

ADD

RESOLUTION [COM5/24] (WRC-2000)

Additional frequency bands identified for IMT-2000

The World Radiocommunication Conference (Istanbul, 2000),

considering

- a) that IMT-2000 is the ITU vision of global mobile access and is scheduled to start service around the year 2000, subject to market and other considerations;
- b) that IMT-2000 is an advanced mobile communication applications concept intended to provide telecommunication services on a worldwide scale regardless of location, network or terminal used;
- c) that IMT-2000 will provide access to a wide range of telecommunication services supported by fixed telecommunication networks (e.g. PSTN/ISDN), and to other services which are specific to mobile users;
- d) that the technical characteristics of IMT-2000 are specified in ITU-R and ITU-T Recommendations, including Recommendation ITU-R M.1457, which contains the detailed specifications of the radio interfaces of IMT-2000;
- e) that the evolution of IMT-2000 is being studied within ITU-R;
- f) that the review of IMT-2000 spectrum requirements at this conference has concentrated on the bands below 3 GHz;
- g) that at WARC-92, 230 MHz of spectrum was identified for IMT-2000 in the bands 1 885-2 025 MHz and 2 110-2 200 MHz, including the bands 1 980-2 010 MHz and 2 170-2 200 MHz for the satellite component of IMT-2000, in No. **S5.388** and under the provisions of Resolution **212 (Rev.WRC-97)**;
- h) that since WARC-92 there has been a tremendous growth in mobile communications including an increasing demand for wideband multimedia capability;
- i) that ITU-R studies forecasted that of the order of 160 MHz of spectrum, in addition to that already identified for IMT-2000 in No. **S5.388** and in addition to the spectrum used for first- and second-generation mobile systems in all three ITU Regions, will be needed in order to meet the projected requirements of IMT-2000 in those areas where the traffic is the highest by 2010;
- j) that this conference has identified additional frequency bands in No. **S5.AAA** for IMT-2000 in order to meet the additional spectrum requirement projected by ITU-R;
- k) that the bands identified for IMT-2000 are currently used by either first- or second-generation mobile systems or applications of other radiocommunication services;
- l) that Recommendation ITU-R M.1308 addresses the evolution of existing mobile communication systems to IMT-2000;

- m)* that harmonized worldwide bands for IMT-2000 are desirable in order to achieve global roaming and the benefits of economies of scale;
- n)* that the bands 1 710-1 885 MHz and 2 500-2 690 MHz are allocated to a variety of services in accordance with the relevant provisions of the Radio Regulations;
- o)* that, for technical reasons, the existing applications in the bands identified for IMT-2000 require spectrum below 3 GHz;
- p)* that technological advancement and market demand will promote innovation and accelerate the delivery of advanced communication applications to consumers;
- q)* that changes in technology may lead to the further development of communication applications, including IMT-2000,

emphasizing

- a)* that flexibility must be afforded to administrations:
 - to determine, at a national level, how much spectrum to make available for IMT-2000 from within the identified bands;
 - to develop their own transition plans, if necessary, tailored to meet their specific deployment of existing systems;
 - to have the ability for the identified bands to be used by all services having allocations in those bands;
 - to determine the timing of availability and use of the bands identified for IMT-2000, in order to meet particular market demand and other national considerations;
- b)* that the particular needs of developing countries must be met;
- c)* that Recommendation ITU-R M.819 describes the objectives to be met by IMT-2000 in order to meet the needs of developing countries,

noting

- a)* Resolutions [COM5/25] (WRC-2000) and [COM5/26] (WRC-2000), which also relate to IMT-2000;
- b)* that the sharing implications between services sharing the bands identified for IMT-2000 in No. S5.AAA will need further study in ITU-R;
- c)* that studies regarding the availability of the bands 1 710-1 885 MHz and 2 500-2 690 MHz for IMT-2000 are being conducted in many countries, the results of which could have implications for the use of those bands in those countries;
- d)* that, due to differing requirements, not all administrations may need all of the IMT-2000 bands identified at this conference, or, due to the usage by and investment in existing services, may not be able to implement IMT-2000 in all of those bands;
- e)* that the spectrum for IMT-2000 identified by this conference may not completely satisfy the expected requirements of some administrations;
- f)* that currently operating second-generation mobile communication systems may evolve to IMT-2000 in their existing bands;

- g) that services such as fixed, mobile (second-generation systems), space operations, space research and aeronautical mobile are in operation or planned in the band 1 710-1 885 MHz, or in portions of that band;
- h) that services such as broadcasting-satellite, broadcasting-satellite (sound), mobile-satellite and fixed (including multipoint distribution/communication systems) are in operation or planned in the band 2 500-2 690 MHz, or in portions of that band;
- i) that the identification of several bands for IMT-2000 allows administrations to choose the best band or parts of bands for their circumstances;
- j) that ITU-R has identified additional work to address further developments in IMT-2000 and beyond;
- k) that the IMT-2000 radio interfaces as defined in Recommendation ITU-R M.1457 are expected to evolve within the framework of ITU-R beyond those initially specified, to provide enhanced services and services beyond those envisaged in the initial implementation;
- l) that the identification of a band for IMT-2000 does not establish priority in the Radio Regulations and does not preclude the use of the band for any application of the services to which they are allocated;
- m) that the provisions of Nos. **S5.388**, **S5.AAA** and **S5.XXX** do not prevent administrations from having the choice to implement other technologies in the frequency bands identified for IMT-2000, based on national requirements,

recognizing

- a) that some administrations are planning to use the band 2 300-2 400 MHz for IMT-2000;
- b) that for some administrations the only way of implementing IMT-2000 would be spectrum refarming, requiring significant financial investment;
- c) that spectrum for IMT-2000 is identified in Nos. **S5.388**, **S5.AAA** and **S5.XXX**, but this identification does not preclude the use for IMT-2000 of other bands allocated to the mobile service,

resolves

1 to invite administrations implementing IMT-2000 or planning to implement IMT-2000 to make available, based on market demand and other national considerations, additional bands or portions of the bands above 1 GHz identified in No. **S5.AAA** for the terrestrial component of IMT-2000; due consideration should be given to the benefits of harmonized utilization of the spectrum for the terrestrial component of IMT-2000, taking into account the use and planned use of these bands by all services to which these bands are allocated;

2 to acknowledge that the differences in the texts of Nos. **S5.388** and **S5.AAA** do not confer differences in regulatory status.

invites ITU-R

- 1 to study the implications of sharing of IMT-2000 with other applications and services in the bands 1 710-1 885 MHz and 2 500-2 690 MHz and the implementation, sharing and frequency arrangements of IMT-2000 in the bands 1 710-1 885 MHz and 2 500-2 690 MHz in accordance with Annex 1;
- 2 to develop harmonized frequency arrangements for operation of the terrestrial component of IMT-2000 in the spectrum mentioned in this resolution, aiming to achieve compatibility with existing frequency arrangements used by the first- and second-generation systems;
- 3 to continue its studies on further enhancements of IMT-2000, including the provision of Internet Protocol (IP)-based applications that may require unbalanced radio resources between the mobile and base stations;
- 4 to provide guidance to ensure that IMT-2000 can meet the telecommunication needs of the developing countries and rural areas in the context of the studies referred to above;
- 5 to include these frequency arrangements and the results of these studies in one or more ITU-R Recommendations,

invites ITU-T

- 1 to complete its studies of signalling and communication protocols for IMT-2000;
- 2 to develop a common worldwide intersystem numbering plan and associated network capabilities that will facilitate worldwide roaming,

further invites ITU-R and ITU-T

to commence these studies forthwith,

instructs the Director of the Radiocommunication Bureau

to facilitate to the greatest extent possible the completion of these studies and to report the results of the studies before the next competent conference, or within three years, whichever is the earlier,

requests administrations and Sector Members

to submit the necessary contributions and to participate actively in the ITU-R studies.

ANNEX 1 TO RESOLUTION [COM5/24] (WRC-2000)

Request for studies by ITU-R

In response to Resolution [COM5/24] (WRC-2000), studies that address the following should be conducted:

- 1 sharing implications and possibilities for all services having allocations in the identified frequency bands;
- 2 harmonized frequency arrangements for the implementation of IMT-2000 in the bands mentioned in this resolution that take into account the services currently using the bands or planning to use the bands and the required compatible frequency arrangements of second-generation systems using these bands, taking into account the need to facilitate the evolution of current mobile systems to IMT-2000;
- 3 means to facilitate global roaming across different regional band usage within the bands identified for IMT-2000;
- 4 spectrum demand predictions related to traffic density and timing;
- 5 planning tools for adaptation of mobile radiocommunication technologies, including IMT-2000, for the needs of developing countries;
- 6 maintaining a database of national studies and decisions on selection of spectrum for IMT-2000;
- 7 study of the provision of a fixed wireless access interface using IMT-2000 technologies.

ADD

RESOLUTION [COM5/25] (WRC-2000)

Frequency bands for the terrestrial component of IMT-2000 below 1 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

- a) that parts of the band 806-960 MHz are extensively used in the three Regions by first- and second-generation mobile systems;
- b) that some administrations are planning to use part of the band 698-806 MHz for IMT-2000;
- c) that, in some countries, the band 698-806 MHz is allocated to the mobile service on a primary basis;
- d) that first- and second-generation mobile systems in the three Regions operate using various frequency arrangements;
- e) that where cost considerations warrant the installation of fewer base stations, such as in sparsely populated areas, bands below 1 GHz are generally suitable for implementing mobile systems including IMT-2000;
- f) Recommendation ITU-R M.819 which describes the objectives to be met by IMT-2000 to meet the needs of developing countries,

recognizing

that the evolution of first- and second-generation cellular-based mobile systems to IMT-2000 can be facilitated if they are permitted to use their current frequency bands,

emphasizing

- a) that flexibility must be afforded to administrations:
 - to determine, at a national level, how much spectrum to make available for IMT-2000 from within the identified bands;
 - to develop their own transition plans, if necessary, tailored to meet their specific deployment of existing systems;
 - to have the ability for the identified bands to be used by all services having allocations in those bands;
 - to determine the timing of availability and use of the bands identified for IMT-2000, in order to meet particular market demand and other national considerations;
- b) that the particular needs of developing countries must be met,

RES[COM5/25]-2

resolves

to request administrations which are implementing, or planning to implement IMT-2000, to consider the use of bands below 1 GHz and the possibility of evolution of first- and second-generation mobile systems to IMT-2000, in the frequency band identified in No. **S5.XXX**, based on market demand and other national considerations,

invites ITU-R

to study compatibility between mobile systems with different technical characteristics and provide guidance on any impact on spectrum arrangements.

