CHAPTER 1

Definitions

CONTENTS

		Page
1.1	General terms	5
1.1.1	The Stockholm Agreement (1961) (ST61)	5
1.1.2	The Geneva Agreement (1989) (GE89)	5
1.1.3	Planning area	5
1.2	Definition of radio stations and systems	5
1.2.1	Digital terrestrial television broadcasting (DTTB)	5
1.2.2	Digital video broadcasting – terrestrial (DVB-T)	5
1.2.3	Digital terrestrial sound broadcasting (DTSB)	5
1.2.4	Terrestrial – digital audio broadcasting (T-DAB)	5
1.3	Frequency management terms	5
1.3.1	Frequency bands	5
1.3.2	Coverage area	6
1.3.3	Service area	6
1.4	Definitions relating to propagation and field-strength prediction	6
1.4.1	Refractive index; *n* (Recommendation ITU-R P.310)	6
1.4.2	Refractivity; *N* (Recommendation ITU-R P.310)	7
1.4.3	*N*-unit (Recommendation ITU-R P.310)	7
1.4.4	Standard refractivity gradient (Recommendation ITU-R P.310)	7
1.4.5	Vertical refractivity gradient in the lowest atmospheric layer (Recommendation ITU-R P.453)	7
1.4.6	Reference refractivity gradient (Recommendation ITU-R P.1546)	7
1.4.7	Superrefraction (Recommendation ITU-R P.310)	7
1.4.8	Gaussian propagation channel	7
1.4.9	Rayleigh propagation channel	7
1.4.10	Ricean propagation channel	8
1.4.11	Effective transmitting antenna height (Recommendation ITU-R P.1546)	8
1.4.12	Height loss correction factor	8
1.4.13	Location correction factor	8

Page

1.4.14 Location distribution 9
1.4.15 Location probability 9
1.4.16 Mean building penetration loss 9
1.5 Definitions relating to radio equipment 9
1.5.1 Effective antenna aperture 9
1.5.2 Feeder loss 9
1.6 Definitions relating to network planning 9
1.6.1 Allotment planning 9
1.6.2 Assignment planning 9
1.6.3 Test points 9
1.6.4 Nuisance field strength 10
1.6.5 Minimum usable field strength/Minimum field strength to be protected 10
1.6.6 Usable field strength 10
1.6.7 Reference usable field strength (Recommendation ITU-R V.573) 11
1.6.8 Minimum median power flux-density φ_{med} (dB(W/m^2)) 11
1.6.9 Minimum median field strength, E_{med} (dB(μV/m)) 11
1.6.10 Fixed reception 12
1.6.11 Portable reception 12
1.6.12 Mobile reception 12
1.6.13 Multifrequency network (MFN) 13
1.6.14 Single frequency network (SFN) 13
1.6.14.1 Large area SFN 13
1.6.14.2 Mini SFN 13
1.6.14.3 Dense network 13
1.6.14.4 National SFN 13
1.6.14.5 Regional or local SFN 13
1.6.15 SFN network gain 13
1.6.16 Small allotment area 13
1.6.17 Transmitting stations used in digital networks 13
1.6.17.1 High power station 13
1.6.17.2 Medium power station 13
1.6.17.3 Low power station 14

		Page
1.6.18	Reference Planning Configuration (RPC)	14
1.6.19	Reference network	14
1.7	Definitions of existing and planned assignments and allotments of the broadcasting service and existing and planned assignments of other primary services.....	14
1.7.1	Existing and planned assignments and allotments of the broadcasting service.....	14
1.7.2	Existing and planned assignments of primary services other than broadcasting.....	16
Annex 1.1	Definitions given in the Radio Regulations (Edition 2001) and complemented by explanations in Recommendations.....	17
Annex 1.2	Methods to identify administrations potentially affected by assignments or allotments in the broadcasting service and other primary services	19
A.1.2.1	Identification of the administrations whose analogue or digital assignments in the broadcasting service or assignments in other primary services may be affected by digital assignments recorded in the ST61 and GE89 Plans.....	19
A.1.2.1.1	Coordination distances to assess the potential impact of DVB-T assignments on analogue television and comparison with the ST61/GE89 limiting distances.....	19
A.1.2.1.2	Coordination distances to assess the potential impact of DVB-T assignments on other primary services.....	20
A.1.2.1.2.1	Reception of other primary services at ground level	20
A.1.2.1.2.2	Reception of other primary services on board aircraft	20
A.1.2.2	Identification of the administrations whose analogue or digital assignments in the broadcasting service or assignments in other primary services may be affected by T-DAB allotments/assignments	21
A.1.2.2.1	Impact of T-DAB allotments/assignments on analogue or digital assignments in the broadcasting service.....	21
A.1.2.2.2	Impact of T-DAB allotments/assignments on assignments in other primary services.....	21
A.1.2.3	Identification of the administrations whose analogue or digital assignments in the broadcasting service may be affected by assignments in other primary services.....	21

Page

A.1.2.4 Identification of the administrations in the RRC planning area whose broadcasting and other primary services may be affected by the broadcasting analogue assignments contained in the “RCC List”..... 21

A.1.2.5 Applicability to DVB-T allotments 21

The terms defined in the Radio Regulations are listed in Annex 1.1.

