (coordinated vs. planned use), with the same status, should be mutually taken into account even if the case is not covered by specific procedures and on the basis of the existing analogies (Article 7 of Appendix 30, Article 7 of Appendix 30A, existing systems in Part B of the Appendix 30B Plan), the Board decided that the following calculation methods and technical criteria shall be applied to take into account the mutual effects of the bi-directional use of the bands 10.7 - 10.95 GHz and 11.2 - 11.45 GHz:

2.1 Up-link FSS applications in the bands 10.7 - 10.95 GHz and 11.2 - 11.45 GHz (Article 11, coordinated usage):

The FSS up-link usage (according to RR835) should protect the continuing rights (including the PDA concept) of both the Part A allotments of the Plan of Appendix 30B (or their permissible conversions into List assignments according to the applicable plan procedure contained in Section I of Article 6 of Appendix 30B) and the existing systems of Part B of the Plan (Section IB of Article 6 of Appendix 30B). To this effect the FSS up-link networks shall apply the coordination (Article 11) and notification (Article 13) procedures not only vis-à-vis other up-link FSS networks of the same direction (Earth-to-space) but also vis-à-vis Plan entries. To take into account the Appendix 30B Plan within the Article 11 procedure, the Plan shall be considered as a coordinated usage of the spectrum. Administrations responsible for the FSS up-link shall obtain coordination agreements from those other administrations whose systems

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in the Plan are likely to be affected. The method and criteria for the identification of the administrations to be coordinated with shall be, similarly to the case of Appendix 30A (where the same bi-directional problem exists between planned feeder-links and other FSS), as follows:

a) For the compatibility assessment between space stations, the Appendix 29 method (paragraph 2.2.2, Case II, bi-directional use) will be extended to cover the entries of the Plan (allotments at orbital positions within their PDA, converted List assignments, existing systems or their corresponding assignments recorded in the MIFR at the time of receipt of the subject FSS up-link coordination notice) and the threshold value of 6 % (paragraph 3 of Appendix 29) will be used.

b) For the compatibility assessment between Earth stations (transmitting ES of the FSS up-links and the receiving ES within the Plan allotment) the principle defined in Appendix 30A (paragraphs 3 of Annex 4, modified Appendix 28) will be used. The service areas defined in Appendix 30B will be extended by the coordination distance to form an "agreement area" within which a transmitting earth station of the FSS up-link has to be coordinated. For the calculation of the coordination distance the most up-to-date ITU-R Recommendation will be used.

2.2 Down-link FSS applications in the bands 10.7 - 10.95 and 11.2 - 11.45 GHz (Appendix 30B, planned usage)

To take into account the coordinated or notified FSS up-link networks within the allotment conversion procedure of Appendix 30B (allotment conversions into assignments having an adverse impact on the up-link usage), those FSS up-link networks which have obtained a coordination or recorded status (RR1076 or RR1488) shall be examined with a view to determining if the conversion of an allotment into a specific assignment indicates coordination requirements. The conversion of an allotment will be subject to coordination with the FSS up-link if the calculated deltaT/T ratio of the FSS up-link network (if exceeding 6 %) has been found to have increased with respect to the value obtained with the original characteristics of the allotment. For this comparative analysis the orbital positions within the PDA of the allotment are considered as being part of the "original characteristics". (The orbital position modifications resulting from the application of the PDA concept only should not generate additional coordination requirements.) The method and criteria of Appendix 29 shall be used for the identification of the administrations to be coordinated with. (Paragraph 2.2.2 of Appendix 29, case II, bi-directional use for the calculation method and 6 % (paragraph 3) for the threshold value.)

818

As the title of this provision is "Alternative allocation", the allocation of the band 8,400-8,500 MHz to the space research service in the United Kingdom is not limited to the direction space-to-Earth. The limitation to deep space specified in RR816 does not apply to it.

See comments under the Rules of Procedure concerning RR342.

835

See comments under the Rules of Procedure concerning RR792A.

836

1. The wording of this provision raised the following basic question: "Is the band 11.7-12.2 GHz allocated to the broadcasting-satellite service?" The Board considered the following:

a) that the provision is not titled an "additional allocation". Some footnotes do not have such a title and the Board considered them additional allocations. However, in this case, it is not clear that the intent was to permit an additional allocation;

b) the provision states that "transponders on space stations in the fixed-satellite service may be used <u>additionally</u> ... in the broadcasting-satellite service": the use of the word "additionally", together with the last sentence saying that "this band shall be used principally for the fixed-satellite service", leads to the understanding that the use by the broadcasting-satellite service is not of the same nature as would be the use of a given band by a service to which the band is allocated;

c) the provision refers to transponders, which are to be considered transmitting stations. As the procedures of Articles 11 and 13 and Resolution No. 33 apply to each assignment, each transponder shall be considered independently from the others. Consequently the provision may be interpreted in either of the following two ways:

- a first interpretation consists in considering that some transponders will be used for the fixed-satellite service and others for the broadcasting-satellite service, and this is equivalent to a sharing of the band between two services which raises a question about the word "principally": how many transponders would be allowed for each of the two services?
- a second interpretation consists in considering that a given transponder of the fixed-satellite service may be used in a given period of time for broadcasting (this is not to be confused with the use of the fixed-satellite service for the transport of a video signal between two fixed points). If in such a case the provision was to be considered an additional allocation, a question arises in relation to the procedure to be applied: Should it be that of Articles 11 and 13 or that of Resolution No. 33?

2. Keeping in mind the above comments, the Board concluded that the band 11.7-12.2 GHz is not allocated in Region 2 to the broadcasting-satellite service. Those transponders of the fixed-satellite service which are used for broadcasting-satellite purposes will be treated in accordance with Articles 11 and 13 (and Appendix 30 if required). When such a use is indicated in the notice, the Bureau will assume that the coordination of the network was made on the basis that for the period during which a

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transponder is used for broadcasting, the e.i.r.p. will not exceed the e.i.r.p. notified for the fixed-satellite service. Considering that the fixed-satellite service uses relatively low e.i.r.p., the Bureau will consider the value of 53 dBW to be a limit not to be exceeded.

838

RR435 states that "a service may operate ... subject to not causing harmful interference". This provision stipulates that "services ... shall not cause harmful interference to ...". Despite this difference in wording, the Board is of the view that RR435 would apply in this case. This would lead to a contradiction with Articles 4, 6 and 7 of Appendix 30, containing procedures which lead one to consider that the fixed-satellite, the fixed and the mobile services have equality of rights with the broadcasting-satellite service. The Board considers that in this case it should be deemed when applying Appendix 30 that the service concerned has equality of rights; however, if, despite the application of the procedures of Appendix 30, harmful interference is actually caused to a broadcasting-satellite station, the fixed, fixed-satellite or mobile station shall cease this interference.

839

This rule contains several decisions, which may be understood as follows:

1. Use of the band 12.2 - 12.7 GHz by the broadcasting-satellite service in Region 2

This use shall be made in accordance with Article 15 and Appendix 30. The Plan being essentially based on national systems, only those sub-regional systems that may result from the successful application of Article 4 of Appendix 30 will be considered to be in conformity with the Table of Frequency Allocations.

2. Use of the band 11.7 - 12.2 GHz by the fixed-satellite service in Region 2

2.1 In this footnote, the allocation "is limited to national and sub-regional systems". The Board understands a national system as being a system having a service area limited to the territory of the notifying administration. As a consequence of this, the sub-regional system to which reference is made shall be considered an aggregate of two or more national systems; it shall be limited to the territories of the administration concerned and it shall be notified by one of the participating administrations on behalf of the other administrations. The Board reached this conclusion keeping in mind RR412, which defines a sub-Region, and RR392.1, relating to the interpretation of the word "sub-regional" without a capital "R". Therefore, only those assignments which satisfy the following conditions shall be considered to be in conformity with the Table of Frequency Allocations:

a) The service area for a national or sub-regional system is within Region 2;

b) In the case of a national system the service area is limited to the territory under the jurisdiction of the notifying administration;

c) If the satellite network is operated within the framework of an international system to which countries outside Region 2 pertain, the notice must indicate that the use is limited to Region 2.

2.2 According to this provision, "the use of the band 11.7 - 12.2 GHz by the fixedsatellite service in Region 2 is subject to previous agreement between the administrations concerned and those having services, operating or planned to operate in accordance with the Table, which may be affected (see Articles 11, 13 and 14)". This raises the following questions:

- What is meant by "previous agreement"?

- Is the reference to Article 14 in parenthesis equivalent to the usual wording "subject to agreement obtained under the procedure set forth in Article 14"?

The Board examined this situation and is of the view that

2.2.1 the word "previous" is to be understood as being covered by RR1610 which states "Before ...";

2.2.2 the reference to Article 14 is equivalent to the usual wording appearing in several footnotes, and therefore the use of the band 11.7-12.2 GHz by the fixed-satellite service is subject to the application of Article 14;

2.2.3 the sub-band 12.1-12.2 GHz resulted from the splitting in two parts by ORB-85 of the band 12.1-12.3 GHz, which was allocated to several services. It is probable that when the splitting was done, this part of RR839 was overlooked; the Board understood the condition relating to the application of Article 14 as being intended to protect the Appendix 30 Plan and therefore, considering that this sub-band is not allocated to other services, decided to identify as administrations whose services may be affected only those administrations having an assignment in the Regions 1 and 3 Plan whose assigned bandwidth overlaps the assigned band of the proposed fixed-satellite use and with respect to which the limits set forth in Annex 4 to Appendix 30 are exceeded. The Article 14 procedure has to be applied also with respect to the fixed service in Brazil and Peru (see RR842).

2.3 In the application of RR1616, the following administrations will be considered as affected;

a) vis-a-vis their terrestrial services of Regions 1,2, and 3, if they have assignments recorded in the MIFR with overlapping frequency bands with respect to which the power flux-density values generated by the space station exceed the following limits:

-150 dB(W/m²) in 4 kHz	for 0°	$\le \Theta \le 5^{\circ}$
-150 + 0.5 (Θ-5) dB(W/m²) in 4 kHz	for 5°	<
-140 dB(W/m²) in 4 kHz	for	Θ ≥ 25°

where Θ is the angle of arrival, in degrees, on the service of the Earth of the radio frequency wave. PFD values will be calculated under free-space propagation conditions.

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b) vis-a-vis their broadcasting-satellite services (Regions 1 and 3), if they have assignments in the Appendix 30 Plan with overlapping assigned bandwidth and with respect to which the power flux-density values set forth in Annex 4 of Appendix 4 to Appendix 30 are exceeded.

NB. For the threshold values included in paragraph a) above the Board used the limits developed in the ITU-R Recommendation 674 for Region 2 and provisionally extended their utilisation for Regions 1 and 3 subject to further review by the Study Group.

844

This provision is similar to RR838. The same rules apply.

845

Paragraph 2.1 of the comments under the Rules of Procedure concerning RR839 applies, with Region 2 replaced by Region 3.

846

1. The Board concluded that the band 12.2 - 12.7 GHz is not allocated in Region 2 to the fixed satellite Service. Those transponders of the broadcasting-satellite service which are also used for fixed satellite service purposes will be treated in accordance with Appendix 30. When recorded they will bear a symbol to indicate such a use. No specific methodology exists to-date to carry out the compatibility analysis between the assignments that may be used in broadcasting-satellite transponders for fixed satellite service transmissions and the assignments in the Plan.

2. Earth stations receiving fixed-satellite service transmissions will be treated as earth stations of the broadcasting-satellite service and are not to be notified.

847

1. Community reception is defined in RR124; however, there is no means to check any difference between community reception and individual reception (RR123) other than the power flux-density limit. Frequency assignment notices of the broadcasting-satellite service are treated under Resolution No. 33, and their examination under paragraph 5.2 of this Resolution takes account of Annex 5 to Appendix 30 and of Resolution No. 34.

2. The Board understands the reference to Annex 5 to Appendix 30 as being limited to the last indent of paragraph 3.16 of that Annex.

3. Resolution No. 34 indicates the procedures to be applied ("<u>resolves</u>" 1) and the power flux-density limits not to be exceeded ("<u>resolves</u>" 3). The Board decided to examine

- "<u>resolves</u>" 1 under paragraphs 5.3 to 5.5 of Resolution No. 33 (taking account of the Plan for the broadcasting-satellite service in Region 2),

- "resolves" 3 under paragraph 5.2 of Resolution No. 33.*)

4. Having reviewed the power flux-density (pfd) limits referred to in RR847, Appendix 30 and Resolution No. 34, the Board reached the conclusion that the pfd limit with respect to the territory of any country is -111 dB(W/m²).

850

1. The fixed and mobile (except aeronautical mobile) services in the countries listed in this provision

- have equal rights with the fixed-satellite service in the same countries and in the relations between them, and the coordination under RR1107 and RR1148 shall be applied;
- shall be operated under RR435 with respect to the fixed-satellite service in the other countries of Region 1, and coordination under RR1107 cannot be imposed on earth stations. The fixed and mobile stations shall apply coordination under RR1148;
- have equal rights with the services to which the band is allocated in Regions 2 and
 3.
- 2. The comments made under the Rules of Procedure concerning RR554 apply.

852

See comments under the Rules of Procedure concerning RR591.

864

See comments under the Rules of Procedure concerning RR342, except for the countries listed in RR865.

874

There is no allocation to radio astronomy in this band; the comments made under RR718 apply.

879

There is no allocation to radio astronomy in these bands; the comments made under the Rules of Procedure concerning RR718 apply.

^{*)} In Resolution No. 34, "resolves" 3 (1), the reference to Annex 5 is no longer correct. This Resolution was adopted by WARC-1979, and at that time Annex 5 was what is now sections (a) and (b) of section 5 of Annex 1.

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See comments under the Rules of Procedure concerning RR342.

882

The Board understands this provision as an additional allocation to the earth exploration-satellite service for inter-satellite links. The use of the words "telemetry, tracking, and control purposes" leads the Board to understand that the use is limited to space operation.

886

There is no allocation in this band to radio astronomy; the comments made under the Rules of Procedure concerning RR718 apply.

887

See comments under the Rules of Procedure concerning RR342.

898

There is no allocation in this band to radio astronomy. The comments made under the Rules of Procedure concerning RR718 apply.

903

See comments under the Rules of Procedure concerning RR726A.

906

There is no allocation to radio astronomy in the bands listed in this provision. The Board understands the words "national arrangements" as referring to arrangements to be concluded within each country. These arrangements are not required to be communicated to the Bureau.

907

See comments under the Rules of Procedure concerning RR342.

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There is no allocation in this band to radio astronomy. The comments made under the Rules of Procedure concerning RR718 apply.

917

See comments under the Rules of Procedure concerning RR342.

921

See comments under the Rules of Procedure concerning RR342.

Rules concerning

ARTICLE 11 of the RR

Advance Publication (Article 11, Section I)

1042

1.

Receivability of advance information

An advance publication notice sent to the Bureau earlier than six years before the planned date of bringing into service of the satellite network is not receivable and shall be returned to the administration responsible for the network. This general rule also applies for those mobile-satelliete networks which fall under Recommendation No. 2 of WRC-93 and to which the advance publication procedure of Article 11 and/or Resolution 46 applies. See also under Rules of Procedure concerning RR1044 and Resolution 46.

2. Postponement of the date of bringing into use

2.1 The Board understands from the reference to RR1550 in RR1042.2 in conjunction with RR1056A that, for a space station not yet brought into use, the maximum overall period of validity of an advance publication is nine years (six years under RR1042 plus a 3 year extension under RR1550). Consequently, the postponement of the date of bringing into use (beyond the original six years), at any stage of the procedure, is acceptable only if the date of bringing into use (2C date) remains within nine years counted from the advance publication date.

2.2 The above limit of nine years applies to the initial bringing into use of the frequency assignments to the satellite network. If the characteristics of the satellite network are modified <u>after the assignments are brought into use</u> (i.e. orbital position or service area) and new coordination agreements are required without a need to publish a new advance publication (see paragraph 2 of Rules of Procedure under RR1043), the nine year period is counted from the publication date of the Special Section AR11/C/.. covering the above mentioned modification minus six months (see RR1058E).

3. <u>Cancellation of advance publication</u>

3.1 On the basis of the above and irrespective of the regulatory status of the network (under advance publication, coordination or already recorded in the Master Register), the Bureau will, after consultation with the administration concerned, cancel from the Master Register or its advance publication or coordination files those networks which are not notified as being brought into service within the above 9 year period. Administrations intending to bring these networks into use at a later date will have to re-start the procedures from the advance publication.

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3.2 By virtue of paragraph 6.29 of Section IB of Appendix 30B this cancellation also concerns those frequency bands of the "existing system" networks which fall under the allotment plan procedures (Part B of Appendix 30B).

4. The nine-year period mentioned under paragraph 2 above is not taken into account in the following cases:

- the addition at any time of an earth station, even if it was not foreseen in the advance publication;

- the launching at any time of an additional satellite in any non-geostationary satellite network, provided that its characteristics are identical to those published in the Special Section AR11/A.

5. IFRB Circular-letter No. 839 of 11.10.1990 contains the forms of notice to be used for communication of particulars of space networks. The notice forms were derived from Appendix 4 of the Radio Regulations. The above Circular-letter includes detailed instructions for filling out the forms.

1043

1. RR1043 indicates that "modifications which are of such a nature as to significantly change the character of the network may require recommencing the advance publication procedure". The Board noted that WARC-ORB-88 decided ¹ that, in the case of geostationary-satellite networks, any modification to the basic characteristics of an assignment, in the application of RR1548, should be subject only to the coordination procedure (Section II of Article 11). On the basis of this decision an administration, except in the case of paragraph 2 below, is not required to recommence the advance publication procedure, for a modification of a frequency assignment which is either recorded in the Master Register or being coordinated under Section II of Article 11. Such cases are treated in accordance with the relevant provisions of Section II of Article 11 or those of Article 13 (in case where RR1074A is applicable). (See also interpretation rules under RR1073 and RR1548.)

2. The Board considers, however, that a new advance publication is required to cover the use of a new frequency band which is added to a network (either recorded in the Master Register, under coordination or advance publication), if this band has not been the subject of any previous advance publication.

1044

In the case of an incomplete Appendix 4 notice received by the Bureau for advance publication the administration shall be immediately requested to provide the missing information. A formal date of receipt for the purpose of publication (in date order) will only be set when the complete information is received.

¹ See the summary records of the eleventh meeting of Committee 6; Doc. 430, paragraph 2.3 and Doc. 391, paragraph 3.

<u>Comments relating to the exclusion of the territory of a country from the service area of a space station</u>

1. When an administration B requests the Bureau to exclude its territory from the service area of a space station of an administration A, this raises the following questions:

- should that comment have any effect on the identification of the administrations concerned in the coordination process or on the assessment of the level of harmful interference?

- what action shall the Bureau take in respect of it?

2. The question of a request concerning the exclusion of the territory of a country from the service area of a space station can be studied at two different levels:

- the compatibility between services and stations and the related status that may be derived from the application of the procedures contained in the Radio Regulations, on one hand, and

- the principles embodied in the Preamble to the Convention and the Radio Regulations as well as in Resolution No. 1 of WARC-79 in respect of the sovereign right of each country to use the frequency spectrum and the geostationary satellite orbit, on the other hand.

3. Compatibility matters are well defined in the Radio Regulations; they involve:

- power flux-density limitations which are deemed to avoid any problem of incompatibility without any recourse to coordination with terrestrial services;

- coordination between administrations using or intending to use stations of the same service or of different services sharing the same frequency band;

- examination by the Bureau of the probability of harmful interference in cases where, for one reason or another, agreement on coordination could not be reached between the administrations concerned.

4. The identification by the Bureau of administrations involved in a coordination process and the assessment of the probability of harmful interference are based on the technical characteristics notified by administrations. The extent to which a comment intended to reduce the service area of a space station may affect the application of Articles 11 and 13 should be considered on the basis of a distinction to be made between the "coverage area" and the "service area". The coverage area results from limitations imposed by the design of the space station, and a certain degree of overlapping of territories of other countries not intending to participate in the system may be unavoidable. The Board understands that, in designing any space station, the administration concerned applies RR1807, which stipulates that "radiation in and reception from unnecessary directions shall be minimized by taking the maximum practical advantage of the properties of directional antennas whenever the nature of the service permits". If an administration B, not participating in a given satellite
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network, considers that the network was not designed to minimize the overlapping which resulted in an unnecessary coverage of its territory, the Bureau can only transmit such comment to administration A without any action from its side.

5. In relation to the sovereignty of the country B to authorize earth stations to be installed on its territory, the Bureau assumes that, in accordance with Resolution 1, an agreement existed between the two administrations. Administration B is entitled to react and indicate to the Bureau that such an agreement does not exist; however, the Bureau has no authority to modify a characteristic notified by administration A without its agreement. If the latter refuses to modify the service area, the Bureau can only note this situation. (The licensing authority; irrespective of the application of the procedures of Article 11, remains under the responsibility of country B. See also comment under the Rules of Procedure concerning Res. 1 in Part B 1.)

6. In conclusion, when administration B makes comments intending to exclude its territory from the service area of the space station of administration A, the Bureau:

- shall consider such comments receivable and that it is a matter to be resolved between the administrations concerned;

- shall inform administration A of the comments received requesting consultations between the administrations concerned (Administrations A and B) and will modify the service area only if administration A agrees;

- shall enter a remark to indicate this situation when publishing a Special Section;

- shall consider, unless it receives a subsequent notification to the contrary, that there is no agreement between administrations A and B under Resolution No. 1 for the use of the territory of Administration B by earth stations associated with the satellite network in question.

1056

This provision concerns the publication of administrations' comments. Bearing in mind that administrations attach particular importance to such publication, the Bureau, using the information received from administrations, will publish a summary of the report submitted by the administration responsible for the network in a manner that correctly reflects the situation.

When the administration responsible for the network or any other administration having submitted comments finds the published summary unsatisfactory, the Bureau will publish that administration's comments in extenso.

1056A

See comments under the Rules of Procedure concerning RR1042.

Space network coordination (Article 11, Section II)

1060

1. Based on a review of the relevant provisions (RR1060-RR1065, RR1074A, RR1076-1078, RR1085A), the Board agreed that:

a) publication of requests for coordination shall be made in the order of their date of receipt;

b) the intent of RR1060-RR1065 is to identify to which administrations a request for coordination must be addressed, and not to state an order of priorities for rights to a particular orbital position;

c) the coordination process is a two way process. This understanding was included in the Radio Regulations by WARC-ORB-88 with the adoption of RR1085A;

d) in the application of Article 11 of the Radio Regulations no administration obtains any particular priorities as a result of being the first to start either the advance publication phase (Section I of Article 11) or the request for coordination procedure (Section II of Article 11).

2. Cases of continuing disagreement or unsuccessful coordination are dealt with in Article 13 where the goal of the procedures, the international recognition of frequencies, is secured through the recording of frequency assignments in the MIFR. (See also rules under RR1506 and RR1544.)

1063

1. Frequency assignments to be taken into account in the coordination procedure

Frequency assignments to be taken into account in this coordination procedure and mentioned in provisions RR1061 to RR1065 are those having received a favourable Finding under RR1503 and which are, with a prior date of receipt,:

a) recorded in the Master Register;

b) coordinated, notified and in the process of being recorded;

c) coordinated following the successful application of Article 11 procedure but not notified;

d) communicated to the Bureau for publication under RR1074; or

e) notified, not requiring coordination and in the process of being recorded.

1.1 As stated under the Rules of Procedure concerning RR1042 the period between the date of advance publication of a satellite network and the date of bringing into use of the first assignment of the satellite network in question shall in no circumstance exceed 9 years (i.e six years referred to in RR1042 plus 3 years of possible maximum extension by RR1550). Consequently, frequency assignments not complying with the

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above time limits will no longer be taken into account under the provisions of RR1063. (See also RR1042.)

1.2. On the basis of the above, the Board sees no justification to maintain the RR1060 coordination data of those networks (categories c) and d) mentioned under paragraph 1 above) for which the above 9 year period has elapsed. Such networks can not be recorded later in the Master Register without proceeding again to the advance publication of the network.

1.3 The Board, thus, decided that the Bureau will no longer take into account the concerned networks beyond the 9 year period when examining other networks under the procedures of Articles 11 and 13 (RR1077, RR1504 or RR1506, as the case may be) and that after consultation with the administration concerned, the entry shall be deleted from the Master Register and the advance publication and coordination files of the Bureau, as the case may be.

2. Assignment under the Article 14 procedure

Some bands are allocated to space radiocommunications subject to agreements obtained under the procedure set forth in Article 14. This procedure permits an administration to initiate its application at the same time as it begins the coordination procedure of Article 11. Assignments to which the Article 14 procedure is being applied are candidates for a favourable Finding RR1503; however, they are not mentioned in this provision. The Board considered this matter and found that it would be more simple from the procedural point of view to treat such assignments as if they had a favourable Finding (see comments under the Rules of Procedure concerning RR1625), and decided to take them into account with a "Qualified Favourable Finding (the Finding will be favourable when the Article 14 procedure is applied)". The successful completion of the Article 14 procedure will be examined and confirmed, as the case may be, when the notices comes under examination of Article 13 (RR1503).

3. Assignments in different allocation categories

This provision refers to assignments recorded in the MIFR without qualifying them. They may have been recorded following different provisions and different Findings; some as secondary, others with a favourable Finding under RR1504 or an unfavourable Finding under RR1506 but without having caused harmful interference. The Board decided that the Bureau takes into account the assignments described in RR1063 as indicated in the following Table:

	Assignments to be taken into account in accordance with RR1063			
Assignments under consideration	Recorded in the MIFR (or Article 13 notification received)	received for publication in a Special Section AR11/C		
primary/permitted	primary/permitted with: -a favourable finding RR1503 and -a favourable Finding RR1504 or -a favourable finding RR1506 or -an unfavourable finding RR1506 without having caused harmful interference	- primary/permitted with a favourable finding RR1503		
secondary	 a) any primary/permitted assignment as above b) any secondary assignment with: -a favourable finding RR1503 and -a favourable Finding RR1504 or -a favourable finding RR1506 or -an unfavourable finding RR1506 without having caused harmful interference 	- primary/permitted - secondary with a favourable Finding RR1503		
RR435	 a) any primary/permitted assignment as above b) any secondary assignment as above c) RR435 with: -a favourable finding RR1503 and -a favourable Finding RR1504 or -a favourable finding RR1506 or -an unfavourable finding RR1506 without having caused harmful interference 	- primary/permitted - secondary - RR435 with a favourable Finding RR1503		
RR342 *)	none	none		

*) Frequency assignments with reference to RR342 which are submitted for publication in AR11/C special section series are included in this publication for information only.

An assignment not conforming with the Radio Regulations and notified with reference to RR342 will not be examined, from the viewpoint of the coordination RR1060, with respect to any other assignment including those recorded with a reference to RR342.

4. Modification of characteristics during coordination

For the purpose of this Rule, an administration A is the one which sends a request to administrations B, C and D for coordination in respect of a frequency assignment to a geostationary space station, a copy of which is received by the Bureau on date D1. In order to reach agreement, administration A might, either on its own initiative or in agreement with administration B, C or D, decide to modify the characteristics of its network (e.g. the nominal longitude of the space station) and inform the Bureau accordingly on date D3 with a view to having the new characteristics published either as a modification to the communication already published or under RR1087A. It may happen that the Bureau receives on date D2, between dates D1 and D3, information from another country E concerning a space station or an earth station which may or

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may not affect or be affected by the satellite network of administration A with its modified characteristics (e.g. the modified nominal longitude of the position).

4.1 When the Bureau is informed by administration A of the change in characteristics, Appendix 29 shall be applied for calculating the noise temperatures, taking into account the assignments described in RR1061 and those of country E communicated on date D2, and, depending on the findings, the following procedure shall be followed.

4.1.1 If the assignments of country E or of any other countries except B, C and D are affected, a request for coordination shall be addressed to those countries and published as a modification to the initial Special Section, allowing those countries alone to comment within a further four month period. Following this publication, any comments received on the initial publication shall be disregarded as being received after the deadline established in accordance with RR1084 for that publication.

4.1.2 If the modification affects no country other than B, C or D, it shall be published under RR1087 without a new date, since the publication concerns information connected with the coordination in progress.

4.2 When the change in characteristics has been published as described in paragraph 4.1.1 or 4.1.2 above, the initial characteristics are no longer taken into account in applying Appendix 29 in respect of any new satellite network.

1064

See comments under the Rules of Procedure concerning RR1063.

1065

See comments under the Rules of Procedure concerning RR1063.

1067

For the RR1060 coordination of earth stations see related comments under the Rules of Procedure concerning RR1504.

1069

For the RR1060 coordination of earth stations see comments under the Rules of Procedure concerning RR1504.

1073

1. IFRB Circular-letter No. 820 of 04.05.1990 contains the forms of notice to be used for communication of particulars of satellite networks. The notice forms were derived from Appendix 3 of the Radio Regulations. The above circular-letter includes detailed instructions for filling out the forms.

2. The question of aligning the characteristics provided under RR1073 with those contained in the advance publication has been raised with the Board. The Board considers that a new advance publication is necessary only in the case where the assigned frequency band lies in a frequency band which is not included in previous advance publications of the network. (See also comments under the Rules of Procedure concerning RR1043.)

1075

In the case of an incomplete Appendix 3 notice received by the Bureau for publication as an RR1060 coordination request the administration shall be immediately requested to provide the missing information. A formal date of receipt for the purpose of taking this network into account vis-à-vis other networks according to RR1064 will only be established when the complete information is received. See also comments under the Rules of Procedure concerning RR1060 (1.a).

1080

This provision does not indicate what action is required by the Bureau with respect to such requests. It is only in cases where the Bureau's calculations indicate that the administration which requested to be brought into the coordination procedure was omitted from the AR11/C special section that the Bureau takes the appropriate actions. In other cases the matter is left to the consideration of the administration concerned.

1084

1. This provision refers to "those relevant characteristics contained in Appendix 3 which have not previously been notified to the Board". The Board understands these additional characteristics to be those characteristics which bear the footnote saying "This information need only be furnished when such information has been used as a basis to effect coordination with another administration".

2. This provision also states that "A copy of these comments shall also be sent to the Board". This provision does not specify what action the Bureau will take with respect to this additional information. The Bureau will not consider it as a notification under RR1488 and will not publish it, considering that it is a bilateral matter which does not need to be brought to the knowledge of all administrations.

1085A

See comments under the Rules of Procedures concerning 1060 (1.c).

1087A

This provision is to be considered differently from RR1056 relating to the publication of Special Section AR11/B, which is a simple copy of comments made. This provision refers to changes in the characteristics without specifying the extent to which such changes are made. For this reason the Board considers that administrations are authorized to comment on these changes, when they are such that coordination with

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an administration is required. In such cases the Board decided to fix time-limits for comments as they are indicated in RR1084. In such a case the publication of a Special Section AR11/D containing the changes of characteristics is considered a formal modification of the Special Section AR11/C. Therefore the characteristics notified under RR1488 shall be in conformity with the Special Section AR11/C as modified by any Special Section AR11/D.

1102

1. The Board understands that this provision applies only to the space radiocommunication stations which were taken into consideration when the request was sent. Other existing assignments of the administration to which this provision is not applied remain entitled to protection. Assignments of the same administrations which are considered at a later date are also entitled to protection.

2. In the case of an earth station, the administration to which this provision is applied is entitled to claim protection against harmful interference that may be caused by the terrestrial station.

1103

The comments made under paragraph 1 of the Rules of Procedure concerning RR1102 apply. This administration is deemed to have undertaken not to cause interference to those stations for which the agreement was requested.

Earth station coordination (Article 11, Section III)

1107

1. The expression "band allocated with equal rights" is understood to mean bands with the same category of allocation.

2. Concerning the word "partly", cases have arisen where the coordination contour exceeding several hundreds kilometers overlaps a very small part of the territory of an administration (less than a few tens of kilometers). Considering that several conservative assumptions are used in calculating the coordination area, the Board decided that the coordination was not required when the coordination distance is large compared with the overlapping part.

3. The last sentence in this provision permits the administration to request coordination for a band (B) wider than the band assigned to the earth station. This band B is not mentioned in any part of Appendix 1 or Appendix 3, but it may be needed when determining the terrestrial stations for which the coordination RR1148 is not required (see RR1158). For this reason the Board decided to have this band recorded in the MIFR.

1110

1. The use of another associated space station may be one of the modifications of characteristics. In such a case, a new coordination contour is drawn and compared with the previous one. The coordination is then required with any administration on the territory of which a coordination distance is increased.

2. Generally, the Bureau uses the same approach, i.e. an increase of the coordination distance in order to decide if there is an increase of interference.

1113

1. The last sentence of this provision indicates that a copy of the information shall be sent to the Bureau <u>for information</u>. Usually, any material sent to the Bureau for information is kept in the files of the Bureau without a predetermined use; in this case the title of sub-section IIE of Article 12 refers to earth stations for which the coordination was initiated and the Bureau, when it receives the information referred to in this provision, should consider that the coordination was initiated. It is to be noted that RR1151 indicates that an earth station is to be taken into account from the date of receipt of the information in application of RR1107. A direct application of the Radio Regulations would imply that the information received by the Bureau under RR1113 is thus captured and the coordination contour is calculated and used for the examinations of terrestrial stations under Sub-Section IIE of Article 12.

2. On the basis of the experience gained in the processing of notices, the formulation of Findings and the use of information submitted to the Bureau, the Board considered the following:

2.1 earth station coordination data are submitted to the Bureau for information only;

2.2 this information is neither published nor used for any purpose concerning space applications by the Bureau;

2.3 this information together with the related coordination contours should, however, be used in the processing of terrestrial station notices in the "shared bands" when examining these notices under RR1353 (RR1151 refers);

2.4 the treatment of earth station coordination information and the establishment of the related coordination contours represent a considerable workload and requires major effort by the Bureau;

3. In order to achieve the same regulatory objectives and rights for both the earth and terrestrial stations but, however, using more efficient working methods, the Board decided that the Bureau shall proceed as follows:

3.1 The earth station data undergoing coordination submitted for information under RR1113 shall not be processed by the Bureau. This information will be kept in the files of the Bureau. (Earth station notices concerning requests for coordination assistance submitted under RR1129-RR1135 shall nevertheless be processed.)

3.2 Consequently, in the case of a favourable Finding given in the examination of terrestrial station notices under RR1353 (Sub-section IIE of Article 12), this favourable

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Finding when recorded in the Master Register shall be qualified by the following remark (symbol H/...(date) in column 13B2):

"This assignment was examined under the provisions of Sub-Section IIE of Article 12 and recorded in the Master Register according to RR1362 or RR1367. The favourable Finding with respect to RR1353 was based on earth station information submitted to the Bureau under the provisions of RR1129 - RR1135 of Article 11 and RR1488 of Article 13. In this RR1353 examination, however, the Bureau did not take into account the earth station data communicated to it for information under RR1113 of Article 11. Consequently, the present assignment shall not be taken into account, within the three years (date following symbol H/... in column 13B2) following its date of notification, in the examination under RR1509/RR1511 of an earth station whose coordination information was previously communicated to the Bureau under RR1113 and, if coordination with that earth station was not successfully effected, the present assignment is deemed not to cause harmful interference to the services rendered by the earth station."

1120

It is to be noted that if the period were to be extended without limit, the Bureau would have to keep files which are of concern only to the administrations concerned. Keeping in mind the manpower required for the maintenance of such files, the Board decided to consider the agreement referred to in this provision as a bilateral agreement not involving the Bureau or any other country.

1126

1. This provision refers to the case of disagreement; the way it will be applied depends on the location of the terrestrial stations with respect to the coordination area and their date of bringing into use.

2. This provision refers to "the information required in the case of No. 1124". The information required is described in RR1125 as being "a diagram drawn to an appropriate scale indicating the location of those terrestrial radiocommunication stations which are or will be within the coordination area of the earth transmitting or receiving station, as appropriate, together with all other relevant basic characteristics". This leads the Bureau:

a) to verify the position of the terrestrial stations with respect to the coordination area;

b) to verify that all the relevant characteristics listed in Section A or B, as the case may be, of Appendix 1 are given. In some cases the information communicated concerns a terrestrial station having characteristics corresponding to those of a typical station already recorded in the MIFR with only the characteristics listed in Section C of Appendix 1; the Board considered that such cases shall be treated as new notifications.

3. According to the provisions of RR1230, frequency assignment notices to terrestrial stations of this category are receivable not earlier than three years before their bringing into use.

1142

1. See comments under the Rules of Procedure concerning RR1107.

2. This provision treats the case of an administration which did not reply to the request sent by the Bureau under RR1137 or which fails to give a decision. A more frequent case encountered by the Bureau is the case of an administration which does not give its agreement and despite repeated requests by the Bureau does not communicate information on its terrestrial stations. In such situations the Bureau uses any information available in the MIFR.

<u>Terrestrial station coordination (Article 11, Sub-Section IV)</u>

1148

1. "A band ... allocated with equal rights" is understood to refer to bands with the same category of allocation.

2. The coordination procedure RR1148 is to be applied only in frequency bands allocated to a space service in the direction space-to-Earth, i.e. when the terrestrial stations are in the coordination area of a receiving earth station. The coordination between terrestrial stations and transmitting earth stations is done only when the transmitting earth station is coordinated in application of RR1107. Once this coordination is effected (with or without success) the administration wishing to operate terrestrial stations within the coordination area of the transmitting earth station can evaluate the level of interference that its station may receive and decide by itself to proceed or not with the implementation of its terrestrial stations.

1154

The existing terrestrial stations are those which have been taken into account in the RR1107 coordination procedure of the earth station. Terrestrial stations notified at a later stage are not taken into account in applying this provision.

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Rules concerning

ARTICLE 12 of the RR

1220

1. This provision stipulates that no notification shall be made of the frequencies that are prescribed for common use by stations of a given service. According to this provision the Bureau established a list of the frequencies that enter into this category. This list is regularly updated and published in the Preface to the International Frequency List (IFL), in frequency order (Section V of the Preface). The common frequencies appear in the Master Register and in the IFL.

2. A summary list of these frequencies is given below, in terms of reference (carrier) frequencies:

- Worldwide distress and calling frequencies (500 kHz, 2 182 kHz);

- GMDSS frequencies for distress and safety calling using DSC techniques (2 187.5 kHz, 4 207.5 kHz, 6 312 kHz, 8 414.5 kHz, 12 577 kHz, 16 804.5 kHz and 156.525 MHz);

- GMDSS frequencies for distress and safety traffic by NBDP telegraphy (2 174.5, 4 177.5, 6 268, 8 376.5, 12 520 and 16 695 kHz);

- GMDSS frequencies for distress and safety traffic by radiotelephony (2 182 kHz, 4 125 kHz, 6 215 kHz, 8 291 kHz, 12 290 kHz, 16 420 kHz and 156.8 MHz);

- International frequencies for search and rescue operations (2 182 kHz, 3 023 kHz, 5 680 kHz, 8 364 kHz, 10 003 kHz, 14 993 kHz, 19 993 kHz, 121.5 MHz, 123.1 MHz, 156.3 MHz, 156.8 MHz and 243 MHz);

- International frequencies for digital selective calling, for purposes other than distress and safety (455.5, 458.5, 2 177, 2 189.5, 4 208, 4 208.5, 4 209, 4 219.5, 4 220, 4 220.5, 6 312.5, 6 313, 6 313.5, 6 331, 6 331.5, 6 332, 8 415, 8 415.5, 8 416, 8 436.5, 8 437, 8 437.5, 12 577.5, 12 578, 12 578.5, 12 657, 12 657.5, 12 658, 16 805, 16 805.5, 16 806, 16 903, 16 903.5, 16 904, 18 898.5, 18 899, 18 899.5, 19 703.5, 19 704, 19 704.5, 22 374.5, 22 375, 22 375.5, 22 444, 22 444.5, 22 445, 25 208.5, 25 209, 25 209.5, 26 121, 26 121.5 and 26 122 kHz);

- International frequencies for selective calling using the sequential single-frequency code system (2 170.5, 4 125, 4 417, 6 516, 8 779, 13 137, 17 302, 19 770, 22 756 and 26 172 kHz);

- International frequencies for radiotelephone calling (4 125, 4 417, 6 215, 6 516, 8 255, 8 779, 12 290, 13 137, 16 420, 17 302, 18 795, 19 770, 22 060, 22 756, 25 097 and 26 172 kHz);

- Worldwide and international working frequencies for ship radiotelegraph stations in the authorized bands between 415 and 535 kHz (425, 454, 458, 468, 480 and 512 kHz);

- International ship-to-shore working or intership frequencies (2 045, 2 048, 2 635 and 2 638 kHz);

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- Worldwide frequencies for use by ship and coast SSB radiotelephone stations by simplex (single-frequency) operation and for intership cross-band (two-frequency) operation (bands listed in RR4199, frequencies indicated in Section B of Appendix 16);

- Worldwide working frequencies for ship stations equipped for wideband telegraphy, facsimile and special transmission systems (bands listed in RR4200, frequencies indicated in Appendix 31);

- Worldwide working frequencies for ship stations equipped for NBDP telegraphy and data transmission systems on a non-paired basis (bands listed in RR4203, frequencies indicated in Appendix 33);

- Ship calling frequencies using A1A Morse telegraphy (bands listed in RR4204, frequencies indicated in Appendix 34);

- Ship working frequencies using A1A Morse telegraphy (bands listed in RR4206, frequencies indicated in Appendix 35);

- 410 kHz, worldwide frequency for radio direction-finding in the maritime radionavigation services;

- 75 MHz, worldwide frequency assigned to aeronautical marker beacons.

3. If these frequencies are used by other services and/or for purposes other than the ones specified in the Radio Regulations, they should be notified under the relevant provisions of Article 12 of the Radio Regulations and in some cases under the provisions of RR342.

1223

This provision and RR1224 to RR1227 and other provisions of Article 11 identify assignments to terrestrial stations to be notified individually (i.e. with the information listed in Section A or B of Appendix 1). All other assignments¹ can be notified either as a typical station (with only the information listed in Section C of Appendix 1) or as individual stations, as the administration concerned considers appropriate. The frequency assignments which shall be notified individually are the following:

1. <u>Assignments in frequency bands below 28 MHz</u> (except those of the broadcasting service in its exclusive bands to which Article 17 apply).

2. Assignments to stations of the broadcasting service in any band above 28 MHz (RR1224.)

3. Assignments in frequency bands above 1 GHz² to stations of all terrestrial services which are within the coordination area of an earth station (RR1225) and which are:

¹ Frequencies for common use listed in Section V of the Preface to the IFL shall not be notified.

On the basis of the provisions of paragraphs 3.5.2 and 3.6 of the Annex to Resolution 46, the Board extended the application of this Rule to those frequency bands <u>below</u> 1 GHz to which the procedure of Resolution 46 applies.

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a) communicated in application of RR1126 or RR1127;

b) notified in application of RR1214.

4. <u>Assignments to stations of the fixed or mobile services outside the coordination area of a receiving earth station (irrespective of their category of allocation) in the frequency bands listed in Table II of Appendix 28 with an e.i.r.p. exceeding the corresponding value listed in that table (RR1226).</u>

The Board understands this provision as being intended to afford appropriate protection to receiving <u>earth</u> stations when the terrestrial stations are using a high e.i.r.p. The Table below indicates the band and the e.i.r.p. limit above for which individual notification is required.

Band	e.i.r.p. dBW	Notes
1 525 - 1 535 MHz	55	
1 670 - 1 700 MHz	55	
1 700 - 1 710 MHz	55	Note 1: Table II of Appendix 28 indicates two values depending on the space service concerned (92 or 62 dBW). Note 2: The footnote to Table II of Appendix 28 indicates that the e.i.r.p. values indicated therein are associated with transhorizon systems. The Board is of the view that terrestrial stations using an e.i.r.p. greater than 55 dBW are probably associated with transhorizon systems. Considering that footnotes of the Table of Frequency Allocations make special reference to such systems the Board
		decided that administrations should notify them individually.
1 710 - 1 790 MHz	55	See Note 2 above.
2 290 - 2 300 MHz	55	See Note 2 above.
2 500 - 2 655 MHz	55	See Note 2 above.
2 655 - 2 690 MHz	55	Table II of Appendix 28 indicates an e.i.r.p. of 92 dBW, and in accordance with RR1227 any station in this band shall be notified individually, irrespective of its e.i.r.p.
3 400 - 4 200 MHz	55	· · · · · · · · · · · · · · · · · · ·
4 500 - 4 800 MHz	55	See Note 2 above.
7 250 - 7 750 MHz	55	
8 025 - 8 400 MHz	55	
8 400 - 8 500 MHz	55	Note 3: The e.i.r.p. given in Table II of Appendix 28
		is derived from a total e.i.r.p. of 55 dBW.
10.7 - 12.75 GHz	55	
17.7 - 40 GHz	55	See Note 3 above.

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5. <u>Assignments to terrestrial stations in the frequency bands listed in RR2509, RR2510</u> and RR2511 (RR1227);

The Board understands provision RR1227 as being intended to protect the geostationarysatellite orbit. It should be applied to all terrestrial services in the bands referred to above, irrespective of their category of allocation.

1240

REGULATORY EXAMINATIONS

According to this provision, every notice is examined with respect to its conformity with the provisions of the Convention, the Table of Frequency Allocations and the other provisions of the Radio Regulations with the exception of those provisions which relate to the probability of harmful interference, as appropriate.

1. Conformity with the Table of frequency allocation

The examination of conformity with the Table of frequency allocations consists of determining whether the assigned frequency and/or the necessary bandwidth of the emission is within the frequency band allocated to the service in which the station in question operates. Another element is to identify the category of the service according to the Table of Frequency Allocations. The following rules are applied in this connection:

1.1 <u>Out-of band emissions:</u> In the case where the assigned frequency is in a band which is not allocated to the service in which the station operates the notice receives an unfavourable regulatory finding. If the assigned frequency is on the edge of a band which is not allocated to the service the finding is also unfavourable.

1.2 <u>Overlapping emissions</u>: In the case where the assigned frequency is in the band which is allocated to the service, but the necessary bandwidth overlaps the immediately adjoining band which is not allocated to the service, the notice receives an unfavourable regulatory finding.

1.3 <u>Receiving point in a region where the service is not allocated</u>: In the case of circuit whose transmitting point is in a country, Sub-Region or Region where the frequency is allocated to the service, but whose receiving point is not, an unfavourable regulatory finding is issued.

1.4 <u>Allocation made subject to the application of the procedure of Article 14</u>: In the case where the notified frequency is in a band where the allocation is subject of the application of the procedure of Article 14, the application of that procedure by the notifying administration is checked. If the procedure has not been initiated, the notice is returned to the administration with an unfavourable regulatory finding and a recommendation to apply the appropriate procedure. If the notifying administration has started the Article 14 procedure, but could not complete it successfully and declares to operate under the provisions of RR342, the assignment, though with unfavourable regulatory finding, is examined with respect to the probability of harmful interference likely to be caused to other existing assignments. Depending on the result of the technical examination the assignment may be recorded in the Master Register.

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1.5 <u>Categories of allocation</u>: In the case when the assigned bandwidth overlaps two frequency bands that are both allocated to the service in question, with different categories of allocation, the favourable regulatory finding is accompanied by the indication of the status derived from the lowest of the two categories of allocation.

1.6 <u>Tropical broadcasting bands</u>: The frequency bands listed in RR2669 are allocated on a shared basis to the tropical broadcasting, to fixed and mobile services (see also footnote RR503). In the Tropical zone (RR406 - 411) the broadcasting service has priority over the other services in these frequency bands and the frequency assignments to services other than the broadcasting service are indicated so as to show their lower status with respect to the frequency assignments to stations in the broadcasting service, while retaining their status with respect to the non-broadcasting assignments from both inside and outside the Tropical Zone (symbol V in column 13B2).

2. Regulatory provisions, other than those contained in Art. 8

The regulatory examination takes into account all the mandatory provisions that are contained in the Articles in Part B of, and/or in Appendices to, the Radio Regulations and that are relevant to the service in the frequency band in which a station of that service operates. The non-compliance with these provisions results in an unfavourable finding and in the return of the notice to the notifying administration. The list of these provisions, for the terrestrial services in the bands that are not shared with space services, is given below:

2.1 <u>Broadcasting service</u>: The only mandatory provisions contained in Part B of the Radio Regulations to be applied by the Bureau on a regular basis with respect to the broadcasting service in the bands below 28 MHz are those contained in RR2670 concerning the power limit (50 kW) of the broadcasting transmitters operating in the Tropical bands in the frequency band listed in RR2669.

2.2 <u>Fixed service</u>: The only mandatory provisions contained in Part B of the Radio Regulations, which are applicable to the fixed service below 28 MHz, are those of RR2701 which stipulate that F3E and G3E emissions are prohibited in the fixed service below 30 MHz;

2.3 <u>Aeronautical mobile service</u>: There are mandatory provisions only for the frequency bands that are allocated exclusively to the aeronautical mobile service. These provisions (obligatory channelling arrangement, permitted classes of emission, power limits) are contained in Appendices 26(Rev.92) and 27Aer2. The provisions of RR3633 also falls into this category of mandatory regulatory provisions, i.e. the prohibition of using the exclusive frequency allocations to the aeronautical mobile service for any kind of public correspondence.

2.4 <u>Maritime mobile service</u>: There are many mandatory provisions that are applicable to the maritime mobile service in the frequency bands below 28 MHz. Most of them are related to the frequency bands that are allocated exclusively to the maritime mobile service (obligatory channelling arrangements, permitted classes of emission, power limits, etc); however many of them are also applicable to the non-exclusive allocations to the maritime mobile service. A summary of the provisions that are applicable to the frequency assignments subject to notification is given in the Table below:

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	Provision No.
Power limits	4256, 4321B 4323H, 4323R (Region 1 only), 4323AH, 4323AI, 4323BK 4338-4340, 4342, 4357 (Region 1 only) 4373, 4374, 4382
Class of emission	4181A, 4181B, 4215A, 4235 4255, 4316, 4319, 4325, 4335, 4342, 4353, 4371
Mandatory sub-division	4188A (Region 1 only), 4197-4209, 4237-4238 Appendix 16, Appendices 31-35

3. Call sign

No systematic control of the call signs is performed during the examination of the notice. Nevertheless, if non-conformity of the call sign with the international call sign series is identified, the notifying administration is informed thereof.