ADD

RESOLUTION [COM5/26] (WRC-2000)

Use of additional frequency bands for the satellite component of IMT-2000

The World Radiocommunication Conference (Istanbul, 2000),

considering

- a) that the bands 1 980-2 010 MHz and 2 170-2 200 MHz are identified for use by the satellite component of International Mobile Telecommunications-2000 (IMT-2000) through No. **S5.388** and Resolution **212 (Rev.WRC-97)**;
- b) Resolutions **212 (Rev.WRC-97)**, **[COM5/24] (WRC-2000)** and **[COM5/25] (WRC-2000)** on the implementation of the terrestrial and satellite components of IMT-2000;
- c) that the bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz, 2 483.5-2 500 MHz, 2 500-2 520 MHz and 2 670-2 690 MHz are allocated on a co-primary basis to the mobile-satellite service and other services in accordance with the Radio Regulations;
- d) that distress, urgency and safety communications of the Global Maritime Distress and Safety System and the aeronautical mobile-satellite (R) service have priority over all other mobile-satellite service communications in accordance with Nos. **S5.353A** and **S5.357A**.

recognizing

- a) that services such as broadcasting-satellite, broadcasting-satellite (sound), mobile-satellite, fixed (including point-to-multipoint distribution/communication systems) and mobile are in operation or planned in the band 2 500-2 690 MHz, or in portions of that band;
- b) that other services such as the mobile service and radiodetermination-satellite service are in operation or planned, in accordance with the Table of Frequency Allocations, in the bands 1 525-1 559/1 626.5-1 660.5 MHz and 1 610-1 626.5/2 483.5-2 500 MHz, or in portions of those bands, and that those bands, or portions thereof, are intensively used in some countries by applications other than the IMT-2000 satellite component, and the sharing studies within ITU-R are not finished;
- c) that studies of potential sharing and coordination between the satellite component of IMT-2000 and the terrestrial component of IMT-2000, mobile-satellite service applications and other high-density applications in other services such as point-to-multipoint communication/distribution systems in the bands 2 500-2 520 MHz and 2 670-2 690 MHz bands are not finished;
- d) that the bands 2 520-2 535 MHz and 2 655-2 670 MHz are allocated to the mobile-satellite, except aeronautical mobile-satellite, service for operation limited to within national boundaries pursuant to Nos. **S5.403** and **S5.420**;

ADD

RESOLUTION [COM5/29] (WRC-2000)

Sharing studies for, and possible additional allocations to, the mobile-satellite service (space-to-Earth) in the 1-3 GHz range, including consideration of the band 1 518-1 525 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

- a) that this conference has considered proposals for an allocation to the mobile-satellite service (MSS) (space-to-Earth) in Regions 1 and 3 in the frequency band 1 518-1 525 MHz;
- b) that ITU-R has established that, so as to meet projected MSS requirements in the frequency range 1-3 GHz, spectrum of the order of two times 123 MHz will be required by 2005 and of the order of two times 145 MHz will be required by 2010;
- c) that the frequency band 1 492-1 525 MHz is allocated to the MSS (space-to-Earth) in Region 2 on a primary basis, except in the United States;
- d) that the frequency band 1 518-1 525 MHz is allocated to the fixed service on a primary basis in all three Regions, to the mobile service on a primary basis in Regions 2 and 3, and to the mobile, except aeronautical mobile, service on a primary basis in Region 1;
- e) that in a number of countries in No. **S5.342**, the band 1 429-1 535 MHz is allocated to the aeronautical mobile service on a primary basis exclusively for the purposes of aeronautical telemetry within their national territories under the provisions of No. **S5.342**;
- f) that, in Region 2, the use of the band 1 435-1 535 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile service under the provisions of No. **S5.343**;
- g) that, as an alternative allocation in the United States, the band 1 452-1 525 MHz is allocated to the fixed and mobile services on a primary basis (see also No. **S5.343**) under the provisions of No. **S5.344**;
- h) that there has been further development of point-to-multipoint systems in the fixed service since the time of ITU-R studies that formed the basis for the power flux-density (pfd) values for use as coordination thresholds for the protection of fixed service systems in the band 1 492-1 525 MHz that are contained in Appendix **S5**;
- i) that there is a need to review the pfd values in Appendix **S5** in order to ensure that they are adequate to protect these new point-to-multipoint systems operating in the fixed service;
- j) that the proposed allocation to the MSS (space-to-Earth) is intended for satellite downlink operations, which, due to their potentially widespread emissions upon the Earth from either geostationary or non-geostationary systems, could have an impact on the terrestrial mobile service, including aeronautical mobile and aeronautical mobile telemetry, in all three Regions;

RES[COM5/28]-3

invites ITU-R

1 taking into account the *resolves*, to conduct as a matter of urgency and in time for WRC-03, studies to determine whether the power flux-density limits included in Table S21-4 adequately protect the fixed service in the bands 37.5-40 GHz and 42-42.5 GHz from FSS and MSS space-to-Earth transmissions;

2 taking into account the *resolves*, to conduct as a matter of urgency and in time for WRC-03, studies to determine whether the power flux-density limits included in Table S21-4 adequately protect the fixed service in the band 40.5-42 GHz from FSS space-to-Earth transmissions, taking into account the requirements of the FSS and *recognizing c*);

3 to study technical and operational characteristics and power flux-density values for the BSS in the range 40.5-42.5 GHz;

4 in conducting studies under *invites ITU-R* 1, 2 and 3 above, to take into account the need to ensure a proper balance in terms of the impact on both the fixed service and space services sharing the same band;

5 to conduct, as a matter of urgency and taking into account the *considering* paragraphs above, studies on mitigation techniques to improve sharing conditions between the space services referred to under *considering* above and fixed service systems, taking account of the impact on both the systems of these space services and the fixed service systems;

6 to undertake, as a matter of urgency, studies on the appropriate criteria and techniques for addressing interference from transmitters of the fixed service into earth station receivers in high-density applications in the FSS having allocations in the bands 39.5-40 GHz and 40.5-42 GHz and intended for operation in the same geographic area;

7 in the bands 37.5-40 GHz and 42-42.5 GHz, to study the nominal clear-sky power flux-density levels, and the percentage of time during which they may be exceeded to overcome fading conditions between the satellite and one or more geographically separated earth stations, in order to protect the fixed service while permitting operation of FSS earth stations using, for example, coordinated large antennas, taking into account the balance of constraints on both FSS systems and the fixed service;

8 to report on the results of these studies in time for WRC-03,

recommends

that WRC-03 take appropriate action based on the results of these studies.

RES[COM5/26]-2

e) Resolution ITU-R 47 on studies under way on satellite radio transmission technologies for IMT-2000.

resolves

1 that, in addition to the frequency bands indicated in *considering a)* and *resolves 2*, the frequency bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz and 2 483.5-2 500 MHz may be used by administrations wishing to implement the satellite component of IMT-2000, subject to the regulatory provisions related to the mobile-satellite service in these frequency bands;

2 that the bands 2 500-2 520 MHz and 2 670-2 690 MHz as identified for IMT-2000 in No. S5.AAA and allocated to the mobile-satellite service may be used by administrations wishing to implement the satellite component of IMT-2000; however, depending on market developments, it may be possible in the longer term for bands 2 500-2 520 MHz and 2 670-2 690 MHz to be used by the terrestrial component of IMT-2000;

3 that this identification of frequency bands for the satellite component of IMT-2000 does not preclude the use of these bands by any applications of the services to which they are allocated and does not establish priority in the Radio Regulations,

invites ITU-R

1 to study the sharing and coordination issues in the above bands related to use of the mobile-satellite service allocations for the satellite component of IMT-2000 and the use of this spectrum by the other allocated services, including the radiodetermination-satellite service;

2 to report the results of these studies to a future world radiocommunication conference,

instructs the Director of the Radiocommunication Bureau

to facilitate to the greatest extent possible the completion of these studies.

ADD

RESOLUTION [COM5/27] (WRC-2000)

Development of the technical basis for coordination of radio astronomy stations with transmitting high-density fixed systems in the fixed service, in the band 42.5-43.5 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

- a)* that this conference has decided that the band 42.5-43.5 GHz, which is allocated to the fixed service, should become available for high-density applications;
- b)* that the 42.5-43.5 GHz band is also allocated to the radio astronomy service on a primary basis worldwide, and is used intensively for both continuum and spectral line observations, at a limited number of sites;
- c)* that radio astronomy observatories operating in the band are generally located far from urban population centres, employ very high-gain antennas and very low-noise amplifiers to receive extremely weak cosmic radio emissions over which astronomers have no control;
- d)* that high-density fixed system (HDFS) stations are expected to be deployed in large numbers over areas of large geographical extent in urban population centres;
- e)* that studies are being initiated to characterize short-term anomalous propagation from transmitting stations dispersed over a large geographical area to a single receiving earth station (area-to-point propagation);
- f)* that no studies are yet available on the coordination distance that may be required to protect a radio astronomy station from HDFS transmissions associated with a single urban population centre, but that, based on preliminary studies made at lower frequencies, a provisional coordination distance of 250 km may be appropriate,

resolves to invite ITU-R

to conduct studies on the coordination distance between radio astronomy stations operating in the 42.5-43.5 GHz band and HDFS stations with a view to developing ITU-R Recommendations,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R.

