PUBLIC NOTICE

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FCC SEEKS COMMENT ON RECOMMENDATIONS APPROVED BY THE ADVISORY COMMITTEE FOR THE 2007 WORLD RADIOCOMMUNICATION CONFERENCE

IB Docket No. 04-286

On April 27, 2006, the World Radiocommunication Conference Advisory Committee (WRC-07 Advisory Committee) approved and submitted for Commission consideration its recommendations with regard to a number of issues that will be considered by the 2007 World Radiocommunication Conference (WRC-07).[1] These recommendations are attached to this Public Notice.

Based upon an initial review of the attached WRC-07 Advisory Committee recommendations, the International Bureau, in coordination with other FCC Bureaus and Offices, tentatively concludes that it can generally support these recommendations. The International Bureau, however, notes the differing views expressed by WRC-03 Advisory Committee participants in documents WAC/102 and WAC/104.

The FCC seeks comment on the attached recommendations as well as recommendations that appear in all of the WRC-07 Advisory Committee documents.[2] The FCC also seeks comment on the attached draft preliminary views and proposals that have been developed by the Executive Branch Agencies and submitted to the FCC by the National Telecommunications and Information Administration (NTIA). Finally, the FCC seeks comment on the International Bureau's initial conclusions with regard to the WRC-07 Advisory Committee recommendations.

The comments provided by interested parties will assist the FCC in its upcoming consultations with the U.S. Department of State and NTIA in the development of U.S. positions for WRC-07. As the recommendations that are attached to this Public Notice may evolve in the course of interagency discussions as WRC-07 nears, they do not constitute final U.S. Government position on any issue.

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[1] The WRC-07 Advisory Committee was established by the FCC in January 2004 to assist the FCC in developing proposals for WRC-07. Since its inception, the WRC-07 Advisory Committee has developed and submitted recommendations and preliminary views for Commission consideration. *See, e.g., The FCC's Advisory Committee for the 2007 World Radiocommunication Conference Proposes Preliminary Views on WRC-07 Issues*, Public Notice, DA 04-1698 (rel. June 14, 2004) (Int'l Bur. 2004).

[2] These documents are available through the FCC's WRC-07 website at: http://www.fcc.gov/wrc-07.

The complete text of these recommendations is available in the FCC's Reference Information Center, Room CY-A257, 445 12th Street, SW, Washington, DC 20554 or by accessing the FCC's WRC-07 world wide web site at: http://www.fcc.gov/wrc-07. Comments on the recommendations may be filed by referencing IB Docket 04-286 using the Commission's Electronic Comment Filing System (ECFS) or by filing paper copies. Parties are encouraged to file electronically by following the instructions at: http://www.fcc.gov/cgb/ecfs Parties who choose to file paper copies only should submit an original and four copies of each filing. Guidelines and address for paper filings are available at: http://www.fcc.gov/osec . In addition, please submit one copy of your comments electronically or by paper to Alexander Roytblat, FCC WRC-07 Director, Federal Communications Commission, Room 6-A865, 445 12th Street, SW, Washington, DC 20554; e-mail: WRC07@fcc.gov. Comments should refer to IB Docket No. 04-286 and to specific recommendations by document number. The deadline for comments on the recommendations is May 26, 2006.

I. Recommendations by the Advisory Committee for the 2007 World Radiocommunication Conference:

INFORMAL WORKING GROUP 1 (IWG-1)
Terrestrial and Space Science Services

Document WAC/111(27.04.06):

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda item 1.5: to consider spectrum requirements and possible additional spectrum allocations for aeronautical telecommand and high bit-rate aeronautical telemetry, in accordance with Resolution **230 (WRC-03);**

Background Information: This agenda item seeks to address a growing demand for spectrum that is allocated for wideband aeronautical telemetry and associated telecommand. There is a large and growing shortfall in spectrum that is necessary to conduct aeronautical telemetry. The shortfall is exacerbated by the loss of telemetry spectrum diverted to other than telemetry applications. As indicated in the responses to ITU-R Question 231/8, additional spectrum is necessary due to rapidly increasing data rates associated with the testing of new and emerging technologies. For example, newer technologies rely increasingly on high-resolution video for monitoring aircraft functions or increased use of computer based aircraft systems. Without access to additional spectrum, aeronautical development would be subject to escalating delays and costs, and the growth of the aerospace industry would be impaired (including equipment manufacturers, civilian programs and test ranges, and airlines). New worldwide telemetry spectrum will aid numerous countries and the international aeronautical community as administrations continue to support their national airlines and some administrations initiate their own test programs. Existing international allocations used for aeronautical telemetry will need to remain available.

Aeronautical mobile telemetry ("AMT") is an application within the mobile service. Depending on the extent to which new AMT spectrum requirements can be fulfilled using Primary Mobile Service allocations, it is important that the suitability of additional spectrum for AMT be studied ("suitable" as defined below). International recognition of bands suitable for AMT will not only encourage international harmonization of test equipment, but also provide assurance to Administrations that, based on technical studies conducted in the ITU-R, implementation of wideband telemetry systems can be accomplished by those Administrations wishing to do so without disrupting other services using the bands. This will also enable manufacturers to offer prospective customers aircraft with common test equipment packages, and thus help airlines achieve additional economies in the aircraft life-cycle cost. Moreover, by establishing conditions under which AMT use of a band would be suitable, incumbent users of the spectrum can be assured that they will not experience unacceptable interference, and manufacturers and test ranges will have a measure of additional certainty for the substantial investment in range infrastructure that will be incurred in equipping aircraft to use new bands deemed suitable for AMT.

The need for additional spectrum has been studied by several administrations. The requirement may differ depending on national and regional needs. It is not necessary to fulfill all AMT requirements in only one band. The U.S. requires an additional 650 MHz of spectrum for aeronautical flight test telemetry. The new requirements for aeronautical telemetry are only in the air-to-ground direction inasmuch as telecommand functions (i.e., ground-to-air transmissions) can be accommodated in other bands used for telemetry. In addition, this new AMT spectrum will not be used for the protection of life and property. The latter AMT applications will continue to be accommodated in other bands used for telemetry (see Nos. **5.342**, **5.343**, and **5.394** in the Radio Regulations). Hence, aeronautical mobile telemetry applications in new spectrum will not require the level of protection associated with operations in other telemetry bands.

ITU-R WP 8B conducted numerous studies of bands that could be used to satisfy the requirements of wideband aeronautical telemetry applications. Several bands were studied for suitability to implement AMT given the other co-primary services in the band. These are the 4 400-4 940, 5 925-6 700, and 5 091-5 150 MHz bands. It is expected that the implementation of wideband telemetry may require avoiding co-frequency operations with other co-primary services that utilize these bands in the same geographic area.

This will likely mean that the spectrum requirement for AMT would be satisfied using portions of each of the bands studied and considered to be suitable for AMT implementation. Suitable means, in this context, that AMT can be implemented compatibly with other co-primary services utilizing the band, assuming the implementation is in accordance with the criteria set forth in the resolutions attached.
The ITU-R studies have demonstrated that aeronautical mobile telemetry for flight test purposes can be implemented in these bands without adversely affecting the operation of existing systems and allocated services. However, the ability to implement AMT in some areas and in some portions of the bands may be restricted based on deployment intensity of other co-primary service stations that are ground-based, such as the Fixed Service (FS) stations, in the same vicinity. Application of frequency coordination will ensure that AMT is implemented such that other services and systems are not negatively impacted. The studies also show that there would not be undue constraints placed on future deployment of systems in the co-allocated services, provided applications are limited to flight testing conducted in specific geographic areas.
In cases where AMT operations are in radio LOS of Radio Astronomy observatories as could be determined using a 500 km coordination distance, it may be possible to arrange AMT time-sharing with those observatories to enable AMT use of the 4825-4835 MHz band.
Rather than the more aggressive approach of "designating" or "identifying" bands for AMT on a global basis, which could lead to a perception that other services in the bands may have a lesser status, the approach for regulatory accommodation of AMT has been to simply determine the suitability of certain bands for the implementation of AMT based on compatibility studies. This approach was in part based on the realization that the necessary AMT operational or implementation constraints will influence decisions on AMT implementation in each administration. Since the conditions under which AMT could be implemented can vary by administration, the approach maximizes the flexibility of implementing AMT.
Any authorization of AMT operations within these bands would be decided by individual administrations, and would be specifically limited to testing of aircraft at designated flight test areas in the air-to-ground direction within those individual countries. According to No. **5.444** of the Radio Regulations, the 5 091-5 150 MHz band is to be used by the MLS (Microwave Landing System) with precedence given to this international standard system. However, the band 5 091-5 150 MHz is not yet in use by MLS.
The 5 091-5 150 MHz band is already allocated to the Aeronautical radio navigation service (ARNS) on a primary basis in all Regions and is also allocated to the fixed-satellite service (FSS) (Earth-to-space) on a primary basis. This FSS allocation is limited to feeder links of non-geostationary mobile-satellite systems in the mobile-satellite service and is subject to coordination under No. **9.11A**. Test aircraft are not intended to use ground-to-air transmissions in this ARNS band. WP 8B is also considering the band 5 091-5 150 MHz under agenda item 1.6 for the purpose possible allocation to the aeronautical mobile (R) service.

Proposal

USA/ /01 ADD

5.XXX The bands 4 400-4 940 MHz and 5 925 - 6 700 MHz are suitable for the implementation of aeronautical mobile telemetry applications for flight test transmissions by aircraft stations to aeronautical stations. Any such use does not preclude the use of these bands by other mobile service applications or by other services to which these bands are allocated on a co-primary basis and does not establish priority in the Radio Regulations. Resolution **XXX (WRC-07)** shall apply. (WRC-07)

Reasons: A footnote as above could be used to satisfy a portion of the 650 MHz spectrum requirement. The advantage of having such a footnote is it merely states that the bands are suitable and that, via the provisions of Resolution XXX, AMT for flight test could share spectrum without causing undue constraints on other co-primary services in the band(s). Furthermore, a finding that spectrum is suitable for AMT implementation inherently would not preclude use of the bands by other co-primary services. Resolution **XXX (WRC-07),** to be finalized upon receipt of WP9D's response to a WP8B liaison statement, will outline the sharing conditions in the band(s).

USA/ /02 ADD

5.ZZZ The band 5 091-5 150 MHz band is also allocated to the aeronautical mobile service and is limited to flight test telemetry transmissions by aircraft stations to aeronautical stations. This does not preclude the use of this band by other services to which this band is allocated on a co-primary basis and does not establish priority in the Radio Regulations. Resolution **ZZZ (WRC-07)** shall apply. (WRC-07)
Reasons: This allocation is necessary for implementation of AMT in the band 5 091-5 150 MHz. The footnote will ensure that the new allocation to AMS is limited to air-to-ground fight test telemetry only. Resolution **ZZZ (WRC-07),** to be finalized, will outline the sharing conditions in the band.

USA/ /03 MOD
5.442 In the band ~~bands 4 825 – 4 835 MHz and~~ 4 950-4 990 MHz, the allocation to the mobile service is restricted to the mobile, except aeronautical mobile, service. In the band 4 825 – 4 835 MHz applications in the aeronautical mobile service are limited to flight test telemetry transmissions by aircraft stations to aeronautical stations, and Resolution XXX (WRC-07) shall apply.

Reasons: This modification to No. **5.442** exempts AMT from the aeronautical mobile exclusion, consistent with compatibility studies, and the Resolution specifies an appropriate coordination trigger.

USA/ /04 MOD

2 700-4 800 MHz

Allocation to services		
Region 1	Region 2	Region 3
….		
4 400-4 500	**FIXED** **MOBILE ADD 5.XXX**	
4 500-4 800	FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE ADD 5.XXX	
….		

4 800-5 570 MHz

Allocation to services		
Region 1	Region 2	Region 3
….		
4 800-4 990	**FIXED** **MOBILE MOD 5.442 ADD 5.XXX** **Radio astronomy** **5.149 5.339 5.443**	
5 030-5 150	AERONAUTICAL RADIONAVIGATION 5.367 5.444 5.444A ADD 5.ZZZ	
….		

5 570-7 250 MHz

Allocation to services		
Region 1	Region 2	Region 3
….		
5 925-6 700	**FIXED** **FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B** **MOBILE ADD 5.XXX** **5.149 5.440 5.458**	
….		

Reasons: The appropriate modifications to the table of allocations have been made to reflect proposals 1 through 3.

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RESOLUTION XXX (WRC-07)

Use of the bands 4 400-4 940 MHz and 5 925-6 700 MHz by an Aeronautical Mobile Telemetry (AMT) application in the mobile service

The World Radiocommunication Conference (Geneva, 2007),

c*onsidering*

a) that studies have been conducted within the ITU-R concerning the compatibility of aeronautical mobile telemetry for flight testing with other services in the bands 4 400 - 4 940 and 5 925 – 6 700 MHz;

b) that studies have shown that the bands 4 400 – 4 940 and 5 925 – 6 700 MHz are suitable for implementation of AMT when the criteria in resolves 2 are used in the implementation;

c) that spectrum efficiency is enhanced in situations where new applications can be implemented compatibly in bands that are heavily occupied;

d) that AMT applications for flight testing present unique and well-defined operating parameters;

e) that depending on frequency usage by other systems and services in the vicinity of flight test ranges, coordination may reveal that some portions of the bands 4 400 – 4 940 and 5 925 - 6 700 MHz may not be available for AMT or may be restricted with respect to AMT use,

recognizing

a) the bands 4 400 - 4 500 MHz and 4 800 - 4 940 MHz are allocated to the fixed and mobile services on a primary basis, and for the band 4825-4835 MHz No. **5.442** applies;

b) the band 4 500 - 4 800 MHz is allocated to the fixed, fixed-satellite (space-to-Earth), and mobile services on a co-primary basis;

c) the band 5 925 - 6 700 MHz is allocated to the fixed, fixed-satellite (Earth-to-space), and mobile services on a co-primary basis;

d) that under No. 5.441, the use of the bands 4 500 - 4 800 MHz (space-to-Earth) by the fixed satellite service shall be in accordance with the provisions of Appendix 30B;

noting

a) that the criteria used and assumptions made in sharing studies between aeronautical mobile telemetry flight test applications and other co-primary services should not be considered applicable to other sharing situations,

resolves

1 that administrations take into account that AMT applications for flight test purposes can be implemented in the bands 4 400 – 4 940 MHz and 5 925 – 6 700 MHz ;

2 that administrations choosing to implement aeronautical mobile telemetry for flight test purposes shall utilize the criteria set forth below:

- transmissions limited to those from an aircraft station to an aeronautical station (that is, in the air-to-ground direction);

- the peak e.i.r.p. density shall not exceed -2.2 dBW/MHz;

- transmissions limited to designated flight test areas, where flight test areas are airspace designated by Administrations for flight testing within their territories;

- coordinate use of the band 4 825 - 4 835 MHz with authorities of any Radio Astronomy observatories;

- coordinate any proposed frequency assignments for AMT frequency use with frequency assignments of earth stations in the fixed satellite service and stations in the fixed and mobile services;

RESOLUTION ZZZ (WRC-07)

Use of the band 5 091- 5 150 MHz by the aeronautical mobile service for the implementation of aeronautical mobile telemetry applications

The World Radiocommunication Conference (Geneva, 2007),

considering

a) the current allocation of the frequency band 5 030-5 150 MHz to the aeronautical radionavigation service;

b) the current allocation of the 5 091 - 5 150 MHz band to the fixed-satellite (FSS) (Earth-to-space), which is limited to feeder links of non-geostationary satellite (non-GSO) systems in the mobile-satellite service (MSS)) services;

c) the band 5 000-5 150 MHz is also allocated to the aeronautical mobile-satellite (R) service on a primary basis, subject to agreement obtained under No. 9.21;

d) that this conference has allocated the 5 091-5 150 MHz band for the aeronautical mobile service (AMS) limited to air-to-ground flight test telemetry applications,

recognizing

a) that spectrum efficiency is enhanced in situations where new applications can be implemented compatibly in heavily occupied bands;

b) that studies have been conducted within the ITU-R concerning the compatibility of aeronautical mobile telemetry (AMT) for flight testing with other services in the band 5 091-5 150 MHz;

c) that precedence is to be given to the microwave landing system (MLS) in accordance with No. **5.444** in the frequency band 5 030-5 150 MHz,

noting

a) that ITU-R Report [5GHz] describes methods for ensuring compatibility between the AMS and FSS operating in the band 5 091-5 150 MHz;

b) that the requirements for protection of MLS from AMS are contained in Recommendation [MLS-AMS],

resolves

1 that administrations take account that the band 5 091-5 150 MHz has been allocated to AMS limited to implementation of aeronautical mobile telemetry applications for flight test purposes based on the ITU studies referred to in *noting a) and b)* above;

2 that administrations choosing to implement aeronautical mobile telemetry for flight test purposes in the band 5 091-5 150 MHz be urged to utilize the criteria set forth below:

- transmissions limited to those from an aircraft station only (that is, transmissions in the air-to-ground direction);

- transmissions limited to designated flight test areas, where flight test areas are airspace designated by Administrations for flight test within their territories;

- coordinate AMT frequency use with earth stations in the fixed-satellite (Earth-to-space) service;

- coordinate AMT frequency use with Microwave Landing Systems located within the coordination distance determined in Annex A, [INSERT AS ANNEX A THE COORDINATION DISTANCE DEVELOPED IN WP 8B]

Document WAC/105(27.04.06):

Comments of IWG-1 on Draft U.S. Proposal from Exec. Branch Agencies on WRC-07 Agenda Item 1.20

IWG-1 has considered the terrestrial elements of the draft U.S. proposal for WRC-07 Agenda Item 1.20 from the Executive Branch agencies. It offers the following comments:

1. IWG-1 observes that it is premature for the United States to assert, in the background or in the reasons for any specific proposal, that values proposed for the protection of the EESS (passive) are based on an assessment of the impact on the relevant active service. To the extent that any ITU-R studies have even considered the impact on the active service involved – a requirement of both Resolution 738 (WRC-03) and the agenda item – no conclusions have yet been reached, which calls into question the proposals for specific levels at this time. The terrestrial industry is continuing to address this question with respect to the operation of stations in the 1350-1400 MHz, 1427-1452 MHz, 31-31.3 GHz and 51.4-52.6 GHz bands.

2. IWG-1 is concerned with the proposal for mandatory limits on fixed service station emissions into adjacent bands. For protection against unacceptable interference caused by unwanted emissions, mandatory limits may be without precedent in the RRs. The language in the Exec. Branch agencies' proposals for new footnotes (including 5.AAA, 5.CCC, and 5.EEE) would appear to invite BR examination under Art. 11 of compliance with unwanted emission limits. Even if BR examination is not what the Exec. Branch agencies contemplate, the mandatory nature of the wording does not clearly exclude examination, and has serious negative implications for the operation and evolution of advanced services in the affected active service bands. In Document WAC/096, a redline of the Exec. Branch agencies' proposal for Agenda Item 1.20, IWG-1 offers suggestions for the wording of the proposed footnotes that aligns the notes generally with the approach taken by WRC-03 with respect to protection of the radioastronomy service from detrimental interference (see Resolution 739 (WRC-03)), and removes any suggestion that the footnotes would require BR examination.

3. IWG-1 concurs with proposals USA/ /3, 5, 7 and 13.

Document WAC/096(27.04.06):
DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

WRC-07 Agenda Item 1.20[3]: to consider the results of studies, and proposals for regulatory measures, if appropriate, regarding the protection of the Earth exploration-satellite service (passive) from unwanted emissions of active services in accordance with Resolution **738 (WRC–03)**;

Background Information: The *resolves* in Resolution **738** calls for three actions: 1) study the compatibility between EESS (passive) and the corresponding active services listed in the Table in Resolution **738** to update Recommendation ITU-R SM.1633 or develop additional Recommendations; 2) further study the impact of implementing the values in *considering f*) and *g*) in the bands 31–31.3 GHz and 51.4–52.6 GHz for unwanted emissions of systems operating in Region 2 and 3, taking into account that the impact on fixed-service systems in Region 1 is documented in ITU-R Recommendation SM.1633; and 3) review the results of studies in 1) and 2) in order to consider regulatory measures, if appropriate, to ensure the protection of the EESS (passive) operating in the bands listed in the table in Resolution **738 (WRC 03)** from unwanted emissions of active services operating in the corresponding bands while taking into account the impact on all concerned services of implementing or not implementing such measures. The table below shows the frequency band and radiocommunication service combinations within the scope of the agenda item.

EESS (passive) band	Active service band	Active service
1 400-1 427 MHz	1 350-1 400 MHz	Fixed service (FS) Mobile service (MS) Radiolocation service (RLS)
	1 427-1 429 MHz	FS, MS (except aeronautical mobile service (AMS)) and space operation service (Earth-to-space)[1]
	1 429-1 452 MHz	FS and MS
23.6-24 GHz	22.55-23.55 GHz	Inter-satellite service (ISS)
31.3-31.5 GHz	30-31 GHz	FSS (Earth-to-space)
	31-31.3 GHz	FS (except HAPS)
50.2-50.4 GHz[2]	50.4-51.4 GHz[2]	FSS (Earth-to-space)[2]
	47.2-50.2 GHz (Regions 2 and 3) 49.44-50.2 GHz[2] (Region 1)	FSS[2]
52.6-54.25 GHz	51.4-52.6 GHz	FS

[1] Resolution 738 (WRC 03) incorrectly refers to the space research service instead of the space operation service.

[2] Studies in this band must take into account No. **5.340.1**.

Studies documented in Recommendation ITU–R SM.1633 show that active services in some of these bands do not produce significant unwanted emissions in the adjacent passive band. However, active

[3] This ~~is a counter~~ proposal supercedes ~~to~~ the one contained in FCC Public Notice DA 05–1011 as WAC/052(04.04.05).

services in other bands produce or theoretically could produce unwanted emissions in excess of EESS (passive) protection criteria in ITU-R recommendations.~~requirements.~~ Because of the differences between the active services, and the differences in the use of the active and passive services from band to band, the solutions for this agenda item have been determined on a band-by-band and service-by-service basis. [The proposed solutions were determined considering the impact to both the active and passive services.]

Resolution **738** can be suppressed, and there is no need for an agenda item dealing with unwanted emission levels in EESS (passive) bands for the next Conference.

Proposal:

USA/ /1 MOD

1 300-1 525 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
……		
1 350-1 400 FIXED ADD 5.AAA MOBILE RADIOLOCATION 5.149 5.338 5.339 5.339A	**1 350-1 400** RADIOLOCATION 5.149 5.334 5.339 5.339A	
1 400-1 427	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	
1 427-1 429	SPACE OPERATION (Earth-to-space) ADD 5.BBB FIXED ADD 5.AAA MOBILE except aeronautical mobile 5.341	
1 429-1 452 FIXED ADD 5.AAA MOBILE except aeronautical mobile 5.339A 5.341 5.342	1 429-1 452 FIXED ADD 5.AAA MOBILE 5.343 5.339A 5.341	
……..		

USA/ /2 ADD

5.AAA Fixed Service stations brought into use after [last day of WRC-07] should take reasonable steps to restrict ~~In order to ensure the protection of the Earth exploration-satellite (passive) service in the band 1 400–1 427 MHz,~~ the unwanted emissions power delivered to the antenna of any station in the fixed service operating in the band 1 350–1 400 MHz or in the band 1 427–1 452 MHz to the level of [~~shall be limited to~~ –45 dBW in the 27 MHz reference bandwidth] of the Earth Exploration Satellite (passive) Service in the band 1 400-1427 MHz. ~~400–1 427 MHz. Fixed service systems in operation at the date of entry into force of the Final Acts of WRC-07 are not subject to this limit.~~

Reasons: Results of studies documented in Recommendation ITU–R SM.1633 show that large numbers of higher power fixed service transmitters can cause significant levels of unwanted emissions in the 1 400–1 427 MHz passive band. [Considering equitable burden-sharing between the active and passive services],~~,~~ the single-entry unwanted emission limit proposed for future systems will slightly exceed the desired protection level of the EESS (passive) sensors in some cases, but will still allow the collection of valuable scientific data and will not place an undue burden on the future development and use of the fixed service in these nearby bands. The level of regulatory protection of the EESS (passive) from harmful interference that may be caused by the unwanted emissions of active services is provided by No. 4.7

USA/ /3 NOC

No change to Radio Regulations regarding the radiolocation service allocation in the band 1 350–1 400 MHz.

Reasons: Although studies documented in Recommendation ITU–R SM.1633 show that the radiolocation unwanted emissions in the EESS (passive) band at 1 400–1 427 MHz would exceed the permissible interference threshold in Recommendation ITU–R SA.1029–2, any interference would occur for only short time periods and would be readily discernible by users of the remote sensing data, allowing corrupted data to be discarded. The remaining uncorrupted data is expected to satisfy the scientific objectives of the EESS missions. Studies also show that radars would experience unacceptable degradation in operational coverage and range, target resolution, and accuracy if required to meet unwanted emission limits in the 1 400–1 427 MHz band. As with other pairs of active and passive bands, use of portions of the allocated bands must not be restricted. Radars would suffer an increased likelihood of interference from other radars and a reduction in coverage range, while a reduced bandwidth would be inadequate for remote sensing requirements.

USA/ /4 ADD

5.BBB Space Operations Service earth stations brought into use after [last day of WRC-07] should take reasonable steps to restrict ~~In order to ensure the protection of the Earth exploration-satellite (passive) service in the band 1 400–1 427 MHz,~~ the unwanted emissions e.i.r.p. of any earth station in the space operation service (Earth-to-space) operating in the band 1 427–1 429 MHz ~~shall be limited~~ to the level of 8 dBW in the 27 MHz reference bandwidth of the Earth Exploration-Satellite (passive) Service band 1 400–1 427 MHz. ~~Space operation service earth stations in operation at the date of entry into force of the Final Acts of WRC-07 are not subject to this limit.~~

Reasons: Results of studies documented in Recommendation ITU–R SM.1633 show that earth station transmitters in the 1 427–1 429 MHz band can cause significant levels of unwanted emissions in the 1 400–1 427 MHz passive band. [Considering equitable burden-sharing between the active and passive services], the single-entry unwanted emission limit proposed for future systems will slightly exceed the desired protection level of the EESS (passive) sensors in some cases, but will still allow the collection of valuable scientific data and will not place an undue burden on the future development and use of the space operation service (Earth-to-space) in the 1 427–1 429 MHz band. The level of regulatory protection of the EESS (passive) from harmful interference that may be caused by the unwanted emissions of active services is provided by No. 4.7

22-24.75 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
….		
22.55-23.55	FIXED INTER-SATELLITE MOBILE 5.149	
23.55-23.6	FIXED MOBILE	
23.6-24	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	
….		

USA/ /5 NOC

No change to Radio Regulations regarding the inter-satellite service allocation in the band 22.55–23.55 GHz.

Reasons: Results of studies documented in Recommendation ITU–R SM.1633 show that unwanted emissions from the ISS in the 22.55–23.55 GHz band are well below the recommended protection criteria for the EESS (passive) in the 23.6–24.0 GHz band. Therefore, no changes are needed to the Radio Regulations to protect the EESS (passive) in the 23.6–24.0 GHz band from unwanted emissions from the ISS in the 22.55–23.55 GHz band.

USA/ /6 MOD

29.9-34.2 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
….		
30-31	FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) Standard frequency and time signal-satellite (space-to-Earth) 5.542	
31-31.3	FIXED 5.543A ADD 5.CCC MOBILE Standard frequency and time signal-satellite (space-to-Earth) Space research 5.544 5.545 5.149	
31.3-31.5	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	
….		