EXAMINATION OF THE NOTICES, IN THE BANDS BELOW 28 MHZ, WITH RESPECT TO THE PROBABILITY OF HARMFUL INTERFERENCE (TECHNICAL EXAMINATION)

1. Introduction

1.1 According to the provisions of RR1241 or 1242, as appropriate, every notice concerning a new (or modified) frequency assignment in the bands below 28 MHz, is examined with a view to determining the probability of harmful interference to the service rendered by a station for which an assignment is already recorded in the Master Register (existing assignments). This examination is referred to hereafter as technical examination. The purpose of the technical examination is to "protect" from harmful interference those stations for which a frequency assignment, in conformity with the provisions of RR1240, was recorded in the Master Register:

- with a favourable (technical) Finding with respect to RR1241/1242; or
- with an unfavourable (technical) Finding with respect to RR1241/1242, but which has not, in fact, caused harmful interference to any frequency assignment previously recorded in the Master Register with a favourable regulatory (RR1240) Finding.

1.2 For the bands listed in RR1388 (9 kHz to 3 900 kHz in Region 1; 9 kHz to 4 000 kHz in Region 2 and 9 kHz to 3 950 kHz in Region 3) the technical examination is made under RR1241 (date in column 2A or 2B) and in the other bands below 28 MHz the technical examination is made under RR1242 (date in column 2D).

2. Definitions of the terms

2.1 In these Rules, the terms that are used hereafter have the following meaning:

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2.1.1 <u>Existing assignment</u>: The term "existing assignment" is used to indicate an assignment which is already recorded in the Master Register and in respect of which, in accordance with Article 12 of the Radio Regulations, the probability of harmful interference, arising from either the operation of the new assignment or from the implementation of a modification to an assignment already recorded, should be ascertained. In other words, existing assignments are those for which the protection should be ascertained, they are the "assignments to be protected". Their signal at the receiving point is the "desired" or "wanted" signal.

2.1.2 <u>New notice</u>: The term "new notice" or "incoming assignment" means a frequency assignment notice which relates either to a new assignment or to an amendment to an existing assignment. The signal of a new or amended assignment at the receiving point of an existing assignment is the "undesired" or "unwanted" signal.

2.1.3 <u>Protection ratio</u>: The protection ratio afforded to an existing assignment by a new or modified assignment, is the ratio, expressed in decibels, between the calculated field strengths of the "desired" and "undesired" signals at the receiving point of the "desired" emission. In certain cases, as a result of technical assumptions that are specified in these Rules of Procedure, allowances should be added to this calculated protection ratio.

2.1.4 <u>Affected assignment</u>

- When the new notice relates to a *new assignment*, the term "affected assignment" means an existing assignment for which the calculated protection ratio, during the period of common normal use of both the existing and the new assignments, is below the figure or the lowest figure, according to the frequency range concerned, given in Technical Standard A-1 (TSA-1) for the existing assignment.
- When the new notice relates to an *amendment to an existing assignment*, the term "affected assignment" means an existing assignment, for which the calculated protection ratio, during the period of common normal use of both the existing and the amended assignment is reduced or if it is not reduced, the period of simultaneous use is increased as a result of the amendment and is below the figure or the lowest figure, according to the frequency range concerned given in TSA-1 for the existing assignment.

2.1.5 <u>Period</u>: The term "period" means an interval of time during a day in one of the four phases of solar activity DL, JL, DA and JA (D: December, J: June; A: high and L: low solar activity index).

3. Calculation of the probability of harmful interference: the approach

3.1 Under the provisions of RR1241 and RR1242 any new (or modified) assignment has to be examined with respect to the probability of harmful interference to each of the existing assignments that are recorded in the Master Register and that are subject to protection <u>as if</u> <u>no other (existing) assignments were present in the interference environment</u>. To this end, the concept of single-source interference assessment is applied in which no account is taken of the effects of the other existing assignments. The basic diagram for calculation of the probability of harmful interference representing the above concept is shown in Figure 1.

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The symbols used in Figure 1 have the following meaning:

T(ex), R(ex)	= transmitter and receiver of the existing assignment
T(new), R(new)	= transmitter and receiver of the new or amended assignment
G _{te} , G _{re}	= transmitting and receiving antenna gain of the existing assignment
G _{tn} , G _{r n}	= transmitting and receiving antenna gain of the new or amended assignment
DIFAZ	 difference in azimuth between the direction of maximum radiation and the direction towards the receiving point of the existing assignment
DELTA	= angle seen at the receiving point of the existing assignment between the wanted and the interference path

3.2 The determination of the probability of harmful interference involves, over both the wanted and interference paths, the calculation of the field strength values at the receiving point of the wanted emission for the common time of use of the two frequency assignments in question, taking into account factors such as transmitter powers, gain or efficiency of the transmitting and receiving antennae and receiver discrimination. The technical data necessary for these calculations, that allow a uniform treatment of all the frequency assignment notices, are contained in the Technical Standards A-1 to A-5, which were developed in accordance with RR1454 (see Part B of these Rules of Procedure). The Findings relating to the probability of harmful interference are formulated after comparison of the calculated value of the signal/interference ratio with a predetermined value of the setablished in the Technical Standard A-1.)

3.3 The technical examination may lead to one of the following results, designated by "Findings":

A in 13A3: A in 13A3 (followed by RR1251 in 13B1): N in 13A3: favourable, "qualified" favourable, unfavourable.

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A "qualified" favourable finding relates to the situation referred to in RR1251, i.e. when the probability of harmful interference for certain hours, seasons, or periods of solar activity is slightly greater than is considered desirable.

3.4 Any one of these Findings may be followed, in columns 13B and 13C, by other remarks giving further information, justification of the finding, required actions or references to provisions of the Radio Regulation or Final Acts of Administrative Radio Conferences.

4. Application of the technical examination procedure: working documents

4.1 List of Incoming assignments

The list of incoming assignments is prepared on a weekly basis and contains those assignments which have been declared complete and for which a technical examination is required as a result of the regulatory examination. This list is eventually completed, for the purpose of the technical examination, with additional data for the incoming notice (e.g. coordinates for a receiving point within a geographical area, or coordinates for the transmitting point for an assignment of a receiving station, etc, for MUF and field strength calculations).

4.2 Technical examination results

4.2.1 The results of the technical examination, in the form of computer printout, contain all the details that may be needed for further analyses of the probability of harmful interference likely to be caused by an incoming assignment to one or more existing assignments. The results are presented in two different formats, depending on the frequency band:

- *in the bands between 9 kHz and 3 900 kHz*, calculations are performed for the ground wave and for the skywave and the signal/interference ratio (and all the related technical parameters) are given for day-time operation and for night-time operation;
- *in the bands between 3 900 kHz and 28 000 kHz*, where the skywave is the predominant mode of propagation, the signal/interference ratio (and all the related technical parameters) are given for each of the 24 hours and for four solar activity phases.

4.2.2 The technical examination results are given separately for each entry of the incoming assignment so that separate examinations can be carried out and independent Findings be given to each entry.

4.3 Finding documents

The results of the examinations including parameters of the incoming assignment and those of the affected assignments as well as the calculated protection ratios, partial findings (with respect to each affected assignment) and overall findings (consolidated finding for the incoming assignment including the results of all examinations, i.e. regulatory, plan conformity and technical examinations), the reasons for the proposed finding elements and the recommendations to the notifying administration, if appropriate, are summarized in "Finding Documents".

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5. Elements of the technical examination: selection of assignments likely to be affected

5.1 Automated preselection

The selection of assignments recorded in the Master Register that are liable to be affected is performed automatically, on the basis of the following criteria: frequency separation, receiver discrimination, geographical separation, power level, location of the point of reception, common time of operation, antenna characteristics, etc. Other data are also taken into account with a view to eliminating those assignments which are coordinated among administrations (according to RR380 and RR1245), pertaining to the same notifying administration or which are not protected for any reason (X or Y in 13B2).

The following categories of existing assignments are not protected:

- assignments recorded for information only (such as unfavourable regulatory finding recorded under RR342);
- assignments for which the notifying administration has not replied to an inquiry of the Bureau within the required period;
- assignments of class of operation C (col. 7B, see RR1222).

5.2 Selection of affected assignments according to their allocation categories

For the purpose of the selection of the assignments likely to be affected (protected assignments) the primary and permitted services have an equal status, they are thus selected mutually for an incoming assignment of these categories. An assignment pertaining to a secondary service is not protected against an incoming assignment of a primary or permitted service (RR422), but it is protected vis-à-vis the incoming assignments of a secondary service. An assignment pertaining to a service which may operate in a specific frequency band subject to not causing interference is only protected against the incoming assignments of this category. Assignments in services other than the broadcasting service, in the frequency bands allocated to the tropical broadcasting service (RR2669) and bearing the symbol V in Column 13B2 are not selected as affected assignments for an incoming assignment of the broadcasting service, because of the priority of the latter over the other services with which it shares these bands.

5.3 Affected assignments in the bands governed by the Regional Agreement GE85-MM-R1

5.3.1 The Regional Agreement concerning the MF Maritime Mobile and the Aeronautical Radionavigation Services (Region 1), 1985, (GE85-MM-R1), in which the fixed and land mobile services were also taken into consideration, although not planned, contains provisions applicable to the technical examinations of new notices concerning the non-planned services (fixed and land mobile services) in the following bands:

1 606.5 - 1 625 kHz,

1 635 - 1 800 kHz and

2 045 - 2 160 kHz.

5.3.2 In these bands, a new notice to a station in the fixed and land mobile services has to be examined not only with respect to the existing assignments recorded in the Master Register, but also with respect to those "plan" assignments of the maritime mobile service:

- 5.3.2.1 which are in conformity with the Plan, but have not yet been notified in accordance with Article 5 of the Agreement; and
- 5.3.2.2 which were published in a special section of the weekly circular in accordance with Article 4 of the Agreement.

In the technical examinations the above "plan assignment" categories have to be protected only for their ground-wave propagation mode.

5.3.3 In the event of an unfavourable finding relating to assignments of the above categories 5.3.2.1 and 5.3.2.2, and if the administration resubmits the notice under RR1255, the period of two months specified in RR1259 shall not start until the assignment which forms the basis of the unfavourable finding is brought into service.

5.4 Affected assignments in the bands governed by the Regional Agreement GE85-EMA

5.4.1 The Regional Agreement concerning the Planning of the Maritime Radionavigation Service (Radiobeacons) in the European Maritime Area, 1985, (GE85-EMA), in which the aeronautical radionavigation service was also taken into consideration, although not planned, contains provisions applicable to the technical examinations of new notices concerning the non-planned service (i.e. the aeronautical radionavigation service) in the frequency band 283.5 - 315 kHz.

5.4.2 In this band, a new notice to an aeronautical radionavigation station has not only to be examined with respect to the existing assignments recorded in the Master Register, but also with respect to those "plan" assignments of the maritime radionavigation service:

- 5.4.2.1 which are in conformity with the Plan, but have not yet been notified in accordance with Article 5 of the Agreement; and
- 5.4.2.2 which were published in a Part I of the weekly circular in accordance with paragraph 4.4 of Article 4 of the Agreement.

5.4.3 In the event of an unfavourable finding relating to assignments of the above categories 5.4.2.1 and 5.4.2.2, and if the administration resubmits the notice under RR1255, the period of two months specified in RR1259 shall not start until the assignment which forms the basis of the unfavourable finding is brought into service.

6. Outline of the technical examination: technical consideration of the parameters of the circuits, protection criteria and related elements

6.1 Transmitting antenna gain of the existing assignment (TAG)

6.1.1 When the antenna gain of an omnidirectional antenna or of a directional antenna has been notified, the notified value is used in the calculations.

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- 6.1.2 However, even when an omnidirectional antenna (ND in column 9A) is notified with no gain (0 in column 9G), in the frequency bands above 3 900 kHz, in the fixed service, when the length of the circuit of the existing assignment notified as ND is greater than 1 600 km irrespective of the notified power, or less than 1 600 km but not less than 500 km and if the notified power is not less than 27 dBW (0.5 kW), a directional antenna is presumed to be used. The value of the antenna gain is taken from the Technical Standard A-4 (Gain of antennae) according to the frequency band and the notified power; the value used in these calculations is indicated in the Finding Document containing the results of the examination together with the proposed findings.
- 6.1.3 The preceding procedure in 6.1.2 above is not applicable for cases of circuits between 500 and 1 600 km with different points of reception including networks (symbol ZN in col. 5A) scattered all around the transmitting station, where the use of different transmitting directional antennae might be impracticable.

6.2 Transmitting antenna gain of the new or amended assignment for the interference path

- 6.2.1 In the case of an omnidirectional antenna notified in a new notice, the interference calculations is based on the notified antenna gain (up to 3 dB).
- 6.2.2 In the case of a directional antenna, the antenna gain of the interfering transmitter is calculated as a function of the angular difference (DIFAZ) between the azimuth of the main beam and the azimuth in the direction of the receiving point of the existing assignment to be protected. The notified antenna gain is used for an angular difference of 0 to 5 degrees. For greater angular differences values of columns 2 or 2bis of the Technical Standard A-4 are used. For notified values of antenna gain for which there is no corresponding value in TSA-4, the values of Table 1 below are used as reference values.

DIFAZ	col 2	col 2 bis	col 2	col 2 bis	col 2	col 2 bis
(degree)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)
0 - 5	3, 4, 5	1	6, 7, 8	3	9, 10	6
6 - 10	2	1	5	2	7	4
11 - 15	2	1	4	1	5	2
16 - 20	2	1	2	1	3	1
21 - 30	2	1	2	1	2	1
31 - 60	2	1	2	1	2	1
61 - 90	1	-2	1	-2	1	-2
91 - 180	-2	-9	-2	-9	-2	-9

TABLE 1

6.3 Receiving antenna discrimination of the existing assignment (RAD)

6.3.1 Appendix 1 to the Radio Regulations does not require the notification of the receiving antenna gain. Under certain conditions, however, the use of a

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directional receiving antenna is assumed, with the same characteristics as those of the transmitting antenna (Gte = Gre). The receiving antenna discrimination (RAD) is calculated on the basis of the angle (DELTA) seen at the receiving point between the wanted path and the interference path:

RAD (dB) = Gte - Gte(DELTA)

Values of the antenna gain for angles (DELTA) other than the main radiation direction can be found in the Technical Standard A-4 in columns 2 or 2bis as a function of values in column 1 (DIFAZ).

- 6.3.2 The provisions of the preceding paragraph, which are based on the assumption that a directional antenna is used for reception, are applicable in the bands above 3 900 kHz, only for fixed, point-to-point circuits involving distances of not less than 1 600 km irrespective of the notified power, or distances less than 1 600 km but not less than 500 km, if the power notified is not less than 27 dBW (0.5 kW).
- 6.3.3 The value of the RAD is not included in the calculation of the protection ratio and is shown in the Finding Document only as further discrimination assumed and where its inclusion will enable a "qualified" favourable finding to be given.
- 6.3.4 However when a directional antenna for reception is assumed, and with the only purpose to verify whether the field intensity at the receiving point justifies the protection of an assignment, the value from TSA-2 (minimum field strength to be protected) used for this assessment is decreased by an amount equal to the gain of the directional antenna assumed for reception (= TAG).

6.4 Notified hours of operation

The term HJ is taken to mean that transmission is only effected on the frequency concerned between 0600 and 1800 hours, local time at the transmitter site. Similarly the term HN is taken to mean that transmission is only effected between 1800 and 0600 hours, local time at the transmitter site. The term HT is taken to mean that transmission is only effected on the frequency concerned during transitional periods between daylight and darkness, i.e. between 0400 and 0800 hours and 1600 and 2000 hours, local time at the transmitter site.

6.5 Hours of operation determined on the basis of MUF (f > 3 900 kHz)

6.5.1 The probability of successfully establishing communication by ionospheric propagation depends on the probability that the signal is reflected by the ionosphere on the assigned frequency.

6.5.2 In the bands above 3 900 kHz, in order to obtain an indication of the period during which the assigned frequency on the existing or incoming assignment is considered to be "normally usable", the ratio *assigned frequency/median MUF* is calculated and interpreted as follows:

6.5.2.1 When during certain periods this ratio is between 1.15 and 0.6, then the frequency is considered to be "normally usable" during these periods.

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- 6.5.2.2 When during certain periods this ratio is lower than 0.6 (for frequencies below about 18 000 kHz) this indicates that the frequency is too low with respect to the MUF and that a higher frequency should normally be used in order to avoid excessive absorption. In certain cases referred to in paragraph 6.5.4, the frequency is considered to be " normally usable" during all the periods where it is below the MUF, subject to the wanted signal level being above the minimum field strength specified in TSA-2.
- 6.5.2.3 When during certain periods the above ratio is above 1.15 this indicates that the frequency is higher than the upper decile value of the MUF, and that, as a result of "skip" phenomenon, propagation probability is lower than acceptable. Consequently the frequency is not considered to be "normally usable".
- 6.5.2.4 When the conditions of the TSA-2 for the minimum field strength to be protected are not met, the frequency is not considered to be "normally usable" irrespective of the ratio assigned frequency/median MUF.

6.5.3 The ratio assigned frequency/median MUF is calculated for each of the 24 hours in each of the four phases (DA, DL, JA, JL; see paragraph 2.1.5 above) and for the two assignments involved in the technical examination (new or amended assignment and existing assignment). The main purpose of this analysis is to assess the probability of propagation on the paths simultaneously, i.e. to identify the periods of "common time" of normal use of both assignments. In the technical examination results the common periods are indicated, and for these periods the protection ratio values are calculated.

6.5.4 When an assignment is notified with specific time of daily use not exceeding 12 hours (HJ, HN, HT or specific hours), if during this time or part of it, the ratio *assigned frequency/median MUF* is less than 1 for at least 3 phases, it is assumed that the frequency is "normally usable" for that part of the time during all the phases insofar as the field strength is above the minimum field strength to be protected according to Technical Standard A-2.

6.5.5 <u>Skip on the interference path</u>: When the ratio *assigned frequency/median MUF* on the interference path is greater than 1.15, it is assumed that "skip" will occur (less than 10% of probability of reflection from the ionosphere: upper decile) which will help in protecting the receiving point of the existing assignment. The principle is applicable for frequencies higher than 10 MHz and the signal/interference ratio is not calculated for the period considered.

6.6 Field strength values

6.6.1 In the bands below 3 900 kHz, it is assumed that, as a general rule, signals over the wanted and unwanted paths may be propagated by ground wave (land or sea) during both day and night hours, and that the sky wave is predominant at night and at longer distances. Hence the tables of field strength values included in Technical Standards Series A-5, are used for the calculations with the mode of propagation which gives the highest field at a particular point, by comparing the values for propagation by ground or sky wave. In the bands below 526.5 kHz an antenna efficiency factor is also applied as a correction to the notified power; values of this correction factor are contained in TSA-5.

6.6.2 In the bands above 3 900 kHz, it is assumed that the signals over the wanted or unwanted paths are propagated by sky-wave only. Sky-wave median field strength values are thus calculated for the " common time" period (see 6.5.3 above) in each of the four

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phases (DA, DL, JA, JL) and for the two paths involved in the technical examination (existing assignment and interference path) by means of the computer programs included in the technical examination programs,. Values of field strength are expressed as median values (exceeded 50% of time) in decibels relative to 1 μ V/m for 1 kW (30 dBW) of power radiated from a loss-free halfwave dipole antenna isolated in space. When calculating the actual field strength values at the receiving point of the existing assignment the power difference vis-à-vis 30 dBW as well as the corresponding antenna gain values are to be taken into account.

6.7 Type of notified power

The protection ratio values contained in TSA-1 refer to a signal/interference ratio where both the wanted and the interfering signals are calculated in terms of peak envelop power (p.e.p) values. On the other hand powers notified for different type of emissions are required in mean (PY), carrier (PZ) or peak envelope power (PX) values. For the purpose of technical examination calculations, both for the incoming and the existing assignments, all the notified powers, other than those expressed in PX, are converted into PX with the conversion factors indicated in Table 2 of Technical Standard A-1.

6.8 Minimum field strength to be protected

6.8.1 The purpose of calculating the minimum field strength to be protected in the technical examination is to determine the field strength at the receiving point below which the wanted signal is not protected against interfering signals because the wanted signal-to-noise ratio is smaller than that which could satisfy the required performance quality criteria in the absence of interference.

6.8.2 The value of the minimum field strength to be protected (I_m) is obtained from the Technical Standard A-2 for the region of the reception point of the existing assignment, for 6 time blocks (N2, T1, J1, J2, T2, N1), for two seasons (the winter season which is represented by the month of December and is indicated with DC, and the summer season which is represented with the month of June and is indicated with JN) and for each class of emission (transmission type) of the existing assignment. They are expressed in dB relative to 1 μ V/m. When a directional antenna is assumed, I_m is the value obtained from the TSA-2 reduced by the amount of the receiving antenna gain. The calculated value of the field strength of the existing assignment (I_W) is determined to include the gain of the transmitting antenna of the existing assignment.

6.8.3 The calculated field strength (I_W) of the existing assignment is protected when its value is above the minimum value (I_m).

6.8.4 When, for a point-to-point circuit, I_W is lower than I_m in all time blocks and seasons, the protection ratio of the type of transmission concerned is not calculated (i.e. not protected).

6.8.5 In certain cases of more than one type of transmission (more than one entry in the assignment), when the protection ratio is not calculated because I_W is below I_m , the protection ratio of another type of transmission is calculated if I_W is higher than I_m for that case.

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6.8.6 In the case of point-to-zone type circuits, in frequency bands below 3 900 kHz, the determination of the receiving point to be protected is based on minimum field strength consideration:

- 6.8.6.1 If at the point of intersection of the border of the receiving zone and the great circle line between the two transmitting points (wanted and unwanted), I_W is greater than or equal to I_m , this point is designated for the calculations as receiving point for the transmission type considered.
- 6.8.6.2 If at the point determined according to paragraph 6.8.6.1 above, I_W is less than I_m , the length of the service range of the wanted circuit will be reduced along the great circle line to the limit corresponding to the condition $I_W = I_m$. This point is then designated for the signal/interference calculations as the receiving point to be protected. (Wanted and interfering paths are redefined for the new point to be protected.)
- 6.8.6.3 When an existing assignment has more than one type of transmission, having different values of I_m, the different service ranges are calculated with the corresponding signal/interference ratios for each type of transmission (each entry in the assignment).

6.8.7 For point-to-zone type circuits, in the bands above 3 900 kHz, the technical examination programs designate test points within the service area, and calculations are performed for these test points in applying the same criteria as for point-to-point circuits. The results so obtained for different receiving points are compared and Findings are formulated taking into account actual values of MUF and minimum field strength to be protected and, if appropriate, the principles such as SPR (see paragraph 7.4 below).

6.9 Receiver discrimination

The limited bandwidth of the emissions and the selectivity of the receivers can contribute to the protection of assignments if the interfering and wanted emissions operate with sufficient frequency separation. The effect of this additional protection is considered by the "receiver or frequency discrimination". Values of frequency discrimination are defined in the Technical Standards Series A-3 as a correction, in decibels, to be added to the signal/interference ratio and expressed as a function of the frequency separation between the assigned frequencies of the wanted and interfering emissions. TSA-3 contains values of discrimination for different classes and bandwidths of the interfering emission and for different pass-band values of the wanted receiver. The pass-band of receivers not being notified, its value is assumed to be equal to the necessary bandwidth notified for the existing assignment, and it is assumed to include also the frequency tolerance contained in Appendix 7 of the Radio Regulations.

6.10 Protection ratio

6.10.1 The calculated signal/interference ratio (including the value of the frequency discrimination) is compared with the protection ratio required for the protected transmission type. The Technical Standard A-1 contains these values for the main types of transmission. These values include allowances for long-term intensity fluctuation and short-term fading for the wanted and interfering signals, for given time percentages corresponding to the performance quality criteria applicable to each type of transmission. For each transmission

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type two time percentages are used, one which is intended to satisfy the highest quality criteria so as to reach a favourable finding foreseen in RR1249 and 1250, and another one which ensures the protection during a lesser percentage of time to meet the objectives stipulated in RR1251: these are values in brackets in TSA-1 for "qualified" favourable findings.

6.10.2 The "minimum limit" (the lower of the figures in brackets) and the "upper value" (the higher figure in brackets) of the protection ratio required for an existing assignment with a single type of emission are those shown in TSA-1. However some particular cases are treated as follows:

6.10.2.1 <u>A1A, A2A telegraphy</u>: With respect to existing assignments for which manual transmission has been notified with a bandwidth implying a speed higher than manual (i.e. > 500 Hz), and consequently the use of automatic receiving equipment, the following procedure is applied:

- 6.10.2.1.1 When directional transmitting antenna has not been notified the protection ratio required is a combined value of those given in TSA-1 for telegraphy, aural reception and telegraphy, automatic reception without error correction (i.e. the lower limit is taken from telegraphy, aural reception and the upper value from telegraphy, automatic reception), when the calculated field strength is not below the value obtained from the corresponding table of TSA-2, for telegraphy, automatic reception. Nevertheless, when the calculated field strength is less than this value, but is not below the value obtained from the corresponding table of TSA-2, for telegraphy aural reception. Nevertheless, when the calculated field strength is less than this value, but is not below the value obtained from the corresponding table of TSA-2, for telegraphy aural reception, the protection ratio required is that shown in TSA-1 for aural telegraphy.
- 6.10.2.1.2 With respect to other circuits of this kind, irrespective of their length, but for which a directional transmitting antenna is notified or assumed (TAG in the bands above 3900 kHz) and for which a directional receiving antenna is also assumed (RAD in the bands above 3900 kHz) the protection ratio required is that shown in TSA-1 for telegraphy, automatic reception and the minimum field to be protected is obtained from the corresponding table of TSA-2 for telegraphy, automatic reception. When no directional receiving antenna is assumed in the bands above 3900 kHz, the protection ratio required is that given in 6.10.2.1.1 above.

6.10.2.2 <u>F1A telegraphy</u>: Existing assignments for F1A or F1B radiotelegraph circuits are considered in all cases as relating to telegraphy, automatic reception.

6.10.2.3 <u>Telephony</u>

6.10.2.3.1 With respect to existing assignments for telephony of any type (double sideband, single sideband or independent sideband), notified as CP, if a directional transmitting antenna has not been notified, the protection ratio required is a combined value of those given for the corresponding type of telephony for CO and CP (i.e. the lower limit is taken from telephony CO and the upper value from telephony CP), when the calculated field strength is not below the value obtained from TSA-2 for telephony CP. When the calculated field strength is less than this value, but is not below the value for telephony CO, the

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lower limit of the protection ratio required is that shown in TSA-1 for telephony CO.

- 6.10.2.3.2 With respect to other circuits of this kind, notified as CP, irrespective of their length, but for which a directional transmitting antenna is notified or assumed (TAG), the protection ratio required is that shown in TSA-1 for telephony CP, and the minimum field strength to be protected is obtained from TSA-2 for telephony CP. If, however, the calculated field strength is less than that obtained from TSA-2 for telephony CP, but not less than that obtained from TSA-2 for telephony CO, the circuit will be treated as CO and the lower limit of the protection ratio required is that shown in TSA-1 for telephony CO.
- 6.10.2.3.3 With respect to circuits of this kind notified as CR, CV or OT, these are considered, for the purpose of application of TSA-1 and TSA-2 as CO.

6.10.3 In the case of a new assignment which includes more than one class of emission or type of transmission (each one representing a separate entry of the assignment) a separate technical examination is performed for each entry, the signal-to-interference ratio is calculated separately and individual Findings are formulated for each entry within the assignment.

6.10.4 In the case of an existing assignment which includes more than one class of emission or type of transmission, the signal-to-interference protection ratio required for this assignment involves a combination of the protection ratios required for these classes of emission or types of transmission. Subject to the provisions of paragraph 6.10.5 below, this combination is treated as follows: the "minimum limit of TSA-1" becomes the minimum limit required for the notified class of emission or type of transmission which requires the lowest of the minimum limits shown is TSA-1; similarly, the "upper value of TSA-1" becomes the upper value applicable to the notified class of emission or type of transmission which requires the highest of the upper values shown in TSA-1. The signal/interference ratio of the existing assignment is calculated on the basis of the type of transmission or class of emission which is the most susceptible to harmful interference.

6.10.5 In applying the provisions of paragraph 6.10.4 to existing assignments which have been notified with class of emission A1A, A2A (with bandwidths > 500 kHz) or F1A (or any combination of these classes of emission) associated with one or more other classes of emission with wider bandwidths (i.e. A3E, etc.) and for which a directional antenna is notified or assumed, it is assumed that automatic telegraphy is involved ; the lowest and highest values defined in TSA-1 are selected, bearing in mind the protection ratio required for each type of transmission of the assignment in question.

7. Elements of the technical examination procedure: additional "principles"

7.1 Need for additional "principles"

7.1.1 As indicated in paragraph 6.10.1 above, the technical part of the finding (col. 13A3) depends of the comparison of the calculated value of the signal/interference ratio with the protection ratio contained in TSA-1. Accordingly the finding can be favourable, unfavourable or "qualified" favourable. A "qualified" favourable finding (foreseen in RR1251) is normally given when during the period of normal use of both the new or amended assignment and the existing assignment likely to be affected, the calculated signal/interference ratio is between

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the minimum limit and the upper value of TSA-1, after adding any appropriate allowance for receiving antenna discrimination (RAD, para 6.3). A "qualified" favourable finding is also issued when the signal/interference ratio is equal to or greater than the upper value of the TSA-1 only as a result of the assumption of transmitting antenna gain (TAG, para 6.1).

7.1.2 However, the application of all the rules described above still results in an overconservative approach, especially for the transmissions that are of intermittent character. Therefore additional "principles" are introduced that allow formulation of a "qualified" favourable finding in some cases, although the signal/interference ratio is below of the "minimum limit" of TSA-1. It is, however to be noted, that "principles" are not applicable for those new assignments for which the regulatory examination has already resulted in an unfavourable finding, for which the notifying administration invokes the provisions of RR342. The "principles" are not applicable either to the broadcasting service whose transmissions are of a continuous character. The principles referred to are as follows.

7.2 Little common time (PTC)

7.2.1 When the existing assignment is affected for a part only of the time during which the frequency is "normally usable" by the assignment, the "little common time" procedure is applicable in the following circumstances:

- 7.2.1.1 When the existing assignment, in the bands above 3 900 kHz, is affected during less than 25% of the period when the frequency is "normally usable" by the assignment in one or more of the four phases, with a maximum time of two hours during each or any of the four phases when the assignment is affected, or
- 7.2.1.2 When the existing assignment, in the bands above 3 900 kHz, is affected in only one phase during less than 25% of the period when the frequency is "normally usable" by this assignment, without a limit of two hours to the maximum time provided that such time is within 0000 to 0800 hours, local time, at the transmitter.
- 7.2.1.3 When the existing assignment, in the bands below 3 900 kHz, is affected during less than 25% of the period during which the frequency is used with a maximum time of two hours.
- 7.2.1.4 The principle of little common time, which is normally not applicable to stations of the broadcasting service, can be applied for an existing assignment of the tropical broadcasting service when it is affected only between 0100 and 0500 hours, local time, in the reception zone.

7.2.2 Whenever the principle "PTC" results in a "qualified" favourable Finding the symbol PTC is entered in the remarks column of the Finding Document against the existing assignment for which the principle has been applied. In the bands above 3 900 kHz this symbol is followed by an indication of the hours (between brackets) for which the principle has been applied. This serves as justification of the "qualified" favourable finding formulated instead of an unfavourable one.

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7.3 Occasional use (N.103)

7.3.1 An existing assignment, which bears in column 13B2 the remark Z indicating occasional use (e.g. assignments of class of operation B, see RR1222), is taken into account in the examination of a new notice and when the existing assignment is affected, a "qualified" favourable finding is given. This rule is referred to as the application of the "principle represented by symbol N.103". In all cases where the assignment bearing a symbol Z in col. 13B2 is involved in the technical examination, in the remarks column of the Finding Document Symbol "N.103" is entered followed, in parenthesis, by the country symbol of the affected assignment. It is to be noted also that, according to the provisions of RR1222, assignments of class of operation \mathbb{C} (col. 7B) are not protected and consequently they are not selected for existing assignments.

7.3.2 In the case of a new notice relating to a frequency assignment for occasional use (including classes of operation B and C notified in col. 7B) and if one or more existing assignments are found to be affected by the new or amended assignment, a "qualified" favourable finding is given instead of an unfavourable finding: this rule is referred to as the application of the "principle represented by the symbol N.103 for a new assignment". Symbol "N.103" is inserted in the remarks column of the Finding Document against the existing assignments for which the principle has to be applied, because the signal/interference ratio was less than the minimum required by TSA-1.

7.4 Protection of receiving areas (SPR)

7.4.1 The principle represented by the symbol "SPR" (the affected assignment has more than one point or area of reception, part of which only is affected) is applicable to existing assignments as follows:

- 7.4.1.1 assignments having more than one notified reception points (including the case of ZN, ZN-A, etc), when the number of the receiving points to which the frequency concerned is "normally usable" during the periods of normal use of the new or amended assignment is not less than six, and when the number of reception points affected in the existing assignment is not more than 25% (i.e. not more than 2/8, or 3/12, etc) of the foregoing number; (For the calculation of the reception points only those in respect of which the MUF is appreciably similar will be considered.);
- 7.4.1.2 assignments having a notified receiving area, when the size of the area which is affected is not more than 25% of the area of which the frequency concerned is "normally usable" by the existing assignment during the periods of normal use of the new or amended assignment.

7.4.2 Whenever the principle of "SPR" results in a "qualified" favourable finding (less than 25% of the receiving zone is affected) the symbol "SPR < 25%" is entered in the remarks column of the Finding Document against the existing assignment for which the principle has been applied. This serves for justification of the "qualified" favourable finding formulated instead of an unfavourable finding.

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8. Technical examination of notices for modifications

8.1 When a new frequency assignment notice concerning a change or addition (modification) to an assignment already recorded in the Master Register is examined, provisions RR1306 and 1307 are taken into account. For this purpose (irrespective of the modifications of the other basic characteristics) the following categories of modifications are identified:

- 8.1.1 the change in the assigned frequency does not exceed half of the frequency band originally assigned;
- 8.1.2 the change in the assigned frequency exceeds half of the frequency band originally assigned.

In the case of 8.1.1 above (the change in the assigned frequency does not exceed half 8.2 of the frequency band originally assigned) and for cases where the assignment already recorded in the Master Register is in conformity with the provisions of the Radio Regulations (favourable regulatory finding in 13A1) a double technical examination is performed with a view to assessing the increase of the probability of harmful interference caused to other existing assignment resulting from the modification (by comparing the interference situations before and after the modification). If the examination results in a favourable (or "qualified" favourable) finding, or if the modification does not result in an increase of the probability of harmful interference to assignments already recorded, the original date in col. 2 as well as the technical finding (13A3), followed by symbols in 13B1 if appropriate, are maintained. For the purpose of the application of these provisions, it is considered that there is no significant increase in the probability of harmful interference if the calculated signal/interference ratio is not reduced by more than 2 dB, or the period of "common use" is not increased as a result of the modification. The results of the above comparative examinations are shown in the Finding Document in the form of observations in the remarks column such as: "BEF. x dB+" or "BEF. x dB-", indicating the difference in the signal/interference ratio with respect to the value obtained with the original characteristics of the modified assignment. In the case of doubt an indication on the "common time" period is also given: SCT, LCT or MCT (same, less or more common time).

8.3 When the change of the assigned frequency exceeds half of the bandwidth originally notified for the assignment, the modified assignment is treated as new (without considering any comparison with the "before" assignment).

8.4 In the case when the modified assignment cannot be recorded as a consequence of the formulated findings, and the notice concerning the amendment is returned to the notifying administration, the original assignment is maintained in the Master Register.

1245

1. This Rule of Procedure applies uniformly certain principles to the treatment of frequency assignment notices which are not in conformity with a Regional Agreement and which are received from administrations considered to be party to the Agreement.

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2. These principles are :

2.1 Under RR1240, the Bureau shall examine the "conformity of the notice with the Convention, the Table of Frequency allocations and the other provisions of the Radio Regulations with the exception of those provisions relating to the probability of harmful interference which are the subject of Nos. 1241 and 1242".

2.2 Under RR1245, where appropriate, the Bureau shall also examine the notice "with respect to its conformity with a regional or service agreement".

3. The results of these two examinations are, in principle, not inter-related and the findings resulting from these examinations are not inter-related either. However, when a footnote in the Table of Frequency Allocations (Article 8 of the Radio Regulations) indicates that the use of the concerned band shall be subject to conformity with a Regional Agreement, then these two findings are inter-related and the non-conformity with the Regional Agreement implies an unfavourable finding under RR1240; this is the case with the Regional Agreements RJ88 (for the frequency band 1605 - 1705 kHz) and GE84 (for the frequency band 100 - 108 MHz) that are referred to in RR480 and RR584, respectively.

4. The procedure to be followed after formulating unfavourable findings with respect to the provisions of RR1240 and/or RR1241/1242 is explained in a very detailed manner in the Radio Regulations. However, excepting the cases referred to in RR480 and RR584, there are no clear indications in the Radio Regulations concerning the procedure to be followed for those assignments that are notified under the provisions of Article 12 of the Radio Regulations and whose characteristics are not in conformity with the Plan.

5. The Board considers that the consequences of non-conformity with the Agreement (for cases that are not governed by RR480 and RR584) shall be determined by the Agreement itself. In this connection the following cases are identified:

5.1 Some Agreements allow, under certain conditions, the possibility of recording assignments which are not in the Plan. This is the situation of GE75 (paragraph 3.5.4 of Article 4), RJ81 (paragraph 5.4 of Article 5), GE85-MMR1 (paragraphs 5.3 and 5.4 of Article 5) and GE85-EMA (paragraph 4.9 of Article 4). These Agreements specify that, when the conditions are fulfilled, the assignment shall be recorded accordingly, mostly with a symbol indicating that the entry has been made subject to the reservation that no harmful interference will be caused to frequency assignments in the Plan.

5.2 The Agreement RJ88 does not allow the possibility of recording assignments which are not in the Plan: it specifies that, when a notice received is not in conformity with the Plan, it shall be returned, and, if resubmitted, it shall also be returned.

5.3 The Agreements ST61, GE84 and GE89 contain no indication as to the bringing into use of the assignments that are not in conformity with the Agreement.

6. Frequency assignments may be recorded under RR342 (Nos. 1262 - 1272) in derogation of either the Table of frequency Allocations or the other provisions of the Radio Regulations on the express condition that harmful interference shall not be caused to services carried out by stations operating in accordance with the provisions of the Convention and of the Radio regulations. Thus RR342 may be applied for assignments not

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in conformity with a Regional Agreement, when, under Article 8, the use of the band is subject to conformity with the Agreement (i.e. RR480 and RR584).

7. The following action shall be taken by the Bureau when the examination of a notice shows that it is not in conformity with the Plan:

7.1 The frequency assignments in the bands governed by Regional Agreements that are referred to explicitly in the Table of Frequency Allocations (i.e. the frequency assignment notices governed by the Regional Agreements RJ88 and GE84 (in the band 100-108 MHz), as stipulated in RR480 and RR584) shall be treated in the following manner:

7.1.1 the frequency assignment notices submitted without reference to RR342 shall be returned to the notifying administration;

7.1.2 the frequency assignment notices submitted under the provisions of RR342 shall be examined further, and, if recorded, shall be recorded with unfavourable finding regarding RR1240 and under the conditions of RR342;

7.2 The frequency assignments in the bands governed by Regional agreements that are not referred to explicitly in the Table of Frequency Allocations shall be treated in the following manner:

7.2.1 For the Agreements that allow the possibility of bringing into use assignments that are not in accordance with the relevant Plan (i.e. GE75, RJ81, GE85-MMR1 and GE85-EMA): the assignment shall be examined according to the conditions specified in the Agreements and if the conditions are fulfilled, the assignment shall be recorded accordingly. If the conditions are not fulfilled the assignments shall be treated in accordance with paragraph 7.2.2 below.

7.2.2 For the Agreements that contain no indication as to bringing into use assignments that are not in accordance with the relevant Plan (i.e. in the bands governed by the Regional Agreements ST61, GE84 (band 87.5 - 100 MHz) and GE89) the notice shall be returned to the administration with a suggestion to apply the necessary procedure or make the necessary modifications to the notice, in order to be in conformity with the Plan. However, if the administration insists on reconsideration of the notice, the assignment shall be recorded with a favourable Finding under RR1240 together with the name(s) of the administration(s) whose Plan assignments are likely to be affected, indicating that with respect to this (these) administration(s) the recording is made under the conditions equivalent to those of RR342.

1318
1329

1. According to these provisions the Bureau examines the notice with respect to its conformity with an allotment in the Allotment Plan contained in Appendix 25 to the Radio Regulations. With regard to these examinations, the Board took into consideration the following elements:

1.1 The "original" Appendix 25 Plan, produced at the MWARC-1974, contains only an indication of the allotment areas on the given channel. The conformity of the relevant

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assignments with the allotments was checked using that information and the other general mandatory provisions of the Radio Regulations concerning the channelling arrangement, the class of emission and the transmitter power.

1.2 The updates of the Appendix 25 Plan, through the application of the Article 16 procedure, contain more data, notably information of the transmitter power, characteristics of the antenna, hours of operation and service area <u>as a result of the coordination with the</u> <u>administrations concerned</u>. Consequently, the characteristics of the notified assignments have to correspond to the characteristics resulting from the coordination.

1.3 For the purpose of the implementation of Resolution No. 325, the Board asked for (and obtained) more precise data concerning the <u>intended</u> use of the newly available channels. However, many administrations indicated that the subject information has to be considered as a working assumption, since the definitive characteristics will depend on the established allotment arrangement (number of allotments per channel, characteristics of the other allotments and the actual use of the allotments by other administrations). Consequently, the characteristics of the allotments entered in the newly available channels of the Appendix 25 Plan, as indicated in IFRB Circular-letter No. 860 of 22 March 1991, will be considered as working assumptions only and not as compulsory conditions.

1.4 However, the inclusion of the new allotments in the existing channels of the Appendix 25 Plan has been performed on the insistence of the administration concerned and the search for the least affected channel has been effected on the basis of very firm characteristics of the relevant requirement (power, hours of operation, peak hours of operation, service area, traffic information) - <u>if the characteristics had been different the least affected channel would have been different</u>.

2. In view of the above the Board decided to adopt the following rules concerning the examination of the frequency assignments notices, in the bands governed by Sub-section IIB of Article 12 of the Radio Regulations, from the point of view of their conformity with the corresponding allotments of the Appendix 25 Plan:

2.1 The characteristics of the frequency assignment notices, which correspond to the allotments of the "original" Appendix 25 Plan (as adopted by the MWARC-1974), or to the allotments entered in the newly available channels of the Appendix 25 Plan pursuant to Resolution No. 325, will be checked only with respect to the general conditions concerning the use of the channels for duplex radiotelephony (conformity with the channelling arrangement of Appendix 16, conformity with RR4325, RR4371, RR4373 and RR4374) and, where applicable, with respect to the conditions contained in the Appendix 25 Plan concerning the location of the transmitting coast station;

2.2 The characteristics of the frequency assignment notices, which correspond to the allotments entered in the Appendix 25 Plan pursuant to the application of the procedure of Article 16 of the Radio Regulations, as well as those entered in the existing channels of the Appendix 25 Plan in accordance with paragraph 5 of the Annex to Resolution No. 325 (determination for the least affected channel pursuant to the insistence of the administration), will be checked with respect to their conformity with all conditions stipulated against the relevant allotment in the Appendix 25 Plan (i.e. location of the transmitting coast station vis-a-vis the allotment area, power limit, hours of operation).

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2.3 The non-conformity with the relevant characteristics of the Appendix 25 Plan will result in an unfavourable Finding under RR1318 or RR1329 and the modification of these characteristics will be subject to the application of the procedure of Article 16 of the Radio Regulations.

1353

See comments made under the Rules of Procedure concerning RR1113

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Rules concerning provisions of

ARTICLE 13 of the RR

1495

IFRB Circular-letter No. 820 of 04.05.1990 contains the forms of notice to be used for notification of frequency assignments to stations in the space radiocommunication services. The notice forms were derived from Appendix 3 of the Radio Regulations. The above Circular-letter includes detailed instructions for filling out the forms.

1501

1. Date of receipt of the notice

RR1501 stipulates that complete notices shall be treated in the order of their receipt. In the case of an incomplete Appendix 3 notice received by the Bureau for notification under RR1488, the notifying administration shall, in accordance with RR1498, be immediately requested to provide the missing information. A formal date of receipt for the purpose of treatment (in date order) will only be set when the complete information is received.

2. Application of Article 11

RR1501 does not refer to the need to compare the notified characteristics with those published in the Special Sections AR11/A (advance publication), AR11/C (coordination), and AR11/D (results of the coordination). A frequency notice submitted under RR1488 whose characteristics differ greatly from those published in a Special Section necessarily requires consideration by the Bureau for appropriate decisions. The following actions shall be taken:

a) An RR1488 notice which is not supported by an advance publication AR11/A (and/or an RS46/A if applicable)¹ is not receivable and will be returned to the notifying administration.

b) The date of bringing into use of a space station shall be compared with the date of publication of the supporting AR11/A advance publication. In the case that this period exceeds 9 years, the notice is returned to the notifying administration with a recommendation to restart the Article 11 procedure. (See also comments under the Rules of Procedure concerning RR1042.)

c) When the notified characteristics are within the limits of those published in the Special Section AR11/A but are different from those published in the Special Sections

¹ Note: In the present Rules of Procedures, each time that there is a reference to a Special Section AR11/A, AR11/C or AR11/D this also means AP30/A or AP30A/A, RS33/A, RS33/C or RS33/D as well as RS46/A, RS46/C or RS46/D, as the case may be, if the procedures of Article 7 of AP30 or AP30A or those of Resolution 33 or 46 are applicable in the bands concerned. (See also Rules of Procedure B2 concerning Resolution 46.)
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AR11/C and AR11/D, this difference is assumed to have resulted from the coordination and the administration is requested to ask the Bureau to publish them in a Special Section AR11/D in order to permit any administration to comment on them (see comments under RR1087A). This publication is intended to inform administrations and does not delay the processing under Article 13. It should, however, be noted that for practical reasons, the Bureau could not systematically undertake the comparison of coordination information submitted in the RR1488 notice form and that from the voluminous correspondence from the coordination phase. The Board thus decided that the RR1504 examinations of the Bureau shall be based on the coordination information available from the notice forms (Boxes A5/A6). This information being the most up-to date for the case under examination, the Bureau shall consider the notified data of the network submitted in the notice form as coordinated with those countries mentioned in boxes A5/A6. When these boxes contain no information (either the name of administrations whose agreement was obtained or indication of the application of RR1066-RR1071 or RR1108-RR1111A, as appropriate) the notice is considered incomplete and will be treated in accordance with paragraph 1 above.

d) When the notified characteristics are not within the limits of those published in the Special Section AR11/A the comments made under the Rules of Procedure concerning RR1043 and RR1073 apply.

1503

1. This provision requires the examination of a notice with respect to its conformity, inter alia, with the Convention. Several provisions of the Convention concern the frequency spectrum and the geostationary-satellite orbit. These provisions are repeated in more detail in the Radio Regulations and the Board is of the view that conformity with the Convention under this provision is derived from conformity with the Radio Regulations.

2. The examination under RR1503 includes the following ²:

- the Table of Frequency Allocations, including its footnotes and any Resolution or Recommendation which is referred to in a footnote;

- the application of the procedure set forth in Article 14 when mention is made of that Article in a footnote;

- Articles 28 and 29.

3. The relationship between the notifying administration and the territory in which the station is located is covered by Resolution No. 1 (see also comments under the Rules of Procedure concerning RR1047 and Resolution 1. The notification of assignments to space stations raises the following questions:

- Should there be any relation between the territory of the notifying administration and the orbital position of a space station in the case of worldwide allocations?

² With respect to the application of this provision to assignments of the Broadcasting-satellite service submitted under Resolution 33 see comments under Rules of Procedure concerning RR2674.

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- Should there be any such relation in the case of Regional allocations or allocations to a group of countries or to individual countries?

In reply to these questions the Board reached the following conclusions:

a) In the case of worldwide allocations without a specific restriction in a footnote, any administration may notify any orbital position and any service area in any part of the Earth which is visible from the space station.

b) When an allocation is made with territorial restrictions, such as for national use, the service area must then be limited to that territory.

c) In the case of a Regional allocation, as the limits separating the three Regions do not refer to the geostationary-satellite orbit, the orbital position is not taken into consideration when determining if the Regional allocation is respected; only the service area is used to formulate a Finding; this Finding is favourable if the service area is entirely located in the Region to which the allocation is made and unfavourable otherwise. When there is no specific restriction in a footnote, any administration, pertaining or not to the Region to which the allocation is made, may notify any orbital position and any service area within the Region to which the allocation is made.

d) The paragraph c) above applies equally to an allocation to a sub-Region or to a country.

e) As indicated in c) and d) above, the service area notified by an administration is not necessarily the territory of the notifying administration. When the service area notified covers totally or partly the territory of another administration, it is assumed (unless advised to the contrary by an administration not accepting such practice) that an agreement exists between the administrations concerned. If, following the publication of an assignment in the weekly Circular, an administration objects to the notified service area, the Bureau informs the notifying administration of the comments received and will modify the service area only if the notifying administration so requests. (See comments under the Rules of Procedure concerning RR1047.)

f) A space station has a "coverage area" which generally encompasses the "service area". Article 1 of the Radio Regulations does not contain a definition for these terms; however, the definitions given in Annex 4 to Appendix 30 may be used. Generally the coverage area results in an unavoidable transmission over the territory of other countries and the comments made in paragraph e) above do not apply to such unavoidable overlap.