ADD

RESOLUTION [COM5/28] (WRC-2000)

Power flux-density limits in the bands 37.5-42.5 GHz for the fixed-satellite service, broadcasting-satellite service and mobile-satellite service

The World Radiocommunication Conference (Istanbul, 2000),

considering

- a) that this conference has established power flux-density limits in accordance with the provisions of Nos. **S21.16.10** and **S21.16.FSS** for the fixed-satellite service (FSS) (space-to-Earth) in the bands 37.5-40.0 GHz and 40.5-42.5 GHz, and the mobile-satellite service (MSS) (space-to-Earth) in the band 39.5-40 GHz;
- b) that, in the band 37.5-42.5 GHz, Recommendation ITU-R SF.1484 recommends power flux-density limits for non-GSO FSS systems;
- c) that, in the bands 37.5-40 GHz and 40.5-42.5 GHz, the power flux-density limits adopted by this conference for GSO FSS systems are based on ITU-R studies;
- d) that this conference has harmonized the allocation to FSS in the band 40.5-42.5 GHz across all the Regions;
- e) that there exists an allocation to BSS on a co-primary basis in the band 40.5-42.5 GHz;
- f) that there are only provisional power flux-density limits for BSS in the range 40.5-42.5 GHz;
- g) that, although sharing is feasible between FSS earth stations and terrestrial stations provided that appropriate coordination procedures and/or operational techniques are employed, sharing may in practice become difficult when high geographic densities of such stations are deployed in bands heavily used by either service;
- h) that the band 40-40.5 GHz has not been identified as being available for high-density applications in the fixed service,

noting

- a) that Recommendation ITU-R SF.1484 indicates that some fixed service systems employing small net fade margins and which operate at elevation angles greater than 10° in the band 37.5-40 GHz may not be fully protected from interference from FSS systems without imposing undue constraints on FSS systems;
- b) that the fixed service parameters for sharing studies are given in Recommendation ITU-R F.758;
- c) that new studies taking account of high-density fixed service deployments with new characteristics (as documented in Recommendation ITU-R F.1498) in some countries have been presented and discussed at this conference;

d) that the new studies submitted to this conference, in which requirements are identified for the protection of high-density fixed service systems vis-à-vis GSO FSS and non-GSO FSS systems, but on which consensus has not been reached, indicate clear-sky pfd protection requirements that are about 13.5 dB more stringent at elevation angles above 25° than the table entries in Table **S21-4** for the band 37.5-40 GHz;

e) that No. **S5.NGSO** may provide additional protection to the fixed service,

recognizing

a) that some downlink fade compensation techniques, such as adaptive power control, could reduce the operational power flux-density levels of satellite networks under normal operating conditions while enhancing the ability of FSS networks to overcome rain fading;

b) that there is a need for further study to determine the percentage of time during which fade conditions will require downlink fade compensation techniques;

c) that, within the range 39.5-42 GHz, some administrations plan to deploy FSS systems using ubiquitous very small aperture terminals,

recognizing further

a) that the use of downlink fade compensation techniques by satellite systems may affect the performance of fixed service and FSS links operating in unfaded conditions in the same frequency band;

b) that the use of downlink fade compensation techniques affects the design of FSS links,

resolves

1 that the limits in Table **S21-4** for the bands 37.5-40 GHz and 40.5-42.5 GHz, as revised by this conference, shall be applied for verification purposes by the Radiocommunication Bureau and by administrations as of 2 June 2000 in accordance with the provisions of Nos. **S21.16.10** and **S21.16.FSS**;

2 that, taking into account *recognizing a)*, in the interim period before WRC-03, before an administration brings into use in Region 2 a frequency assignment for a GSO FSS network in the 37.5-40 GHz band, it shall seek the agreement of any administration in Region 2 on whose territory the power flux-density produced exceeds the values in Table **S21-4** minus 12 dB,

urges administrations

1 to meet the requirements of No. **S5.NGSO**;

2 when considering regulatory provisions in relation to the band 40-40.5 GHz, to take into account that there were a number of proposals to WRC-2000 to identify the band 40-40.5 GHz for high-density applications in the FSS,

RES[COM5/29]-2

k) in response to Resolution **220 (WRC-97)**, ITU-R studies concluded that sharing between the MSS and the radionavigation-satellite service was not feasible in the band 1 559-1 610 MHz.

recognizing

- a) that there remains an unsatisfied need for additional downlink MSS spectrum on a global basis, preferably in the vicinity of the existing 1.5 GHz allocations;
- b) that Recommendation ITU-R F.1338, for an adjacent frequency band, includes an allowance for consideration of pfd values other than those specified therein for use as coordination thresholds for the fixed service;
- c) that Recommendation ITU-R M.1459 contains criteria for the protection of aeronautical mobile telemetry with respect to geostationary satellites in the MSS;
- d) that additional information on the characteristics of systems in both the MSS and aeronautical mobile telemetry would facilitate studies on sharing between these services.

noting

that Resolution [COM5/30] (WRC-2000) addresses sharing studies for the possible additional allocations to the MSS (Earth-to-space) in the 1-3 GHz range, including consideration of the band 1 683-1 690 MHz,

resolves to invite ITU-R

- 1 to study, as a matter of urgency, sharing between the MSS and aeronautical mobile telemetry in all the Regions in the band 1 518-1 525 MHz, taking into account, *inter alia*, Recommendation ITU-R M.1459;
- 2 to review, as a matter of urgency, the pfd levels used as coordination thresholds for MSS (space-to-Earth) with respect to the protection of point-to-multipoint fixed-service systems in the band 1 518-1 525 MHz in Regions 1 and 3, taking into account the work already done in Recommendations ITU-R M.1141 and ITU-R M.1142 and the characteristics of fixed-service systems contained in Recommendations ITU-R F.755-2 and ITU-R F.758-1, and the sharing methodologies contained in Recommendations ITU-R F.758-1, ITU-R F.1107 and ITU-R F.1108;
- 3 in the event that the studies of the specific frequency bands referred to in this resolution lead to an unsatisfactory conclusion, to carry out sharing studies in order to recommend alternative MSS (space-to-Earth) frequency bands in the 1-3 GHz range, but excluding the band 1 559-1 610 MHz, for consideration at WRC-03;
- 4 to bring the results of these studies to the attention of WRC-03,

further resolves

to recommend that WRC-03 consider making new allocations to the MSS (space-to-Earth), on a global basis, preferably in the vicinity of the existing allocation around 1.5 GHz,

urges administrations

to participate actively in these studies, with the involvement of terrestrial and satellite interests.

ADD

RESOLUTION [COM5/30] (WRC-2000)

Sharing studies for, and possible additional allocations to, the mobile-satellite service (Earth-to-space) in the 1-3 GHz range, including consideration of the band 1 683-1 690 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

- a) that ITU-R has established that, so as to meet projected mobile-satellite service (MSS) requirements in the frequency range 1-3 GHz, spectrum of the order of two times 123 MHz will be required by 2005 and of the order of two times 145 MHz will be required by 2010;
- b) that, at this conference, proposals have been made for worldwide allocation of the band 1 683-1 690 MHz to the MSS (Earth-to-space);
- c) that the frequency band 1 675-1 710 MHz is allocated to the MSS (Earth-to-space) in Region 2 on a co-primary basis;
- d) that the band 1 683-1 690 MHz is mainly used by the meteorological-satellite (MetSat) and meteorological aids (MetAids) services;
- e) that, while there are only a limited number of main MetSat earth stations operating in this band in all three Regions, there are a large number of MetSat earth stations operating in Regions 2 and 3, and the locations of many of these stations are unknown;
- f) that use of these stations in Regions 2 and 3 by government, commercial and private users for public safety and enhancement of national economies is on the increase;
- g) that sharing between MetSat and MSS in the band 1 675-1 690 MHz is feasible if appropriate separation distances are maintained by means of coordination under No. **S9.11A**;
- h) that sharing between MetSat and MSS may not be feasible in those countries where a large number of MetSat stations are deployed;
- i) that Recommendation ITU-R SA.1158-2 indicates that additional studies are required in order to determine the criteria for coordination between MSS and the MetSat service for GVAR/S-VISSR stations operated in the band 1 683-1 690 MHz in Regions 2 and 3;
- j) that sharing of the band 1 690-1 710 MHz between MSS and MetSat is not feasible;
- k) that co-channel sharing between MSS and MetAids is not feasible;
- l) that co-frequency sharing between MetAids and MetSat services is not feasible;
- m) that WMO has identified future spectrum requirements for MetAids operations as 1 675-1 683 MHz in the band 1 675-1 700 MHz, but some administrations will continue to require spectrum in the range 1 683-1 690 MHz for MetAids operations;

n) that MSS operation should not constrain current and future development of the MetSat service, as specified in No. S5.377;

o) that new coordination parameters for MetSat earth stations have been adopted at this conference which will require a review of assumptions made in earlier ITU-R studies.

recognizing

that there remains an unsatisfied need for additional uplink MSS spectrum on a global basis, preferably in the vicinity of the existing 1.6 GHz allocations,

noting

a) that no further study is required on sharing between the services identified under *considering* above and MSS in the bands 1 675-1 683 MHz and 1 690-1 710 MHz;

b) that Resolution [COM5/29] (WRC-2000) addresses sharing studies for possible additional allocations to MSS (space-to-Earth) in the 1-3 GHz range, including consideration of the band 1 518-1 525 MHz,

resolves to invite ITU-R

1 to complete, as a matter of urgency and in time for WRC-03, the technical and operational studies on the feasibility of sharing between MSS and MetSat, by determining appropriate separation distances between mobile earth stations and MetSat stations, including GVAR/S-VISSR stations, in the band 1 683-1 690 MHz, as stated in Recommendation ITU-R SA.1158-2;

2 to assess, with the participation of WMO, the current and future spectrum requirements of the MetAids service, taking into account improved characteristics, and of the MetSat service in the band 1 683-1 690 MHz, taking into account future developments;

3 in the event that the studies of the specific frequency band referred to in this resolution lead to an unsatisfactory conclusion, to carry out sharing studies in order to recommend alternative MSS (Earth-to-space) frequency bands in the 1-3 GHz range, but excluding the band 1 559-1 610 MHz, for consideration at WRC-03;

4 to bring the results of these studies to the attention of WRC-03,

further resolves

to recommend that WRC-03 consider making new allocations to the MSS (Earth-to-space), on a global basis, preferably in the vicinity of the existing allocation around 1.6 GHz,

urges

administrations and interested parties such as WMO to participate actively in these studies by submitting contributions,

instructs the Secretary-General

to bring this resolution to the attention of WMO.