USA/ /7 NOC

No change to Radio Regulations regarding the fixed-satellite service (Earth-to-space) allocation in the band 30-31 GHz.

Reasons: Results of studies documented in Recommendation ITU–R SM.1633 show that unwanted emissions from the FSS in the 30-31 GHz band do not exceed the recommended protection criteria for the EESS (passive) in the 31.3-31.5 GHz band. The FSS allocation is separated from the EESS (passive) allocation by 300 MHz, which greatly reduces the possibility of FSS unwanted emissions exceeding the protection criteria in the EESS (passive) band. Unwanted emission limits in the EESS (passive) band are unnecessary, and could constrain the future development of FSS uplink transmitters in the 30-31 GHz band.

USA/ /8 ADD

5.CCC Fixed Service stations brought into use after [last day of WRC-07] should take reasonable steps to restrict~~In order to ensure the protection of the Earth exploration-satellite (passive) service in the band 31.3–31.5 GHz,~~ the unwanted emissions power delivered to the antenna of any station in the fixed service operating in the band 31.0–31.3 GHz to the level of~~shall be limited to~~[–38 dBW] in any 100 MHz reference bandwidth of~~in~~ the Earth Exploration-Satellite (passive) Service in the band 31.3–31.5 GHz (see also No. **5.543A**). ~~Fixed service systems in operation at the date of entry into force of the Final Acts of WRC-07 are not subject to this limit.~~

Reasons: Studies documented in Recommendation ITU–R SM.1633 indicate that EESS (passive) systems in the 31.3–31.5 GHz band are protected if unwanted emissions in that band from fixed service transmitters in the 31.0–31.3 GHz band do not exceed –38 dBW in any 100 MHz reference bandwidth. Measures to ensure that future FS systems in the 31.0–31.3 GHz band do not exceed this level will not constitute an undue burden on the fixed service. The level of regulatory protection of the EESS (passive) from harmful interference that may be caused by emissions from actives services is provided by No. 4.7

USA/ /9 MOD

40-47.5 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
….		
47.2-47.5	FIXED FIXED-SATELLITE (Earth-to-space) 5.552 ADD 5.DDD MOBILE 5.552A	

47.5-51.4 GHz

<table>
<tr><th colspan="3">Allocation to services</th></tr>
<tr><th>Region 1</th><th>Region 2</th><th>Region 3</th></tr>
<tr><td>47.5-47.9
FIXED
FIXED-SATELLITE
(Earth-to-space) 5.552 ADD 5.DDD
(space-to-Earth) 5.516B 5.554A
MOBILE</td><td colspan="2">47.5-47.9
FIXED
FIXED-SATELLITE (Earth-to-space) 5.552 ADD 5.DDD
MOBILE</td></tr>
<tr><td>47.9-48.2</td><td colspan="2">FIXED
FIXED-SATELLITE (Earth-to-space) 5.552 ADD 5.DDD
MOBILE
5.552A</td></tr>
<tr><td>48.2-48.54
FIXED
FIXED-SATELLITE
(Earth-to-space) 5.552 ADD 5.DDD
(space-to-Earth) 5.516B 5.554A 5.555B
MOBILE</td><td colspan="2" rowspan="3">48.2-50.2
FIXED
FIXED-SATELLITE (Earth-to-space) 5.516B 5.552 ADD 5.DDD
MOBILE</td></tr>
<tr><td>48.54-49.44
FIXED
FIXED-SATELLITE
(Earth-to-space) 5.552 ADD 5.DDD
MOBILE
5.149 5.340 5.555</td></tr>
<tr><td>49.44-50.2
FIXED
FIXED-SATELLITE
(Earth-to-space) 5.552 ADD 5.DDD
(space-to-Earth) 5.516B 5.554A 5.555B
MOBILE</td></tr>
<tr><td>50.2-50.4</td><td colspan="2">EARTH EXPLORATION-SATELLITE (passive)
SPACE RESEARCH (passive)
5.340</td></tr>
<tr><td>50.4-51.4</td><td colspan="2">FIXED
FIXED-SATELLITE (Earth-to-space) ADD 5.DDD
MOBILE
Mobile-satellite (Earth-to-space)</td></tr>
</table>

USA/ /10 ADD

5.DDD Fixed Satellite Service earth stations brought into use after [last day of WRC-07] should take reasonable steps to restrict~~In order to ensure the protection of the Earth exploration-satellite (passive) service in the band 50.2-50.4 GHz,~~ the unwanted emissions e.i.r.p. of any earth station in the fixed-satellite service operating in the band 47.2-50.2 GHz in Regions 2 and 3, 49.44-50.2 GHz in Region 1, and 50.4-51.4 GHz in all Regions to the level~~shall be limited~~ of~~to~~ [30 dBW] in the 200 MHz reference bandwidth of the Earth Exploration (passive) Service in the band 50.2-50.4 GHz in clear sky conditions, and to a level that is Y dB higher during fading conditions. ~~Fixed-satellite service systems in operation at the date of entry into force of the Final Acts of WRC-07 are not subject to this limit.~~

Reasons: Results of studies documented in Recommendation ITU–R SM.1633 show that fixed-satellite service uplink transmitters operating in bands adjacent to then 50.2-50.4 GHz passive band can cause significant levels of unwanted emissions in the 50.2-50.4 GHz passive band. The level of regulatory protection of the EESS (passive) from harmful interference that may be caused by the unwanted emissions of active services is provided by No. 4.7.

USA/ /11 MOD

51.4-55.78 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
51.4-52.6	FIXED ADD 5.EEE MOBILE 5.547 5.556	
52.6-54.25	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340 5.556	
….		

USA/ /12 ADD

5.EEE Fixed Service stations brought into use after [last day of WRC-07] should take reasonable steps to restrict~~In order to ensure the protection of the Earth exploration-satellite (passive) service in the band 52.6–54.25 GHz,~~ the unwanted emissions power delivered to the antenna of any station in the fixed service operating in the band 51.4–52.6 GHz to the level of~~shall be limited to~~ [–33 dBW] in any 100 MHz reference bandwidth of~~in~~ the Earth Exploration (passive) Service in the band 52.6–54.25 GHz. ~~Fixed-service systems in operation at the date of entry into force of the Final Acts of WRC-07 are not subject to this limit.~~

Reasons: Studies documented in Recommendation ITU–R SM.1633 indicate that EESS (passive) systems in the 52.6–54.25 GHz band are protected if unwanted emissions in that band from fixed service transmitters in the 51.4–52.6 GHz band do not exceed –33 dBW in any 100 MHz reference bandwidth. Measures to ensure that future FS systems in the 51.4–52.6 GHz band do not exceed this level will not constitute an undue burden on the fixed service. The level

of regulatory protection of the EESS (passive) from harmful interference that may be caused by the unwanted emissions of active services is provided by No. 4.7

USA/ /13 SUP

RESOLUTION 738 (WRC-03)

Compatibility analyses between the Earth exploration-satellite service (passive) and active services

Reasons: Consequential to completion of this agenda item. All of the actions required under this Resolution will have been completed at WRC-07 and it may be suppressed. The technical studies will either have confirmed that the unwanted emissions do not interfere with the EESS (passive) or appropriate regulatory measures, if necessary, will have been determined and decided by WRC-07.

DOCUMENT WAC/097(27.04.06)

Proposed Modification to NTIA/RCS proposal for A.I. 7.2 (Space Research-22GHz)
The NTIA in a communication from it Associate Administrator for spectrum, has forwarded to the WAC a proposal related to Agenda Item 7.2 of WRC-07. This agenda item concerns proposals for the agenda of WRC-10. The proposal of interest states:

"2.X.B to consider the addition of up to a 500 MHz primary space research service (Earth-to-space) allocation in the 22.55-23.55 GHz band, taking into account the results of ITU-R studies and recognizing the need to protect existing systems in the band."

The background information in this draft proposal indicates that the suggested new allocation is required to provide for, "a companion uplink(Earth-to-space) band to provide the mission data, command and control links" for referenced NASA missions to the moon both robotic and manned. It is further indicated that such an allocation is desirable be in close proximity to the ISS links in the 25.25-27.5 GHz allocation.

It is certainly clear that this is an important mission and clearly needs spectrum support.
It is also clear that the referenced ISS allocation is already extensively used and is expected to continue to be by both the Iridium system and other NASA ISS links.
The Iridium ISS links operate in the band 23.183-23.377 GHz. Of concern is that when an international allocation is adopted in Article 5 of the Radio Regulations it is available to all 189 members of the ITU. This means that there could be any number of Administrations requesting to use the band, and particularity since this is proposed to be an uplink transmission could present sharing difficulties.

As may not be apparent the capability offered by non-GSO MSS systems such as Iridium
Have become increasingly important as the last communication link in the context of emergencies and natural disasters cause by Tsunamis, Hurricanes, and earth quakes. The ISS links are critical to providing the associated services.

The importance of the NASA mission is recognized, however, it appears that such a requirement could be met through an appropriate footnote to the US table of allocations. However, alternatively, given the requirement indicated, it could be accommodated through a modification of this proposal which avoids conflict with the Iridium ISS links. The NASA requirement is for 500 MHz. This requirement can easily be accommodated in the lower half of the existing ISS allocation. Therefore if an agenda item is really necessary the proposed frequency range in the NTIA/RCS proposal should be changed to 22.55-23.05 GHz. This should be reflected in the text of the proposal and the associated Resolution. A proposed modification to reflect this is attached.

In summary, it appears that Iridium concerns could be addressed by either providing for the requirement through a US domestic footnote or by a small change in the suggested proposal by referencing only the lower half of the ISS allocation in the 22.55-23.55 GHz band.

Attachment

United States of America

Agenda Item 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 possible agenda items for future conferences, taking into account Resolution 802 (WRC-03);

Background Information

Add additional paragraph to this section:

The Intersatellite Service links of a non-GSO MSS satellite system operate in the ISS allocation in the band 23.183-23.377 GHz. They have been in operation for several years and increasingly being used as a source of last communications is situations of emergencies and natural disasters.

Proposal:

Modify the NTIA/RCS proposal as follows:

USA/ / 1 MOD

RESOLUTION 803 (WRC-07)

Agenda for the 2010 World Radiocommunication Conference

The World Radiocommunication Conference (Geneva, 2007)

USA/ / 2 ADD

2.XB to consider the addition of up to a 500 MHz primary space research service (Earth-to-space) allocation in the 22.55-23.05 GHz band, taking into account the results of ITU-R studies and recognizing the need to protect existing systems in the band.

Reasons: Allocating sufficient primary space research service frequency spectrum in the 22.55-23.055 GHz band will provide the space exploration initiatives adequate uplink (Earth-to space) bandwidth as a companion to the primary space research service space to Earth band at 25.5-27.0 GHz.

USA/ / 3 ADD

RESOLUTION US XXX (WRC-07)

Use of the Band 22.55-23.05 GHz by the Space Research Service

In considerings h), i), j), recognizings 1, 2, and 3, resolves 1, and invites administrations, of the NTIA/RCS draft proposal in the referenced resolution, the band 22.55-23.55 GHz should be changed to 22.55-23.05 GHz.

INFORMAL WORKING GROUP 2 (IWG-2)
Space Services and High Altitude Platform Stations (HAPS)

DOCUMENT WAC/098(27.04.06)

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

WRC-07 Agenda Item 1.8 (Res. 145 (WRC-03) only): *to consider the results of ITU-R studies on technical sharing and regulatory provisions for the application of high altitude platform stations operating in the bands 27.5-28.35 GHz and 31-31.3 GHz in response to Resolution **145 (WRC-03),** and for high altitude platform stations operating in the bands 47.2-47.5 GHz and 47.9-48.2 GHz in response to Resolution **122 (Rev.WRC-03)**;*
ISSUE: Identifying a common 300 MHz segment of the band 27.5-28.35 GHz, paired with the 300 MHz band at 31-31.3 GHz, for use by HAPS in the countries listed in Nos. **5.537A** and **5.543A** or countries in Region 2 planning provisional operation, taking into account the requirements of other fixed-service systems and other services, and resolving outstanding future conference related issues.

(i) Resolution 145 (WRC-03)

"Potential use of the bands 27.5-27.8 GHz and 31-31.3 GHz by high altitude platform stations (HAPS) in the fixed service"

Background Information:

Resolution 145: WRC-2000 decided to adopt provisions for the operation of HAPS on a non-interfering/non-protected basis in the bands 27.5-28.35 and 31-31.3 GHz in Region 3, but did not allow operation in the entire bands until studies could be completed to determine how best to protect existing services in these and nearby frequency bands. WRC-03 further refined these provisions by deciding to limit HAPS operation to 300 MHz in a specified direction in each of these two bands, retaining the requirement for HAPS to operate on a non-interfering/non-protected basis in these 300 MHz segments, and adopting Resolution **145 (WRC-03)**, which created the possibility of allowing Region 2 administrations to advise the Radiocommunications Bureau of their intent to implement HAPS systems within the bands 27.5-28.35 and 31-31.3 GHz. Administrations intending to implement HAPS in these bands are to seek the explicit agreement of concerned administrations in accordance with *resolves* 4 of this Resolution.
Under Resolution **145 (WRC-03)**, the use of HAPS within the fixed-service allocations within the 27.5-28.35 GHz and 31-31.3 GHz bands must be limited to 300 MHz in each band, and is subject to the condition that such use must not cause harmful interference to, nor claim protection from, other stations of services operating in accordance with the Table of Frequency Allocations of Article **5**. Furthermore, the Resolution specifies that that the development of these other services shall proceed without constraints by HAPS operating pursuant to the Resolution. This Resolution also calls for the identification of a common 300 MHz within the 27.5-28.35 GHz band for use by HAPS. With respect to the band 31-31.3 GHz, Resolution **145 (WRC-03)** specifies that systems using HAPS in Region 2 in the band 31-31.3 GHz must not cause harmful interference to the radio astronomy service having a primary allocation in the band 31.3-31.8 GHz, taking into account the protection criterion given in Recommendation ITU-R RA.769. The Resolution contains limits on the level of unwanted power density into the HAPS ground station antenna in the band 31.3-31.8 GHz in order to ensure the protection of satellite passive services.

Proposal:

b. USA/1.8/A

c. MOD

5.537A In Bhutan, Korea (Rep. of), the Russian Federation, Indonesia, Iran (Islamic Republic of), Japan, Kazakhstan, Lesotho, Malaysia, Maldives, Mongolia, Myanmar, Uzbekistan, Pakistan, the Philippines, Kyrgyzstan, the Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the band 27.5-27.88.35 GHz may also be used by high altitude platform stations (HAPS). ~~The use of HAPS within the band 27.5-28.35 GHz is limited, within the territory of the countries listed above, to a single 300 MHz sub-band.~~ Such use of 300 MHz of the fixed-service allocation by HAPS in the above countries is further limited to operation in the HAPS-to-ground direction and shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems or other co-primary services. Furthermore, the development of these other services shall not be constrained by HAPS. See Resolution **145 (Rev.WRC-073)**.

Reason: WRC-03 called for the identification of a common 300 MHz band, within the 27.5-28.35 GHz band, for use by HAPS in those countries wishing to implement such service. Such identification will help to ease the implementation and harmonization of HAPS in those countries. Identifying the lowest 300 MHz segment for potential use by HAPS maximizes the amount of contiguous FSS spectrum in the 27.5-30.0 GHz band that would not be constrained domestically in any way as a consequence of any potential use of the band by HAPS.

d. USA/1.8/B

e. MOD

5.543A In Bhutan, Korea (Rep. of), the Russian Federation, Indonesia, Iran (Islamic Republic of), Japan, Kazakhstan, Lesotho, Malaysia, Maldives, Mongolia, Myanmar, Uzbekistan, Pakistan, the Philippines, Kyrgyzstan, the Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the band 31-31.3 GHz may also be used by systems using high altitude platform stations (HAPS) in the ground-to-HAPS direction. The use of the band 31-31.3 GHz by systems using HAPS is limited to the territory of the countries listed above and shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems, systems in the mobile service and systems operated under No. **5.545**. Furthermore, the development of these services shall not be constrained by HAPS. Systems using HAPS in the band 31-31.3 GHz shall not cause harmful interference to the radio astronomy service having a primary allocation in the band 31.3-31.8 GHz, taking into account the protection criterion as given in Recommendation ITU-R RA.769. In order to ensure the protection of satellite passive services, the level of unwanted power density into a HAPS ground station antenna in the band 31.3-31.8 GHz shall be limited to –106 dB(W/MHz) under clear-sky conditions, and may be increased up to -100 dB(W/MHz) under rainy conditions to take account of rain attenuation, provided the effective impact on the passive satellite does not exceed the impact under clear sky conditions given above. See Resolution **145** (**Rev.WRC-073**) (WRC-073)

Reason: Consequential to the changes to Resolution **145** in **USA/1.8/C**

f. USA/1.8/C

g. MOD

RESOLUTION 145 (REV.WRC-07~~3~~)

Potential use of the bands 27.5-27.88~~.35~~ GHz and 31-31.3 GHz by high altitude platform stations (HAPS) in the fixed service

The World Radiocommunication Conference (Geneva, 2007~~3~~),

considering

a) that WRC-97 made provision for the operation of HAPS, also known as stratospheric repeaters, within a 2 × 300 MHz portion of the fixed-service allocation in the bands 47.2-47.5 GHz and 47.9-48.2 GHz;

b) that WRC-97 adopted No. **4.15A** specifying that transmissions to or from HAPS shall be limited to the bands specifically identified in Article **5**;

c) that at WRC-2000, several countries in Region 3 and one country in Region 1 expressed a need for a lower frequency band for HAPS due to the excessive rain attenuation that occurs at 47 GHz in these countries;

d) that ~~at the present Conference,~~ some countries in Region 2 have also expressed an interest in using a frequency range lower than those referred to in *considering a)*;

e) that, in order to accommodate the need expressed by the countries referred to in *considering c)*, WRC-2000 adopted Nos. **5.537A** and **5.543A**, which were modified at WRC-03 and then again at WRC-07 ~~this Conference~~ to permit the use of HAPS in the fixed service ~~within 300 MHz of spectrum~~ in the band 27.5-27.88~~.35~~ GHz and in the band 31-31.3 GHz in certain Region 3 countries and in one Region 1 country on a non-harmful interference, non-protection basis;

f) that the bands 27.5-27.88~~.35~~ GHz and 31-31.3 GHz are already heavily used or planned to be used by a number of different services and a number of other types of applications in the fixed service;

g) that while the decision to deploy HAPS can be taken on a national basis, such deployment may affect neighbouring administrations, particularly in small countries;

h) that the 31.3-31.8 GHz band is allocated to the radio astronomy, Earth exploration-satellite (passive) and space research (passive) services, and that WRC-03 ~~this Conference~~ amended No. **5.543A** to specify signal levels that would protect satellite passive services and radio astronomy stations;

i) that ITU-R has conducted studies dealing with sharing between systems using HAPS in the fixed service and other types of systems in the fixed service in the bands 27.5-27.88~~.35~~ GHz and 31-31.3 GHz leading to Recommendation ITU-R F.1609;

j) that results of some ITU-R studies indicate that, in the bands 27.5-27.88~~.35~~ GHz and 31-31.3 GHz, sharing between fixed-service systems using HAPS and other conventional fixed-service systems in the same area will require appropriate interference mitigation techniques to be developed and implemented;

k) that ITU-R has conducted studies dealing with compatibility between systems using HAPS and the passive services in the 31.3-31.8 GHz band leading to Recommendations ITU-R F.1570 and ITU-R F.1612;

l) that ITU-R has produced Recommendation ITU-R SF.1601 containing a methodology for evaluating interference from the fixed-service system using HAPS into GSO FSS systems in the band 27.5-27.88~~.35~~ GHz ~~in order to facilitate further studies~~;

m) that HAPS technical ~~and regulatory~~ issues should continue to be studied in order to determine appropriate measures for protecting the fixed service and other co-primary services in the band 27.5-27.8~~8.35~~ GHz;

~~*n)* that pending the completion of studies, administrations in Region 2 may wish to consider deployment of HAPS systems in the fixed service within 300 MHz of spectrum at 27.5-28.35 GHz and in 300 MHz of spectrum at 31-31.3 GHz and to have some provisional means by which to authorize such use of HAPS in their territories,~~

~~*noting*~~

~~that systems using HAPS may operate in the bands 27.5-28.35 GHz and 31-31.3 GHz under No. **4.4**,~~

resolves

~~1 to invite WRC-07 to review the results of the studies specified below and consider appropriate refinement of the regulatory provisions for the use of HAPS within the bands 27.5-28.35 GHz and 31-31.3 GHz;~~

1~~2~~ that, notwithstanding No. **4.15A**, in Region 2 the use of HAPS within the fixed-service allocations within the 27.5-27.8~~8.35~~ GHz and 31-31.3 GHz bands shall ~~be limited, pending the completion of the studies specified in *invites ITU-R* 1 below, to 300 MHz in each band, that such use shall~~ not cause harmful interference to, nor claim protection from, other stations of services operating in accordance with the Table of Frequency Allocations of Article **5**, and, further, that the development of these other services shall proceed without constraints by HAPS operating pursuant to this Resolution;

2~~3~~ that~~, pursuant to *resolves* 2 above,~~ any use by HAPS of the fixed-service allocation at 27.5-27.8~~8.35~~ GHz pursuant to *resolves* 1 above shall be limited to operation in the HAPS-to-ground direction, and that any use by HAPS of the fixed-service allocation at 31-31.3 GHz shall be limited to operation in the ground-to-HAPS direction;

3~~4~~ that~~, on a provisional basis,~~ the administrations listed in Nos. **5.537A** and **5.543A** and those administrations in Region 2 which intend to implement systems using HAPS in the fixed service in the bands 27.5-27.8~~8.35~~ GHz and 31-31.3 GHz shall seek explicit agreement of concerned administrations with regard to their primary services to ensure that the conditions in Nos. **5.537A, 5.543A**, *resolves* 1~~2~~ and *resolves* 4~~5~~ are met;

4~~5~~ that systems using HAPS in the band 31-31.3 GHz, in accordance with *resolves* 1~~2~~ above, shall not cause harmful interference to the radio astronomy service having a primary allocation in the band 31.3-31.8 GHz, taking into account the protection criterion given in Recommendation ITU-R RA.769. In order to ensure the protection of satellite passive services, the level of unwanted power density into the HAPS ground station antenna in the band 31.3-31.8 GHz shall be limited to –106 dB(W/MHz) under clear-sky conditions and may be increased up to –100 dB(W/MHz) under rainy conditions to take account of rain attenuation, provided that effective impact on the passive satellite does not exceed the impact under clear-sky conditions as given above,

invites ITU-R

~~1 to continue to conduct studies, as a matter of urgency, and taking into account the requirements of other fixed-service systems and other services, on the feasibility of identifying a suitable and preferably a common 300 MHz segment of the band 27.5-28.35 GHz paired with the 300 MHz band at 31-31.3 GHz, for use by HAPS in the countries listed in Nos. **5.537A** and **5.543A** or countries in Region 2 planning provisional operation;~~

1~~2~~ to develop, one or more ITU-R Recommendations, technical sharing criteria or HAPS system design conditions that are necessary to ensure that HAPS applications in the fixed service operate successfully on a non-harmful interference, non-protected basis in the bands 27.5-27.8~~8.35~~ GHz and 31-31.3 GHz;

2~~3~~ to complete studies on the interference criteria and methodology for evaluating interference from the downlink (HAPS-to-ground direction) of systems using HAPS to the uplink of the GSO satellite

networks in the FSS within the band 27.5-27.88.35 GHz, taking into account Recommendation ITU-R SF.1601 for the situations referred to in *considering l)*;

4 to study the regulatory provisions that might be needed in order to address those cases where the deployment of HAPS in the fixed service in the bands 27.5-28.35 GHz and 31-31.3 GHz in the territory of one administration may affect other administrations;

35 to continue to carry out studies on the appropriate interference mitigation techniques for the situations referred to in *considering j)*,

invites administrations,

to advise the Radiocommunications Bureau of their intention to implement HAPS systems within the band 27.5-27.88.35 GHz and in the band 31-31.3 GHz, whether in countries listed in Nos. **5.537A** and **5.543A** or in accordance with *resolves 1*2, and to specify the technical characteristics of the systems they intend to implement frequency bands (up to 300 MHz each with the 27.5-28.35 GHz and 31-31.3 GHz bands) they intend to use for such systems,

instructs the Radiocommunications Bureau,

to publish in the International Frequency Information Circular (BR IFIC) a list of administrations who have so advised, and to publish the information on HAPS implementation received from administrations which intend to implement systems using HAPS in the fixed service in the bands 27.5-27.88.35 GHz and 31-31.3 GHz.

Reason: Changes to frequency ranges throughout, deletion of *invites 1,* and other minor changes are consequential to proposal **USA/1.8/A**. Deletion of *noting* is made recognizing that this is a simple statement of fact. Deletion of *invites 4* is made recognizing the retention of old *resolves 4,* now *resolves 3*. Changes to *invites administrations* are proposed to clarify that administrations are to supply technical details of their systems along with an indication of their intention to implement HAPS in these frequency bands.

Document WAC/099(27.04.06):

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Agenda Item 1.12: to consider possible changes in response to Resolution **86 (Rev. Marrakesh, 2002)** of the Plenipotentiary Conference: "Advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks" in accordance with Resolution **86 (WRC-03)**;

Coordination of the radionavigation-satellite service (space-to-space) in the bands 1 215-1 300 MHz and 1 559-1 610 MHz

Background Information: The scope and criteria to be used for the implementation of Resolution **86 (Rev. Marrakesh, 2002)** of the Plenipotentiary Conference by future world radiocommunication conferences (WRCs) is established in Resolution **86 (WRC-03)**. *Resolves 1* of Resolution **86 (WRC-03)** relates to the consideration of proposals dealing with deficiencies in the advance publication, coordination and notification procedures of the Radio Regulations for space services, and Resolves 2 relates to consideration of proposals intended to transform the content of the Rules of Procedure into regulatory text.

WRC-2000 added the space-to-space direction to the existing radionavigation-satellite service (RNSS) (space-to-Earth) allocations in the bands 1 215-1 300 MHz and 1 559-1 610 MHz, along with footnote **5.329A**. WRC-03 added footnote **5.328B**, which applied coordination between two non-GSO RNSS systems and between non-GSO and GSO RNSS systems in the bands 1 164-1 300 MHz, 1 559-1 610 MHz and 5 010-5 030 MHz under Nos. **9.12**, **9.12A** and **9.13** after 1 January 2005, without specifying direction (i.e., space-to-Earth or space-to-space). Coordination between GSO RNSS systems in the same bands (space-to-Earth and space-to-space) is covered by No. **9.7**, again without specifying direction (i.e., space-to-Earth or space-to-space).

No. **9.11A** applies the coordination provisions of Nos. **9.12** to **9.16** where the requirement to coordinate is included in a footnote to the Table of Frequency Allocations referring to No. **9.11A**. Since WRC-2000, the Rules of Procedure (RoP), issued by the Radio Regulations Board (RRB), rather than the Radio Regulations have defined the services and frequency bands for which the coordination procedure under No. **9.11A** is required. The RRB considered the application of No. **9.11A** to the bands given in No. **5.329A** (i.e., 1 215-1 300 and 1 559-1 610 MHz) and interpreted the Regulations as excluding RNSS (space-to-space) assignments in the bands given in No. **5.329A** from any obligation to coordinate with other services and with RNSS (space-to-Earth), but as obliging these RNSS (space-to-space) assignments to coordinate with each other.