4. As stipulated in RR1042, RR1060 and RR1107, the coordination procedures shall be applied before the notification under Article 13. In this context the question whether assignments brought into use before the application of the coordination procedures are in conformity with the Radio Regulations may be raised. Having considered the matter in detail, the Board decided not to take account of the time limits stipulated in RR1060 or RR1107 when formulating a finding with respect to RR1503.

5. As stipulated in RR1610, when the application of the procedure of Article 14 is required, an administration shall obtain the agreement of other administrations before notifying its assignments under Article 13. The comments made under the Rules of

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Procedure concerning RR1610 indicate the reasons for which the Bureau should accept notifications with a reference to RR342 in any stage of the application of the Article 14 procedure. The Rules of Procedure concerning RR1623 and RR1625 contain decisions of the Board for the treatment of RR1488 notices related to not yet concluded Article 14 cases. The RR1503 examination shall thus be made on the basis of the information on the status of the Article 14 procedure available to the Bureau at the moment of the RR1503 examination.

6. The examination under Articles 28 and 29 may result in cases where the limits stipulated in these Articles are exceeded. When the agreement of other administrations is foreseen, the Bureau will formulate a favourable Finding RR1503 only if it is informed that such agreement exists. This agreement is treated by the Bureau separately from the coordination agreement.

1504

1. Examination of a frequency assignment to a space station

The literal application of this provision would lead to the examination of the notified assignment with any satellite network identified in application of RR1062 - 1065 while this examination or a major part of it was already done during the application of the coordination procedure. It requires a time-consuming process consisting of identifying for each network the associated earth stations and defining the relationship between the frequencies assigned to each earth station and those of the space station. The Board adopted a practical approach which consists of the following:

a) Calculations with respect to networks of an administration indicated in the notice as having given its agreement to the coordination RR1060 are not carried out, assuming that any difference that may exist between the notified characteristics and those published in Special Sections AR11/C and AR11/D is coordinated with and accepted by this administration.

b) In order to identify other administrations that may be affected, the notified characteristics are compared with those published in the Special Sections AR11/C and AR11/D and, if they are identical or covered by those published in the Special Sections, the result of calculations already made for these Special Sections is used.

c) If the notified characteristics are different from those published, calculations are made on the basis of Appendix 29 and, if additional administrations are identified, the notifying administration is requested to ask the Bureau to publish the results obtained in a Special Section AR11/C. This action will, nevertheless, not interrupt the processing of the notice under Article 13 which consists of examining whether the coordination requirements with respect to newly identified administrations and those which were already included in the original AR11/C Special Section are met.

2. Examination of a frequency assignment to an earth station

a) In accordance with RR1504, the Bureau shall examine the notice of a frequency assignment to an earth station with respect to the coordination under RR1060. This examination would normally involve the application of Appendix 29 to each frequency assignment of each earth station, the comparison of the results so obtained with the

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values corresponding to the already published or notified earth stations, and the identification of the administrations affected. In this process, the most time-consuming task is the identification of all the existing satellite networks that should be taken into account for the use of Appendix 29.

b) It was noted that in practice, when coordinating their satellite networks, administrations usually take account of the earth stations whether their characteristics were published or not. WARC-ORB-88 considered the complexity of the procedures of Articles 11 and 13, mainly with respect to their application to earth stations and decided to adopt a network coordination procedure. In view of the above, the Board decided that the following simplified procedure should be applied:

2.1 Examination of an assignment to an earth station received for the first time

The examination with respect to RR1504 of frequency assignments to earth stations shall be carried out by verifying the status of the corresponding assignments to the associated space station.

2.1.1 Case where the space station's assignments are recorded in the MIFR.

a) In the case of a space station recorded with a Favourable RR1504 Finding (successfully coordinated or not requiring coordination) the assignment to the associated earth station shall be assumed to have been coordinated and shall be given a Favourable RR1504 Finding with the following indication in Column 11:

- Z/RR1060/--- (see Preface) followed by the names of administrations appearing in Column 11 under the symbol RR1060/--- of the associated space station; and

- RR1060/--- followed by the names of administrations indicated with the notice of the earth station, if appropriate.

b) If, after the publication of such an assignment to an earth station in Part II of the weekly Circular, any administration objects to the Bureau's action described in paragraph a) above the Bureau shall examine the already recorded assignment to the earth station with respect to RR1060 by applying Appendix 29, taking into account the satellite networks referred to in RR1061 - 1065. As a result of this examination, the Bureau will either review or retain the Finding initially reached on the assignment in question and, in either case, will communicate its conclusions to the administration which had objected to the recording.

c) The approach of paragraph a) and b) above was extended to the case of a space station recorded with a Favourable RR1506 Finding (examination of the probability of harmful interference). The assignment of the associated earth station shall be given a Favourable RR1504 Finding with the appropriate indications, in Column 11, as described in paragraph a) above.

d) In the case of an associated space station recorded with an Unfavourable Finding under RR1518 (operated in accordance with RR342), the earth station will be given a regulatory (RR1503) Finding and, if applicable, a coordination conformity (RR1504/1505) Finding, independent from the unfavourable regulatory Finding of the space station. The coordination conformity Finding shall nevertheless only concern its

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conformity with the RR1107 coordination procedure. When recorded, a symbol describing the situation will also be added to the assignment to mean that the earth station has this status only with respect to terrestrial services and has no recognized status in the space network coordination context (RR1060).

2.1.2 Case where the space station's assignments are not recorded in the MIFR

This category may include the following cases:

a) a space station requiring coordination and not yet communicated to the Bureau under RR1074;

b) a space station in the process of coordination (the coordination procedure not yet completed and the space station not yet notified under RR1488);

c) a space station coordinated or not requiring coordination but not yet notified;

d) a space station's notice notified (RR1488) but returned to the administration with an unfavourable finding RR1503 or RR1504; and

e) a space station already notified (RR1488) but not yet recorded (being processed by the Bureau).

2.1.2.1 Starting from the principle that the leading element of a space network is the space station and that it would be misleading to record in the Master Register earth stations for which a space station (network) is not recorded, the Board decided that an earth station cannot be recorded in the Master Register before its associated space station. Consequently the earth stations of categories a) to d) above will be given an Unfavourable RR1504 Finding.

2.1.2.2 The earth station notices of category e) above shall be processed by the Bureau together with the associated space station and the RR1504 Finding will be given in accordance with the Finding of the space station either in application of paragraphs 2.1.1 (Favourable Finding) or 2.1.2.d) (Unfavourable Finding).

2.1.3 Earth stations outside the service area of the associated space station

Earth stations outside the service area of the associated space station shall be given an unfavourable RR1504 Finding, assuming that the coordination of the associated space station could not have taken account of earth stations outside the service area.

2.2 Examination of a modification of a recorded assignment to an earth station

The modification of an assignment to an earth station may concern:

- the modification of the orbital position of the associated space station; or
- the replacement of the associated space station with another one; or
- the modification of any other characteristic(s).
- 2.2.1 Modification of the orbital position of the associated space station

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The modification of the orbital position of the associated space station may affect other satellite networks and may have led the administration responsible for the space station to re-apply the coordination procedure. The Bureau assumes that the concerned earth stations were taken into account in the coordination of the modification of the associated space station and consequently will apply the rules indicated in paragraph 2.1 above.

2.2.2 Replacement of the associated space station

The Board considers that the replacement of the associated space station results in the earth station participating in a different network. Consequently, the notification of the modification will be considered a first notification, the notice will be modified, and the administration will be informed accordingly. The examination under RR1504 will be carried out as indicated in paragraph 2.1 above.

2.2.3 Modification of other characteristics

When other characteristics are modified, Appendix 29 will be applied to the old and new characteristics with respect to all satellite networks communicated to the Bureau before the notification of the modification under consideration. If the modification results in a new value of $\Delta T/T$ which exceeds the previous value, coordination RR1060 is required, and the notice will be returned to the administration if this coordination is not successfully effected. However, the acceptance of an increased level of interference, in the case of a receiving earth station shall be deemed to constitute successful application of the coordination procedure. (See also comments under the Rules of Procedure concerning RR1548 and RR1549.)

2.3 Cancellation of the space station's assignment

If the space station's assignment is cancelled by the notifying administration, the Bureau shall review the earth station(s) associated with that space station and in accordance with RR1574 suggest to the notifying administration to either cancel or suitably modify the basic characteristics of the entry.

1505

See comments under the Rules of Procedure concerning RR1107 and RR1110.

1506

1. Application of RR1506

The examination of the probability of harmful interference under RR1506-RR1508 and RR1509-RR1512 is carried out in those specific cases which are defined by the provisions of RR1529 and RR1530A, i.e.

- if the coordination effort of the Bureau toward securing an agreement in application of the provisions of RR1528 or RR1089-RR1094 or RR1130-1135 (cases of assistance) are unsuccessful (RR1529); or

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- where the notifying administration states that it was unsuccessful in coordination with respect to a specific case (1530A).

2. <u>Calculation method and criteria</u>

The calculation method to assess the probability of harmful interference and the criteria for the formulation of the Findings of the Bureau are contained in the Rules of Procedure B3.

3. <u>Consideration of continuing disagreements</u>

3.1 According to RR1506.1, in the case where the coordination required under RR1060 between two space networks (e.g. networks A and B, the latter being published under RR1078 after the publication of network A) has not been successfully effected and if the notice of network B is subject to examination under RR1506 and if the notice for network A has not yet been received under Article 13 (RR1495), then the notice for network B should be kept in abeyance until the notice for network A is received. Such a situation could result in a considerable backlog of notices which cannot be processed, as they could be affected by one of the notices being held pending under RR1506.1. With this problem in mind and having considered also RR1501 the Board decided that RR1506 and RR1506.1 should be applied in the following manner:

3.2 If the coordination under RR1060 has not been successfully effected between networks A and B, the Bureau will undertake the examination under RR1506 and will proceed in application of RR1506 and RR1506.1 as follows:

a) the networks A and B will be examined under RR1506 in the order of their date of receipt under RR1074 or their publication under RR1078 as appropriate (RR1506.1);

b) in the case where the notice (Appendix 3) concerning network A has not been received under Article 13, the technical examination of the assignments of network B (RR1506) will be done using, for network A (assignments likely to be affected), the information (Appendix 3) submitted for Article 11 under RR1074 plus any modifications under RR1087A. In the case where the Appendix 3 notices under RR1074 are used for the above purpose the examination of network A under RR1506 does not give any status to that network as being treated under Article 13 until it is formally notified under Article 13. However, it will continue to be taken into account by the Bureau in subsequent examinations during the period specified in RR1056A.

4. See also comments under the Rules of Procedure concerning RR1063 and RR1544.

1509

See comments made under the Rules of Procedure concerning RR1113.

1510

1. Assignments recorded in application of RR1248 are those terrestrial assignments for which the examination RR1241 or RR1242 is not required. Generally, assignments to which RR1241 or RR1242 is not applicable are not notified individually; they are

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notified as typical stations, giving the characteristics listed in Section C of Appendix 1, including a service area where the station may be located. The Bureau cannot carry out any examination with such limited characteristics and should request the administration to notify individually any station located within the coordination area of the earth station concerned, giving the characteristics listed in Section A or B of Appendix 1.

2. When the Bureau receives information relating to individual terrestrial stations located within the coordination area of an earth station, in application of RR1126 or RR1127, (see comments under Rules of Procedure concerning RR1126) this information is considered as a first notification even in those cases where the information concerns a terrestrial station having characteristics corresponding to those of a typical station already recorded in the Master Register. Such notices are receivable not earlier than three years before the bringing into service of the assignments. (RR1230 refers.)

1513

1. <u>Suspended assignments</u>

1.1 Under the provisions of RR1570 - RR1572 of Article 13, an administration may suspend the use of a frequency assignment to a space station for a period not exceeding two years and still continue to enjoy the protection acquired by virtue of the coordination agreements already obtained. The Bureau may be informed of such suspensions either by the administration at its own initiative (RR1570) or in response to an enquiry made under RR1513, RR1569 or RR1574.

1.2 There are no provisions relating to suspension of the use of frequency assignments to earth stations. However, the Board decided that RR1574 authorizes the Bureau to consult administrations having earth stations associated with the suspended space station. Furthermore, there is nothing to prevent the procedure applicable to frequency assignments for suspended space stations being applied also to the associated earth stations.

1.3 Accordingly, the Board decided that the procedure described below should apply to space and earth stations. The procedure will only be valid for suspended assignments which are not modified before being brought back into use.

2. <u>Registration of a suspension of use</u>

2.1 When the Bureau is informed, either under RR1570 or in response to an RR1513, RR1569 or RR1574 enquiry, that the use of a frequency assignment to a space station or earth station recorded in the Master Register is suspended, this information is published in Part II of the weekly Circular (in order to inform all administrations) and the entry in the MIFR will be amended to include the date D of resumption of use indicated by the notifying administration.

2.2 Frequency assignments to space stations or earth stations whose suspension is notified for a period of less than 2 years will continue to be taken into account for the purposes of the examination of other assignments in accordance with RR1077,

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RR1354, RR1504 - 1512 and RR1616, until that time that the consultation concerning their resumption of use is completed.

2.3 Frequency assignments to space and earth stations whose suspension is notified for a period of more than 2 years will not be taken into account for the purpose of examinations of other assignments under RR1077, RR1354, RR1504 - RR1512 and RR1616 as of the date of such notification or after confirmation from the administration of the period of suspension exceeding 2 years.

2.4 Consultation concerning resumption of use of an assignment

At the expiry of the period of suspension of the use of a frequency, the notifying administration is consulted as to the date of resumption of use. If no reply is received, a reminder will be sent. According to the results of the consultation, the Bureau will apply the following procedures:

2.4.1 When the administration confirms that the use has been resumed at the originally indicated date D (not later than two years after the date of suspension) or before, this information is published in Part II of the weekly Circular and the MIFR is modified to indicate this situation.

2.4.2 When the administration notifies that the use will be resumed at a date later than two years after the date of suspension, the provision RR1572 applies. This provision stipulates that when the assignment is not brought back into use within two years, it shall bear a remark to indicate this situation and the assignments of the station will no longer be taken into account in further examinations of other assignments in accordance with RR1077, RR1354, RR1504 - RR1512 and RR1616. The notifying administration will be informed of the resulting situation.

2.4.3 As RR1513 stipulates that before such an assignment is brought back into use, it shall be subject to further coordination, the Board understands this to mean that, for those stations which may be resumed later than the 2 year period, the administration responsible for the assignment shall seek the agreement of other administrations whose satellite networks were communicated to the Bureau after the date of suspension and to which RR1062 - 1065 apply. For these cases the notifying administration has to apply the RR1060 coordination procedure with respect to all assignments likely to be affected which are either notified under Article 13 or received by the Bureau for publication in an AR11/C Special Section between the date of suspension and the actual date of resumption.

1518

See comments under theRule of Procedure relating to RR342 concerning frequency bands which are prohibited from any other use than that indicated in the Radio Regulations.

1527

An assignment to a space service can be recorded in the Master Register with reference to RR342 only in the case of an unfafourable finding with respect to RR1503

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e.g. non-conformity with the Table of Frequency Allocation (see RR1517 and RR1518). This implies that RR342 is also applicable to non-conformity with Article 14 when this Article is referred to in a footnote of the Table. A consequence of the above is that an assignment which is in conformity with the Table of Frequency Allocation but for which the relevant coordination procedure (e.g. Article 11, Resolution 46) has not been completed can not be recorded under RR342. There are other provisions (e.g. RR1528, RR1529) which may lead in given circumstances to recording when the coordination has not been effected.

1544

1. In the case of a notice being returned by the Bureau as a result of an unfavourable finding under RR1506 (RR1542), and the administration resubmits the notice with insufficient changes that would permit a favourable finding (RR1543), the resubmitted notice may be recorded in the MIFR with an <u>unfavourable</u> Finding with respect to RR1506 under the following conditions:

a) either provisionally (RR1556/RR1544) in the case where the earlier notified assignment which was at the origin of the unfavorable finding is not yet put into operation, or

b) definitely (RR1544) in the case where both assignments have already been in operation for at least four months without any harmful interference being reported.

Both of the above cases are further placed under the general provision of RR1559 which stipulates that stations using frequencies recorded with an RR1544 unfavourable finding shall immediately eliminate interference upon receipt of a complaint of harmful interference.

1548

1. Modification of a space network may take place during the coordination process; this case is covered in the comments under the Rules of Procedure concerning RR1063 (4.), RR1073 and 1087A. (See as well comments under the Rules of Procedure concerning RR1043.)

2. With respect to applicable procedures for cases of modifications to assignments recorded in the Master Register, WARC-ORB-88 decided³ that, in the case of geostationary satellite networks, any modification to the basic characteristics of an assignment, in the application of RR1548, should be subject only to the coordination procedure (Section II of Article 11). On the basis of this decision the Bureau does not require an administration to recommence the advance publication procedure, for a modification concerns the addition of a new frequency band which was not included in the advance publication of the network. The purpose of the examination under RR1548 is to determine whether the coordination requirements remained unchanged or, where appropriate, whether the probability of harmful interference is not increased. In these cases the provisions of RR1549 apply with the effect of maintaining unchanged the

³ See the summary records of the eleventh meeting of Committee 6; Doc. 430, §.2.3 and Doc. 391, §.3.

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status (Findings) and the 2D date of the assignment. If, due to the modifications, new coordination requirements are identified, then the coordination procedure should go back to Section II or III of Article 11. Findings with respect to RR1504 or RR1505 are determined on the basis of the coordination agreements effected to meet the new coordination requirements (RR1525). In the case, where the provisions of RR1506 - RR1508 or RR1509 - RR1512 are applicable and the examinations show an increased probability of harmful interference, then the provisions of RR1541 apply.

3. Modification of an earth station by changing the associated space station or the associated beam so far as RR1504 is concerned is covered in the comments under the Rules of Procedure concerning RR1504 in paragraph 2.2.

4. When the modification of a frequency assignment to an earth station is examined with respect to RR1505, the coordination distance is calculated in each azimuth and the coordination RR1107 is required only with those countries on whose territory the coordination distance is increased owing to the modification. (See comments under the Rules of Procedure concerning RR1110.)

1549

This provision specifies that a change in the basic characteristics shall be examined when appropriate with respect to RR1504 and RR1506 - 1508 for space and earth stations and RR1505 and RR1509 - 1512 for earth stations.

In the case of the examination RR1504 or RR1506, the comments under RR1548 indicate the cases which should not be considered as modifications but as first notifications (with new 2D date). These examinations should be carried out only when "the interference resulting from a modification ... will not exceed that value agreed during coordination" (RR1068). However, RR1549 refers to an increase in the probability of harmful interference. The probability of harmful interference (C/I) is calculated in the examination RR1506 only. The examination RR1504 is made only using the increase of Δ T/T with respect to the criteria used and agreed during coordination above the threshold value of 6 %.

1550

See comments under the Rules of Procedure concerning RR1042, RR1063 and RR1501 (2.b).

1555

According to this provision the Bureau shall consult the administrations concerned in order to get confirmation of the date of putting into use of the space station assignment. The Board adopted the following procedure for this consultation:

1. When, on expiry of the 30-day period after the date of bringing into use (2c date) recorded in the MIFR, the Bureau has not received confirmation of the bringing into service of an assignment, the notifying administration is consulted in accordance with RR1555. The administration is advised that in the absence of such confirmation,

the Bureau will cancel the provisional recording and publish it in Part I of the Weekly Circular.

2. If the administration replies within one month that the assignment is already in service, the entry in the MIFR is modified accordingly.

3. If the administration modifies the date of bringing into service so that the interval between the new 2c date of the first assignment put into service and the date of publication of the Special Section AR11/A is still less than 9 years (specified in RR1550), the new 2c date is recorded in the MIFR.

4. If the administration requests the Bureau to extend the date of bringing into service so that the interval between the new 2c date of the first assignment put into service and the date of publication of the Special Section AR11/A exceeds 9 years (see also comment under the Rules of Procedure concerning RR1042 and RR1063), the notifying administration is advised that

- in view of the provisions of RR1550, the Bureau is unable to accept the modification of the 2c date, and

- the Bureau will no longer take the assignment into account when applying Articles 11 and 13.

5. The Bureau will cancel the assignments for which the administration fails to reply within the one-month period following the dispatch of the enquiry described in paragraph 1 above.

1556

See comments under the Rules of Procedure concerning RR1544.

1559

See comments under the Rules of Procedure concerning RR1544.

1572

See comments under the Rules of Procedure concerning RR1513.

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Rules concerning

ARTICLE 14 of the RR

1610

1. <u>Notification under Articles 12 and 13 before the completion of the procedure of</u> <u>Article 14</u>

No provision in Article 14 prevents administrations from notifying assignments not in conformity with the Table of Frequency Allocations, provided that they refer to RR342. Therefore, the Bureau accepts notifications under Articles 12 and 13 with a reference to RR342 in a band where the procedure of Article 14 is to be applied at any moment before starting the procedure or during the procedure of Article 14. For cases of notification under Articles 12 or 13, where the procedure of Article 14 was already initiated but not yet fully completed, see the comments under the Rules of Procedure concerning RR1625.

2. <u>Application of the Article 14 procedure to frequency assignments for reception by an</u> <u>earth or space station</u>

Because the coordination procedures of RR1060 and RR1107, as well as the notification and recording of frequency assignments to space networks and earth stations, are applicable separately to receiving and transmitting assignments, the Board considered that the procedure of Article 14 also applies separately to these types of stations. However, the Board considered that in the case of receiving frequencies, the reference to an "administration whose services may be affected" has no meaning unless the recording of such frequencies, after successful application of Article 14, imposes restrictions on the future development of the services of another administration (for example if the assignments to such services run the risk of receiving an unfavourable Finding due to a recorded Article 14 assignment).

To this effect the Board adopted the following rules:

a) for the purpose of applying the Article 14 procedure to a receiving earth or space station, the characteristics of the station shall be published in a Special Section AR14/C, without indicating the names of the administrations concerned ("likely to be affected");

b) after the completion of the procedure the assignment will be deemed to have successfully applied the Article 14 procedure and will receive a favourable Finding with respect to RR1503;

c) however, if the Bureau is informed within the prescribed period of four months following the publication of the Special Section AR14/C that an administration considers that one of its assignments, operated or planned to be operated in accordance with the Radio Regulations but not notified to the Bureau, may adversely affect the assignment published in the subject Special Section, and it could not reach an agreement with the administration which has initiated the Article 14 procedure, the Bureau will enter in the Master Register, by means of an appropriate symbol in Column

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11 of the entry for the assignment in question, the name of the administration formulating such an objection, in order to indicate this situation. The administration responsible for the assignment published in the Special Section will be deemed not to be entitled to object to any harmful interference that may be caused by the assignment of the administration whose name is entered in Column 11. Furthermore, when the latter administration notifies its assignments, the Bureau will not take account of the receiving space or earth station which is the subject of this publication when it applies the procedures of Articles 11, 12 and 13 to such assignments.

3. <u>Secondary services</u>

The following rule has been adopted by the Board for application in cases where the application of the Article 14 procedure will upgrade a secondary allocation to a primary status.

For the purpose of identifying other administrations (Adm. B) likely to be affected, assignments to stations of secondary services already entered in the Master Register and subject to provisions of RR420 - 423 shall not be taken into consideration in cases involving those services of the requesting Administration (Adm. A) which are subject to the Article 14 procedure and will have primary status once that procedure has been successfully applied. Consequently, when criteria are drawn up for identifying affected administrations, secondary services shall not be regarded as enjoying protection against a primary or permitted service subject to the Article 14 procedure.

4. Modification to existing assignments

The provisions of Article 14 do not specify any action with respect to a modification to an assignment having successfully applied the procedure. The Board decided that the procedure shall be applied equally to such modifications; however, comments from administrations shall be limited to the modification only in comparison with the original assignment.

1613

This provision refers to the use of Appendix 4, as does RR1613.1. When applying the procedure of Article 14 for space or earth stations, administrations may either:

- use Appendix 3 or Appendix 4 exclusively for this purpose; or

- when using these Appendices for other purposes (e.g. advance publication or coordination request under Article 11) indicate that they shall also be used for the application of Article 14.

In accordance with RR1610, the Article 14 procedure shall be applied to each frequency assignment while Appendix 4 contains the information relating to a satellite network including space transmit and receive stations and earth transmit and receive stations without specifying the frequency assignments to be associated with each of these stations. In order to permit the use of Appendix 4, the Bureau will request the following additional information:

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- If an administration communicates Appendix 4 data without stating explicitly that the Article 14 procedure is to be applied to both the space station and the earth station, it shall be asked whether it wishes the procedure to be applied to the space station alone, both the space and the earth station or the earth station alone;

- If the specific frequencies (assigned frequency and associated necessary bandwidth) are not given, that information shall be requested;

- The administration shall be requested to provide, preferably, the exact coordinates of the earth station(s) or, if those coordinates are not known, the area in which the earth station(s) is (are) to be located (service area). If the administration does not provide the exact coordinates of the earth station(s), the Bureau will have to establish an "area of agreement" around the service area, by applying the most pessimistic values of the technical criteria in order to determine the administrations whose services may be affected. If several earth stations are mentioned, the Article 14 procedure shall be applied to each assignment of each earth station separately.

1616

1. Under this provision, the Bureau "shall endeavour to identify administrations whose services may be affected". The Bureau uses the following calculation methods and criteria in identifying affected administrations¹:

- space network vs. space network : Appendix 29;

- earth station vs. terrestrial stations (and *vice versa*): Rules of Procedure B1, B2 (derived from Appendix 28);

- transmitting terrestrial stations vs. receiving space stations: criteria of Article 27;

- transmitting space stations vs. terrestrial services: pfd limits defined in Article 28 and in Annex 1 (paragraphs 4, 5 and 8) of Appendix 30; (See also the Rules of Procedure concerning RR839.)

- fixed-satellite transmitting space stations in the band 11.7 -12.2 GHz vs. Broadcasting-satellite service (inter-Regional): pfd limits defined in Annex 4 of Appendix 30;

- between stations of terrestrial services (in application of RR484 and RR487 as well as RR675 and RR705): Rules of Procedure B4 and B5, respectively.

2. It is to be noted that irrespective of the identification by the Bureau under RR1616, any administration, even one not identified, may object to the published assignment and any administration, even one identified by the Bureau, that has not commented on the proposed use is considered to have no objection to that use.

¹

For cases not covered below, the Bureau, in collaboration with the appropriate ITU-R Study Groups, continue to develop applicable calculation methods and criteria in the form of Rules of Procedure to be submitted to the RRB for approval.

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1617

1. This provision allows an administration B to make comments within four months. It is to be noted that in other procedures, an administration B which may not be in position, for any reason, to respond to the requesting administration A can send its comments directly to the Bureau. The Board decided that comments addressed directly to the Bureau in the application of Article 14 are valid in the meaning of RR1617.

2. <u>Case of administrations having responded</u>

2.1 When an administration B has responded in application of RR1617 within four months, the response shall contain the particulars of those assignments that may be affected which are either operating in accordance with the Table of Frequency Allocations or planned to be so operated" (RR1617).

An administration B may, when it accepts the proposed use, stipulate conditions of use. If such conditions are accepted by the administration requesting the agreement, the Bureau will take them into account for any future use.

2.2 When an administration B has responded in application of RR1617 within four months, it may request additional information "which may be required to resolve the problem", in accordance with RR1621. If the administration A seeking the agreement does not communicate this information within four months from the date of the request, the Bureau will consider that the procedure of Article 14 has not been successfully completed by Administration A with respect to Administration B and will publish a Special Section AR14/D indicating this situation (this action is not foreseen in any provision of Article 14).

2.3 When an administration has responded in application of RR1617 within four months and requested the assistance of the Bureau, the comments under the Rules of Procedure concerning RR1622 apply.

2.4 When an administration B has responded, in application of RR1617, more than four months after the date of publication of the Special Section AR14/C, and the Bureau has been informed of a continuing disagreement between the two administrations, the Bureau has to literally apply RR1617; it will consider administration B not to have responded in due time. Despite the comments expressed by administration B, administration A will be considered to have successfully completed the procedure.

2.5 When an administration B has responded, in application of RR1617, more than four months after the date of publication of the Special Section AR14/C, and an agreement is reached between the two administrations, the Bureau will take this situation into account.

2.6 An administration may respond to a request for agreement taking account of its planned assignments. Article 14 does not specify any time-limit for the planned assignments. The Board decided that, for a valid objection concerning a planned assignment, the acceptable time period prior to its date of bringing into service shall be the same as that for notifications in advance, i.e. 3 years for space services (RR1496

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refers) and terrestrial services in the shared bands for which the provisions of RR1230 apply and 3 months for other terrestrial services (RR1228 refers).

1618

Case of administrations not responding

RR1618 and RR1624 define the status of assignments of an administration B which has not responded to a Special Section AR14/C in application of RR1617. In this respect:

- Administration A having applied the procedure "shall be regarded as having successfully completed the procedure of this Article" *vis-à-vis* the non- responding Administration B.

- Administration B "shall be regarded as unaffected by the planned assignment of Administration A"

It may happen that an administration B responds to the Special Section AR14/C within the four months specified in RR1617 and, in so doing, asks for additional information without giving any decision on the matter at a later date. This case is not covered by any provision of Article 14. The Board decided that in such situations the Bureau will request administration B to give its decision on the matter and, if this administration fails to reply giving its decision either to administration A or to the Bureau within four months following the request by the Bureau, RR1618 and RR1624 shall be applied to its assignments.

1619

Administration B is required either to give its agreement or to give the relevant characteristics (Appendix 1 or Appendix 3) of its station. It should do this "if possible at the same time" as the comments under RR1617. It may also do it at a later date. No provision in Article 14 covers this case. The Board decided that in such situations the Bureau will request administration B to either give its agreement or communicate information on its stations. If administration B fails to reply to the request of the Bureau within four months, RR1618 and RR1624 shall be applied to its assignments.

1620

Continuing disagreement

Article 14 does not prescribe the steps to be taken when a disagreement persists between an administration requesting the agreement and one or more administrations unable to agree to the planned assignment. To partly overcome this difficulty, the Board decided that in the case of a continuing disagreement the Bureau shall ensure that the disagreement is based on valid technical grounds. The Bureau will conclude a non-successful completion of the Article 14 procedure *vis-à-vis* only those cases where the technical reasons for objections are valid.

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1622

Assistance of the Bureau

Article 14 does not indicate the action of the Bureau in the matter. The Board decided that, in the case of such requests, the Bureau has to

a) request the administration to communicate information on its existing or planned assignments;

- b) endeavour to calculate the level of interference caused by or to these assignments;
- c) make any further recommendation it may be able to offer to resolve the case.

1623

Article 14 does not specify time-limits for the completion of the procedure. The Bureau may find itself maintaining for several years folders of correspondence without any final result. It may happen that the administrations do not provide a concluding report permitting the Bureau to publish a final AR14/D Special Section before the assignments subject to the Article 14 procedure are notified under Article 12 or 13. In this situation the Bureau shall request administration A to communicate the results of the application of the procedure with other administrations; and these results will be published in a Special Section AR14/D. When the administration does not communicate these results, the Bureau, using the information available to it, will publish the above Special Section and formulate its Findings within the Article 12 or 13 procedure. (See also comments under the Rules of Procedure concerning RR1625).

1624

Publication of Special Section AR14/D

1. Article 14 requires administrations (Administration A) to inform the Bureau when the procedure that it initiated is completed (RR1624 and RR1625). Upon receipt of this information, the Bureau shall publish it in a Special Section (RR1626) which is numbered in the "AR14/D" series.

2. In the event that the Bureau receives comments by administration B which is not mentioned in administration A's submission, such comments shall be taken into account for the examination. Administration A shall be informed of such a situation.

3. The comments formulated by administrations B may be objections to the proposed use, or simple statements of a general nature. Any comment which does not explicitly object to the proposed use is not considered an objection. In case of doubt concerning the nature of comments, the Administration concerned should be consulted.

4. The Special Section AR14/D shall include the following information:

a) the names of administrations whose comments are considered by the Bureau as an objection to the planned use;

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b) the names of administrations whose agreement has been obtained;

c) the names of administrations whose agreement is still to be obtained;

d) a Note, as follows:

"Pursuant to RR1618, all administrations other than those listed above shall be regarded as unaffected."

5. When no administration has formulated objections to the planned use, or when an objection has been formulated but the agreement of the administration concerned has been obtained thereafter, the following Note shall be added:

"On the basis of the information available, the Bureau has concluded in accordance with RR1624 or RR1625 that the administration responsible for the assignment has successfully completed the Article 14 procedure."

6. When the Bureau is informed, following the publication of the Special Section AR14/D, that one or more of the remaining agreements have been obtained, an addendum to the Special Section AR14/D shall be published.

1625

Experience indicates that the number of administrations commenting on AR14/C Special Sections is limited, and there may be only few administrations objecting to the use on the basis of sound technical criteria without necessarily ascertaining that harmful interference exists or will exist. This raises the question of the advisability of formulating an unfavourable Finding. Two alternatives were examined:

- Alternative 1: record the assignment with a favourable Finding together with the name(s) of the administration(s) still having objections, indicating that with respect to this (these) administration(s) the recording is made under the conditions of RR342.

- Alternative 2: record the assignment with an unfavourable Finding together with the names of administrations having given their agreement and indicating that RR342 does not apply to them.

As indicated above, the number of disagreeing administrations is very limited, and for this reason the Board decided that the Bureau shall apply the first alternative.

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Rules concerning

ARTICLE 14A of the Radio Regulations

1635-1636

1. The Bureau examines the proposed use :

- a) with respect to assignments to stations of other services to which the band 517.5 518.5 kHz is allocated, notified under RR1214 at an earlier date;
- b) with respect to frequency assignments to other coast stations participating in the International NAVTEX system, both those that are notified to the Bureau under RR1214 and those for which the procedure of Article 14A is initiated at an earlier date.

2. In the Special section AR14A/, referred to in RR1636, the Bureau publishes all incompatibilities determined in accordance with paragraph 1 above. However, only the incompatibilities determined in accordance with *paragraph 1a*) above have regulatory character and are used in the subsequent steps of the procedure. The incompatibilities that are determined under *paragraph 1b*) are for information only and they are not used in the subsequent steps of the procedure.

Rules concerning

ARTICLE 27 of the RR

2501

This provision is considered as a recommendation of action to administrations and is not taken into account in the examination from the viewpoint of conformity with the Radio Regulations providing that the limits specified in RR2507, and RR2508, are not exceeded.

2502

See comments made under the Rules of Procedure concerning RR2501.

2503

See comments made under the Rules of Procedure concerning RR2501.

2504.1

See comments made under the Rules of Procedure concerning RR2501.

2505

Passive repeaters

In a band shared by terrestrial and space radiocommunication services, the administration may use passive repeaters in the fixed service (radio-relay systems). While generally the passive repeater is situated close to the transmitting or receiving station, it usually involves a major change in the direction of the maximum radiation which may further affect the orbit; for this reason the Board decided as follows:

a) administrations shall be requested to notify both parts of the link as separate stations, i.e., transmitting stations to passive repeater and passive repeater to receiving stations; and

b) each of the notices, containing information in accordance with Appendix 1, is treated as a separate assignment representing a separate station.

2509

1. This provision indicates the frequency bands and services to which the limitations specified in RR2501 to RR2507 apply, with a view to protecting the geostationary-satellite orbit. Some of them are to be considered as recommendations to administrations (see comments under RR2501), while others contained in RR2505 to RR2507 are not to be exceeded in order for an assignment to be in conformity with the Radio Regulations. These provisions form part of a series of provisions intended to ensure the equality of rights between the terrestrial and space services sharing the same frequency bands. They cover the Earth-to-space direction of transmission.

2. The Board noted that the provision RR2509 was limited only to those space services using the geostationary-satellite orbit and to those bands in which the space

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services concerned and the terrestrial services are primary services with equal rights. The Bureau shall examine frequency assignment notices to terrestrial stations in the bands listed in provision RR2509, RR2510 and RR2511 and will formulate RR1240 Findings (Regulatory Findings) according to the conformity of the e.i.r.p. of the terrestrial station with respect to the limits defined in RR2505 to 2508.

2510

See comments under the Rules of Procedure concerning RR2509.

2511

See comments under the Rules of Procedure concerning RR2509.

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Rules concerning

ARTICLE 28 of the RR

2539

This provision is considered as a recommendation of action to administrations and is not taken into account in the examination from the viewpoint of conformity with the Radio Regulations providing that the limits specified in RR2541, RR2542 and RR2544 - 2546, as applicable, are not exceeded.

2546

1. When the agreement of an administration concerned is not obtained, the assignment is not in conformity with the Radio Regulations. In order to identify the administrations concerned, the Bureau shall calculate a nominal contour based in all azimuths on the limits specified under RR2541 or RR2542 and compare it with the appropriate contour resulting from the notified e.i.r.p. and the antenna diagram. In any azimuth where the second contour exceeds the first one, an agreement under this provision is required with any administration having a territory which lies within the contour. The communication to the Bureau of the agreement of this administration is required for the formulation of a favourable Finding RR1503.

2. In accordance with this provision, any frequency assignment having an e.i.r.p. that exceeds the limits by more than 10 dB will receive an unfavourable Finding with respect to RR1503.

2550

Elevation angles lower than 3 degrees would create a high value of the e.i.r.p. towards the horizon. The Board understands that this provision is to be used together with Section II of Article 28. This means the following:

Irrespective of the e.i.r.p. of the earth station, an elevation angle lower than 3 degrees is subject to the agreement of the administrations concerned. In the case of receiving earth stations, to identify the administrations concerned, a nominal coordination contour is drawn at a 3 degree elevation angle and compared with the contour for the notified elevation angle. In any azimuth where the second contour exceeds the first, the administration is concerned if its territory is within the coordination area. The Bureau shall formulate a favourable Finding RR1503 only when it is informed of the formal agreement of these administrations.

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Rules concerning

ARTICLE 29 of the RR

2619

The Board understands this provision as meaning that it is for the administration concerned to decide if it can or cannot comply with the limit specified in RR2617. So far as the conformity examination of the Bureau with respect to RR2619 is concerned, the Bureau shall formulate a favourable Finding RR1503 when examining the validity of the longitudinal tolerance only in the following cases:

a) if the tolerance is within ± 0.1 degrees, or

b) if the administration indicates that its space station has the capability to be maintained within \pm 0.1 degrees, if necessary.

2623

The comments under the Rules of Procedure concerning RR2619 apply, replacing \pm 0.1 degrees by \pm 0.5 degrees.

2628

In the case of pointing accuracy there is no mandatory value to be respected. The administration has to indicate that its space station has the capability of being maintained within the limits indicated in this provision. In the absence of a statement to this effect, the Bureau shall formulate an unfavourable Finding RR1503.

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Rules concerning

ARTICLE 30 of the RR

2674

1. Some administrations raised the question as to whether this provision should be used as a basis of requesting that the notifying administration should exclude the territory of a concerned administration from the service area. As this provision refers to "In devising the characteristics of a space station....", the Board considered that the onus of applying this provision rests with the notifying administration. Therefore, in the application of RR2674, the Board decided that this is a provision mainly applicable between administrations and no RR1503 type findings shall be given based on this provision.

2. In reviewing this provision the Board noted that there is a significant difference between the English and French versions, therefore the Board suggests that this provision be reviewed by WRC-95.

3. RR2674 refers to the radiation from a space station and consequently this provision relates mainly to the question of "coverage area" and not "service area". With respect to the service area and the notification of stations within the service area, refer to the comments under the Rules of Procedure under Resolution 1.

4. See also the comments under the Rules of Procedure concerning RR1503, paragraph 3.f).

5. The Board decided that the Bureau shall initially consider that agreements exist with all administrations having any territory located within the service area. If during the period four months from the date of the relevant weekly circular containing the information on the application of Resolution 33 or Appendix 30, any administration objects to being included in the service area, this information shall be brought to the attention of the notifying administration with a request that it should apply all technical means possible to reduce the radiation over the territory of the objecting administration. If the notifying administration agrees to exclude the objected part of the service area, then the modified service area will be used by the Bureau. However, if the notifying administration states that in devising the characteristics of its space station it has used all technical means to reduce the radiation over this area and/or does not agree to exclude the area of the concerned administration from its service area, the Bureau will continue to use the originally notified service area. The Bureau shall enter a remark to indicate this situation when publishing the Special Section. However, there is no obligation for the objecting administration to protect the reception of the satellite network in question in the objected part of the service area.

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Rules concerning ARTICLE 33 of the Radio Regulations

2768-2769

1. In accordance with the provisions Nos. 2767 to 2772 of Article 33 of the Radio Regulations any new frequency assignment to a station in the Standard Frequency and Time Signal Service should be coordinated with other administrations concerned, prior to its notification to the Radiocommunication Bureau. Additionally, this coordination is required for any change in existing transmissions in the bands allocated to the standard frequency and time service.

2. Provisions of No. 2768 stipulate that the above referred coordination can be effected with the assistance of the Radiocommunication Bureau that "...shall also continue to seek the advice and cooperation of the International Time Bureau (BIH), the International Scientific Radio Union (URSI) and other international organizations having a direct and substantial interest in the subject".

3. The experience gained in the application of the above procedure with respect to several cases indicated that this procedure is not suitable for the administrations due to the following reasons:

- the procedure is lengthy;

- the BIPM (which took over the responsibilities of the BIH) and URSI no longer play an effective role in the frequency coordination;

4. In view of the above the Board decided to adopt the following procedure concerning the treatment of the notices in the bands allocated exclusively to the Standard frequency and time signal service:

4.1 On the receipt of the appropriate request for coordination, the Radiocommunication Bureau will identify, amongst the administrations which already provide Standard frequency and time signal service on the respective frequency, the ones whose services are likely to be affected by the new request. The Bureau will communicate these results to the administration which originated the request and will ask this latter administration to secure the agreements of the administrations having assignments which are likely to be affected. At the same time, the Bureau will seek the advice and cooperation of BIPM, URSI etc.

4.2 If the notifying administration informs the Bureau on the difficulties in obtaining the agreement (with copies of relevant correspondence) the Bureau will contact the administrations concerned and will offer its assistance in the resolution of the problem. If the difficulties are due to non-response of the administration concerned, the Bureau shall act in accordance with RR1432 and shall disregard the assignment(s) of the administration which fail to supply the necessary information to the Bureau within three months.

4.3 If the administration decides to commence transmissions on the selected frequency, without completing the requested coordination, the frequency assignment shall be recorded in the MIFR on the basis of non-interference with respect to those administrations with which the coordination is not completed. The relevant findings will be updated subsequently whenever any new agreement is secured and communicated to the Radiocommunication Bureau.

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Rules concerning

APPENDIX 30 to the RR

(Rules are arranged by paragraph numbers of Appendix 30.)

Art.3 Execution of the provisions and Associated Plans 3.1

For the footnote of paragraph 3.1 see comments made under the Rules of Procedure concerning RR846.

Procedure for modification to the Plans

4.1a)

Art. 4

This provision refers to the modification of "the characteristics of any of its frequency assignments to a space station in the broadcasting-satellite service which are shown in the appropriate Regional Plan". The Plans as they appear in Articles 10 and 11 contain only eight characteristics, while Annex 2 contains a greater number of characteristics which were used by each of the conferences concerned to establish the Plan. Among these characteristics only one, the energy dispersal (Annex 2, item 14.h)), is referred to in the footnote of this provision. The Board considers that modifications of other characteristics not listed in Articles 10 and 11 may be considered as modifications to the Plans. These other characteristics are listed in the comments under item 5.2.1 b) of Article 5.

4.1.1

The last sentence of this provision requires the Region 2 administration to inform the Bureau of the reasons that lead it to modify the Plan by adding a new frequency or a new orbital position before notifying the Bureau of the assignments already appearing in the Plan; however, no other provision indicates the extent to which the Bureau should examine these reasons, or formulate any opinion with respect to their validity. Therefore, the Board decided that the Bureau shall limit its action to:

- ensuring that the reasons are given, otherwise the communication is not considered complete; and

publishing them in the Special Section referred to in item 4.3.6.

4.3.1.1

1. In determining those administrations of Regions 1 and 3 that may be affected, the proposed modification/addition is examined with respect to the Regions 1 and 3 Plan as it exists at the date of receipt of the request for modification/addition including the proposed modifications received before that date (whether the procedure of

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Article 4 is complete or not). The examination consists of ensuring that the limits of Annex 1 of Appendix 30 are not exceeded. Account is also taken of any time-limited modifications to the Plans in accordance with provision 4.3.15.

2. Following the introduction by RARC-83 of the grouping concept for Region 2 (Articles 9 and 10 of Appendices 30A and 30 respectively) and further to the decision of WARC-ORB-88 to apply this concept to the Regions 1 and 3 Feeder link Plan (Article 9A of Appendix 30A), the Board decided to extend this concept to the WARC-77 BSS Plan. On the other hand the cluster concept was introduced by RARC-83 for Region 2 for BSS and Feeder-links (Section B of Annex 7 of AP30, paragraph 4.13 of Annex 3 of AP30A) and for Regions 1 and 3 by WARC-88 for feeder-links (paragraph 3.15 of Annex 3 of AP30A), the Board decided that Regions 1 and 3 may also apply this concept for the BSS Plan provided that the required agreement is obtained from administrations in the cluster.

3. The Board's understanding of the group concept is that there should be no simultaneous transmission on the same channels/assignments that are part of the same group (either from one or different orbital positions). Consequently, in the interference calculation to assignments that are part of the group, only the interference contribution from assignments that are not part of the same group is to be included. On the other hand, for the interference calculation from assignments that are not part of the same group, only the worst interference contribution from that are not part of the same group, only the worst interference contribution from that group is to be taken into consideration.

4.3.1.2

In determining those administrations of Region 2 that may be affected, the proposed modification of the Regions 1 and 3 Plan is examined with respect to the Region 2 Plan as it exists at the date of receipt of the proposal for modification including the proposed modifications received before that date (whether the procedure of Article 4 is complete or not). The examination will consider only those administrations having assignments whose necessary bandwidth overlaps the necessary bandwidth of the proposed modification. The Region 2 administration is identified as having services which are considered to be affected when the power flux-density over its territory exceeds the limits specified in section 3 of Annex 1 to Appendix 30.

4.3.1.4

1. This provision is understood by the Board as being intended to protect terrestrial services in any territory or part of a territory in the three Regions where this territory or part of a territory is not covered by a broadcasting-satellite assignment in a given channel. Therefore the modification to the Regions 1 and 3 Plan should take account of:

- terrestrial stations in Regions 1 and 3; and
- terrestrial stations in Region 2.

1.1. In the case of terrestrial stations in Regions 1 and 3 the limit for the power fluxdensity not to be exceeded by a broadcasting-satellite space station in the same Regions is specified in section 8a) of Annex 1. The agreement of an administration of Region 1 or 3 whose territory is covered by one beam only is required when:

- it has no assignment in the Plan on the channel concerned, and
- the power flux-density limit is exceeded in any part of its territory.

The agreement of an administration of Regions 1 or 3 whose territory is covered by more than one beam is required when

- it has no assignment in the Plan on the channel concerned, in any of its beams; or

- it has an assignment in the Plan on the channel concerned in some of its beams, and the power flux-density limit is exceeded at any point in its territory outside the service area of a beam to which the channel under consideration is assigned.

1.2. In the case of terrestrial stations in Region 2 the limit for the power flux-density not to be exceeded by a broadcasting-satellite space station in Regions 1 and 3 is specified in paragraph 4 of Annex 1. The agreement of an administration of Region 2 would be required under the conditions specified in paragraph 1.1 above. However, as the channelling arrangement in Regions 1 and 3 is different from that in Region 2, there cannot be any coincidence of channels, and the channel of the Regions 1 and 3 Plan which is the subject of modification will overlap two channels in the Region 2 Plan. The Board decided to use a practical approach, i.e. the agreement of an administration in Region 2 is required when the power flux-density limit is exceeded over its territory without regard to the channel used.

2. When applying this provision to Region 2, only channels in Region 1 in the band 12.2 - 12.5 GHz are considered.

4.3.1.5

1. The band 11.7 - 12.2 GHz is allocated in Region 2 to the fixed- satellite service subject to the application of the Article 14 procedure. Therefore, the Board decided that the Bureau shall:

- not take account of any assignments in the fixed-satellite service for which the Article 14 procedure was not initiated, considering them not to be in conformity with the Table of Frequency Allocations;

- take account of any assignment in the fixed-satellite service for which the Article 14 procedure was initiated, considering that this application will result in a favourable Finding RR1503.

2. The band 12.2 - 12.5 GHz is allocated in Region 3 to the fixed-satellite service by RR845, with the only condition that the use is limited to national and sub-regional systems. See comments made under the Rules of Procedure concerning RR845.

3. An administration in Region 2 is identified among those whose agreement is required under this provision when the following conditions are fulfilled:

a) the power flux-density over its territory resulting from the proposed modification of the Regions 1 and 3 Plan exceeds the limits prescribed in paragraph 1 of section 6 of Annex 1 to Appendix 30; and

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b) it has assignments to fixed-satellite service stations in the band 11.7 - 12.2 GHz to which the Article 14 procedure was applied as follows:

- recorded in the MIFR, with a favourable Finding RR1503;

- published or received for publication for coordination under RR1060, for which the Article 14 procedure was initiated;

- published or received for publication under provision 7.2.1 of Article 7 of Appendix 30, for which the Article 14 procedure was initiated.

c) See also the comments made under the Rules of Procedure concerning Annex 7.