ADD

RESOLUTION [COM5/31] (WRC-2000)

Transitional and implementation arrangements in certain frequency bands for the use of geostationary networks in the fixed-satellite service and the broadcasting-satellite service, and non-geostationary systems in the fixed-satellite service as well as for the use of networks in the radionavigation-satellite service and terrestrial services

The World Radiocommunication Conference (Istanbul, 2000),

considering

- a) that this conference has revised the sharing criteria and associated regulatory provisions between and among GSO FSS and BSS networks, non-GSO FSS systems, and terrestrial stations in certain parts of the 10.7-30 GHz band;
- b) that it is important for geostationary-satellite networks and terrestrial stations, and for non-GSO FSS systems for which complete notification or coordination information, as appropriate, has been received by the Bureau after 21 November 1997, that the new and revised power limits in Articles **S21** and **S22** and associated provisions be immediately brought into force;
- c) that, by the end of the year 2000, the Bureau is expected to have modified its database and capture software, and to have issued a circular letter defining the format in which the data should be submitted, along with any other necessary information,

considering further

- a) that this conference has decided to introduce new or revised allocations for the radionavigation-satellite service (space-to-Earth) (space-to-space) in the bands 960-1 300 MHz, 1 559-1 610 MHz and 5 000-5 150 MHz, and for the radionavigation-satellite service (Earth-to-space) in the bands 1 300-1 350 MHz and 5 000-5 150 MHz, as well as for other services in these bands;
- b) that certain provisions regarding the new allocations shall apply as of 3 June 2000 (see Resolution [**COM5/16**] (**WRC-2000**) and Resolution [**COM5/19**] (**WRC-2000**));
- c) that some administrations have expressed the wish to start the notification procedure for radionavigation-satellite networks and other systems as soon as possible following this conference,

resolves

- 1 that, as of 22 November 1997, in the frequency bands specified in Tables **S22-1A**, **S22-1B**, **S22-1C**, **S22-1D**, **S22-2** and **S22-3** of Article **S22**, non-GSO FSS systems for which complete notification or coordination information, as appropriate, has been received by the Bureau after 21 November 1997 shall be subject to the power limits in these tables, as established by WRC-2000;

2 that, as of 3 June 2000, in any case where complete coordination or notification information, as appropriate, is considered as having been received between 22 November 1997 and 2 June 2000 for a non-GSO FSS system in the frequency bands specified in *resolves 1* above, the responsible administration shall, within six months after the BR circular letter referred to in *considering c*) or by 1 July 2001, whichever is later, submit all necessary supplementary information (see Annex **2A**, Sections **A.4 b) 6)**, **A.4 b) 7)**, and **A.14** and **C.9 d)** of Appendix **S4**) to permit the Bureau to make a finding in compliance with the limits in Tables **S22-1A**, **S22-1B**, **S22-1C**, **S22-1D**, **S22-2**, and **S22-3** of Article **S22**, as established by WRC-2000;

3 that, as of 22 November 1997, in the frequency bands specified in Tables **S22-4A** (including Table **S22-4A1**), **S22-4B** and **S22-4C** of Article **S22**, non-GSO FSS systems for which complete notification or coordination information, as appropriate, is considered as having been received by the Bureau after 21 November 1997 shall be subject to the power limits in these tables, as established by WRC-2000;

4 that, as of 3 June 2000, in any case where complete coordination or notification information, as appropriate, is considered as having been received between 22 November 1997 and 2 June 2000 for a non-GSO FSS system in the frequency bands specified in *resolves 3* above, the responsible administration shall, within six months after the BR circular letter referred to in *considering c*) or by 1 July 2001, whichever is later, submit the commitment in Section **A.15** of Annex **2A** of Appendix **S4** to meeting the single-entry additional operational efd↓ limits in Table **S22-4A1**, as established by WRC-2000;

5 that, in the frequency bands specified in Table **S22-1D**, which are allocated to the broadcasting-satellite service and subject to the Plan of Appendix **S30**, no advance publication, coordination or notification information for non-GSO FSS systems shall be considered as having a date of receipt before 22 November 1997;

6 that, as of 3 June 2000, the following provisions of these Regulations, as revised or established by WRC-2000, shall apply: Nos. **S22.5B** to **S22.5K**, inclusive; Nos. **S9.11A** to **S9.16**, inclusive; Nos. **S22.26** to **S22.39**, inclusive; No. **S5.520**; No. **S5.516**; No. **S5.441**; No. **S5.484A**; No. **S5.487A**; No. **S5.488**; No. **S5.491**; No. **S5.502**, No. **S5.503**; Nos. **S9.7A** to **S9.7B**, inclusive; No. **S9.35.1**; Nos. **S11.32.A** to **S11.33**, inclusive; Annexes **2A** and **2B** to Appendix **S4**; Table **S5-1** of Appendix **S5**; and Table **S21-4** and its associated footnotes,

further resolves

that the new or revised allocations in the bands 960-1 300 MHz, 1 300-1 350 MHz, 1 559-1 610 MHz and 5 000-5 150 MHz shall enter into force on 3 June 2000,

instructs the Radiocommunication Bureau

as of 3 June 2000, and taking into account *resolves 2*, to review and, if appropriate, revise, any finding previously made on the compliance with the limits contained in Article **S22** (WRC-97) for a non-GSO FSS system for which complete coordination or notification information, as appropriate, has been received between 22 November 1997 and 2 June 2000, inclusive; this review shall be based on the limits in Tables **S22-1A**, **S22-1B**, **S22-1C**, **S22-1D**, **S22-2** and **S22-3** of Article **S22**, as adopted by WRC-2000.

RESOLUTION PLEN-1 (WRC-2000)

**Use of FSS systems for the provision of direct-to-home television
broadcasting transmissions**

The World Radiocommunication Conference (Istanbul, 2000),

noting

- a) that, in some regions, a number of FSS systems provide direct-to-home (DTH) broadcasting;
- b) that fixed-satellite service frequency bands are used for a wide variety of services and applications;
- c) that, however, the adoption of the revised Regions 1 and 3 BSS Plans contained in Appendices S30 and S30A will encourage greater use of the BSS bands,

considering

- a) that, in the minutes of the thirteenth Plenary Meeting of WRC-97, the IRG was requested to review the possibility of combining DTH transmission services by satellite and satellite-broadcasting services in the planned and non-planned bands and its implications for the relevant Articles of the Radio Regulations;
- b) that some administrations proposed that the above item be included in the agenda of WRC-03;
- c) that other administrations were of the view that more studies are required before placing such an item on the agenda of a WRC,

resolves to invite ITU-R

to study the current and expected future use of FSS allocations for DTH television broadcasting in the different ITU Regions, as a matter of urgency, and the technical, operational and regulatory aspects of DTH television broadcasting in the FSS bands,

instructs the Director of the Radiocommunication Bureau

to report the results of these studies to WRC-03 for consideration, as appropriate, in the development of future conference agendas.

ADD

RESOLUTION [GT PLEN-1/1] (WRC-2000)

Application and study of the regulatory procedures and associated sharing criteria contained in Appendices S30 and S30A and in the associated provisions of Articles S9 and S11

The World Radiocommunication Conference (Istanbul, 2000),

considering

- a) that this conference has adopted a revision of the Regions 1 and 3 broadcasting-satellite service (BSS) and associated feeder-link Plans contained in Appendices **S30** and **S30A**, respectively;
- b) that this conference has adopted revisions to the sharing criteria contained in Annex 1 to Appendix **S30** to identify whether terrestrial services may be affected by BSS;
- c) that this conference has suppressed the method that was contained in section 3 of Annex 4 to Appendix **S30A** and replaced it with the method contained in Appendix **S7**;
- d) that this conference has modified the criteria in section 1 of Annex 4 to Appendix **S30A** concerning sharing between non-planned transmitting space stations and planned receiving BSS feeder-link space stations;
- e) that this conference has revised the orbital position limitations on Region 1 BSS in section A3 of Annex 7 to Appendix **S30** to allow more flexibility for new and modified assignments in the list of Region 1 BSS assignments, while continuing to guarantee access to Region 2 fixed-satellite service (FSS) in the orbital arc from 37° W to 10° E;
- f) that the power flux-density limits currently appearing in section 6 of Annex 1 to Appendix **S30** for BSS to protect FSS do not vary as a function of orbital separation between the FSS and BSS space stations, and therefore do not provide adequate protection to FSS networks at small orbital separations, and at large orbital separations overly constrain the implementation of BSS networks;
- g) that the sharing criteria in Appendices **S30** and **S30A** should provide appropriate protection to the BSS, FSS and terrestrial services whilst not unduly constraining the services involved;
- h) that, worldwide, in various sub-bands of the frequency range 11.7-12.7 GHz, FSS networks as well as BSS networks are in operation, and others will be operated in the near future and, consequently, difficulties may be experienced in modifying their characteristics;
- i) that this conference has also revised the regulatory procedures contained in Appendices **S30** and **S30A**, and the associated provisions in Articles **S9** and **S11** and associated Appendices,

recognizing

- a) that there are differing geographic situations between the ITU Regions and that this may have an impact on the sharing criteria and therefore should be taken into account in any revision to the sharing criteria in the relevant Annexes of Appendices **S30** and **S30A**;
- b) the need to protect existing and future terrestrial and space services and systems,

further noting

that the Bureau has been instructed by this conference to analyse the newly established Regions 1 and 3 BSS and feeder-link Plans with respect to compatibility with other services having primary allocations in the Plan bands in all three Regions and with the Region 2 Plan (Resolution **53 (Rev.WRC-2000)**).

resolves

1 that, until section 6 of Annex 1 to Appendix **S30** is modified by [WRC-03], the pfd limits appearing in the Annex to this resolution shall be applied in place of the $-138 \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$ and $-160 \text{ dB(W/(m}^2 \cdot 4 \text{ kHz))}$ criteria appearing in paragraph 3 of section 6 of Annex 1 to Appendix **S30**;

2 to instruct the Director of the Radiocommunication Bureau to apply this resolution as of 3 June 2000.

invites ITU-R

to undertake, as a matter of urgency, additional studies and complete them by [WRC-03] on:

- 1 the sharing criteria in Annexes 1, 3, 4 and 6 to Appendix **S30** and Annexes 1 and 4 to Appendix **S30A**, except the criteria referred to in *considering b) and c)*, taking into account *considering g) and h)* and *recognizing a)*;
- 2 review the changes made by WRC-2000 to the regulatory procedures contained in:
 - a) Articles 4 and 5 to Appendices **S30** and **S30A** with a view to establishing a list of additional uses for Regions 1 and 3 and providing for its implementation, including the implications of provisions 4.1.18-4.1.20 on the assignments in conformity with the Plan;
 - b) Articles 6 and 7 to Appendices **S30** and **S30A**, including related modifications to Articles **S9** and **S11** and the associated Appendix **S5**,

with a view to ensuring consistency among these provisions, as appropriate, taking into account *considering i)*;

3 the limitations of section A3 of Annex 7 to Appendix **S30** in the context of any changes to the sharing criteria studied by ITU-R,

instructs the Secretary-General

to bring this resolution to the attention of the ITU Council so as to include in the agenda of the next WRC consideration of the results of the ITU-R studies carried out pursuant to *invites ITU-R* above.

ANNEX 1 TO RESOLUTION [GT PLEN-1/1] (WRC-2000)

**Pfd limits to be applied in place of $-138 \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$
and $-160 \text{ dB(W/(m}^2 \cdot 4 \text{ kHz))}$ in paragraph 3 of section 6
of Annex 1 to Appendix S30¹**

Instead of the uniform pfd limits of $-138 \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$ and $-160 \text{ dB(W/(m}^2 \cdot 4 \text{ kHz))}$, apply new pfd limits to protect FSS in all Regions from BSS in all Regions, as given below:

For Regions 1 and 3 BSS → Region 2 FSS (space-to-Earth in the band 11.7-12.2 GHz):

$-160 \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$	$0^\circ \leq \theta < 0.054^\circ$
$(-137.46 + 17.74 \log \theta) \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$	$0.054^\circ \leq \theta < 3.67^\circ$
$(-141.56 + 25 \log \theta) \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$	$3.67^\circ \leq \theta < 11.54^\circ$
$-115 \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$	$11.54^\circ \leq \theta$

where θ corresponds to the minimum geocentric angular separation between the interfering BSS and the interfered-with FSS space station.