1.1 General terms

1.1.1 The Stockholm Agreement (1961) (ST61)

The "Regional Agreement for the European Broadcasting Area concerning the use of frequencies by the broadcasting service in the VHF and UHF bands" adopted by the European VHF/UHF Broadcasting Conference (Stockholm, 1961).

1.1.2 The Geneva Agreement (1989) (GE89)

The "Regional Agreement relating to the planning of VHF/UHF television broadcasting in the African Broadcasting Area and neighbouring countries" adopted by the Regional Administrative Conference for the planning of VHF/UHF television broadcasting (Geneva, 1989).

1.1.3 Planning area

The planning area covers Region 1 (No. 5.3 of the Radio Regulations) (parts of Region 1 situated to the west of meridian 170° E and to the north of parallel 40° S, except the territories of Mongolia) and the Islamic Republic of Iran.

1.2 Definition of radio stations and systems

1.2.1 Digital terrestrial television broadcasting (DTTB)

Digital television systems in the terrestrial broadcasting service which are described in Recommendation ITU-R BT.1306.

1.2.2 Digital video broadcasting – terrestrial (DVB-T)

A system in the terrestrial broadcasting service designated in Recommendation ITU-R BT.1306 as "Digital System B". For the full system specifications on "Digital broadcasting systems for television, sound and data services; framing structure, channel coding and modulation" see the bibliography section for System B in Appendix 2 to Annex 1 of the Recommendation.

1.2.3 Digital terrestrial sound broadcasting (DTSB)

Digital sound systems in the terrestrial broadcasting service which are described in Recommendation ITU-R BS.1114.

1.2.4 Terrestrial – digital audio broadcasting (T-DAB)

A system in the terrestrial broadcasting service designated in Annex 2 of Recommendation ITU-R BS.1114 as "Digital System A".

1.3 Frequency management terms

1.3.1 Frequency bands

Band III

Frequency range: 174-230 MHz.

Band IV

Frequency range: 470-582 MHz.

Band V

Frequency range: 582-862 MHz.

1.3.2 Coverage area

Coverage area of a broadcasting station, or a group of broadcasting stations in the case of a single frequency network (SFN, see definition in § 1.6.14), is the area where the wanted field strength is equal to or exceeds the usable field strength defined for specified reception conditions.

In defining the coverage area for each reception condition a three level approach is taken:

– *Level 1: Receiving location*

  The smallest unit is a receiving location; optimal receiving conditions will be found by moving the antenna up to 0.5 m in any direction.

  A receiving location is regarded as being covered if the level of the wanted signal is high enough to overcome noise and interference for a given percentage of the time.

– *Level 2: Small area coverage*

  The second level is a "small area" (typically 100 m by 100 m).

  In this small area the percentage of covered receiving locations is indicated.

– *Level 3: Coverage area*

  The coverage area of a broadcasting station, or a group of broadcasting stations, is made up of the sum of the individual small areas in which a given percentage (e.g. 70% to 99%) of coverage is achieved.

1.3.3 Service area

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

1.4 Definitions relating to propagation and field-strength* prediction

1.4.1 Refractive index; *n* (Recommendation ITU-R P.310)

Ratio of the speed of radio waves *in vacuo* to the speed in the medium under consideration.

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* In the case of wideband digital signals where the spectral power density may not be constant across the occupied bandwidth, the term "field strength" is often replaced by the term "equivalent field strength". The equivalent field strength is the field strength of a single unmodulated RF carrier radiated with the same power as the total radiated power of the wideband digital signal. The terms "field strength" and "equivalent field strength" are used synonymously in this report.

1.4.2 Refractivity; *N* (Recommendation ITU-R P.310)

One million times the amount by which the refractive index *n* in the atmosphere exceeds unity.

1.4.3 *N*-unit (Recommendation ITU-R P.310)

A dimensionless unit in terms of which refractivity is expressed.