In addition, many RNSS (space-to-space) network assignments are receive-only in the bands 1215-1 300 MHz and 1 559-1 610 MHz. Resolution **610 (WRC-03)**, as referenced in No. **5.328B**, requires administrations to provide evidence of binding agreements for the manufacture,

procurement, and launch of RNSS systems and networks. This resolution was intended to aid bilateral coordination between transmitting RNSS systems and networks by ensuring such systems are either in operation or in the process of being implemented. Requiring Resolution **610 (WRC-03)** data for receiving space stations is unnecessary.

Therefore, modifications to No. **5.329A** and No. **5.328B** are needed to reflect the RRB decision that requires RNSS (space-to-space) to coordinate only with other RNSS (space-to-space) but not with other services or with RNSS (space-to-Earth), and to remove Resolution **610 (WRC-03)** obligations from RNSS receiving space stations. Additionally, to ensure that the obligation on RNSS (space-to-space) networks under No. **5.329A** is also adequately reflected for geostationary RNSS (space-to-space) networks with respect to GSO RNSS (space-to-Earth) networks in the 1215-1300 MHz and 1559-1610 MHz bands (a coordination scenario not encompassed by Nos. **9.12**, **9.12A**, and **9.13)**, the modification to No. **5.328B** refers as well to No. **9.7**.

Proposal

USA/ /1 MOD

5.329A Use of systems in the radionavigation-satellite service (space-to-space) operating in the bands 1 215-1 300 MHz and 1 559-1 610 MHz is not intended to provide safety service applications, and shall not impose any additional constraints on ~~other~~radionavigation-satellite service (space-to-Earth) systems or on other services operating in accordance with the Table.

Reasons: To clarify that "other systems" in No. **5.329A** refers to the radionavigation-satellite service (space-to-Earth) and that "services" refers to services other than the radionavigation-satellite service.

USA/ /2 MOD

5.328B The use of the bands 1 164-1 300 MHz, 1 559-1 610 MHz and 5 010-5 030 MHz by systems and networks in the radionavigation-satellite service for which complete coordination or notification information, as appropriate, is received by the Radiocommunication Bureau after 1 January 2005 is subject to the application of the provisions of Nos. **9.12**, **9.12A** and **9.13**. As a consequence of No. **5.329A**, for systems or networks in the radionavigation-satellite service (space-to-space) in the bands 1 215-1 300 MHz and 1 559-1 610 MHz, the application of the provisions of Nos. **9.7, 9.12**, **9.12A** and **9.13** is only with respect to other systems or networks in the radionavigation-satellite service (space-to-space). Resolution **610 (WRC-03)** shall also apply, but only to transmitting space stations.

Reasons: To make it clear that the application of the coordination procedure in Nos**. 9.7, 9.12**, **9.12A** and **9.13** to RNSS (space-to-space) systems and networks is only with respect to other radionavigation-satellite service (space-to-space) systems and networks in the bands 1 215-1 300 MHz and 1 559-1 610 MHz and to limit the application of Resolution **610 (WRC-03)** to transmitting space stations.

Document WAC/100(27.04.06):

Comments of IWG-2 on Draft U.S. Proposal from Exec. Branch Agencies on WRC-07 Agenda Item 1.20 (Document IWG-2/057)

IWG-2 has considered the satellite elements of Document IWG-2/057, which contains draft U.S. proposal for WRC-07 Agenda Item 1.20 from the Executive Branch agencies. It offers the following comments:

1. IWG-2 endorses the NOC proposals for the bands 22.55-23.55 GHz and 30-31 GHz (inter-satellite service and fixed-satellite service (Earth-to-space), respectively) that are contained in Proposals USA/ /5 and USA/ /7.

2. IWG-2 also endorses the SUP proposal for Resolution738 that is contained in Proposal USA/ /13.

3. IWG-2 observes that it is premature for the United States to assert, in the background or in the reasons for any specific proposal, that values proposed for the protection of the EESS (passive) are based on an assessment of the impact on the relevant active service. To the extent that any ITU-R studies have even considered the impact on the active service involved – a requirement of both Resolution 738 (WRC-03) and the agenda item – no conclusions have yet been reached. The FSS industry is continuing to address this question with respect to the operation of earth stations in the 47.2-50.2 GHz FSS (Earth-to-space) band.

4. IWG-2 is concerned with the proposal for mandatory limits on FSS earth station emissions into adjacent bands. For protection against unacceptable interference caused by unwanted emissions, mandatory limits may be without precedent in the RRs. The language in the Exec. Branch agencies' proposals for new footnotes (including 5.BBB, 5.DDD, and 5.EEE) would appear to invite BR examination under Art. 11 of compliance with unwanted emission limits. Even if BR examination is not what the Exec. Branch agencies contemplate, the mandatory nature of the wording does not clearly exclude examination, and has serious negative implications for the operation and evolution of advanced services in the affected active service bands. In Document WAC/096, a redline of the Exec. Branch agencies' proposal for Agenda Item 1.20 (Doc. IWG-2/057), IWG-2 offers suggestions for the wording of the proposed footnotes that aligns the notes generally with the approach taken by WRC-03 with respect to protection of the radioastronomy service from detrimental interference (see Resolution 739 (WRC-03), and removes any suggestion that the footnotes would subject FSS and space operations earth stations to BR examination. The language of the alternative text was coordinated with IWG-1, which has responsibility for the terrestrial service elements.

5. With respect to the proposal for an unwanted emission value for FSS earth stations operating in the 47.2-50.2 GHz band (proposed note 5.DDD in Proposal USA/ /10), it appears that the derivation of the 30 dBW/200 MHz level that is stated as needed to protect the EESS (passive) from unwanted emissions into the 50.2-50.4 GHz band may have been based on unrealistic assumptions regarding FSS deployment and parameters. Furthermore, it should be emphasized in the proposal that the protection level is a clear-sky level, and that FSS earth stations in the 47.2-50.2 GHz band can increase their transmit power density by TBD dB, to overcome fading conditions without causing additional impact to the EESS (passive) systems. IWG-2 emphasizes that it has no difficulty with the concept of identifying an unwanted

emission level that would protect the EESS (passive) service in that band; at this time, however, that level remains under discussion between interested representatives from both the active service and passive service communities.

6. There is an inconsistency between the language of No. 5.DDD in Proposal USA/ /10 and the proposed modification to Article 5 in Proposal USA/ /9. The former indicates that the note is to apply only to the 49.44-50.2 GHz portion of the 47.2-50.2 GHz band in Region 1, while the latter applies No. 5.DDD to the entire 47.2-50.2 GHz band. IWG-2 recommends that this discrepancy be resolved, but as long as No. 5.DDD reflects a satisfactory resolution of the matter addressed in Comment No. 4 above, IWG-2 takes no position on how this discrepancy should be resolved.

INFORMAL WORKING GROUP 3 (IWG-3)
IMT-2000 and 2.5 GHz Sharing Issues

Document WAC/101(27.04.06):

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

WRC-07 Agenda Item 1.9: to review the technical, operational and regulatory provisions applicable to the use of the band 2 500-2 690 MHz by space services in order to facilitate sharing with current and future terrestrial services without placing undue constraint on the services to which the band is allocated;

Background Information: The band 2500-2690 MHz is allocated to both terrestrial and satellite services on a primary basis. The terrestrial services include the Mobile Services and the Fixed Services (including IMT-2000). Both the terrestrial Mobile and Fixed Services have been rapidly evolving to encompass high-speed mobile Internet services requiring sensitive receiving equipment, which are highly susceptible to interference.

The 2500-2690 MHz band is also allocated to the satellite services, which include MSS (including GSO and non-GSO), BSS (including GSO and non-GSO), and FSS. In WRC-03 the issue of sharing between terrestrial services and NGSO BSS (Sound) in certain Region 3 countries was resolved with the revision of pfd limits/coordination thresholds for NGSO BSS (Sound) per Resolution 539. GSO BSS (Sound) limits/coordination thresholds within these countries were also tightened for systems for which complete Appendix **4** coordination information has been received after 1 June 2005. Other than for these Region 3 countries the pfd limits for BSS remained the same as given in Table 21-4.

In general, co-frequency sharing between the mobile-satellite service (MSS) and terrestrial services has been found to be difficult in the ITU-R studies. The sharing between the terrestrial services and the MSS poses risks of harmful interference to both systems. In addition, it will require large separation distance between terrestrial stations and MSS earth stations in order to avoid harmful interference to both stations. ITU-R Report M.2041 studied the feasibility of sharing between MSS and MS for IMT-2000 and highlighted the incompatibility between these two services on a co-frequency basis.

Both BSS and FSS are also allocated to the 2500-2690 MHz band and are subject to the limits in Table 21-4. WRC-03 recognized the potential sharing difficulty between the terrestrial and satellite services and caused the formation of Joint Task Group 6-8-9 to study the issues related to sharing.

JTG 6-8-9 has developed a methodology for estimating the satellite pfd values required to protect terrestrial services. Based on this methodology the USA has determined that pfd values at the surface of the Earth produced by the emissions of MSS, BSS and FSS satellites of -136 dBW/m^2/MHz for angles of arrival below 5^0 and -122 dBW/m^2/MHz for angles of arrival greater than 25^0 would yield tolerable levels of interference to the Fixed and non IMT-2000 mobile services.

There are definite advantages to having a hard limit regulatory regime, based on the specification of a power flux density mask in Article 21 of the Radio Regulations. First it would ensure the long term safeguard of terrestrial systems in the band 2 500-2 690 MHz from satellite interference and could also be

beneficial to the long-term development of space services as a defined set of pfd limits would be known. Additionally, a hard limit regime would result in no need for coordination between administrations with terrestrial services and administrations planning to deploy FSS, MSS or BSS systems.

However, there may be potential disadvantages to the hard limit regime based on the PFD limits that are ultimately adopted by the WRC for both the terrestrial and space services. The PFD limits adopted to protect terrestrial networks may have the result that it would be difficult to operate satellite networks in this frequency band. Alternatively, the PFD limits adopted may have the result that it would be difficult to operate terrestrial networks in this frequency band.

This proposal calls for assigning the above pfd values for MSS, FSS and BSS in Article 21, Table 21-4, in order to provide long term protection of terrestrial services in this band.

Proposal

USA/ /1 MOD

TABLE **21-4** (WRC-03)

Frequency band	Service*	Limit in dB(W/m^2) for angles of arrival (δ) above the horizontal plane			Reference bandwidth
		0°-5°	5°-25°	25°-90°	
2 500-2 690 MHz 2 520-2 670 MHz 2 500-2 516.5 MHz (No. **5.404**) 2500-2535	Fixed-satellite Broadcasting-satellite Radiodetermination-satellite Mobile Satellite (Space to Earth)	~~–152~~ –136	~~–152 + 0.75(δ – 5)~~ –136 + 0.7(δ – 5)	~~–137~~ –122	~~4 kHz~~ 1 MHz
3 400-4 200 MHz	Fixed-satellite (space-to-Earth) (geostationary-satellite orbit)	–152	–152 + 0.5(δ – 5)	–142	4 kHz

Reasons: Power flux density limits would facilitate FSS, BSS and MSS sharing with current and future terrestrial services in the 2500-2690 MHz band as appropriate pfd limits would provide for long term safeguard of terrestrial (e.g., FS and MS) systems in the band 2 500-2 690 MHz and would also provide certainty to the space services as a defined set of pfd limits would be known and extensive coordination with unknown outcomes would not be needed. Studies have shown that a satellite pfd value of -136 $dBW/m^2/MHz$ at angles below 5^0, and -122 $dBW/m^2/MHz$ at angles greater than 25^0 yielded acceptable levels of interference to terrestrial services in the 2500-2690 MHz band.

USA/ /2 MOD

APPENDIX 5 (Rev. WRC-03)
ANNEX 1

TABLE 5-2 (WRC-03)

Frequency band (MHz)	Terrestrial service to be protected	Coordination threshold values				
		GSO space stations		Non-GSO space stations		
		pfd (per space station) calculation factors (NOTE 2)		pfd (per space station) calculation factors (NOTE 2)		% FDP (in 1 MHz) (NOTE 1)
		P	*r* dB/ degrees	*P*	*r* dB/ degrees	

Frequency band (MHz)	Terrestrial service to be protected	Coordination threshold values				
		GSO space stations		Non-GSO space stations		
		pfd (per space station) calculation factors (NOTE 2)		pfd (per space station) calculation factors (NOTE 2)		% FDP (in 1 MHz) (NOTE 1)
		P	*r* dB/ degrees	*P*	*r* dB/ degrees	
~~2 500-2 520~~	~~Analogue FS telephony (NOTE 5)~~	~~–146 dB(W/m^2) in 4 kHz and –128 dB(W/m^2) in 1 MHz~~	~~0.5~~	~~–146 dB(W/m^2) in 4 kHz and –128 dB(W/m^2) in 1 MHz~~	~~0.5~~	
	~~All other cases~~	~~–128 dB(W/m^2) in 1 MHz~~	~~0.5~~	~~–128 dB (W/m^2) in 1 MHz~~	~~0.5~~	~~25~~
~~2 520-2 535~~	~~Analogue FS telephony (NOTE 5)~~	~~–154 dB(W/m^2) in 4 kHz and –136 dB(W/m^2) in 1 MHz~~	~~75~~	~~–146 dB(W/m^2) in 4 kHz and –128 dB(W/m^2) in 1 MHz~~	~~0.5~~	
	~~All other cases~~	~~–136 dB(W/m^2) in 1 MHz~~	~~0.75~~	~~–128 dB(W/m^2) in 1 MHz~~	~~0.5~~	~~25~~

Reasons: Consequential to adding pfd limit for MSS to Article 21, Table 21-4 per USA/ /1. Limits on MSS pfd eliminate the need for coordination with terrestrial systems in the band 2 500-2 535 MHz.

Document WAC/102(27.04.06):

To the WRC-07 Advisory Committee:

Attached please find two documents from IWG-3 related to Agenda Item 1.9 “to review the technical, operational and regulatory provisions applicable to the use of the band 2 500-2 690 MHz by space services in order to facilitate sharing with current and future terrestrial services without placing undue constraint on the services to which the band is allocated” of the 2007 to the World Radiocommunication Conference (WRC-07).

After considerable debate, IWG-3 drafted IWG-3 Proposal for Agenda Item 1.9 presented in Document WAC/102A. Over the past several months, this document was reviewed by the entire IWG-3 and modified to include the concerns of some MSS companies, including New ICO, Globalstar and MSV. The majority of IWG-3 members supported the resulting proposal. However, IWG-3 was unable to reach full consensus as a minority of members from the satellite community continued to object to the proposal.

The dissenting proposal from the satellite community is contained in Proposal Document WAC/102B. This document was not extensively reviewed by the IWG and only represents the views of those parties dissenting.

IWG-3 forwards the majority proposal and dissenting proposal to the WRC-07 Advisory Committee for its consideration.

IWG-3 forwards the majority proposal and dissenting proposal to the WRC-07 Advisory Committee for its consideration.

Sincerely,

Cecily A. Cohen
Chair, IWG-3

DOCUMENT WAC/102A(27.04.06)

United States of America

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

WRC-07 Agenda Item 1.9: to review the technical, operational and regulatory provisions applicable to the use of the band 2 500-2 690 MHz by space services in order to facilitate sharing with current and future terrestrial services without placing undue constraint on the services to which the band is allocated;

Background Information: The band 2 500-2 690 MHz is allocated for sharing by both terrestrial and satellite services. The terrestrial services include the Mobile Services and the Fixed Services (including IMT-2000). Both the terrestrial Mobile and Fixed Services have been rapidly evolving to encompass high-speed mobile Internet services requiring sensitive receiving equipment, which are highly susceptible to interference.

Portions of the 2500-2690 MHz band are also allocated to the satellite services, which include MSS, BSS (including GSO and non-GSO), and FSS. At WRC-03 the issue of sharing between terrestrial services and NGSO BSS (Sound) in certain Region 3 countries was resolved with the revision of pfd limits for NGSO BSS (Sound) per Resolution 539. GSO BSS (Sound) limits within these countries were also tightened for systems for which complete Appendix **4** coordination information has been received after 1 June 2005. Other than for these Region 3 countries the BSS limits remained the same as given in Table 21-4.

In general, co-frequency sharing between the mobile-satellite service (MSS) and terrestrial services has been found to be difficult in the ITU-R studies. The sharing between the terrestrial services and the MSS poses risks of harmful interference to both systems. In addition, sharing would require large separation distances between terrestrial stations and MSS earth stations in order to avoid harmful interference to both stations. ITU-R Report M.2041 studied the feasibility of sharing between MSS and MS for IMT-2000 and highlighted the sharing difficulties between these two services on a co-frequency, co-coverage basis. Per Report M.2041, "When considering the sharing of the same frequency band between the terrestrial component of IMT-2000 and the MSS, the detailed analysis (see Annex 2) shows that such sharing is not feasible over the same geographical area. Consequently, Radiocommunication Study Group 8 came to the conclusion that co-frequency sharing is not feasible for networks operating in the same geographical area." Report M.2041 was approved in SG8 with support from the USA.

Within Region 2 any satellite service launched will naturally overlap many other Region 2 countries and may have the effect of interfering with existing and planned terrestrial services within that band. Administrations in Region 2 have indicated no plans to implement MSS systems in the 2500-2690 MHz band. A number of Administrations in Region 2 have authorized terrestrial Mobile and Fixed services and several other Region 2 Administrations have definite plans to introduce new terrestrial Mobile and Fixed services in the 2500-2690 MHz band. (See WP-8F questionnaire to administrations and summary in document 8F/TEMP/276).

In addition to the allocation of the 2500-2520 MHz and 2670-2690 MHz band for MSS within Region 2, the bands 137-137.025 MHz, 148-150.05 MHz, 399.9-401 MHz, 406-406.1 MHz, 455-456 MHz, 459-460 MHz, 1518-1559 MHz, 1610-1660.5 MHz, 1668.4-1675 MHz, 1930-1970 MHz, 1980-2025 MHz, 2120-2200 MHz, 2483.5-2500 MHz, 14-14.5 GHz, 19.7-21.2 GHz, 29.5-31 GHz, 39.5-41 GHz, among others, are also allocated for MSS within Region 2.

Considering that:
(1) Administrations in Region 2 have indicated no plans to implement MSS services in the 2500-2690 MHz band,
(2) Administrations in Region 2 have implemented or plan to implement terrestrial Mobile and Fixed services in the 2500-2690 MHz band,
(3) Co-frequency sharing of the 2500-2690 MHz band between MSS and terrestrial services threatens to cause interference to terrestrial Mobile services systems,
(4) That there is other spectrum allocated for MSS within Region 2, (I move to strike *considering*

the MSS allocation in Region 2 should be suppressed

Proposal

USA/ /1 MOD

ARTICLE 5
Frequency allocations
Section IV – Table of Frequency Allocations

2 170-2 520 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
2 170-2 200	FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A 5.388 5.389A 5.389F 5.392A	
2 200-2 290	SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (space-to-Earth) (space-to-space) 5.392	
2 290-2 300	FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	
2 300-2 450 FIXED MOBILE Amateur Radiolocation 5.150 5.282 5.395	**2 300-2 450** FIXED MOBILE RADIOLOCATION Amateur 5.150 5.282 5.393 5.394 5.396	
2 450-2 483.5 FIXED MOBILE Radiolocation 5.150 5.397	**2 450-2 483.5** FIXED MOBILE RADIOLOCATION 5.150 5.394	

2 483.5-2 500	**2 483.5-2 500**	**2 483.5-2 500**
FIXED	FIXED	FIXED
MOBILE	MOBILE	MOBILE
MOBILE-SATELLITE (space-to-Earth) 5.351A	MOBILE-SATELLITE (space-to-Earth) 5.351A	MOBILE-SATELLITE (space-to-Earth) 5.351A
Radiolocation	RADIOLOCATION	RADIOLOCATION
	RADIODETERMINATION-SATELLITE (space-to-Earth) 5.398	Radiodetermination-satellite (space-to-Earth) 5.398
5.150 5.371 5.397 5.398 5.399 5.400 5.402	5.150 5.402	5.150 5.400 5.402
2 500-2 520	**2 500-2 520**	**2 500-2 520**
FIXED 5.409 5.410 5.411	FIXED 5.409 5.411	FIXED 5.409 5.411
MOBILE except aeronautical mobile 5.384A	FIXED-SATELLITE (space-to-Earth) 5.415	FIXED-SATELLITE (space-to-Earth) 5.415
MOBILE-SATELLITE (space-to-Earth) 5.351A 5.403	MOBILE except aeronautical mobile 5.384A	MOBILE except aeronautical mobile 5.384A
	~~MOBILE-SATELLITE (space-to-Earth) 5.351A 5.403~~	MOBILE-SATELLITE (space-to-Earth) 5.351A 5.403
5.405 5.407 5.412 5.414	5.404 5.407 5.414 5.415A	5.404 5.407 5.414 5.415A

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Reasons: Co-frequency, co-coverage sharing between MSS and terrestrial Mobile services is not possible per ITU-R Report M.2041. As stated in M.2041, "When considering the sharing of the same frequency band between the terrestrial component of IMT-2000 and the MSS, the detailed analysis (see Annex 2) shows that such sharing is not feasible over the same geographical area. Consequently, Radiocommunication Study Group 8 came to the conclusion that co-frequency sharing is not feasible for networks operating in the same geographical area."
Administrations in Region 2 have indicated no plans to implement MSS systems in the 2500-2690 MHz band. A number of Administrations in Region 2 have authorized terrestrial Mobile and Fixed services and several other Region 2 Administrations have definite plans to introduce new terrestrial Mobile and Fixed services in the 2500-2690 MHz band. (See WP-8F questionnaire to administrations and summary in document 8F/TEMP/276). Considering that:
(1) Administrations in Region 2 have indicated no plans to implement MSS networks in the 2500-2690 MHz band,
(2) Administrations in Region 2 have implemented or plan to implement terrestrial Mobile and Fixed services in the 2500-2690 MHz band,
(3) Co-frequency sharing at 2500-2690 MHz between MSS and terrestrial services threatens to cause interference to terrestrial Mobile services systems.
(4) That there is other spectrum allocated for MSS within Region 2

the MSS allocation in Region 2 is suppressed.

USA/ /2 MOD

ARTICLE 5
Frequency allocations
Section IV – Table of Frequency Allocations

2 520-2 700 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
2 520-2 655 FIXED 5.409 5.410 5.411 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 5.339 5.403 5.405 5.412 5.417C 5.417D 5.418B 5.418C	**2 520-2 655** FIXED 5.409 5.411 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 5.339 5.403 5.417C 5.417D 5.418B 5.418C	**2 520-2 535** FIXED 5.409 5.411 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 5.403 5.415A **2 535-2 655** FIXED 5.409 5.411 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 5.339 5.417A 5.417B 5.417C 5.417D 5.418 5.418A 5.418B 5.418C
2 655-2 670 FIXED 5.409 5.410 5.411 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.347A 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.412 5.420	**2 655-2 670** FIXED 5.409 5.411 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.347A 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.347A 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.420	**2 655-2 670** FIXED 5.409 5.411 FIXED-SATELLITE (Earth-to-space) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.347A 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.420

2 670-2 690 FIXED 5.409 5.410 5.411 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (Earth-to-space) 5.351A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.412 5.419 5.420	**2 670-2 690** FIXED 5.409 5.411 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.347A 5.415 MOBILE except aeronautical mobile 5.384A ~~MOBILE-SATELLITE (Earth-to-space) 5.351A~~ Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.419 5.420	**2 670-2 690** FIXED 5.409 5.411 FIXED-SATELLITE (Earth-to-space) 5.415 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (Earth-to-space) 5.351A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.419 5.420 5.420A
2 690-2 700	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.422	

Reasons: Co-frequency, co-coverage sharing between MSS and terrestrial Mobile services is not possible per ITU-R Report M.2041. As stated in M.2041, "When considering the sharing of the same frequency band between the terrestrial component of IMT-2000 and the MSS, the detailed analysis (see Annex 2) shows that such sharing is not feasible over the same geographical area. Consequently, Radiocommunication Study Group 8 came to the conclusion that co-frequency sharing is not feasible for networks operating in the same geographical area."
Administrations in Region 2 have indicated no plans to implement MSS systems in the 2500-2690 MHz band. A number of Administrations in Region 2 have authorized terrestrial Mobile and Fixed services and several other Region 2 Administrations have definite plans to introduce new terrestrial Mobile and Fixed services in the 2500-2690 MHz band. (See WP-8F questionnaire to administrations and summary in document 8F/TEMP/276). Considering that:
(1) Administrations in Region 2 have indicated no plans to implement MSS services in the 2500-2690 MHz band,
(2) Administrations in Region 2 have implemented or plan to implement terrestrial Mobile and Fixed services in the 2500-2690 MHz band,
(3) Co-frequency sharing at 2500-2690 MHz between MSS and terrestrial services threatens to cause interference to terrestrial Mobile services,
(4) That there is other spectrum allocated for MSS within Region 2,

the MSS allocation in Region 2 is suppressed.

DOCUMENT WAC/102B(27.04.06)

United States of America

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

WRC-07 Agenda Item 1.9: to review the technical, operational and regulatory provisions applicable to the use of the band 2 500-2 690 MHz by space services in order to facilitate sharing with current and future terrestrial services without placing undue constraint on the services to which the band is allocated;

Background Information: The band 2 500-2 690 MHz is allocated on a Primary basis to both terrestrial and satellite services. The terrestrial services include the Mobile Services and the Fixed Services (including IMT-2000). Both the terrestrial Mobile and Fixed Services have been rapidly evolving to encompass high-speed mobile Internet services requiring sensitive receiving equipment, which are highly susceptible to interference.

Portions of the 2500-2690 MHz band are also allocated to satellite services, which include MSS, BSS (including GSO and non-GSO), and FSS. The bands 2500-2520 MHz and 2670-2690 MHz are allocated to the MSS on a Primary basis and have been identified for use by the satellite component of IMT-2000 and beyond. As part of this identification, it was noted that, "in the long term" these bands might also be used for the terrestrial component of IMT-2000 and beyond (See Res.225).

At WRC-03 the issue of sharing between terrestrial services and NGSO BSS (Sound) in certain Region 3 countries was resolved with the revision of pfd limits for NGSO BSS (Sound) per Resolution 539. GSO BSS (Sound) limits within these countries were also tightened for systems for which complete Appendix **4** coordination information has been received after 1 June 2005. Other than for these Region 3 countries the BSS limits remained the same as given in Table 21-4.

In general, co-frequency sharing between the mobile-satellite service (MSS) and terrestrial services has been found to be difficult in the ITU-R studies. The sharing between the terrestrial services and the MSS poses risks of harmful interference to both systems. In addition, sharing would require large separation distances between terrestrial stations and MSS earth stations in order to avoid harmful interference to both Services.

Large separation distances could be available in large countries where citizens without the benefit of terrestrial infrastructure could rely on MSS systems to provide vital communications services including Internet access. The lack of terrestrial infrastructure in developing countries and sparsely populated areas also points up the need for Services such as the MSS.

ITU-R Report M.2041 studied the feasibility of sharing between MSS and MS for IMT-2000 and highlighted the sharing difficulties between these two services on a co-frequency, co-coverage basis. Report M.2041, came to the conclusion that sharing is not feasible over the same geographical area. Consequently, Radiocommunication Study Group 8 came to the conclusion

that co-frequency sharing is not feasible for networks operating in the same geographical area," even though Report M.2041 was never vetted by ITU-R Working Party 8D.