For Region 1 BSS → Region 3 FSS (space-to-Earth in the band 12.2-12.5 GHz):

$-160 \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$	$0^\circ \leq \theta < 0.054^\circ$
$(-137.46 + 17.74 \log \theta) \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$	$0.054^\circ \leq \theta < 3.67^\circ$
$(-141.56 + 25 \log \theta) \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$	$3.67^\circ \leq \theta < 16.69^\circ$
$-111 \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$	$16.69^\circ \leq \theta$

where θ corresponds to the minimum geocentric angular separation between the interfering BSS and the interfered-with FSS space station.

For Region 2 BSS → Regions 1 and 3 FSS (space-to-Earth in the band 12.5-12.7 GHz in Region 1 and in the band 12.2-12.7 GHz in Region 3):

$-160 \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$	$0^\circ \leq \theta < 0.054^\circ$
$(-137.46 + 17.74 \log \theta) \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$	$0.054^\circ \leq \theta < 3.67^\circ$
$(-141.56 + 25 \log \theta) \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$	$3.67^\circ \leq \theta < 11.54^\circ$
$-115 \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$	$11.54^\circ \leq \theta$

where θ corresponds to the minimum geocentric angular separation between the interfering BSS and the interfered-with FSS space station.

It is understood that, in the implementation of these criteria, the Bureau should take into account the pertinent station-keeping accuracy of the BSS and FSS space stations as filed by the notifying administrations.

NOTE - In addition, the 0.25 dB allowed increase over the pfd resulting from the original Plan assignments of all Regions should be maintained.

¹ For those sharing situations not listed here, the provisions of Appendix S30 and Appendix S30A apply.

ADD

RESOLUTION [GT PLEN-1/2] (WRC-2000)

**Implementation of WRC-2000 broadcasting-satellite service Plans and
associated broadcasting-satellite service feeder-link
Plans of Appendices S30/S30A**

The World Radiocommunication Conference (Istanbul, 2000),

considering

- a)* that this conference has adopted a Plan for the broadcasting-satellite service (BSS) in the bands 11.7-12.2 GHz in Region 3 and 11.7-12.5 GHz in Region 1, as well as a Plan for feeder links for the BSS in the bands 14.5-14.8 GHz and 17.3-18.1 GHz in Regions 1 and 3, and has also revised the technical criteria and regulatory procedures of those Plans as contained in Appendix S30 and Appendix S30A;
- b)* that this conference has decided that the provisions of the Radio Regulations, as revised by it, shall provisionally apply as from 1 January 2002;
- c)* that there is a need to apply a single set of technical criteria and regulatory provisions for processing of Article 4 submissions, so as to avoid problems due to parallel sets of technical criteria or regulatory provisions;
- d)* that it is necessary to ensure the integrity of the Region 2 Plan and its associated provisions,

resolves

- 1 that the Regions 1 and 3 Plan, the List and their associated procedures, together with the annexes thereto, shall enter into force as of 3 June 2000;

instructs the Radiocommunication Bureau

to apply the following provisions as from 3 June 2000:

- 1 in respect of the notification of assignments under Article 5 of Appendices S30/S30A for Regions 1 and 3:
- for assignments which are contained in the List: once notified with the same characteristics, they will be examined with the same criteria and calculation methods used when they completed the procedure of Article 4;
 - for those assignments contained in the Plan: the new criteria and calculation methods as adopted by WRC-2000 will be used;
- 2 in respect of the notification of assignments with the same characteristics under Article 5 of Appendices S30/S30A for Region 2 which have already completed the procedure of Article 4, the same criteria and calculation methods as used when they completed the procedure of Article 4 will be used;
- 3 in respect of the notification of assignments of all three Regions whose notified characteristics are different from those used for coordination, the new criteria and calculation methods as adopted by WRC-2000 will be used.

ADD

RESOLUTION [GT PLEN-1/3] (WRC-2000)

Sharing procedures and criteria between receiving earth stations in the broadcasting-satellite service and transmitting earth stations or terrestrial stations in frequency bands allocated to the broadcasting-satellite service and the fixed-satellite service (Earth-to-space) or to terrestrial services

The World Radiocommunication Conference (Istanbul, 2000),

considering

- a) that receiving earth stations in the broadcasting-satellite service are ubiquitously deployed throughout the service area of the associated satellite network and therefore cannot be coordinated or notified on the basis of specific earth stations;
- b) that Nos. **S9.17** and **S9.17A** and the associated provisions in Article **S11** provide for the coordination and notification of specific earth stations with terrestrial stations or earth stations only;
- c) that transmitting earth stations or terrestrial stations sharing spectrum with the broadcasting-satellite service are required to coordinate with receiving earth stations in this service under No. **S9.19** of the Radio Regulations;
- d) that No. **S9.19** was introduced in the Radio Regulations by WRC-97 as a new provision, without specific criteria for sharing between these services;
- e) that this conference has modified No. **S9.19** to include the coordination of earth stations in opposite directions of transmission and the protection of typical earth stations in the broadcasting-satellite service;
- f) that the harmonious development of terrestrial and space services in the bands allocated to the broadcasting-satellite service may be impeded by the lack of suitable procedures and associated sharing criteria;
- g) that Appendix **S7** and Annex 3 to Appendix **S30** provide sharing criteria that may be reviewed and adjusted in order to cover the sharing situations referred to above,

resolves to invite ITU-R

to undertake, as a matter of urgency, and complete in time for consideration by WRC-03, the appropriate regulatory, operational and technical studies in the bands allocated to the broadcasting-satellite service and the fixed-satellite service (Earth-to-space) or to terrestrial services, consistent with the decisions of WRC-2000 on No. **S9.19**, in order to enabling WRC-03 to review, and if appropriate revise, the regulatory and technical sharing conditions between these services, with a view to enabling equitable access to spectrum by these services in these bands and ensure their harmonious development,

urges administrations

to participate actively in these studies, with the involvement of terrestrial, broadcasting-satellite and fixed-satellite service interests.

RESOLUTION [GT PLEN-1/4] (WRC-2000)

**Appendices S30/S30A Regions 1 and 3 Plans
and associated Lists of additional uses**

The World Radiocommunication Conference (Istanbul, 2000),

considering

- a) that this conference has adopted Plans for Regions 1 and 3 as contained in Annex 1 to this resolution, to be included in the revised versions of Appendices **S30** and **S30A**;
- b) that this conference has adopted those additional uses which are compatible with the above Plans, as listed in Annex 2 to this resolution, for inclusion in Lists to be annexed to the Master International Frequency Register (MIFR);
- c) that it determined that the Regions 1 and 3 Plans and the Regions 1 and 3 Lists are compatible with each other,

recognizing

that the assignments contained in Annex 1 to this resolution shall be included in the Plans contained in Article 11 of Appendix **S30** and Article 9A of Appendix **S30A**,

resolves

that the assignments contained in the Lists of additional uses contained in Annex 2 to this resolution shall be annexed to the MIFR.

ANNEX 1

[Attach lists of downlink and feeder-link Plan assignments as contained in Documents 503 + Corr.1 and 508]

ANNEX 2

[Attach lists of downlink and feeder-link List assignments as contained in Documents 504 + Corr.1 and 509]

ADD

RESOLUTION [GT PLEN-2/2] (WRC-2000)

Review of spectrum and regulatory requirements to facilitate worldwide harmonization of emerging terrestrial wireless interactive multimedia applications

The World Radiocommunication Conference (Istanbul, 2000),

considering

- a) the rapid technical evolution taking place in several areas of telecommunications;
- b) the importance of finding global solutions and worldwide spectrum for new terrestrial wireless interactive multimedia applications;
- c) the need for terrestrial wireless interactive multimedia applications to individual end-users;
- d) the convergence between some applications of the fixed, mobile and broadcasting services;
- e) the need for worldwide allocations to such services, which also calls for higher spectrum efficiency;
- f) the benefit, also for developing countries, of new, globally harmonized equipment and spectrum for the implementation of market-driven universal services,

noting

- a) the historical practice of frequency segmentation, particularly the differences between Regions, but also segmentation between services, in the Table of Frequency Allocations (Article S5 of the Radio Regulations);
- b) Recommendation 34 (WRC-95), derived from the recommendations of the Voluntary Group of Experts (VGE) to study alternative allocation methods, merging of services, etc. which sets the objectives of allocating frequency bands on a worldwide basis and to the most broadly defined services, wherever possible,

also noting

- c) Resolution 9 of the World Telecommunication Development Conference (Valletta, 1998), calling for active participation by the developing countries in the review of global spectrum requirements for new technologies;
- d) that ITU-R study groups are currently addressing the relevant issues, including, *inter alia*, the digitization of broadcasting services and studies on spectrum requirements,

recognizing

- a) the time necessary to develop and agree on the technical, operational, spectrum and regulatory issues associated with the introduction of harmonized multimedia wireless applications;

- b) that service functionalities in fixed, mobile and broadcasting networks are increasingly converging;
- c) that, for international operation and economy of scale, it is desirable to agree on the technical, operational and spectrum-related parameters of systems;
- d) that spectrum consideration is a prerequisite for the technological and economical success of multimedia wireless applications,

resolves to invite ITU-R

1 to pursue its studies to facilitate the development of common, worldwide allocations or identification of spectrum suitable for new terrestrial wireless interactive multimedia technologies and applications;

2 to review regulatory methods and appropriate means of worldwide spectrum identification in order to facilitate the harmonization of emerging terrestrial wireless interactive multimedia systems for the instant and flexible implementation of universal personal services;

3 to review, if necessary, service definitions in the light of convergence of applications;

4 to report to a future competent conference,

requests administrations

to participate in these studies by submitting contributions to ITU-R, and to submit proposals to future WRCs on this subject.