4. An administration of Region 3 having assignments in the band 12.2 - 12.5 GHz should be identified when the limits specified in paragraphs 1 and 3 of section 6 of Annex 1 to Appendix 30 are exceeded. The agreement of such an administration of Region 3 is required if its assignments to fixed-satellite service stations are:

recorded in the MIFR, with a favourable Finding,

- received under RR1074 or published under RR1078 for coordination under RR1060,

- published or received for publication under provision 7.2.1 of Article 7 of Appendix 30.

In the case of an addition of a new assignment to the Regions 1 and 3 Plan, an administration is considered as being affected if the power flux-density on any part of its territory exceeds the limit prescribed in paragraph 3 of section 6 of the same Annex.

4.3.3.1

1. In determining those administrations affected in Region 2, the proposed modification shall be examined with respect to the Region 2 Plan as it exists at the date of receipt of the proposed modification including all proposed modifications received before that date (whether the procedure of Article 4 is complete or not). The examinations consist of ensuring that the limits of section 2 of Annex 1 to Appendix 30 are not exceeded. Account is also taken of any time-limited modifications to the Plan in accordance with provision 4.3.15. See also 4.3.1.1 above.

2. According to Resolution No. 42 Rev (ORB-88), the Board decided that, when applying this provision, the Bureau shall not take account of the interim systems.

4.3.3.2

In determining the administrations of Region 1 that might be affected, the proposed modification of the Region 2 Plan is examined with respect to the Regions 1 and 3 Plan as it exists at the date of receipt of the modification including all proposed modifications received before that date (whether the procedure of Article 4 is complete or not). The examination will identify only those administrations having assignments whose necessary bandwidth overlaps the necessary bandwidth of the proposed modification. An administration of Region 1 is identified as having services which may be affected

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when the power flux-density over its territory exceeds the limits specified in section 3 of Annex 1 to Appendix 30.

4.3.3.4

As indicated in the comments under item 4.3.1.4, a modification to the Region 2 Plan should take account of

- terrestrial stations in Region 2; and

- terrestrial stations in Regions 1 and 3.

1. In the case of terrestrial stations in Region 2, the limit for the power flux-density not to be exceeded by a broadcasting-satellite station in Region 2 is specified in paragraph 8b) of Annex 1. The agreement of an administration of Region 2 whose territory is covered by one beam only is required when:

- it has no assignment in the Plan on the channel concerned; and

- the power flux-density limit is exceeded at any point of its territory.

The agreement of an administration of Region 2 whose territory is covered by more than one beam is required when

- it has no assignment in the Plan on the channel concerned in any of its beams; or

- it has an assignment in the Plan on the channel concerned in one or more of its beams, and the power flux-density limit is exceeded at any point of its territory outside the service area of a beam to which the channel under consideration is not assigned.

2. In the case of terrestrial stations in Regions 1 and 3, the limit for the power fluxdensity not to be exceeded by a broadcasting-satellite space station in Region 2 is specified in section 5 of Annex 1 to Appendix 30.

4.3.3.5

1. See comments in paragraph 3) under item 4.3.1.5.

2. Those administrations of Region 1 and 3 having fixed-satellite space stations in the band 12.5-12.7 GHz (Region 1) or 12.2 - 12.7 GHz (Region 3) which are

- recorded in the MIFR; or

- published or received for publication for coordination under RR1060; or

- published or received for publication under provision 7.2.1 of Article 7 of Appendix 30;

shall be identified as being affected if any of the limits of sections 6 (Paragraph 2 and 3) and 7 of Annex 1 to Appendix 30 are exceeded.

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3. In the case of an addition of a new assignment to the Region 2 Plan, an administration is considered as being affected if the power flux-density on any part of its territory exceeds the limit prescribed in paragraph 3 of section 6 of the same Annex.

4.3.3.6

1. Until there is a Plan for Region 3 for the band 12.5 - 12.7 GHz, administrations of Region 3 having broadcasting-satellite assignments in the MIFR or published for coordination under Resolution 33 shall be identified as possibly affected if their necessary bandwidth overlaps the necessary bandwidth of the proposed modification and the limits of section 3 of Annex 1 of Appendix 30 are exceeded.

See comments under RR847.

4.3.5

2.

1. Appendix 30 contains assignment Plans with beams covering only a territory or a part of a territory, which leads one to conclude that the usual wording used in similar provisions "or an administration on behalf of a group of administrations" is not necessary. However, it is to be noted that some beams have been included in both Plans for some groups of administrations. Consequently the Board decided that the Bureau shall accept the application of the procedure of Article 4 for a modification of either of the two Plans by an administration on behalf of other administrations.

2. This provision states that modifications involving new assignments will lapse if they are not brought into service by the date indicated. The provision does not contain any possibility for administrations to extend this date within a specified period as is done in RR1550. This provision does not state what the Bureau is to do if the assignment is not brought into use by the date indicated. The Board decided that, for modifications and/or additions to the Plans, the postponement of the date of bringing into use beyond the original date shall not exceed by more than three years to the original date of entry into use.

4.3.5.1

The calculations to be made in order to ensure that the limits are not exceeded may be very complex. For this reason, when the administration has not indicated if the limits are exceeded or not, the Bureau shall make these calculations and inform the administration of the results obtained. The Bureau shall also do this when the administration indicates that the limits are not exceeded, in order to ensure that the interests of other administrations are safeguarded. This action by the Bureau is derived from item 4.3.6.

4.3.5.2

As indicated in the comments under item 4.3.5.1, the Bureau has to do the same calculations in order to identify the administrations which are likely to be affected, as prescribed by item 4.3.6.

4.3.8

The Board understands from this provision that any request by an administration to be included in the list of administrations to be published shall be based only on technical reasons to be verified using Annex 1. If this indicates that the requesting administration should have been included in the list, the Bureau will include it; otherwise the

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requesting administration will be informed that its name will not be published, it being left to the notifying administration to consider if it is appropriate to take the request into account.

4.3.9

The Board understands that the agreement referred to in this provision is the agreement of the administrations identified under paragraph 4.3.1 or 4.3.3 and of those under paragraph 4.3.8 which have been confirmed by the Bureau using the appropriate criteria.

4.3.10

An administration which has only requested additional information in accordance with provision 4.3.10 will not be considered by the Bureau to have submitted comments in accordance with provision 4.3.12.

4.3.12

This provision specifies that, an administration that has not notified its comment within four months (from the publication date of the special section) shall be understood to have agreed to the proposed modifications. The Board considered the adverse effect of such missing replies and decided that the Bureau shall send reminder telegrams 30 days before the expiry of the above four month period.

4.3.17

The second part of this provision applies only to those assignments for which the procedure of Article 4 has been successfully applied, i.e., all administrations identified by the Bureau in application of items 4.3.6 and 4.3.8 have either given their agreement or failed to comment on the proposed modification.

Art. 5 Notification, Examination and Recording

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5.2.1b)

1. The Board has considered the question whether the examination with respect to conformity with the Plan means only the columns of Articles 10 and 11 of Appendix 30, as updated or whether it also includes an examination with respect to the technical criteria given in Annex 5 to Appendix 30 which were used for the establishment of the Plans. The Board concluded that some of the technical criteria contained in Annex 5 need to be taken into account in this examination. Therefore, the examination from the viewpoint of conformity with the Plan is carried out in two steps:

a) to ensure that the characteristics notified are those specified in the columns of the Plan concerned as updated (see item 3.1 of Article 3). If the characteristics are different then the examination under item 5.2.1.c) is carried out. For the items below any characteristics for which the procedure of Article 4 has been successfully applied may be notified.

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b) to ensure that the protection criteria resulting from the Plan¹ are not exceeded. To this effect the following characteristics are examined:

- beam identification (as indicated in column 1 of Plan)
- nominal orbital position (as indicated in column 2 of Plan)
- channel number/frequency (as indicated in column 3 of Plan)
- boresight coordinates (as indicated in column 4 of Plan)
- antenna beamwidth (as indicated in column 5 of Plan)
- ellipse orientation (as indicated in column 6 of Plan)
- polarization (as indicated in column 7 of Plan)
- power plus antenna gain (as indicated in column 8 of Plan)
- service area (test points shall be located within the service area)
- class of emission and bandwidth ;
- antenna characteristics (same as or better than Figure 9 or 10 as appropriate of Annex 5 to Appendix 30)
- antenna pointing accuracy (same as or better than provision 3.14 of Annex 5 to Appendix 30)
- antenna rotational accuracy (same as or better than provision 3.14 of Annex 5 to Appendix 30)
- station keeping tolerance (same as or better than that of provision 3.11 of Annex 5 to Appendix 30)
- modulation characteristics (same as provision 3.1 of Annex 5 to Appendix 30)
- energy dispersal (same as provision 3.18 of Annex 5 to Appendix 30)
- the power flux-density identified in Note 10 of the Region 2 Plan, to determine whether the limits are met or whether there is an agreement with the affected administrations.

2. For the establishment of the Regions 1 and 3 Plan the ΔG was used to calculate the e.i.r.p. for small beams. The Board is of the view that this characteristic is no longer required in the application of any provision of Appendix 30.

3. If an administration notifies modulation characteristics different from those of provision 3.1 of Annex 5, a study is undertaken to determine if the proposed characteristics will increase the interference to other assignments in the Plan.

¹ Any time the "Plan" is referred to, this means the current version of the Plan as updated.

5.2.1c)

1. See comments under item 5.2.1b)

2. See comments made under the Rules of Procedure concerning Annex 7.

3. In the case of administrations of Region 2 the orbital position shall be examined to ensure compliance with paragraph B of Annex 7 to Appendix 30:

- if the orbital position is identical with that shown in the Plan, no further agreements are necessary;

- however, if the orbital position is different from that contained in the Plan but it is in the same cluster, then the agreement of administrations having assignments in the same cluster is necessary; the concept of these clusters is described in Section 4.13.1 of Annex 3 to Appendix 30A. The clusters are listed in the <u>Attachment</u> to the present Rule AP30. Appendix 30 does not contain any provision indicating the procedure to be followed for this agreement. The role of the Bureau in this respect is to ensure that the agreement of the administrations concerned is indicated in the notice; otherwise it considers the assignment to be not in conformity with the Plan.

5.3.1

1. See paragraph 2 in the comments under item 4.3.5 above.

2. For any notification other than that relating to the modification and /or addition of a new assignment in the Plan, the 2c date can be extended at the request of the administration by no more than three years.

Art. 6 Coordination, Notification and Recording of Terrestrial Assignments Affecting BSS Assignments

6.3.9

This provision refers to "the other administrations concerned". These administrations are those identified in application of item 6.1.1. There is no reference in either this provision or in item 6.1.1 to Resolution No. 42, Rev (ORB-88) therefore the Board understands these provisions also to apply to assignments appearing in the Interim System List.

6.3.10

See comments made under item 6.3.9 above.

Art. 7

Coordination, Notification and Recording of SFF Assignments when BSS Assignments Are Involved

7.1.1

The procedures contained in Article 7 of Appendix 30 are the same as those contained in Article 11 of the Radio Regulations. A similar article exists in Appendix 30A which

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makes reference only to the numbers of provisions in Article 11 without repeating them. The Board, having noted that this provision applied to the fixed-satellite service could not find any reason for excluding the possibility for an administration to apply this provision on behalf of a group of administrations.

7.2.2

In this provision there is reference to the interference potential specified in an agreement; the Board may not have the details of this agreement, and will therefore take this into account only when it has been communicated to it.

Sections III - VIII

Any frequency assignment subject to application of Article 7 of Appendix 30 are simultaneously notified under Article 13 of the Radio Regulations, the Board therefore decided that the application of the relevant provision of Sections III -VIII of Article 7 of Appendix 30. shall be carried out within the framework of Article 13 of the RR.

Art. 9

Power Flux-Density Limits

Article 9 refers to Section 5 of Annex 1 which is already used when applying 4.3.3.4 of Article 4. In addition Article 9 is not referred to in any provision of Articles 4 and 5 relating to the examination of modifications and/or additions to the Plans or frequency assignment notices. Therefore the Board decided that, as these criteria were already applied in Article 4 (Annex 1), the provisions of this Article will not be applied separately.

Annex 1

Limits for Determining Whether a Service of an Administration is Affected by Proposed Modifications to the Plan

In applying the provisions of this annex, calculations may lead to results differing by a tenth of a decibel; for this reason the Board allows a margin of 0.1 dB to the limits indicated in this Annex.

Sec. 1

a) <u>Test points</u>

In examining a proposed modification all test points communicated to the Bureau by administrations are used. These test points are periodically published by the Bureau together with the reference situation of the updated plan.
b) <u>Reference Protection margin²</u>

The reference equivalent protection margin used as the basis for comparing the effect of a proposed modification and/or addition or interim system is that periodically published by the Bureau and updated at the time of examination. In making these examinations to determine which administrations might be affected, the assignments considered are:

- all assignments in the Plan at the time of the Conference;

- all modifications and additions made or in process under Article 4.

If the calculations for a proposed modification/addition show that the equivalent protection margin (EPM) of any assignment which is currently 0 dB or negative, decreases by more than 0.25 dB ³, then that administration is identified as possibly affected.

In the application of this section the cumulative effect of the proposed modification and addition of all assignments in the Plan is calculated and compared as follows:

i) For an assignment entered in the Plan by the Conference

the cumulative effect is compared with the reference situation on the date of entry into force of the Plan, such as modified after the administration responsible for this assignment gave its coordination agreement to another assignment which was, as a consequence of this acceptance, modified or entered in the Plan.

ii) For an assignment entered in the Plan by the Conference and modified by the administration

the cumulative effect is compared with the reference situation on the date of modification, such as modified after the administration responsible for this assignment gave its coordination agreement to another assignment which was, as a consequence of this acceptance, modified or entered in the Plan.

iii) For a new assignment entered in the Plan in application of Article 4

the cumulative effect is compared with the reference situation on the date of entry of the new assignment in the Plan, such as modified after the administration

² <u>Note by the Radiocommunication Bureau</u>: An analysis carried out by the Radiocommunication Bureau has shown that the sensitivity to interference, in terms of being identified as affected, of networks received by the Bureau under Article 4 of Appendices 30 and 30A, caused by subsequent proposed modifications or additions to the Plan, decreases when those networks have a very low equivalent protection margin (EPM). In those cases where, because of the above phenomenon they are not identified as affected (the equivalent protection margin reduces by at least 0.25 dB) it is up the administrations concerned to take necessary action, as appropriate.

³ For reasons of uniformity, the Board decided that the Bureau shall use the same margin of 0.25 dB as indicated for the same purpose in Section 2 of Annex 1 of Appendix 30.

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responsible for this assignment gave its coordination agreement to another assignment which was, as a consequence of this acceptance, modified or entered in the Plan.

Sec. 2

a) <u>Test Points</u>

In examining a proposed modification, addition or interim system all test points communicated to the Bureau by administrations are used. These test points are periodically published by the Bureau together with the reference situation of the Plan and overall equivalent protection margin (OEPM).

b) Reference protection margin ⁴

The reference overall equivalent protection margin (OEPM) used as the basis for comparing the effect of a proposed modification and/or addition or interim system is that periodically published in by the Bureau and updated. In making these examinations to determine which administrations might be affected, the assignments considered are:

- all assignments in the Plan at the time of the Conference;

- all modifications and additions made or in process under Article 4.

Interim systems are not considered to be assignments likely to be affected; however, the suspended assignments are taken into consideration.

When applying this section to a proposed interim system in accordance with Resolution No. 42, all the corresponding suspended assignments in the Region 2 Plan are deleted from the interference calculations.

If the calculations for a proposed modification, addition or interim system show that the OEPM of any assignment which is currently 0 dB or negative decreases by more than 0.25 dB, then that administration is identified as possibly affected.

In the application of this section the cumulative effect of the proposed modification on all assignments in the Plan is calculated and compared as follows:

i) For an assignment entered in the Plan by the Conference

the cumulative effect is compared with the reference situation on the date of entry into force of the Plan, such as modified after the administration responsible for this assignment gave its coordination agreement to another assignment which was, as a consequence of this acceptance, modified or entered in the Plan.

ii) For an assignment entered in the Plan by the Conference and modified by the administration

⁴ See footnote by the Radiocommunication Bureau related to Rule of Procedure concerning the Reference Protection Margin under Section 1 of Annex 1 to Appendix 30.

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the cumulative effect is compared with the reference situation on the date of modification, such as modified after the administration responsible for this assignment gave its coordination agreement to another assignment which was, as a consequence of this acceptance, modified or entered in the Plan.

iii) For a new assignment entered in the Plan in application of Article 4

the cumulative effect is compared with the reference situation on the date of entry in the Plan, such as modified after the administration responsible for this assignment gave its coordination agreement to another assignment which was, as a consequence of this acceptance, modified or entered in the Plan.

Sec.6

The Board noted that this section does not contain the limits applicable to the protection of Region 3 fixed-satellite stations in the band 12.2 - 12.5 GHz from Region 1 broadcasting-satellite stations. The Board therefore decided that, to protect the fixed satellite service in Region 3 in the band 12.2 - 12.5 GHz from the Region 1 BSS Plan, the Bureau shall apply the limits applicable for Region 2 (11.7 -12.2 GHz).

Sec.7

The Board noted that the Δ T/T criteria contained in this Section which is to be used in conjunction with the calculation method of Appendix 29 is 4 %. (In Appendix 29 this trigger limit was changed to 6 % by WARC-ORB-88.)

Annex 5 Technical Data Used in Establishing the Plan and Which Should Be Used for their Application

The provisions of paragraph 3.9 of Annex 5 make it possible to use the guard bands at the lower and upper edges of the planned bands for transmissions in the space operation service. No procedure is however defined for these transmissions. Consequently, the Board decided that frequency assignments in the guard bands of the Plans are only subject to publications in a Special Section AP30/A/... and no other publication or technical examination shall be effected by the Bureau.

Annex 7 Orbital Position Limitations

1. One administration requested the views of the Board concerning the application of Annex 7 to Appendix 30. The main question concerned the applicability of the 8 dB reduction mentioned in the second paragraph of section A.3 of Annex 7 in a case where an administration wishes to add to the Plan a new assignment using a position other than the nominal positions in the Plan.

The second paragraph of section A.3 reads as follows:

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"In the event of a modification to an assignment in the Regions 1 and 3 Plan, the use of a new nominal orbital position not coincident with any nominal orbital position in the Plan at the date of entry into force of the Final Acts shall involve an 8 dB reduction in the e.i.r.p. compared to that appearing in the Regions 1 and 3 Plan for the assignment before modification."

The Board understands that the above limit was introduced by WARC-77, to provide protection to the terrestrial services.

2. As to the applicability of this provision to an addition to the Plan the Board decided that, because Article 4 defines a modification to the Plan as also including an addition and as the intent is to protect terrestrial services, this provision applies in the case of an addition to the Plan of an orbital position other than the nominal position. In the case of a new entry in the Plan, the Board decided to calculate the median value of the e.i.r.p. at the nearest nominal orbital position to the position being proposed, and apply the 8 dB reduction to that value.

3. The Board took into consideration that, with recent technology, such as the use of fast roll-off antennas (the 1977 Plan is based on the technology of 1976/77), it may be possible to provide the same level of protection to other services and at the same time provide some flexibility in the application of Appendix 30. Consequently the Board decided on the following approach. The Bureau shall use the e.i.r.p. of Appendix 30 (in the case of a new entry to the Plan, the median value) and the antenna patterns of the Appendix and calculate the pfd resulting from an e.i.r.p. 8 dB lower coming from the intended orbital position. It would then compare this pfd with that resulting from the proposed modification/addition (with its associated technical parameters) on the territories of other administrations. If there is no increase in the pfd, then the Bureau shall consider modification to be in conformity with Appendix 30; if there is an increase, it shall still be considered to be in conformity with Appendix 30 if there is agreement with any administration affected.

4. Based on the introduction by WARC-ORB-88 of the cluster concept for Regions 1 and 3 (Paragraph 3.15 of Annex 3 of Appendix 30A), the Board decided that the above 8 dB e.i.r.p. reduction of section A3) of Annex 7 to Appendix 30 is not applicable in the case of an orbital position in the cluster.

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ATTACHMENT

Clusters for Region 2

Column No.	Designation
1	Cluster (degree)
2	Number of beams in the cluster
3	Administration names and orbital position

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CLUSTERS FOR REGION 2

1	2	3							
-175.00	8	ALS00003 -175.2	HWA00003 -175.2	HWA01003 -175.2	USAPSA03 -175.2	ALS00003 -174.8	HWA00003 -174.8	USAPSA03 -174.8	HWA01003 -174.8
-166.00	8	ALS00002 -166.2	HWA00002 -166.2	HWA01002 -166.2	USAPSA02 -166.2	ALS00002 -165.8	HWA00002 -165.8	USAPSA02 -165.8	HWA01002 -165.8
-157.00	2	USAWH102 -157.2	USAWH102 -156.8						
-148.00	2	USAWH101 -148.2	USAWH101 -147.8						
-138.00	8	CAN01101 -138.2	CAN01201 -138.2	CAN02101 -138.2	CAN02201 -138.2	CAN01101 -137.8	CAN01201 -137.8	CAN02101 -137.8	CAN02201 -137.8
-136.00	2	MEX02NTE -136.2	MEX02NTE -135.8						
-131.00	1	CTR00201 -130.8							
-129.00	12	CAN01203 -129.2 CAN01403	CAN01303 -129.2 CAN02203	CAN01403 -129.2 CAN02303	CAN02203 -129.2 CAN02403	CAN02303 -129.2	CAN02403 -129.2	CAN01203 -128.8	CAN01303 -128.8
-127.00	2	-128.8 MEX02SUR	-128.8 MEX02SUR -126.8	-120.0	-120.0				
-121.00	1	PNRIFRB2 -121.0	120.0						
-119.00	2	USAEH004 -119.2	USAEH004 -118.8						
-116.00	3	BLZ00001 -115.8	CYM00001 -115.8	TCA00001 -115.8					
-115.00	6	BOLAND01 -115.2	CLMAND01 -115.2	EQACAND1 -115.2	EQAGAND1 -115.2	PRUAND02 -115.2	VENAND03 -115.2		

1	2				3				
-110.00	4	PTRVIR02	USAEH003	PTRVIR02	USAEH003				
		-110.02	-110.2	-109.8	-109.8				
-107.50	4	GTMIFRB2	HNDIFRB2	NCG00003	SLVIFRB2				
		-107.3	-107.3	-107.3	-107.3				
-106.00	5	CHLCONT5	CHLPAC02	PAQPAC01	CHLCONT4	CHLCONT6			
		-106.2	-106.2	-106.2	-105.8	-105.8			
-104.00	2	VEN02VEN	VEN11VEN						
		-103.8	-103.8						
-103.00	1	CLM00001							
		-103.2							
-102.00	1	B SE911							
		-101.8			i.				
-101.00	4	PTRVIR01	USAEH002	PTRVIR01	USAEH002				
		-101.2	-101.2	-100.8	-100.8				
-99.00	1	PRG00002							
		-99.2							
-96.00	1	BERBERMU							
		-96.2							
-95.00	2	EQAC0001	EQAG0001						
		-94.8	-94.8						
-94.00	3	ARGINSU4	ARGSUR04	ARGNORT4					
		-94.2	-94.2	-93.8					
-92.50	7	BRB00001	JMC00002	CRBBAH01	CRBBER01	CRBBLZ01	CRBEC001	CRBJMC01	
		-92.7	-92.7	-92.3	-92.3	-92.3	-92.3	-92.3	
-91.00	12	CAN01304	CAN01404	CAN01504	CAN02304	CAN02404	CAN02504	CAN01304	CAN01404
		-91.2	-91.2	-91.2	-91.2	-91.2	-91.2	-90.8	-90.8
		CAN01504	CAN02304	CAN02404	CAN02504				
		-90.8	-90.8	-90.8	-90.8				
-89.00	1	CUB00001							
		-89.2							
-87.00	2	BAHIFRB1	BOL00001						
		-87.2	-87.2						

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1	2				3				
-86.00	1	PRU00004							
		-85.8							
-84.50	3	GUY00201	SURINAM2	TRD 00001					
		-84.7	-84.7	-84.7					
-83.50	2	DOMIFRB2	HTI00002						
		-83.3	-83.3						
-82.00	12	CAN01405	CAN01505	CAN01605	CAN02405	CAN02505	CAN02605	CAN01405	CAN01505
		-82.2	-82.2	-82.2	-82.2	-82.2	-82.2	-81.8	-81.8
		CAN01605	CAN02405	CAN02505	CAN02605				
		-81.8	-81.8	-81.8	-81.8		· ·		
-81.00	4	B SU111	B SU211	B SU111	B SU211		2		
		-81.2	-81.2	-80.8	-80.8				
-79.50	8	ATGSJN01	MSR00001	SCN00001	VRG00001	DMAIFRB1	GRD00003	LCAIFRB1	VCT00001
		-79.7	-79.7	-79.7	-79.7	-79.3	-79.3	-79.3	-79.3
-78.00	2	MEX01NTE	MEX01NTE						
		-78.2	-77.8						
-74.00	6	B N0611	B N0711	B N0811	B N0611	B N0711	B N0811		
		-74.2	-74.2	-74.2	-73.8	-73.8	-73.8		
-72.50	4	CAN01202	CAN02202	CAN01202	CAN02202				
		-72.7	-72.7	-72.3	-72.3				
-71.50	1	URG00001							
		-71.7							
-70.50	4	CAN01606	CAN02606	CAN01606	CAN02606				, -1
		-70.7	-70.7	-70.3	-70.3				
-69.00	1	MEX01SUR							
		-69.2							
-64.00	6	B CE311	B CE411	B CE511	B CE311	B CE411	B CE511		
		-64.2	-64.2	-64.2	-63.8	-63.8	-63.8		
-61.50	2	USAEH001	USAEH001						
		-61.7	-61.3						
-57.00	2	FLKANT01	GRD00059						
1		-57.2	-57.2						

1	2				3	i and	л Т		
-55.00	3	ARGINSU5	ARGSUR05	ARGNORT5					
		-55.2	-55.2	-54.8					
-53.00	4	GRLDNK01	SPMFRAN3	ATNBEAM1	GUFMGG02		¥.		
		-53.2	-53.2	-52.8	-52.8				
-45.00	8	B CE312	B CE412	B SU112	B SU212	B CE312	B : CE412	B SU112	B SU212
		-45.2	-45.2	-45.2	-45.2	-44.8	-44.8	-44.8	-44.8
-42.00	1	GRD00002							
		-42.2							
-34.00	2	GUY00302	JMC00005						
		-33.8	-33.8				,		
-31.00	2	BERBER02	FLKFALKS						
		-31.0	-31.0				¥		

1

Rules concerning

APPENDIX 30A to the RR

(Rules are arranged by paragraph numbers of Appendix 30A.)

Art. 4	Procedure for modification t	to the Plans
4.5	nya kali ing Panganan kali kali kali na bara kali kali kali kali kali kali kali kal	
4.1a)		4

This provision refers to the modification of "the characteristics of any of its frequency assignments in the fixed-satellite service which are shown in the appropriate Regional Plan". The Plans as they appear in Articles 9 and 9A contain only eight and nine characteristics, respectively, while Annex 2 contains a greater number of characteristics which were used by each of the conferences concerned to establish the Plan. The Board considers that modifications of other characteristics not listed in Articles 9 and 9A may be considered as modifications to the Plans. These other characteristics are listed in the comments under item 5.2.1 b) of Article 5.

4.1.1

The last sentence of this provision requires administrations to inform the Bureau of the reasons that lead it to modify the Plan by adding a new frequency or a new orbital position before notifying to the Bureau the assignments already appearing in the Plan; however, no other provision indicates the extent to which the Bureau should examine these reasons, or formulate any opinion with respect to their validity. Therefore, the Board decided that the Bureau shall limit its action to:

- ensuring that the reasons are given, otherwise the communication is not considered complete; and

publishing them in the Special Section referred to in item 4.2.7.

4.2.1.1

1. In determining those administrations of Regions 1 and 3 that may be affected, the proposed modification/addition is examined with respect to the Regions 1 and 3 Plan as it exists at the date of receipt of the request for modification/addition including the proposed modifications received before that date (whether the procedure of Article 4 is complete or not). The examination consists in ensuring that the limits of Annex 1 (Section 4) of Appendix 30A are not exceeded. Account is also taken of any time-limited modifications to the Plans in accordance with provision 4.2.16.

2. Following the decision of WARC-ORB-88 to apply the grouping concept to the Regions 1 and 3 Feeder link Plan (Article 9A of Appendix 30A), the Board's understanding of the group concept is that there should be no simultaneous transmission on the same channels/assignments that are part of the same group (either from one or different orbital positions). Consequently, in the interference calculation to assignments that are part of the group, only the interference contribution from assignments that are not part of the same group are to be included. On the other

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hand, for the interference calculation from assignments belonging to a group into assignments that are not part of the same group, only the worst interference contribution from that group is to be taken into consideration.

4.2.1.2

In determining those administrations affected in accordance with this provision, the limits of Annex 1 (Section 1) and Annex 4 (Section 3) will be used for those earth stations in the fixed- satellite service (space-to-Earth) which are either recorded in the MIFR or communicated to the Bureau at the date of receipt of the proposed modification for publication in accordance with RR1074 or notified at that date.

4.2.1.3

In determining those administrations affected in accordance with this provision, the limits of Annex 1 (Section 2) shall be applied. Provisions 4.2.1.2 and 4.2.1.3 refer to "the coordination area of the feeder link fixed-satellite earth station", implying that any modification to the Plan should be limited to feeder links with fixed earth stations. The Board noted that few entries in the Plan contain fixed feeder-link earth stations. It may be concluded from this situation that nothing prevents an administration from applying the Article 4 procedure to a typical feeder link earth station the coordination area of which should be calculated as indicated in paragraph 7 of Appendix 28.

4.2.1.4

In determining those administrations of Region 2 that may be affected, the proposed modification of the Regions 1 and 3 Plan is examined with respect to the Region 2 Plan as it exists at the date of receipt of the proposal for modification including the proposed modifications received before that date (whether the procedure of Article 4 is complete or not). The examination will consider only those administrations having assignments whose necessary bandwidth overlaps the necessary bandwidth of the proposed modification. The Region 2 administration is identified as having services which are considered to be affected when the limits specified in Section 5 of Annex 1 to Appendix 30A are exceeded.

4.2.2

This provision refers to, inter alia, transportable feeder-link earth station in the bands 14.5 -14.8 GHz and 17.3-18.1 GHz. The Board noted that, a transportable earth station is an earth station which does not include the following characteristics: geographical coordinates, some of its antenna characteristics (i.e. items g, h and i of section 2.7 of Annex 2 to Appendix 30A). Having defined the characteristics of the earth stations, the Board had to identify the procedures to be applied to them, and reached the following conclusions.

a) From the viewpoint of the application of Article 4:

An administration may bring into use any fixed or transportable earth station in the bands 14.5- 14.8 and 17.3 - 18.1 GHz with the characteristics listed in Annex 3 of Appendix 30A without applying the procedure of Article 4;

b) From the viewpoint of Article 5:

A transportable earth station is not defined in any part of the Radio Regulations. The Board understands that the purpose of a transportable earth station is to permit an administration to install it at any point of the service area without a need to notify geographical coordinates. With this understanding the Board is of the view that what is referred to in Appendix 30A as a "transportable earth station" is a "typical earth station", and decided that the Bureau shall treat it as a typical earth station being associated with the notified test points identifying the service area. See also paragraph 4.2.1.3 above.

4.2.3.1

1. In determining those administrations affected in Region 2, the proposed modification shall be examined with respect to the Region 2 Plan as it exists at the date of receipt of the proposed modification including all proposed modifications received before that date (whether the procedure of Article 4 is complete or not). The examinations consist of ensuring that the limits of section 3 of Annex 1 to Appendix 30A are not exceeded. Account is also taken of any time-limited modifications to the Plan in accordance with provision 4.2.16. See also 4.2.1.1 above.

2. According to Resolution No. 42 Rev (ORB-88), the Board decided that, when applying this provision, the Bureau shall not take account of the interim systems.

4.2.3.2

See comments made under 4.2.1.2 above

4.2.3.3

See comments made under 4.2.1.3 above

4.2.3.4

In determining the administrations of Regions 1 and 3 that might be affected, the proposed modification of the Region 2 Plan is examined with respect to the Regions 1 and 3 Plan as it exists at the date of receipt of the modification including all proposed modifications received before that date (whether the procedure of Article 4 is complete or not). The examination will identify only those administrations having assignments whose necessary bandwidth overlaps the necessary bandwidth of the proposed modification. An administration is identified as having services which may be affected when the limits specified in section 5 of Annex 1 to Appendix 30A are exceeded.

4.2.5

Appendix 30A contains assignment Plans with beams covering only a territory or a part of a territory, which leads one to conclude that the usual wording used in similar provisions "or an administration on behalf of a group of administrations" is not necessary. However, it is to be noted that some beams have been included in both Plans for some groups of administrations. Consequently the Board decided that the Bureau shall accept the application of the procedure of Article 4 for a modification of either of the two Plans by an administration on behalf of other administrations.

4.2.6.1

The calculations to be made in order to ensure that the limits are not exceeded may be very complex. For this reason, when the administration has not indicated if the limits

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are exceeded or not, the Bureau shall make these calculations and inform the administration of the results obtained. The Bureau shall also do this when the administration indicates that the limits are not exceeded, in order to ensure that the interests of other administrations are safeguarded. This action by the Bureau is derived from item 4.2.7.

4.2.6.2

As indicated in the comments under item 4.2.6.1, the Bureau has to do the same calculations in order to identify the administrations which are likely to be affected, as prescribed by item 4.2.7.

4.2.9

The Board understands from this provision that any request by an administration to be included in the list of administrations to be published shall be based only on technical reasons to be verified using Annex 1. If this indicates that the requesting administration should have been included in the list, the Bureau will include it; otherwise the requesting administration will be informed that its name will not be published, it being left to the notifying administration to consider if it is appropriate to take the request into account.

4.2.10

The Board understands that the agreement referred to in this provision is the agreement of the administrations identified under paragraph 4.2.1 or 4.2.3 and of those under paragraph 4.2.9 which have been confirmed by the Bureau using the appropriate criteria.

4.2.11

An administration which has only requested additional information in accordance with provision 4.2.11 will not be considered by the Bureau to have submitted comments in accordance with provision 4.2.13.

4.2.13

This provision specifies that, an administration that has not notified its comment within four months (from the publication date of the special section) shall be understood to have agreed to the proposed modifications. The Board considered the adverse effect of such missing replies and decided that the Bureau shall send reminder telegrams 30 days before the expiry of the above four month period.

4.2.18

The second part of this provision applies only to those assignments for which the procedure of Article 4 has been successfully applied, i.e., all administrations identified by the Bureau in application of items 4.2.7 and 4.2.9 have either given their agreement or failed to comment on the proposed modification.

Art. 5 Notification, Examination and Recording

5.2.1b)

1. The Board has considered the question whether the examination with respect to conformity with the Plan means only the columns of Articles 9 and 9A of Appendix 30A,

as updated or whether it also includes an examination with respect to the technical criteria given in Annex 3 to Appendix 30A which were used for the establishment of the Plans. The Board concluded that some of the technical criteria contained in Annex 3 need to be taken into account in this examination. Therefore, the examination from the viewpoint of conformity with the Plan is carried out in two steps:

a) to ensure that the characteristics notified are those specified in the columns of the Plan concerned as updated (see item 3.1 of Article 3). If the characteristics are different then the examination under item 5.2.1.c) is carried out. For the items below any characteristics for which the procedure of Article 4 has been successfully applied could be notified.

b) to ensure that the protection criteria resulting from the Plan¹ are not exceeded. To this effect the following characteristics are examined:

- i) For a receiving frequency by a space station
- space station beam identification (as indicated in column 1 of Plan)
- nominal orbital position (as indicated in column 2 of Plan)
- channel number/frequency (as indicated in column 3 of Plan)
- boresight coordinates (as indicated in column 4 of Plan)
- antenna beamwidth (as indicated in column 5 of Plan)
- ellipse orientation (as indicated in column 6 of Plan)
- polarization (as indicated in column 7 of Plan)
- service area (test points shall be located within the service area)
- class of emission and bandwidth ;
- antenna characteristics (same as or better than sections 3.7 (Regions 1 and 3) or
 4.6 (Region 2) as appropriate of Annex 3 to Appendix 30A)
- antenna pointing accuracy (same as or better than provisions 3.7.4 (Regions 1 and 3) or 4.6.4 (Region 2) of Annex 3 to Appendix 30A)
- antenna rotational accuracy (same as or better than provisions 3.7.4 (Regions 1 and 3) or 4.6.4 (Region 2) of Annex 3 to Appendix 30A)
- system noise temperature (see provisions 3.8 (Regions 1 and 3) and 4.7 of Annex 3 to Appendix 30A as appropriate)
- station keeping tolerance (same as or better than that of provision 3.11 of Annex 5 to Appendix 30)

¹ Any time the "Plan" is referred to, this means the current version of the Plan as updated.

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- modulation characteristics (same as provision 3.1 of Annex 5 to Appendix 30)
- energy dispersal (same as provision 3.18 of Annex 5 to Appendix 30)
- range of automatic gain control (same as provisions 3.10 of Annex 3 for Regions 1 and 3, and 4.9 of the same Annex for Region 2)
- ii) For a transmitting earth station

The examination of a notice of a frequency assignment to an earth station under this provision uses the characteristics mentioned below or those for which the Article 4 procedure was successfully applied. In regard to the rules that the Bureau shall apply in processing frequency assignments to earth stations, the uncertainties originate from the reference in several provisions to "the characteristics appearing in the Plan", although the Plan contains only the earth station e.i.r.p. (Column 8 identical for all the entries) for Region 2 Plan and earth station e.i.r.p and power control for Regions 1 and 3 Plan (Columns 8 and 9). In order to alleviate these uncertainties, the Board decided that the Bureau shall consider as "characteristics appearing in the Plan" those characteristics used for the establishment of the Plan as indicated in Annex 3 to this Appendix. As a result of the above, whenever a provision of Appendix 30A refers to the characteristics of earth stations appearing in the Plan, the following characteristics will be used for Regions 1 and 3 or Region 2, as appropriate:

- e.i.r.p.: Column 8 of the Plan
- antenna diameter: paragraphs 3.5.1 or 4.4.1 of Annex 3
- reference patterns: Figure 6 or Figure A of Annex 3
- transmit power: paragraphs 3.6 or 4.5 of Annex 3
- in the case of a fixed feeder-link earth station

- its geographical coordinates within the service area

- elevation angle of the horizon around the earth station
- in the case of a typical earth station

- the location of the earth station to be associated with test points within the service area

- elevation angle of the horizon around the earth station is assumed to be zero.

In relation to the transmitting power, the Board noted that according to Sections 3.11 and 4.10 of Annex 3, the use of power control shall remain within the limits indicated in those Sections.

2. If an administration notifies modulation characteristics different from those of provision 3.1 of Annex 5 to Appendix 30, a study is undertaken to determine if the proposed characteristics will cause/receive more interference to/from other assignments in the Plan.

5.2.1c)

1. See comments under item 5.2.1b)

2. The orbital position shall be examined to ensure compliance with the cluster concept (paragraph B of Annex 7 to Appendix 30 and Sections 3.15 (Regions 1 and 3) and 4.13.1 (Region 2) of Annex 3 to Appendix 30A) as follows:

- if the orbital position is identical with that shown in the Plan, no further agreements are necessary;

- however, if the orbital position is different from that contained in the Plan but it is in the same cluster, then the agreement of administrations having assignments in the same cluster is necessary. The clusters are listed in the Attachment to the Rule of Procedure concerning Appendix 30. Appendices 30 and 30A do not contain any provision indicating the procedure to be followed for the above mentioned agreement. The task of the Bureau in this respect is to ensure that the agreement of the administrations concerned is indicated in the notice; otherwise it considers the assignment to be not in conformity with the Plan.

Art. 6

Coordination, Notification and Recording of Receiving Terrestrial Assignments when FSS Feeder-links are involved

6.1

1. The provisions of Article 6 do not mention interim systems implemented in accordance with Resolution No. 42 (Rev.ORB-88). Such systems may be implemented in the following frequency bands shared with equal rights with terrestrial services:

- 17.7 - 17.8 GHz for Region 2 and

- (through application of Resolution 519 and Article 4) 14.5-14.8 GHz and 17.7-18.1 GHz for Regions 1 and 3.

Such usage may affect terrestrial stations.

2. This provision refers to "the closest feeder-link earth station located on the border of the territory of another administration". This earth station is to be considered a typical earth station located at the worst location.

3. In order to evaluate the interference, an administration A, intending to use terrestrial stations, needs to know the fixed-earth station existing or planned. In order to take them into account administrations may calculate the coordination area as indicated in paragraph 7 of Appendix 28 around a service area as referred to in the comments under provision 4.2.1.3

6.2

1. This provision refers to the need for an administration B to communicate the actual location of its feeder-link earth stations without specifying which of these earth

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stations should be taken into account. As no indication is given, the Board understands that the administration may communicate the locations of earth stations without any limitations.

2. The actual locations of earth stations so communicated to administration A and to the Bureau will be examined for their conformity with the characteristics listed under comments relating to provisions 5.2.1 b) of this Appendix or those for which the procedure of Article 4 was successfully applied. This examination will lead to the following:

- earth stations which conform to the above characteristics will be entered in the Plan without applying the Article 4 procedure, and administration A will be informed accordingly;

- earth stations which do not conform to the characteristics listed under the comments relating to provision 5.2.1b) and for which the Article 4 procedure was not applied will be recorded in the Plan once the procedure of Article 4 is successfully applied and in this application of Article 4 the proposed use of the terrestrial service by administration A shall be taken into account.

3. It is concluded from this provision that no transportable earth station can be used in the band 17.7 - 17.8 GHz in Region 2.

6.5

This provision implies that these feeder-link earth stations will not be entered in the Plan. For this reason the Bureau shall in such cases recommend to the administration that it apply the procedure of Article 4 in order to permit its earth stations to be entered in the Plan.

Art. 7

Coordination, Notification and Recording of FSS Assignments when feeder-links to BSS Assignments Are Involved

7.6

The comments under provision 6.5 apply.

Annex 1

Limits for Determining Whether a Service of an Administration is Affected by Proposed Modifications to the Plan

In applying the provisions of this annex, calculations may lead to results differing by a tenth of a decibel; for this reason the Board allows a margin of 0.1 dB to the limits indicated in this Annex.

Sec. 3

See comments made under the Rules of Procedure concerning Section 2 of Annex 1 to Appendix 30.

Sec. 4

Annex 3

See comments made under the Rules of Procedure concerning Section 1 of Annex 1 to Appendix 30.

Technical Data Used in Establishing the Plan and Which Should Be Used for their Application

The antenna characteristics referred to in the footnote under the title of Annex 3 (Fast roll-off antenna pattern for the Plan) are reproduced in the <u>Attachment</u> to the present Rules of Procedures.

Section 3

The provisions of paragraph 3.1 (Regions 1 and 3) and 4.1 (Region 2) of Annex 3 make it possible to use the guard bands at the lower and upper edges of the planned bands for transmissions in the space operation service. No procedure is however defined for these transmissions. Consequently, the Board decided that frequency assignments in the guard bands of the Plans are only subject to publications in a Special Section AP30A/A/... and no other publication or technical examination shall be effected by the Bureau.

Provision 3.11.4.4 of Annex 3 to Appendix 30A states that " In the event of modifications to the Plan, the Bureau shall recalculate the value of power control for the assignment subject to modification and insert the appropriate value for the assignment in column 9 of the Plan. A modification to the Plan shall not require the adjustment of the values of permissible power increase of other assignments in the Plan". Therefore, the Board decided that, the Bureau, immediately after the Regions 1&3 Feeder link Plan (14 GHz or 17 GHz) is updated and before Part B publication is effected, shall recalculate the power control values and inform about its findings the responsible administration, as appropriate. If the values referred to in the above paragraph need to be adjusted, the responsible administration shall seek all the possible means to solve the matter with the affected administrations.

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ATTACHMENT

to Rules concerning Appendix 30A

FAST ROLL-OFF ANTENNA PATTERN

for the Feeder-Link Plan (Appendix 30A)

A discontinuity was noticed in Curve A for both the Region 2 and Regions 1 and 3 feeder-link fast roll-off antenna beams (Figure C of Section 3 and Figure 8 of Section 4 of Annex 3 to Appendix 30A). The upper limit for the plateau at -25.23 dB is given for a φ/φ_o equal to 1.413.

When used in the equation of $-(22 + 20 \log (\phi/\phi_0))$ this value gives a relative gain of minus 25.00 dB, which leaves a gap of 0.23 dB between the plateau and the next equation. For this reason, the value of 1.413 should be replaced by 1.45 as shown below.

Curve A: Co-polar component (dB relative to main beam gain)

-12 (φ/φ _o) ²	for 0 $\leq \phi/\phi_o \leq 0.5$
$-33.33 \phi_0^2 (\phi/\phi_0 - x)^2$	for $0.5 \le 0.87/\phi_o$ + x
-25.23	for $0.87/\phi_0 + x \le 1.45$
-(22 + 20log (φ/φ _o))	for $\phi/\phi_0 > 1.45$

after intersection with Curve C: as Curve C

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Rules of Procedures

concerning Appendix 30B

I. Introduction

1. Appendix 30B contains a frequency plan and associated procedures for the fixed-satellite service in the following frequency bands:

4 500 - 4 800 MHz (space to Earth); 6 725 - 7 025 MHz (Earth to space); 10.70 - 10.95 GHz (space to Earth); 11.20 - 11.45 GHz (space to Earth); 12.75 - 13.25 GHz (Earth to space).

2. The Plan was established to contain allotments for all Member countries of the ITU. An allotment comprises a nominal orbital position, a bandwidth of 800 MHz (in each, both up-link and down-link) a service area for national coverage and a set of generalised parameters within which a specific satellite network may be implemented. In order to provide an additional flexibility to the Plan the nominal orbital positions were associated with an orbital segment of a given size called "predetermined arc" (PDA) to allow future adjustments of the orbital position of the satellites within the predetermined arc.

- 3. The Plan consists of two separate parts:
 - Part A containing the national allotments (described above);
 - Part B containing the networks of "existing systems"; and supplemented by the List of assignements associated with the Plan as defined in paragraph 5.5 of Article 5 of Appendix 30B.

II. <u>Applicable Rules</u>

(The following Rules of Procedure are arranged by paragraph numbers of Appendix 30B.)

Article 2 Definitions

2.5

Sub-regional systems

The definition of sub-regional systems contained in paragraph 2.5 of Article 2 limits the group of administrations in a sub-regional system to neighbouring countries only. In some cases, it may be difficult to define whether two given countries are or are not neighbouring countries. The Board has consequently decided that the Bureau shall examine this question on every specific request on a case by case basis.

2.6

Additional use

The definition for "Additional use" limits this utilisation for national coverage (third line under a) in the definition). This limitation may, nevertheless, be the subject of agreements between administrations concerned according to the concluding part of the same sentence (the expression "unless otherwise agreed" is linked with the restriction meant by "shall be limited to national coverage"). Those notices for additional use whose service area covers the territory of other countries will, thus, be considered receivable only if these other countries agreed on this utilisation.

Article 4

Execution of the Provisions and Associated Plan

4.1

Space operation functions

1. It has been noted that the use of the Space Operation Service with class of station EK/ER and/or TK/TR was not considered when the Plan was drawn up in WARC ORB-88.

2. However, frequency assignments in the space operation service with the above mentioned class of station associated with the existing systems of Part B of the Plan which (recorded in the MIFR) were entered in the Appendix 30B List without any compatibility examinations¹(paragraph 6.25 of Article 6 of Appendix 30B) and should thus be taken into account in the subsequent examinations under appropriate provisions of that Appendix .

3. In the light of paragraph 1 above the Board decided that for assignments to the stations in Space Operation Service associated with the Appendix 30B Plan received under that Appendix after 29 August 1988 the Bureau shall:

3.1 consider them as being incompatible with the Plan and thus

3.2 not enter them in the Appendix 30B List as far as the reference situation is concerned,

3.3 continue to protect the assignments mentioned in paragraph 2 above.

See also comments made under the Rules of Procedure concerning paragraph 6.25²

¹ While affecting a number of allotments in Part A of the Plan with the single-entry or aggregate C/I ratios different to those agreed at the WARC ORB-88 conference.

² In which it is required that the Bureau shall continue to protect the assignments to the Space Operation Service with the single-entry and aggregate C/I ratios resulting from their entry in the Appendix 30B List and to retain the lowest resulting values of the single-entry and/or aggregate C/I ratios for the affected allotments of Part A in the technical examination of subsequent submissions of administrations under the provisions of Appendix 30B of the Radio Regulations.

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Bi-directional allocation of some bands

4. See comments made under the Rules of Procedure concerning RR792A.

Article 6 Procedures for Implementation of the Plan

6.12

Compatibility examinations

1. The footnote to the provisions of paragraph 6.27 makes reference to the case of an apparent incompatibility between two assignments in Part B when, nevertheless, an agreement exists between the administrations concerned. Such agreements may be concluded for assignments in Part A as well. These examples raise the question of calculating the aggregate carrier-to-interference ratio in case of coordinated (agreed) frequency usage. The Board decided that for such cases the coordinated assignments shall be included in the calculations of the aggregate C/I and the C/I value so calculated will further be considered as the reference situation of interference which was accepted by the administrations.

2. The planning exercise and the interference analysis were made by WARC-ORB-88 for the whole band of 300 MHz (4/6 GHz) or 500 MHz (11/13 GHz) on a co-channel basis. It may happen that two administrations conclude agreement on the shared use of the frequency bands (in particular, existing systems use only part of the available spectrum). In the compatibility examination by the Bureau, the mutual interference between non-overlapping frequency assignments shall not be taken into consideration in formulating Findings.