1.4.4 Standard refractivity gradient (Recommendation ITU-R P.310)

A standard value of vertical gradient of refractivity used in refraction studies, namely –40 *N*/km. This corresponds approximately to the median value of the gradient in the first kilometre of altitude in temperate regions.

1.4.5 Vertical refractivity gradient in the lowest atmospheric layer (Recommendation ITU-R P.453)

The statistics of the vertical gradient of refractivity, d*N,* in the lowest layer of the atmosphere (the lowest 65 m from the surface of the Earth) are important parameters for the estimation of propagation-associated effects such as ducting on transhorizon paths.

1.4.6 Reference refractivity gradient (Recommendation ITU-R P.1546)

The field-strength curves in Recommendation ITU-R P.1546 are considered to represent reference values, dN_0, of the vertical refractivity gradient for fields exceeded for a given percentage of time:

For fields exceeded for 50% time:	$dN_0 = -43.3$	*N*-units/km
For fields exceeded for 10% time:	$dN_0 = -141.9$	*N*-units/km
For fields exceeded for 1% time:	$dN_0 = -301.3$	*N*-units/km

1.4.7 Superrefraction (Recommendation ITU-R P.310)

Refraction for which the refractivity gradient is less (i.e. more negative) than the standard refractivity gradient.

1.4.8 Gaussian propagation channel

A channel which supports a propagation mode where only the wanted signal with no delayed signals is present at the receiver input, taking into account the Gaussian noise only.

1.4.9 Rayleigh propagation channel

A channel which supports a propagation mode where several statistically independent signals with different delay times, none of which is dominant, are present at the receiver input, taking into account the thermal noise. Rapid and severe variations of the input signal with locations are observed, caused by multipath propagation.

1.4.10 Ricean propagation channel

A channel which supports a propagation mode where a dominant wanted signal together with lower-level delayed signals are present at the receiver input, taking into account the thermal noise.

1.4.11 Effective transmitting antenna height (Recommendation ITU-R P.1546)

The "effective height" of the transmitting/base antenna is the height of the antenna above terrain height averaged between distances of 3 to 15 km in the direction of the receiving/mobile antenna. For land paths shorter than 15 km, where the information is available the method in Recommendation ITU-R P.1546 also takes account of the height of the transmitting/base antenna above the height of representative clutter (i.e. ground cover) at the location of the transmitting/base station.

1.4.12 Height loss correction factor

A correction in decibels applied to the predicted field strength at roof level when making a prediction for lower reception heights.

1.4.13 Location correction factor

The ratio, expressed in decibels, of the field strength exceeded for a given percentage of the receiving locations to the field strength exceeded for 50% of the receiving locations.

NOTE 1 – In the case of a single signal, where the statistical distribution parameters are known *a priori*, the location correction factor "C_l" for a given x% of locations is defined as the product of a distribution factor, μ, by the appropriate standard deviation of location variation, μ being equal to $Q_i(1 - x/100)$, which is the inverse complementary cumulative normal distribution function (see Table 5 of Recommendation ITU-R P.1546).

NOTE 2 – In this Report, the designation "location correction factor", unless otherwise stated, relates to outdoor locations, the standard deviation of the outdoor location variation of a wideband signal being taken as 5.5 dB, in accordance with Recommendation ITU-R P.1546.

NOTE 3 – In this Report, the designation "indoor location correction factor" represents the location correction factor at indoor locations, being defined as a combination of the outdoor location variation (see Note 2) with the building attenuation variation; provided these distributions are uncorrelated, the combined standard deviation is calculated by taking the square root of the sum of the squares of the individual standard deviations.

NOTE 4 – In this Report, the designation "combined location correction factor" represents the location correction factor in the case of a wanted signal and a nuisance signal; provided the distributions of the signals concerned are uncorrelated, the combined standard deviation of location variation for the wanted and the nuisance signals is calculated by taking the square root of the sum of the square of the standard deviation of the wanted signal and the square of the standard deviation of the nuisance signal.

1.4.14 Location distribution

The statistical distribution (typically log normal) over a specified area (typically a square with a side of 100 m to 200 m) of the more or less random variation of the received signal level with location due to terrain irregularities and the effect of obstacles in the near vicinity of the receiver location.

1.4.15 Location probability

Percentage of receiving locations where a given field strength is achieved or exceeded.

1.4.16 Mean building penetration loss

The ratio, expressed in decibels, between the mean field strength inside a building at a given height above ground level and the mean field strength outside the same building at the same height above ground level.

1.5 Definitions relating to radio equipment

1.5.1 Effective antenna aperture

The ratio of the power available at the receiving antenna terminals to the power flux-density of the appropriately polarized incident wave.