ADD

RESOLUTION [GT PLEN-2/3] (WRC-2000)

**Studies to consider requirements for the future development of IMT-2000
and systems beyond IMT-2000 as defined by ITU-R**

The World Radiocommunication Conference (Istanbul, 2000),

considering

- a) that IMT-2000 is scheduled to start service around the year 2000, subject to market and other considerations;
- b) that Question ITU-R 229/8 addresses the future development of IMT-2000 and systems beyond IMT-2000;
- c) that the technical characteristics of IMT-2000 are specified in ITU-R and ITU-T Recommendations, including Recommendation ITU-R M.1457 which contains the detailed specifications of the radio interfaces of IMT-2000;
- d) that telecommunication technologies evolve rapidly;
- e) that adequate spectrum availability is a prerequisite for the technological and economic success of the future development of IMT-2000 and systems beyond IMT-2000;
- f) that the demand for the provision of multimedia applications such as high-speed data, IP-packet and video by mobile communication systems will continue to increase;
- g) that the future development of IMT-2000 and systems beyond IMT-2000 is foreseen to address the need for higher data rates than those currently planned for IMT-2000;
- h) that, for global operation and economy of scale, it is desirable to agree on common technical, operational and spectrum-related parameters of systems;
- i) that it is therefore timely to study technical, spectrum and regulatory issues pertinent to the future development of IMT-2000 and systems beyond IMT-2000,

recognizing

- a) the time necessary to develop and agree on the technical, operational, spectrum and regulatory issues associated with the continuing enhancement of mobile services;
- b) that service functionalities in fixed and mobile networks are increasingly converging;
- c) that future mobile systems will require the adoption of more spectrum-efficient techniques;
- d) the needs of developing countries for the implementation of advanced mobile communication technologies,

RES[GT PLEN-2/3]-2

resolves

- 1 to invite ITU-R to continue studies on overall objectives, applications and technical and operational implementation, as necessary, for the future development of IMT-2000 and systems beyond IMT-2000;
- 2 to invite ITU-R to study the spectrum requirements and potential frequency ranges suitable for the future development of IMT-2000 and systems beyond IMT-2000, and in what time-frame such spectrum would be needed;
- 3 that the requirements for the future development of IMT-2000 and systems beyond IMT-2000 be reviewed by WRC-05/06, taking into consideration the results of ITU-R studies presented to WRC-03,

urges administrations

to participate actively in the studies by submitting contributions to ITU-R.

ADD

RESOLUTION [GT PLEN-2/4] (WRC-2000)

Agenda for the 2003 World Radiocommunication Conference

The World Radiocommunication Conference (Istanbul, 2000),

considering

- a) that, in accordance with No. 118 of the Convention, the general scope of the agenda for a world radiocommunication conference should be established four to six years in advance and a final agenda shall be established by the Council two years before the conference;
- b) Article 13 of the Constitution relating to the competence and scheduling of world radiocommunication conferences and Article 7 of the Convention relating to their agendas;
- c) the relevant resolutions and recommendations of previous world administrative radio conferences (WARCs) and world radiocommunication conferences (WRCs),

recognizing

- a) that this conference has identified a number of urgent issues requiring further examination by WRC-03;
- b) that, in preparing this agenda, many items proposed by administrations could not be included and have had to be deferred to future conference agendas,

resolves

to recommend to the Council that a world radiocommunication conference be held in 2003 for a period of four weeks, with the following agenda:

1 on the basis of proposals from administrations and the Report of the Conference Preparatory Meeting, taking account of the results of WRC-2000, and with due regard to the requirements of existing and future services in the bands under consideration, to consider and take appropriate action with respect to the following items:

1.1 requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required, in accordance with Resolution 26 (Rev.WRC-97);

1.2 to review and take action, as required, on No. S5.134 and related Resolutions 517 (Rev.WRC-97) and 537 (WRC-97) and Recommendations 515 (Rev.WRC-97), 517 (Rev.WRC-2000), 519 (WARC-92) and Appendix S11, in the light of the studies and actions set out therein, having particular regard to the advancement of new modulation techniques, including digital techniques, capable of providing an optimum balance between sound quality, bandwidth and circuit reliability in the use of the HF bands allocated to the broadcasting service;

RES[GT PLEN-2/4]-2

- 1.3 to consider identification of globally/regionally harmonized bands, to the extent practicable, for the implementation of future advanced solutions to meet the needs of public protection agencies, including those dealing with emergency situations and disaster relief, and to make regulatory provisions, as necessary, taking into account Resolution [GT PLEN-2/5] (WRC-2000);
- 1.4 to consider the results of studies related to Resolution 114 (WRC-95), dealing with the use of the band 5 091-5 150 MHz by the fixed-satellite service (Earth-to-space) (limited to non-GSO MSS feeder links), and review the allocations to the aeronautical radionavigation service and the fixed-satellite service in the band 5 091-5 150 MHz;
- 1.5 to consider, in accordance with Resolution [GT PLEN-2/1] (WRC-2000), regulatory provisions and spectrum requirements for new and additional allocations to the mobile, fixed, Earth exploration-satellite and space research services, and to review the status of the radiolocation service in the frequency range 5 150-5 725 MHz, with a view to upgrading it, taking into account the results of ITU-R studies;
- 1.6 to consider regulatory measures to protect feeder links (Earth-to-space) for the mobile-satellite service which operate in the band 5 150-5 250 MHz, taking into account the latest ITU-R Recommendations (for example, Recommendations ITU-R S.1426, ITU-R S.427 and ITU-R M.1454);
- 1.7 to consider issues concerning the amateur and amateur-satellite services:
 - 1.7.1 possible revision of Article S25;
 - 1.7.2 review of the provisions of Article S19 concerning the formation of call signs in the amateur services in order to provide flexibility for administrations;
 - 1.7.3 review of the terms and definitions of Article S1 to the extent required as a consequence of changes made in Article S25;
- 1.8 to consider issues related to unwanted emissions:
 - 1.8.1 consideration of the results of studies regarding the boundary between spurious and out-of-band emissions, with a view to including the boundary in Appendix S3;
 - 1.8.2 consideration of the results of studies, and proposal of any regulatory measures regarding the protection of passive services from unwanted emissions, in particular from space service transmissions, in response to *recommends* 5 and 6 of Recommendation 66 (Rev.WRC-2000);
- 1.9 to consider Appendix S13 and Resolution 331 (Rev.WRC-97) with a view to their deletion and, if appropriate, to consider related changes to Chapter SVII and other provisions of the Radio Regulations, as necessary, taking into account the continued transition to and introduction of the Global Maritime Distress and Safety System (GMDSS);
- 1.10 to consider the results of studies, and take necessary actions, relating to:
 - 1.10.1 exhaustion of the maritime mobile service identity numbering resource (Resolution 344 (WRC-97));
 - 1.10.2 shore-to-ship distress communication priorities (Resolution 348 (WRC-97));

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- 1.11 to consider possible extension of the allocation to the mobile-satellite service (Earth-to-space) on a secondary basis in the band 14-14.5 GHz to permit operation of the aeronautical mobile-satellite service as stipulated in Resolution **216 (Rev.WRC-2000)**;
- 1.12 to consider allocations and regulatory issues related to the space science services in accordance with Resolution **723 (Rev.WRC-2000)** and to review all Earth exploration-satellite service and space research service allocations between 35 and 38 GHz, taking into account Resolution **[COM5/1] (WRC-2000)**;
- 1.13 to consider regulatory provisions and possible identification of existing frequency allocations for services which may be used by high altitude platform stations, taking into account No. **S5.5RRR** and the results of the ITU-R studies conducted in accordance with Resolutions **122 (Rev.WRC-2000)** and **[COM5/14] (WRC-2000)**;
- 1.14 to consider measures to address harmful interference in the bands allocated to the maritime mobile and aeronautical mobile (R) services, taking into account Resolutions **207 (Rev.WRC-2000)** and **[COM5/12] (WRC-2000)**, and to review the frequency and channel arrangements in the maritime MF and HF bands concerning the use of new digital technology, also taking into account Resolution **347 (WRC-97)**;
- 1.15 to review the results of studies concerning the radionavigation-satellite service in accordance with Resolutions **[COM5/16] (WRC-2000)**, **[COM5/19] (WRC-2000)** and **[COM5/20] (WRC-2000)**;
- 1.16 to consider allocations on a worldwide basis for feeder links in bands around 1.4 GHz to the non-GSO MSS with service links operating below 1 GHz, taking into account the results of ITU-R studies conducted in response to Resolution **127 (Rev.WRC-2000)**, provided that due recognition is given to the passive services, taking into account No. **S5.340**;
- 1.17 to consider upgrading the allocation to the radiolocation service in the frequency range 2 900-3 100 MHz to primary;
- 1.18 to consider a primary allocation to the fixed service in the band 17.3-17.7 GHz for Region 1, taking into account the primary allocations to various services in all three Regions;
- 1.19 to consider regulatory provisions to avoid misapplication of the non-GSO FSS single-entry limits in Article **S22** based on the results of ITU-R studies carried out in accordance with Resolution **[COM5/2] (WRC-2000)**;
- 1.20 to consider additional allocations on a worldwide basis for the non-GSO MSS with service links operating below 1 GHz, in accordance with Resolution **214 (Rev.WRC-2000)**;
- 1.21 to consider progress of the ITU-R studies concerning the technical and regulatory requirements of terrestrial wireless interactive multimedia applications, in accordance with Resolution **[GT PLEN-2/2] (WRC-2000)**, with a view to facilitating global harmonization;
- 1.22 to consider progress of ITU-R studies concerning future development of IMT-2000 and systems beyond IMT-2000, in accordance with Resolution **[GT PLEN-2/3] (WRC-2000)**;
- 1.23 to consider realignment of the allocations to the amateur, amateur-satellite and broadcasting services around 7 MHz on a worldwide basis, taking into account Recommendation **718 (WARC-92)**;

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- 1.24 to review the usage of the band 13.75-14 GHz, in accordance with Resolution [COM5/10] (WRC-2000), with a view to addressing sharing conditions;
- 1.25 to consider, with a view to global harmonization to the greatest extent possible, having due regard to not constraining the development of other services, and in particular of the fixed service and the broadcasting-satellite service, regulatory provisions and possible identification of spectrum for high-density systems in the fixed-satellite service above 17.3 GHz, focusing particularly on frequency bands above 19.7 GHz;
- 1.26 to consider the provisions under which earth stations located on board vessels could operate in fixed-satellite service networks, taking into account the ITU-R studies in response to Resolution [COM4/3] (WRC-2000);
- 1.27 to review, in accordance with Resolutions [GT PLEN-1/1] (WRC-2000) and [GT PLEN-1/3 (WRC-2000)], the ITU-R studies requested in those resolutions, and modify, as appropriate, the relevant regulatory procedures and associated sharing criteria contained in Appendices S30 and S30A and in the associated provisions;
- 1.28 to permit the use of the band 108-117.975 MHz for the transmission of radionavigation satellite differential correction signals by ICAO standard ground-based systems;
- 1.29 to consider the results of studies related to Resolutions [COM5/3] (WRC-2000) and [COM5/23] (WRC-2000) dealing with sharing between non-GSO and GSO systems;
- 1.30 to consider possible changes to the procedures for the advance publication, coordination and notification of satellite networks in response to Resolution 86 (Minneapolis, 1998);
- 1.31 to consider the additional allocations to the mobile-satellite service in the 1-3 GHz band, in accordance with Resolutions [COM5/29] (WRC-2000) and [COM5/30] (WRC-2000);
- 1.32 to consider technical and regulatory provisions concerning the band 37.5-43.5 GHz, in accordance with Resolutions 128 (Rev.WRC-2000) and [COM5/28] (WRC-2000);
- 1.33 to review and revise technical, operational and regulatory provisions, including provisional limits in relation to the operation of high altitude platform stations within IMT-2000 in the bands referred to in No. S5.BBB, in response to Resolution [COM5/13] (WRC-2000);
- 1.34 to review the results of studies in response to Resolution [COM4/6] (WRC-2000) concerning threshold values for non-GSO BSS (sound) in the band 2 630-2 655 MHz, and to take actions as required;
- 1.35 to consider the report of the Director of the Radiocommunication Bureau on the results of the analysis in accordance with Resolution 53 (Rev.WRC-2000) and take appropriate action;
- 2 to examine the revised ITU-R Recommendations incorporated by reference in the Radio Regulations communicated by the Radiocommunication Assembly, in accordance with Resolution 28 (Rev.WRC-2000), and to decide whether or not to update the corresponding references in the Radio Regulations, in accordance with principles contained in the Annex to Resolution 27 (Rev.WRC-2000);
- 3 to consider such consequential changes and amendments to the Radio Regulations as may be necessitated by the decisions of the conference;