3. Paragraphs 6.12, 6.18, 6.43 and 6.56 determines the different categories of allotments/assignments which have to be taken into account in the compatibility examinations of "non-conforming assignments" (Section IA), sub-regional systems (Section II), "additional uses" (Section III) or of those assignments for which the macrosegmentation concept was not applied. In contrast with paragraph 6.24 (Section IB), in the above mentioned provisions the compatibility examinations are not extended to Part B networks. This would mean that networks being notified under provisions of Sections IA, II and III would not be examined as to their compatibility with Part B of the Plan. In order to avoid the recording of assignments whose compatibility has not been fully examined the Board decided to extend the compatibility examinations to the above case and before recording the assignments found incompatible with a Part B network it will inform the administration concerned accordingly.

4. Use of additional frequency bands by "existing systems"

4.1. The Board's views on the possibility of using for a satellite network contained in Part B of Appendix 30B (existing system) a frequency sub-band which was not originally included in any publications of that network referred to in paragraphs a), b) and c) of Section 2.4 of Article 2 of that Appendix is summarised as follows.

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4.1.1 The main purpose of the WARC-ORB-88 Conference was to establish the Allotment Plan and its associated Regulatory procedures for national coverage for the fixed satellite service in 4/6 and 10-11/13 GHz bands.

4.1.2 The Conference was faced with some difficulties to incorporate existing systems in the Allotment Plan and the "existing systems" were finally included in Part B of that Plan, with their characteristics as communicated to the IFRB in accordance with Section 2.4 of Article 4 of Appendix 30B and recognized by WARC-ORB-88.

4.1.3 Some administrations obtained allotments with carrier-to-interference ratio (C/I) less than 26 dB (*the value agreed by the Conference for the establishment of the Plan*) and in some cases "existing systems" were the prime source of interference to the allotments having a C/I lower than 26 dB. Administrations accepted the Plan on the understanding that "existing systems" should remain with their original characteristics as communicated to and recognized by the Conference.

4.2 The Board thus decided that

4.2.1 existing systems shall normally remain within their original characteristics as communicated to and recognized by WARC-ORB-88. (See definitions given under paragraph 2.4 of Article 2 of Appendix 30B);

4.2.2 consequently, the use by an existing system of a frequency band different from those communicated to and recognized by WARC-ORB-88 is not in conformity with the provisions of Section 1B of Article 6 of that Appendix;

4.2.3 the extended use of the band could only be made through the application of the provisions of Section III of Article 6 (Supplementary provisions applicable to Additional Uses of the Planned Bands).

6.12 c)

1. When the notices of the proposed frequency assignments under Article 6 are received by the Bureau they have to be examined in accordance with the appropriate provisions of this Article one by one in the order of the date of receipt. In all cases the examination consists in checking if the criteria of Annex 4 of Appendix 30B are met for the allotments of the Part A, the existing systems contained in Part B of the Plan, the assignments entered in the Appendix 30B List and the assignments with respect to which the Bureau previously received information in accordance with Article 6 (Assignments In Process - AIP). Depending on the category of submission (the section of Article 6 under which it is submitted) and the results of examinations different actions follow:

1.1 Finding favourable with respect to the Plan, the assignments in the List and the assignments in AIP (i.e. no administrations are affected - the criteria of Annex 4 of Appendix 30B are met); the subject assignment is recorded in the Appendix 30B List (see paragraphs 6.6, 6.11, 6.19, 6.21, 6.26, 6.34, 6.44, 6.50, 6.59).

1.2 Finding favourable with respect to paragraphs 6.32 or 6.48 - the results of examination are published in a special section AP30B/.. (see paragraphs 6.33, 6.49 respectively).

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1.3 Finding unfavourable with respect to paragraphs 6.7, 6.18/6.20 (provisions of Annex 3B and Annex 4 of Appendix 30B are not met); the administration responsible for the proposed assignment shall seek the agreement of affected administration.

1.4 Finding unfavourable with respect to the criteria of Annex 4 of Appendix 30B (administration(s) affected); the assignment shall be returned to the responsible administration (see paragraphs 6.13, 6.23, 6.27, 6.45, 6.51, 6.58).

1.5 In cases mentioned in 1.2 and 1.3 above the assignments are neither returned to the responsible administrations nor recorded in the Appendix 30B List. Thus, they form the group of assignments (AIP) to which provisions of paragraphs 6.12 c), 6.24 d), 6.43 c), 6.56 c) of Article 6 shall be applied.

1.6 There is no provision in Appendix 30B which specifies the time limit under which the agreement (such as that referred to in paragraph 6.20) is to be obtained. Since the submission is not returned to the responsible administration, it should thus be protected as per paragraph 6.12 c), Nevertheless, it is not logical nor desirable to protect these assignments for an unspecified period.

1.7 Section I is silent for cases with respect to which agreement referred to in paragraph 6.10 is not obtained.

2. In view of the above, the Board decided that the Bureau shall:

2.1 constitute a temporary list of assignments in process "AIP" list containing *the assignments with respect to which the Bureau previously received information in accordance with Article 6* and which were subject to application of paragraphs 6.20, 6.34 and 6.50.

2.2 afford provisional status (in terms of reference situation) to these assignments for the period of time referred to in paragraphs 2.2.1 and 2.2.2 below or until the agreement is reached with the affected administration(s) (whichever is shorter):

2.2.1 four months (from the communication of the unfavourable finding) for submissions referred to in paragraph 1.3 above);

2.2.2 sixty days from the date of publication of corresponding special section of weekly circular for submissions referred to in 1.2 above;

2.3 protect these assignments during the above periods in subsequent technical examination with the resulting single-entry or aggregate carrier-to-interference (C/I) ratios;

2.4 depending on the results of coordination or publication either transfer the corresponding assignments to the Appendix 30B List (agreement is reached or no comments received from administrations within sixty days) or return the notices to the responsible administration (disagreement is communicated to the Bureau directly by the administration concerned or through the notifying administration within the time limits specified in 2.2.1 and 2.2.2 above);

2.5 update the Appendix 30B reference situation accordingly;

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2.6 return the assignments referred to in paragraph 1.7 above to the notifying administration.

6.13

In paragraph 6.13 the case of non-conformity with only Annex 3A is mentioned. From paragraph 6.8 (which makes the liaison between Sections I and IA) as well as from the title of Section IA it is clear that the world "Annex 3A" should be understood as "Part A". Consequently the Board understands that the part concerned of paragraph 6.13 should read: "If the proposed assignment is not in conformity with Part A of the Plan, the Board...".

6.14

The provisions of paragraph 6.14 of Section IA are applicable to an assignment which, not being in conformity with Part A of the Plan (paragraph 6.8), had been returned to the administration for modifications. According to these provisions the modified and resubmitted case should go back to paragraph 6.2 of Section I of Article 6 and should be the subject of an examination of conformity with the Plan. The cases which, after the modifications, conform to Part A of the Plan are treated under Section I of Article 6. Those other cases, however, which, after the modification, are still not in conformity with Part A do not have any instruction to undergo the examination foreseen by the preamble paragraph 6.12 of Section I.A. That paragraph defines the purpose of Section IA in determining if the proposed assignment affects allotments of the Plan or assignments of the List. On the basis of the above considerations as well as of what is stated in paragraph 6.13 a), the Board understands that for those resubmitted cases which are still not in conformity with the Plan a compatibility examination (using the method of Annex 4) should be effected. This examination is also to be carried out for the case of modification of the satellite position irrespective whether the other characteristics are or are not in conformity with Part A of the Plan.

6.16

Application of PDA concept

1. Appendix 30B contains provisions inviting the Bureau, when it is requested, to assist the administration in the selection of an alternative orbital position in the process of conversion of an allotment into an assignment, or in resolving incompatibilities with existing systems or assignments of the Appendix 30B List, or to accommodate a sub-regional system.

2. The Bureau, to the extent practicable ³, should endeavour to find appropriate orbital positions compatible with the Plan using, if necessary, the PDA concept (defined in paragraphs 5.3 and 5.4 of Appendix 30B).

³ Note by the Radiocommunication Bureau: The computer software presently available for the Appendix 30B applications (MSPACEG) is limited to the use of the method of Annex 4 of Appendix 30B to carry out compatibility calculations between networks of fixed orbital positions, but it does not contain the possibility of introduction of the PDA concept in the Appendix 30B calculations aimed at selection of a new or alternative orbital position. The method of optimisation of the Plan and criteria related to it with the aim of identifying the required orbital position is yet to be developed. Consequently the Radiocommunication Bureau is not yet in a position to apply the PDA concept.

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3. In view of the difficulties of the Bureau to apply the PDA concept in its integrity, the Board decided that the Bureau shall provisionally apply the following procedures upon receipt of the request to provide the assistance to administrations under provisions of paragraphs 6.16, 6.31, 6.47 or 6.48 of Appendix 30B. The Bureau shall:

3.1 proceed with the compatibility analysis prescribed in Appendix 30B only if the orbital position for the planned system and/or new orbital positions within the PDA of other administrations are provided by the notifying administration; and

3.2 return the notice to the responsible administration if these data are not supplied.

6.17

Paragraph 6.17 makes reference to the successful application of the PDA concept and, for that case it refers back the procedure to paragraph 6.5 of Section I. There is, however, no instruction for the case of unsuccessful application of the PDA concept. The Board considered that, similarly to other provisions (paragraphs 6.23 of Section IA or 6.51 of Section II) such a case should be referred back to the notifying Administration.

6.18

See comments made under the Rules of Procedure concerning paragraph 6.12.

6.24

1. Based on the provisions of the footnote to paragraph 6.24 b) (continuation of the procedure of coordination of Section II of Article 11 of the Radio Regulations for existing networks in Part B of the Plan), the Board decided that the Bureau shall use in the examination of incompatibilities between Part B assignments the criteria defined in Article 11 of the Radio Regulations, i.e. the $\Delta T/T$ ratio with a threshold value of 6 %. In any other compatibility examination the method of Annex 4 will be used.

Macrosegmentation Concept

2. Paragraphs 6.24, 6.43 and 6.56 of Article 6 of Appendix 30B prescribe the application of the method of Annex 4 to determine whether the proposed assignment affects the allotments of Part A, the existing systems contained in Part B of the Plan, the assignments of the Appendix 30B List and the assignments with respect to which the Bureau previously received information in accordance with Article 6. While Annex 3B refers to Annex 3A which is generally concerned with Part A, the order of its application to Subregional Systems, Additional use and Existing Systems requires clarification.

3. In view of the above, the Board decided that the Bureau shall also (in addition to Part A of the Plan) apply the Macrosegmentation concept and the second paragraph of Annex 4 of Appendix 30B to:

- Sub-regional Systems,
- Additional Uses.

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4. Nevertheless, the Bureau shall not apply the second paragraph of Annex 4 of Appendix 30B with respect to the frequency assignments of Existing Systems regardless the carrier distribution within the allotment bands.

5. By virtue of Annex 3B of Appendix 30B the proposed frequency assignments shall not be required to coordinate if in addition to meeting the conditions of Annex 3A, they are ordered in such a way that the upper 60% of each allotment band is used for high-density carriers and the lower 40% for low-density carriers. The second paragraph of Annex 4 of the same Appendix provides the C/I criteria for protection of such assignments (25 + k (dB); k being the peak-to-average ratio).

6. When administrations submit the frequency assignments with low-density carriers in the whole allotment bands (there is no provision in Appendix 30B which prohibits such use) and these assignments are recorded in the Appendix 30B List (no administrations affected), the question of application of (25 + k) criteria in subsequent examinations is raised with respect to the frequency assignments using the portion of allotment bands intended for high-density carriers as defined in Annex 3B.

7. The Board decided that the Bureau shall not apply the criteria mentioned in the second paragraph of Annex 4 of Appendix 30B with respect to the frequency assignments resulting from Part A of the Plan, of Subregional Systems and Additional Use entered in the Appendix 30B List using the upper 60% of each allotment band (foreseen for high-density carriers) for low-density carriers.

8. See also the comments made under the Rules of Procedure concerning paragraph 6.12.

6.25

1. The Board understands the second sentence of paragraph 6.25 ("characteristics are identical to those contained in Part B of the Plan") to mean that only those existing system assignments may be entered into the List which have characteristics of an interference potential less than or equal to those of Part B. If their characteristics are such as to cause (or to receive) more interference than those networks in Part B, then they shall be returned back to the notifying administration. The assignments retained shall be the subject of further examinations foreseen by paragraph 6.24.

Appendix 30B List for compatibility examinations

2. The first sentence of paragraph 6.25 of Article 6 of Appendix 30B stipulates that "assignments for the networks contained in Part B of the Plan for which notices for recording in the Master Register were received prior to 29 August 1988 and recorded subsequently in the MIFR will be entered in the List" (without compatibility examination).

3. It has been noted that frequency assignments to some space stations relating to the existing systems recorded in the MIFR have different characteristics (power density, etc.) from those contained in Part B of the Plan adopted by the Conference. By virtue of paragraphs 6.12, 6.24, 6.43, 6.56 of Appendix 30B the assignments contained in the Plan as well as those recorded in the List shall be taken into account in the compatibility analysis in accordance with the criteria defined in Annex 4 to Appendix 30B. On the other hand, the recorded MIFR space station characteristics can

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be used in C/I calculations as prescribed in Appendix 1 to Annex 4 of Appendix 30B only if the corresponding network link are established.

4. The inclusion of this type of systems in the Appendix 30B List with technical characteristics different from those of Part B of the Plan may result in degradation of the C/I ratios in some test points or an improvement of the C/I ratio in other test points compared with the first reference situation established by the Conference for a number of allotments of Part A of the Plan.

5. It was also noted that the existing systems of Part B of the Appendix 30B Plan having assignments already recorded in the MIFR and the Appendix 30B List form in some cases "multi-beam networks" (MBN).

6 Some of the existing links in Part B of the Plan, including those recorded in the Appendix 30B List in accordance with Article 6 of Appendix 30B, contain up-link or down-link parts only. While the Annex 4 criteria of Appendix 30B relate to complete networks, the separate values of C/I ratio applicable for down- or up-links are not defined.

7. In view of the above, the Board decided that the Bureau shall:

7.1 constitute, for the existing systems referred to in paragraph 3 above, complete links (uplink and downlink) required for Appendix 30B C/I calculations, using the recorded characteristics in the MIFR (for receiving/transmitting space stations) as entered in the Appendix 30B List together with the parameters of transmitting/receiving earth stations as contained in Part B of the Plan;

7.2 use for subsequent technical examination of the assignments submitted by Administrations under the provisions of Appendix 30B of the Radio Regulations the resulting lowest values of single-entry or aggregate carrier-to-interference (C/I) ratios for the allotments of Part A of the Plan affected as a result of the application of the first sentence of paragraph 6.25 of Article 6 of Appendix 30B;

7.3 not to take into account, while performing C/I calculations, inter-beam interference within a multi-beam network;

7.4 calculate the interference to each assignment of these "multi-beam networks" and corresponding C/I ratio for their protection in subsequent calculations;

7.5 take into account in the technical examinations the interference of only one beam of "multi-beam networks" which constitutes the worst case with respect to the assignments of the Plan and Appendix 30B List;

7.6 apply the Annex 4 criteria for the separate up- and down-links for the case mentioned in paragraph 5.bis above.

6.29

See comments made under the Rules of Procedure concerning RR1042.

6.31

See comments made under the Rules of Procedure concerning paragraph 6.16.

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6.43

See comments made under the Rules of Procedure concerning paragraphs 6.12 and 6.24.

6.47

See comments made under the Rules of Procedure concerning paragraph 6.16.

6.48

See comments made under the Rules of Procedure concerning paragraph 6.16.

6.56

See comments made under the Rules of Procedure concerning paragraphs 6.12 and 6.24.

Article 7

New Allotments to New Members of the Union

7.1

New allotment to the Plan for the new Members of the ITU.

1. Appendix 30B contains provisions inviting the Bureau ,when it is requested, to provide an allotment to a new Member of the ITU.

2. The Bureau, to the extent practicable ⁴, should endeavour to find appropriate orbital positions compatible with the Plan using, if necessary, the PDA concept (defined in paragraphs 5.3 and 5.4 of Appendix 30B).

3. In view of the difficulties of the Bureau to apply the PDA concept in its integrity, the Board decided that the Bureau shall provisionally apply the following procedures upon receipt of the request to find an appropriate orbital position for an allotment in Part A of the Plan for a new member of the Union under Article 7 of Appendix 30B. The Bureau shall:

3.1 study the orbit occupancy on a case by case basis, and select a few (not more than 3) likely suitable orbital positions;

3.2 using the criteria of Annex 4 of Appendix 30B to determine whether the new allotment at selected orbital position(s) are compatible with the allotments of the Part A, the existing networks contained in Part B of the Plan, the assignments which appear

⁴ Note by the Radiocommunication Bureau: The computer software presently available for the Appendix 30B applications (MSPACEG) is limited to the use of the method of Annex 4 of Appendix 30B to carry out compatibility calculations between networks of fixed orbital positions, but it does not contain the possibility of introduction of PDA concept in the Appendix 30B calculations aimed at selection of a new or alternative orbital position. The method of optimisation of the Plan and criteria related to it with the aim of identifying the required orbital position is yet to be developed. Consequently the Radiocommunication Bureau is not yet in a position to apply the PDA concept.

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in the Appendix 30B List and the assignments with respect to which the Bureau previously received information in accordance with Article 6;

3.3 if the result of the exercise for all three selected positions is not satisfactory (affected administrations are identified) send the results to the requesting administration recommending that it may seek the agreement(s) of affected administration(s) and upon reaching the agreement may formally submit the request for the allotment on any of the proposed position to the Bureau;

3.4 enter the new allotment in Part A of the Plan and inform administrations in its circular telegram, indicating the characteristics of the allotment concerned if no administration was identified as affected in the above mentioned exercises or if agreement is reached and the request is resubmitted.

Procedure for Notification and Recording

8.1

Article 8

Examination of the frequency assignments under Article 13 of the Radio Regulations

1. It was noted that in examining the notices of frequency assignments to earth/space transmitting/receiving station(s) notified under Article 13 of the RR in the frequency bands which are subject to RR 792A (the use of these bands shall be in accordance with the provisions of Appendix 30B) the technical characteristics of the notified assignment (as prescribed by Annex 3 of the RR) shall be checked whether they are conform with those recorded in the Appendix 30B List (frequency assignment having successfully applied the provisions of Article 6 of Appendix 30B).

2. The frequency assignments notified to the Bureau under Article 13 of the RR or contained in the MIFR do not normally have the basic technical parameters prescribed by Annex 2 of Appendix 30B. For example, the power density averaged over necessary bandwidth of the modulated carrier and referred to a 1 MHz bandwidth is not included in the basic characteristics to be furnished under Appendix 3 of the RR. Nevertheless this parameter is mandatory for the frequency assignments submitted under Appendix 30B of the RR.

3. In order to permit the Bureau to carry out the conformity examination of the notified characteristics according to those relating to transmitting/receiving station(s) previously recorded in the Appendix 30B List the Board decided that the following procedures shall be applied:

3.1 Administrations when notifying under Article 13 of the Radio Regulations the frequency assignments to the transmitting earth/space stations operating in the frequency bands used in accordance with Appendix 30B of that Regulations shall, in addition to the Appendix 3 data (RR 1495), provide the maximum value of power density, in dB(W/Hz), averaged over necessary bandwidth of the modulated carrier as per Annex 2 of Appendix 30B to the RR. Should administrations fail to provide this information the Bureau shall calculate it in accordance with the formula given in paragraph 3.3 below.

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3.2 For the existing systems recorded in the MIFR and for those notified under Article 13 of the RR between 29 August 1988 (end of WARC ORB-88) and 16 March 1990 (the date of entry into force of the Final acts of that conference) the Bureau shall calculate the missing parameter and enter it in the Appendix 30B List.

3.3 To derive the power density averaged over the necessary bandwidth of the modulated carrier for the frequency assignments of existing systems the following formula shall be applied:

$$P_d = P_t - 10\log_{10} B$$

where:

- P_d the value of power density averaged over the necessary bandwidth of the modulated carrier in dB(W/Hz),
- Pt the value of total peak envelope power in dBW,
- B the necessary bandwidth of the modulated carrier in Hz.

3.4 By analogy with columns 10 and 11 of Article 10 of Appendix 30B the e.i.r.p. density using power density averaged over the necessary bandwidth of the modulated carrier either provided by the administration or derived from the formula referred to in 3.3 above shall be applied to determine whether values such as the isotropic gain of the antenna in the direction of maximum radiation, the antenna pattern, the total peak envelope power and the necessary bandwidth of the modulated carrier of the frequency assignments to earth/satellite transmitting stations of existing systems notified by the administrations under Article 13 of the RR conform to the Appendix 30B List.

Annex 1

Parameters Used in Characterizing the FSS Plan

The antenna characteristics referred to in the footnote under the title of Annex 1 (Fast roll-off antenna pattern for the allotment Plan) are reproduced in the <u>Attachment</u> to the present Rules of Procedure.

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ATTACHMENT

to Rules concerning Appendix 30B

FAST ROLL-OFF ANTENNA PATTERN

1. An examination of Figure 2 of Annex 1 to Appendix 30B showed that the equations are valid only for a minimum beamwidth of 0.8 degrees, i.e. for the 13/10-11 GHz bands.

2. A corrected set of equations is given in paragraph 4 below. These equations are applicable to any fast roll-off antenna beam with a minimum beamlet beamwidth, B_{min}, given as an input parameter. Figure 2 was also modified accordingly.

3. When B_{min} is set at 0.8 degrees (for 13/10-11 GHz) the expression

$$12 \left| \frac{\frac{\phi}{\phi_0} - x}{\frac{B_{\min}}{\phi_0}} \right|^2 \text{ resolves to } 18.75 \phi_0^2 \left[\frac{\phi}{\phi_0} - x \right]^2$$

and 1.45 B_{min} becomes 1.16 as given in the Final Acts. At 6/4 GHz (with B_{min} set at 1.6°) these values become $4.69\varphi_0^2 \left[\frac{\varphi}{\varphi_0} - x\right]^2$ and 1.45 B_{min} becomes 2.32.

4.





Reference patterns for satellite antennas with fast roll-off in the main beam

Curve A: dB relative to main beam gain

- 12 $(\phi / \phi_0)^2$ for $0 \le (\phi / \phi_0) \le 0.5$

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$$-12\left[\frac{\frac{\varphi}{\varphi_{0}}-x}{\frac{B_{\min}}{\varphi_{0}}}\right]^{2} \text{ for } 0.5 < (\varphi/\varphi_{0}) \leq \left[\frac{1.45}{\varphi_{0}}B_{\min}+x\right]$$
$$-25.23 \qquad \text{ for } \left[\frac{1.45B_{\min}}{\varphi_{0}}+x\right] < (\varphi/\varphi_{0}) \leq 1.45$$
$$-(22+20\log(\varphi/\varphi_{0})) \qquad \text{ for } (\varphi/\varphi_{0}) > 1.45$$

after intersection with curve B: Curve B

Curve B: minus the on-axis gain (Curves A and B represent examples of four antennas having different values of φ_0 as labelled in Figure 2. The on-axis gains of these antennas are approximately 28.3, 34.3, 40.4 and 46.4 dBi, respectively).

where:

 φ - off-axis angle (degrees)

 ϕ_{0} - cross-sectional half-power beamwidth in the direction of interest (degrees)

$$x = 0.5 \left[1 - \frac{B_{\min}}{\varphi_0} \right]$$

B_{min} =
$$\begin{cases} 0.8^{\circ} \text{ for } 13/10\text{-}11 \text{ GHz} \\ 1.6^{\circ} \text{ for } 6/4 \text{ GHz} \end{cases}$$

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Rules concerning

RESOLUTION 1

Relating to notification of frequency assignments

1. Terrestrial services

In accordance with this Resolution, the Bureau should, in each case of notification or communication of information :

a) verify that the station is within a territory under the jurisdiction of the notifying administration, and

b) if that is not the case, verify that a special arrangement has been communicated to the Union.

Any action under a) above would lead the Bureau to delicate situations when considering the administration having jurisdiction on a given territory. The consideration of b) above may lead to impractical situations because administrations may agree on operating a given system without necessarily going through a formal agreement.

Considering that it was not the intention of the Members to see the Bureau involved in matters relating to disputed territories, the Board decided that Resolution No. 1 shall be applied as follows :

- Unless advised to the contrary by an administration not accepting such practice, any notification of a frequency assignment to a station located in a territory of an administration other than the notifying administration shall be assumed to be the subject of agreement between the two administrations concerned;

- When, following the publication of a frequency assignment in the Weekly Circular or its Special Sections, the administration of the territory on which the station is located objects to it, the notifying administration is requested to communicate any special arrangement to the objecting administration;

- If, following the replies received from the notifying administration, the Bureau is of the opinion that the sovereignty over the territory in question is a matter of dispute between the two administrations and it is informed that the station is actually operated by the notifying administration, the Bureau will record the assignment and will enter a symbol to indicate the situation. Otherwise the notice will be returned to notifying administration.

2. Space services

2.1 The notification of terrestrial international links contains the indication of the receiving station located in the territory of another administration assuming that there is an agreement about establishing the radio-link. In the case of space radiocommunications, the notification and registration procedures of Article 13 of a given frequency assignment are applied separately by the administration operating the transmitting part and by the administration using the receiving part.

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2.2 When the Bureau receives from an administration A a notice for a transmitting space station with a service area covering the territory of an administration B, it assumes that the latter has given its agreement and the transmission will be protected over its territory.

2.3 Similarly, when an administration notifies a transmitting or a receiving earth station the Bureau assumes that the proposed use will be made with the agreement of the administration responsible of the associated space station and the comments in paragraph 1 above apply.

2.4 As far as the request for exclusion of the territory of a country from the service area of a space station, see comments under the Rules of Procedure concerning RR1047 in Part A1.

3) Requirements for Planning Conferences

Radio Conferences in the past had to deal with :

- requirements by administrations for stations to be located on a territory under the jurisdiction of another administration; or

- reference points or test points of the requirement of an administration which were located on the territory under the jurisdiction of another administration.

In accordance with the approach described in paragraphs 1 and 2 above this information was published in Conference preparatory documents. Following this publication, when objections were received from administrations that considered themselves concerned, the objected test point or requirements were cancelled and the matter was reported to the Conference for decision.

Rules concerning

RESOLUTION 46

Introduction

WARC-92 adopted Resolution 46 on "the interim procedures of coordination and notification of frequency assignments of non-geostationary-satellite networks in certain space services and the other services to which the bands are allocated". The Resolution also contains provisions applicable to geostationary satellite networks and stations of terrestrial services. The present rule contains:

- the Board's understanding of the applicability of the Resolution to different services;
- the Board's understanding of the date of entry into force of those footnotes of Article 8 of the Radio Regulations which are associated to the application of Resolution 46;
- the structure and data of publications in special sections under Resolution 46; and
- the rules of application of Resolution 46 to those cases which were already in one of the phases of the coordination procedures defined by Article 11 of the Radio Regulations before the entry into force of the Resolution.

1. Application of Resolution 46 to different services/frequency bands

1.1 Resolution 46 does not specifically define the services to which the interim procedure described in the Annex to the Resolution applies. In the footnote to the title of the Resolution a reference is made to the frequency bands to which the procedure is applied indicating that the "Resolution shall be applied only to the frequency bands for which a specific reference is made to this Resolution in the footnote to the Table of the Frequency Allocations".

1.2 Administrations found some difficulties in applying the procedure contained in the Resolution with respect to certain categories of services. The question was whether, in addition to the space services specifically mentioned in the new footnotes (mobile-satellite and radiodetermination-satellite), the procedure is applicable or not to the other terrestrial and space services not specifically mentioned in the appropriate footnotes.

1.3 While recognizing the difficulties of harmonizing the text of the footnotes to Article 8 introduced by WARC-92 and the text of the Resolution 46 with respect to the services to which the Resolution is applicable, the Board concluded that the procedure is applicable to all the space and terrestrial services having allocations of equal rights with respect to the mobile-satellite and radiodetermination-satellite services mentioned in the specific footnotes to which Resolution 46 applies. The frequency bands are those to which a footnote reference is made to the Resolution in the Table of Frequency Allocations. <u>Table I</u> of the present document contains these frequency bands. In this Table there is an indication of those other space services (in addition to the mobile-satellite and raiodetermination-satellite services included in the new footnotes) to which the procedure of Resolution 46 should also apply. This application is subject to the same conditions as that of the mobile-satellite and
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radiodetermination-satellite services, i.e. the coordination of space stations of the other space services, with respect to terrestrial services, is required only if the power flux-density produced by the space stations on the Earth's surface exceeds the threshold values indicated in the specific footnotes.

1.4 The conclusion included in paragraph 1.3 above was based on the Board's understanding of the major regulatory principles governing the use of frequencies between services of equal rights and on the decisions of WARC-92¹ on the subject. The <u>Annex</u> of the present rule contains a detailed explanation of the Board's present conclusion.

2. <u>Frequency allocation matters</u>

2.1 The modified or new provisions of the Radio Regulations contained in the Final Acts of WARC-92 entered into force on 12 October 1993. The interim procedure included in Resolution 46, however, entered into force on 04.03.92. The Board studied the relationship between the date of implementation of the procedure and the date of entry into force of those allocations the associated footnote of which includes a reference to the procedure of Resolution 46. The Board's conclusions are as follows.

2.2 The Board understood that the intent of the Conference was that Resolution 46 would be applicable immediately to those bands in which there is a reference to this Resolution even though the footnotes to the Table of Frequency Allocations are not in force until later. This means that the earlier date of implementation of the procedure does not influence the date of entry into force of the related allocations. <u>Table I</u> of the present document contains an indication of the dates of entry into force of the allocations concerned with the application of Resolution 46. On the other hand, the Board concluded that irrespective of the date of entry into force of the allocations, the date of implementation of the procedures of the Resolution was 04.03.92.

2.3 The conformity of the frequency assignments, in a coordination request (Section II of Res. 46), with the Table of Frequency Allocations is considered through the examinations under paragraph 2.7.1 (with respect to the conformity with RR1503) and the Findings of the Bureau will reflect the status of the assignment *vis-à-vis* the allocation. The Board decided that the following categories of Regulatory Finding shall be formulated regarding the dates concerned:

a) the RR1503 Finding is favourable if, at the date of receipt by the Bureau of the coordination request (Section II of Res. 46), the allocation concerned is in force;

b) the RR1503 Finding is unfavourable if, at the date of receipt by the Bureau of the coordination request (Section II of Res. 46), the allocation concerned is not in force and will not come into force before the planned date of putting the assignment into service 2 ;

c) the RR1503 Finding is "qualified favourable" (which will become favourable at the date of coming into force of the allocation) if, at the date of receipt by the Bureau of the coordination request (Section II of Res. 46), the allocation concerned is not in force but will

¹ See Summary Records of the tenth meeting of Committee 5; Doc. 265/WARC-92, §§ 1.24, 1.25, 1.26.

² The date of receipt of the coordination request should not precede the date of putting into operation by more than 5 ½ years (see paragraphs 1.1, 1.8C of Res.46). This latter date can be extended by no more than 3 years (see RR1550).

come into force before the planned date of putting the assignment into service. This Finding will permit for the network in question to be taken into account for the application of paragraph 2.5.1 of Section II, Res. 46.

3. <u>Publication of Special Sections under Resolution 46</u>

3.1 For the different phases of the procedure described in the Annex to Resolution 46, the following types of special sections will be published:

- RS46/A/... (Section I, §.1.3, publication of advance information);

- RS46/B/... (Section I, §.1.6, report on the application of the advance publication procedure);

- RS46/C/... (Section II, §.2.7.2, publication of request for coordination);

- RS46/D/... (Section II, 2.9, report on the application of the coordination procedure).

3.2 In the case of simultaneous application of Article 11 and Resolution 46, and whenever this is possible, joint AR11/.. and RS46/..publications will be made.

3.3 It should be noted that, while for the geostationary networks this Resolution applies in addition to Article 11, for non-geostationary systems Resolution 46 replaces Article 11 (paragraph "resolves 2" of the Resolution refers). Consequently, in the bands concerned with the Resolution, non-geostationary space networks will no longer be published in AR11/A... special sections. These networks will be included solely in the RS46/ publication series.

3.4 It was noted from some of the submissions concerning non-geostationary satellite systems, received for publication under the procedures of Resolution 46, that, in some cases, the information intended for publication was too broad when describing the satellite orbits. In fact the data concerning inclination angles of the satellite orbit planes, perigees, apogees, periods and numbers of satellites in a network were given in a very approximate manner. The Board decided that the Bureau may accept AP4 notice forms, for AR11/A and RS46/A publication, containing a broader description of the satellite systems (being in the pre-design or design phase of the satellite project). In order, however, to permit the administrations to better assess the interference potential of satellites entering the coordination phase, the Bureau shall require AP3 notice forms with a very specific description of the satellite systems including unambiguous orbit information (number of satellites, degree of inclination of the orbit plane, apogee, perigee, period, etc.).

4. Application of the procedure for "existing" networks

As at the date of implementation of Resolution 46, some satellite systems using the bands associated with the provisions of Resolution 46, were already in the advance publication phase of Article 11, the Board decided in this respect that the already published AR11/A special sections (advance information published in the Article 11 procedure) should be considered valid for the application of Resolution 46. The missing orbital information for non-GSO systems additionally required by paragraph A.3 of Res. 46 should be published in the forthcoming RS46/C publication. A coordination request should be later accepted and published (RS46/C) on the basis of the above mentioned AR11/A publication.

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5. Notice forms to be used

In addition to the data included in Appendices 4 or 3, Resolution 46 requires the notification of three orbital parameter data-items. These elements have to be included in the publications mentioned in paragraph 3 above. When submitting the data for the purpose of Resolution 46, notice forms AP4 and AP3 will be used and the additional data elements will be provided in the accompanying letter.

6. See also comments under the Rules of Procedure concerning RR1527.

7. <u>Coordination between terrestrial stations and earth stations of non-geostationary</u> systems

7.1 According to the provisions of paragraphs 3.1 and 4.1 of the Annex of the Resolution, the coordination between terrestrial stations and earth stations of <u>non-geostationary</u> systems allocated with equal rights, is mandatory in the bands of Resolution 46 even below 1 GHz.

7.2 Paragraph 4.1 (Section IV of Annex to Resolution 46) stipulates that the coordination of the assignments of terrestrial stations with respect to earth stations of <u>non-geostationary</u> networks is requested only if the terrestrial station is situated with the coordination area of an earth station for which the coordination under Section III (paragraph 3.1) was already <u>agreed</u> under paragraph 3.5.1. Because of the difference with respect to the treatment of terrestrial station coordinations under Article 11 (when the coordination is required from the moment of beginning the earth station coordination procedure (RR1151)), it is essential to notify the Bureau of the coordination agreements obtained according to the provisions of paragraph 3.5.1. Without this information the Bureau will be unable to take into account the corresponding earth stations in the examination of terrestrial stations under the provisions of RR1353 of Article 12 (Sub-section IIE) referred to also under the notification procedure of Resolution 46 (Section V, paragraph 5.3).

8. pfd and e.i.r.p. limits for earth stations

Footnotes RR608A, RR608B and RR731E prescribes power limitations for earth stations (pfd or e.i.r.p.) to protect terrestrial services. The question may be raised whether conformity with these limitations should be examined within the regulatory examination of the satellite network (Finding under RR1503). The Board's opinion in this matter is that the main purpose of the examination of conformity with RR1503 at the coordination phase of the network under paragraph 2.7.1 of the Annex to Resolution 46 is (as it is for RR1060 coordination cases under Article 11) to analyse the frequency assignments used in the <u>network</u> (transmitting and receiving frequencies of the space station). The Board thus decided that in the examination under paragraph 2.7.1, when formulating the Finding with respect to RR1503, the Bureau does not take into account the question of conformity with the power limitations of the earth stations included in the above footnotes. In the Special Section RS46/C the Bureau will nevertheless include a Note drawing the attention of the administration to the situation. The conformity problem related to the earth station power limits will be given full consideration in the Article 13 examinations of the earth stations.

9. Conclusion of the Application of the Procedure of Resolution 46

The procedure of the Annex to Resolution 46 does not contain a methodology to identify administrations likely to be affected by the network under consideration. According to the procedure (paragraph 2.5 of Resolution 46) the Bureau identifies only overlapping

frequency assignments of other administrations without further technical examinations. The procedure of the Resolution does not consider the question of administrations not responding to the request for coordination published in an RS46/C special section. In these circumstances the Board decided that, for the application of the Article 13 examination procedures (referred to in Section V of Resolution 46), the coordination conformity Finding (paragraph 5.1.1 of Resolution 46 and RR1504 refer) will be based on the responses (remarks, objections, agreements) received from Administrations within the 6 month period following the publication of the coordination request (as stipulated by paragraph 2.8 of the Annex to Resolution 46). This rule is based on the similar approach of Article 14 where the identification of the affected administrations is similarly not defined.

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Frequency	PD	Space services in	Other space services	date of entry into
band	footnote	the Res.46	to which Res.46	force of the <u>new</u>
MHz		footnote *)	applies equally	allocations *)
137 - 137.025	599A	MOBILE-	SPACE OPERATION	12.10.93
137.175-		SATELLITE	METEO-SATELLITE	
137.825			SPACE RESEARCH	
137.025-	599A	mobile-satellite		12.10.93
137.175	1		· · ·	
137.825-138				
148-149.9	608A	MSS,		12.10.93
149.9-150.05	608B	LMSS		12.10.93 (secondary
	1			until 1.1.1997,
				RR609B)
312-315	641A	mss		12.10.93 (Art.14)
387-390	641A	mss		12.10.93 (Art.14)
400.15-401	647B	MSS	METEO-SATELLITE	12.10.93
	['		SPACE RESEARCH	
1492-1525	723C	MSS (R2, except		12.10.93
		USA)		
1525-1530	726D	MSS(or SUBSET)	SPACE OPERATION	12.10.93
1525-1530	726D	Imss(R1)	earth exploration	12.10.93
1530-1535	726D	MSS(or SUBSET)	SPACE OPERATION	existing allocation
1533-1535	726D	Imss	earth exploration	existing allocation
1535-1550	726D	MSS(or SUBSET)		existing allocation
1535-1544	726D	Imss		existing allocation
1550-1559	726D	MSS(or SUBSET)		existing allocation
1610-1626.5	731E	MSS,		12.10.93 (RDSS is
		RDSS (R2+733B)		existing allocation)
1610-1626.5	731E	rdss (R1, R3)		existing allocation
1613.8-1626.5	731F	mss		12.10.93
1626.5-1660	726D	MSS(or SUBSET)		existing allocation
1660-1660.5	726D	MSS(or SUBSET)		existing allocation
1626.5-1631.5	726D	Imss		existing allocation
1634.5-1645.5	!			Ĭ
1675-1700	735A	MSS (R2)		12.10.93
1700-1710	735A	MSS (R2)	SPACE RESEARCH	12.10.93
			(743)	

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TABLE I Applicability of Resolution 46 for Space Services

Frequency band MHz	RR footnote	Space services in the Res.46 footnote *)	Other space services to which Res.46 applies equally	date of entry into force of the <u>new</u> allocations *)
1970 - 1980	746B	MSS (R2)		01.01.2005,
1980 - 2010	746B	MSS		(1996 in USA, RR746C)
2160-2170	746B	MSS (R2)	•••	01.01.2005,
2170-2200	746B	MSS		(1996 in USA, RR746C)
2483.5-2500	753F	MSS		12.10.93 (RDSS is
		RDSS(R2+753C)		existing allocation)
2483.5-2500	753F	rdss (R1&3)		existing allocation
2500 -2520	760A 754	MSS	FIXED SATELLITE (R2&3), RDSS in RR754A	01.01.2005; (until 2005: Art.14: MSS (-AMSS))
2520 -2535	754	MSS (-AMSS)	BROADCASTING- SATELLITE, FIXED SATELLITE (R2&3)	12.10.93 (existing allocation in R3)
2655-2670	766	MSS (-AMSS)	BROADCASTING- SATELLITE, FIXED SATELLITE (R2&3)	12.10.93 (existing allocation in R3)
2670-2690	764A 766	MSS	FIXED SATELLITE (R2&3),	01.01.2005; (until 2005: Art.14: MSS (-AMSS))

TABLE I (contd.)

Note: MSS: MOBILE-SATELLITE SERVICE

mss: mobile-satellite service

LMSS: LAND MOBILE-SATEL;LITE SERVICE

Imss: land mobile-satellite service

RDSS: RADIODETERMINATION-SATELLITE SERVICE

rdss: radiodetermination-satellite service

AMSS: AERONAUTICAL MOBILE-SATELLITE SERVICE

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<u>ANNEX</u>

EXPLANATION OF THE BOARD'S CONSIDERATIONS

1. Resolution 46 does not specifically define the services to which the interim procedure described in the Annex to the Resolution applies. In the footnote to the title of the Resolution a reference is made to the frequency bands to which the procedure is applied indicating that the "Resolution shall be applied only to the frequency bands for which a specific reference is made to this Resolution in the footnote to the Table of Frequency Allocations". In the "resolves" part of the resolution three categories of services (i.e. terrestrial, geostationary and non-geostationary space services) are designated for the application of the procedure without further indication of the specific services. In the footnotes in Article 8 the mobile-satellite and radiodetermination-satellite services are specifically indicated. ³

2. One administration, in its analysis of the procedure of Resolution 46, found some difficulties of applicability for certain categories of services and requested the Board's opinion on this question. The dilemma of the administration was to know whether, in addition to the space services specifically mentioned in the new footnotes (mobile-satellite and radiodetermination-satellite), the procedure was applicable or not to the other terrestrial and space services not specifically mentioned in the appropriate footnotes.

3. In its considerations, the Board noted that, when Committee 5 of WARC-92 discussed the above problem (Doc. 265: Summary Record of the Ninth Meeting, paragraphs 1.24, 1.25 and 1.26), "the Chairman drew attention to the title of the Resolution and observed that as soon as an allocation was made, the procedure would apply to all other services in the relevant band."

The Board also noted that paragraph 2.5 of the Annex of Resolution 46 explicitly states 4. that the coordination procedure of a station should cover assignments of the same service or another service to which the band is allocated with equal rights or a higher category of allocation. When interpreting the applicability of the Resolution to the other space services which are not specifically mentioned in the new footnotes, the Board had to take into account the major regulatory principle of frequency usage by services of equal rights. In order to treat on equal footing all the services of co-equal allocation the coordination procedures should be equally applied. In fact, and supposing to the contrary, that the Resolution would not apply to those space services which are not specifically mentioned in the footnotes, an unresolvable conflict would arise between the otherwise equal allocation type services which are, on one hand, those non-mobile satellite services (non-geostationary) to which the Resolution would not apply (which, in application of RR1515, would have a direct access to the MIFR without previous coordination) and, on the other hand, those mobile-satellite services (GSO or non-GSO) to which the Resolution applies (undergoing the coordination procedure of Resolution 46 by which they should guarantee the protection of the networks recorded in the MIFR). Such a position would lead to a de facto downgrading of the coequal allocations made by WARC-92 to the mobile-satellite and radiodetermination-satellite services and to an uncontrollable interference situation between the above service categories. The Board considered that such a general downgrading was not the intention of the Conference, while some examples were found when downgrading of the mobile-satellite service was explicitly

³ The following footnotes include a reference to Resolution 46: 599A, 608A, 608B, 641A, 647B, 723C, 726D, 731E, 731F, 735A, 746B, 753F, 754, 760A, 764A, 766.

expressed by some specific footnotes (RR608A, RR608B, RR608C, RR609B, RR731E, RR733E, RR735A).

5. On the basis of the arguments expressed in paragraphs 3 and 4, the Board concluded that, in the specific frequency bands, designated by the footnotes making reference to Resolution 46, the procedures of the Resolution apply to all the space and terrestrial services having allocations of equal rights in the bands.

RULES OF PROCEDURE

PART A2

Regional Agreement for the European Broadcasting Area concerning the use of frequencies by the Broadcasting Service in the VHF and UHF Bands (Stockholm, 1961)

ARTICLE 2 : Execution of the Agreement

Paragraph 1

1. In the examination for conformity with the Regional Agreement, a notice is considered to be in conformity with the Agreement either when the notified characteristics are the same as in the Plan or, where they are different, when they do not increase the probability of interference in any azimuth above that resulting from the entry in the Plan.

2. An assignment in the Plan may contain, in addition to the maximum effective radiated power,

- an azimuth of maximum radiation

- in some cases, reduced e.r.p. in one or more azimuths or one or more sectors.

3. The notified radiation characteristics are considered to be in conformity with the Plan if the e.r.p. in any azimuth is equal to or lower than the ones derived from the Plan by combination of maximum e.r.p. and reduced e.r.p. in azimuths or sectors.

4. When an assignment, notified under Article 12 with an azimuth of maximum radiation different from the one in the Plan, satisfies the condition indicated in paragraph 3 above, its radiation characteristics are considered to be in conformity with the Plan.

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RULES OF PROCEDURE PART A3

Regional Agreement concerning the Use by the Broadcasting Service of Frequencies in the Medium Frequency Bands in Regions 1 and 3 and in the Low Frequency Bands in Region 1.

(Geneva, 1975)

ARTICLE 3 : Execution of the Agreement

1. Paragraph 2

According to "further resolves" of Resolution 500, the bringing into use of a broadcasting station in the LF Band (148.5-283.5 kHz) or the implementation of a modification to such a station is submitted to prior notification to the Radiocommunication Bureau two years in advance for publication. Consequently :

1.1 Where notice of an assignment is received at least two years after the date of receipt of information published in Special Section RES500, the notice shall be considered to be in conformity with Resolution No 500, and examined in accordance with the procedure of Article 12 of the Radio Regulations.

1.2 Where notice of an assignment is received less than two years after the date of receipt of information in accordance with "further resolves" of Resolution No 500, the notice is considered to be not in conformity with the said Resolution. In the examination of the notice under Article 12 of the Radio Regulations, the Finding is unfavourable with respect to RR1240, and the provisions of RR1269 to RR1273 apply. The unfavourable Finding with respect to RR1240 shall be reviewed at the end of the two-year period mentioned in "further resolves" of Resolution No 500, i.e. two years from the date of receipt of the information in the Bureau. An appropriate symbol to this effect shall be entered.

Where no information has been received by the Bureau under "further resolves" of Resolution No 500, the receipt of the notice under Article 12 of the Radio Regulations will also be considered to be the receipt of the information under Resolution No 500. This information will then be published in Special Section RES500.

ARTICLE 4 : Procedure for Modifications to the Plan

2. Paragraph 3.2.12

If the delay between publication in Part A and publication in Part B is too long, other modifications to the Plan are likely to be introduced in the meantime, which could not be taken into account at the time of examination.

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When an Administration, in application of paragraph 3.2.12 of the Agreement, communicates to the Radiocommunication Bureau the final characteristics of the assignment, after a period of 1 year from its publication in part A of a Special Section GE75, the modification shall follow again the full procedure of Article 4. The date at which the communication has been received by the Bureau will be considered as the new date of receipt of the proposed modification. A reminder is sent to the notifying administration two months before the end of the one-year period.

3. Paragraph 3.3.1.

In the application of paragraph. 3.3 of Art. 4, the agreement of another country is not necessary when the modification of the characteristics of an assignment would not increase the probability of interference at any point on the border of this country, within the coordination distance.

<u>ANNEX 1 : Plan for the Assignment of Frequencies to Broadcasting Stations in the</u> <u>Meduim Frequency Band (other than to Stations using Low-Power Channels) in</u> <u>Regions 1 and 3 and in the Low Frequency Bands in Region 1</u>

4. Explanation of symbols 24 and 33 used in the "Remarks" column .

The Board noted that remarks 24 and 33 apply only to assignments in the Plan, but concluded that their texts define relations between Israel on one hand and the countries listed in Remark 33 on the other hand and should therefore apply not only to modifications of the assignments of these countries appearing in the Plan, but also to any new assignments which may be subject to the modification procedure.

The Board therefore decided that any new assignment or any modification to an existing assignment in the Plan communicated to the Bureau by the administration of Israel or an administration of one of the following countries :

Algeria, Saudi Arabia, Egypt, United Arab Emirates, Jordan, Kuwait, Lebanon, Libya, Morocco, Qatar, Sudan, Tunisia, Yemen

shall be treated as follows :

- For an assignment of Israel, if the country (countries) objecting to the modification is (are) one (or more) of the countries listed above, and it is (they are) the only country (countries) whose objection prevents the completion of the procedure for modification, the comments are communicated to the administration of Israel and are not taken into account for updating the Plan. The same procedure applies to an assignment of one of the countries listed, if the only objecting administration is that of Israel.

- In such a case, when the notification is received, the provisions of Article 12 of the Radio Regulations are applied.

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ANNEX 2 : Technical Data used in the Preparation of the Plan and to be used in the Application of the Agreement

5. Paragraph 4.8.3

Paragraph 4.8.3. of Annex 2 of the Agreement specifies the limiting distance for a broadcasting station in a low-power channel. When the equivalent monopole radiated power of the station is 0.25 kW or less, two values are given : one for land and one for sea paths. In the case of a mixed path (partially land and partially sea), the limiting distance shall be calculated in the following way :

Limiting distance =
$$\frac{(V_l \times D_l) + (V_s \times D_s)}{D_l + D_s}$$

in which

 D_l : total path length over land (km)

- D_s : total path length over sea (km)
- V_l : limiting distance (km) path over land obtained from the Table in paragraph 4.8.3 of Annex 2 to the Agreement.
- V_s : limiting distance (km) path over sea obtained from the Table in paragraph 4.8.3 of Annex 2 to the Agreement.