Within Region 2, the 2005 hurricane season was marked by massive destruction that included terrestrial communications infrastructure. Entire regions in the states of Florida, Alabama, Mississippi, Louisiana and Texas were laid waste by hurricanes Katrina and Rita. MSS systems provided lifesaving communications for first responders and government agencies over wide spread areas where there were no terrestrial means. Had government officials availed themselves of MSS communications equipment before the storms and equipped their first responders continuity of emergency communications could have been maintained. Plans have been announced for first responders to be equipped with MSS equipment to provide alternative communications when terrestrial means fail. As much of Region 2 is prone to tropical storms, other countries may wish to follow the example of the USA and equip emergency personnel with MSS equipment.

In view of the outstanding performance provided by MSS systems during the past hurricane season, it seems foolhardy to advocate the complete elimination of an allocation for this Service in Region 2. Allocation to the MSS on a Secondary basis would provide a regulatory solution to interference while still maintaining the option of the MSS in areas where no terrestrial infrastructure exists.

Proposal

USA/ /1 MOD

ARTICLE 5
Frequency allocations
Section IV – Table of Frequency Allocations

2 500-2 520 MHz

Allocation to services		
2 500-2 520	**2 500-2 520**	**2 500-2 520**
FIXED 5.409 5.410 5.411	FIXED 5.409 5.411	FIXED 5.409 5.411
MOBILE except aeronautical mobile 5.384A	FIXED-SATELLITE (space-to-Earth) 5.415	FIXED-SATELLITE (space-to-Earth) 5.415
MOBILE-SATELLITE (space-to-Earth) 5.351A 5.403	MOBILE except aeronautical mobile 5.384A	MOBILE except aeronautical mobile 5.384A
	~~MOBILE SATELLITE~~	MOBILE-SATELLITE (space-to-Earth) 5.351A 5.403
	Mobile-Satellite (space-to-Earth) 5.351A 5.403	
5.405 5.407 5.412 5.414	5.404 5.407 5.414 5.415A	5.404 5.407 5.414 5.415A

Reasons: In general, co-frequency sharing between the mobile-satellite service (MSS) and terrestrial services has been found to be difficult in the ITU-R studies. The sharing between the terrestrial services and the MSS poses risks of harmful interference to both systems. In addition, sharing would require large separation distances between terrestrial stations and MSS earth stations in order to avoid harmful interference to both Services.

Large separation distances could be available in large countries where citizens without the benefit of terrestrial infrastructure could rely on MSS systems to provide vital communications services including Internet access. The lack of terrestrial infrastructure in developing countries and sparsely populated areas also points up the need for Services like MSS. The use of large separation distances could permit the use of both terrestrial Services and the MSS.

Allocation to the MSS on a Secondary basis would provide a regulatory solution to interference while still maintaining the option of the MSS in areas where no terrestrial infrastructure exists.

USA/ /2 MOD

ARTICLE 5
Frequency allocations
Section IV – Table of Frequency Allocations

2 520-2 700 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
2 520-2 655	**2 520-2 655**	**2 520-2 535**
FIXED 5.409 5.410 5.411	FIXED 5.409 5.411	FIXED 5.409 5.411
MOBILE except aeronautical mobile 5.384A	FIXED-SATELLITE (space-to-Earth) 5.415	FIXED-SATELLITE (space-to-Earth) 5.415
BROADCASTING-SATELLITE 5.413 5.416	MOBILE except aeronautical mobile 5.384A	MOBILE except aeronautical mobile 5.384A
	BROADCASTING-SATELLITE 5.413 5.416	BROADCASTING-SATELLITE 5.413 5.416
		5.403 5.415A
		2 535-2 655
		FIXED 5.409 5.411
		MOBILE except aeronautical mobile 5.384A
		BROADCASTING-SATELLITE 5.413 5.416
		5.339 5.417A 5.417B 5.417C
5.339 5.403 5.405 5.412 5.417C 5.417D 5.418B 5.418C	5.339 5.403 5.417C 5.417D 5.418B 5.418C	5.417D 5.418 5.418A 5.418B 5.418C
2 655-2 670	**2 655-2 670**	**2 655-2 670**
FIXED 5.409 5.410 5.411	FIXED 5.409 5.411	FIXED 5.409 5.411
MOBILE except aeronautical mobile 5.384A	FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.347A 5.415	FIXED-SATELLITE (Earth-to-space) 5.415
BROADCASTING-SATELLITE 5.347A 5.413 5.416	MOBILE except aeronautical mobile 5.384A	MOBILE except aeronautical mobile 5.384A
Earth exploration-satellite (passive)	BROADCASTING-SATELLITE 5.347A 5.413 5.416	BROADCASTING-SATELLITE 5.347A 5.413 5.416
Radio astronomy	Earth exploration-satellite (passive)	Earth exploration-satellite (passive)
Space research (passive)	Radio astronomy	Radio astronomy
	Space research (passive)	Space research (passive)
5.149 5.412 5.420	5.149 5.420	5.149 5.420

2 670-2 690 FIXED 5.409 5.410 5.411 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (Earth-to-space) 5.351A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.412 5.419 5.420	**2 670-2 690** FIXED 5.409 5.411 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.347A 5.415 MOBILE except aeronautical mobile 5.384A ~~MOBILE-SATELLITE~~ Mobile-Satellite (Earth-to-space) 5.351A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.419 5.420	**2 670-2 690** FIXED 5.409 5.411 FIXED-SATELLITE (Earth-to-space) 5.415 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (Earth-to-space) 5.351A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.419 5.420 5.420A
2 690-2 700	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.422	

Reasons: In general, co-frequency sharing between the mobile-satellite service (MSS) and terrestrial services has been found to be difficult in the ITU-R studies. The sharing between the terrestrial services and the MSS poses risks of harmful interference to both systems. In addition, sharing would require large separation distances between terrestrial stations and MSS earth stations in order to avoid harmful interference to both Services.

Large separation distances could be available in large countries where citizens without the benefit of terrestrial infrastructure could rely on MSS systems to provide vital communications services including Internet access. The lack of terrestrial infrastructure in developing countries and sparsely populated areas also points up the need for Services like MSS. The use of large separation distances could permit the use of both terrestrial Services and the MSS.

Allocation to the MSS on a Secondary basis would provide a regulatory solution to interference while still maintaining the option of the MSS in areas where no terrestrial infrastructure exists.

INFORMAL WORKING GROUP 4 (IWG-4)

Broadcasting and Amateur Issues

Document WAC/103(27.04.06):

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

WRC-07 Agenda Item 1.11

Subject: Modification and Augmentation to CITEL PCC.II IAP for WRC-07 Agenda Item 1.11, *"to review sharing criteria and regulatory provisions for protection of terrestrial services in particular terrestrial television broadcasting services, in the band 620 – 790 MHz from BSS networks and systems, in accordance with **Res. 545 (WRC-03)**"*

Purpose:

The sixth meeting of CITEL PCC.II developed an IAP for WRC-07 Agenda Item 1.11, to which the US signed. The US strongly supports the goal of this IAP, to protect terrestrial services in the 620-790 MHz band from harmful interference of transmitting co-frequency broadcast-satellite systems. In order to ensure the best protection of terrestrial systems, the US believes that certain modifications are needed to augment the proposal. These modifications, summarized in the following paragraphs, are provided in the attached edits to the IAP.

The current IAP, which specifies NOC to Articles 5, 9, and 11 of the Radio Regulations, needs to be slightly modified because the Art. 5 provision dealing with the 620-790 MHz BSS allocation, No**. 5.311**, does not indicate a reference bandwidth for the pfd. One is needed to avoid questions over the level of protection afforded to terrestrial services. Furthermore, Res. 545, the companion resolution to this agenda item, should be modified to reflect that studies on this topic are completed and to address transitional measures (e.g., how the Bureau should process the BSS submissions suspended by WRC-03).

In order to define an appropriate reference bandwidth for the pfd, it is assumed that the reference bandwidth for the current pfd is 24 MHz, recognizing that the larger the bandwidth assumed for a given pfd value, the greater protection provided to terrestrial services. Then, to protect broadcast systems and more narrowband systems, the pfd is translated into a 4 kHz bandwidth.

Summary:

The following pages indicate the modification to the IAP for agenda item 1.11 in strikethrough/underline format.

VI MEETING OF PERMANENT CONSULTATIVE COMMITTEE II: RADIOCOMMUNICATIONS INCLUDING BROADCASTING
October 25 to 28, 2005
2. San José, Costa Rica

OEA/Ser.L/XVII.4.2
CCP.II-RADIO/doc. 896/05
1 May 2006
Original: English

INTER-AMERICAN PROPOSALS OF WSG-2
(Item on the Agenda: 4.1)
(Document submitted by working sub-group 2 (WSG-2))

Agenda Item 1.11: ***to review sharing criteria and regulatory provisions for protection of terrestrial services in particular terrestrial television broadcasting services, in the band 620 – 790 MHz from BSS networks and systems, in accordance with Resolution 545 (WRC-03)***
Background

Under footnote No.**5.311**, the band 620-790 MHz may be used for assignments to television stations using frequency modulation in the BSS (GSO or non-GSO). Since this band is extensively used by terrestrial applications, Recommendation **705 (WARC-79)** includes, among other things, satellite pfd limits needed to protect the terrestrial services, in particular, the terrestrial television broadcasting service that uses this band extensively in all three Regions.. It should also be noted that there are allocations to the fixed and mobile services in some regions in this band that also need to be addressed. In particular, some Region 2 administrations added their names to footnote No.5.293 which allocates the band to the fixed and mobile services on a primary basis in several Region 2 countries.

In Region 2 the 620-790 MHz band is used extensively by free-to-air TV systems. As a result of this extensive use of the 620-790MHz band ,Region 2 Administrations have not made allowances for external interference in the deployment of their terrestrial TV systems or in the development of their TV allotment plans or in the development of other fixed and mobile services and therefore ,there are no excess margins which could have been used to accommodate additional interference from systems in the BSS.
WRC-03 adopted a freeze on the processing of BSS satellite filings in the band until the next WRC as per a new Resolution **545 (WRC-03)** and suspended the application of No.**5.311** and Recommendation **705 (WARC-79)** until that date. The Resolution was acceptable to all parties with the understanding:

1) it allows for studies to continue on the appropriate protection levels for the terrestrial broadcasting service (BS) to be determined;
2) it does not impact the Regional Planning Conference (RRC-04/06, Region 2 is not affected) for these services;
3) it places a moratorium on further deployments of BSS networks in these bands until such studies are complete.

This proposal effects modifications to No. 5.311 and Res. 545 that ensure the complete protection of the current and future usage of the broadcast, mobile, and fixed services in the 620-790 MHz band from interference from broadcast satellite operations in this same band. The purpose of this propose is to restrict the future deployment of broadcast satellite systems in a band that is very extensively used by terrestrial services.

Since neither No. 5.311 nor Rec. 705 indicate a reference bandwidth for the BSS pfd limit in 620-790 MHz band, a reference bandwidth of 24 MHz is assumed and then translated further to a 4 kHz bandwidth, and No. 5.311 is accordingly modified. Res. 545 from WRC_03 is modified to address transitional issues related to resuming processing of BSS networks after WRC-03 suspended such processing by the BR.

As a consequence, Rec. 705, "Criteria to be applied for frequency sharing between the broadcasting-satellite service and the terrestrial broadcasting service in the band 620-790 MHz", is deleted since its relevant content, the pfd limit reference, is contained in the modifications to No. 5.311 and Res. 545, and after WRC-07 the broadcast satellite and terrestrial broadcast issues in this band will have been resolved.

MOD 5.311 Within the frequency band 620-790 MHz, assignments may be made to television stations using analog frequency modulation in the broadcasting-satellite service subject to agreement between the administrations concerned and those having services, operating in accordance with the Table, which may be affected (see Resolutions **33 (Rev.WRC-03)** and **507 (Rev.WRC-03)**). Such stations shall not produce a power flux-density in excess of the value ~~–129~~ 166.8 dB(W/m^2/ 4 kHz) for all angles of arrival ~~less than 20º (see Recommendation **705**)~~ within the territories of other countries without the consent of the administrations of those countries. Resolution **545 (WRC-~~03~~07)** applies. (WRC-~~03~~07)

MOD Res. 545 (See Attachment 1)

SUP Rec. 705

Reason

Region 2 administrations have no plans to implement BSS systems in the band 620-790 MHz. The administrations in Region 2 are currently operating or planning to operate a large number of terrestrial analog and digital television broadcasting systems. In addition, some Region 2 administrations will be implementing mobile and fixed services, including public safety applications. As a result of this extensive use of the 620-720MHz by existing systems ,Region 2 Administrations have not allocated any additional interference margins for the protection of terrestrial TV broadcasting and therefore any additional interference from BSS will place undue constraints on the existing and planned services in Region 2.

ATTACHMENT 1

RESOLUTION 545 (~~r~~Rev. WRC-07~~3~~)

T~~rechnical and regulatory proceduresansitional measures~~ relating to the broadcasting-satellite service networks ~~operating~~ in the 620-790 MHz band

The World Radiocommunication Conference (Geneva, 2007~~3~~),

considering

a) that No. **5.311** provides the conditions under which the band 620-790 MHz may be used for assignments to television stations using analog frequency modulation in the broadcasting-satellite service (BSS);

b) that it is necessary to adequately protect terrestrial services including the terrestrial television broadcasting systems and fixed and mobile systems in this band;

~~*c)* that the sharing and associated provisions for satellite networks are under study in ITU-R with respect to the impact of such systems on the terrestrial services;~~

c~~*d*~~*)* that geostationary-satellite (GSO) BSS networks and non-geostationary (non-GSO) BSS satellite networks or systems are at the stage of advance publication or coordination, or have been notified in the 620-790 MHz frequency band;

*e**d**)* that ~~studies are being undertaken to determine, *inter alia*, the planning criteria to be used for~~ the Regional Radiocommunication Conference (RRC-04/05) effected a terrestrial digital television broadcasting plan for Region 1 and one country in Region 3;~~that the impact of these GSO BSS networks and non-GSO BSS satellite networks or systems on terrestrial services including digital and analogue television broadcasting systems has yet to be examined;~~

e~~*g*~~*)* that there are at present few GSO networks operating in accordance with No. **5.31**~~*h)* that it would be inappropriate to draw any conclusions regarding the form and levels of the protection criteria and their application to GSO BSS networks and non-GSO BSS satellite networks or systems until the completion of relevant studies and the approval of corresponding ITU-R Recommendations;~~

f~~*i*~~*)* that many administrations have extensive infrastructure for the transmission and reception of analogue and digital television services between 620 MHz and 790 MHz,

g) that some administrations are using or plan to use portions of the 620-790 MHz band for fixed and mobile service applications

noting

a) ~~that the protection of terrestrial television services in the band 620-790 MHz requires more study before any conclusion can be made about the appropriate pfd values;~~

~~*b)* that studies called for in Recommendation **705** have been recently initiated but not completed;~~

~~*c)* that the reference bandwidth of the pfd limit in No. **5.311** is undefined and guidance is urgently needed and has been requested by the Radiocommunication Bureau;~~

~~*d)* that the existing provisions related to the band 620-790 MHz are ambiguous and have been difficult to apply by administrations and the Bureau;~~that WRC-03 suspended processing of

submissions of BSS networks or systems in the 620-790 MHz band, irrespective of their date of receipt, pending WRC-07 decisions;

b) that WRC-03 specified that GSO BSS networks and non-GSO BSS satellite networks or systems in the frequency band 620-790 MHz other than those notified, brought into use and the date of bringing into use confirmed before the end of WRC-03, shall not be brought into use before the end of WRC-07;

c) that transitional measures are needed to address the WRC-03 decisions in notings a) and b),

resolves

1 that, at the end of WRC-07, the processing of submissions of GSO BSS networks and non-GSO BSS satellite networks or systems in the frequency band 620-790 MHz received by the Bureau and not brought into use prior to 5 July 2003, irrespective of their date of receipt, ~~shall be suspended pending WRC-07 decisions on the sharing criteria, including the pfd required to protect the terrestrial services in this frequency band~~shall resume, with No. **5.311** as revised by WRC-07 applied;

2 to ~~suspend~~ apply ~~the application of~~ No. **5.311** ~~and Recommendation **705** until the end of WRC-07 with respect~~ as revised by WRC-07 to the GSO BSS networks and non-GSO BSS satellite networks or systems in the frequency band 620-790 MHz and for which notification is received between 5 July 2003 and the end of WRC-07;

3 that No. **5.311** as revised by WRC-07 shall be applied to all GSO BSS networks and non-GSO BSS networks or systems in the frequency band 620-790 MHz other than those notified, brought into use and the date of bringing into use confirmed before the end of WRC-03;

4~~3~~ that, in accordance with No. **5.311** (as revised by WRC-07), ~~GSO BSS networks and non-GSO BSS satellite networks or systems in the frequency band 620-790 MHz other than those notified, brought into use and the date of bringing into use confirmed before the end of WRC-03, shall not be brought into use before the end of WRC-07~~no submissions for GSO BSS networks and non-GSO BSS satellite networks or systems in the frequency band 620-790 MHz under Articles 9 or 11 of the Radio Regulations involving digital transmission shall be accepted;

5~~4~~ that the notified date of bringing into use referred in Nos. **11.44** and **11.48** for GSO BSS networks and non-GSO BSS satellite networks or systems in this frequency band for which the Bureau receives notification prior to 5 July 2003 shall be extended by the length of the period from the date of receipt by the Bureau of the complete advanced publication information to the end of WRC-07;~~5 that the BSS systems referred to in *resolves* 1 above shall not be taken into account in the application of *resolves* 3.1C and 3.4 of Council Resolution 1185;~~

6 that in the band 620-790 MHz, No. **22.2** shall ~~continue to~~ apply to assignments to non-GSO satellite systems in the BSS, including those for which complete notification information is considered to have been received by the Bureau prior to 5 July 2003~~ in respect of assignments to GSO satellite networks in the BSS for which complete coordination information is considered to have been received by the Bureau prior to 5 July 2003. The relationship between~~

~~GSO networks and non-GSO satellite networks or systems for which complete Appendix **4** information has been received by the Bureau after 4 July 2003 in the band 620-790 MHz is subject to the procedures to be decided at WRC-07~~,

~~*invites ITU-R*~~

~~to conduct studies as a matter of urgency, and develop sharing criteria and regulatory provisions, prior to WRC-07, for the protection of terrestrial services, in particular terrestrial television broadcasting services, in the 620-790 MHz band from GSO BSS networks and non-GSO BSS satellite networks or systems which it is planned to operate in this band,~~

instructs the Director of the Radiocommunication Bureau

~~*subject to the decisions taken by WRC-07,*~~ *to resume, as appropriate, the application of Nos.* ***5.311*** *(as revised by WRC-07)****, 9.34*** *and* ***11.30*** *and other relevant associated provisions of the Radio Regulations*~~,~~ ~~*instructs the Secretary-General*~~

~~to bring this Resolution to the attention of the Regional Radiocommunication Conference, 2004/2005 (RRC-04/05)~~

Document WAC/104(27.04.06):

From: **Chairman & Vice Chairman, IWG-4**
To: **Chair, FCC WAC-2007 Board**
Subject: **Non-census on Agenda Item 1.13**

IWG-4 has held 13 meetings since its inception, about 10 of these included extensive work and discussion as it pertains to ITU-R **Res.544** (WRC-03) portion for WRC-07 Agenda Item 1.13

> ***taking into account Resolutions 729 (WRC-97), 351 (WRC-03) and 544 (WRC-03), to review the allocations to all services in the HF bands between 4 MHz and 10 MHz, excluding those allocations to services in the frequency range 7 000 -7 200 kHz and those bands whose allotment plans are in Appendices 25, 26 and 27 and whose channeling arrangements are in Appendix 17, taking account of the impact of new modulation techniques, adaptive control techniques and the spectrum requirements for HF broadcasting***

Following considerable discussion on the pros and cons of each proposal, the two major factions, the National Association of Shortwave Broadcasters (NASB) and Globewireless, Inc.(with a number of other non-government HF users of the Fixed and Mobile Services bands), could not reach agreement on one proposal. There was no compromise or consensus.

Several participants suggested different options and their impact on what might likely result at WRC-07. There was no compromise. The IWG-4 decided that the two alternative draft proposals should be sent to the WAC for its consideration and action. These alternative proposals are presented in WAC/104A and WAC/104B.

Sincerely yours,

Ben Fisher
Chairman, IWG-4

Walt Ireland
Vice Chair, IWG-4

2 Attachments:

a. Doc. WAC/104A -- IWG-4/66 (Rev.1)
b. Doc. WAC 104B -- IWG-4/72 (Rev.1)

Document WAC/104A

IWG-4/66(R.1) (04.04.20060)

National Association of Shortwave Broadcasters

messerhdonald@aol.com

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

AGENDA ITEM 1.13 OF WRC-07

Agenda Item 1.13: *taking into account Resolutions **729 (WRC-97), 351 (WRC-03)** and **544 (WRC-03)**, to review the allocations to all services in the HF bands between 4 MHz and 10 MHz, excluding those allocations to services in the frequency range 7 000-7 200 kHz and those bands whose allotment plans are in Appendices **25, 26** and **27** and whose channeling arrangements are in Appendix **17**, taking into account the impact of new modulation techniques, adaptive control techniques and the spectrum requirements for HF broadcasting:*

The essence of each of the 3 Resolutions mentioned in the Agenda Item follows:

a. Resolution **351 WRC-03)** asks that, as soon as **ITU-R** studies are completed, a future competent conference should consider necessary changes to Appendix **17** to enable the use of new technology by the maritime mobile service,

b. Resolution **544 (WRC-03)** asks to consider additional allocations in the HF bands between 4 and 10 MHz to the broadcasting service, taking into account its requirements and the interest of all affected services, with a *noting* that the following bands are preferred by the broadcasting service for possible additional allocations to it:

4 500-4 650 kHz
5 060-5 250 kHz
5 840-5 900 kHz
7 350-7 650 kHz
9 290-9 400 kHz
9 900-9 940 kHz,

and,

c. Resolution **729 (WRC-97)** asks to consider frequency assignments for frequency adaptive systems in frequency bands allocated for fixed/mobile services operation.

Background information:

This is a very broad agenda item, as there are multiple services allocated to the HF bands between 4 MHz and 10 MHz, including aeronautical mobile (OR), aeronautical mobile (R), amateur, broadcasting, fixed, maritime mobile, land mobile and mobile services. The 3 Resolutions noted above deal with 3 separate issues, though the agenda item itself connects the services through the consideration of modifying the allocations within these 6 MHz. The CPM convened immediately following WRC-03 and assigned the primary responsibilities for the separate issues (based upon each Resolution) to different ITU-R Study Group Working Parties. Subsequently a joint arrangement has been made to facilitate the production of a CPM Report on the full consequences of the Agenda Item, including the "overlap" engendered by the reallocation element.

Resolution 351:

resolves

"1) that, in order to provide full worldwide interoperability of equipment on ships, there should be one technology, or more than one interoperable worldwide technology, implemented under Appendix **17**;

2) that, as soon as the ITU-R studies are completed, a future competent conference should consider necessary changes to Appendix **17** to enable the use of new technology by the MMS;"

The focus of Resolution **351 (WRC-03)** is to identify a digital technology, or family of digital technologies, that provide interoperability and improved usage of the MF and HF bands allocated to the maritime mobile service under Appendix **17**. The scope of this portion of the agenda item includes a review of all Appendix **17** assignments to facilitate the introduction of these advanced maritime mobile digital systems.

Resolution **351 (WRC-03)** calls for studies to include: future requirements of the MMS, technical characteristics of the digital systems, the necessary modifications to Appendix **17** to enable the use of new technologies by MMS, a timetable for the introduction of new digital technologies, and recommendations on how digital technologies can be introduced while ensuring compliance with distress and safety requirements. In accordance with *resolves* 2 of Resolution **351**, as soon as the ITU-R studies are completed, a competent conference should consider necessary changes to Appendix **17**, to enable the use of new digital maritime technologies by the MMS. These studies are still underway and should be refined to examine the requirements of GMDSS electronic messaging.

The future spectrum needs of the maritime mobile service in the HF bands are closely related to the introduction of new data exchange technologies into the maritime mobile service, as an alternative standard for narrow-band direct printing (NBDP). The use of NDBP is in rapid decline for commercial communications. IMO has noted NBDP is currently used for broadcasting of MSI, ship reporting, weather forecasts and for business

communications, e.g., by fishing fleets. However, all these functions could in principle be provided by alternative HF data communications technology. A PDNR for the new MMS HF data exchange service has been developed based on commercial Orthogonal Frequency Division Modulation (OFDM) (see 8B/135).

NBDP remains useful for providing distress communications in the polar regions (sea area A4) when other terrestrial means of communication are no longer reliable because of atmospheric noise, and there is no coverage from geostationary satellite networks providing service to the maritime community. This NBDP functionality will be preserved using the HF distress and safety frequencies relocated to Appendix **15**.

Because the studies on this issue are continuing, a revision of Resolution **351** to recognize the current views of the IMO regarding the technology transition, to note the transition that has already taken place, and to direct additional studies regarding the spectrum needed for new technologies is appropriate.

Resolution 544:

Important aspects of the recent history leading to this Resolution begin with the preparation for Agenda Item 1.36 for WRC-03. That agenda item called for a study of the spectrum requirements between 4 MHz and 10 MHz as seen by the broadcasting service. After intensive study by members of the broadcasting service, these requirements were documented quantitatively through the activities of the ITU-R's Study Group 6, and subsequently reported in the CPM-02 report for use by the WRC-03.

The essence of these study results from the broadcasting service Study Group was that there is a significant deficiency of spectrum availability in the current BS allocations between roughly 4 MHz and 10 MHz compared to the demand for broadcast transmission channels. A major conclusion from the analysis was that it would take about 250 kHz of additional spectrum to eliminate co-channel interference that is currently unavoidable and roughly 850 kHz total to remove first adjacent channel interference along with the co-channel interference.

In the main, these results were based upon a scrutiny of the databases used by the frequency assignment coordinating committees, for example the HFCC, for all the semi-annual periods coming a few years before CPM-02. These results were effectively independent of the particular sunspot cycle values during these years.

These values of a deficiency of spectral supply vs. broadcasting demand were accepted at WRC-03. However, it did not act upon any suggestions for a decision by it for any reallocation of the 4 MHz to 10 MHz band range. Instead, it produced Resolution **544**. This resolution, together with the development of Agenda Item **1.13**, strongly suggests that WRC-07 come to closure on the main issue of a reallocation among some of the services in this 6 MHz wide HF band.

Between WRC-03 and now, continued study has been engaged in updating the statistical summaries on the "shortfall" in two aspects:

(1) The first is to add to the analysis the statistics from the coordinating committees for semi-annual seasons since 2002. This has been done and reported upon through the activities of WP6E. Now, for a 5 year period, covering both relatively high and relatively low sunspot activity seasons, the same basic "shortfall" conclusion persists. The fundamental broadcasting demand has remained and the below 10 MHz HF spectrum requirement is still needed at roughly the same level independent of sunspot activity. (The latter is clearly shown analytically in propagation analysis comparisons at various sunspot numbers and times of the year, and is noted in *considering e)* of this Resolution.) In short, no significant trend has appeared that would alter this conclusion.

(2) Questions came to WP6E in the form of Liaison Statements from other Working Parties about the continuity during a scheduling season of the "shortfall" after transmissions have begun and some adjustments have been made based upon the feedback that the broadcasting community receives via its HF monitoring networks. It was pointed out, through WP6E's replies to these Liaison Statements, that the statistical summaries provided included the situations after a month or two of seasonal operation, that is, after all adjustments to avoid interference that could be made were made. The other Working Parties accepted this finding.