1.5.2 Feeder loss

The signal attenuation from the receiving antenna to the receiver's RF input.

1.6 Definitions relating to network planning

1.6.1 Allotment planning

In allotment planning, a specific channel is "given" to an administration to provide coverage over a defined area within its service area, called the allotment area. Transmitter sites and their characteristics are unknown at the planning stage and should be defined at the time of the conversion of the allotment into one or more assignments.

1.6.2 Assignment planning

In assignment planning, a specific channel is assigned to an individual transmitter site location with defined transmission characteristics (for example, radiated power, antenna height, etc.). At the completion of the assignment plan, the locations and characteristics of all transmitters are known and the transmitters can be brought into service without further coordination.

1.6.3 Test points

A test point is a geographically defined location at which specified calculations are carried out.

1.6.4 Nuisance field strength

The nuisance field strength (E_n), expressed in dB(µV/m), is the field strength for 50% of locations and for a given percentage of the time of an unwanted signal from any potential interfering source, to which has been added the relevant protection ratio in decibels.

NOTE 1 – Where relevant, the appropriate value in decibels of receiving antenna directivity or polarization discrimination must be taken into account.

NOTE 2 – Where there are several unwanted signals, a method for combination of individual nuisance field strengths shall be applied, such as the power sum method or some other appropriate method for signal summation, in order to obtain the resultant nuisance field strength.

1.6.5 Minimum usable field strength/Minimum field strength to be protected

Minimum value of the field strength necessary to permit a desired reception quality, under specified receiving conditions, in the presence of natural and man-made noise, but in the absence of interference from other transmitters.

NOTE 1 – The desired quality is determined in particular by the protection ratio against noise and by the percentage of time during which this protection ratio must be ensured.

NOTE 2 – The receiving conditions include, *inter alia*:

– the type of transmission and frequency band used;

– the receiving equipment characteristics (antenna gain, receiver characteristics, etc.);

– receiver operating conditions.

NOTE 3 – The term “minimum usable field strength” corresponds to the term “minimum field strength to be protected” which appears in many ITU texts and it also corresponds to the term “minimum median field strength”, which appears in § 1.6.9 as the planning value E_{med} used for coverage by a single transmitter only.

1.6.6 Usable field strength

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

NOTE 1 – The desired quality is determined in particular by the protection ratios against noise and interference for the percentage of time during which the required quality must be ensured.

NOTE 2 – The receiving conditions include, *inter alia*:

– the type of transmission and frequency band used;

– the receiving equipment characteristics (antenna gain, receiver characteristics, etc.);

– receiver operating conditions; where the receiver is mobile, a median field strength for multipath propagation must be considered.

NOTE 3 – The term "usable field strength" corresponds to the term "necessary field strength" which appears in many ITU texts.

NOTE 4 – The usable field strength is calculated by combining the individual nuisance field strengths (E_n) and the combined location correction factor. One of the individual nuisance field strength contributions is the minimum median field strength, (E_{med}), which represents the noise level.

1.6.7 Reference usable field strength (Recommendation ITU-R V.573)

The agreed value of the usable field strength that can serve as a reference or basis for frequency planning.

NOTE 1 – Depending on the receiving conditions and the quality required, there may be several reference usable field strength values for the same service.

NOTE 2 – Where there is no ambiguity, the term "reference field strength" may be used.

1.6.8 Minimum median power flux-density φ_{med} (dB(W/m^2))

The appropriate value of power flux-density for planning purposes to be used for coverage by a single transmitter only, being a value for 50% of locations and for 50% of the time at 10 m above ground level.

NOTE 1 – In this Report, the planning value (φ_{med}) depends on the median value of the minimum power flux-density (φ_{min}) at the receiving place which is required for a given percentage of locations and percentage of the time to ensure that the minimum signal level is achieved for the receiver to successfully decode the signal.

NOTE 2 – φ_{med} is calculated from the median value of the minimum power flux-density by adding, where relevant, appropriate correction factors expressed in decibels, such as allowance for man-made noise (P_{mmn}), established for the particular band of interest, height loss correction factor (L_h) and mean building penetration loss (L_b).

NOTE 3 – In the case of a single wanted signal, the "median value" referred to in Note 2 is obtained from the minimum power flux-density (φ_{min}) by adding the location correction factor (C_l) for a specified percentage of locations.

1.6.9 Minimum median field strength, E_{med} (dB(μV/m))

The appropriate value of minimum usable field strength for planning purposes to be used for coverage by a single transmitter only, being a value for 50% of locations and for 50% of the time at 10 m above ground level.