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4 in accordance with Resolution **95 (Rev.WRC-2000)**, to review the resolutions and recommendations of previous conferences with a view to their possible revision, replacement or abrogation:

5 to review, and take appropriate action on, the report from the Radiocommunication Assembly submitted in accordance with Nos. 135 and 136 of the Convention;

6 to identify those items requiring urgent action by the radiocommunication study groups in preparation for the next world radiocommunication conference;

7 in accordance with Article 7 of the Convention:

7.1 to consider and approve the Report of the Director of the Radiocommunication Bureau on the activities of the Radiocommunication Sector since WRC-2000, including on any difficulties or inconsistencies encountered in the application of the Radio Regulations, and action in response to Resolution **80** (Minneapolis, 1998);

7.2 to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, taking into account Resolution [GT PLEN-2/6] (WRC-2000),

further resolves

8 to recommend to the Council that additional budgetary and conference resources be provided so that the following items can be included in this agenda for WRC-03:

8.1 to examine the adequacy of the frequency allocations for HF broadcasting from about 4 MHz to 10 MHz, taking into account the seasonal planning procedures adopted by WRC-97;

8.2 to consider the regulatory and technical provisions for satellite networks using highly elliptical orbits;

8.3 to consider provision of up to 6 MHz of frequency spectrum to the Earth exploration-satellite service (active) in the frequency band 420-470 MHz, in accordance with Resolution **727 (Rev.WRC-2000)**;

8.4 to examine the spectrum requirements in the fixed-satellite service bands below 17 GHz for telemetry, tracking and telecommand of fixed-satellite service networks operating with service links in the frequency bands above 17 GHz;

9 to activate the Special Committee,

invites the Council

to finalize the agenda and arrange for the convening of WRC-03, and to initiate as soon as possible the necessary consultation with Member States,

instructs the Director of the Radiocommunication Bureau

to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting and to prepare a report to WRC-03,

instructs the Secretary-General

to communicate this resolution to international and regional organizations concerned.

ADD

RESOLUTION [GT PLEN-2/5] (WRC-2000)

Global harmonization of spectrum for public protection and disaster relief

The World Radiocommunication Conference (Istanbul, 2000),

considering

- a) the growing telecommunication needs of public agencies and organizations dealing with law and order, disaster relief and emergency response;
- b) that future advanced solutions used by such public protection agencies and organizations will require high data rates, video and multimedia;
- c) that there is a need for interoperability and interworking between security and emergency networks, both nationally and for cross-border operations, in emergency situations and disaster relief;
- d) the importance of the needs of public protection agencies and organizations, including those dealing with emergency situations and disaster relief for:
 - i) maintenance of law and order;
 - ii) emergency and disaster response;
 - iii) safety of life and property,

recognizing

- a) the benefits of globally harmonized frequency bands for such applications;
- b) the increased potential for cooperation between countries for the provision of effective and appropriate humanitarian assistance during disasters;
- c) the needs of developing countries for low-cost solutions for public protection agencies and organizations;
- d) that global harmonization of spectrum for such usage will lead to economies of scale and reduced the costs of such solutions,

resolves to invite ITU-R

1 to study, as a matter of urgency, identification of frequency bands that could be used on a global/regional basis by administrations intending to implement future solutions for public protection agencies and organizations, including those dealing with emergency situations and disaster relief;

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2 to study, as a matter of urgency, regulatory provisions necessary for identifying globally/regionally harmonized frequency bands for such purposes;

3 to conduct studies for the development of a resolution identifying the technical and operational basis for global cross-border circulation of radiocommunication equipment in emergency and disaster relief situations,

instructs the Director of the Radiocommunication Bureau

to report on the results of these studies to WRC-03,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R,

recommends

that WRC-03 consider the identification of globally/regionally harmonized frequency bands for future advanced solutions to meet the needs of public protection agencies and organizations, including those dealing with emergency situations and disaster relief, and make regulatory provisions, as necessary.

ADD

RESOLUTION [GT PLEN-2/6] (WRC-2000)

Preliminary agenda for the 2005/2006 World Radiocommunication Conference

The World Radiocommunication Conference (Istanbul, 2000),

considering

- a) that, in accordance with No. 118 of the ITU Convention, the general scope of the agenda for WRC-05/06 should be established four to six years in advance;
- b) Article 13 of the Constitution relating to the competence and scheduling of world radiocommunication conferences and Article 7 of the ITU Convention relating to their agendas;
- c) the relevant resolutions and recommendations of previous world administrative radio conferences (WARCs) and world radiocommunication conferences (WRCs),

resolves to give the view

that the following items should be included in the preliminary agenda for WRC-05/06:

- 1 to take appropriate action in respect of those urgent issues that were specifically requested by WRC-03;
- 2 on the basis of proposals from administrations and the Report of the Conference Preparatory Meeting, and taking account of the results of WRC-03, to consider and take appropriate action in respect of the following items:
 - 2.1 requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required, taking into account Resolution 26 (Rev.WRC-97);
 - 2.2 to review the operational procedures of the Global Maritime Distress and Safety System (GMDSS), taking into account the experience since its introduction and the needs of all classes of shipping;
 - 2.3 to review studies and consider allocations in the frequency bands above 275 GHz;
 - 2.4 to consider a resolution specifying the technical bases for the global operation of stations in the land mobile and land mobile-satellite services between 30 MHz and 6 GHz;
 - 2.5 to review the allocations to services in the HF bands, taking account of the impact of new modulation and adaptive control techniques and any recommendations by WRC-03 on the adequacy of the frequency allocations for HF broadcasting and the fixed and mobile services (excluding those bands whose allotment plans are in Appendices 25, 26 and 27), from about 4 MHz to 10 MHz;

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- 2.6 to consider possible changes in response to Resolution **86** (Minneapolis, 1998): “Coordination and notification procedures for satellite networks”;
- 2.7 to consider potential for sharing at around 4 300 MHz between radio altimeters and space-based passive earth sensors;
- 2.8 on the basis of the results of studies, to consider allocations, if appropriate, to non-GSO MSS with service links below 1 GHz in the band 470-862 MHz, in accordance with Resolution **728 (Rev.WRC-2000)**;
- 2.9 to consider the use of frequency adaptive systems in the MF/HF bands, in accordance with Resolution **729 (WRC-97)**;
- 2.10 to consider allocation of the frequency band 14.5-14.8 GHz to the fixed-satellite service (Earth-to-space) in Region 3 (expansion of the fixed-satellite service to include links other than feeder links of the broadcasting-satellite service);
- 2.11 to review the possibility for additional allocations for the fixed service in the bands above 3 GHz;
- 2.12 to consider spectrum requirements for wideband aeronautical telemetry in the band between 3 GHz and 30 GHz;
- 2.13 to review No. **S5.332** in respect of the frequency band 1 215-1 260 MHz and No. **S5.333** in respect of the frequency band 1 260-1 300 MHz, concerning the Earth exploration-satellite (active) service and other services;
- 2.14 to take into account ITU-R studies in accordance with Resolution **342 (WRC-2000)**, and to consider the use of new digital technology for the maritime mobile service in the band 156-174 MHz, and consequential revision of Appendix **S18**;
- 2.15 to review, with a view to identifying necessary spectrum for global harmonization, spectrum and regulatory issues related to terrestrial wireless interactive multimedia applications in accordance with Resolution **[GT PLEN-2/2] (WRC-2000)**;
- 2.16 to review the requirements for the future development of IMT-2000 and systems beyond IMT-2000, taking into account Resolution **[GT PLEN-2/3] (WRC-2000)**;
- 3 to consider the results of the studies related to the following, with a view to considering them for inclusion in the agendas of future conferences:
- 3.1 to consider results of ITU-R studies on the feasibility of sharing in the band 2 700-2 900 MHz between the aeronautical radionavigation service, meteorological radars and the mobile service, and to take appropriate action on this subject;
- 3.2 to consider results of ITU-R studies in accordance with Resolution **[COM5/22] (WRC-2000)** to ensure spectrum availability and protection for the aeronautical mobile-satellite (R) service and the Global Maritime Distress and Safety System (GMDSS), and to take appropriate action on this subject, while retaining the generic allocation for the mobile-satellite service;
- 4 to examine the revised ITU-R Recommendations incorporated by reference in the Radio Regulations communicated by the Radiocommunication Assembly, in accordance with Resolution **28 (Rev.WRC-2000)**, and to decide whether or not to update the corresponding references in the Radio Regulations, in accordance with the principles contained in the annex to Resolution **27 (Rev.WRC-2000)**;

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5 to consider such consequential changes and amendments to the Radio Regulations as may be necessitated by the decisions of the conference;

6 in accordance with Resolution 95 (Rev.WRC-2000), to review the resolutions and recommendations of previous conferences with a view to their possible revision, replacement or abrogation:

7 to review, and take appropriate action on, the report from the radiocommunication Assembly submitted in accordance with Nos. 135 and 136 of the Convention;

8 to identify those items requiring urgent action by the radiocommunication study groups:

9 in accordance with Article 7 of the Convention:

9.1 to consider and approve the Report of the Director of the Radiocommunication Bureau on the activities of the Radiocommunication Sector since WRC-03;

9.2 to recommend to the Council items for inclusion in the agenda for the following world radiocommunication conference,

invites the Council

to consider the views given in this resolution,

instructs the Director of the Radiocommunication Bureau

to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting and to prepare a report to WRC-05/06,

instructs the Secretary-General

to communicate this resolution to international and regional organizations concerned.