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RULES OF PROCEDURE

PART A4

Regional Agreement for the Use of the Band 535 to 1605 kHz

in Region 2 by the Broadcasting Service

1. Article 3. para. 3.1

For the application of this agreement Region 2 countries are divided into four groups:

- Group A: Countries which signed the Final Acts of the Conference or acceded to the Regional Agreement.
- Group B: Countries which are not party to the Agreement but have communicated to the Board the undertaking to observe the provisions of Resolutions Nos. 2, 3 and 4. As of today, these countries are BOL, BRB, DMA, GTM, HND, HTI, LCA, SLV and SUR.
- Group C: Countries which are not party to the Agreement and have not undertaken to observe the provisions of Resolutions Nos. 2, 3 and 4 but have requested the Board to apply some provisions in connection with their assignments in the Plan. As of today, these countries are NONE.
- Group D: Countries which are not party to the Agreement. These countries are CUB and DOM.

2. Article 4 of the Agreement

2.1 Para 4.2.8/4.2.9

2.1.1. Paragraphs 4.2.8 and 4.2.9 of the Agreement specify the examination to be made as between a proposed modification and pending modifications. In accordance with paragraph 4.2.9, the examination to determine the effect of a proposed modification on pending modifications, and *vice versa*, is limited to modifications which have been pending for not more than 180 days counted from the date any such modification was received by the Bureau. As soon as this 180-day period is over, a pending modification. This means that a request for entry in the Plan of a proposed modification which has been pending for more than 180 days shall necessarily have to be examined for eventual objectionable interference to the assignments which may in the meantime have entered the Plan as a result of successful application of the Article 4 procedure.

2.1.2. The Board has therefore decided that when an administration, in application of paragraph 4.2.18 of the Agreement, communicates to the Bureau the final characteristics of the assignment, after 180 days of its publication in Part A of a Special Section RJ81, the modification shall follow again the full procedure of Article 4. The date at which the communication has been received by the Bureau will be considered the new date of receipt of the proposed modification.

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2.1.3. In counting 180 days from the date of publication in Part A of a Special Section RJ81, instead of from the date of receipt of the proposed modification by the Bureau, the intent is to eliminate the effect of the time lag before the proposed modification is published in accordance with paragraph 4.2.5 of the Agreement.

2.2 Para 4.6

2.2.1 In accordance with paragraph 4.6 and its sub-paragraphs, when an assignment which has been in the Plan for 4 years has not been brought into service, the Bureau will consult the administration concerned with regard to the advisability of cancellation of the assignment. para 2.3 describes the procedure followed by the Bureau in the application of the provisions of the Agreement relating to assignments recorded in the Plan but not brought into service.

2.2.2 The determination whether an assignment is in operation is made for each entry (day or night) by examining the Master Register and comparing the recorded assignments with the assignment in the Plan, with the following criteria :

- same frequency,
- same country code,
- same operating period and
- location within the tolerances of paragraph 4.2.14 of the Agreement.

If an entry corresponding to the above conditions is found in the Master Register, the entry in the Plan is considered to be in operation. In the other cases, the entry is considered to be not in operation.

2.3 Para 4.6.3

2.3.1 The four-year period and the allowed extension of one year, mentioned in paragraphs 4.6.1 and 4.6.2 of the Agreement, are counted from the date of entry of an assignment in the Plan. In the case of a change in a basic characteristic of a frequency assignment already in the Plan, the date of entry in the Plan is the date shown for the modified characteristics in Part B of the corresponding Special Section RJ81.

2.3.2 The request for reinstatement of the assignment, and deletion of the symbol mentioned in paragraph 4.6.3 of the Agreement, shall reach the Bureau not earlier than three months before the intended date of bringing it into service. This is based on the consideration that a request for the removal of the symbol is conditional upon bringing the assignment into service. An analogy with RR1228, therefore, is in order. Any request received earlier than this period shall be kept in abeyance until the above-stated time limit, and the administration concerned shall be informed accordingly.

2.3.3 When the three-month condition is satisfied, the assignment concerned shall be examined from the point of view of objectionable interference caused to stations entered in the Plan from the date of suspension of the assignment. The stations "entered in the Plan" comprise the new stations introduced in the Plan, as well as modifications in characteristics of the stations already existing in the Plan.

2.3.4 If the examination shows that no objectionable interference will be caused to the stations concerned, the suspended assignment shall be reinstated and the corresponding symbol in the Plan shall be removed. Appropriate publication shall be made in a Special Section RJ81.

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2.3.5 In view of the fact that the 2c date is known, the reinstated assignment shall be examined under Article 12 of the Radio Regulations for entry in the Master Register. The administration concerned shall, in accordance with the Radio Regulations, confirm the bringing of the assignment into use. In the absence of this confirmation, the symbol mentioned in paragraph 4.6.3 of the Agreement, shall be reinserted leading to the re-suspension of the assignment.

2.3.6 At the time of publication of the Special Section mentioned in paragraph 2.4 above, the administration shall be requested to notify the assignment in accordance with Article 12 of the Radio Regulations and shall be reminded of the action that will be taken in accordance with paragraph 2.3.5 above. The examination under Article 12 of the Radio Regulations (paragraph 2.5 above), however, shall be carried out without waiting for the receipt of the Article 12 notice.

2.3.7 When an administration makes known its intention to change the characteristics of a suspended assignment, other than under paragraph 4.6.4 of the Agreement, the request shall be understood as indicating the decision of the administration to abandon the suspended assignment. The proposed modification, therefore, shall be examined as a request for the introduction of a new assignment into the Plan. The corresponding suspended assignment shall be deleted from the Plan forthwith without waiting for the completion or result of the modification procedure.

2.3.8 Paragraph 4.6.3 of the Agreement states that the assignment with the symbol (i.e. the suspended assignment) shall be disregarded in the future modifications to the Plan. As a suspended assignment can be reinstated under paragraph 4.6.4 of the Agreement, it cannot be considered as having been removed from the Plan. Therefore, the suspended assignments shall not be disregarded in the transfer of assignments from List B to List A.

2.3.9 Section 4.6 of the Agreement does not prescribe any time limit for the maintenance of the suspended assignments in the Plan. However, the indefinite retention in the Plan of the suspended assignments can lead to complication in the establishment of the reference situation against which an interference may be judged objectionable, as well as in the resolution of problems under Resolution No. 2 of the Conference. The Board has decided that any suspended assignment for which reinstatement, under paragraph 4.6.4 of the Agreement, is not initiated within one year of suspension shall be removed from the Plan.

3. **Resolution No 2 of the Conference**

3.1. The transfer of an assignment from List B to List A is dependent upon the resolution of incompatibilities which had resulted, initially, in its entry in List B. Resolution No. 2 of the Regional Administrative MF Broadcasting Conference (Region 2), Rio de Janeiro, 1981, prescribes the procedure for the resolution of these incompatibilities. Under this procedure, the administrations with assignments in List B shall continue negotiations and find solutions to unresolved incompatibilities as soon as possible.

3.2. It is possible that when the procedure for modifications to the Plan, Article 4 of the Regional Agreement, has been successfully applied, the characteristics of a List B assignment may be so modified as to justify its transfer to List A. There is, therefore, a need for a procedure that should be applied to any List B assignment whose characteristics have been changed under Article 4 of the Regional Agreement to determine its eligibility for transfer to List A. The Board has established the following procedure for this purpose. This procedure is separate from, and in addition to, that of Resolution No. 2.

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3.3. In applying the Article 4 procedure to the proposed change in the characteristics of a List B assignment, no aspects relating to its possible transfer to List A shall be considered. Its possible transfer from List B to List A will be considered as soon as the Article 4 procedure is completed.

3.4. Immediately following the completion of the Article 4 procedure, each assignment (with changed characteristics) shall be examined to assess the effect of changed characteristics with a view to possibly transferring the assignments from List B to List A. This examination may show an increase or a decrease in its nuisance field in relation to the other List B assignment(s) concerned.

INCREASE IN THE NUISANCE FIELD

3.5. The Part A of the Special Section RJ81 in which the above change was published would have also contained the names of administrations whose assignments in List B were adversely affected. The fact that the assignment with changed characteristics has been able to enter the Plan indicates that agreement has been reached with, among others, the administrations responsible for the affected List B assignments on the interference caused to them. If the modified assignment was, initially, in List B only because its interference caused being unacceptable, it shall now be transferred to List A if the agreement for all the List B assignments concerned has been obtained through the Article 4 procedure. If, in addition to the unaccepted interference caused, there was also unaccepted interference received, the administration concerned shall be consulted before the assignment is transferred to List A.

DECREASE IN THE NUISANCE FIELD

3.6. The modified assignment shall be examined to determine the improvement to all the List B assignments to which it caused unaccepted interference in the Plan of 1 January 1982. If this examination shows that, with the now modified characteristics, the List B assignments would not have been considered affected on 1 January 1982, the modified assignment shall be transferred to List A after consultation concerning received interference if necessary.

3.7. Where the above examination leads to an unfavourable conclusion, the contribution of interference by the modified assignment shall be examined in the light of the general interference situation of the stations in the Plan of the country with affected List B assignments. The result of this review will determine whether the administrations concerned should be advised by the Bureau to consider accepting the level of incompatibility.

OTHER LIST B ASSIGNMENTS

3.8. When a List B assignment with changed characteristics is transferred to List A, the situation of other related List B assignments shall be examined for the Form B status and the administrations concerned shall be consulted where further transfers appear to be feasible.

3.9. For the purpose of transfers from List B to List A, the reference situation for examining the transfer will be as on 1 January 1982 after the correction procedure in Annex 1 to Resolution No. 2 has been applied. Any interfering field which was earlier masked by a higher interference shall not be taken into account in considering the possible transfer from List B to List A.

PUBLICATION

3.10. All transfers to List A, under the above procedure, shall be published in the Special Section RJ81.

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RULES OF PROCEDURE PART A5

Regional Agreement Relating to the Use of the Band 87.5-108 MHz for FM Sound Broadcasting (Region 1 and Part of Region 3) (Geneva, 1984)

<u>RESOLUTION No. 3 : Procedure relating to the fixed and mobile except aeronautical</u> <u>mobile (R) services in the band 104-108 MHz</u>

When notices to FM sound broadcasting stations in the band 104-108 MHz are received from countries party to the GE84 Agreement, the conformity of the assignment with the provisions of Resolution No. 3 of RARC 1984 is examined as follows :

1. Determine if the services of any of the countries mentioned in RR587, 588 or 589 are likely to be affected if a station in the FM sound broadcasting service is brought into service. For this purpose, the criteria of Chapters 4, 5 and 6 of Annex 4 shall be used.

2. No agreement under Resolution No 3 is required if none of the countries mentioned in RR587, 588 or 589 is shown as affected by the application of (1) above. In this case, the Resolution is not relevant and no corresponding finding is required.

3. If the application of criteria mentioned in (1) above indicates that the services of one or more countries mentioned in RR587, 588 or 589 could be affected, and if the Bureau has not been informed of the agreement required in Resolution No. 3, the following steps are taken :

- The Master Register is examined for assignments of a country mentioned in RR587, 588 or 589, whose services are shown as likely to be affected as a result of application of the procedure of (1) above.
- In the absence of any assignments in the Master Register, no agreement under Resolution No. 3 is required.
- The assignments in the Master Register, where the Bureau has not been informed of an agreement between the concerned administrations, shall be examined by applying the criteria mentioned in 4.3.7.4 and 4.3.7.6 of the Agreement as well as those mentioned in Chapter 6 of Annex 4 to the Agreement. An unfavourable finding in this case, will result in an unfavourable finding with respect to Resolution No. 3.

4. As Resolution No. 3 is mentioned in the main body of the Agreement, and taking into account RR584, an unfavourable finding with respect to Resolution No. 3 will result in an unfavourable finding with respect to RR1240.

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RULES OF PROCEDURE PART A6

REGIONAL AGREEMENT (GENEVA, 1989) RELATING TO THE PLANNING OF VHF/UHF TELEVISION BROADCASTING IN THE AFRICAN BROADCASTING AREA AND NEIGHBOURING COUNTRIES

Examination of notices related to the non-planned services in the bands governed by the Regional Agreement GE89

1. Sections 5.2 and 5.3 of Article 5 of the GE89 Agreement specify the procedure to be followed for the examination of the notices related to the non-planned primary and permitted services in the bands governed by the Agreement. The bands and the services concerned are summarized in the Table below.

Freq.band	Services and countries within the planning area	Provisions	Notes
(MHz)		·	
47 - 68	FX: AFS, AGL, BOT, BDI, CME, COG, IRN, LSO, MDG,	RR555	
	MLI, MOZ, MWI, NMB, RRW, SOM, SDN, SWZ, TCD,	RR561	
	TZA, YEM, ZAI, ZMB, ZWE		
	MO(-aer): AFS, AGL, BOT, BDI, CME, COG, LSO,	RR555	
	MDG, MLI, MOZ, MWI, NMB, RRW, SOM, SDN, SWZ,	RR561	
	TCD, TZA, YEM, ZAI, ZMB, ZWE		
	MO: IRN (47-50 MHz, 54-68 MHz)		
174 - 223	FX: IRN		
	MO: IRN		
223 - 230	FX: IRN		
	MO: IRN		
	AL: ARS, BHR, ISR, IRN, JOR, OMA, QAT, SYR, UAE	RR632	
230 - 238	FX: from all parties to the Agreement		
	MO: from all parties to the Agreement		Note 1
	AL: ARS, BHR, ISR, IRN, JOR, OMA, QAT, SYR, UAE	RR632	
246 - 254	FX: from all parties to the Agreement		
	MO:from all parties to the Agreement		Note 1
470 - 790	FX: IRN		
	MO: IRN		
	AL: IRN, KWT(590-598 MHz, until 1.1.1995)	RR685	
790 - 862	FX: from all parties to the Agreement		
	MO: IRN		

Note 1: In the frequency bands 230 - 238 MHz and 246 - 254 MHz, in the examinations under Section 5.2 of the Agreement, account is taken of only those frequency assignments in the broadcasting service which are entered into Plan following a

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successful application of Article 14 procedure, as required by Resolution No. 1(GE89) and RR635.

2. The frequency assignment notices related to the aeronautical radionavigation service of Nigeria, whose allocation is governed by RR638, shall not be subject to the examinations referred to in paragraph 5.2 of Article 5 of the Agreement, since these notices are subject to the application of the Article 14 procedure.

3. The frequency assignment notices related to services and countries referred to in RR554, RR621, RR622, RR628 and RR697 shall not be subject to the examinations requested by Section 5.2 of Article 5 of the Agreement, since their allocation is subject to not causing harmful interference to, or claiming protection from, the broadcasting service. Consequently they will be recorded in the MIFR under the conditions of RR435 vis-à-vis the broadcasting service (symbol R in column 13B2).

RULES OF PROCEDURE PART A7

CONCERNING RESOLUTION NO. 1 OF THE RJ-88 CONFERENCE AND ARTICLE 6 OF THE RJ-88 AGREEMENT

1. Application of Resolution No. 1 (RJ88)

1.1 Under the terms of this Resolution, the IFRB was requested to assess the interference caused to the allotments appearing in the broadcasting Plan by assignments to the fixed and mobile services in the band 1 625 - 1 705 kHz notified before 1 July 1990, the date of entry into force of the Final Acts of the Rio-88 Conference (see paragraph 2 of *"resolves to request the IFRB"*). The Resolution also requested the IFRB to review the finding of any assignment, recorded in the Master Register, of the fixed or mobile service which is incompatible with the broadcasting Plan and to enter a remark in an appropriate column of the Master Register to indicate that this finding will be reviewed again when a broadcasting station of the allotment which is at the origin of the unfavourable finding is brought into use (see paragraph 3 of "*resolves to request the IFRB*").

1.2 In terms of this Resolution and when an assignment of the fixed or mobile service is incompatible and consequently the finding is unfavourable vis-à-vis an allotment in the broadcasting Plan, the procedure of No. 1255 of the Radio Regulations is to be applied to the assignment concerned of the fixed or mobile service with the proviso that the two-month period specified in that procedure shall start from the date of bringing into use of the station of the broadcasting service in conformity with the allotment concerned (see paragraph 4 of "resolves to request the IFRB").

1.3 The Board noted the provisions of RR480 in which it is stated that the relationship between the broadcasting, fixed and mobile services in the band 1 625 - 1 705 kHz in Region 2 is that indicated in RR419. RR480 also refers to the examination of frequency assignments to stations of the fixed and mobile services in the band 1 625 - 1 705 kHz under No. 1241 requiring to take account of the allotments appearing in the Plan (RJ88).

The Board also noted that the frequency assignments to stations of the fixed and 1.4 mobile services in Region 2, at the time of the entry into force of the RJ88 Agreement, were recorded in the Master Register with a favourable finding and with a date in Column 2A, if they were otherwise in conformity with the provisions of the Radio Regulations. Such a recording defines the status of these assignments not only vis-à-vis stations of the same or other radiocommunications services in Region 2 but also vis-à-vis stations of all services in other Regions. This means that the literal application of the procedure of RR1255 to these assignments in accordance with Resolution No. 1 (RJ88) would affect the status of these assignments vis-à-vis assignments in other Regions. In accordance with the provisions of RR377 "Special agreements concluded in accordance with the provisions of Nos. 374 to 376 shall not be in conflict with any of the provisions of these Regulations.". However, since RR480 refers to examination of the assignments to stations of fixed and mobile services in Region 2 under the provisions of RR1241, in which the Bureau is required to take into account the allotments in the Plan, an unfavourable finding resulting from such examination would entail application of RR1255 procedure and the resulting finding can modify the status of the assignment vis-à-vis those of other Regions recorded in the Master Register.

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1.5 The Board, therefore, decided to use the following approach in application of Resolution No. 1 (RJ88) :

- 1.5.1 in application of paragraph 3 of the Resolution, an incompatibility of an assignment of the fixed or mobile service vis-à-vis an allotment in the Plan was indicated by symbol H in Column 13B2, and a symbol X/RS1(RJ88)/---- (symbol of the country whose allotment is likely to be affected) in Column 11;
- 1.5.2 when an assignment corresponding to the allotment concerned in the broadcasting Plan is brought into use, the procedure of RR1255 will be applied only in its intent in the sense that during the period of two months mentioned in paragraph 4(b) of Resolution No. 1 (RJ88), if the Bureau receives information that harmful interference has occurred, the Bureau shall review the finding of the assignment to the fixed or mobile station. In so doing, it shall replace the earlier finding indicated in 1.5.1 above by inserting symbol N in Column 13A2, symbol Y in Column 13B2 and symbol X/RS1(RJ88) in Column 13B1; the symbols mentioned in 1.5.1 above will be deleted and the date will be transferred from Column 2A to Column 2B;
- 1.5.3 however, if the Bureau does not receive information that harmful interference has occurred during the two-month period, the finding of the assignment to the fixed or mobile station mentioned in 1.5.1 above shall be retained.

2. Application of Article 6 of the Rio-88 Agreement

2.1 Application of paragraphs 1 to 6 of Article 6 do not present any problem and they shall be applied as indicated in Article 6.

2.2 If the administration resubmits the notice in accordance with paragraph 7 of Article 6, the Bureau shall examine the assignment under RR1241 vis-à-vis assignments to stations in Regions 1 and 3.

2.3 The Bureau shall review the recording when it is advised that a broadcasting station is brought into use in the area of the allotment at the origin of the unfavourable finding or at an interval of two years whichever is earlier.

2.4 If no interference to the broadcasting station is reported during the two-month period the provisional recording shall be maintained without change.

2.5 If interference to the broadcasting station is reported during the two-month period the provisional recording shall be cancelled and the notice shall be returned to the administration.

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RULES OF PROCEDURE

PART A8

REGIONAL AGREEMENT CONCERNING THE MF MARITIME MOBILE AND AERONAUTICAL RADIONAVIGATION SERVICES (REGION 1), GENEVA, 1985

1. <u>Status of the Administration with respect to the Agreement</u>

1.1 In the transitional period between the establishment of the Agreement (13 March 1985) and its entry into force (1 April 1992), and after consultation with the administrations of Region 1 countries, the Board introduced and used the concept of "parties to the Agreement" for the purposes of the application of the procedures and associated technical criteria set up in Articles 4, 5 and 6 of the GE85-MM-R1 Agreement for the modifications to the Plan and for notifications, examination and recording of frequency assignment notices to stations in the planned (maritime mobile and aeronautical radionavigation) or non-planned (fixed and land mobile) services. "Parties to the GE85-MM-R1 Agreement" were considered to be all administrations having territories in the planning area (i.e. in Region 1) that were not opposed to this concept. Non-parties to the Agreement were those administrations that declared formally that they did not wish to be considered "parties to the Agreement", as well as non-participating administrations without Plan assignments that had not declared formally that they intended to become "parties to the Agreement".

1.2 After the entry into force of the Agreement, and pending further consultation with the administrations concerned, the Board decided to maintain this concept. Therefore, the Bureau will consider parties to the GE85-MM-R1 Agreement all administrations having territories in Region 1, with the exception of the following administrations: AND, BFA, CAF, GNB, LSO, LUX, MLI, MNG, MWI, NGR, RRW, SWZ, TZA, UGA, ZMB and ZWE, which are considered non-parties to the Agreement, until such a time as they accede formally to the Agreement.

2. <u>Treatment of the notices intended for modifications to the Plans governed by</u> <u>the Regional Agreement MM-R1, Geneva, 1985</u>

2.1 Modifications to the Plans shall be considered receivable from all administrations which are considered parties to the Agreement (see paragraph 1.2 above).

2.2. The treatment of notices intended for modifications to the frequency assignment Plans shall follow the procedures contained in Article 4 of the Agreement.

2.3. The technical principles to be used in the procedure for the modifications of the frequency assignment Plans shall be those contained in Annexes 3, 4 and 5 to the MM-R1 Agreement. The computer program used as that used at RARC-MM-R1 shall be used for this purpose, suitably modified to take account of the digitized coastlines.

2.4 The following items will be checked in order to determine conformity with the technical principles of the Agreement:

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- 2.4.1 conformity of the assigned frequency (frequency pair) with the appropriate channelling arrangement (checks shall be performed with respect to Tables 1 to 4 of Annex 3 to the MM-R1 Agreement);
- 2.4.2 conformity of the notified class of emission with the permissible class of emission. The following classes of emission, and the following bandwidths are considered receivable:
 - for AL stations : 100HA1A, 850HA2A and 2K14A2A; however, the limitations set forth in Table 4 of Annex 3 to the Agreement, for some channels, shall also be taken into account;
 - for FC/MS stations in the bands around 500 kHz: A1A and F1B, and the necessary bandwidths up to 500 Hz;

The Board considered in this respect that 500 Hz bandwidth represents, for A1A emissions, a speed of 100 words per minute, more than adequate for manual telegraphy. For F1B emissions, this limit covers the standard 304 Hz bandwidth (ITU-R Recommendations 476-3 and 493-2, Appendix 6 of the Radio Regulations).

- for FC/MS stations in the bands around 2 MHz: F1B and J3E; the necessary bandwidth for the F1B emissions shall not exceed 500 Hz, and the necessary bandwidth for J3E emission shall not exceed 2 800 Hz (RR4325 refers for this later case);
- 2.4.3 conformity of the notified service range with the established limits at the Conference;

The administrations shall notify only the required service range, which serves as a basis for determining the power value necessary to ensure the minimum field strength at the edge of the service area. The following service range limits, for coast stations, shall not be exceeded:

- 500 km, for the band 415 526.5 kHz
- 400 km, for the band 1 606.5 2 160 kHz.

The Bureau will use the same values as those established by RARC-MM-R1 on the basis of planning considerations (see document 63 of RARC-MM-R1). Nevertheless, these values represent, at the same time, technical limitations for use of the ground-wave mode of propagation, since at the above distances the ground-wave component is just 3 dB higher than the sky-wave component.

2.5. For the FC stations in the bands around 500 kHz, only one A1A assignment per coast station shall be accepted; however, the administration concerned shall be informed that it may use A1A emissions on F1B assignments and vice versa.

The Bureau will use the same approach as that used in the establishment of the Plan at RARC-MM-R1, taking account of the note on page 14 of the Final Acts of RARC-

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MM-R1, which stipulates that "in the frequency bands between 415 and 526.5 kHz, A1A emissions may be used on F1B assignments and vice versa".

3. <u>Treatment of the RR1214/RR1219 notices in the bands governed by the</u> <u>Regional Agreement MM-R1, Geneva, 1985 (for administrations considered</u> <u>parties to the Agreement)</u>

3.1 <u>Treatment of the RR1214/RR1219 notices for assignments to stations in the planned</u> services in the bands covered by frequency assignment plans

3.1.1 The treatment of the RR1214/RR1219 notices related to assignments to stations of the planned services in the frequency bands covered by the frequency assignment plans (namely, 415 - 435 kHz, 435 - 453 kHz, 460.5 - 495 kHz, 505 - 526.5 kHz, 1 606.5 - 1 621 kHz, 1 635 - 1 800 kHz and 2 060 - 2 156 kHz), and notified by administrations considered parties to the Agreement, shall follow the procedure contained in Article 5 of the Agreement. As the Plans were established on the basis of ground wave only, the technical examination with respect to notices of the administrations considered parties to the Agreement will be made using the day-time results.

3.1.2 The regulatory examination of these notices shall consist in verifying their conformity with the Table of frequency allocations and with the provisions of Nos. 4188A, 4325, 4335, 4338-4340 and 4357 of the Radio Regulations. The provisions of Nos. 471, 3018 and Resolution 210(Mob-87) shall be taken also into account.

3.1.3 The examination for conformity with the Plan shall be based on a check of all the data contained in the appropriate frequency assignment Plan and of the following additional items:

3.1.3.1 Since the FC/MS Plans do not contain any value concerning the necessary bandwidths, the following values will be used when checking the conformity of the notified assignments with the Plans:

- for A1A and F1B: 500 Hz

The Board considered in this respect that 500 Hz bandwidth represents, for A1A emissions, a speed of 100 words per minute, more than adequate for manual telegraphy. For F1B emissions, this limit covers the standard 304 Hz bandwidth (ITU-R Recommendations 476-3 and 493-2, Appendix 6 of the Radio Regulations).

- for J3E : 2800 Hz, in accordance with RR4325

3.1.3.2 The notified bandwidth for the ALRC assignments shall be checked with respect to the values contained in the Plan.

3.1.4 In accordance with Resolution No. 3(MM), the Board carried out a compatibility analysis in the bands 1 606.5 - 1 625 kHz, 1 635 - 1 800 kHz and 2 045 - 2 160 kHz, taking account of the non-planned services (see IFRB Circular-letters Nos. 762 and 890 of 20 October 1988 and 19 December 1991, respectively). The results of the compatibility analysis shall be taken into account.

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3.1.5 Frequency assignment notices referred to in this section shall also be examined with respect to frequency assignments recorded in the MIFR on behalf of non-parties to the Agreement, using the Technical Standards contained in Section B4 of the Rules of Procedure.

3.2 <u>Treatment of the RR1214/RR1219 notices for assignments to stations of the planned</u> services in the bands covered by frequency allotment plans

3.2.1 The treatment of the RR1214/RR1219 notices related to assignments to stations of the planned services in the frequency bands covered by the frequency allotment Plans (namely, 456 - 457 kHz, 459 - 460 kHz, 1 621 - 1 625 kHz and 2 156 - 2 160 kHz), notified by the administrations considered parties to the agreement, shall be subject to the following examination:

- examination of conformity with the Allotment Plan, as contained in Annex 1 to Resolution No. 5(MM), and taking into account the checklist as contained in paragraph 3.2.2 of this Rule;
- examination with respect to the existing MIFR assignments.

3.2.2 The examination of the conformity of an assignment with the frequency allotment Plans shall be made using the following criteria:

- the assigned frequency pairs shall coincide with those of the allotment Plans contained in Annexes to Resolution No. 5(MM);
- the geographical coordinates of the transmitting/receiving station shall be situated within the respective country;
- the notified service range shall not exceed the limits of 500 km for the band 435
 526.5 kHz, and of 400 km for the band 1 606.5-2 160 kHz (these limits were used in the establishment of the frequency assignment Plans);
- the notified nature of service shall be CP;
- the notified class of emission shall be F1B or J2B, and the notified bandwidth shall not exceed 304 Hz.

3.3 <u>Treatment of the RR1214/RR1219 notices for assignments to stations in the non-planned services</u>

The treatment of the RR1214/RR1219 notices related to assignments of the nonplanned services, from administrations considered parties to the Agreement, shall follow the procedure contained in Article 6 of the Agreement. In the analysis of the results of the technical examination with respect to notices of the administrations considered parties to the Agreement, only the day-time results will be taken into account (sky-wave shall be disregarded).

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RULES OF PROCEDURE

PART A9

REGIONAL AGREEMENT CONCERNING THE PLANNING OF THE MARITIME RADIONAVIGATION SERVICE (RADIOBEACONS) IN THE EUROPEAN MARITIME AREA, GENEVA, 1985 (GE85-EMA)

1. <u>Status of the Administrations with respect to the Agreement</u>

1.1 In the transitional period between the establishment of the Agreement (13 March 1985) and its entry into force (1 April 1992), and after consultation of the administrations of the countries situated in the European Maritime Area, the Board introduced and used the concept of "parties to the Agreement" for the purposes of the application of the procedures and associated technical criteria set up in Articles 4, 5 and 6 of the GE85-EMA Agreement for the modifications to the Plan and for notifications, examination and recording of frequency assignment notices to stations in the planned (maritime radionavigation) or non-planned (aeronautical radionavigation) services. "Parties to the GE85-EMA Agreement" were considered to be all administrations having territories in the planning area (i.e. in the European Maritime Area) that were not opposed to this concept. Non-parties to the Agreement", as well as non-participating administrations without Plan assignments that had not declared formally that they intended to become "parties to the Agreement".

1.2 After the entry into force of the Agreement, and pending further consultation with the administrations concerned, the Board decided to maintain this concept. Therefore, the Bureau will consider parties to the GE85-EMA Agreement all administrations having territories in the European Maritime Area, with the exception of the following administrations: AND, BIH, BLR, CVA, IRQ, ISL, LIE, LUX, MDA, MKD, SMR, SUI and SVN, which are considered non-parties to the Agreement, until such a time as they accede formally to the Agreement.

2. <u>Application of RR466 and of Resolution No. 602(Rev.Mob-87) in the context of</u> <u>the Regional Agreement GE85-EMA</u>

2.1 Pursuant to the decisions of the Regional Administrative Conference for the Planning of the Maritime Radionavigation Service (Radiobeacons) in the European Maritime Area, Geneva, 1985 (referred to hereafter as RARC GE85-EMA, Geneva, 1985), and in order to enable the treatment of the notices submitted under Resolution No. 1 of the Conference, the Board prepared the provisional Rule of procedure No. H42 concerning the application, by the

administrations parties to the Agreement and by the IFRB, of the transitional procedure set forth in Annex to Resolution No. 1(EMA), in the period preceding the entry into force of the Agreement (1 April 1992).

2.2 After the publication of Rule H42 (see IFRB Circular-letter No. 828 of 5 July 1990) several administrations indicated that they intend to use the maritime radiobeacons in this band for transmission of supplementary navigational data to ships, including differential corrections of other radionavigation systems (e.g. Omega, GPS, Loran-C).

2.3 The Board reviewed the matter having particularly in mind the provisions of No. 466 of the Radio Regulations, Resolution No. 602(Mob-87), and *Note 2* to Annex 1 of the Regional Agreement. Rule No. H42(Rev.) was published with the IFRB Circular-letter No. 913 of 30 September 1992 on this subject. The proposed approach was not opposed and the Board decided to maintain it (see also Part A1 of the Rules of Procedure concerning the application of RR466).

3. <u>Treatment of the RR1214 notifications related to radiobeacon stations in the</u> <u>Maritime Radionavigation Service from Administrations considered Party to</u> <u>the Agreement (Article 5 of the Agreement)</u>

The RR1214 notices related to assignments to radiobeacon stations of the maritime radionavigation service in the frequency band 283.5 - 315 kHz, situated within the European Maritime Area, and notified by administrations considered party to the Agreement, shall be subject to the following examinations:

3.1 Regulatory examination (RR1240 and related provisions)

The regulatory examination of these notices shall consist in verifying their conformity with the Table of frequency allocations, including the check whether the notice is related to a radiobeacon station.

3.2 Examination of conformity with the Agreement (RR1245)

The examination for conformity with the Plan shall be based on a check of all the data contained in the Plan.

As *Note 2* in Annex 1 to the GE85-EMA Agreement stipulates that "the technical parameters also provide for composite emission using both A1A and F1B emissions", the frequency assignment will be considered as being in conformity with the Agreement as long as these two classes of emission (e.g. A1A and F1B) are notified and the notified bandwidth does not exceed 500 Hz. Moreover, and in view of the results of the studies in the ITU-R study groups in response to Resolution No. 3(EMA), the Board decided that the class of emission G1D (i.e. class of emission corresponding to MSK techniques) would be also receivable.

3.3 Examination from the standpoint of probability of harmful interference (RR1241)

Frequency assignment notices to maritime radionavigation stations (radiobeacons), whose characteristics are in conformity with the Plan, shall be examined from the standpoint of the probability of harmful interference they may cause to frequency assignments already recorded in the MIFR on behalf of non-parties to the Agreement, as well as with respect to the MIFR assignments to stations outside the EMA which are recorded on behalf of parties to the Agreement. In these examinations the Technical Standards contained in Section B4 of the Rules of procedure (ground wave and sky wave) will be applied.

4. <u>Treatment of the notices intended for modification to the Plan governed by the</u> <u>Regional Agreement GE85-EMA (Article 4 of the Agreement)</u>

4.1 Modifications to the Plan shall be considered receivable from those administrations which are considered parties to the Agreement (see paragraph 1.2 above), provided that the subject stations are situated within the European Maritime Area.

4.2 The treatment of notices intended for modifications to the Plan shall follow the following procedures:

4.2.1 The technical principles to be used in the procedure for the modifications of the Plan shall be those contained in Annexes 2 and 3 to the GE85-EMA Agreement. The computer program used at RARC-GE85-EMA shall be used for this purpose, suitably modified to take account of the digitized coastlines;

4.2.2 The following items shall be checked with a view of determining the conformity with the technical principles of the Agreement:

- conformity of the assigned frequency with the channelling arrangement contained in Annex 2 to the GE85-EMA Agreement; however, the Bureau shall not apply the provisions of Note 1 of that Annex;

- conformity of the notified class of emission and bandwidth with the permissible values (A1A, F1B, G1D; up to and including 500 Hz);

- conformity of the notified service range with the limits established at the Conference.

The administrations shall notify only the required service range, which serves as a basis for determining the power value necessary to ensure the minimum field strength at the edge of the service area. The administration which notifies a service range in excess of 280 km shall be requested to reduce it to a value below 280 km,

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since the propagation criteria, used in the preparation of the Plan, disregard the skywave, which, however, occurs at night and may cause bearing errors at long ranges (see Note 1 in Annex 1 to the Final Acts).

4.3 In conducting the examinations for identifying the administrations whose assignments may be affected by a modification to the Plan, the following criteria shall be used:

4.3.1 the relevant Technical Standards contained in Section B4 of the Rules of procedure with respect to :

- the frequency assignments recorded in the MIFR on behalf of non-parties to the Agreement;

- the frequency assignments to stations in the aeronautical radionavigation service, recorded in the MIFR on behalf of parties to the Agreement;

- the frequency assignments to stations in the maritime radionavigation services, which are situated outside the European Maritime Area, recorded in the MIFR on behalf of parties to the Agreement;

4.3.2 the criteria contained in Annex 3 to the Agreement with respect to the assignments which are in accordance with the Agreement, including those proposed modifications to the Plan for which the Article 4 procedure is in progress.

<u>Note 1</u>: The Technical Standards contained in Section B4 of the Rules of procedure and the criteria of Annex 3 to the Agreement differ in the following:

- The Technical Standards contained in Section B4 of the Rules of procedure take account of the sky-wave, while the Annex 3 criteria disregard the sky-wave;

- paragraph 1.4 of Annex 3 and Technical Standard A-3 contained in the Rules of procedure contain different values concerning the discrimination factors (relative adjacent- channels protection ratios).

5. <u>Treatment of the RR1214 notices for assignments to stations in the</u> <u>Aeronautical Radionavigation Service (Article 6 of the Agreement)</u>

The treatment of RR1214 notices related to assignments of the aeronautical radionavigation service, from administrations considered party to the Agreement, shall follow the procedure contained in Article 6 of the Agreement. The Technical Standards contained in Section B4 of the Rules of procedure shall be used in these examinations.

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RULES OF PROCEDURE

PART B

SECTION B1

Calculation methodology for the "agreement area"

related to a transmitting earth station in the frequency bands below 1 GHz,

in application of the procedure of Article 14

The following procedures are to be applied in determination of the "agreement area" around the transmitting earth station subject to the application of the Article 14 procedure. These rules have been derived from relevant ITU-R Recommendations.

1. The transmission loss is calculated by applying the following formula:

 $L_0 = P_{t'} + G_{t'} + G_r - P_l$, where

- L_0 = basic transmission loss;
- P_{t'} = interfering power in the input bandwidth of the receiver calculated by multiplying the value of power density per Hz of a transmitting station by the value of B (kHz) taken from Table 1 for appropriate frequency bands and comparing this value with the total peak power value, retaining the smaller of the two values for the calculation. In the event that the total peak power is not available, it may be estimated by multiplying the maximum power density by 4 000;
- $G_{t'}$ = gain of interfering station antenna towards horizon;
- G_r = gain of the receiving station antenna towards horizon;
- P₁ = maximum permissible interfering power.

2. Protection criteria used for calculations are presented in Table 1. According to the Rules of Procedures concerning Article 14 (see paragraph 3 under the Rules concerning RR1610) only those bands were included in Table 1 which, after the application of Article 14, result in an allocation of equal rights between earth stations and terrestrial services.

3. Agreement distances for frequencies below 500 MHz are obtained from <u>Figures 1, 2</u> and <u>3</u> for land, cold-sea and warm-sea paths respectively. When a mixed path is involved, the method of summation of Appendix 28 is used to obtain the resulting distance.

4. Agreement distances for the frequency range 800 - 1 000 MHz are obtained from Figures 4, 5 and 6 for land, cold-sea and warm-sea paths respectively. These are curves of Appendix 28 which have been extrapolated for frequencies below 1 GHz. Figure 7 and Table III of Appendix 28 are to be used for determining the agreement distance for 1% of the time. When a mixed path is involved, the method of summation of Appendix 28 is used to obtain the resulting distance.

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TABLE 1

Parameters required for the determination of the "agreement area" for a transmitting earth station in the space operation, mobile-satellite (except aeronautical mobile-satellite ^a) and space research services

Frequency band	148 - 149.9	405.5 - 406		806 - 960
		406.1 - 410	449.75 - 450.25	890 - 896
(MHz)				(RR700,
	(RR608)	(RR648)	(RR668)	701, 704A)
Satellite service				
sharing the	Space	Mobile-	Space operation	Mobile-
frequency band	operation	satellite	Space research	satellite
Terrestrial service				
sharing the	Mobile,	Met. aids,	Radiolocation,	Broadcast,
frequency band	Fixed ^b	Mobile,	Mobile,	Mobile,
		Fixed ^b	Fixed ^b	Fixed ^b
Modulation at				
terrestrial stations	FM		FM	
Interference time				
	1%		1%	
Protection ratio				
(dB)	10		10	
Min. median wanted				
signal level to be	-130	-130		
protected				
B (kHz)	16	14		
Permitted level of				
interference (Pl	-140		-140	· .
dBW/B)			• • • •	
Receiving antenna				
gain (dB)	+2		+2	

a) For aircraft earth stations, see Section 3.2 of Rule B2.

b) For terrestrial stations, parameters associated with the land mobile service have been used

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Distance (km)



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• Distance (km)



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· Distance (km)



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Figure 4

Coordination distance d_A (0.01) for 0.01% of the time due to propagation mode (1) as a function of frequency and coordination loss in Zone A

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Coordination distance d_B (0.01) for 0.01% of the time due to propagation mode (1) as a function of frequency and coordination loss in Zone B
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Figure 7

1.6

Coordination distance correction factor for propagation mode (1) for percentages of time other than 0.01

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RULES OF PROCEDURE

PART B

SECTION B2

CALCULATION METHODOLOGY FOR COORDINATION CONTOURS

1. INTRODUCTION

<u>Tables 1 and 2</u> present in a consolidated form the possible sharing situations involving stations of space and terrestrial services in frequency bands from 1 GHz to 47 GHz, with indications of the parameters to be used in the application the method of Appendix 28 or with reference to other methods used in the determination of the earth station coordination area.

2. APPLICATION OF APPENDIX 28

Whenever the method of Appendix 28 is to be applied, the appropriate values of the constants used in the calculation of the transmission loss, as well as the reference bandwidth and the percentage of the time (%) are indicated if they are not given in Tables I and II of Appendix 28.

The definition of the constants (in dB) referred to above are as follows:

(i) Mode 1 (see expressions (2) and (3) of Appendix 28) $C1 = G_r - P_r(p)$

For those bands where $P_r(p)$ is given: C3 = P_t '+ G_t ' - $P_r(p)$

Otherwise: C3 '= P_t '+ G_t '- 10log B + 228.6 - J - M(p) + W

and transmission loss is calculated by $L_b (p) = G_r + C3' - 10 \log T$

(ii) Mode 2 (see expression (20) of Appendix 28)

For the bands where P_r (p) is not given C3 is replaced by C3 ' and 10 log T is taken into account in the calculation of the loss.

For bands where Table 2 of Appendix 28 does not contain the necessary parameters, the calculation of C3 is based on relevant ITU-R Recommendations.

For the determination of the coordination area of an earth station in the bands between 40 and 47 GHz, until more adequate information is available about the sharing conditions for

C2 = C1 - 42C4 = C3 - 42

the bands and services involved, the method of Appendix 28 is to be applied using the present data of Tables I and II pertaining to the closest bands below 40 GHz as indicated in Tables 1 and 2.

3. APPLICATION OF OTHER METHODS

3.1 <u>Mobile (except aeronautical mobile) earth stations</u>

Section 7 of Appendix 28 is to be applied. Furthermore, the coordination distances should be calculated assuming that the horizon elevation angle of the mobile earth station is zero. For the ship earth station, the rain climate to be used is that associated with the overland portion of the path involved.

3.2 <u>Aircraft earth station in the aeronautical mobile-satellite service or aeronautical</u> radiodetermination-satellite service

The coordination area of aircraft earth stations, either transmitting or receiving, is to be determined by increasing its service area by:

- (i) 1 000 km, vis-à-vis the (terrestrial) aeronautical mobile service; and
- (ii) 500 km, vis-à-vis terrestrial services, other than aeronautical mobile.

These coordination distances were derived assuming line-of-sight propagation between the aircraft earth station and the terrestrial station with a 4/3 Earth radius and the aircraft altitude of 12 km.

3.3 <u>Receiving earth stations in the meteorological-satellite service in frequency bands</u> shared with the meteorological aids service

The coordination distance is considered to be the visibility distance as a function of the earth station horizon elevation angle for a radiosonde at an altitude of 20 km above the mean sea level, assuming a 4/3 Earth radius. Figure 1 shows the resulting distances for an earth station at sea level for a range of horizon elevation angles.

3.4 <u>Resolution 46</u>

For earth stations of a non-geostationary satellite network for which Resolution 46 (WARC-92) coordination procedures are applicable, the coordination area is defined in Section III of the Annex to Resolution 46.