NOTE 1 – In this Report, the planning value E_{med} depends on the median value of the minimum field strength (E_{min}) at the receiving place which is required for a given percentage of locations and percentage of the time to ensure that the minimum signal level is achieved for the receiver to successfully decode the signal.

NOTE 2 – E_{med} can be calculated from the minimum median power flux-density φ_{med} (dB(W/m^2)) by adding 145.8, this value resulting from the free-space impedance, i.e. 10 log(120 π), from which has been subtracted the conversion factor from dB(V/m) to dB(μV/m), i.e. 20 log(10^{-6}).

1.6.10 Fixed reception

Fixed reception is defined as reception where a directional receiving antenna mounted at roof level is used.

It is assumed that near-optimal reception conditions (within a relatively small volume on the roof) are found when the antenna is installed.

In calculating the field strength for fixed antenna reception, a receiving antenna height of 10 m above ground level is considered to be representative for the broadcasting service. Other heights might be used for other services.

1.6.11 Portable reception

Portable reception is defined as:

– class A (outdoor), which means reception by a portable receiver with an attached or built-in antenna is used outdoors at no less than 1.5 m above ground level;

– class B (ground floor, indoor), which means reception by a portable receiver with an attached or built-in antenna is used indoors at no less than 1.5 m above floor level in rooms with the following characteristics:

  a) on the ground floor;

  b) with a window in an external wall.

Portable indoor reception on the first or higher floors will be regarded as class B reception with signal level corrections applied, although indoor ground floor reception is likely to be the most common case.

In both classes A and B, it is assumed that:

– optimal receiving conditions will be found by moving the antenna up to 0.5 m in any direction;

– the portable receiver is not moved during reception and large objects near the receiver are also not moved;

– extreme cases, such as reception in completely shielded rooms, are disregarded.

1.6.12 Mobile reception

Mobile reception is defined as reception by a receiver in motion. This could be a car receiver or handheld equipment with an antenna situated at no less than 1.5 m above ground level or floor level. The dominant factor with regard to local reception effects is thought to be due to fading in a Rayleigh channel. Fade margins are intended to offset these effects. Fade margins depend on the frequency and the velocity of the vehicle. The values of fade margins are derived from the differences between the required *C*/*N* ratio for a Gaussian channel and that for a Rayleigh channel.

1.6.13 Multifrequency network (MFN)

A network of transmitting stations using several RF channels.

1.6.14 Single frequency network (SFN)

A network of synchronized transmitting stations radiating identical signals in the same RF channel.

1.6.14.1 Large area SFN

An SFN which contains more than one high-power station together with any associated medium and low-power stations, usually with a composite coverage greater than about 10 000 km^2.

1.6.14.2 Mini SFN

One high-power station together with at least one (and probably several) associated medium or low-power stations.

1.6.14.3 Dense network

A network of low-power to medium-power stations.

1.6.14.4 National SFN

An SFN covering a whole country.

1.6.14.5 Regional or local SFN

An SFN covering part of a country.

1.6.15 SFN network gain

Increase of the wanted signal level at a specific receiving location due to simultaneous reception of multiple useful signals. This is a characteristic of orthogonal frequency division multiplex (OFDM) systems operating in an SFN.

1.6.16 Small allotment area

An allotment area with a perimeter of no more than 30 km.

1.6.17 Transmitting stations used in digital networks

1.6.17.1 High power station

A station with an e.r.p. greater than or equal to 10 kW.

1.6.17.2 Medium power station

A station with an e.r.p. greater than or equal to 50 W and less than 10 kW in Band III, or greater than or equal to 250 W and less than 10 kW in Band IV/V.

1.6.17.3 Low power station

A station with an e.r.p. less than 50 W in Band III, or less than 250 W in Band IV/V. However, in order to resolve cases of incompatibilities during the intersessional period, administrations concerned may agree bilaterally and/or multilaterally to use e.r.p. values for the UHF Band IV/V of not less than 100 W. These stations, once communicated to the Radiocommunication Bureau, need to be taken into account in the development of the draft plan(s) and at the second session.

1.6.18 Reference Planning Configuration (RPC)

An RPC is a representative combination of criteria and parameters to be used for frequency planning purposes.

1.6.19 Reference network

A generic network structure representing a real network, as yet unknown, for the purposes of a compatibility analysis. The main purpose is to determine the potential for and susceptibility to interference of typical digital broadcasting networks.

1.7 Definitions of existing and planned assignments and allotments of the broadcasting service and existing and planned assignments of other primary services

1.7.1 Existing and planned assignments and allotments of the broadcasting service

Existing and planned assignments and allotments of the broadcasting service are defined as follows.