MOD

RECOMMENDATION 66 (Rev.WRC-2000)

Studies of the maximum permitted levels of unwanted emissions

The World Radiocommunication Conference (Istanbul, 2000),

considering

- a)* that Appendix **S3** specifies the maximum permitted levels of spurious emissions, in terms of the mean power level of any spurious component supplied by a transmitter to the antenna transmission line;
- b)* that the principal objective of Appendix **S3** is to specify the maximum permitted levels of spurious emissions that, while being achievable, provide protection against harmful interference;
- c)* that excessive levels of unwanted emissions may give rise to harmful interference;
- d)* that while out-of-band emissions can also give rise to harmful interference, the Radio Regulations do not provide general limits for these emissions;
- e)* that while Appendix **S3** applies generally to the mean power of a transmitter and its spurious emissions, it also takes account of a variety of emissions where interpretation of the term "mean power", and thus its measurement, would be difficult, particularly in the cases of digital modulation broadband systems, pulsed modulation and narrow-band high-power transmitters;
- f)* that unwanted emissions from transmitters operating in space stations may cause harmful interference, particularly emissions from wideband amplifiers which cannot be adjusted after launch;
- g)* that unwanted emissions may cause harmful interference to safety services and radio astronomy and space services using passive sensors;
- h)* that, for technical or operational reasons, more stringent spurious emission limits than the general limits in Appendix **S3** may be required to protect specific services, such as safety services and passive services in specific bands or situations;
- i)* that broadband digital modulation may cause unwanted emissions at frequencies far from the carrier frequency,

noting

- a) that safety services and passive services have in many cases been allocated frequencies adjacent or close to those of services employing high-power transmitters;
- b) that some administrations have adopted more stringent limits for spurious emissions than those specified in Appendix S3;
- c) that, at this time, in response to *resolves* 2.3.2 of Resolution 722 (WRC-97), ITU-R has decided to recommend not including general out-of-band limits in the Radio Regulations,

recommends that ITU-R

- 1 continue the study of spurious emission levels in all frequency bands, emphasizing the study of those frequency bands, services and modulation techniques not presently covered by Appendix S3;
- 2 study the question of unwanted emissions resulting from transmitters of all services and all modulation methods, and, on the basis of those studies, develop a Recommendation or Recommendations for maximum permitted levels of spurious emissions and out-of-band emissions;
- 3 establish appropriate measurement techniques for unwanted emissions, where those techniques do not currently exist, including the determination of reference levels for wideband transmissions as well as the applicability of reference measurement bandwidths;
- 4 study the reasonable boundary between spurious emissions and out-of-band emissions with a view to defining such a boundary in Article S1;
- 5 study those frequency bands and instances where, for technical or operational reasons, more stringent spurious emission limits than the general limits in Appendix S3 may be required to protect safety services and passive services such as radio astronomy, and the impact on all concerned services of implementing or not implementing such limits;
- 6 study those frequency bands and instances where, for technical or operational reasons, out-of-band limits may be required to protect safety services and passive services such as radio astronomy, and the impact on all concerned services of implementing or not implementing such limits;
- 7 study the matter of reference bandwidth in the space services and the option of modifying Table II of Appendix S3 by separately identifying individual space services;
- 8 report the results of these studies to a competent world radiocommunication conference(s).

MOD

RECOMMENDATION 503 (Rev.WRC-2000)

High-frequency broadcasting

The World Radiocommunication Conference (Istanbul, 2000),

considering

- a) the congestion in the HF broadcasting bands;
- b) the extent of co-channel and adjacent-channel interference;
- c) that AM reception quality is relatively poor compared with FM broadcast or CD quality;
- d) that new digital techniques have enabled significant improvements in reception quality to be obtained in other broadcasting bands;
- e) that the introduction of digital modulation systems in the broadcasting bands below 30 MHz has been shown to be feasible using low bit-rate coding;
- f) that Resolution **517 (Rev.WRC-97)** invites ITU-R to continue its studies on digital techniques in HF broadcasting, as a matter of urgency;
- g) that urgent studies on this subject are currently being carried out by ITU-R under Question ITU-R 217/6, with a view to issuing a relevant Recommendation in a very short time period,

recognizing

- a) that the implementation of an ITU-recommended worldwide system for digital sound in the HF bands would be extremely beneficial, particularly for developing countries, since it allows for:
 - mass-scale production resulting in receivers as economical as possible;
 - more economical analogue-to-digital conversion of existing transmitting infrastructures;
- b) that the above system would result in digital receivers having a number of advanced features such as assisted tuning, improved audio quality and robustness to co-channel and adjacent-channel interference, which would greatly contribute to a better spectrum utilization,

recommends administrations

- 1 to draw the attention of manufacturers to this matter, in order to ensure that future digital receivers take full advantage of the advanced technology while maintaining low cost;
- 2 to encourage manufacturers to monitor closely the development of the studies carried out by ITU-R, with a view to starting mass production of new low-cost digital receivers as soon as possible after the approval of relevant ITU-R Recommendation(s).

List of Resolutions and Recommendations approved for deletion by WRC -2000

RESOLUTIONS	
8 (Rev.Mob-87)	Implementation of the changes in allocations in the bands between 4 000 kHz and 27 500 kHz
14	Relating to the transfer of technology
23 (WRC-95)	Provisions applicable to the frequency assignments in the non-planned bands below 28 000 kHz
24 (WRC-95)	Review of the provisions of the Constitution relating to revisions of the Radio Regulations
30 (WRC-97)	Publication of the Weekly Circular including special sections
50 (WRC-97)	Interval between world radiocommunication conferences
52 (WRC-97)	Provisional application of Nos. S11.24 and S11.26 of the Radio Regulations adopted by WRC-97 with regard to high altitude platform stations
54 (WRC-97)	Implementation of Resolution 46 (Rev.WRC-97)
60	Relating to information on the propagation of radio waves used in the determination of the coordination area
70 (WRC-92)	Establishment of standards for the operation of low-orbit satellite systems
121 (Rev.WRC-97)	Continued development of interference criteria and methodologies for fixed-satellite service coordination between feeder links of non-geostationary satellite networks in the mobile-satellite service and geostationary-satellite networks in the fixed-satellite service in the bands 19.3-19.7 GHz and 29.1-29.5 GHz
123 (WRC-97)	Feasibility of implementing feeder links of non-geostationary satellite networks in the mobile-satellite service in the band 15.43-15.63 GHz (space-to-Earth) while taking into account the protection of the radio astronomy service, the Earth exploration-satellite (passive) service and the space research (passive) service in the band 15.35-15.4 GHz
126 (WRC-97)	Use of the frequency band 31.8-33.4 GHz for high-density systems in the fixed service
129 (WRC-97)	Criteria and methodologies for sharing between the fixed-satellite service and other services with allocations in the band 40.5-42.5 GHz
130 (WRC-97)	Use of non-geostationary systems in the fixed-satellite service in certain frequency bands

List of resolutions and recommendations approved for deletion by WRC -2000

RESOLUTIONS	
131 (WRC-97)	Power flux-density limits applicable to non-geostationary fixed-satellite service systems for protection of terrestrial services in the bands 10.7-12.75 GHz and 17.7-19.3 GHz
133 (WRC-97)	Sharing between the fixed service and other services in the band 37-40 GHz
134 (WRC-97)	Use of the frequency band 40.5-42.5 GHz by the fixed-satellite service
213 (Rev.WRC-95)	(Rev.WRC-95) Sharing studies concerning possible use of the band 1 675-1 710 MHz by the mobile-satellite service
218 (WRC-97)	Use of the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz by the mobile-satellite service
219 (WRC-97)	Studies relating to consideration of the allocation to the non-geostationary mobile-satellite service in the meteorological aids band 405-406 MHz and the impact on primary services allocated in the adjacent bands
220 (WRC-97)	Studies to consider the feasibility of use of a portion of the band 1 559-1 610 MHz by the mobile-satellite service (space-to-Earth)
406	Relating to the use of frequency bands higher than the HF bands in the aeronautical mobile (R) service and the aeronautical mobile-satellite (R) service for communication and for meteorological broadcasts
411 (WARC-92)	Implementation of the new provisions applicable in the frequency bands allocated exclusively to the aeronautical mobile (OR) service between 3 025 kHz and 18 030 kHz
412 (WARC-92)	Transfer of frequency assignments of aeronautical stations operating in the frequency bands allocated exclusively to the aeronautical mobile (OR) service between 3 025 kHz and 18 030 kHz
500	Relating to the modification of carrier frequencies of LF broadcasting stations in Region 1
518 (Orb-88)	Country/geographical area symbols used in Appendices S30/30 and S30A/30A
519 (Orb-88)	Possible extension to Regions 1 and 3 of provisions for interim systems
524 (WARC-92)	Future consideration of the Plans for the broadcasting-satellite service in the band 11.7-12.5 GHz (Region 1) and the band 11.7-12.2 GHz (Region 3) in Appendix S30/30 and the associated feeder-link Plans in Appendix S30A/30A
531(WARC-95)	Review of Appendices S30/30 and S30A/30A of the Radio Regulations

List of resolutions and recommendations approved for deletion by WRC -2000

RESOLUTIONS	
534(WARC-97)	Implementation of Annex 5 to Appendix S30 and Annex 3 to Appendix S30A of the Radio Regulations
538 (WRC-97)	Use of the frequency bands covered by Appendices S30/30 and S30A/30A by non-geostationary-satellite systems in the fixed-satellite service
712 (Rev.WRC-95)	Consideration by a future competent World Radiocommunication Conference of issues dealing with allocations to space services
721 (WRC-97)	Agenda for the 1999 World Radiocommunication Conference
722 (WRC-97)	Preliminary agenda for the 2001 World Radiocommunication Conference
726 (WRC-97)	Frequency bands above 30 GHz available for high-density applications in the fixed service
RECOMMENDATIONS	
32 (Orb-88)	International monitoring of emissions originating from space stations
61	Relating to technical standards for the assessment of harmful interference in the frequency bands above 28 MHz
105 (WRC-95)	Further work by ITU-R on determination of the coordination area around earth stations operating with geostationary-satellite networks in the fixed-satellite service and earth stations providing feeder links to non-geostationary-satellite networks in the mobile-satellite service operating in opposite directions of transmission
405	Relating to a study of the utilization of the aeronautical mobile-satellite (R) service
507	Relating to spurious emissions in the broadcasting-satellite service
518 (HFBC-87)	HF broadcast receivers
711	Relating to the coordination of earth stations
720 (WRC-95)	The flexible and efficient use of the radio spectrum by fixed and some mobile services in the MF and HF bands using block allocations for adaptive systems