This Resolution in *considering g)* notes that the introduction of new digital technology will not completely solve current congestion problems. Since the end of WRC-03, many HF broadcasters have begun regular digital modulation broadcasts using the DRM system, which is the ITU-R recommended system and which has been standardized by the ITU, IEC and ETSI. The level of broadcasting is now hundreds of hours per day, which is still only a small fraction of the total daily HF broadcasting. These are not "replacement" broadcasts, but additional ones from the usual analog AM ones. Thus, so far, there is no diminishment of broadcasting transmission demand because of digital modulation.

Serious attempts have been made to predict the impact of digital modulation, in the middle- and long-term on the spectral needs for HF broadcasting. The primary conclusion is that there is no current, reasonable way to state that digital modulation broadcasting will significantly increase or significantly decrease the demand for HFBC channels. On the one hand, the introduction of this new modulation technique could greatly increase the interest in international and domestic broadcasting in the HF bands because of the clear advantages it provides over traditional analog broadcasting; on the other hand, it could eventually reduce the need of multiple transmissions on different frequencies for the same target area that many of the major broadcasters employ to increase the probability of a clear signal at the targeted reception area. Finally, a reasonable conclusion on this, given the 5 year's worth of solid data since 2000 and some indication that it will take several years even to obtain an indication of the true impact of digital

modulation on spectral demand, is that the current demand vs. capacity "shortfall" will be apparent for a long time.

A condition relative to this Resolution and HF broadcast spectral demand at frequencies below 10 MHz is that considerable broadcasting is done in bands nearby, but not in, the Article **5** HFBC bands. This is a consequence of the "shortfall" in the HFBC bands. Its use, invoking Article **4.4** (non-interference), amounts to roughly 15% of all HF broadcasting. Additional data from one administration show that approximately 40% of the non-government broadcasting done under its auspices uses frequencies outside of the broadcasting bands between 4 and 10 MHz due to the lack of available channels in these bands that are necessary, based upon propagation analysis, to provide adequate signal strength in the intended broadcast areas. This Resolution and Agenda Item 1.13 itself have been approved to redress this situation to the maximum level possible.

To summarize, this Resolution was approved at WRC-03 with the full understanding by the Conference that a persistent problem exists with respect to a deficit of spectrum required for the broadcasting service between 4 MHz and 10 MHz. Furthermore, all the quantitative data available from scheduling coordination committees show that this deficit level is severe (250 to 850 kHz, depending on eliminating co-channel interference only or all interference), and the best predictions available indicate that in the large this will continue.

Resolution 729:

resolves

"1 that, in authorizing the operation of frequency adaptive systems in the MF and HF bands, administrations shall:

1.1 make assignments in the bands allocated to the fixed and mobile services;

1.2 not make assignments in the bands:

- allocated exclusively to the maritime or aeronautical mobile (R) services;

- shared on a co-primary basis with the broadcasting service, radiodetermination service or the amateur services;

- allocated to radio astronomy;

1.3 avoid use which may affect frequency assignments involving safety services made in accordance with Nos. **5.155**, **5.155A** and **5.155B**;

1.4 take into account any footnotes applicable to the proposed bands and the implications regarding compatibility;

2 that frequency adaptive systems shall automatically limit simultaneous use of frequencies to the minimum necessary for communication requirements;

3 that, with a view to avoiding harmful interference, the system should evaluate the channel occupancy prior to and during operation;

4 that frequency adaptive systems shall be notified to the Bureau in accordance with the provisions of Article **11**,"

Resolution **729 (WRC-97)** deals with implementation of adaptive HF systems and was not successfully addressed at either WRC-2000 or WRC-2003. Adaptive HF systems are systems that monitor the propagation environment on pre-established channels, and react to use the optimal frequencies available for transmission.

Frequency adaptive systems automatically limit simultaneous use of frequencies to the minimum necessary for communication requirements. According to 6E/223, which originated from WP-9C, this characteristic of adaptive systems does not necessarily reduce the number of frequencies that must be made available to ensure successful link establishment. Consideration must also be given to maintain quality of service for uses that fluctuate in response to situations such as those that arise during Public Protection and Disaster Relief. The number of frequencies in an adaptive frequency pool is directly interrelated to the specific HF propagation characteristics based on time of day, season, sunspot activity, etc. Therefore, efficiency improves as more frequencies are available. A network of stations is assigned a number of frequencies over which to communicate, and each station is assigned a unique address (*e.g.,* alpha-numeric).

Adaptive HF systems have been in use for over 20 years. No special consideration in the ITU Radio Regulations is required to fully implement adaptive HF systems. By their nature these systems already automatically limit simultaneous use of frequencies to the minimum necessary for communication requirements. These systems also automatically avoid harmful interference by evaluating the channel occupancy prior to and during operations.

To fully exploit modern HF technology, the availability of sufficient and coordinated spectrum resources is crucial, and bandwidth beyond the typical 3 kHz-channels must be available.

The channel bonding approach currently in use is based on the use of several 3 kHz contiguous channels. The advent of HF 64 kbps modems has begun to provide the ability to utilize HF spectrum for Internet, large file transfer, and advanced electronic messaging. Loss of HF spectrum allocated to the fixed and mobile services would constrain the development of advanced technologies such as messaging, file transfer, and the Internet.

The required studies related to adaptive HF technology have been adequately answered. Therefore, Resolution **729** can be suppressed.

However, there is an emergence of high bandwidth requirements in the form of advanced fixed and mobile HF systems which does require urgent study. Therefore a new resolution is required to examine the issues involved in implementing advanced fixed and mobile HF systems in the MF/HF bands.

Sharing considerations:
A key element to satisfy Agenda Item 1.13 in its entirety is to determine how, if at all possible, the allocations between 4 MHz and 10 MHz can be revised to permit additional allocations to the broadcasting service without adversely affecting, or minimally affecting, the other services within this 6 MHz since this spectrum is of value to all the services that have allocations therein.

Considerable thought over the years has been given to the sharing possibilities among the services. Focusing on recent events, the CPM-02 report, for the WRC-03 Agenda Items 1.23 and 1.36, summarized the situation. Its conclusions on this matter have not been modified by the ITU-R Study Group activities since the end of WRC-03

This summarization is consistent with many ITU-R reports over the years. It states that if at all possible allocations for the broadcasting service (one way/high power) should not be made on a co-primary basis with any of the other services that wish to use HF. Secondly, the other services in many situations can share on a co-primary basis with each other. These are general statements that take no account of the specific uses of certain transmissions within a service. Clearly, each use has to be studied with its own sharing constraints in mind.

After detailed discussion, and recognizing (a) the fact that the broadcasting community regularly transmits broadcasts in certain of the fixed service bands, under Article 4.4, with a minimum of harmful interference events, and (b) the regulatory difficulty of transferring some of the current fixed service, etc. allocations to maritime mobile service allocated frequencies on a shared basis, we believe the simplest, most practical solution for all the services involved in the 4 – 10 MHz part of the spectrum is to have the broadcasting service and the fixed, mobile and land mobile services share on a non-exclusive co-primary basis.

Transition arrangements for any reallocation need to be developed since it is understood that any reallocation will require an adequate time to take place. If the overall reallocation solution includes no movement for the fixed, mobile and land mobile services, a transition period could be a short one.

Proposals:

USA/ /1 MOD

RESOLUTION 351 (WRC-07)

Review of the frequency and channel arrangements in the MF and HF bands allocated to the maritime mobile service with a view to improving efficiency by considering the use of new digital technology by the maritime mobile service

The World Radiocommunication Conference (Geneva, 2007),

Reasons: Editorial

considering

a) that the agenda of this Conference included consideration of the use of new digital technology in the maritime mobile service (MMS) in the MF and HF bands;

b) that the introduction of new digital

technology in the MMS shall not disrupt the distress and safety communications in the MF and HF bands including those established by the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended;

c) that changes made in Appendix **17** should not prejudice the future use of these frequencies or the capabilities of systems or new applications required for use by the MMS;

d) that the need to use new digital technologies in the MMS is growing rapidly; resolution is required to examine the issues involved in implementing advanced fixed and mobile HF systems in the in MF/HF bands.

e) that the use of new digital technology on HF and MF frequencies allocated to the MMS will make it possible to better respond to the emerging demand for new services;

f) that the HF bands allocated to the MMS for A1A Morse telegraphy and narrow-band direct-printing are significantly under-utilized at present;

USA/ /2 MOD

g) that the IMO supports replacing general communication narrow-band-direct-printing with new HF data exchange technology capable of working FEC NBDP,

h) that the IMO supports the frequencies of Appendix **15,** concerning NBDP, be retained for the foreseeable future.

i) that the ITU Radiocommunication Sector is conducting ongoing studies to improve the efficient use of these bands,

noting

a) that different digital technologies have already been developed and are in use in the MF and HF bands in several radiocommunication services,

b) that new maritime HF data transfer protocols have already been developed to replace general narrow-band-direct-printing communications using Appendix **17** frequencies,

noting also

that this conference has modified Appendix **17** to permit the use of various channels or bands identified in the MF and HF bands for the introduction of new digital technology,

resolves

1 that, in order to provide full worldwide interoperability of equipment on ships, there should be one technology, or more than one interoperable worldwide technology, implemented under Appendix **17**;

2 that, as soon as the ITU-R studies are completed, a future competent conference should consider necessary changes to Appendix **17** to enable the use of new technology by the MMS,

invites ITU-R

to finalize studies currently ongoing:

– to identify future requirements of the MMS;

– to identify the technical characteristics necessary to facilitate use of digital systems in the MF and HF bands allocated to the MMS, taking into account any relevant ITU-R Recommendations;

– to identify the digital system(s) to be used in the MF/HF bands by the MMS;

- to identify any necessary modifications to the frequency table contained within Appendix 17;

- identify maritime mobile HF spectrum for new systems, particularly in the range 10 to 18 MHz.

- identify additional spectrum resources in the range 9 to 10 MHz in order to facilitate the introduction of new technologies in the mobile maritime service, by overcoming the large gap between the 8 and 12 MHz maritime mobile bands;

– to propose a timetable for the introduction of new digital technologies and any consequential changes to Appendix **17**;

– to recommend how digital technologies can be introduced while ensuring compliance with distress and safety requirements,

instructs the Secretary-General

to bring this Resolution to the attention of the International Maritime Organization, the International Civil Aviation Organization, the International Association of Marine Aids to Navigation and Lighthouse Authorities and the Comité International Radio-Maritime.

Reasons: There are still several studies underway that need to be completed prior to resolving this issue. These studies should be completed prior to the next Conference, where the appropriate changes to the RR can be considered.

USA/ /3 MOD

Additional spectrum for the broadcasting bands in the HF bands between 4 MHz and 10 MHz

For all three Regions allocate the following frequency bands to the broadcasting service on a co-primary, that is, non-exclusive, basis with the fixed, mobile and land mobile services (see the Table for details):

5 060 - 5100 kHz
5 840 - 5 900 kHz
7 450 - 7 600 kHz
9 340 - 9 400 kHz
9 900 - 9 940 kHz,

for a total of 350 kHz.

All of these parts are portions of the bands listed as "preferred bands" in **Res. 544.**

ARTICLE 5

Frequency allocations
(as modified)

REGION 1	**REGION 2**	**REGION 3**
5 060 – 5 100	FIXED BROADCASTING Mobile except aeronautical mobile 5.113, 5.133, 5.ABC, 5.DEF	
5 100 – 5 250	FIXED Mobile except aeronautical mobile 5.133	
	……..	
5 730 – 5 840 FIXED	**5 730 – 5 840** FIXED	**5 730 – 5 840** FIXED

LAND MOBILE	MOBILE except aeronautical mobile (R)	Mobile except aeronautical mobile (R)
5 840 – 5 900 FIXED LAND MOBILE BROADCASTING 5.ABC, 5.DEF	**5 840 – 5 900** FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.ABC, 5.DEF	**5 840 – 5 900** FIXED BROADCASTING Mobile except aeronautical mobile (R) 5.ABC, 5.DEF
…….		
7 450 – 7600	FIXED MOBILE except mobile aeronautical (R) BROADCASTING 5.143E, 5.144, 5.ABC, 5.DEF	
7 600 - 8 100	FIXED MOBILE except maritime mobile (R) 5.143E, 5.144	
……		
9 040 – 9340	FIXED	
9 340 – 9400	FIXED BROADCASTING 5.ABC, 5.DEF	
…….		
9 900 – 9940	FIXED BROADCASTING 5.ABC, 5.DEF	
9 940 – 9995	FIXED	

Reasons:
There is ample evidence that the broadcasting service has a requirement for additional spectrum allocations in this portion of the spectrum. This is substantiated by several years of carefully compiled statistics comparing channel demand with channel capacity in its existing allocations between 4 and 10 MHz. “Collisions”, that is, unavoidable mutual interference, occur to the extent of a channel deficit the equivalent of 250 kHz for co-channel interference and around 800 – 850 kHz to include the removal of adjacent channel interference.

In addition, in attempts to avoid this situation, some broadcasters resort to “spillover” broadcasting into nearby fixed, mobile and land mobile bands, with the broadcasters operating under **Article 4.4.** Broadcast channel occupation statistics show that this “out-of-band” broadcasting covers roughly 15% of all broadcasts below 10 MHz. This de facto situation needs to be remedied because many administrations, acting as “host” administrations for HFBC transmission sites, do not permit “out-of-band” broadcasting. This has the effect of forcing some smaller broadcasting organizations to rely upon “out-of-band” broadcasting well beyond the 15% average value mentioned above.

Remedying this situation, without operationally penalizing the fixed, mobile and land mobile service users of the spectrum where the broadcast service users now operate on an

Article 4.4 basis can be done in two ways: (a) have the broadcasting service share with the non-broadcasting services in a fraction of the allocations for the non-broadcasting services involved or (b) reallocating these non-broadcasting services to share within certain parts of the maritime mobile service allocations within the 4 – 10 MHz portion of the spectrum. Because of the wording of Agenda Item 1.13, and for some operational reasons, the latter method is less attractive than the former.

Therefore, contiguous with existing broadcasting service bands, 5 non-broadcasting bands are proposed for use on a non-exclusive basis for the broadcasting service and those with the current allocation (see the Table above). (Note: The only exception to this contiguity is that in Region 2 the band 7400 – 7450 kHz is allocated to the fixed and mobile services rather than the broadcasting service. This leaves a 50 kHz "gap" to the nearest broadcasting service band, which ends at 7400 kHz.) These 350 kHz in total account for 14 % of the total fixed, mobile and land mobile services allocations in the 4 – 10 MHz portion of the spectrum.

The fixed, mobile and land mobile allocations in these bands will not be eliminated. The change amounts to a sharing situation among these services and the broadcasting service. Although not the most attractive in theory of the sharing possibilities within the 4 – 10 MHz part of the spectrum, it is noted that the current "out-of-band " use of these frequencies by some of the broadcasting service users under Article 4.4 has seldom caused harmful interference with the other service uses. With the increased use of adaptive techniques (see Res. 729), it can be expected that interference under a co-primary allocation will not increase, and may decrease.

This proposed allocation revision also avoids the possibility of suggesting that the fixed, mobile and land mobile services might share the amount of spectrum given to the broadcasting service by moving into a sharing situation with elements of the maritime mobile service. Thus, a potentially difficult situation is avoided.

USA/ /4 ADD

Transition period arrangements

5.ABC The additions of a primary allocation to the broadcasting service in the bands 5060 – 5100 kHz, 5840 – 5900 kHz, 7450 – 7600 kHz, 9340 – 9400 kHz and 9900 – 9940 kHz will be effective starting 30 March 2009.

Reason:
Since the reallocation proposal does not involve reallocating the fixed, mobile and land mobile allocations, a transition period should not need a long period to take effect. Therefore, it is proposed that the additions for the broadcasting service take effect on 30 March 2009. This is to synchronize with the WRC-03 decision on the amateur services

additional allocation in the 7100 – 7200 kHz band resulting from its Agenda Item 1.23. In this way the totality of reallocations within the 4 – 10 MHz portion of the spectrum will take effect at one time

USA/ /5 ADD

Footnote on emergency responses

5.DEF For those frequency allocations listed in footnote **5.ABC,** administrations who control assignments for the broadcasting service to transmit to CIRAF zones that have been declared by competent authorities to be emergencies of a disaster or public safety nature shall immediately notify these broadcasters of the situation and instruct them to cease regular broadcasting in accordance with the Article 12 coordination procedure until further notice to recommence broadcasting. This does not preclude the broadcasters to transmit messages that may be approved by the authorities in the affected CIRAF zones.

Reason:
The ITU-R, among many other international organizations, is deeply concerned about communication and other techniques to be used to respond rapidly to natural and man-made disasters and to certain public safety situations. As part of the overall arsenal to deal with these problems, this proposed footnote, as a pioneering measure perhaps for other Article 5 allocations, will place the ITU-R on record to reduce the problems of interference with essential emergency communications during emergency situations at specific locations.

USA/ / 6 SUP

RESOLUTION 729 (WRC-97)

Use of frequency adaptive systems in the MF and HF bands

Reasons: The studies under Resolution **729** have been completed. These studies have indicated that no changes to the RR are required to facilitate the introduction of adaptive techniques in the MF/HF bands.

USA/ / 7 ADD

RESOLUTION USA 1 (WRC-07)

Bandwidth Requirements for Advanced Fixed and Mobile HF Technologies in the 3 – 30 MHz Band

The World Radiocommunication Conference (Geneva, 2007),

considering

a) that there are a limited number of fixed and mobile 3 kHz bandwidth channels, and many channel bandwidths are below 500 Hz, in the planned portions of the 3-30 MHz band;

b) that trials of advanced fixed and mobile HF frequency systems have demonstrated their feasibility and their associated spectrum efficiency;

c) that advanced fixed and mobile HF frequency systems require larger channel bandwidth assignments which currently can only be accomplished through channel bonding;

noting

that some advanced fixed and mobile HF frequency adaptive systems utilize bandwidths of up to 12 kHz to support HF electronic messaging, HF Internet, and HF file transfer;

resolves to invite ITU-R

1 to determine the feasibility of changing the Radio Regulations to provide for the use of wider bandwidths to support advanced fixed and mobile HF systems in the 3 – 30 MHz band;

2 to bring the results of these studies to the attention of WRC-10

Reasons: Urgent studies are required to determine the suitability of changing the radio regulations to allow for wider bandwidths to the fixed and mobile services to accommodate advanced HF adaptive systems.

Document WAC/104B

Doc.IWG-4/72(R.1) (04.05.2006)
HF Users Group

Peter Kierans

Draft Proposal for the Work of the Conference of WRC 2007

Executive Summary.

This document proposes that no additional spectrum be allocated to the Broadcast Service. Consideration has been given to the fact that:

a) the Broadcast Service is already scheduled to receive additional spectrum in 2007and again in 2009 and,
b) some broadcasters are cutting back or eliminating their HF broadcast services, but there is an increasing demand for safety related mobile services.

The serious consequences associated with allocating further additional spectrum to the Broadcast Service at the expense of Fixed and Mobile is outlined in this document.

> **Agenda Item 1.13***: taking into account Resolutions **729 (WRC-97), 351 (WRC-03)** and **544 (WRC-03)**, to review the allocations to all services in the HF bands between 4 MHz and 10 MHz, excluding those allocations to services in the frequency range 7 000-7 200 kHz and those bands whose allotment plans are in Appendices 25**, 26** and **27** and whose channelling arrangements are in Appendix 17, taking account of the impact of new modulation techniques and the spectrum requirements for HF broadcasting;*

Background: This is a very broad agenda item, as there are multiple services allocated to the HF bands between 4 MHz and 10 MHz, including aeronautical mobile (OR), aeronautical mobile (R), amateur, broadcasting, fixed, maritime mobile and mobile services. Agenda item 1.13 covers three resolutions that deal with three separate issues. These issues are connected within the agenda item on the basis that they cover overlapping frequency ranges. The Conference Preparatory Meet (CPM) convened following WRC-03 assigned the primary responsibilities for the separate issues to different ITU-R Working Parties.

Resolution 351:

> *resolves*
>
> "1) that, in order to provide full worldwide interoperability of equipment on ships, there should be one technology, or more than one interoperable worldwide technology, implemented under Appendix **17**;
>
> 2) that, as soon as the ITU-R studies are completed, a future competent conference should consider necessary changes to Appendix **17** to enable the use of new technology by the MMS;"

The focus of Resolution **351 (WRC-03)** is to identify a digital technology, or family of digital technologies, that provide interoperability and improved usage of the MF and HF bands allocated to the maritime mobile service under Appendix **17**. The scope of this portion of the agenda item includes a review of all Appendix **17** assignments to facilitate the introduction of these advanced maritime mobile digital systems.

Resolution **351 (WRC-03)** calls for studies to include; future requirements of the MMS, technical characteristics of the digital systems, the necessary modifications to Appendix **17** to enable the use of new technologies by MMS, a timetable for the introduction of new digital technologies, and recommendations on how digital technologies can be introduced while ensuring compliance with distress and safety requirements. In accordance with *resolves* 2 of Resolution **351**, as soon as the ITU-R studies are completed, a competent conference should consider necessary changes to Appendix **17**, to enable the use of new digital maritime technologies by the MMS. These studies are still underway and should be refined to examine the requirements of GMDSS electronic messaging. The future spectrum needs of the maritime mobile service in the HF bands are closely related to the introduction of new data exchange technologies into the maritime mobile service, as an alternative standard for narrow-band direct printing (NBDP). The use of NDBP is in rapid decline for commercial communications. IMO has noted NBDP is currently used for broadcasting of MSI, ship reporting, and weather forecasts and for safety related business communications. However, all these functions could in principle be provided by alternative HF data communications technology. A PDNR for the new MMS HF data exchange service has been developed based on commercial Orthogonal Frequency Division Modulation (OFDM) (see 8B/135 and 8B/209).

NBDP remains useful for providing distress communications in the Polar regions (sea area A4) when other terrestrial means of communication are no longer reliable because of atmospheric noise, and there is no coverage from geostationary satellite networks providing service to the maritime community. This NBDP functionality will be preserved using the HF distress and safety frequencies listed in Appendix **15**.

Because the studies on this issue are continuing, a revision of Resolution **351** to recognize the current views of the IMO regarding the technology transition, to note the transition that has already taken place, and to direct additional studies regarding the spectrum needed for new technologies is appropriate.

Resolution 544:

resolves to invite ITU-R

"1 to carry out studies on this matter, particularly in respect of the bands identified in *noting* above, taking into account technical, operational, economic and other relevant factors, including the appropriate transitional arrangements, and how the introduction of digital emissions will affect the HF broadcasting requirements and how such reallocations will affect other services using these bands."

further resolves

"to recommend a future competent conference to conclude, where appropriate, on additional spectrum requirements for the broadcasting service, taking into account the interest of all affected services"

Resolution **544 (WRC-03)** resulted from work that was not completed at WRC-03. WRC-03 allocated 50 kHz in Region 2 to the broadcast service as a result of the realignment of portions of the 7 MHz band under WRC-03 agenda item 1.23. Prior to WRC-03, the broadcasting service identified a shortfall in the 4-10 MHz band of 250 kHz of spectrum to alleviate co-channel

interference, and 800 kHz of spectrum to alleviate adjacent channel interference. The Resolution also called for a review of the impact of relocating other services from current spectrum allocations if these broadcasting spectrum requirements were accommodated, as well as what transitional arrangements should be made.

WARC-92 (**5.136**) decided to allocate 100 kHz of spectrum to the broadcasting service which will transition from fixed and mobile service allocations in 2007. Any further decrease in available spectrum may affect the ability of fixed and mobile service users to establish and maintain reliable, essential and emergency communications services. Any consideration by WRC-07 to reallocate additional spectrum to the broadcast service should carefully consider the impact on existing and planned fixed and mobile services. Currently, there are 2 102 kHz between 4 and 10 MHz allocated to support the land mobile services and 2 712 kHz allocated to the fixed service. After April 1, 2007, implementation of the results of WARC-92 reduces that amount to 2 002 kHz for land mobile and 2 512 kHz for the fixed service as a result of the reallocation to the broadcast service. After March 29, 2009, in Region 2 an additional 50 kHz is allocated from the fixed and land mobile services to the broadcast service.

Because of their reliability and low cost, fixed and mobile HF services will continue to be required by Administrations. Administrations must be ready to support fluctuations in demand by the fixed and mobile service during emergency communications. The fixed and mobile services are unique in that requirements to use them increase during emergency and disaster situations. Public Protection and Disaster Relief operations depend on the availability of spectrum to support operations.

Displacement of current frequencies from the fixed and mobile service may require considerable expenses for realignment of communication networks and change (replacement) of antennas. In some cases it may be difficult to establish required radio links based on the loss of currently available portions of the spectrum, and due to spectrum crowding from realignment of assignments to account for any spectrum allocated from the fixed and mobile service to the broadcast service.

The operational database(s) maintained by the HF Coordinating Committee (HFCC) illustrate that a broadcast primary allocation of 250 kHz of spectrum would alleviate co-channel interference, and 800 kHz of spectrum would alleviate adjacent channel interference. According to text contained in WP-8A/199, which originated from WP-6E, the HF broadcasters currently address this shortfall by using FS and LMS bands on a non-interference basis under Article **4.4**. According to WP 6E/162, 80-85% of shortwave broadcasting hours in the 4-10 MHz band operates within broadcasting allocations and do not operate under Article **4.4**.

There is interference risks associated with Article **4.4** operation. The HFCC and Administrations need to take these risks into account when assessing cross border interference potential and coordinating usage under Article **4.4**. Some Administrations have reported interference from the broadcast service in the fixed and mobile bands. At least one incident resulted in discontinuation of broadcaster operations. Given this interference risk, Article **4.4** operations do not represent successful broadcaster occupancy of the fixed and mobile bands, nor do they justify reallocation of these portions of the fixed and mobile bands to the broadcasting service.

HF Broadcast providers are currently investing in alternate delivery methods, which may be used to augment or replace programming hours. FM, cable, satellite, and Internet are beginning to provide alternate delivery in developed countries, but are problematic for developing countries due to cost, coverage, and reliability.

Recent public announcements by some broadcasters confirm that there is a decline in the need for HF broadcast spectrum.

Recent natural disasters have demonstrated that the fixed and mobile services are unique in comparison to the broadcast service in that requirements are driven up rapidly during the development of emergency situations. Increased congestion is inevitable during periods of peak usage by the fixed and mobile services.

ITU-R WP 9C has noted that during the 2004-2005 Indian Ocean Tsunami Relief Effort, the emergent need for HF communications drove up spectrum demand rapidly. Because of existing extensive usage of the HF bands in disaster areas, it was not possible to provide all the required channels to meet required emergency communications. Ionospheric (skywave) signal propagation is frequency selective and frequencies usable for communications between any two points change over time throughout the day. This is why several different segments of spectrum within the HF frequency range are allocated to each radio service. This enables the users of the service to have full time access to frequencies that are usable throughout a 24-hour period.

For the fixed and mobile services, propagation concerns make it essential that the frequency channels or sub-bands of an HF pool are evenly spaced in order to adapt to the daily and seasonal changes in the ionosphere. That is why spectrum is allocated to the different services throughout the 4 to 30 MHz range.

The impact to the fixed and mobile services of allocating additional spectrum to the broadcasters would be too severe, since those additional allocations would come from bands assigned to these services. This situation will not change in the foreseeable future.

The examples below show the specific services that would be negatively affected by the proposed re-allocation of spectrum.