– For the territories covered by the ST61 or the GE89 Agreements, or both:
  - analogue and digital[1, 2] assignments contained in the ST61 and/or GE89 Plans on 31 October 2005;
  - analogue and digital[1, 2] assignments successfully coordinated under the procedures of Article 4 of the ST61 and/or GE89 Agreements by 31 October 2005;
  - T-DAB allotments and assignments successfully coordinated by 31 October 2005 with all administrations affected, the territories of which are inside the RRC planning area[1, 2];

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[1] These digital assignments and allotments shall not be given more protection than other digital and analogue entries in the new plan.

[2] The criteria to be used for coordination of T-DAB with respect to other analogue and digital assignments and allotments of the broadcasting service and assignments of the other primary services are contained in § A.1.2.2 of the report. In this regard, these criteria are to be applied provisionally as part of Article 4 procedures of the ST61 and GE89 Agreements.

  - assignments recorded in the Master International Frequency Register (MIFR) by 31 December 1989 with a favourable finding with respect to the applicable provisions of the Radio Regulations, and without complaint of harmful interference received by the Radiocommunication Bureau;
  - analogue broadcasting assignments to be submitted to the Radiocommunication Bureau by Iraq within three months after the end of the first session of the conference under the procedure and conditions mentioned in Note 4 below.
- For the territories not covered by the ST61 or the GE89 Agreements:
  - analogue and digital[2] assignments successfully coordinated by 31 October 2005 with all administrations concerned belonging to the RRC planning area;
  - assignments contained in the "RCC List"[3] successfully coordinated by 31 October 2005 with all affected[4] administrations, the territories of which are inside the RRC planning area.

NOTE 1 – Equitable access needs to be considered when taking into account existing and planned assignments of the broadcasting service.

NOTE 2 – In order to avoid undue constraints on the planning, there may be a need to encourage administrations to remove unnecessary entries from the plans.

NOTE 3 – It is to be noted that in Morocco, pursuant to RR No. 5.229, the band 162-230 MHz is allocated to the broadcasting service. Since channel M5 (170-177 MHz) is both concerned by the planning of this conference and outside the bands dealt with by the conference, it may require particular consideration in the planning.

NOTE 4

1) Iraq will submit by 28 August 2004 a list of its analogue broadcasting assignments to the Radiocommunication Bureau and other administrations concerned. The Radiocommunication Bureau will examine this list by applying the relevant procedures of the GE89 and the ST61 Agreements, identify the assignments of other administrations in the planning areas that are likely to be affected and send the results to the administrations concerned before the first planning exercise.

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[3] This "list" of frequency assignments to television broadcasting stations has been produced by the countries in the extended planning area defined in Council Resolution 1185 (modified, 2003) and is set out in the annex to Circular Letter CR/209.

[4] The criteria to be used for coordination of the broadcasting assignments in the "RCC List" with respect to existing and planned analogue and digital assignments and allotments of the broadcasting service and existing and planned assignments of other primary services are contained in § A.1.2.4 of the report. These criteria are to be used by the Radiocommunication Bureau to ensure that coordination with all affected administrations has been successfully completed.

2) Iraq and the administrations concerned will make every possible effort to coordinate these assignments, in accordance with the provisions of the GE89 and the ST61 Agreements, as appropriate, taking into consideration the special situation of Iraq and allowing the Iraqi case to be tested before the finalization of the first planning exercise.

3) The assignments contained in the above-mentioned list will be taken into account in the planning exercise that will be performed in the intersessional period.

4) Those assignments in the list referred to above which are successfully coordinated with all administrations concerned, following step 2 above, will continue to be considered in the production of the draft plan. The uncoordinated assignments will be submitted to the second session of the conference for consideration and further action, as appropriate.

1.7.2 Existing and planned assignments of primary services other than broadcasting

The existing and planned assignments of primary services other than broadcasting are defined as follows:

– assignments notified to the Radiocommunication Bureau and recorded in the MIFR by 31 December 1989 with a favourable finding with respect to the applicable provisions of the Radio Regulations, and without complaint of harmful interference received by the Radiocommunication Bureau;

– assignments notified to the Radiocommunication Bureau and recorded or considered as being recorded in the MIFR between 31 December 1989 and 10 May 2004 with a favourable finding with respect to the applicable provisions of the Radio Regulations, and without complaint of harmful interference received by the Radiocommunication Bureau[5];

– assignments notified to the Radiocommunication Bureau after 10 May 2004 which have been successfully coordinated by 31 October 2005[6, 7].

NOTE 1 – Assignments of other primary services shall be brought into use pursuant to RR No. 11.24.