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Figure - Figura 1

Distance de visibilité Visibility distance Distancia de visibilidad



Angle de site de l'horizon Horizon elevation angle Ángulo de elevación sobre el horizonte

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Band	(MHz)	Space service (RR footnote)	Terrestrial service	Method and parameter
Table I of AP28	ART8 allocation	(underline: ART14)	(RR footnote)	(earth station type)
1 427 - 1 429	1 427 - 1 429	Space operation	Fixed, Mobile (except aeronautical)	AP28 : C1=166
	1 610 - 1 626.5	Mobile-satellite Radiodetermination-satellite <u>Aeronautical radionavigation-</u> <u>satellite</u> (732) <u>Aeronautical mobile-satellite</u> (733)	Aeronautical radionavigation Fixed (730)	 non-RES46: AP28: C1=166 (fixed and mobile¹, except aircraft) Sec.3.2: 1000/500 km (aircraft)
	1 626.5 - 1 645.5	Mobile-satellite (or sub-set)	Fixed (730)	RR1107.2 : 100/400 km (RDSS - GSO)
	1 646.5 - 1 656.5	Aeronautical mobile-satellite (R)	Fixed (730) Aeronautical mobile (735)	(735) • RES46 (non-GSO): 1000/ 500
	1 656.5 - 1 660	Mobile-satellite (or sub-set) (RR730A, 730B, 730C)	Fixed (730)	
	1 675 - 1 710	Mobile-satellite	Fixed, Mobile (except aeronautical)	

Band	(MHz)	Space service (RR footnote)	Terrestrial service	Method and parameter
Table I of AP28	ART8 allocation	(underline: ART14)	(RR footnote)	(earth station type)
2 655 - 2 690	1 750 - 1 850	<u>Space operation.</u> <u>Space research</u> (745)	Fixed, Mobile	• non-RES46:
	1 770 - 1 790	<u>Meteorological-satellite</u> (746)		AP28: C1=192 (fixed and mobile ¹ , except aircraft)
	1 970 - 2 010	Mobile-satellite ²		Sec.3.2 : 1000/500 km (aircraft)
	2 025 - 2 110	Space research, Space operation, Earth exploration-satellite		• RES46 (non-GSO): 1000/500 km
	2 110 - 2 120	Space research		
	2 655 - 2 690	<u>Fixed-satellite</u> (761) <u>Mobile-sat</u> (except aero) (766)	Fixed, Mobile (except aeronautical)	
5 725 - 7 075	5 000 - 5 250·	<u>Aeronautical mobile-</u> <u>satellite</u> (733) <u>Fixed-satellite</u> (797)	Aeronautical radionavigation <u>Mobile</u> (797B)	AP28: C1=176 (fixed and mobile ¹ , except aircraft) Sec. 3.2: 1000/500 km (aircraft)
	5 725 - 7 075	Fixed-satellite	Radiolocation, Fixed, Mobile	

¹ See Section 3.1 2 From 1996 in USA

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Band	(MHz)	Space service (RR footnote)	Terrestrial service	Method and parameter
Table I of AP28	ART8 allocation	(underline: ART14)	(RR footnote)	(earth station type)
7 145 - 7 235	7 125 - 7 155	Space operation (810)	Fixed, Mobile	AP28: C1=178 (fixed and mobile ¹ , except aircraft)
	7 145 - 7 235	Space research (811)		
7 900 - 8 400	7 900 - 8 400	Fixed-satellite		Sec. 3.2 : 1000/500 km (aircraft)
	7 900 - 8 025	Mobile-satellite (812)		
····	8 175 - 8 125	Meteorological-satellite	· · · · · · · · · · · · · · · · · · ·	
10 700 - 11 700	10 700 - 11 700 12 500 - 13 250	Fixed-satellite	Fixed, Mobile (except aeronautical)	
12 500 - 14 500	13 250 - 13 400	Space research (852)	Aeronautical radionavigation Fixed (853)	
14 500 - 14 800	13 750 - 14 000	Fixed-satellite	Radiolocation Fixed (853, 854) Mobile (854) Radionavigation (855)	
	14 000 - 14 300		Radionavigation (856) Fixed (857, 860) Mobile (except aeronautical) (861)	· · · · · · · · · · · · · · · · · · ·
	14 300 - 14 500		Fixed, Mobile (except aeronautical)	
	14 500 - 14 800		Fixed, Mobile	
х.	15 400 - 15 700	<u>Aeronautical mobile</u> <u>satellite</u> (733) <u>Fixed-satellite</u> (797)	Aeronautical radionavigation	

¹ See Section 3.1

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Band	(MHz)	Space service (RR footnote)	Terrestrial service	Method and parameter
Table I of AP28	ART8 allocation	(underline: ART14)	(RR footnote)	(earth station type)
17 700 - 18 100	17 700 - 18 100 18 100 - 18 400	Fixed-satellite	Fixed, Mobile	AP28: C1=178 (fixed and mobile ¹ , except aircraft)
27 000 - 37 500	24 650 - 24 750	Radiolocation-satellite		Sec. 3.2 : 1000/500 km (aircraft)
	24 750 - 25 250 27 000 - 29 500	Fixed-satellite		
	31 000 - 31 300	Space research (885)		
	34 200 - 34 700 34 700 - 35 200	Space research (deep space) Space research (896)	Radiolocation Fixed, Mobile (894)	
	40 000 - 40 500	Space research	Fixed, Mobile	
	42 500 - 43 500	Fixed-satellite	Fixed, Mobile (except aeronautical)	
	43 500 - 47 000	Mobile-satellite Radionavigation-satellite	Mobile, Radionavigation	

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TABLE 2(Receiving earth station)

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Band	(MHz)	Space service (RR footnote)	Terrestrial service	Method and parameter
Table II of AP28	ART8 allocation	(underline: ART14)	(RR footnote)	(earth station type)
1 525 - 1 535	1 215 - 1 260	Radionavigation-satellite	Radiolocation Fixed, Mobile (711) Radionavigation (712, 712A) Aeronautical radionavigation (714)	 non-RES46: AP28: C3=239, p=1 (fixed and mobile¹, except aircraft) Sec. 3.2: 1000/500 km (aircraft)
	1 492 - 1 525	Mobile-satellite	Fixed, Mobile	• RES46 (non-GSO): 1000/ 500 km
	1 525 - 1 530	Space operation Mobile-satellite	Fixed, Mobile (724) Aeronautical mobile (723A, 725)	
	1 545 - 1 555	Aeronautical mobile-satellite	Aeronautical mobile (729) Fixed (730)	
	1 555 - 1 559	Mobile-satellite or Sub-set (730A, 730B, 730C)		
	1 559 - 1 610	Radionavigation-satellite	Aeronautical radionavigation Fixed (730)	
	1 610 - 1 626.5	<u>Aeronautical radionavigation</u> <u>satellite</u> (732) <u>Aeronautical mobile satellite</u> (733)		

TABLE 2 (Receiving earth station)

Band	(MHz)	Space service (RR footnote)	Terrestrial service	Method and parameter
Table II of AP28	ART8 allocation	(underline: ART14)	(RR footnote)	(earth station type)
1 670 - 1 700	1 670 - 1 675 1 675 - 1 690 1 690 - 1 700	Meteorological-satellite	Meteorological aids, Fixed, Mobile (740A) Meteorological aids Fixed, Mobile (except aeronautical) Meteorological aids Fixed, Mobile (except aeronautical) (740, 741)	AP28: C3'=255.6, B=1 MHz, p=0.1 (non-GSO) or 0.05 (GSO) (when interference is not from SM) Sec. 3.3 (when interference is from SM)
1 700 - 1 790	1 700 - 1 710	·	Fixed, Mobile	
	1 770 - 1 790	Meteorological-satellite (746)		
1 700 - 1 710	1 700 - 1 710	Space research (743)		• non-RES46:
2 200 - 2 290	2 160 - 2 200 2 200 - 2 290	Mobile-satellite ² Space operation, Space research (near Earth unmanned) Space research (near Earth manned) Earth exploration-satellite		 AP28: C3=278 (fixed and mobile¹, except aircraft) Sec. 3.2: 1000/500 km (aircraft) RES46 (non-GSO): 1000/ 500 km AP28: C3=246 p=0.1(non-GSO) or 0.05 (GSO)
2 290 - 2 300	2 290 - 2 300	Space research (deep space)		AP28 : C3 = 284

¹ See Section 3.1 ² From 1996 in USA

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TABLE 2(Receiving earth station)

Band	l (MHz)	Space service (RR footnote)	Terrestrial service	Method and parameter
Table II of AP28	ART8 allocation	(underline: ART14)	(RR footnote)	(earth station type)
2 500 - 2 690	2 483.5 - 2 500	Radiodetermination-satellite Mobile-satellite <u>Radiodetermination-satellite</u> (753C)	Fixed, Mobile Radiolocation	 non-RES46: AP28: C3' = 255.6 (fixed and mobile¹, except aircraft) Sec. 3.2: 1000/500 km (aircraft) RR1107.2: 400/100 km (RDSS-GSO)
	2 500 - 2 535	<u>Mobile-satellite</u> (except aeronautical (754)	Fixed, Mobile (except aeronautical)	• RES46 (non-GSO): 1000/ 500 km
	2 500 - 2 516.5	Radiodetermination-satellite (754A)	Radiolocation (755)	
	2 500 - 2 690	Fixed-satelllite (761)		AP28: C3' = 255.6
3 400 - 4 200	3 400 - 4 200	Fixed-satellite	Fixed, Mobile	AP28: C3' = 218.6
4 500 - 4 800	4 500 - 4 800			AP28: C3' = 255.6 (fixed and mobile ¹ , except aircraft)
	5 000 - 5 250	<u>Aeronautical mobile-satellite</u> (733) <u>Fixed-satellite</u> (797)	Aeronautical radionavigation <u>Mobile</u> (797B)	Sec. 3.2 : 1000/500 km (aircraft)
	5 150 - 5 216	Radiodermination-satellite (797A)		

TABLE 2(Receivinge earth station)

Band	(MHz)	Space service (RR footnote)	Terrestrial service	Method and parameter
Table II of AP28	ART8 allocation	(underline: ART14)	(RR footnote)	(earth station type)
7 250 - 7 750	7 250 - 7 750	Fixed-satelllite	Fixed, Mobile	AP28: C3' = 218.6 (fixed and mobile ¹ , except aircraft)
	7 250 - 7 375	<u>Mobile-satellite</u> (812)		Sec. 3.2 : 1000/500 km (aircraft)
	7 450 - 7 550	Meteorological-satellite		
8 025 - 8 400	8 025 - 8 400	Earth expsatellite <u>Earth expsatellite</u> (815)		AP28: C3 = 209
8 400 - 8 500	8 400 - 8 500	Space research (deep space)	Fixed, Mobile (except aeronautical)	AP28: C3 = 245
	8 450 - 8 500	Space research (near Earth)	Radiolocation (818)	AP28: C3 = 241
10 700 - 12 750	10 700 - 11 700	Fixed-satellite	Fixed, Mobile (except	AP28: $C3' = 218.6$ (fixed and mobile ¹ ,
	11 700 - 12 200	Fixed-satellite (839)	aeronautical)	except aircrait)
	12 200 - 12 500	Fixed-satellite (845)		Sec. 3.2 : 1000/500 km (aircraft)
	12 500 - 12 750	Fixed-satellite		
	15 400 - 15 700	<u>Aero mobile-satellite</u> (733) <u>Fixed-satellite</u> (797)	Aeronautical radionavigation	

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TABLE 2(Receiving earth station)

Band	(MHz)	Space service (RR footnote)	Terrestrial service	Method and parameter
Table II of AP28	ART8 allocation	(underline: ART14)	(RR footnote)	(carth station type)
11 700 - 40 000	17 700 - 21 200	Fixed-satellite	Fixed, Mobile	AP28: C3' = 198.6 (fixed and mobile ¹ , except aircraft)
	18 100 - 18 300	Meteorological-satellite (870)		Sec. 3.2 : 1000/500 km (aircraft)
	19 700 - 21 200	Mobile-satellite		Note: See paragrah 3 of Annex 4 to Appendix 30A (TC, when interference is from TC in 17.7 - 18.1 GHz)
	31 800 - 32 300	Space research	Radionavigation	
	34 200 - 35 200	Space research (896)	Radiolocation Fixed, Mobile (894)	
	37 500 - 38 000	Space research	Fixed, Mobile	
	37 500 - 40 500	Fixed-satellite		
	39 500 - 40 500	Mobile-satellite		
	43 500 - 47 000	Mobile-satellite Radionavigation-satellite	Mobile, Radionavigation	

RULES OF PROCEDURE

PART B

SECTION B3

Calculation methodology for calculation of probability of harmful interference

between space networks (C/I ratios)

1. Introduction

In application of the provisions of Nos. 1529 and 1530A of the Radio Regulations when, as a consequence of continuing disagreement between two (or a limited number of) administrations with respect to coordination of their networks under No. 1060, the notifying administration so requests the Radiocommunication Bureau, an examination of the probability of harmful interference under Nos. 1506 to 1508 is carried out. For the calculation method and criteria to be used for the interference assessment as well as the Findings to be formulated, the Bureau shall proceed as follows.

2. Probability of harmful interference

The Radiocommunication Bureau, in performing its mandatory tasks relating to the application of the above-mentioned provisions, shall proceed as follows:

2.1 Recommendation ITU-R S.741-1, as modified by Working Party 4A in October 1993 and adopted by Study Group 4 in March 1994 shall be used to examine the subject assignments with respect to the provisions of Nos. 1506 to 1508.

2.2. The Radiocommunication Bureau shall request the administrations concerned to provide the mutually agreed criteria for accepted interference in the format appearing in Table 2 of Recommendation ITU-R S.741-1

2.2.1 In the case where this information is provided by the administrations concerned:

a) The probability of harmful interference is considered to be negligible if the C/I calculation shows that the applicable criteria for a particular examination between two networks concerned are satisfied. The finding in column 13 A3 shall thus be favourable.

b) The probability of harmful interference is considered not to be negligible, if the C/I calculation shows that the applicable criteria for a particular examination between two networks concerned are not satisfied. The finding in column 13 A3 shall be unfavourable.

2.2.2 In the case where this information is not provided by the administrations concerned

a) The probability of harmful interference is considered to be negligible if the interference is less than the single entry interference limits indicated in Table 2 of Recommendation ITU-R S.741-1. The finding in column 13 A3 shall be favourable.

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b) The probability of harmful interference is considered not to be negligible, if the interference is greater than the single entry interference limits indicated in Table 2 of the above mentioned Recommendation. The finding in column 13 A3 shall be unfavourable.

3. <u>Methodology</u>

To perform the above mentioned compatibility analysis the following methodology will be used.

The methodology is based on Recommendation ITU-R S.741-1 . A set of *carrier-to-interference C/I* calculations are performed following the geometrical considerations of Recommendation ITU-R S.740 and an *interference adjustment factor* is calculated as shown below to take into consideration the frequency offset situations as well as the difference in the bandwidths between the wanted and the interfering carriers. These C/I values are then compared with the *required C/I* values derived from the criteria appearing in Table 2 of Recommendation ITU-R S.741-1 shown below which contains a set of single entry interference criteria to protect different carriers from noise like or slowly swept interference (caused by TV/FM modulated with energy dispersal). In the case of required C/I values agreed by administrations and communicated to the Bureau, the calculated C/I values will be compared with these mutually agreed C/I values.

Thereafter, a set of margins M (C/I calculated - C/I required) are derived. It should be noted that to evaluate the C/I required for each test point^{*}), a set of carrier-to-noise ratios C/N are calculated (performance) and a K value, generally of either 12.2 or 14.0 dB, is added in accordance with the above-mentioned Table 2 of Recommendation ITU-R S.741-1. It should also be noted that these values correspond to a maximum permissible interference of 6% or 4% of the total noise power N of the protected assignments (performance).

In respect of C/N ratio calculations, Recommendation ITU-R S.741-1 Table 2 (see below) defines "C/N" as a "ratio (dB) of carrier to total noise power which includes all internal system noise and interference from other systems". Therefore, and to comply with this definition, an *additional margin* of 0.46 dB for cases involving wanted analogue TV emissions and 1.87 dB for other wanted emissions will be added to the margins calculated on the basis of the internal system noise values provided by the concerned administrations. Attachment 2 contains the calculation methodology used for deriving the above-mentioned additional margin.

3.1 Interfering cases

Table 1 below presents a summary of the different interfering situations to be dealt with when performing C/I calculations.

3.2 Margin M, C/I, C/N algorithms

The algorithms described in Attachment 1 shall be used to evaluate compliance with the mutually accepted interference criteria or with the single entry limits established in Table 2 of Recommendation ITU-R S.741-1.

^{*)} A set of a maximum of 20 test points defining the service area shall be provided by the administrations. Otherwise, the Bureau will use a set of randomly chosen test points within the service area of the satellite networks likely to be affected (including those test points already communicated).

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3.3 Single channel per carrier (SCPC) cases

When dealing with composite interference from a number of narrow-band carriers such as a transponder loaded with SCPC carriers the assumption is made, in the absence of more detailed data from administrations, that the interfering satellite has its transponder fully loaded with SCPC carriers and the individual carriers can be replaced with one wideband carrier which has a total power equal to the sum of the powers of the individual SCPC carriers. The protection ratios given in Recommendation ITU-R S.671-2 are used to protect SCPC transmissions interfered with by analogue television carriers only modulated with energy dispersal signals.

TABLE 1

$\sum \Delta$	Digital	Analogue	Analogue
m en	-	(TV/FM)	(other than
SAN AN		(TV/FM)
V			
No.			
Digital	use C/I plus	use C/I plus	use C/I plus
	interference	interference	interference
	Adjustment	Adjustment	Adjustment
	Factor	Factor	Factor
	(I)	(II)	(111)
Analogue	use C/I plus	Co-Frequency:	use C/I plus
(TV/FM)	interference	use C/I plus	interference
	Adjustment	Interference	Adjustment
	Factor *)	Adjustment	Factor *)
		Factor	
		Non Co-	
		Frequency:	
		use Appendix 30	
		Relative	
		Protection Patio	
		mask	
1		(V)	
	(1V)		(VI)
A			
Analogue	use C/I plus	use C/I plus	use C/I plus B
(other than	Interference	Interference	
TV/FM)	Adjustment	Adjustment	
	Factor ^{*)}	Factor ^{*)}	(IX)

INTERFERING CASES

^{*)} See paragraph 3.5 below.

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TABLE 2
RECOMMENDATION 741-1
Single entry interference (SEI) protection criteria for FSS carriers

FSS	ITU-R	Type of	Single entry (SEI)	Protection criteria
	Recommendations			
	for			
carrier	SEI	interference	API before 1987	API after 1987
FDM-FM	Rec. ITU-R	Any	600 pW0p	800 pW0p
CFDM-FM	S.466 (1)			
TV-FM	Rec. ITU-R	Noise-like	C/N + 14 (dB)	<i>C/N</i> + 14 (dB)
	S.483 (1)			
Digital	Rec. ITU-R	Noise-like	<i>C/N</i> + 14 (dB)	<i>C/N</i> + 12.2 (dB)
	S.523 (1)			
SCPC-FM	(Note 1)	Noise-like	<i>C/N</i> + 14 (dB)	<i>C/N</i> + 12.2 (dB)
SCPC-FM	Rec. ITU-R	Slowly-swept	$13.5 + 2 \log (\delta) - 3 \log (i/10) (dB)$	
	S.671 (1)			
Digital				
narrow-band				
with coding	Rec. ITU-R	Slowly-swept	$C/N + 9.4 + 3.5 \log 100$	a (δ) – 6 log (<i>il</i> /10)
	S.671 (1)		(dB)	
without	Rec. ITU-R	Slowly-swept	$C/N + 6.4 + 3 \log (\delta) - 8 \log (i/10)$	
coding	S.671 (1)		(dB)	

API : Advanced Publication of Information of networks

CIN : ratio (dB) of carrier to total noise power which includes all internal system noise and interference from other systems

 δ : ratio of desired signal bandwidth to peak-to-peak deviation of the TV carrier caused by the energy dispersal signal

i: pre-demodulation interference power in the desired signal bandwidth expressed as a percentage of the total pre-demodulation noise power

(1) Former CCIR Recommendations 466, 483, 523 and 671.

Note 1 – The criteria for noise-like interference are being used for the purposes of coordination.

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3.4 Interference between analogue FDM-FM signals (Case IX in Table 1 above)

When dealing with FDM/FM carriers, and to find out the resulting margin, the C/I ratio is calculated and compared with the required C/I. However a C/N+ K type protection criteria is developed based on the equations of Recommendation ITU-R SF.766 which are required to calculate the B factor (interference reduction factor).

3.5 Other interference cases and further work to be carried out

For cases (IV), (VI), (VII) and (VIII) in Table 1 above, no specific methodology for the Interference Adjustment Factor exists in BR to date. It should be pointed out that the results of the study to be carried out by the Rapporteur of WP 10-11-S appointed during the WP 10-11-S meeting of October 1993, to develop methods for the calculation of interference would certainly clarify several pending issues. In the absence of a more precise methodology and until the time such methodology is developed, the interference adjustment factor mentioned in paragraph 3 above shall be used, In calculating this factor consideration shall be given to paragraph 3 of Section 3.4 of Annex 1 to Recommendation ITU-R S.741-1.

Working Parties 4A and 10-11-S as well as administrations are urged to carry out studies to further improve the present approach.

3.6 Additional information to be provided by the administrations concerned

In addition to the data provided under Appendix 3 of the Radio Regulations and in order to permit the Bureau to carry out this examination, the mutually agreed criteria for the acceptable interference, the modulation characteristics and a set of test points (maximum 20) defining the service area shall be requested from the administrations concerned.

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ATTACHMENT 1

Calculation algorithms (M, C/I, C/N)

1. Margin algorithm

To compute the Margins, it is necessary first to determine the minimum desired $\left(\frac{C}{I}\right)_{-}$ value, which is a function of the C/N and the K factor:

$$\left(\frac{C}{l}\right)_m = \left(\frac{C}{N}\right) + K$$

where:

 $\left(\frac{C}{t}\right)$ is the minimum desired C/I value, dB.



is the calculated value of C/N, dB.

K is the factor used in computing the minimum desired C/I, dB. Generally, this will be either 14.0 or 12.2, depending on the modulation characteristics of the desired signals. (See Recommendations ITU-R S.483 and 523.)

Since $\left(\frac{C}{I}\right)_m$ will vary with each test point, the Margin is also computed at each test point. The Margin is the difference between the calculated C/I value and the minimum desired C/I value:

$$M = \left(\frac{C}{I}\right)_{a} - \left(\frac{C}{I}\right)_{m}$$

where:

M is the Margin, dB.

 $\left(\frac{c}{l}\right)$ is the adjusted value of C/I, taking into account the Interference Adjustment Factor, dB.

 $\left(\frac{c}{I}\right)_{m}$ is the minimum desired C/I value, dB, computed above.

Therefore, substituting, we have:

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$$M = \left(\frac{C}{I}\right)_{a} - \left(\frac{C}{N}\right) - K$$

2. <u>The $\left(\frac{C}{I}\right)_{a}$ algorithm for interfering situations</u>

The basic C/I is adjusted as follows:

$$\left(\frac{C}{l}\right)_{a} = \left(\frac{C}{l}\right)_{b} - l_{a}$$

where:

 $\left(\frac{C}{I}\right)_{a}$ is the adjusted value of C/I, taking into account the Interference Adjustment Factor, dB.

 $\left(\frac{C}{I}\right)_{b}$ is the basic calculated value of C/I, before taking into account the Interference Adjustment Factor, dB.

la is the Interference Adjustment Factor, dB,

and the second second

The adjusted C/I values will be determined separately for the uplink and downlink, keeping in mind that the Interference Adjustment Factor may be different for the uplink and for the downlink.

The overall C/I will also be computed. If there are uplink calculations only (*i.e.*, no downlink for the desired or interfering signal, or both, or no downlink frequency overlap between the desired and interfering signals), the values of the overall C/I are simply the uplink values of C/I. Similarly, if there are downlink calculations only (*i.e.*, no uplink for the desired or interfering signal, or both, or no uplink frequency overlap between the desired and interfering signals), the values of the overall C/I are simply the desired and interfering signals), the values of the overall C/I are simply the downlink values of C/I. However, if the desired and interfering signals have both an uplink and a downlink, the overall C/I will be computed for each downlink test point using the *worst case* uplink C/I and the individual downlink C/I values:

$$\left(\frac{C}{I}\right)_{T} = -10\log_{10}\left[10^{-\left(\frac{(C_{I})_{u}}{10}\right)} + 10^{-\left(\frac{(C_{I})_{d}}{10}\right)}\right]$$

where:

 $\left(\frac{c}{I}\right)_{\mu}$

 $\left(\frac{C}{I}\right)_{\tau}$ is the overall value of C/I for a particular downlink test point, dB.

is the worst case uplink C/I at any uplink test point, dB, and

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 $\left(\frac{C}{I}\right)_{d}$ is the downlink C/I for a particular downlink test point, dB.

2.1 Determination of Interference Adjustment Factor

2.1.1 Interference from noise-like digital carriers (Interference adjustment factor 1)

The current version of Recommendation ITU-R S.741 covers the case of co-frequency interference from noise-like digital carriers. For non-co-frequency interference an interference adjustment factor (or bandwidth advantage factor) will be assumed as a result of the Meeting of Working Party 4A in October 1993 *) which adopted a contribution submitted by the BR together with a methodology to treat cases of frequency offset carriers trough the application of a factor "A" defined below (mentioned as I_a in paragraph 2 above).

The methodology was developed only for interference from digital into digital carriers but that has been extended by BR to digital into analogue carriers as a result of the Meeting of Working Part 10-11 S of October 1993 *) which developed a similar model to treat interference from digital into analogue TV carriers.

For the case of frequency offset between carriers, the resultant C/I can be determined by the following equation:

$$C/I = 10 \log (c/i) - A$$

where A = bandwidth advantage factor (dB).

The factor "A" is the ratio of the interfering carrier power contained in the desired signal bandwidth to the total interfering carrier power under the assumption that the interfering carrier has uniform power spectral density across its occupied bandwidth.

2.1.2 Interference from noise-like analogue carriers (Interference adjustment factor 2)

For these cases, the resultant C/I can be determined by using the equation in 2.1.1 above where the factor "A" is the ratio of the interfering carrier power contained in the desired signal bandwidth to the interfering carrier power with the approximation that the power spectral density of the interfering carrier is constant over the bandwidth of the desired carrier and is equal to the maximum value. (See paragraph 3 of Section 3.4 of Annex to Recommendation ITU-R S.741-1.)

3. The C/N algorithm

The algorithm for C/N requires the computation of the value of N, as follows:

 $N = -228.6 + 10 \left[\log_{10}(T_R) + 6 + \log_{10}(BW) \right]$

^{*)} Documents from BR 4A/236-E of 17 September 1993 to Working Party 4A, document 4/219-E of 29 October 1993 of Study Group 4 and document 10-11-S/1-E of Working Party 10-11-S to the Joint Meeting of SGs 10 and 11 of 3 January 1994 give details on the matter.

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where:

- N is the value of Noise, dBW,
- T_R is the Receiving System Noise Temperature, degrees K, and
- BW is the Bandwidth, MHz.

The value of N is determined once for the uplink (if there is an uplink) and once for the downlink (if there is a downlink) for the desired system.

Once N is determined, C/N will be computed at each uplink test point (if there's an uplink) and each downlink test point (if there's a downlink):

$$\frac{C}{N} = C - N$$

where:

- C is the carrier, dBW, and
- *N* is the Noise, dBW, computed above.

The overall C/N is also computed. If there is an uplink only, the values of the overall C/N are simply the uplink values of C/N. Similarly, if there is a downlink only, the values of the overall C/N are simply the downlink values of C/N. However, if there is both an uplink and a downlink, the overall C/N is computed for each downlink test point using the *worst case* uplink C/N and the individual downlink C/N values:

$$\left(\frac{C}{N}\right)_{T} = -10\log_{10}\left[10^{-\left(\frac{(C_{N})_{u}}{10}\right)} + 10^{-\left(\frac{(C_{N})_{d}}{10}\right)}\right]$$

where:

 $\left(\frac{C}{N}\right)$ is the overall value of C/N for a particular downlink test point, dB,

 $\left(\frac{c}{N}\right)$

is the worst case uplink C/N at any uplink test point, dB, and

 $\left(\frac{c}{N}\right)_{a}$

is the downlink C/N for a particular downlink test point, dB.

3.1 Determination of Relative Protection Ratio for case (V) in Table 1 above (TV/FM) into (TV/FM)

When dealing with a non-co-frequency interfering situation from a TV/FM carrier into another TV/FM carrier, the Radiocommunication Bureau took into consideration Document

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4A/TEMP/79 (Rev.2) of 3 June 1992. As the Study Group 4 has not yet arrived at a Recommended protection ratio for these cases the Radiocommunication Bureau is using the protection ratio mask as it appears in curve B of Figure 1 of Annex 6 to Appendix 30 to the Radio Regulations for analysis of interfering situations involving administrations of Regions 1 and 3. For interfering situations involving Region 2 administrations, the protection ratio mask of Figure 6 of Annex 5 to Appendix 30 will be used. This protection ratio relaxation is applied to the K factor of 14.0 dB established by Recommendation ITU-R S.483.

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ATTACHMENT 2

Additional margins to be taken into consideration

1. Introduction

To finally assess the interfering effect on a given emission, it is necessary to adjust the resulting margins taking into consideration the definition of "C/N" given by Recommendation ITU-R S.741-1 which, for most of the cases, is the performance reference necessary to derive the single entry interference criteria levels for FSS carriers (See Table 2 of Recommendation ITU-R S.741-1).

In the above-mentioned Table "C/N" is defined as: "ratio (dB) of carrier to total noise power which includes all internal system noise and interference from other systems".

2. Calculations performed according to RR168

RR168 defines the equivalent satellite link noise temperature as follows:

"The noise temperature referred to the output of the receiving antenna of the *earth station* corresponding to the radio frequency noise power which produces the total observed noise at the output of the *satellite link* excluding the noise due to *interference* coming from *satellite links* using other *satellites* and from terrestrial systems"

The internal system noise temperature values provided by the administrations to derive the internal system noise "N" i.e. "Ts" and "Te" are defined in Appendix 29 to the RR as follows:

Ts: " the receiving system noise temperature of the space station, referred to the output of the receiving antenna of the space station (K);"

Te: "the receiving system noise temperature of the earth station referred to the output of the receiving antenna of the earth station (K);"

The above mentioned values are combined in accordance with Rec. ITU-R S.738 to derive "Tmin", lowest *equivalent satellite link noise temperature*, as follows:

$$T_{min} = T_e + \gamma_{min} \cdot T_s + T_a$$

Where:

Ta: is "other internal noise" and

 γ min: minimum transmission gain of a specific satellite link subject to interference.

3. Noise to be calculated in accordance with Recommendation 741-1

To be in accordance with Recommendation ITU-R S.741-1 it seems necessary to add to the values of "N" calculated by the program on the basis of "Te" and "Ts" mentioned above, the

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maximum permissible level of aggregate interference caused by other space networks as appears in Recommendations ITU-R S.466-6 (for FDM/FM telephony), 483-2(for TV analogue) and 523-4 (for digital emissions) as well as the contribution of terrestrial emissions sharing the same frequency bands as defined in Recommendation ITU-R SF.356-4 (into telephone channels employing frequency modulation), and 558-2 (into systems employing 8-bit PCM encoded telephony).

4. Calculations of additional margins

4.1 Telephony FDM/FM

4.1.1 <u>Aggregate interference produced by other space networks sharing the same frequency</u> band Recommendation ITU-R S.466-6

In accordance with Recommendation ITU-R S.466-6, in frequency bands in which the network does not practice frequency re-use: the aggregate interference noise power should not exceed 2500 pW0p, psophometrically weighted one minute mean power for more than 20% of any month. This amount corresponds to the 25% of the allowable noise power of 10,000 pW0p established by Recommendation ITU-R S.353-7 for the same percentage of time.

4.1.2 <u>Maximum allowable values of aggregate interference from radio relay systems in a</u> telephone channel of a system in the FSS. Rec. ITU-R SF.356-4

In accordance with this Recommendation the interference caused by the aggregate of the transmitters of radio relay stations should not exceed 1000 pW0p psophometrically weighted one minute mean power for more than 20% of any month. This amount corresponds to 10% of the allowable noise power of 10,000 pW0p established by Recommendation ITU-R S.353-7 for the same percentage of time.

4.1.3 Calculation of the additional margin

Ntot: total link noise including all internal noise and interference from other systems

Ni: link internal noise

X: noise due to interference from other systems

then:

Ntot=Ni+X

where X=(0.25+0.1) Ntot

Therefore

Ntot=Ni+0.35Ntot

Ntot(1-0.35)=Ni

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Ntot=1.53Ni

Additional margin : 10*log(1.53)=1.87 dB

In the absence of sufficient information to calculate an additional margin for cases in which uplink and downlink are treated independently e.g. telemetry and telecommand signals the initial margins will be used i.e. no additional margin will be considered for these cases.

4.2 Digital Emissions

4.2.1 Aggregate interference produced by other space networks sharing the same frequency band Rec. ITU-R S.523-4

In accordance with Recommendation ITU-R S.523-4, in frequency bands in which the network does not practice frequency re-use: the aggregate interference power level averaged over any 10 minutes, should not exceed, for more than 20% of any month, 25% of the total noise power level at the input to the demodulator that would give rise to a bit error ratio of 1 in 10⁶ as it is established by Recommendation ITU-R S.522-4 for the same percentage of time.

4.2.2 <u>Maximum allowable values of aggregate interference from radio relay systems into</u> systems in the FSS. employing 8-bit PCM encoded telephony. Rec. ITU-R SF.558-2

In accordance with this Recommendation the interference caused by the aggregate of the transmitters of radio relay stations, averaged over any ten minutes, should not exceed, for more than 20% of any month, 10% of the total noise power at the input of the demodulator that would give rise to a bit error ratio of 1 in 10⁶ as it is established by Recommendation ITU-R S.522-4 for the same percentage of time.

4.2.3 Calculation of the additional margin

The same values as in section 4.1.3 above are obtained.

4.3 Analogue TV

4.3.1 <u>Aggregate interference produced by other space networks sharing the same frequency</u> band Rec. ITU-R S.483-2

In accordance with Recommendation ITU-R S.483-2, the aggregate interference noise power should not exceed 10% of the permissible video noise in the hypothetical reference circuit for more than 1% of the month.

4.3.2 <u>Maximum allowable values of aggregate interference from radio relay systems into FSS</u> analogue video channel

No recommendations have been arrived at yet for interference from transmitters of the fixed service into FSS analogue video channel.

4.3.3 Calculation of the additional margin

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Ntot=Ni + 0.1Ntot

Ntot(1-0.1)=Ni

Ntot=1.11Ni

Additional margin : 10*log(1.11)=0.46 dB

5. Based on the above a value of 0.46 dB should be added to the margins involving wanted analogue TV emissions and 1.87 dB for other wanted emissions.

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RULES OF PROCEDURE

PART B

SECTION B4

Technical Standards for application in the technical examinations to be carried out by the Radiocommunication Bureau (RR1241/1242)

Technical Standard A-1: Signal/Interference Protection Ratio

1.1 The present Technical Standard contains the signal-to-interference protection ratio values (see <u>Table 1</u> below) for application in the technical examinations, under the provisions of Article 12 of the Radio Regulations, of notices of frequency assignments in the frequency bands between 9 kHz and 28000 kHz.

1.2 These protection ratio values are based on results of the studies within ITU-R Study Groups. Details of the various sources are given in the <u>Annex</u> to this Technical Standard.

1.3 The signal-to-interference protection ratio values (PR) are expressed in dB, for the main types of transmission (from telegraphy, aural reception to telephony, for connection to the public network) to be protected in the technical examinations in the frequency bands from 9 kHz to 28 000 kHz. These values of protection ratios have been determined from RF steady state protection ratio values by adding allowances for long-term intensity fluctuation and short period fading for a given time percentage corresponding to the performance quality criteria applicable to each type of transmission. A detailed description of these principles is given in the <u>Annex</u> of this Technical Standard.

1.4 For the calculation of the signal/interference ratios both the wanted and the interference field strength are considered as median values (exceeded 50 % of time) and on the basis of peak envelop power (p.e.p.; notified power type: PX). Types of power other than p.e.p. (notified as PY or PZ for, respectively, mean or carrier power) are converted to p.e.p. using conversion factors given in <u>Table 2</u>.

1.5 For each transmission type, two time percentages are used: one (e.g. 99 % of time) which is intended to fully satisfy the required performance quality criteria in the fading signal environment when the wanted signal is at its weakest level at the instant when the interference signal is likely to be at its strongest level so as to reach a favourable finding foreseen in RR1249 and RR1250 (the protection ratio values corresponding to this condition are shown in Table 1 outside the parenthesis), and another one (e.g. 75 %) which ensures protection during a lesser percentage of time to meet the objectives stipulated in RR1251 (values in brackets in TSA-1 for "qualified" favourable findings).

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Transn	nission type	Frequency band (kHz)			
		9 - 1606.5	1606.5 - 4000	4000 - 28000	
Telegraphy, aura	al reception	8 (3 - 7)	11 (5 - 10)	15 (7 - 14)	
Telegraphy, aura Meteo, Press	al reception	9 (3 - 8)	13 (5 - 12)	17 (7 - 16)	
Telegraphy, auto without error cor	omatic reception, rection	11 (6 - 10)	17 (10 - 16)	26 (13 - 25)	
Telegraphy, auto with error correc	omatic reception, tion	8 (6 - 7)	12 (7 - 11)	14 (8 - 13)	
Photo telegraphy	y, facsimile	19 (14 - 18)	24 (16 - 23)	28 (18 - 27)	
Telephony, not for connection	DSB and SSB full carrier	18 (15 - 17)	21 (17 - 20)	24 (19 - 23)	
to public network (CO).	SSB, reduced or suppressed carrier, ISB	12 (9 - 11)	15 (11 - 14)	18 (13 - 17)	
Telephony, for connection	DSB and SSB full carrier	31 (26 - 30)	34 (28 - 33)	38 (30 - 37)	
to public network (CP)	ublic network SSB, reduced or suppressed carrier, ISB		28 (22 - 27)	32 (24 - 31)	
Broadcasting (except for HFBC in exclusive bands and MFBC in the band 526.5 - 1705 kHz)		38 (33 - 37)	38 (32 - 37)	38 (32 - 37)	
Aeronautical mo (telegraphy or te	bile service lephony)	15	15	15	
Radiobeacons		15	15	-	

Table 1: RF Signal-to-Interference Protection Ratios(in dB)

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		Conversion ^{1,2})	
Class of	Notified	mean to	p.e.p. to
emission	power type	p.e.p.	mean
NON	z	0	0
A1A, A1B, A1C	X	-	-3
A2A, A2B, A2N	Y	+4	-
H2A, H2B, H2N, D2A	Ϋ́Υ	+3	-
R2B, J2B	Х	-	-3
A3E(BC)	Z	+6	0
A3E, H3E	Y	+4 (3-6)	-
R3E, J3E	X	-	-4 (4-10)
A3C	Y	+4	-
R3C, J3C	x	-	0
A7B, H7B	Y	+4	-
R7C, J7C	x	-	-4 (3-6)
B7B	x	-	-4
B8E	х	-	-4 (3-13)
B8C	x	-	0
AXX	Y	+6	
BXX, JXX	x	-	-4 (3-10)
B9W	X	-	-4
F,G/1,2,3,7, X/B,C,D,X,	Y	0	-
P,L,M,X/any	x	-	10 log (t/T)
K2B	X	-	10 log (t/T) - 5
K3E	x	-	10 log (t/T) - 4

Table 2: Conversion Factors for different notified power types

Notes:

1) In the case where in, brackets, more than one figure is given, these figures refer to different modulating signal conditions (e.g. smoothly read text instead of sinusoidal modulating signal at 100% carrier modulation) (See ITU-R Rec. 326-4).



2) In the case of pulse modulation :

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ANNEX TO TECHNICAL STANDARD A-1 (PROTECTION RATIO): TECHNICAL PRINCIPLES AND CRITERIA APPLIED IN ESTABLISHING TSA-1

1. <u>Main principles</u>

1.1 Technical Standard A-1 (TSA-1) contains signal-to-interference protection ratio values (PR) for the main types of transmission (from telegraphy, aural reception to telephony, for connection to the public network) in the frequency bands from 9 kHz to 28 000 kHz. These values of protection ratios have been determined, as shown in Figure 1, from RF steady state protection ratio values by adding allowances for long-term intensity fluctuation and short period fading for a given time percentage corresponding to the performance quality criteria applicable to each type of transmission.



FIGURE 1

1.2 For the calculation of the signal/interference ratios both the wanted and the interference field strength are considered as median values (exceeded 50 % of time) and on the basis of peak envelop power (p.e.p.; notified power type: PX). Other types of power (notified as PY or PZ for, respectively, mean or carrier power) are converted to p.e.p. using conversion factors given in Table 2.

1.3 For each transmission type, two time percentages are used: one (e.g. 99 % of time) which is intended to fully satisfy the required performance quality criteria in the fading signal environment when the wanted signal is at its weakest level at the instant when the interference signal is likely to be at its strongest level so as to reach a favourable finding foreseen in RR1249 and RR1250 (the protection ratio value corresponding to this condition is shown in Table 1 outside the parenthesis), and another one (e.g. 75 %) which ensures protection during a lesser percentage of time to meet the objectives stipulated in RR1251 (values in brackets in TSA-1 for "qualified" favourable findings).

2. <u>Steady state protection ratio (PR)</u>

2.1 RF steady state signal/interference ratio values were taken from ITU-R Rec. 339 (AF signal-to-noise ratio) and consequently adjusted in some cases. (See Table 3 below). Values were established for the main types of transmission protected in the technical examinations. TSA-1 makes no distinction of the type of transmission (class of emission) of the interfering emission. Table No. 3 below summarizes the method of calculation of steady state protection ratio (PR) values. Figure 2 and Notes 1 to 7 contain explanations.

Type of transmission	Representing class of emission	Power Type	Conversi (ITU-R Re PX/PY	ion factor ec. 326-4) PY/PX	S/N (ITU-R Rec. 339-5) (see Note 1)	Noise power conversion from mean to instantaneous peak	Tolerance of emission to interf. peak / noise peak (IWP 3/1)	Resulting PR (p.e.p.) (Note 2)	Noise reducer assumed (ITU-R Rec. 339)	Steady state PR (p.e.p.)
Telegraphy	A1A	x	3		1 ³⁾	12	3	-2	-	} -2
aural rec.	A2A	Y		4	1 3)	12	3	-1		}
Telegraphy	A1B	x	3		10	12	3	7	-	} 4
aut.rec.	F1B	Y		0	10	12	3	4	-	}
Photo-	R3C, J3C	x	0		15	12	3	9	-	} 9
telegraphy	F3C	Y		0	15	12	3	9	-	}
Telephony, CO	J3E, R3E H3E A3E	X Y Y	6 ⁴⁾ 6 6	6 5) 9 5)	10 } 10 } 6) 10 }	12 12 12	0 0 0	7 13 16	3 3 3	4 10 13
Telephony, CP	J3E, R3E H3E A3E	X Y Y	6 ⁴⁾ 6 6	6 5) 9 5)	26 } 26 } 6) 26 }	12 12 12	0 0 0	23 29 32	8 8 8	15 21 24
Broadcasting (LF/MF)	A3E (BC)	Z	6 ⁴⁾	9 5)	33	12	0	39	10	28 ⁷⁾
Broadcasting (tropical)	A3E (BC)	z	6 ⁴)	9 5)	33	12	0	39	10	25 ⁷)

Table 3: Method and data used for calculating steady state protection ratio

1) S/N in terms of mean signal/mean noise

2) 3 dB added to take into account conversion of interfering signal instantaneous peak to p.e.p.

3) -4 dB (Rec. 339) + 5 dB allowance for operator fatigue

4) VU reading; corresponding p.e.p. = VU + 6 dB

5) for H3E: (demodulated by SSB receiver) conversion: p.e.p. to sideband signal level: 6 dB (IWP 3/1); for A3E (DSB detector) conversion p.e.p. to demodulated signal level : 9 dB

6) In ITU-R Documents (Rec. 339-5, 240-3, Rep. 525) three reception qualities are defined: JU (just usable), MC(Marginally commercial), GC (Good commercial). BR has information as CO or CP. It had been decided to determine S/N values for CO and CP as follows:

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	and an			
	Rec. 339	Rec. 240-3	Rep. 525-2	
JU	6	6	4	10 dB for CO
MC	15	18	13	}
GC	33	39	31	26 dB for CP

7) The calculated value would be 29 dB. Considering the steady state PR values adopted by different Conferences (GE75: 30 dB, RJ81: 26 dB, WARC-HFBC : 27 dB) an average of 28 dB was adopted. Taking into account the specified conditions of the broadcasting service in the Tropical zone, a difference of 3 dB was adopted.



PR = S/I (p.e.p.) = Wanted sign. (p.e.p.) - Interf. sign. (p.e.p.)

Example (A1A): S/I (p.e.p.) = 3 (PX/PY) + 1 (S/N) - 12 + 3 (TOL) + 3 (Inst-to-p.e.p.) = -2 dB

Figure 2

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Long-term intensity fluctuation and short-period fading allowances

The total allowance for signal fluctuation consists of two components:

- a) Long-term intensity fluctuation factor: allowance for long-term variation of the hourly median field strength in relation to the annual median value;
- b) Short-period fading factor: allowance for short-period variation of the field strength in relation to the hourly median value.

3.1 Long-term intensity fluctuation factor (dB)

3.

Table No. 4 below contains data to take into account the intensity fluctuation of one signal or combination of two signals (wanted and interfering). The values concerning 90 % of time for one signal in the given frequency bands are taken from ITU-R documents (Rep. 252-2, Rec. 435-4) and the Report of the WARC-HFBC (First Session). Values for 75 % of time are calculated by multiplying by 0.5 (WARC-HFBC). Values concerning combination of two signals are calculated in the following manner. If the wanted and interfering signals were non-correlated the combined intensity fluctuation factor would be the quadratic addition of the upper (wanted) and lower (interference) decile values (e.g., in the bands between 4 - 28 MHz, $\sqrt{(10^2 + 10^2)} = 14$ dB). If they were perfectly correlated the appropriate allowance would be 0.

Pursuant to the approach considered in the ITU-R Study group texts, the average between the above values (e.g. $0.5 \times (14+0) = 7$) is used when considering practical correlation between the wanted and interfering signals.

	Pro	tection (90 % of days)	Protection (75 % of days)			
Frequency band (kHz)	1 sig.	2 signals (wanted 90 %, interf. 10 %)	1 sig.	2 signals (wanted 90 %, interf. 10 %)		
9 - 1606.5	6	4	3	2		
1606.5 - 4000	8	6	4	3		
4000 - 28000	10	7	5	4		

TABLE No. 4

3.2 Short-period fading factors (dB)

Table No. 5 below contains data to consider short-period fading of one signal or combination of two signals (wanted + interfering) for time percentages from 75 % to 99.99 % (see also paragraph 4).

Freq. bands		Time percentage for protection (%)											
(kHz)	Diversity	99.99		99.9		99		95		90		75	
Assumed distribution	an a	1s	2 s	1 s	2 s	1 s	2 s	1 s	2 s	1 s	2 s	1 s	2 s
9 - 1606.5 Log-normal	Non-div.	11.5	17	9.5	13	7	10	5	7	4	6	2	3
	Diversity (2 elem)	4	6	2	3	1	1.5	0	0	0	0	0	0
1606.5 - 4000 Log-normal	Non-div.	15	21	12.5	18	9	13	6.5	9	5	7	3	4
	Diversity (2 elem)	7	10	5	7	3	4	2	3	1	1.5	0	0
4000-28000 Log normal	Non-div.	20.4	29	17	23.8	12.7	17.8	9	12.5	7	10	3.5	5
	Diversity (2 elem)	12.8	18	10.2	14	7	10	4.3	6	2	4	0	0
4000-28000 Rayleigh	Non-div.	38.4	40	28.4	30	18.4	20	11.4	12.8	8.3	9.5	4	5
	Diversity (2 elem)	18.5	20	13.7	15	8.5	10	4.5	6	2.6	3	Ŏ	0

TABLE No. 5

Fading allowances for 90 % of time (one signal) are taken from ITU-R Rep. 432-1 and Rec. 339-5 for log-normal distribution. Values corresponding to other time percentages of log-normal distribution as well as the data concerning Rayleigh distribution were calculated on the basis of Rep. 266-5. Two signal values were obtained by quadratic addition of the upper (wanted) and lower (interfering) decile values. Diversity improvement data were obtained from Rep. 355-1 and Document IWP 3/1-10.
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Percentage of time for which protection is required for various transmission types
Values shown in Table No. 6, are based on ITU-R Rec. 339-5.

	Prot. against	Prot. against
Transmission type	long-term	short-period
	fluctuation ,%	fading, % 3)
Telegraphy, aural reception	90	90
Telegraphy, aural reception	90	95 (See Note 1)
Meteo, press		
Telegraphy, automatic reception	90	99.9 (see Note 2)
without error correction		
Telegraphy, automatic reception	90	90 (See Note 2)
with error correction		
Photo telegraphy,	90	95 (See Note 1)
Facsimile	90	90
Telephony, without connection	90	80
to public network		
Telephony, for connection to	90	90
public network		· · ·
Broadcasting	90	90

Table No. 6

Notes:

- 1) A higher protection is desirable in the case of meteo, press and photo telegraphy services than in the case of point-to-point aural reception telegraphy, due to the "one-way" character of the transmissions (95% instead of 90%).
- 2) Assuming two-element diversity. In the case of telegraphy automatic reception, ITU-R, Rec. 339-5 requires 99.99 protection time. This requirement would necessitate a very high fading allowance (up to 40 dB) and it is assumed that in practice diversity systems (dual aerial, two tone or other means) are preferred to the use of very high transmitter powers (increase due to the fading allowance). The time percentage of 99.9 % is indicated in Table No. 6 against telephony, automatic reception, assumed with a two element diversity which corresponds to 99.99 % protection realized reasonably with a three element diversity system.
- 3) In the determination of short-period fading allowances corresponding to the time percentage given in this column, it was assumed (on the basis of ITU-R Rec. 339, Rec. 240 and Rep. 266) that the fluctuation is of log-normal distribution type, except for high speed automatic telegraphy, where the fading allowance in the band of 4 000 28 000 kHz is calculated on the assumption of a Rayleigh

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distribution. (It is to be noted, that log-normal and Rayleigh distribution values do not differ more than 1 dB for cases when the protection is required for less than 95 % of time).

5. Radio-frequency protection ratio values (dB)

TSA-1 contains RF protection ratio values including appropriate allowances for the variation of the wanted and interfering signal strength, that were calculated in accordance with Sections 2, 3 and 4.

Table No. 1 shows the determination of the p.e.p. values of PR on the basis of the above principles and corresponding values of Tables Nos. 3 to 6 of the present standard. For each type of transmission and in each of the bands considered, two RF protection ratios are calculated:

- a) one, to establish criteria for favourable findings of technical examinations (allowances for percentages of time as detailed in Table No. 6), and
- b) another one to meet objectives of RR1251 to give "qualified" favourable findings (allowances for 75 % of the time both for long-term intensity fluctuation and short-period fading variation.

Fading allowances are obtained from Tables Nos. 4 and 5 and added to the corresponding values of Table No. 3.

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Technical Standards for application in the technical examinations to be carried out by the Radiocommunication Bureau (RR1241/1242)

Technical Standard A-2: Minimum Field strength to be protected

1.1 The present Technical Standard contains values for the minimum field strength to be protected (see <u>Tables 1 to 4 and 5A and 5B</u> below) for application in the technical examinations, under the provisions of Article 12 of the Radio Regulations, of notices of frequency assignments in the frequency bands between 9 and 28000 kHz.

1.2 The values contained in this standard are based on the ITU-R Recommendations and Reports, namely on Rec. 339 and Rep. 322. After considering Recommendation 372-4 of the 1986 Plenary Assembly of the CCIR (Dubrovnik, 1986) and in particular the Remarks contained in it, it was decided to use the information contained in Rep. 322-2 (1982) in Technical Standard TSA-2, and not that of Rep. 322-3 (1986) whose "universal applicability over the whole world has yet to be ascertained".

1.3 The aim of calculating the minimum field strength to be protected within the technical examinations foreseen in RR1241-1242 or in any other technical study is to determine the field strength at the receiving point below which the wanted signal is not worth protecting against interfering signals because the wanted signal-to-noise ratio is smaller than that which could satisfy the required performance quality criteria without interference.

1.4 Technical Standard A-2 (TSA-2) contains values for the minimum field strength to be protected (expressed in dB, relative to 1 μ V/m) for the main types of transmissions (from telegraphy, aural reception, to telephony, for connection to the public network) in the frequency bands from 9 kHz to 28 000 kHz. These values of the minimum field strength have been determined from the median values (exceeded 50 % of time) of the noise level (atmospheric, man-made or galactic) and the steady state signal-to-noise ratio (S/N) by adding appropriate allowances for 90 % of time to take into account the noise level variation (Du) and the intensity fluctuation of the wanted signal (IF), as explained in detail in the Annex to this standard.

1.5 The assessment of the minimum field strength to be protected is based on a uniform reference power type: the peak envelop power (p.e.p. notified as PX). Types of power other than p.e.p. (notified as PY or PZ for, respectively, mean or carrier power) are converted to p.e.p. using conversion factors given in Table 2 of TSA-1.

1.6 Technical Standard A-2 contains four tables (Tables 1 - 4) giving the noise grades expressed as median of hourly values of the radio noise power in a short vertical antenna relative to the thermal noise, at a frequency of 1 MHz, in terms of latitude and longitude of the receiving point. Separate tables are given for four periods of the year (DC, MR, JN and SE), and in each table the noise grade is given for each of six local time blocks of four consecutive hours (N2, T1, J1, J2, T2, N1). Tables 1 to 4 are superimposed on an outline map of the world.

1.7 Tables 5A and 5B give, for the various types of transmission, the minimum value of the field to be protected (dB over 1 μ V/m) in terms of the noise grades obtained from Tables 1 to 4, the frequency used and the time of transmission. In working with Tables 1 to 5B, interpolations are usually necessary as a result of restricting the size of these tables to manageable proportions.