On-air monitoring up to 19 September 2005 shows that the following services would be affected:

5 060-5 250 kHz

13 safety-related maritime data channels would be affected and one Link 11 operations.
Additional operations with licenses in this band are:
U.S. FBI
NATO Link 11
UK Royal Navy
S African Navy
Malaysian Navy
Russian Navy
French Military
German Navy

The impact on US based services is

Danish Army
Polish Army
US Army
Mexican Army
French Army
Italian Army
US Air Force
US Coast Guard New Orleans (MMS safety service)
Spanish Air Force
Spanish Civil Guard
US NASA
US Navy
China meteorological fax broadcast (safety service)
UK Fisheries surveillance
Canadian Navy
US Federal Emergency Management Agency (Disaster Relief)
UK Royal Navy Coastal Control
UK customs
AFTN net control (aeronautical)
Australian Police
LDOC (Air/Ground) Sweden, France & Australia.
Swiss Diplo Service

summarized in Annex 1

5 840-5 900 kHz

11 safety-related maritime data channels would be affected plus on US Air Force operation and one maritime meteorological broadcast. Additional operations with licenses in this band are:
U.S. DEA
Danish Fax Ice Reports
Spanish Air Force
Spanish Civil Guard
Korean Meteorological Reports
Russian navy
Greek Meteo (safety service)
UK Naval coastal control
US Air Force
French Military
Australian Truckers
USAF NASA

The impact on US based services is summarized in Annex 1

Note: Three (3) broadcasts were heard in this area

7 350-7 650 kHz

11 safety-related maritime data channels, 1 NBDP and 1 Nato Stanag standard 4285 data communication.
This band is already used by French, E European, Indian, and one U.S. based religious broadcaster. A total of 13 broadcasters were heard in Oct. 2005, including the BBC using DRM.

Also having assigned frequencies in this band:
Chinese meteo broadcast (safety broadcast)
French Military
Dutch Military
US Army
US Navy
Russian Navy
Portuguese Navy
Argentine Navy
Indian Meteo (safety service)
Japan Meteo (safety service)
USA Federal Emergency Management Agency (Disaster Relief)
LDOC various (air/ground communications)
USAF NASA
USA FAA
USCG Puerto Rico Hurricane Warning (safety service)
German (Hamburg) Meteo

The Impact on US based services is summarized in Annex 1

9 290-9 400 kHz

There are allocations to:

Various Embassies
Indian Navy
LDOC in Bern, Switzerland (air/ground communications)
US Army
USAF NASA
German Meteo (safety service)
French Military
French Air Force
Danish Fax Ice Reports (safety service)

The impact on US based services is summarized n Annex 1

In Oct. 2005 this band was used by broadcasters every 5 KHz throughout the band.
9 352.0 Thales system 3000 ALE auto link bursts using.

9 900-9 940 kHz

2 safety-related maritime data channels

Frequencies are also allocated to:

French Military
USA FAA (aeronautical)
USAF (aeronautical military)
U.S. Army
U.S. NOAA (safety service)
French Navy
Australian Oil Rigs
Japan Meteo Fax (safety service)
USAF NASA
AFTN Meteo Azores (aeronautical safety)

The impact on US based services is summarized in Annex 1

Note: 7 different broadcasts were heard in this band, October 2005.

In view of the severe consequences listed herein, Resolution **544** should be suppressed.

Further support for this proposal will be found in Annex 1

Resolution 729:

resolves

"1 that, in authorizing the operation of frequency adaptive systems in the MF and HF bands, administrations shall:

1.1 make assignments in the bands allocated to the fixed and mobile services;

1.2 not make assignments in the bands:

- allocated exclusively to the maritime or aeronautical mobile (R) services;

- shared on a co-primary basis with the broadcasting service, radio determination service or the amateur services;

- allocated to radio astronomy;

1.3 avoid use which may affect frequency assignments involving safety services made in accordance with Nos. **5.155**, **5.155A** and **5.155B**;

1.4 take into account any footnotes applicable to the proposed bands and the implications regarding compatibility;

2 that frequency adaptive systems shall automatically limit simultaneous use of frequencies to the minimum necessary for communication requirements;

3 that, with a view to avoiding harmful interference, the system should evaluate the channel occupancy prior to and during operation;

4 that frequency adaptive systems shall be notified to the Bureau in accordance with the provisions of Article **11**,"

Resolution **729 (WRC-97)** deals with implementation of adaptive HF systems and was not successfully addressed at either WRC-2000 or WRC-2003. Adaptive HF systems are systems that monitor the propagation environment on pre-established channels and react to use the optimal frequencies available for transmission.

Frequency adaptive systems automatically limit simultaneous use of frequencies to the minimum necessary for communication requirements. According to ITU-R WP 6E/223, which originated in ITU-R WP 9C, this characteristic of adaptive systems does not necessarily reduce the number of frequencies that must be made available to ensure successful link establishment. Consideration must also be given to maintain quality of service for uses that fluctuate in response to situations such as those that arise during Public Protection and Disaster Relief. The number of frequencies in an adaptive frequency pool is directly interrelated to the specific HF propagation characteristics based on time of day, season, sunspot activity, etc. Therefore, efficiency improves as more frequencies are available. A network of stations is assigned a number of frequencies over which to communicate, and each station is assigned a unique address.

Adaptive HF systems have been in use for over 20 years. No special consideration in the ITU Radio Regulations is required to fully implement adaptive HF systems. By their nature these systems already automatically limit simultaneous use of frequencies to the minimum necessary for communication requirements. These systems also automatically avoid harmful interference by evaluating the channel occupancy prior to and during operations.

To fully exploit modern HF technology, the availability of sufficient and coordinated spectrum resources is crucial, and bandwidth beyond the typical 3 kHz-channels must be available. The ITU-R WP 8B proposal (WP 8B/135) takes this into account for the MMS.

The channel bonding approach currently in use is based on the use of several 3 kHz contiguous channels. The advent of HF 64 kbps modems has begun to provide the ability to utilize HF spectrum for Internet, large file transfer, and advanced electronic messaging. Loss of HF spectrum allocated to the fixed and mobile services would constrain the development of advanced technologies such as messaging, file transfer, and the Internet.

The required studies related to adaptive HF technology have been adequately answered. Therefore, Resolution **729** can be suppressed.

However, there is an emergence of high bandwidth requirements in the form of advanced fixed and mobile HF systems, which does require urgent study. Therefore a new resolution is required to examine the issues involved in implementing advanced fixed and mobile HF systems in the MF/HF bands.

Proposal:

USA/ /1 MOD

RESOLUTION 351 (WRC-07)

Review of the frequency and channel arrangements in the MF and HF bands allocated to the maritime mobile service with a view to improving efficiency by considering the use of new digital technology by the maritime mobile service

The World Radio communication Conference (Geneva, 2007),

Reasons: Editorial

considering

a) that the agenda of this Conference included consideration of the use of new digital technology in the maritime mobile service (MMS) in the MF and HF bands;

b) that the introduction of new digital technology in the MMS shall not disrupt the distress and safety communications in the MF and HF bands including those established by the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended;

c) that changes made in Appendix **17** should not prejudice the future use of these frequencies or the capabilities of systems or new applications required for use by the MMS;

d) that the need to use new digital technologies in the MMS is growing rapidly;

e) that the use of new digital technology on HF and MF frequencies allocated to the MMS will make it possible to better respond to the emerging demand for new services;

f) that the HF bands allocated to the MMS for A1A Morse telegraphy are not used for this purpose and narrow-band direct-printing (NBDP) allocations are used by only a small number of low volume residual services at present;

USA/ /2 MOD

g) that the IMO supports replacing general communication narrow-band-direct-printing with new HF data exchange technology capable of delivering MSI

h) that the IMO supports the frequencies of Appendix **15,** concerning NBDP, be retained for the foreseeable future.

i) that the ITU Radio communication Sector is conducting ongoing studies to improve the efficient use of these bands,

noting

a) that different digital technologies have already been developed and are in use in the MF and HF bands in several radio communication services,

b) that new maritime HF data transfer protocols have already been developed to replace general narrow-band-direct-printing communications using Appendix **17** frequencies and mobile frequencies outside Appendix 17

noting also

that this conference has modified Appendix **17** to permit the use of various channels or bands identified in the MF and HF bands for the introduction of new digital technology,

resolves

1 that, in order to provide full worldwide interoperability of equipment on ships, there should be one technology, or more than one interoperable worldwide technology to serve the MMS.

2 that, as soon as the ITU-R studies are completed, a future competent conference should consider necessary changes to Appendix **17** to facilitate the use of new technology by the MMS,

invites ITU-R

to finalize studies currently ongoing:

- to identify future requirements of the MMS;
- to identify the technical characteristics necessary to facilitate use of digital systems in the MF and HF bands allocated to the Mobile Service, taking into account any relevant ITU-R Recommendations;
- to identify the digital system(s) to be used in the MF/HF bands by the MMS;
- to identify any necessary modifications to the frequency table contained within Appendix **17**
- to propose a timetable for the introduction of new digital technologies and any consequential changes to Appendix **17**;
- to recommend how digital technologies can be introduced while ensuring compliance with distress and safety requirements,

instructs the Secretary-General

to bring this Resolution to the attention of the International Maritime Organization, the International Civil Aviation Organization, the International Association of Marine Aids to Navigation and Lighthouse Authorities and the Comité International Radio-Maritime.

Reasons: There are still several studies underway that need to be completed prior to resolving this issue. These studies should be completed prior to the next Conference after WRC-07, where the appropriate changes to the RR can be considered.

USA/ /3 SUP

RESOLUTION 544 (WRC-03)

Identification of additional spectrum for the broadcasting service in the HF bands

Reasons: The impact to the fixed and mobile community is too severe to allocate additional spectrum to the broadcast service that would, in fact, come from bands assigned to these services. In addition, the long term need for additional broadcasting spectrum is unknown. Additional spectrum reallocated to the broadcast service would result in congestion to the fixed and mobile services, including the MMS. Congestion is now present in some fixed and mobile services bands. Recent operations supporting disaster relief demonstrated that fixed and mobile service requirements exceeded the spectrum allocated to these services. Frequencies used by the MMS support general and safety related communications as well as Ship Security Alert Systems communications and Long Range Tracking and Identification. Any degradation of these services would have severe consequences.

USA/ / 4 SUP

RESOLUTION 729 (WRC-97)

Use of frequency adaptive systems in the MF and HF bands

Reasons: The studies under Resolution **729** have been completed. These studies have indicated that no changes to the RR are required to facilitate the introduction of adaptive techniques in the MF/HF bands.

USA/ / 5 ADD

RESOLUTION USA 1 (WRC-07)

Bandwidth Requirements for Advanced Fixed and Mobile HF Technologies in the 3 – 30 MHz Band

The World Radio communication Conference (Geneva, 2007),

considering

a) that there are a limited number of fixed and mobile 3 kHz bandwidth channels, and many channel bandwidths are below 500 Hz, in the planned portions of the 3-30 MHz band;

b) that trials of advanced fixed and mobile HF frequency systems have demonstrated their feasibility and their associated spectrum efficiency;

c) that advanced fixed and mobile HF frequency systems require larger channel bandwidth assignments greater than the 3 KHz assignments that are currently common.

noting

that some advanced fixed and mobile HF frequency adaptive systems utilize bandwidths of up to 12 kHz to support HF electronic messaging, HF Internet, and HF file transfer;

resolves to invite ITU-R

1 to determine the feasibility of changing the Radio Regulations to provide for the use of wider bandwidths to support advanced fixed and mobile HF systems in the 3 – 30 MHz band;

2 to bring the results of these studies to the attention of WRC-10

Reasons: Urgent studies are required to determine the suitability of changing the radio regulations to allow for wider bandwidths to the fixed and mobile services to accommodate advanced HF adaptive systems.

ANNEX 1

IWG-4
Agenda Item 1.13

The case for no additional spectrum for any service

IWG-4 has received inputs from NASB, from the HF Users Group, and a modified proposal by Don Messer. Subsequently, there was an additional modified submission from the HF Users Group and numerous individual submissions calling for "no additional broadcast spectrum". The overwhelming majority of opinion was in favour of "no additional spectrum".

There have been numerous discussions about the detailed wording of the submitted papers. However, such discussions are essentially irrelevant until the very simple, very straightforward question and entire focus of this discussion is settled: "yes" or "no" to additional HF broadcast spectrum. With this focused idea, following are some relevant considerations.

1. The decision has already been made to give the broadcast service additional spectrum in 2007 (100 KHz) and again in 2009 (50 KHz).
2. The broadcast justification for further additional spectrum does not take into account the potential for spectrum saving through the efficient use of digital broadcasting. The broadcast need for spectrum is likely to decline or, at best, is uncertain. This is based on the advent of new technologies such as internet and satellite radio. This is made clear in recent public announcements from major broadcasters.
3. The demand for mobile services and supporting spectrum is growing and forecast to continue growing. There is ample documentation and evidence of this in the submissions from the various emergency services operators..
4. Mobile services already suffer from broadcast interference. New broadcaster allocations would increase congestion. Broadcast services are already operating in the Maritime Mobile Appendix 17 spectrum that is shared with the fixed service.
5. Broadcast services are already transmitting on the Appendix 17 maritime mobile exclusive frequencies between 6200 and 6280 KHz and causing interference to MMS communications.
6. If additional spectrum is transferred from Fixed & Mobile to Broadcasting, there will be a serious deterioration in essential and critical safety services, including maritime security alerting, long range tracking and identification and emergency response services.
7. If no additional spectrum is transferred to broadcasting, there will be no serious impact on essential, critical or safety related services.
8. Co-primary status between broadcasters and fixed and mobile is unworkable due to time needed to arrange for broadcasters to vacate the spectrum when other means of communication are unavailable to first responders or safety of life applications.

Table 1
Issues and comparisons

	II. HF BROADCAST	III. HF FIXED & MOBILE (Includes Maritime Mobile)
IV. SERVICE	One-way dissemination of useful and important information. Non-critical. High power.	Two-way communications supporting essential operations and critical safety related services. Low power. MMS services are high volume with high frequency occupancy.
V. SERVICE AREA	Global Land Masses	Global Land & Sea
VI. **VII. ALTERNATIVES**	Internet, satellite, FM broadcast.	Satellite in some areas.
VIII. **IX.** **X. SERVICE** **XI. DEMAND**	Alternative dissemination technologies such as the internet, satellite and FM broadcast have reduced the demand to the extent that some HF broadcasters have shut down.	New technologies offering improved efficiencies and automation have increased demand. Concerns about security and single points of failure in satellite systems have also increased the attractiveness of and demand for HF systems.
XII. **XIII.** **XIV.** **XV.** **XVI. SPECTRUM** **XVII. DEMAND**	New, more spectrum efficient technologies such as digital broadcasting and SSB coupled with reduced service demand point towards future reduced spectrum needs. Intelligent, propagation based single frequency selection instead of multiple frequency broadcasts also reduces spectrum needs.	The new technologies require increased bandwidth for increased throughput. This coupled with increased service demand and new service providers entering the market is having a dramatic upward impact of spectrum demand. The attacks of Sept 11 changed how HF is used and dramatically increased the demand.
XVIII. INTERNATIONAL **XIX. IMPLICATIONS**	Any regulatory changes will have severe international implications.	Any regulatory changes will have severe international implications.

Conclusion:
This scenario does not support the concept of taking spectrum from Fixed and Mobile and giving it to Broadcasting.

POTENTIAL IMPACT ON MOBILE SERVICES

The following frequency ranges were proposed for allocation to the broadcast service. Such an allocation would infringe upon the following service providers.

5 060-5 100 kHz

Globewireless:
6 frequencies would have to shut down.

Other Services:

Sailmail, USAF, FBI, USCG, US NASA, US Navy. FEMA, US Customs, UK Military, Dutch Navy, Russian Military, Nato and Nato Link 11, Canadian Navy, Pacific Loran Net, Malaysian Navy Weather, AFTN (Aeronautical Fixed Telecommunications Network) Net Control, RAF and various Antarctic bases.

5 840-5 900 kHz

Globewireless
8 frequencies would have to shut down.
2 planned frequencies would not be available.

Other Services.

Sailmail, FEMA, FAA, US DEA, USAF, USN/MARS, US NASA, US DOE, USCG, Shipcom, KKL Radio planned frequencies x 2, Swedish Maritime Meteo, Nato, Algerian Diplo. Danish Ice Info, Korean Meteo, Spanish Civil Guard numerous, Canadian AF and Italian Meteo. Antarctic Meteo, Diego Garcia Meteo, Danish Marine Info, China Meteo, Russian Meteo and Ice Reports, various diplo. Services, S African Transport and Ecuador Time Signals.

7 350-7 600 kHz

Globewireless
6 frequencies would have to shut down.

Other Services

US Military x 3, US Navy, FEMA, US NASA, US FAA, USAF, USAF/MARS, USCG, US Bell Tel Net, Nato x2, Albanian Military x 3, Israel AF, Spanish Civil Guard x 4, Venezuelan Military x 2, German Military, Italian Police, Russian Navy. Tors Cove Marine Radio (Canada), French Military, UK Military, Antarctic Meteo, Diego Garcia Meteo, Danish Marine Info, China Meteo, Russian Meteo and Ice Reports, various diplo. Services, S African Transport, and Ecuador Time Signals.

9 290-9 400 kHz

Globewireless
Could not find a useable frequency.

Other Services

Cruise Email, US Army, US DOE, US Navy, US NASA, Swedish Maritime Meteo, Spanish Thales System, Tashkent Meteo, Russian Meteo, French AF, S African Oil Rigs, Danish Ice Reports, AFTN

9 900-9 940 kHz

Globewireless
Planned 4 channels but could not find any due to extensive broadcast interference.

Other Services

US FAA, USAF, US Army, FAA, US NOAA, US NASA, S African Police Net, UK Naval and Antarctic Bases.

XX. CONCLUSION

Considering that:

1) There is overwhelming opposition to allocating additional Fixed & Mobile spectrum to Broadcasting.
2) It is in the IWG charter to provide to the FCC "proposals for WRC 07"

It is proposed that:

IWG-4 report to the WAC that there is widespread support, with the dissenting view of the broadcasters, for "no new spectrum allocations" and the suppression of 544.

INFORMAL WORKING GROUP 5 (IWG-5)

Regulatory Issues

DOCUMENT WAC/106(27.04.06):

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Agenda Item 1.10: to review the regulatory procedures and associated technical criteria of Appendix 30B without any action on the allotments, the existing systems or the assignments in the List of Appendix 30B.

Background Information:

As stated in § 1.1 of Appendix 30B the objective of the Plan "is to guarantee in practice, for all countries, equitable access to the geostationary-satellite orbit in the frequency bands of the fixed-satellite service (FSS) covered by this Appendix". While the plan has been in force for some 18 years, little use has been made of the precious spectrum (1600 MHz) regulated by this appendix, particularly as compared to the other bands allocated globally to the FSS. Moreover, numerous administrations have complained that the technical parameters and procedures are outdated, difficult to apply, and exceedingly time-consuming. For these reasons, administrations agreed to include consideration of this matter on the agenda for WRC-07. Several ITU-R preparatory meetings (including WP-4A and the Special Committee) as well as regional bodies have been studying the related issues for several years.

Taking the foregoing into consideration, the United States considers that the conditions for the use the Appendix 30B frequencies can be improved and optimized for ITU Member States that want to implement their allotments as well as for Administrations that want to use capacity (orbit/spectrum resources) beyond that in the Plan. While some studies are continuing, and we expect to continue to participate in the collaborative activities in the regional bodies, we offer a number of proposals below to facilitate fulfilment of the aspirations of *all* administrations. We may expect to augment these proposals when further information becomes available in the preparatory activities leading to the WRC.

Some key points of these proposals are discussed in greater detail, below.

<u>Processing of Submissions</u>

One of the great concerns expressed by administrations is the lengthy process involved in the conversion of allotments into assignments. While the current *sequential* processing of submissions does allow for an accurate consideration of the effect of each submission, the time taken for this process is prohibitively long. It has been estimated that under the current sequential approach the BR is able to process about 8 Appendix 30B submissions (with the possibility of simultaneous submissions from the same administration this number can be slightly increased). On the other hand, on 24 April 2006 there were 98 of those submissions in the BR queue. This corresponds to a backlog of at least 5 years which is very large, especially when compared to the 8-year limit for bringing Appendix 30B frequency assignments into use. Preparatory discussions have highlighted the merits and disadvantages resulting of the two approaches: 1) Continuation of Sequential Processing and 2) Non-Sequential Processing of assignment applications.

With sequential processing, the reference situation is updated only after the new submission enters the List and no other submission will be examined until the fate of each one of the previous submissions has been decided, either by including the associated network in the List or by removing it from the queue. As a result, no submission will be examined based on a certain reference situation and later enter the List when this reference situation has changed.

A non-sequential processing of submissions[4] offers the possibility of a greatly simplified and expedited conversion of allotments into assignments (with or without modifications) and will also reduce the time for processing other submissions. It does not prevent the occurrence of a situation in which a submission is examined under a certain reference situation and enters the List after satisfying the requirements resulting from this examination when the reference situation has already changed. In our view the marginal inaccuracy that may result from this kind of processing will be far outweighed by the benefits of a non-sequential processing.

It is also important to note that non-sequential processing means that a proposed assignment B may enter the List before an assignment A received by the BR at an earlier date. However, if the later assignment B affects A (i.e. does not meet the Appendix 30B protection criteria), definitive registration of B cannot occur until A gives its agreement or B changes its parameters so that protection of A is ensured in accordance with the Appendix 30B criteria.

If we consider a submission under Article 6 that is not the conversion of an allotment into an assignment without any change to the characteristics of the allotment, it becomes clear that a non-sequential processing is more flexible and can potentially lead to a more efficient use of orbit/spectrum resources. Under sequential processing an Article 6 submission (different from conversion of an allotment without any change) that enters the List and expires after the 8-year regulatory period without being brought into use can prevent many other submissions from staying in the queue. Under non-sequential processing, Article 6 submissions could stay in the queue and eventually enter the List through a coordination agreement or after the expiration of the assignments that were blocking their access. As a consequence of proposing a non-sequential processing of submissions the concept of pre-determined arc (PDA) currently included in the Appendix 30B procedures has to be eliminated since it only fits in a sequential processing approach. It may be argued that elimination of the PDA concept removes some flexibility in the sense that an Article 6 submission cannot change orbital locations associated with allotments or assignments in the queue. However, this feature has also some severe drawbacks, such as undesirable and/or unexpected changes of orbital locations which also generate uncertainty for those administrations that have proposed assignments in the queue or are planning to propose the conversion of an allotment. This uncertainty is even more damaging because of the large backlog of submissions discussed above. Such large backlog gives administrations very little time to adapt to an ever changing environment.

For the reasons discussed above, a new text for Article 6 similar to that appearing in Annex 2 of the output of the WP-SC December 2005 meeting is proposed here.

Existing Systems

Existing systems are associated with FSS satellite networks that had already been submitted to the ITU BR when the Plan was developed. By now, the frequency assignments in these networks have either been brought into use and become assignments in the List or have been cancelled. Therefore there seems to be a consensus that the so called Part B of the Plan is not required any more.

However, current § 9.2 states that all the frequency assignments associated with existing systems would have to cease operation 20 years after the entry into force of the Plan, i.e. 16 March 2010. In this respect, the output of the SC-WP December 2005 meeting recognizes that "it would be neither appropriate nor practical to abruptly discontinue on this date the operation of all "existing systems" in the List, in particular those in which either the uplink or downlink stands from an additional use or other networks in unplanned bands".

The proposal presented below treats existing systems as suggested in Annex 2 of the output of the SC-WP December meeting. By not distinguishing assignments in the List that are associated with existing

[4] For instance as considered in Annex 2 of Doc. 4A/277 (output from the Working Party of the Special Committee, WP-SC, December 2005 meeting, on WRC-07 Agenda Item 1.10) or as currently contained in the procedures of Appendices 30 and 30A of the Radio Regulations.

systems from those that stem from allotments or from subregional systems, the concept of existing systems can be eliminated and continuity of their operation can be ensured.

Subregional Systems and Additional Uses

Subregional systems were introduced in the procedures of Appendix 30B in order to allow neighboring countries to combine their allotments into a system with regional coverage. For this reason, the submission of subregional systems in the current regulations contemplates the possibility of suspending allotments of the Member States participating in the system. However, up to now the submissions for subregional systems have never included requests for suspension or partial suspension of allotments. Therefore, subregional systems have actually been implemented as additional uses in the sense that they will coexist with allotments and assignments in the same way additional uses do.

Given all the above, there is no reason for the distinction between these two types of use of Appendix 30B frequencies and in the proposals below these two categories are merged into one category, referred to as "additional uses".

Currently, the main distinctions between the two categories are : (i) subregional systems can explore the PDA concept and additional uses cannot ; (ii) frequency assignments of subregional systems have an unlimited period of validity while those of additional uses are limited to 15-year period of validity. In the proposals below the distinction with respect to the application of the PDA is not relevant since this concept is being eliminated while the period of validity of frequency assignments of the new category of additional uses would not be limited.

Multinational Service Areas

Currently, § 2.6 of Appendix 30B limits the service area associated with additional uses to the national territory of the administration submitting the additional use "unless otherwise agreed". The Rule of Procedure of § 2.6 states that additional uses may have multinational service areas if agreement from other administrations included in the service area are obtained. It is being proposed here that assignments resulting from modifications of allotments or submitted as additional uses can have multinational service areas. It is noted that if an administration A has its territory included in the service area of an additional use proposed by another administration:

(i) Any allotments or assignments of Administration A are protected because a submission requesting the use of Appendix 30B frequencies for an additional use has to be compatible with allotments, assignments in the List and assignments for which complete information has been received by the BR;

(ii) Terrestrial systems in the territory of administration A are protected by the power-flux density limits of Article 21 of the Radio Regulations;

(iii) Any emission from the territory of administration A intended for reception at the space station under consideration has to be authorized by this administration and the provision of service through the deployment of receive earth stations in the territory of administration A can only occur with its approval.

APPENDIX 30B (Rev. WRC-2000)[5]

[5] Editorial Note: For the convenience of the reader, the proposal presented here includes in most cases text proposed for no change (NOC) as well as text proposed for suppression (SUP).

Provisions and associated Plan for the fixed-satellite service in the frequency bands 4 500-4 800 MHz, 6 725-7 025 MHz, 10.70-10.95 GHz, 11.20-11.45 GHz and 12.75-13.25 GHz

USA/ /01 NOC ARTICLE 1 AND 2.1

ARTICLE 1

Objective of the provisions and associated Plan

1.1 The objective of the procedures prescribed in this Appendix is to guarantee in practice, for all countries, equitable access to the geostationary-satellite orbit in the frequency bands of the fixed-satellite service covered by this Appendix.

1.2 The procedures prescribed in this Appendix shall in no way prevent the implementation of assignments in conformity with Part A of the Plan.

ARTICLE 2

Definitions

2.1 *Conference:* World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It, First Session, Geneva, 1985; Second Session, Geneva, 1988.

Reasons: The United States supports the objectives stated in Article 1 and the definition in 2.1.

USA/ /02 MOD 2.2

2.2 *Plan:* The Plan for the fixed-satellite service in the frequency bands contained in this Appendix~~consisting of two parts:~~

~~*a)* Part A, containing the national allotments;~~

~~*b)* Part B, containing the networks of existing systems.~~

Reasons: Existing systems are associated with FSS satellite networks that had already been submitted to the ITU BR when the Plan was developed. By now, the frequency assignments in these networks have either been brought into use and become assignments in the List or have been cancelled. Therefore there is no need for keeping the concept of Part B of the Plan.