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[5] These assignments should be examined with respect to the existing and planned broadcasting assignments and allotments in order to identify incompatibilities, which should be resolved between administrations concerned; existing bilateral and multilateral agreements between administrations concerned need to be taken into account. In case of incompatibility with respect to those assignments to other primary services not coordinated before the second session of the conference, the broadcasting assignments and allotments, when entered in the new analogue and digital plans, will bear no remark with respect to those assignments to other primary services with which there is an incompatibility. For the development of the draft plan and during the second session, the Radiocommunication Bureau shall take into account bilateral and multilateral agreements between administrations concerned, already existing or communicated to the Radiocommunication Bureau.

[6] Applicable coordination criteria and procedures are given in Resolution GT-PLEN/3.

[7] Such assignments should not claim more protection from digital assignments/allotments in the new plans than they already have from the relevant existing and planned assignments.

ANNEX 1.1

Definitions given in the Radio Regulations (Edition 2001) and complemented by explanations in Recommendations

Administration (RR No. 1.2)

African Broadcasting Area (ABA) (RR Nos. 5.10 to 5.13)

European Broadcasting Area (EBA) (RR No. 5.14)*

Broadcasting service (RR No. 1.38)

Broadcasting-satellite service (RR No. 1.39)

Fixed service (RR No. 1.20)

Mobile service (RR No. 1.24)

Mobile-satellite service (RR No. 1.25)

Land mobile service (RR No. 1.26)

Aeronautical mobile service (RR No. 1.32)

Aeronautical mobile-satellite service (RR No. 1.35)

Radionavigation service (RR No. 1.42)

Aeronautical radionavigation service (RR No. 1.46)

Radio astronomy service (RR No. 1.58)

Station (RR No. 1.61)

Terrestrial station (RR No. 1.62)

Broadcasting station (RR No. 1.85)

Allotment (of a radio frequency or radio frequency channel) (RR No. 1.17)

Assignment (of a radio frequency or radio frequency channel) (RR No. 1.18)

Radiation (RR No. 1.137)

Emission (RR No. 1.138)

Out-of-band emission (RR No. 1.144)

Spurious emission (RR No. 1.145)

Unwanted emissions (RR No. 1.146)

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* The delegations of Armenia, Belarus, Georgia, Kyrgyzstan and the Russian Federation attending the first session of RRC are of the opinion that a modification to the definition of the European Broadcasting Area should be proposed to a future competent WRC.

Assigned frequency (RR No. 1.148)

Necessary bandwidth (RR. No. 1.152)

Power (RR No. 1.156)

Peak envelope power (of a radio transmitter) (RR No. 1.157)

Mean power (of a radio transmitter) (RR No. 1.158)

Carrier power (of a radio transmitter) (RR No. 1.159, Recommendation ITU-R V.573)

Gain of an antenna (RR No. 1.160)

Equivalent isotropically radiated power (e.i.r.p.) (RR No. 1.161, Recommendation ITU-R V.573)

Effective radiated power (e.r.p.) (in a given direction) (RR No. 1.162, Recommendation ITU-R V.573)

Antenna electrical characteristics (RR Appendix 4)

Attenuation (dB) of the horizontally polarized component at different azimuths (item 9NH)

Attenuation (dB) of the vertically polarized component at different azimuths (item 9NV)

Protection ratio (R.F.) (RR No. 1.170)

Interference (RR No. 1.166)

Permissible interference (RR No. 1.167)

ANNEX 1.2

Methods to identify administrations potentially affected by assignments or allotments in the broadcasting service and other primary services

A.1.2.1 Identification of the administrations whose analogue or digital assignments in the broadcasting service or assignments in other primary services may be affected by digital assignments recorded in the ST61 and GE89 Plans

Initial provisional studies of the Rules of Procedure of the Stockholm, 1961 Agreement (Part A2) and of the Geneva, 1989 Agreement (Part A6) indicate that the following approach may be used to protect the analogue broadcasting services and some other primary services from digital terrestrial broadcasting services, by applying the coordination distances as described below.

A.1.2.1.1 Coordination distances to assess the potential impact of DVB-T assignments on analogue television and comparison with the ST61/GE89 limiting distances

For the impact of DVB-T on analogue television, the minimum median field-strength values given in Recommendation ITU-R BT.417 have been used to calculate the values of maximum interfering field strength, and a protection ratio of 41 dB has been used (Recommendation ITU-R BT.1368), which leads to the maximum interfering field-strength values as tabulated in Table A.1.2.1-1.