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



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VALEUR DU DEGRE DE BRUIT EN FONCTION DE LA LATITUDE ET DE LA LONGITUDE DU LIEU DE RECEPTION NOISE GRADE FIGURES ACCORDING TO LATITUDE AND LONGITUDE OF RECEIVING POINT

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



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VALEUR DU DEGRE DE BRUIT EN FONCTION DE LA LATITUDE ET DE LA LONGITUDE DU LIEU DE RECEPTION NOISE GRADE FIGURES ACCORDING TO LATITUDE AND LONGITUDE OF RECEIVING POINT

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



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VALEUR DU DEGRE DE BRUIT EN FONCTION DE LA LATITUDE ET DE LA LONGITUDE DU LIEU DE RECEPTION NOISE GRADE FIGURES ACCORDING TO LATITUDE AND LONGITUDE OF RECEIVING POINT

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



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Intensité minimum du champ à protéger (exprimée en dB par rapport à 1 mV/m) Minimum field strength to be protected (expressed in dB relative to 1 mV/m) Intensidad de campo mínima a proteger (expresada en dB con relación a 1 mV/m)

Type de transmission:	Télégraphie, réception auditive	
Type of transmission:	Telegraphy, aural reception	<u>(B > 0.5 kHz)</u>
Tipo de transmisión:	Telegrafía, recepción auditiva	

5A

DEGRE DE									k	Hz									Γ							MHz	5								(Consta	nts to b	e
BRUII		10			20			50		<u> </u>	100		r	200		r	500		-	1		<u> </u>	15		<u> </u>			Γ	2		Г	1		{	add	led to c	vhtain c	wher
GRADO DE			1 1	212	20 TT1	L 11	212	50	11	212	100 T T 1	1 11	212	200	11	112	<u> </u>	T	N12	$\frac{1}{T_1}$	₁₁	N12	<u>1.5</u> Гті	T 1	112	$\frac{2}{1}$	1 11		- J - T1	11	112	$\frac{1}{1}$	1 11	1	auc tu	nes of	emissi	
RUIDO			11	NZ			N2						N2						NZ NI								11			11					L LY	pes of	emissic	2115
100	NI	12	J2		12	J2	NI	12	J2	NI	12	J2		12	J2		12	J2		12	J2 52		12	JZ		12			12	32		12	J2	4	Name			
100	72	72	74	70	72	81	68	70	85	65	68	83	62	65	78	57	59	67	52	54	52	47	50	41	44	47	34	38	42	23	34	38	16		INATIO	w band	1 1-TT_N	-5
	72	74	77	71	75	81	68	74	83	65	73	84	62	70	80	56	63	68	51	55	54	47	49	43	42	45	36	36	39	27	32	35	22	4		1 < 0.5	KHZ)	+
90	69	69	72	67	69	77	63	65	78	59	61	75	54	57	69	48	50	57	42	44	42	38	40	32	35	38	26	31	34	17	28	31	11		Telegi	raphy		4
	70	71	74	67	71	77	62	68	77	58	65	75	53	60	70	47	53	57	41	45	44	37	40	33	34	36	28	30	31	20	27	28	15	4	aut. (E	3 > 0.5	<u>kHz)</u>	
80	66	66	69	63	65	73	58	59	72	52	54	67	46	49	60	38	40	46	32	34	32	28	31	23	27	29	18	24	27	10	22	25	5		Photo	telegra	phy	16
	67	68	71	63	66	72	57	61	71	51	57	67	45	51	60	37	43	46	31	35	34	28	30	25	26	28	20	23	24	13	21	22	9					
70	64	63	66	60	61	68	53	54	66	46	48	59	38	40	50	28	30	35	22	24	22	19	22	14	18	20	10	17	19	3	16	18	1				J3E	
	64	65	68	59	61	68	52	55	63	45	49	58	37	42	50	26	32	36	21	25	24	19	22	16	18	20	12	16	18	6	15	16	4		1		R3E	14
60	61	60	64	57	57	64	49	49	59	40	42	51	30	32	42	18	21	25	12	14	12	10	12	6	10	12	2	10	12	-1	10	12	-1		e	со	B8E	
	61	61	66	56	56	63	47	48	57	39	40	49	29	32	40	18	22	26	11	15	14	9	12	7	9	11	4	9	11	0	9	10	-1		1		H3E	20
50	58	57	61	53	53	60	44	44	52	33	35	43	22	24	32	8	11	15	4	4	4	3	3	3	2	3	2	3	4	-1	4	5	-1		e		A3E	23
	58	58	63	52	52	59	43	41	50	32	32	41	21	23	30	8	12	16	4	5	4	3	3	3	2	3	2	2	3	-1	4	4	-1		р		1	
40	55	55	58	49	50	56	38	39	46	26	28	35	14	16	22		7	.		4			3			2	.		-1		1	-1		1	h		J3E	25
	55	55	60	49	47	55	38	35	43	26	24	32	14	14	20				l I									ļ			ļ				0		B8E	
30	52	52	56	46	47	52	33	34	40	19	22	27	11	11	13		7			4		1	3			2			-1		1	-1			n	СР	H3E	31
	52	51	58	45	42	50	32	28	36	20	16	24	11	11	111								_			_			-			-			У			
20	50	49	54	43	42	48	28	28	33	15	15	20	11	11	11		7			4			3			2			-1			-1					A3E	34
	49	48	55	40	37	46	27	20	30	15	15	15	11										5			-			-			•						
10	48	46	51	40	30	10	22	20	28	15	15	15	11	11	11		7			4			3			2			-1		-					LF	/MF	49
	40	45	53	25	32		21	18	20	15	15	15								•			5			2			-1			-1			Broad			
0	15	12	10	26	32	10	10	10	21	15	15	15	11			-	7		┢──	4		-	3			2		-	-1			1			cast	BC	Trop.	46
	43	43	50	21	27	27	10	10	122	15	15	15				1	•			Ŧ			5			2			-1			-1					<i>-</i>	
	44	L41	50	1 21	121	13/	110	10	10	113	113	113				1			J			L			L			L						1				<u> </u>

Intensité minimum du champ à protéger (exprimée en dB par rapport à 1 mV/m)

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

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

Type de transmission:Télégraphie, réception auditiveType of transmission:Telegraphy, aural receptionTipo de transmisión:Telegrafía, recepción auditiva

5B

DEGRE DE														<u> </u>		N	/Hz														1		Consta	nts to b	e
BRUIT																															Í				1
NOISE GRADE		4			5			6			7			8			10			12			15	-		20			30		1	adde	ed to o	btain c	ther
GRADO DE	N2	T1	J1	N2	T1	J1	N2	T1	J1	N2	T1	J1	N2	T1	J1	N2	T1	Л	N2	T1	J1	N2	T1	J1	N2	T1	J1	N2	T1	11	1	tyr	bes of	emissio	ons
RUIDO	N1	T2	J2	NI	T2	J2	N1	T2	J2	NI	T2	J2	NI	T2	J2	N1	T2	J2	NI	T2	J2	N1	T2	J2	N1	T2	J2	NI	T2	J2					
100	34	38	16	31	34	12	28	31	11	25	28	11	23	25	11	18	21	12	14	17	13	7	11	13	-3	4	10	-7 ·	-7	-3	1	Narrow	band		-5
	32	35	22	30	32	17	28	30	15	26	29	14	24	28	13	21	26	14	19	25	15	14	22	15	7	17	14	-7	0	2		TG (B	< 0.5 kH	Z)	
90	28	31	11	26	28	8	23	25	8	21	23	9	18	21	9	14	16	10	9	12	11	2	6	11	-7	-2	8	Γ.	.7	-7	1	Telegra	iphy		4
1	27	28	15	25	26	12	23	25	11	21	24	11	20	23	11	17	22	12	14	21	13	9	18	13	0	11	12			-5		aut. (B	> 0.5 kH	Z)	
80	22	25	5	20	23	4	18	21	5	16	18	6	14	16	.7	9	13	8	4	8	9	-4	1	9	-7	-7	5		-7]	Photote	legraphy	/	16
	21	22	9	19	21	8	18	20	8	16	19	9	15	19	9	12	18	10	9	17	11	3	13	11	-7	5	9								
70	16	18	1	15	17	1	13	16	2	11	14	3	9	13	4	4	9	6	-1	4	7	-5	-3	7	-7	-7	2		- 7]			J3E	14
	15	16	4	14	15	3	13	15	4	12	14	6	11	14	7	8	14	8	4	13	9	-3	9	9	-7	-1	6			_	J			KJE	14
60	10	12	-1	9	12	-3	9	11	-1	7	10	1	5	9	2	0	5	4	-5	0	5	-5	-5	5	-7	-7	-2		-7			e	со	B8E	20
	9	10	-1	9	10	-1	9	10	1	8	10	3	7	10	4	3	10	6	-1	9	7	-5	4	7	-7	-6	2							нзе	20
50	4	5	-1	4	6	-3	4	6	-3	2	6	-2	8	5	0	-5	1	2	-5	-4	3	-5	-5	2	-	7	-5		-7			e		A3E	23
	4	4	-1	5	5	-3	5	5	-2	4	5	-1	3	6	1	-1	6	4	-5	5	5	-5	0	5			-2					Р			
40		-1		-1	0	-3		-3		-3	1	-3	-3	0	-3	-5	-3	0	-5	-5	1	-	5	0	-	7	-7]	-7			h		J3E R3E	25
				-1	-1	-3				-3	1	-3	-3	2	-3	-5	2	2	-5	1	- 3			2			-6							B8E	
30		-1			-3			-3			-3			-3		-5	-5	-2	-	5	0		5	-2	ł	-7			-7			n	СР	H3E	31
										L						-5	-2	0			1			-1						- <u>-</u>		У			
20		-1			-3			-3			-3			-3		-	5	-4	-	5	-2	-	5	-4		-7			-7			1		A3E	34
																		-2			-1			-4							1				
10		-1			-3			-3			-3			-3		-	5	-5	-	5	-4		-5			-7			-7			Broad	LF	MF	49
	<u> </u>																	-4			-3										1	Ű.			
0		-1		1	-3			-3			-3			-3			-5			-5			-5			-7			-7			cast	BC	Гrop.	46
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ANNEX TO TECHNICAL STANDARD A-2 (MINIMUM FIELD STRENGTH TO BE PROTECTED): TECHNICAL PRINCIPLES AND CRITERIA APPLIED BY THE BOARD IN ESTABLISHING TSA-2

1. <u>Main principles</u>

Technical Standard A-2 (TSA-2) contains values for the minimum field strength to be protected (expressed in dB, relative to 1 μ V/m) for the main types of transmissions (from telegraphy, aural reception, to telephony, for connection to the public network) in the frequency bands from 9 kHz to 28 000 kHz. These values of the minimum field strength has been determined from the median values (exceeded 50 % of time) of the noise level (atmospheric, man-made or galactic) by converting, first, these values to noise field strength values, then, adding the steady state signal-to-noise ratio (S/N) and also considering appropriate allowances for 90 % of time to take into account the noise level variation (Du) and the intensity fluctuation of the wanted signal (IF), as it is shown in Figure 1 below. The above elements are discussed in the following separate paragraphs.



2. <u>Noise grade</u> (F_{am})

ITU-R Report 322-2 gives 24 charts on world maps (Figures 2a - 25a) showing the distribution of atmospheric radio noise by curves for six time blocks of the day (each of four hours of duration, in local time at the reception point: N2, T1, J1, J2, T2, N1), for four seasons of the year (DC, MR, JN, SE), in terms of median (exceeded 50 % of time) values within the time-block, in db, of the noise power generated in a short vertical antenna at 1 MHz, relative to the thermal noise power in a 1 kHz bandwidth ($kT_0B = -174 \text{ dBW/Hz}$). When establishing TSA-2, four tables, one for each season, were prepared by transcribing the values from the above world maps (Tables Nos. 1, 2, 3 and 4).

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3. Noise and field strength values (dB relative to $1 \mu V/m$)

ITU-R Rep. 322-2 gives the variation of the noise grades with the frequency (curves in Figures 2b - 25b). The examination of these curves shows that a correction needs to be applied to the value of F_{am} at 1 MHz in respect of the daily time blocks (but not in respect of the season):

 F_{am} (f) = F_{am} (1 MHz) + K(f).

Figures 2b - 25b contain curves also for man-made and galactic noise which could prevail over atmospheric radio noise in the upper part of the HF frequency spectrum.

In order to express the noise power in terms of field strength, so that it can be compared directly with the field strength of the wanted signal, the following formula (Rep. 322-2) is used:

 $E_n = F_{am}$ (f) - 65.5 + 20 log f (MHz),

where E_n is the median value (exceeded 50 % of time) of the RMS noise field strength for a 1 kHz bandwidth, in dB above 1 μ V/m.

4. <u>Allowance for intensity fluctuation</u>

4.1 Allowance for atmospheric noise

In order to ensure that the field strength of the wanted signal (which is subject to fluctuation) exceed the also fluctuating noise field strength by the steady state S/N ratio for 90 % of the days, it is necessary to add to E_n a combined allowance including "D_u": the noise power level exceeded for 10 % of the hours within the time block (dB above the time block median) and "IF": the long-term intensity fluctuation factor for wanted signal (quadratic sum, because the two variations are uncorrelated : $\sqrt{(D_u^2 + IF^2)}$). D_u is given in Rep. 322-2 for the different frequency bands and daily time blocks. IF values are shown in Table No. A below:

f (kHz)	.10	500	2000	5000	10000	30000
IF (dB)	6*)	9*)	8*)	6	5	3

TABLE NO. A

*) Not included for day and transition time when the service area is defined by ground-wave coverage ($f \le 2 \text{ MHz}$).

4.2 <u>Allowance for man-made or galactic noise</u>

Based on values contained in Rep. 258-2 for the upper decile factor (values exceeded for 10 % of time) the allowance is calculated for 90 % of time for this category of noise in the same manner as for the atmospheric radio noise (see Table No. B below):

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f (kHz)	10	500	2000	5000	10000	30000
D _u (dB)	10	10	10	7	7	7
Man-made noise (Rep. 258-2)						
IF (dB)	6	9	8	6	5	3
$\sqrt{(D_u^2 + IF^2)}$	12	13	13	9	8.6	7.6

TABLE NO. B

5. <u>Steady state signal-to-noise ratios (dB)</u>

ITU-R Rec. 339-5 gives the required signal-to-noise ratios under stable conditions for various classes of emission in terms of the ratio of the wanted signal (p.e.p.) /RMS noise level in a 1 Hz bandwidth. In Table No. C below, S/N values are reproduced for the main transmission types (conversion for 1 kHz bandwidth is included).

	Trai	Rec. 339-5 (- 30 dB)	Adopted for this TS	
Narrow band t	elegraph	-1	-1	
Telegraphy, au Telegraphy, au	ural recep utomatic	otion (A1A, A2A, b > 0.5 kHz) rec. (A1B, F1B, b > 0.5 kHz)	1/5	4
Phototelegrap	hy (R3C,	F3C)	8/10 20	8 20
	со	SSB, ISB (J3E, R3E, B8E)	21 1)	18 ³)
		SSB (H3E), DSB (A3E)	27 2)	24 3)
Telephony	СР	SSB, ISB (J3E, R3E, B8E)	37 1)	29 4)
		SSB (H3E), DSB (A3E)	43 2)	35 4)

TABLE NO. C

Notes: (See Rec. 339-5)

1, 2)

	JU	МС	GC	
J3E	17	26	44	⇒ CO: 21, CP: 37
H3E A3E	23 20	32 29	50 47	⇒ CO: 27, CP: 43

3) -3 dB noise reduction assumed due to the use of noise reducer in the receiver

4) -8 dB noise reduction assumed due to the use of noise reducer in the receiver

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Technical Standards for application in the technical examinations to be carried out by the Radiocommunication Bureau (RR1241/1242)

Technical Standard A-3: Frequency discrimination

1.1 The present Technical Standard contains values for "receiver discrimination" that are defined as a correction, in dB, to be applied to the signal-to-interference ratio and are expressed as a function of the frequency separation between the wanted and unwanted emissions (Δf). The term "receiver discrimination" is equivalent to the definition of "Relative RF Protection Ratio".

1.2 The values contained in this Technical Standard were determined on the basis of

- the selectivity of typical receivers assumed to be used for different classes of emission, and
- the necessary bandwidth occupied by the interfering stations, together with the energy distribution of the power within and outside the bandwidth.

1.3 Data that are used for the establishment of this standard were extracted from the ITU-R Recommendations 328 and 332; they are summarised in Table 1.

1.4 The method of calculation of the values of TSA-3 consisted in considering the energy accepted by the receiver tuned to a frequency of a given frequency separation (Δf) and comparing this energy with the one that the receiver would accept if tuned to the assigned frequency of the emission ($\Delta f = 0$).

1.5 The value of the discrimination, in cases where the wanted emission bandwidth overlaps with the receiver pass-band, depends on both the transmitted spectrum and the receiver selectivity curve. However, in cases of higher frequency separation (where there is no overlapping) the discrimination is determined mainly by the slope of out-of-band emission.

1.6 The values of the receiver discrimination are given in Table 2 in terms of the frequency discrimination factor d. The frequency discrimination factor d represents the difference between the limits of the bandwidths, as indicated in Figure 1 below:



d =∆f - 0.5 (Bwa + Bwi)

Figure 1

1.7 In this approach, the likelihood of mutual interference is not considered in cases where the notified bandwidths of the emissions are separated more than 500 Hz (i.e. for d > 0.5).

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	Receiver of wanted emission		Interfering emission						
Class of emission	Assumed pass band (kHz)	Attenuation slope (dB/kHz)	Necessary bandwidth (kHz)	Level of components at the edge of the necessary bandwidth (dB)	Slope of out-of-band spectrum				
A1A (9-1605 kHz)	0.3, 0.5, 0.75 or 1 kHz, depending on notified bandwidth of wanted emission	120	as notified	-27 at ± 5B/2	-57 dB at \pm 5B, then 12 dB/oct				
A1A (1605 - 28000 kHz) (B: up to 200 baud)	1	120	as notified	-27 at ± 5B/2	-57 dB at \pm 5B, then 12 dB/oct				
F1B (9-1605 kHz)	0.3, 0.5, 0.75, 1 or 1.5 kHz, depending on notified bandwidth of wanted emission	120	as notified	-15	13 + 1.8m = 20 dB/oct				
F1B (1605-28000 kHz) (2D= 200 to 400 Hz B: up to 200 baud m= 2 to 6)	1.5	120	as notified	-15 at 2.6 D + 0.55 B	13 + 1.8m = 20 dB/oct				
A2A, A2B (F: up to 1000 Hz, B: up to 50 baud)	2	120	as notified	-24 at ± (F+5B/2)	12 dB/oct				
A1C, A3C, A7B, AXX, F1C, F2B, F7B	2, 2.5, 3, 3.5, 4, 4.5, 5, 6, 7, 8, 9, 10 or 12 kHz depending on notified bandwidth of wanted emission	120	as notified	-15	20 dB/oct in respect to the outer channel				
A3E	6	20	as notified	-23	12 dB/oct				
R3E, H3E, J3E	3	100	as notified	-23	12 dB/oct				
B8E	6, 9 or 12 kHz depending on notified bandwidth of wanted emission	100	as notified	-23	12 dB/oct				

Table 1: Assumed characteristics of receivers of wanted emissions and characteristics of interfering emissions

References: B: telegraphic speed in baud 2D: difference between mark and space frequencies

m: modulation index 2D/B

F: modulation frequency

Table 2: Values of the frequency discrimination (dB), for different interfering emissions

d	100HA1A	500HA1A 500HA1B	1K00A1B	(A,H)2(A,B,N)	Other telegraphy	Telephony SSB-CP or ISB- CO/CP (with privacy device)	Telephony DSB-CP (with PD) SSB-CO (without PD)	Telephony DSB-CO (without PD)	
-1.0	0	0	0	0	0	0	0	0	
-0.9	0	0	0	6	0	0	0	0	
-0.8	0	0	0	6	0	0	0	0	
-0.7	0	0	0	6	0	0	0	3	
-0.6	0	0	0	6	0	0	3	9	
-0.5	0	0	0	6	0	3	9	15	
-0.4	0	0	3	6	0	9	15	21	
-0.3	0	0	9	6	0	13	19	25	
-0.2	0	0	14	6	3	17	23	29	
-0.1	0	11	18	6	6	19	25	31	
0.0	10	17	22	6	10	21	27	33	
0.1	20	26	30	17	20	28	34	38	
0.2	30	34	37	28	30	37	40	44	
0.3	40	43	45	38	40	44	46	49	
0.4	50	51 52		49	50	52	53	55	
0.5	60	60 60		60	60	60	60	60	
>0.5	> 60	> 60	> 60	> 60	> 60	> 60	> 60	> 60	

References: d:

Receiver discrimination factor (d = $\Delta f - 0.5$ (Bwa + Bwi))

Bwa: Pass-band of the receiver of wanted emission

Bwi: Bandwidth of interfering emission

 Δf : Frequency separation between assigned frequencies.

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Technical Standards for application in the technical examinations to be carried out by the Radiocommunication Bureau (RR1241/1242)

Technical Standard A-4: Gain of Antennae (frequency range between 3900 and 28000 kHz)

1.1 The present Technical Standard contains values of the relative gains of directional antennae, in the frequency ranges and directions indicated, with respect to a reference antenna which is a <u>half-wave loss-free dipole</u> isolated in space (producing a field-strength of 222 mV/m at a distance of 1 km for a power of 1 kW).

1.2 The values contained in Table 1 of this Technical Standard are applicable to the fixed circuits in cases where the administration concerned has not notified the characteristics of the transmitting antenna but it may be assumed that directional antennae are employed. These values refer to both transmitting and receiving antennae.

1.3 The values of antennae gain are presented in terms of the difference between the direction of maximum radiation (column 9a of the International Frequency List) and the direction considered, for two types of antennae:

- the minimum standard antenna, when the notified power is equal to or below 10 kW;
- the economic standard antenna, when the notified power is higher than 10 kW.

1.4 The table also includes, for the two categories of antennae, the angular width of the radiation main lobe (half-power beamwidth), in the horizontal plane, as specified in Appendix 1 to the Radio Regulations with a view to its entry in column 9c of the IFL.

1.5 In cases where an assumption for the receiving directional antenna is made, it is supposed that this antenna is of the same type as the antenna of the corresponding transmitting station (minimum standard antenna or economic standard antenna).

1.6 Directional antennae used are assumed to be typical rhombic antennae or typical dipole arrays. In this connection:

- 1.6.1 the values of the gain to be used, as function of the DIFAZ (i.e. the difference in azimuth between the direction of maximum radiation and the direction towards the receiving point of the existing assignment) are in general those in column 2 of the table. Such values correspond to relatively *small angles of elevation*;
- 1.6.2 however, for angles of elevation greater than about 30^o the gain for all values of DIFAZ is smaller than the gain shown in column 2. As a consequence, when the distance between the interfering transmitting station and the affected receiving station is less than 1000 km, and in addition the length of the circuit for which a directional antenna is used exceeds the interference distance by more than 50%, the values shown in column *2bis* should be used as the gain in the direction of the interference path, for both the transmitting and the receiving antennae.

1.7 With respect to the fixed circuits, it is assumed that in the case of frequency assignments recorded in the Master Register, directional transmitting and receiving antennae are used in the following cases:

- 1.7.1 when the length of the circuit is 500 km or more for transmitter power greater than, or equal to, 500 W;
- 1.7.2 when the length of the circuit is equal to, or greather than 1600 km for transmitter powers less than 500 W.

												ł					
		3.9 - 7	.3 MHz			7.3 - 12	.33 MHz			12.33 - 1	7.36 MH	z	17.36 - 28 MHz				
	P ⊆ 1	0 kW	P > 1	0 kW	P <u></u> _ 1	10 kW	P > 10 kW		P <u></u> 10 kW		P > 1	0 kW	P <u></u> _ 1	0 kW	P > 1	0 kW	
DIFAZ (degree)	col. 2	col. 2bis	col. 2	col. 2bis	col. 2	col. 2bis	col. 2	col. 2bis	col. 2	col. 2bis	col. 2	col. 2bis	col. 2	col. 2bis	col. 2	col. 2bis	
0 - 5	11	8	15	4	14	4	18	4	16	3	20	4	17	4	21	5	
6 - 10	10	8	13	4	13	4	13	4	13	3	11	4	13	4	10	5	
11 - 15	8	5	7	2	7	2	5	1	6	1	4	1	5	1	3	1	
16 - 20	4	1	3	1	3	1	3	1	3	0	2	1	3	1	2	1	
21 - 30	2	1	1	1	2	1	1	1	2	0	1	1	1	1	1	1	
31 - 60	2	1	1	-6	1	-6	1	-6	1	-3	1	-3	1	-3	1	-3	
61 - 90	1	-2	0	-6	0	-6	0	-6	0	-6	0	-6	0	-6	0	-6	
91 - 180	-2	-9	-2	-9	-5	-9	-5	-9	-7	-9	-7	-9	-8	-9	-8	-9	
Angular width of the main lobe (col 9c)	25°	-	18°	_	19°	-	13°	-	16°	-	11°	-	14°	-	10°	-	

Table 1: Gain of antennae, in dB, as a function of DIFAZ, for different frequency bands

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Technical Standards for application in the technical examinations to be carried out by the Radiocommunication Bureau (RR1241/1242)

Technical Standard A-5: Propagation and field strength calculations

1. The present Technical Standard contains information on the methodology used with respect to the propagation and field strength calculations, for application in the technical examinations, under the provisions of Article 12 of the Radio Regulations, of notices of frequency assignments in the frequency bands between 9 and 28000 kHz.

2. <u>Paragraph 3 and Tables 1A to 5</u> of this Technical Standard deal with the field strength calculations in the frequency band between 9 and 3900 kHz. <u>Paragraph 4</u> deals with the frequency bands between 3900 and 28000 kHz.

3. Two modes of propagation are considered in the frequency bands between 9 and 3900 kHz: the ground-wave mode and the sky-wave mode. Values of field strength for these two modes of propagation are contained in <u>Tables 1A and 2-5</u> of this Technical Standard in the form of tables as a function of the distance.

3.1 The field strength values contained in Tables 1A and 2-5 are expressed as median values (exceeded 50 % of the time) in decibels relative to 1 μ V/m. They relate to a radiated power of 1 kW (30 dBW) from a loss-free halfwave dipole isolated in space that produces a field strength of 222 mV/m at a distance of 1 km from the antenna. <u>Table 1B</u> contains antenna efficiency factors (correction factors) to be applied in conjunction with Table 1A to consider differences between radiated and notified power values.

3.2 Field strength values for the ground-wave propagation mode are calculated on the basis of the ITU-R Recommendation 368-5 for the following reference values:

- propagation over sea: $\sigma = 4$ S/m, $\varepsilon_r = 80$;
- propagation over land: σ = 10 mS/m, ε_r = 4.

3.3 In the technical examinations under RR1241, where the ground-wave propagation mode is involved, only homogeneous paths are considered, with no use of mixed-path methodology.

3.4 The tables of field strength values for the sky-wave propagation mode in the frequency bands between 9 and 3900 kHz contain only the value that corresponds to the strongest mode of propagation. These values have been consolidated from different sources but mainly from ITU-R Report 264-1.

3.5 For the day-time propagation only the ground-wave mode is considered within the same time zone. For the night-time propagation both modes are considered; however, only the greater of the ground-wave and the sky-wave mode is used for subsequent calculations.

4. Concerning the calculation of the sky-wave in the bands between 3900 and 28000 kHz, the following methodology is to be applied:

4.1 The monthly median values of the standard MUF (EJF) are calculated in accordance with the ITU-R Recommendation 434 (New Delhi, 1970) and the ITU-R Report 340 (New Delhi, 1970), for two reference values (5 and 125) of the relative sunspot number R_{12} and for two selected months of the year (June and December). These pre-calculated values are stored in a form of tables and are incorporated in the appropriate application software.

4.2 The field-strength values are calculated in accordance with the methodology explained in the NBS Circular No. 462. The same concept of pre-calculated values is applied and the pre-calculated values are stored in a form of tables that are incorporated in the appropriate application software.

TABLE 1A

	Ground wave : sea								Sk	ky wav	e at n	ight			ļ			Grour	d wav	e : lan	d					
Distance in km											F	reque	ency ir	ı kHz						• •						Distance in km
	10	30	60	100	150	200	300	400	500	10	150	200	300	400	500		10	30	60	100	150	200	300	400	500	
10	07	07	07	07	07	07	87	87	97	-100							87	87	87	87	87	87	87	87	87	10
50	72	72	87 72	72	72	72	72	72	72								72	72	72	72	72	72	72	72	71	50
100	66	66	66	66	66	66	66	66	66				43	43	43		66	66	66	66	66	66	65	64	62	100
200	60	60	60	60	60	60	60	59	59				44	44	44		60	60	60	60	60	59	57	54	50	200
300	57	56	56	56	56	55	55	54	54				44	44	44		57	56	56	56	55	54	50	47	42	300
400	55	54	53	53	52	51	50	50	49	45	45	44	44	44	43		55	54	53	53	52	50	45	40	35	400
500	52	51	50	50	48	47	47	46	45	44	44	43	43	43	42		52	51	50	50	48	45	40	34	27	500
600	50	49	48	47	45	44	43	42	41	43	43	43	42	42	41		50	49	48	47	45	42	35	27	21	600
700	48	46	45	43	42	41	39	38	37	 42	42	42	41	41	40		48	46	45	43	42	39	31	17	15	/00
800	46	44	43	41	39	38	37	35	33	41	41	41	40	40	39		40	44	43	41	39	35	27	1/		000
900	45	42	40	38	3/	35	30	28	26	30	30	39	38	30	37	1	43	42	38	36	33	29	18	7	-4	1000
1100	43	38	36	30	31	29	27	25	20	 38	37	37	36	36	35		42	38	36	33	30	25	14	2	-10	1100
1200	40	37	34	31	29	27	24	21	19	38	36	36	35	35	34		40	37	34	31	27	22	9	-3	-15	1200
1300	39	35	32	29	26	24	21	17	15	36	35	35	34	33	33		39	35	32	29	24	19	6	-8	-21	1300
1400	38	33	29	26	23	21	17	14	12	36	34	34	33	32	32		38	33	29	27	22	16	-2	-13		1400
1500	36	32	27	24	21	18	14	11	8	35	33	33	32	31	30		36	32	27	24	19	13	-2	-18		1500
1600	35	29	25	22	18	15	11	7	5	 34	32	32	31	30	29		35	29	25	22	16	10	-7	-23		1600
1700	34	28	23	19	15	12	8	4	1	33	32	31	30	29	28		34	28	23	20	13	7	-10		1	1700
1800	32	26	20	17	13	10	5	1	-3	32	31	31	29	28	27		32	26	20	18	10	4	-14			1800
1900	31	24	19	15	10	7	2	-3	-6	31	30	30	28	27	26		31	24	19	15	8		-18		 	1900
2000	29	23	17	12	8	4	-1	-5	-9	31	29	29	27	26	25		29	23	17	13	0	-3	-21			2000
2200	27	19	13			-1	-/	-12	-10	29	20	26	25	24	25		27	19	15		-5	-0				2400
2400	22	13	5	-1	-2	-11	-18	-10	-2.5	 20	26	25	23	21	20		22	13	5	-1	-10	-20	<u> </u>			2600
2800	20	9	2	-5	-11	-16	-24	<u>-</u> '		26	24	23	21	20	18		20	9	2	-5	-15					2800
3000	18	7	-3	-10	-17	-22				25	23	22	20	18	17		18	7	-3	-10	-21					3000
3200	15	4	-5	-14	-21					25	23	21	19	17	15		15	4	-5	-14						3200
3400	13	0	-10	-18	1		ł	1		24	22	20	18	16	14		13	0	-10	-18			1			3400
3600	10	-3	-13	-23		ļ	ļ	<u> </u>		24	21	20	17	15	13		10	-3	-13	-23		ļ	ļ	<u> </u>		3600
3800	9	-5	-16					1		23	21	19	16	14	12		97	-5	-16							3800
4000	_5	-9	-20							23	20	17	14	10	8	[-5	-24	-20		1					5000
6000	-15		<u> </u>		<u> </u>	+			<u> </u>	23	20	17	14	8	6	<u> </u>	-15	<u> </u>	1	+			<u> </u>			6000
7000		1	ł				1	1		22	19	16	13	8	5											7000

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Fr. Band (kHz)	Class of station	Correction (dB)
9 - 70	Fixed, Land and Radionavigation Land stations - power above 1 kW - power equal to 1 kW - power_below 1 kW	- 10 - 12 - 15
70 - 150	Fixed, Land and Radionavigation Land stations - power above 1 kW - power equal to 1 kW - power below 1 kW	- 7 - 9 - 12
150 - 535	Fixed, Land and Radionavigation Land stations (except non-directional beacons) - power above 1 kW - power equal to 1 kW - power below 1 kW	- 2 - 4 - 7

Table 1B: Antenna efficiency (correction factor)

ΓABL	E 2
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															SEA
			1 60	5 - 2 30	0 kHz										
		1		S	ky wave						Sky	wave			
Distance in km	Ground wave		noon (I	ow sola	r activity	')	night	Ground wave		noon (lo			Distance in km		
				latitude	Э						night				
		0°	30°	40°	50°	60°			0°	30°	40°	50°	60°	-	
10	86							86							10
50	72	r						72							50
100	65							65							100
200	57							57							200
300	50				1			50						-	300
400	43						41	43				Į,		43	400
500	38						41	37						43	500
600	32						41	30	1					43	600
700	27						41	24						43	700
800	22		1				41	18		1		1.		43	800
900	16	<u> </u>				· ·	40	12	·				1	42	900
1000	11						39	7				-9	-1	41	1000
1100	6				-12	-7	39	2			-13	,-10	-3	41	1100
1200	0	1		-15	-13	-8	38	-3	-15	-15	-14	-11	-4	40	1200
1300	-5	-17	-17	-16	-14	-9	37	-9	-16	-16	-15	-12	-6	39	1300
1400	-10	-18	-18	-17	-15	-10	36	-16	-18	-17	-16	-14	-7	38	1400
1500	-15	-20	-20	-19	-16	-12	35		-19	-19	-18	-15	-9	37	1500
1600		-21	-21	-20	-17	-13	34		-20	-20	-19	-16	-10	36	1600
1700			1				33							36	1700
1800			1				33		<u> </u>	1				35	1800
1900			<u> </u>				32							34	1900
2000	<u> </u>						32							34	2000
2200	<u> </u>						31							33	2200
2400	<u> </u>					1	30	1	1		1	1		32	2400
2600		<u> </u>					29					<u> </u>		31	2600
2800							28		1	1				30	2800
3000	<u> </u>						27	<u> </u>	<u> </u>	1				29	3000
3200	1						26			1	<u> </u>	1		27	3200
3400	1						25							26	3400
3600	1	<u> </u>					23				-			24	3600
3800		<u> </u>					21	1	<u> </u>	<u> </u>		<u> </u>		22	3800
4000	<u> </u>	<u> </u>	<u> </u>			1	19		1	1	t	+	<u>├</u> ───		4000
4500		<u> </u>					15	<u>+</u>				<u>+-</u>	<u>├</u> ────	16	4500
5000							10	1				+	<u> </u>	11	5000
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TABLE 3

		_														SEA	
			2 85	50 - 3 50	0 kHz						3 500	) - 3 90	0 kHz				
				S	ky wave	)			Sky wave							·	$\neg$
Distance in km	Ground wave		noon (l	ow sola	r activity	)	night	Ground wave		no	oon (lo	w sola	r activi	ty)		night	Distance in km
				latitude	э		-		latitude						-		
	_	0°	30°	40°	50°	60°			0°	10°	20°	30°	40°	50°	60°		
10	86							86									10
50	72							72								47	50
100	65							65	27	28	29	30	31	35	40	47	100
200	56							55	24	25	26	27	29	32	37	47	200
300	48						44	47	19	20	21	22	25	29	34	47	300
400	41						44	40	14	15	16	17	21	26	32	47	400
500	35						44	33	5	8	11	14	19	24	30	47	500
600	29						44	26	0	1	6	11	16	21	28	46	600
700	22					12	44	19	-2	-1	1	5	12	17	26	46	700
800	16				-3	10	44	12	-5	-4	-3	-2	8	13	24	45	800
900	10				-5	6	44	6	-8	-6	-5	-4	4	12	21	44	900
1000	4			-10	-6	2	43	-1	-10	-8	-6	-5	-2	10	18	43	1000
1100	-3	-14	-13	-12	-8	0	43	-7				-8	-3	5	16	42	1100
1200	-8	-15	-14	-13	-10	-1	42				T	-9	-5	1	14	42	1200
1300	-13	-16	-15	-14	-11	-3	41						-7	-1	11	41	1300
1400		-18	-17	-16	-13	-4	40						-9	-3	8	40	1400
1500		-19	-19	-18	-14	-6	39			1	1			-4	7	39	1500
1600		-20	-20	-19	-15	-7	38							-5	5	38	1600
1700							38									38	1700
1800							37									37	1800
1900			1				36									36	1900
2000							35									35	2000
2200							34									34	2200
2400							33									33	2400
2600							32									32	2600
2800			1			1	31					1				31	2800
3000				[			30									30	3000
3200							28									28	3200
3400							27									27	3400
3600			1		1		25							1	[	26	3600
3800				1			23									25	3800
4000							21		1							23	4000
4500			1			[	16		1							18	4500
5000							11									13	5000

TAE	BLE	4
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												÷			LAND	
··			1 60	)5 - 2 30	0 kHz			2 300 - 2 850 kHz								
				S	kv wave	<u> </u>	·····		1	Sky wave						
Distance	Ground		noon (l	ow sola	r activity	)		Ground	noon (low solar activity)						Distance	
in km	wave					wave							in km			
				latitude	9		night				latitude	*		night		
		0°	30°	40°	50°	60°			0°	30°	40°	50°	60°			
10	78							75				i se			10	
50	48						46	45				÷		46	50	
100	34					30	43	21			25	27	31	44	100	
200	17			10	15	21	41	13	12	13	16	20	25	43	200	
300	5	2	3	4	8	16	41	-1	6	7	10	14	22	43	300	
400	-8	-4	-3	-2	2	10	41	-15	-1	0	2	· 9	16	43	400	
500		-7	-6	-5	-1	6	41		-5	-4	-2	5	12	43	500	
600		-9	-9	-8	-4	2	41		-8	-7	-5	^T 0	8	43	600	
700		-11	-11	-10	-6	-1	41		-10	-9	-7	<b>'</b> -3	6	43	700	
800		-12	-12	-11	-9	-3	41		-11	-10	-9	-6	4	43	800	
900		-13	-13	-12	-10	-4	40		-12	-11	-10	-8	1	42	900	
1000		-14	-14	-13	-11	-5	39		-13	-12	-11	<b>-9</b>	-1	41	1000	
1100		-15	-15	-14	-12	-7	39		-14	-14	-13	-10	-3	41	1100	
1200		-16	-16	-15	-13	-8	38		-15	-15	-14	-11	-4	40	1200	
1300		-17	-17	-16	-14	-9	37		-16	-16	-15	-12	-6	39	1300	
1400		-18	-18	-17	-15	-10	36		-18	-17	-16	-14	-7	38	1400	
1500		-20	-20	-19	-16	-12	35	T	-19	-19	-18	-15	-9	37	1500	
1600		-21	-21	-20	-17	-13	34		-20	-20	-19	-16	-10	36	1600	
1700							33	1	1					36	1700	
1800		T	1				33	T	1					35	1800	
1900			1				32							34	1900	
2000		1	1				32							34	2000	
2200		1	1				31							33	2200	
2400		T					30							32	2400	
2600		1					29	1	1					31	2600	
2800			1				28							30	2800	
3000			1				27							29	3000	
3200			1				26	]			1			27	3200	
3400			1		1	1	25	T		1				26	3400	
3600		1			1		23	T						24	3600	
3800			1		1		21		1					22	3800	
4000		1	1				19							20	4000	
4500			1		t		15				i	1		16	4500	
5000							10		[					11	5000	

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TABLE 5

																	LAND
			2 85	50 - 3 50	0 kHz						3 500	- 3 90	0 kHz				
				S	kv wave	;			Sky wave								
Distance	Ground		noon (l	ow solar	r activity	)		Ground		n	on (lo	w solar	activi	tv)		,	Distance
in km	wave					,		wave						-,,,			in km
	, indice			latitude	<u> </u>		night	, mare				latitude	<u></u>			night	
		<u> </u>	300	100	500	60°		00	100	200	200	, 	50°	600	ingin	1	
10	71	0	- 30	-+0	- 30	00		67			_20	30	40	- 50	00		10
50	41				· · · · ·		45	37								47	50
100	27	26	27	28	28	32	40	23	27	28	29	30	31	35	40	47	100
200	14	17	18	22	25	28	44	4	24	25	26	27	29	32	37	47	200
		9	10	15	20	27	44	·	19	20	21	22	25	29	34	47	300
400		2	3	5	15	21	44		14	15	16	17	21`	26	32	47	400
500		-3	-2	1	11	17	44		5	8	11	14	19	24	30	47	500
600		-6	-5	-3	3	14	44		0	1	6	11	16	21	28	46	600
700		-8	-7	-5	0	12	44		-2	-1	1	5	12	17	26	46	700
800		-10	-9	-8	-3	10	44		-5	-4	-3	-2	8	13	24	45	800
900		-11	-10	-9	-5	6	44		-8	-6	-5	-4	4	12	21	44	900
1000		-12	-11	-10	-6	2	43	1	-10	-8	-6	-5	-2	10	18	43	1000
1100		-14	-13	-12	-8	0	43					-8	-3	5	16	42	1100
1200		-15	-14	-13	-10	-1	42					-9	-5	1	14	42	1200
1300		-16	-15	-14	-11	-3	41						-7	-1	11	41	1300
1400		-18	-17	-16	-13	-4	40						-9	-3	8	40	1400
1500		-19	-19	-18	-14	-6	39							-4	7	39	1500
1600		-20	-20	-19	-15	-7	38							-5	5	38	1600
1700							38							-7		38	1700
1800		L					37							-9		37	1800
1900							36									36	1900
2000							35				L					35	2000
2200			L			L	34		ļ		L			_		34	2200
2400		ļ					33	<u></u>			Į					33	2400
2600		L					32		ļ							32	2600
2800							31			ļ	L					31	2800
3000										ļ						30	3000
3200						ļ	28				L					28	3200
3400	ļ				L	l	27		ļ	ļ						27	3400
3600						ļ	25	ļ		<b> </b>	<b> </b>					26	3600
3800		ļ				ļ	23		ļ		L					25	3800
4000			ļ	ļ		<b> </b>	21		ļ					ļ		23	4000
4500		ļ	ļ	ļ	ļ	<b> </b>	16		ļ		ļ	L				18	4500
5000	L	<u> </u>	<u> </u>	L			11		L		L					13	5000

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# RULES OF PROCEDURE

# PART B

# **SECTION B5**

# Criteria for applying the provisions of RR1616 to a frequency assignment in the services whose allocation is governed by RR484 and RR487

1. The determination of the affected administrations is based on the characteristics of the assignment that is subject to the procedure of Article 14 and the worst-case assumptions relating to the propagation characteristics and other technical parameters. These worst-case assumptions were developed on the basis of the Technical Standards of the Radiocommunication Bureau that are normally used for technical examinations relating to the probability of harmful interference under RR1241.

2. The provisions of RR484 and RR487 deal with the application of the Article 14 procedure for radiodetermination and radiolocation systems, whose maximum "radiated mean power" is limited to 50 W, in the following frequency bands:

	RR484	RR487
Frequency bands (kHz)	1606.5-1625 1635-1800 1850-2160 2194-2300 2502-2850 3500-3800	1625-1635 1800-1810 2160-2170

3. Since the term "radiated mean power" is not defined in the Radio Regulations, the Bureau applies this provision to the mean power supplied to the antenna transmission line (col 8a of Appendix 1 to the Radio Regulations).

4. For identification of the affected administrations the following criteria are applied:

4.1 the <u>coordination distance concept</u> is applied for protection of the services that are allocated according to Article 8 of the Radio Regulations;

4.2 the *standard technical examination* is performed with respect to the cases for which the Article 14 procedure was completed or initiated.

5. For the application of the coordination distances concept appropriate Tables (<u>Table 1</u> and <u>Table 2</u>) were developed on the basis of the Technical Standards A-1 and A-2, using the telegraphy as reference transmission type, for night-time operation. This type of transmission was selected since it represents the worst-case condition for calculation of the coordination distances due to the low value of the minimum field strength to be protected. <u>Table 1</u> relates to the protection ratio of 17 dB, which corresponds to the "upper value of TSA-1" concerning the RF signal-to-interference protection ratio for telegraphy, automatic reception without error correction, in the frequency band 1606.5-4000 kHz; countries outside the coordination area determined by these coordination distances are certainly not affected. <u>Table 2</u> relates to the protection ratio of 5 dB, which corresponds to the "minimum limit of TSA-1" concerning the RF signal-to-interference protection ratio for telegraphy, aural reception, in the frequency band 1606.5-4000 kHz; countries outside the coordination area determined by these coordination distances are certainly not affected. <u>Table 2</u> relates to the protection ratio of 5 dB, which corresponds to the "minimum limit of TSA-1" concerning the RF signal-to-interference protection ratio for telegraphy, aural reception, in the frequency band 1606.5-4000 kHz; countries within the coordination area

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determined by these coordination distances are certainly affected if their services use telegraphy. The countries situated between the two coordination contours have a slightly higher probability of harmful interference than that considered desirable for the referenced type of transmission.

6. However, with respect to allocations to the amateur service in these bands, the Bureau is not in a position to identify the countries whose amateur service could be affected and consequently one of the following notes is included in the appropriate Special Section:

- " In some countries of Region 1, the band 1715-1800 kHz, or part of it, is allocated to the amateur service. The Bureau has no means of identifying the countries whose amateur service could be affected"
- " In Regions 2 and 3 the band 1800-1810 is allocated to the amateur service. The Bureau has no means of identifying the countries whose amateur service could be affected"
- In Regions 2 and 3, except in countries mentioned in RR494, and in some countries in Region 1, the band 1850-2000 kHz, or part of it, is allocated to the amateur service. The Bureau has no means of identifying the countries whose amateur service could be affected"
- In Regions 1, 2 and 3, the band 3500-3750 kHz is allocated to the amateur service. The Bureau has no means of identifying the countries whose amateur service could be affected"
- "In Regions 1, 2 and 3, except in countries mentioned in RR512, the band 3750-3800 kHz is allocated to the amateur service. The Bureau has no means of identifying the countries whose amateur service could be affected".

Table 1: Coordination distance for assuring protection ratio of 17 dB
(protected transmission: telegraphy, automatic reception)

Noise degree	50	60	70	80
Minimum field strength (dB rel. 1 $\mu$ V/m)	4	13	22	30

Power (of the interfering transm.)			Coordination	distance (km)	
1 W	0 dBW	4400	3400	1800	800
3 W	5 dBW	4900	3900	2800	1400
10 W	10 dBW	5000	4500	3500	2200
30 W	15 dBW	5000	5000	4000	3100
50 W	17 dBW	5000	5000	4200	3400

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# Table 2: Coordination distance for assuring protection ratio of 5 dB(protected transmission: telegraphy, aural reception)

Noise degree	50	60	70	80
Minimum field strength (dB rel. 1 μV/m)	0	9	18	26

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Por (of the interfe	wer ering transm.)	Coordination distance (km)			
1 W	0 dBW	3400	1600	800	300
3 W	5 dBW	3900	2600	1300	700
10 W	10 dBW	4500	3500	2200	1100
30 W	15 dBW	5000	4000	3100	1600
50 W	17 dBW	5000	4200	3400	1900

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# RULES OF PROCEDURE

# PART B

### **SECTION B6**

# Criteria for applying the provisions of RR1616 to a frequency assignment in the services whose allocation is governed by Nos. 674, 675, 678, 692, 692A, 704, 705, and 707A

1. The determination of the affected administrations is based on the characteristics of the assignment that is subject to the procedure of Article 14 and the worst-case assumptions relating to the propagation characteristics and other technical parameters. These worst-case assumptions were developed on the basis of the information contained in various sources (Regional Agreements, ITU-R Recommendations), since the Radiocommunication Bureau has no Technical Standards for application in the frequency bands above 28 MHz.

2. For identification of the affected administrations, in the context of the provisions of Nos. 674, 675, 678, 692, 692A, 704, 705 and 707A, the following criteria are applied:

2.1 the <u>coordination distance concept</u> is applied with respect to the services that are allocated according to Article 8 of the Radio Regulations (these services are indicated in the Table below under the heading "protected service");

	Frequency band (MHz)	Allocated service (AR14)	Protected service
RR674 *)	470-512	FX, MO	ВТ
RR675 ^{*)}	470-512 & 614-806	FX, MO	ВТ
RR678	512-608	FX, MO	ВТ
RR692 *)	614-806	FX	вт
RR692A	614-890	AL, NL	BT, FX, MO
RR704	862-960	AL	FX, MO
RR705 *)	890-942	LR	FX, MO
RR707A *)	903-905	MO(-AER)	FX

*) Different category of service

2.2 the <u>case-by-case examination</u> is performed with respect to the assignments for which the Article 14 procedure was completed or initiated.

3. In the calculation of the coordination distances the following approach was used:

3.1 For the protection of the Broadcasting (Television) service, in the context of the provisions of Nos. 674, 675, 678 and 692, the criteria established by the GE89 Conference were used, notably the data relating to propagation zones 1 and 4. The calculated coordination distances over land paths and sea paths, respectively, are contained in <u>Table 1</u>.

3.2 For the protection of the Broadcasting (Television) and of the fixed and mobile services, from the radionavigation and radiolocation services, in the context of the provisions of Nos. 692A, 704 and 705, propagation curves from ITU-R Recommendation 528-2 are used in connection with the following data:

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- Minimum field strength to be protected (BT): 58 dB(μV/m) at 10 m above ground level; PR: 45 dB (tropospheric interference) and 53 dB (continuous interference)
- Minimum field strength to be protected (FX): 30 dB( $\mu$ V/m), PR = 8 dB.

3.3 For the protection of the fixed and mobile services, in the context of the provisions of No. 707A, the criteria established by the GE89 Conference were used, notably the data relating to propagation zones 1 and 4. The calculated coordination distances over land paths and sea paths, respectively, are contained in <u>Table 2</u>.

	Band 470 - 582 MHz		Band 582 - 890 MHz	
Power (of the interf.)	Land path	Sea path	Land path	Sea path
30 dBW	136.8 km	938.1 km	85.0 km	756.8 km
25 dBW	102.1 km	826.2 km	63.0 km	652.1 km
20 dBW	75.2 km	714.6 km	46.9 km	550.0 km
15 dBW	56.1 km	610.4 km	36.1 km	458.3 km
10 dBW	41.1 km	510.0 km	29.1 km	371.0 km
5 dBW	33.2 km	422.2 km	23.8 km	300.0 km
0 dBW	27.0 km	340.5 km	18.8 km	228.6 km

# Table 1: Coordination distances for protection of the BT service (from the FX/MO service, effective antenna height 37.5 m)

# Table 2: Coordination distances for protection of the FX/MO services(from the FX/MO service, effective antenna height 37.5 m)in the frequency band around 900 MHz

Power (of the interf.)	Land path	Sea path
30 dBW	50.9 km	254.1 km
25 dBW	38.1 km	182.1 km
20 dBW	29.4 km	130.8 km
15 dBW	24.2 km	90.0 km
10 dBW	19.2 km	63.7 km
5 dBW	15.2 km	41.3 km
0 dBW	12.4 km	26.1 km

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