USA/ /03 MOD 2.3

2.3 *Allotment:* For the purpose of this Appendix, an allotment comprises:

– a nominal orbital position;

– a bandwidth of 800 MHz (up-link and down-link) in the frequency bands listed in Article 3 of this Appendix;

– a service area for national coverage.

~~– generalized parameters as defined in Annex 1 to this Appendix;~~

~~a predetermined arc (PDA).~~

Reasons: The generalized parameters are not considered to be necessary since examination of the compatibility of any proposed assignment with allotments in the Plan or assignments in the List can be conducted without calculating such parameters. As discussed and justified in connection with Article 6 below, a non-sequential processing of submissions is being proposed here and such approach is not compatible with retention of the PDA concept.

USA/ /04 SUP 2.4

~~2.4 *Existing systems:* Those satellite systems, in the frequency bands covered by this Appendix:~~
~~*a)* which are recorded in the Master International Frequency Register (MIFR); *or*~~
~~*b)* for which the coordination procedure has been initiated; *or*~~
~~*c)* for which the information relating to advance publication was received by the Radiocommunication Bureau before 8 August 1985,~~
~~and which in all cases are listed in Part B of the Plan.~~

Reasons: As noted in connection with **USA/ /02 MOD**, existing systems are either assignments in the List or have been cancelled. As discussed with respect to **No. 9.2** below, assignments in the List that are associated with existing systems should not be distinguished from any other assignments in the List and, as a consequence, there is no need to define existing systems.

USA/ /05 SUP 2.5

~~2.5 *Subregional systems:* For the purpose of the application of the provisions of this Appendix, a subregional system is a satellite system created by agreement among neighbouring countries Member States of the ITU or their authorized telecommunications operating agencies and intended to provide domestic or subregional services within the geographical areas of the countries concerned~~

USA/ /06 MOD 2.6

2.6 *Additional use:* For the application of the provisions of this Appendix, additional uses shall ~~be those of an administration:~~<u>be those associated with submissions for use of Appendix 30B frequencies that do not involve the conversion of an allotment into an assignment with or without modifications to the characteristics of the allotment. Therefore, additional uses correspond to the use of capacity (orbit/spectrum resources) beyond that in the Plan. Submissions for additional uses may also be made by a number of administrations with one among them designated as the notifying administration.</u>

~~*a)* which has a requirement whose characteristics differ from those used in the preparation of Part A of the Plan; any such requirement shall be limited to the national coverage, taking into account technical constraints, of the administration concerned, unless otherwise agreed. Additionally, such requirement can be met only if the allotment of the interested administration, or part of this allotment, has been converted into an assignment, or if the requirement cannot be met by the conversion of the allotment into an assignment;~~

~~*b)* which requires the use of all or part of its national allotment that has been suspended in accordance with § 6.54 of Article 6;~~

~~*c)* which intends to participate in a subregional system using the procedures of Section III of Article 6, instead of using the procedures of Section II thereof.~~

Reasons: The concepts of subregional systems and additional uses have been introduced in the Appendix 30B Plan with different motivations. In particular, subregional systems intended to allow neighboring countries to combine their allotments into a system with regional coverage. For that reason, the possibility of suspending allotments was associated with subregional systems. However, up to now the submissions for subregional systems have never included requests for suspension or partial suspension of

allotments in application of and such submissions have been implemented in a way that does not affect allotments in the Plan or assignments in the List. Therefore, subregional systems have actually been implemented as "additional uses" in the sense that they will coexist with allotments and assignments as additional uses do. In view of the above, it is proposed to eliminate the category of subregional systems and to have a simplified definition for 'additional uses', capable of accommodating requirements being currently met by the two existing categories.

USA/ /07 NOC ARTICLES 3 AND 4

ARTICLE 3
Frequency bands

3.1 The provisions of this Appendix shall apply to the fixed-satellite service in the frequency bands between:

- 4 500 and 4 800 MHz (space-to-Earth);
- 6 725 and 7 025 MHz (Earth-to-space);
- 10.70 and 10.95 GHz (space-to-Earth);
- 11.20 and 11.45 GHz (space-to-Earth);
- 12.75 and 13.25 GHz (Earth-to-space).

ARTICLE 4
Execution of the provisions and associated Plan

4.1 The Member States of the Union shall adopt, for their fixed-satellite service stations operating in the frequency bands referred to in this Appendix, the characteristics consistent with those specified in the Plan and its associated provisions.

4.2 The Member States of the Union shall not change the characteristics, or bring into use assignments to fixed-satellite service stations, or stations in the other services to which these frequency bands are allocated, except as provided for in the Radio Regulations and the appropriate Articles and Annexes of this Appendix.

Reasons: Articles 3 and 4 need not be changed.

ARTICLE 5 (WRC-03)
The Plan and the associated List of assignments

USA/ /08 MOD 5.1

5.1 The Plan consists of ~~*a)*~~

~~Part A containing the~~ allotments~~;~~ ~~*b)*~~

~~Part B containing the networks of existing systems~~.

Reasons: As discussed above there is no need to retain the concepts of Part A and Part B because all frequency assignments associated with existing systems have either been included in the List as assignments or have been cancelled.

USA/ /09 MOD 5.2

5.2 A List of assignments ~~as described in § 5.5~~will be associated with the Plan and will contain:

(i) assignments resulting from the conversion of allotments (with or without modifications to the characteristics of the allotments in the Plan);
(ii) assignments resulting from submissions for additional uses.

Reasons: This is a consequence of the elimination of Part B and of the merger of the categories "subregional systems" and "additional uses". In view of that, instead of describing the assignments in a separate provision (§ 5.5 in the current Appendix 30B), the description was also included in 5.2.

USA/ /10 SUP 5.3 and 5.4

~~5.3 The predetermined arc (PDA) is a segment of the geostationary-satellite orbit (GSO) about a nominal orbital position intended to provide flexibility in the Plan.~~

~~*a)* The size of the PDA depends on the stage of development of the satellite system:~~

- ~~for a system in the *pre-design stage*, the PDA is the fixed portion of the GSO defined by the intersection between a segment of ±10° about the nominal orbital position established at the Conference and the corresponding service arc. After twenty years from the date of entry into force of this Appendix, the PDA for a system in the pre-design stage is the fixed portion of the GSO defined by the intersection between a segment of ±20° about the nominal orbital position established at the Conference and the corresponding service arc, provided that the minimum elevation angle after the application of this procedure is not less than 20° or than the value indicated for each climatic zone in Annex 1 to this Appendix, whichever is larger, for all allotments affected;~~
- ~~for a system in the *design stage*, the PDA is the fixed portion of the GSO defined by the intersection between a segment of ±5° about the nominal orbital position as may be modified by the application of this Appendix and the PDA defined for the pre-design stage;~~
- ~~for a system in the *operational stage*, the PDA will be considered as being zero.~~

~~*b)* The stage of development to be associated with allotments in Part A and assignments in the List derived from allotments in Part A, with existing systems in Part B, with subregional systems or additional uses, is given in Table 1.~~

~~*c)* An administration will not be considered to be affected if the nominal orbital position associated with its allotment in the Plan or with its assignments in the List is moved within the corresponding PDA while keeping an aggregate $C/I \geq 26$ dB. WRC-03 decided that for submissions received as from 5 July 2003 the value $C/I \geq 23$ dB shall be applied. (WRC-03)~~

TABLE 1

Stage of development	Part A allotments, subregional systems or additional uses	Part B
Pre-design	Part A allotments	–
Design	Assignments for which the Bureau has received complete information under § 6.2 of Section I or § 6.43 of Section II of Article 6	Networks for which the Bureau has received complete information to start the application of Section I of Article **9**
Operational	Assignments for which the Bureau has received complete information under § 6.58 of Section III of Article 6 or for notification under Article 8	Networks for which the Bureau has received complete information, in order to start the application of Section II of Article **9** or for notification under Article **11**

5.4 The PDA concept may be applied only:

- to provide an allotment to a new Member State of the ITU;
- in the process of conversion of an allotment into an assignment;
- to accommodate a subregional system;
- to resolve incompatibilities with existing systems (except for the implementation of additional uses);
- to resolve incompatibilities with the assignments in the List (except for the implementation of additional uses).

Reasons: §5.3 and §5.4 are being suppressed because, as discussed and justified in connection with Article 6 below, a non-sequential processing of submissions is being proposed here and such approach is not compatible with retention of the PDA concept.

USA/ /11 SUP 5.5

5.5 The List of Assignments to be associated with the Plan will contain:

a) assignments derived from allotments in Part A of the Plan;

b) assignments relating to existing systems in Part B of the Plan;

c) assignments resulting from the introduction of subregional systems;

d) assignments relating to additional uses.

USA/ /12 SUP 5.6

5.6 Whenever a new assignment is entered in this List, the Bureau shall inform administrations in its International Frequency Information Circular (BR IFIC), indicating the characteristics of the assignment concerned.

Reasons: § 5.5 is being suppressed because description of the assignments in the List was incorporated in § 5.2. § 5.6 is being suppressed because its content is being included in Article 6.

ARTICLE 6 (REV.WRC-03)
Procedures for implementation of the Plan and regulation of the fixed-satellite service in the planned bands **(WRC-03)**

USA/ /13 SUP Article 6

REASONS: GIVEN THE SIMPLIFICATIONS INTRODUCED IN THE PREVIOUS ARTICLES, NAMELY ELIMINATION OF PART B AND MERGER OF THE CATEGORIES "SUBREGIONAL SYSTEMS" AND "ADDITIONAL USES", ARTICLE 6 CAN BE SIGNIFICANTLY SHORTENED. IN THIS RESPECT, IT BECAME EASIER TO SUPPRESS THE CURRENT ARTICLE 6 AND TO PROPOSE A COMPLETELY NEW TEXT.

USA/ /14 ADD Article 6

ARTICLE 6 (REV.WRC-03)
Procedures for implementation of the Plan and regulation of the fixed-satellite service in the planned bands (WRC-03)

6.1 When an administration intends to

- convert an allotment into an assignment (with or without modifications to the allotment in the Plan),
- introduce an additional use or
- modify the characteristics of assignments in the List,

it shall, not earlier than eight years and not later than two years before the planned date of bringing the assignment into use, send to the Bureau the information specified in Appendix 4[6].

6.2. Submission of an additional use can also be made by a group of named administrations in which case one among these administrations (notifying administration) will be designated to act on their behalf in the application of the provisions of this Appendix.

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[6] If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication, after informing the administration concerned. The Bureau shall inform all administrations of such action and that the network specified in the publication in question no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration, not later than two months prior to the deadline for the payment in accordance with Council Decision 482 unless the payment has already been received (see also Resolution **87 (WRC-03)**). (WRC-03)

6.3. If the information received by the Bureau under §6.1 is found to be incomplete, the Bureau shall immediately seek from the administration concerned any clarification required and information not provided.

6.4. Upon receipt of a complete (Appendix 4) notice relating to the proposed assignment, the Bureau shall examine each notice as to its conformity with the Table of Frequency Allocations and the other provisions[7] of these Regulations, except those provisions relating to conformity with the fixed-satellite service Plan.

6.5. When the examination of all or parts of the notice with respect to § 6.4 leads to an unfavourable finding, the relevant part of the notice shall be returned to the notifying administration with an indication of the appropriate action.

6.6. When the examination of all or parts of the notice with respect to § 6.3 leads to a favourable finding, the Bureau shall use the method of Annex 4, with respect to the relevant part of the notice to determine administrations whose

- allotments in the Plan;

- assignments which appear in the List;

- assignments for which the Bureau has previously received complete information in accordance with this Article;

are considered as being affected.

6.7. The Bureau shall publish, in a Special Section of its International Frequency Information Circular (BR IFIC), the complete information received under § 6.1, together with the names of the affected administrations and the corresponding allotments in the Plan, assignments in the List and/or assignments for which the Bureau has previously received complete information in accordance with this Article. The Bureau shall immediately send the results of its examination to the administration proposing the assignment.

6.8. The Bureau shall send a telegram/fax to the administrations listed in the Special Section of the BR IFIC drawing their attention to the information it contains and shall send them the results of its examination.

6.9. Comments from administrations on the information published pursuant to § 6.7 shall be sent to the administration proposing the assignment with a copy to the Bureau.

6.10. An administration which considers that it should have been identified in the publication referred to under § 6.7 above shall, within four months of the date of publication of its relevant BR IFIC, and identifying the affected allotment, assignment or proposed assignment, request the Bureau to include its name in the publication. The Bureau shall study this information on the basis of Annex 4 and shall inform both this administration and the administration proposing the assignment of its conclusions. Should the Bureau agree to the administration's request, it shall publish an addendum to the publication under § 6.7.

6.11. An administration that has not notified its comments either to the administration seeking agreement or to the Bureau within a period of four months following the date of its BR IFIC referred to in § 6.7 shall be deemed to have agreed to the proposed assignment.

6.12. Thirty days prior to the expiry of the same four-month period, the Bureau shall dispatch a reminder telegram or fax to an administration which has not made its comments under § 6.9, bringing the matter to its attention.

[7] The “other provisions” shall be identified and included in the Rules of Procedure.

6.13. After expiry of the deadline for comments in respect of the proposed assignment, the Bureau shall, according to its records, publish a Special Section indicating the list of administrations whose agreements are required for completion of the Article 6 procedure.

6.14. If no comments have been received on the expiry of the four-month period specified in § 6.10 and 6.11, or if agreement has been reached with the administrations which have made comments and with which agreement is necessary, the administration proposing the new or modified assignment may request the Bureau to have the assignment entered into the List, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached. For this purpose, it shall send to the Bureau the information specified in Appendix 4. In submitting the notice, the administration may request the Bureau to examine the notice simultaneously under § 6.16 (entry into the List) and § 8.8, 8.9 (notification).

6.15. If the information received by the Bureau under § 6.14 is found to be incomplete, the Bureau shall immediately seek from the administration concerned any clarification required and information not provided[8].

6.16. Upon receipt of a complete (Appendix 4) notice relating to the proposed assignment under § 6.14, the Bureau shall determine whether the this Appendix 4 submission is identical to the initial notice. If this is the case, the submission under § 6.14 will be treated as specified in § 6.20. However, if, in seeking agreement, an administration modifies its initial notice, the Bureau shall conduct the examination described in § 6.17 through § 6.19.

6.17. The Bureau shall examine the Appendix 4 information received under § 6.14 with respect to its conformity to the Table of Frequency Allocations and the other provisions[9] of these Regulations, except those provisions relating to conformity with the fixed-satellite service Plan.

6.18. When the examination of all or parts of the § 6.14 submission with respect to § 6.17 leads to an unfavourable finding, the relevant part of the notice shall be returned to the notifying administration with an indication of the appropriate action.

6.19. When the examination of all or parts of the modifications with respect to § 6.17 leads to a favourable finding, the Bureau shall use the method of Annex 4 with respect to the relevant part of the notice to identify administrations for which agreement has not been already obtained whose

- allotments in the Plan;

-assignments which appear in the List;

-assignments for which the Bureau has previously received complete information in accordance with this Article;

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[8] If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication, after informing the administration concerned. The Bureau shall inform all administrations of such action and that the network specified in the publication in question no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration, not later than two months prior to the deadline for the payment in accordance with Council Decision 482 unless the payment has already been received (see also Resolution **87 (WRC-03)**).

[9] The "other provisions" shall be identified and included in the Rules of Procedure.

are considered as being affected by the notice submitted under § 6.14[10].

6.20. In the event of a favourable finding with regard to compatibility under § 6.19, the Bureau shall enter the proposed assignment in the List and publish in a Special Section to its BR IFIC the information received under § 6.14 together with the names of any administrations identified under § 6.13 and § 6.19 with which the provisions of this Article have been successfully applied. The administration proposing the assignment may then notify the assignment in accordance with Article 8.

6.21. When the examination under § 6.19 leads to an unfavourable finding, the Bureau shall publish in a Special Section of its BR IFIC the information received under § 6.14 together with the names of any administrations with which the provisions of this Article have been successfully applied as well as the administrations with which they have not.

6.22. After addressing the remaining coordination requirements identified under § 6.21, the administration proposing the new or modified assignment may request the Bureau to have the assignment entered into the List, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached. For this purpose, it shall send to the Bureau the information specified in Appendix 4. In submitting the notice, the administration may request the Bureau to examine the notice simultaneously for entry into the List and for notification (§ 8.8, 8.9).

6.23. The Bureau will then conduct the examination specified in § 6.15 and § 6.16 (comparing the Appendix 4 submission under examination with that previously submitted under § 6.14 or § 6.22). If necessary, examination under § 6.17 through § 6.19 is then conducted.

6.24. After a notice is published under § 6.21, should the notifying administration resubmit the notice and insist upon its reconsideration, the Bureau shall enter the assignments provisionally in the List with an indication of those administrations whose assignments were the basis of the unfavourable finding[11]. The entry shall be changed from provisional to definitive recording in the List only if the Bureau is informed that the new assignment has been in use, together with the assignments which were the basis for the unfavourable finding, for at least four months without any complaint of harmful interference being made or if the assignments which were the basis for the unfavourable finding are cancelled.

6.25. When an assignment is entered provisionally in the List under the provisions of § 6.24, the Bureau shall not update the reference situation for the Plan and the List until the recording is changed to definitive in accordance with § 6.24.

6.26. Should harmful interference be caused by an assignment included in the List under § 6.24 to any assignment in the List which was the basis of the disagreement, the administration using the frequency assignment included in the List under § 6.24 shall, upon receipt of advice thereof, immediately eliminate this harmful interference.

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[10] The allotments in the Plan, assignments in the List and assignments with complete information previously submitted are those that had been identified as such at the date of receipt of the initial submission under § 6.1 of the assignment under examination, i.e. examination under § 6.19 is conducted with respect to the same reference situation previously used for the examination under § 6.1.

[11] The entry shall be definitive in the case of a frequency assignment to a receiving station, under the condition that the notifying administration has undertaken that no complaint will be made in respect of any harmful interference which may be caused to that assignment by the assignment which was the basis for the unfavourable finding.

6.27. When a frequency assignment included in the List is no longer required, the notifying administration shall immediately inform the Bureau.

6.28. The date of bringing into use of a frequency assignment may be extended by the notifying administration up to no more than eight years from the date of receipt by the Bureau of the complete Appendix **4** information under § 6.1.

6.29. Any frequency assignment that

- is no longer required, as per information provided by the notifying administration to the BR in accordance with § 6.27; or

- has not been brought into use within the period specified in § 6.28

shall be canceled by the BR.

6.30. Assignments canceled under § 6.29 that result from the conversion of an allotment (with or without modifications to the characteristics of the allotment) shall be transferred back to the Plan without any changes to the technical parameters or orbital location that they had in the List in the case of a definitive recording and shall be transferred back to the Plan with the characteristics of the original allotment in the case of a provisional entry in the List.

6.31. After taking the action described in § 6.29, the BR shall update the reference situation of all allotments in the Plan and assignments in the List, as appropriate.

6.32. The procedure of this Article may be applied by the administration of a new ITU Member State in order to include a new assignment in the List over its national territory. The next World Radiocommunication Conference may then be requested to consider the inclusion in the Plan of a new allotment over the national territory of the new Member State with the characteristics of its assignment that has entered the List after successful completion of the procedure described here.

6.33. Should the assignments mentioned in § 6.32 over the national territory of the administration not be brought into use within the regulatory time-limit specified in § 6.28, they would be retained in the List until the end of the World Radiocommunication Conference immediately following the successful completion of the procedure referred to in § 6.32, and thereafter they shall be removed from the List.

6.34. An administration may, at any stage in the procedure described in this Article, or before applying it, request the assistance of the Bureau.

Reasons: The changes proposed in Article 6 incorporate the key points discussed in the Background Information section. In particular, for the reasons discussed therein the proposed Article 6 is consistent with a non-sequential processing of submissions with no distinction made between the current categories of “subregional systems” and “additional uses”.

§ 6.1 THROUGH § 6.23 DEFINE HOW SUBMISSIONS FOR USE OF APPENDIX 30B FREQUENCIES ARE TO BE PROCESSED. THIS PROCEDURE IS CONSIDERED TO BE APPROPRIATE AND IS SIMILAR TO THAT CURRENTLY USED IN APPENDICES 30 AND 30A.

§ 6.24 THROUGH § 6.26 OPEN THE POSSIBILITY OF PROVISIONAL ENTRY IN THE LIST. IT IS IMPORTANT THAT THIS FLEXIBILITY BE INTRODUCED TO PREVENT THAT ASSIGNMENTS THAT MAY NEVER BE BROUGHT INTO USE UNDULY BLOCK THE IMPLEMENTATION OF ASSIGNMENTS THAT WOULD OTHERWISE BE IMPLEMENTED. IN § 6.24 THROUGH § 6.26, PROVISIONAL ENTRY IN THE LIST HAS BEEN LIMITED TO THE CASES IN WHICH THE ASSIGNMENTS THAT WERE THE BASIS FOR THE UNFAVOURABLE FINDING BE ADDITIONAL USES IN THE LIST OR SUBMITTED NOTICES FOR ADDITIONAL USES. BY DOING THIS, IT IS ENSURED THAT PROVISIONAL ENTRIES IN THE LIST MAY BE INCOMPATIBLE WITH ALLOTMENTS OR ASSIGNMENTS RESULTING FROM THE CONVERSION OF ALLOTMENTS. THIS APPROACH PROVIDES A REASONABLE BALANCE BETWEEN THE INTERESTS OF ITU MEMBER STATES THAT WANT TO IMPLEMENT THEIR ALLOTMENTS AND THOSE OF ADMINISTRATIONS THAT WANT TO USE CAPACITY (ORBIT/SPECTRUM RESOURCES) BEYOND THAT IN THE PLAN.
§ 6.29 through § 6.31 address the cancellation of assignments. In particular, § 6.30 proposes that in the case of assignments resulting from the conversion of allotments, cancelled assignments will be transferred to the Plan in a way that does disrupt the current reference situation.

§ 6.32 § 6.33 propose that, similarly to the treatment given in Appendix 30 and 30A for Regions 1 and 3, new ITU Member States can use the provisions of Article 6 to have allotments (with national coverage) included in the Plan.

USA/ /15 SUP Article 7

~~ARTICLE 7~~

~~Procedure for the addition of a new allotment to the Plan for a new Member State of the Union~~

~~7.1 The administration of a country which has joined the Union as a new Member State shall obtain a national allotment in Part A of the Plan by the following procedure.~~

~~7.2 The administration shall submit its request for an allotment to the Bureau, with the following information:~~

- ~~*a)* the geographical coordinates of not more than 10 test points for determining the minimal ellipse to cover its national territory;~~
- ~~*b)* the height above sea level of each of its test points and the rain zone or zones;~~
- ~~*c)* any special requirement, other than a fixed orbital position, which is to be taken into account to the extent practicable.~~

~~7.3 Upon receipt of the complete information (mentioned in § 7.2 above), the Bureau shall find an appropriate orbital position, if necessary using the PDA concept, and shall enter the national allotment of the new Member State of the Union in Part A of the Plan.~~
~~7.4 For this purpose the Bureau shall consult, and if necessary seek the agreement of, any administrations that may be affected.~~

ARTICLE 8 (WRC-03)
Procedure for notification and recording in the Master Register of assignments in the planned bands for the fixed-satellite service

USA/ /16 NOC 8.1

8.1 Any assignment for which the relevant procedure of Article 6 has been successfully applied shall be notified to the Bureau using the relevant characteristics listed in Appendix **4**, not earlier than three years before the assignments are brought into use. (WRC-03)
Reasons: Current text is appropriate.

USA/ /17 MOD 8.2

8.2 If the first notice referred to in § 8.1, § 6.14 and § 6.22 has not been received by the Bureau within the eight-year period mentioned in § 6.1 and 6.28 ~~6.38 or 6.57~~ of Article 6~~asappropriate~~, the assignments in the List shall no longer be taken into account by the Bureau and administrations. The Bureau shall then act as if the assignment in the List has not been brought into use in conformity with § 6.29~~6.38 or 6.57~~ of Article 6, as appropriate. The Bureau shall inform the notifying administration, three months in advance of the end of the eight-year period, of the actions it intends to take. (WRC-03)
Reasons: Changes are consequential of those introduced in Article 6.

USA/ /18 NOC 8.3

8.3 Notices not containing those characteristics specified in Appendix **4** as mandatory or required shall be returned with comments to help the notifying administration to complete and resubmit them, unless the information not provided is immediately forthcoming in response to an inquiry by the Bureau. (WRC-03)
Reasons: Current text is appropriate.

USA/ /19 SUP 8.4

~~8.4 Upon reception by the Bureau of a complete notice under § 8.1, a PDA of zero degrees (operational stage) shall be associated with this assignment. (WRC-03)~~
Reasons: Suppression is consequential of the elimination of the PDA concept proposed in USA/ /03 MOD.

USA/ /20 NOC 8.5 to 8.12

8.5 Complete notices shall be marked by the Bureau with their date of receipt and shall be examined in the date order of their receipt. Following receipt of a complete notice the Bureau shall, within not more than two months, publish its contents, with any diagrams and maps and the date of receipt, in the BR IFIC, which shall constitute the acknowledgement to the notifying administration of receipt of its

notice. When the Bureau is not in a position to comply with the time-limit referred to above, it shall periodically so inform the administrations, giving the reasons therefor. (WRC-03)

8.6 The Bureau shall not postpone the formulation of a finding on a complete notice unless it lacks sufficient data to reach a conclusion thereon. (WRC-03)

8.7 Each notice shall be examined: (WRC-03)

8.8 *a)* with respect to its conformity with the Table of Frequency Allocations and the other provisions[4] of these Regulations, except those provisions relating to conformity with the fixed-satellite service Plan which are the subject of the following subparagraph; (WRC-03)

8.9 *b)* with respect to its conformity with the fixed-satellite service Plan and the associated provisions. (WRC-03)

8.10 When the examination with respect to § 8.8 leads to a favourable finding, the assignment shall be examined further with respect to § 8.9; otherwise the notice shall be returned with an indication of the appropriate action. (WRC-03)

8.11 When the examination with respect to § 8.9 leads to a favourable finding, the assignment shall be recorded in the Master Register. When the finding is unfavourable, the notice shall be returned to the notifying administration, with an indication of the appropriate action. (WRC-03)

8.12 In every case when a new assignment is recorded in the Master Register it shall, in accordance with the provisions of Article **8**, include an indication of the finding reflecting the status of the assignment. This information shall also be published in the BR IFIC. (WRC-03)

Reasons: Current text is appropriate.

USA/ /21 MOD 8.13

8.13 A notice of a change in the characteristics of an assignment already recorded, as specified in Appendix **4**, shall be examined by the Bureau under § 8.8, and 8.9 as appropriate. Any changes to the characteristics of an assignment, that has been notified and confirmed as having been brought into use, shall be brought into use within eight years from the date of the notification of the modification. Any changes to the characteristics of an assignment that has been notified but not yet brought into use shall be brought into use within the period provided for in § 6.1 and 6.28~~6.29, 6.38 or 6.57~~ of Article 6~~as appropriate~~. (WRC-03)

Reasons: Changes are consequential of those introduced in Article 6.