TABLE A.1.2.1-1

Values of maximum interfering field strength (dB(µV/m)) for analogue television interfered with by DVB-T used to evaluate coordination distances

	Minimum median field-strength value (dB(µV/m))	**Maximum interfering field strength $E_{max\ int}$ (dB(µV/m))**
Band III	55	14
Band IV	65	24
Band V	70	29

The field-strength values are converted into coordination distances by applying Recommendation ITU-R P.1546 as described in Chapter 2 of the report to the second session, using 1 kW e.r.p. transmitters with 300 m effective antenna heights, but without taking into account terrain clearance angle.

Considering the information presented by the Radiocommunication Bureau, the only new digital assignments in the ST61/GE89 Plans or in the Master International Frequency Register are in Band IV/V. Consequently, the analysis has been conducted for 600 MHz only.

TABLE A.1.2.1-2

Comparison of coordination distances (1 kW e.r.p., 300 m effective antenna height)

	Calculated coordination distances with Recommendation ITU-R P.1546 (1% of the time) (km)	**ST61 limiting distances (km)**	**GE89 limiting distances (km)(1)**
Case 1 (600 MHz, land)	130	220	150 to 180
Case 2(2) (600 MHz, warm sea)	670	Not given (>1 000 km)	650 to 750
Case 3(3) (600 MHz, cold sea)	500	980	

(1) For the GE89 distances, the distances related to Zone 1 (for land) and Zone 4 (for warm sea) are considered in this text for comparison. No comparison has been drawn for cold sea.

(2) For this case, the ST61 distances for comparison are taken from the "Mediterranean Sea" case.

(3) For this case, the ST61 distances for comparison are taken from the "sea in general" case.

Based on these results, it can be seen that, for the chosen cases, the calculated coordination distances are lower than the limiting distances provided by ST61 and GE89. It is envisaged that this will be generally valid (e.g. for other values of transmit powers and antenna heights).

It is therefore concluded that the distances provided by ST61 and GE89 can be used to identify administrations whose analogue assignments in the broadcasting service may be affected by digital assignments recorded in the ST61 and GE89 Plans.

A.1.2.1.2 Coordination distances to assess the potential impact of DVB-T assignments on other primary services

A.1.2.1.2.1 Reception of other primary services at ground level

It has been agreed that, in this case, limiting distances from ST61/GE89 can be used to identify administrations whose assignments to other primary services can potentially be affected by a digital assignment recorded in the ST61 and GE89 Plans.

A.1.2.1.2.2 Reception of other primary services on board aircraft

It has been concluded that, in this case, the coordination distances should be determined by line of sight using free-space propagation.

For the application of this method, it seems necessary to have a means to specify the reference points of the aircraft receiver area, which should be limited to the service area of the aeronautical land station, and shall be limited to the territory of the notifying administration responsible for the aeronautical radionavigation system.

As an example, the case of an aircraft at 10 000 m altitude will lead to line-of-sight distances around 450 km, which will depend upon the DVB-T antenna height.

A.1.2.2 Identification of the administrations whose analogue or digital assignments in the broadcasting service or assignments in other primary services may be affected by T-DAB allotments/assignments

A.1.2.2.1 Impact of T-DAB allotments/assignments on analogue or digital assignments in the broadcasting service

In order to identify the administrations whose analogue or digital assignments in the broadcasting service may be affected by T-DAB allotments/assignments, Recommendations ITU-R BS.1660, ITU-R BT.655 and ITU-R BT.1368 should be applied.

A.1.2.2.2 Impact of T-DAB allotments/assignments on assignments in other primary services

For assignments related to ground-based receiving stations from another primary service, distances from ST61/GE89 can apply to identify administrations potentially affected by T-DAB allotments/assignments.

For an airborne receiving station from another primary service, these distances will be determined with line of sight (see § A.1.2.1.2.2).

A.1.2.3 Identification of the administrations whose analogue or digital assignments in the broadcasting service may be affected by assignments in other primary services

It is proposed to use the same method as described in § A.1.2.1.2.

When the transmitting station of the other primary service is ground-based, distances from ST61/GE89 may be applied (see § A.1.2.1.2.1).

When the transmitting station of the other primary service is on board an aircraft, the distances will be determined with line of sight (see § A.1.2.1.2.2).

A.1.2.4 Identification of the administrations in the RRC planning area whose broadcasting and other primary services may be affected by the broadcasting analogue assignments contained in the “RCC List”

This case has not been studied in detail, but it is expected that the methods proposed in § A.1.2.1 will be applicable as well.

A.1.2.5 Applicability to DVB-T allotments

In the case of DVB-T allotments, the combined effect of individual transmitters in the corresponding reference network should be considered (see § 5.3.1.2.6 of the report from the first to the second session of RRC).