USA/ /22 NOC 8.14 to 8.19

8.14 In the case of a change in the characteristics of an assignment which is in conformity with § 8.8, should the Bureau reach a favourable finding with respect to § 8.9, the amended assignment shall retain the original date of entry in the Master Register. The date of receipt by the Bureau of the notice relating to the change shall be entered in the Master Register. (WRC-03)

8.15 In applying the provisions of this Article, any resubmitted notice which is received by the Bureau more than six months after the date on which the original notice was returned by the Bureau shall be considered to be a new notice. (WRC-03)

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[4] The "other provisions" shall be identified and included in the Rules of Procedure. (WRC-03)

8.16 All frequency assignments notified in advance of their being brought into use shall be entered provisionally in the Master Register. Any frequency assignment provisionally recorded under this provision shall be brought into use by the date specified in the notice. Within thirty days of such an assignment being brought into use, the notifying administration shall so inform the Bureau. If the Bureau does not receive that confirmation within the above period, after sending a reminder, it shall cancel the entry. The Bureau shall, however, inform the administration concerned before taking such action. (WRC-03)

8.17 Where the use of a recorded assignment to a space station is suspended for a period not exceeding eighteen months, the notifying administration shall, as soon as possible, inform the Bureau of the date on which such use was suspended and the date on which the assignment is to be brought back into regular use. This latter date shall not exceed two years from the date of suspension. (WRC-03)

8.18 No provision of this Appendix shall be considered as modifying the requirements of Article **9** relating to coordination between earth stations in the fixed-satellite service and stations of terrestrial services sharing the planned bands on an equal primary basis. (WRC-03)

8.19 Notification of assignments to a specific earth station using assignments included in the List shall be effected applying the provisions of Article **11**. (WRC-03)

Reasons: Current text is appropriate.

ARTICLE 9
General provisions

USA/ /23 MOD 9.1

9.1 ~~Part A of t~~The Plan is limited to national systems providing a domestic service. Administrations may, however, in accordance with the provisions ~~of Section II~~ of Article 6, ~~use all or part of~~ modify their allotments or propose additional uses to provide multi-national services~~form a subregional system~~.

Reasons: Changes are consequential of those introduced in Article 6.

USA/ /24 SUP 9.2

~~9.2 The existing systems listed in Part B of the Plan may continue in operation for a maximum period of 20 years from the date of entry into force of this Appendix.~~

Reasons: Existing systems are associated with FSS satellite networks that had already been submitted to the ITU BR when the Plan was developed. By now, the frequency assignments in these networks have either been brought into use and become assignments in the List or have been cancelled.

Current § 9.2 means that all these frequency assignments would have to cease operation (or operate under No. 4.4 of the Radio Regulations) after 16 March 2010. Operation under No. 4.4 is not a realistic option, at least as Appendix 30B frequencies are more widely used. Moreover, requiring that operational satellite networks with large number of users cease abruptly their operation is unreasonable.

By suppressing § 9.2, frequency assignments of existing systems that have been brought into use just remain in the List similarly to the way in which frequency assignments associated with subregional systems are currently treated.

ARTICLE 10

Plan for the fixed-satellite service in the frequency bands
4 500-4 800 MHz, 6 725-7 025 MHz, 10.70-10.95 GHz,
11.20-11.45 GHz and 12.75-13.25 GHz[5]

USA/ /25 MOD A.1

A.1 COLUMN HEADINGS~~OF PART A~~ OF THE PLAN

Reasons: Change is consequential to the changes proposed in USA/ /02 MOD (elimination of Part B).

USA/ /26 NOC A.2

A.2 TEXT FOR SYMBOLS IN REMARKS COLUMN OF THE PLAN

Tables with Allotments.

Reasons: No need to change section A2 or the tables containing the allotments.

USA/ /27 SUP Part B

~~B COLUMN HEADINGS OF PART B OF THE PLAN~~

~~Table with Existing Systems.~~

Reasons: Consequential to the treatment proposed for existing systems (see USA/ /04 SUP and USA/ /23 MOD).

USA/ /28 NOC Article 11

ARTICLE 11

Period of validity of the provisions and associated Plan

11.1 These provisions and associated Plan have been prepared in order to guarantee in practice for all countries equitable access to the GSO and the frequency bands contained in Article 3, to meet the requirements of the fixed-satellite service for a period of at least 20 years from the date of entry into force of this Appendix.

11.2 These provisions and associated Plan shall, in any event, remain in force until their revision by a competent world administrative radio conference, convened in accordance with the relevant provisions of the Convention in force.

Reasons: Current text is appropriate.

ANNEX 1 (WRC-03)

Parameters used in characterizing the fixed-satellite service Plan

Section A – Technical data used in establishing the Allotment Plan and the associated provisions

[Note 1: Discussions on the technical parameters used in connection with the Allotment Plan are being held in ITU-R Working Party 4A. The United States of America is following these discussions but does not have a proposal on this matter at this point in time.]

[5] The Plan has been prepared with a view to assuring for each allotment an aggregate C/I ratio of at least 26 dB.

USA/ /29 SUP Section B

~~**Section B – Generalized parameters used for determining when the assignments of a proposed satellite network are in conformity with the Plan**~~

Reasons: This suppression is consequential of the proposed elimination of the generalized parameters (see USA/ /03 MOD above).

USA/ /30 NOC Annex 2

ANNEX 2 (WRC-03)

Basic data to be furnished in notices relating to stations in the fixed-satellite service entering the design stage using frequency bands of the Plan

These data are listed in Appendix **4**.
Reasons: Current text is appropriate.

USA/ /31 SUP Annexes 3A and 3B

~~ANNEX 3A~~

~~Criteria for determining when proposed assignments are considered as being in conformity with the Plan~~

~~In this method, the generalized parameters are calculated (see Annex 1, Section B), and the results are compared with the corresponding reference set:~~

- ~~If the calculated *A*, *B*, *C* and *D* values are less than or equal to the relevant reference set, then the use of the assignment is considered to be in conformity with the Plan.~~
- ~~If the calculated values of *A* or *C* are greater than the relevant reference set, the use of the assignment is considered not to be in conformity with the Plan.~~
- ~~If the calculated values of *B* or *D* are greater than the relevant reference set, the assignment is protected only to the level of the relevant reference set.~~

~~ANNEX 3B~~

~~Macrosegmentation concept~~

~~In this method, an administration shall not be required to coordinate if, in addition to meeting the conditions of Annex 3A, the proposed frequency assignments are ordered in such a way that the upper 60% of each allotment band is used for high-density carriers and the lower 40% for low-density carriers.~~

~~For the purposes of this annex, the term "high-density carriers" shall be used for those carriers whose ratio of power spectral density peak (averaged over the worst 4 kHz) to average (defined over the necessary bandwidth of the modulated carrier) is greater than 5 dB; and the term "low-density carriers" shall be used for those for which this ratio is less than 5 dB.~~

Reasons: Suppression of Annexes 3A and 3B is consequential of the proposed elimination of the generalized parameters (see USA/ /03 MOD and USA/ /29 SUP above). The concept of segregating "high density carriers" from "low density carriers" is still maintained in Annex 6, item 2.

ANNEX 4 (WRC-03)

Limits for determining whether an allotment or an assignment made in accordance with the provisions of Appendix 30B is considered to be affected

APPENDIX 1 TO ANNEX 4

Method for determination of the single-entry and aggregate carrier-to-interference ratio averaged over the necessary bandwidth of the modulated carrier

[Note 2: Discussions on the protection criteria to be used in connection with the Plan are being held in ITU-R Working Party 4A. The United States of America is following these discussions but does not have a proposal on this matter at this point in time.]

USA/ /32 SUP Annex 5

~~ANNEX 5 (WRC-03)~~

~~Application of the PDA (predetermined arc) concept~~

~~1 The following method will be used in the application of the PDA concept, which is based on the criteria set out in § 1.1 below.~~

~~1.1 For the purposes of this Annex, an administration will be considered as being affected by another administration if, at its nominal orbital position within the predetermined arc, the calculated single-entry *C/I* is less than or equal to 30 dB (WRC-03 decided that for the examination of submissions received as from 5 July 2003 the value 27 dB (instead of 30 dB) shall be applied), or the calculated value, based on the Plan, due to that other administration (whichever is lower), at any test point within the service area of the interfered-with satellite network. The single-entry *C/I* is calculated by the method in Appendix 1 to Annex 4.~~

Even if the single-entry *C/I* is above 30 dB (WRC-03 decided that for the examination of submissions received as from 5 July 2003 the value 27 dB (instead of 30 dB) shall be applied), or the calculated value, based on the Plan, due to that other administration (whichever is lower), an administration shall be considered as being affected if the overall aggregate *C/I*, calculated by the method in Appendix 1 to Annex 4, falls below 26 dB[9] (WRC-03 decided that for the examination of submissions received as from 5 July 2003 the value 23 dB (instead of 26 dB) shall be applied), or the value for the assignment (whichever is lower). (WRC-03)

[9] For allotments with an aggregate *C/I* less than 26 dB (WRC-03 decided that for the examination of submissions received as from 5 July 2003 the value 23 dB (instead of 26 dB) shall be applied), the calculated *C/I* based on the Plan will be used. However, if through the use of the PDA Concept, this value is improved in the latter application of this procedure, the improved value will be used until it reaches 26 dB (WRC-03 decided that for the examination of submissions received as from 5 July 2003 the value 23 dB (instead of 26 dB) shall be applied). (WRC-03)

~~1.2 The PDA Concept shall be applied in the following steps:~~

~~*a)* the order of all satellites and also the position of satellites in the "design" or "operational" stages shall be fixed so as to minimize the impact on these systems. Next, the nominal positions of "pre-design" systems shall be adjusted so as to compensate for the degraded *C*/*I*. The adjustments of nominal positions shall be limited to the range of their respective predetermined arcs;~~

~~*b)* if compatibility is not obtained through § 1.2 *a)*, the ordering of allotments of satellites in the "pre-design" stage shall be subject to change within their predetermined arcs, as defined in Article 5;~~

~~*c)* if the *C*/*I* objectives are not achieved, the affected administration may at this stage opt to select other measures than repositioning, as described in § 1.2 *d)* below;~~

~~*d)* if compatibility is not achieved under § 1.2 *b)*, and if the measures of § 1.2 *c)* are unsuccessful, the allotment(s)/assignment(s) subject to repositioning shall include the systems in the "design" stage, for their predetermined arc as defined in Article 5.~~

~~1.3 Administrations for which the criteria of § 1.1 are not met shall be identified for the purposes of this Annex.~~

Reasons: This suppression is consequential of the proposed elimination of the PDA concept (see USA/ /10 SUP above).

USA/ /31 NOC Annex 6

ANNEX 6 (WRC-03)

Technical means which may be used to avoid incompatibilities between systems in the fixed-satellite service at their implementation stage

1 Improved frequency modulated TV carrier dispersal techniques with up to 4-5 MHz peak-to-peak deviation.

2 Frequency separation between signals with high peak spectral density and narrow-band signals (bandwidth segmentation).

3 The use of transmitting and receiving antennas with special beams providing minimum gain in the direction to neighbouring satellites.

4 Shaped beams for transmitting satellite antennas.

5 Transmission (modulation) and reception techniques allowing for the *C*/*I* ratios less than 26 dB (WRC-03 decided that for the examination of submissions received as from 5 July 2003 the value 23 dB (instead of 26 dB) shall be applied). (WRC-03)

Reasons: Current text is appropriate.

WAC/107(27.04.06):

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Agenda Item 1.12: to consider possible changes in response to Resolution **86 (Rev. Marrakesh, 2002)** of the Plenipotentiary Conference: "Advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks" in accordance with Resolution **86 (WRC-03)**;

Coordination arc in the band 17.3-17.8 GHz and other closely related proposal

Background information: Resolution 901 (WRC-03) invites ITU-R "to conduct studies on the applicability of the coordination arc concept for space radiocommunication services not yet covered by these Regulations" as well as "to recommend, as appropriate, the orbital separation required for triggering inter-service and intra-service coordination concerning the satellite services in frequency bands above 3.4 GHz for geostationary-satellite (GSO) networks not subject to a Plan and not already covered by the coordination arc concept specified in No. 9.7 (GSO/GSO) of Table 5-1 (Appendix 5), under items 1), 2) and 3) of the frequency band column, and subject to Section II of Article 9". This Resolution further *resolves* to recommend that a future competent conference review the results of ITU-R studies on the application of the coordination arc and consider including the results of these studies in Appendix **5**. Review of such study results are considered under Resolution **86** of Agenda Item 1.12.

Pursuant to Resolution 901, ITU-R studied the appropriate coordination arc value to trigger coordination between Broadcasting-Satellite Service (BSS) networks serving Region 2 in the band 17.3-17.8 GHz and Fixed Satellite Service (FSS) (space-to-Earth) networks serving Region 1 in the band 17.3-17.7 GHz and FSS (space-to-Earth) networks serving Regions 1, 2 and 3 in the band 17.7-17.8 GHz.

The ITU-R studies concluded that a coordination arc value of ±8° is appropriate to trigger coordination between GSO BSS networks serving Region 2 and GSO FSS (space-to-Earth) networks whose service areas are limited to Region 1 in the band 17.3-17.7 GHz and between GSO BSS networks serving Region 2 and GSO FSS (space-to-Earth) networks whose service areas are limited to Regions 1 and/or 3 in the band 17.7-17.8 GHz. As a result, specific changes are proposed to Table 5-1 of Appendix 5 to incorporate these conclusions.
For the case of Region 2 FSS (space-to-Earth) with respect to Region 2 BSS in the 17.7 – 17.8 GHz band footnote No. **5.517** applies.

5.517 *In Region 2, the allocation to the broadcasting-satellite service in the band 17.3-17.8 GHz shall come into effect on 1 April 2007. After that date, use of the fixed-satellite (space-to-Earth) service in the band 17.7-17.8 GHz shall not claim protection from and shall not cause harmful interference to operating systems in the broadcasting-satellite service.*

Changes to the wording of this provision, as well as consequential changes to the Table of Allocations are proposed recognizing that the 1 April 2007 date has passed.

Finally, also for Region 2, No. **5.518** applies for the Mobile Service.

5.518 *Different category of service: in Region 2, the allocation of the band 17.7-17.8 GHz to the mobile service is on a primary basis until 31 March 2007.*

Suppression of this provision is proposed, recognizing that the 31 March 2007 date has passed.

Proposals:

USA/ /01 MOD

TABLE 5-1 (Rev.WRC-03~~7~~)

Technical conditions for coordination
(see Article 9)

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
No. **9.7** GSO/GSO	A station in a satellite network using the geostationary-satellite orbit (GSO), in any space radiocommunication service, in a frequency band and in a Region where this service is not subject to a Plan, in respect of any other satellite network using that orbit, in any space radio-communication service in a frequency band and in a Region where this service is not subject to a Plan, with the exception of the coordination between earth stations operating in the opposite direction of transmission	1) 3 400-4 200 MHz 5 725-5 850 MHz (Region 1) and 5 850-6 725 MHz 7 025-7 075 MHz	i) Bandwidth overlap, and ii) any network in the fixed-satellite service (FSS) and any associated space operation functions (see No. **1.23**) with a space station within an orbital arc of ±10° of the nominal orbital position of a proposed network in the FSS		With respect to the space services listed in the threshold/condition column in the bands in 1), 2), 3), 4) ~~and~~ 5), <u>6) and 7)</u> an administration may request, pursuant to No. **9.41**, to be included in requests for coordination, indicating the networks for which the value of $\Delta T/T$ calculated by the method in § 2.2.1.2 and 3.2 of Appendix **8** exceeds 6%. When the Bureau, on request by an affected administration, studies this information pursuant to No. **9.42**, the calculation method given in § 2.2.1.2 and 3.2 of Appendix **8** shall be used
		2) 10.95-11.2 GHz 11.45-11.7 GHz 11.7-12.2 GHz (Region 2) 12.2-12.5 GHz (Region 3) 12.5-12.75 GHz (Regions 1 and 3) 12.7-12.75 GHz (Region 2) and 13.75-14.5 GHz	i) Bandwidth overlap, and ii) any network in the FSS or broadcasting-satellite service (BSS), not subject to a Plan, and any associated space operation functions (see No. **1.23**) with a space station within an orbital arc of ±9° of the nominal orbital position of a proposed network in the FSS or BSS, not subject to a Plan		

TABLE 5-1 (*CONTINUED*) (REV.WRC-03)

Reference of Article 9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
No. **9.7** GSO/GSO (*cont.*)		3) 17.7-20.2 GHz, (Regions 2 and 3), 17.3-20.2 GHz (Region 1) and 27.5-30 GHz	i) Bandwidth overlap, and ii) any network in the FSS and any associated space operation functions (see No. **1.23**) with a space station within an orbital arc of ±8° of the nominal orbital position of a proposed network in the FSS		
		4) 17.3-17.7 GHz (Regions 1 and 2)	i) Bandwidth overlap, and ii) a) any network in the FSS and any associated space operation functions (see No. 1.23) with a space station within an orbital arc of ±8° of the nominal orbital position of a proposed network in the BSS *or* b) any network in the BSS and any associated space operation functions (see No. 1.23) with a space station within an orbital arc of ±8° of the nominal orbital position of a proposed network in the FSS		
		5) 17.7-17.8 GHz	i) Bandwidth overlap, and ii) a) any network in the FSS and any associated space operation functions (see No. 1.23) with a space station within an orbital arc of ±8° of the nominal orbital position of a		

			proposed network in the BSS *or* b) any network in the BSS and any associated space operation functions (see No. 1.23) with a space station within an orbital arc of ±8° of the nominal orbital position of a proposed network in the FSS (See also No. **5.517)**		
		4~~6~~) Bands above 17.3 GHz, except those defined in § 3)	i) Bandwidth overlap, and ii) any network in the FSS and any associated space operation functions (see No. **1.23**) with a space station within an orbital arc of ±8° of the nominal orbital position of a proposed network in the FSS (see also Resolution **901 (WRC-03)**)		
		~~5~~7) Bands above 17.3 GHz, except those defined in § 4) and 5	i) Bandwidth overlap, and ii) any network in the FSS or BSS, not subject to a Plan, and any associated space operation functions (see No. **1.23**) with a space station within an orbital arc of ±16° of the nominal orbital position of a proposed network in the FSS or BSS, not subject to a Plan, except in the case of a network in the FSS with respect to a network in the FSS (see also Resolution **901 (WRC-03)**)		

TABLE 5-1 (*CONTINUED*) (REV.WRC-03)

Reference of Article 9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
No. **9.7** GSO/GSO (*cont.*)		~~6~~8) All frequency bands, other than those in 1), 2), 3), 4), 5), 6) and ~~5~~7), allocated to a space service, and the bands in 1), 2), 3), 4), 5), 6) and ~~5~~7) where the radio service of the proposed network or affected networks is other than the space services listed in the threshold/condition column, or in the case of coordination of space stations operating in the opposite direction of transmission	i) Bandwidth overlap, and ii) Value of $\Delta T/T$ exceeds 6%	Appendix **8**	In application of Article 2A of Appendix **30** for the space operation functions using the guardbands defined in § 3.9 of Annex 5 of Appendix **30**, the threshold/condition specified for the FSS in the bands in 2) applies. In application of Article 2A of Appendix **30A** for the space operation functions using the guardbands defined in § 3.1 and 4.1 of Annex 3 of Appendix **30A**, the threshold/condition specified for the FSS in the bands in 4) applies

Reasons: These modifications to Table 5-1 of Appendix 5 incorporate the results of ITU-R studies that conclude that a coordination arc of ±8º between Region 2 BSS and Regions 1&3 FSS in the bands 17.3-17.8 GHz is sufficient for triggering coordination between these services. These modifications also note that No. **5.517** applies in the band 17.7-17.8 GHz.

USA/ /02 NOC

Resolution 901

Reason: The study called for in this Resolution is still valid for other cases not yet addressed by the ITU-R

Other Closely Related Proposals for Modifying the Table of Allocations

USA/ /03 MOD

5.517 In Region 2, ~~the allocation to the broadcasting-satellite service in the band 17.3-17.8 GHz shall come into effect on 1 April 2007. After that date,~~ use of the fixed-satellite (space-to-Earth) service in the band 17.7-17.8 GHz shall not claim protection from and shall not cause harmful interference to operating systems in the broadcasting-satellite service.

Reasons: Modifications to this footnote are consequential to the 1 April 2007 date having passed.

USA/ /04 SUP

~~**5.518** *Different category of service:* in Region 2, the allocation of the band 17.7-17.8 GHz to the mobile service is on a primary basis until 31 March 2007.~~

Reasons: Suppression of this footnote is consequential to the 31 March 2007 date having passed.

USA/ /05 MOD

17.3-17.7 FIXED-SATELLITE (Earth-to-space) 5.516 (space-to-Earth) 5.516A 5.516B Radiolocation 5.514	**17.3-17.7** FIXED-SATELLITE (Earth-to-space) 5.516 BROADCASTING-SATELLITE Radiolocation 5.514 5.515 ~~5.517~~	**17.3-17.7** FIXED-SATELLITE (Earth-to-space) 5.516 Radiolocation 5.514
17.7-18.1 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 MOBILE	**17.7-17.8** FIXED FIXED-SATELLITE (space-to-Earth) 5.517 (Earth-to-space) 5.516 BROADCASTING-SATELLITE Mobile ~~5.518~~ 5.515 ~~5.517~~	**17.7-18.1** FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 MOBILE

Reasons: Modifications to the table are consequential to the modifications made to the wording of No. **5.517** and the Suppression of No. **5.518**.

Document WAC/108(27.04.06):

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

WRC-07 Agenda Item 2: to examine the revised ITU-R Recommendations incorporated by reference in the Radio Regulations communicated by the Radio Assembly in accordance with Resolution 28 (Rev. WRC-03), and to decide whether or not to update the corresponding references in the Radio Regulations, in accordance with the principles contained in Resolution 27 (WRC-03).

Background Information: Agenda Item 1.15 of WRC-03 dealt with RNSS matters as indicated in Resolutions 604 (WRC-00), 605 (;WRC-00), and Resolution 606 (WRC-00).
Resolution 605 concerned the development and implementation of regulations to provide protection for the ARNS in the band 1164-1215 MHz from all the emissions of "real" RNSS systems in the band. To this end No. 5.328A was adopted and is associated with the referenced allocation. It states:

5.328A Stations in the radionavigation-satellite service in the band 1164-1215 MHz shall operate in accordance with the provisions of Resolution 609 (WRC-03) and shall not claim protection from stations in the aeronautical radionavigation service in the band 960-1215 MHz. No. 5.43A does not apply. The provisions of 21.18 shall apply.

The language of this footnote regulation mandates that the RNSS in the band 1164-1215, "shall" operate in accordance with the provisions of Resolution 609 (WRC-03). This Resolution is entitled: "Protection of aeronautical radionavigation service systems from the equivalent power flux-density produced by radionavigation-satellite service networks and systems in the 1164-1215 MHz frequency band". Resolves 10 of this mandatory Resolution states:

10 that the methodology and the reference worst-case ARNS system antenna contained in Recommendation ITU-R 1642 shall be used by administrations for calculating the aggregate epfd produced by all the space stations within all RNSS systems in the band 1164-1215 MHz.

As indicated the statement "shall be used" in relation to Recommendation ITU-R 1642 clearly makes use of this recommendation mandatory in the context of the Radio Regulations, and therefore must be considered part of them.

Resolution 27 and its Annex set forth the criteria for Recommendations and Resolutions to be: Incorporated by Reference". Clearly, Recommendation M. 1642 meets these criteria.

In consequence it is mandatory that this recommendation be considered as part of Volume 4 of the Radio Regulations although it is not now. Recommendation ITU-R 1642 must be included in subsequent revisions of Volume 4 of the Radio Regulations.

It should be noted that a Working Party of the Special Committee has come to the same conclusion regarding the incorporation in volume 4 of the Radio Regulations of the referenced Recommendation as reflected in the Attachment to Annex 15 of Document SC-WP/57-E.

Proposal:

Document WAC/108(27.04.06):

USA/ /4-1 ADD

The Recommendation ITU-R M. 1642, " Methodology for Calculating the EPFD Produced by All Space Stations within all RNSS systems and networks in the band 1164-1215 MHz" is required to be added to Volume 4 , ITU-R Recommendations incorporated by reference. A copy of Recommendation ITU-R M. 1642 will be made available to the Conference in accordance with the provisions of Annex 3 to Resolution 27.

Reason: Recommendation ITU-R M. 1642 fulfills all of the criteria for a recommendation which is incorporated by reference as set forth in Resolution 27 and its Annex, and therefore must be included in Volume 4 of the Radio Regulations.

Document WAC/110(27.04.06):

United States of America
DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Agenda Item 1.12: to consider possible changes in response to Resolution **86 (Rev. Marrakesh, 2002)** of the Plenipotentiary Conference: "Advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks" in accordance with Resolution **86 (WRC-03)**;

Regulatory Procedures and associated technical criteria applicable to satellite networks
Modification to Appendix 7, Table 10

Background information: Resolution **86 (Rev. Marrakesh, 2002)** requested that WRC-03 and subsequent Conferences review the regulatory procedures associated with the advance publication, coordination, notification and recording of frequency assignments pertaining to satellite network. WRC-03 identified in Resolution **86 (WRC-03)** the scope and the criteria to be used for the implementation of Resolution **86 (Rev. Marrakesh, 2002)**. Resolves 1 of Resolution **86 (WRC-03)** specifically states that WRC-07 should "consider any proposals which deal with deficiencies in the advance publication, coordination, notification and recording procedures of the Radio Regulations (RR) for space services which have either been identified by the Board and included in the Rules of Procedure or which have been identified by administrations or by the Bureau as appropriate."

A review of Appendix **7**, Table 10 (Predetermined coordination distance) indicates that the case of ground-based earth stations and aircraft terrestrial stations, except for those specifically identified cases in the table, is missing. In the past the Radiocommunications Bureau has used the predetermined distance of 500 km for this case, e.g., see Document RRB98/134(Rev.1) dated 8 December 1998. This coordination distance was derived assuming line-of-sight propagation between the aircraft and ground-based stations with a 4/3 Earth radius and the aircraft altitude of 12 km. The 500 km is consistent with the distance currently applicable to the similar cases of coordination between aircraft and ground-based stations such as i) ground-based earth stations in the bands below 1 GHz to which No. **9.11A** applies/ground-based mobile in the bands within the range 1-3 GHz to which No. **9.11A** applies and aircraft (mobile) terrestrial stations; ii) aircraft (mobile) earth stations and ground-based terrestrial stations; and iii) non-GSO MSS feeder-link earth stations and aircraft (mobile) terrestrial stations. To cover the case of ground-based earth stations and aircraft terrestrial stations, Table 10 needs to be modified to include this case with a coordination distance of 500 km. <u>The proposal the United States makes here does not apply to frequency bands already covered in Table 10, including all bands below 3 GHz.</u>

Proposal

USA/ /01 MOD

APPENDIX 7

TABLE 10 (WRC-03)

Predetermined coordination distances

Frequency sharing situation		Coordination distance (in sharing situations involving services allocated with equal rights) (km)
Type of earth station	Type of terrestrial station	
Ground-based	Mobile (aircraft) (all bands not included elsewhere in Table 10)	500

Reasons: For No. **9.17**, this modification is needed to cover the case of ground-based earth stations and aircraft terrestrial stations.

Document WAC/109(27.04.06):

Comments of IWG-5 on Draft U.S. Preliminary View from Exec. Branch Agencies on WRC-07 Agenda Item 4 (Document IWG-5/57)

IWG-5 has considered the elements of Document IWG-5/57 that are relevant to either regulatory issues or agenda items under IWG-5's purview. It offers the following comments:

1. With respect to Resolution 27 (Incorporation by Reference), IWG-5 notes that it is highlighted for possible modification to include reference in Vol 4 of RR for IBR of parts of recommendations. IWG-5 believes that incorporation by reference is a sensitive topic, and that opening up Resolution 27 to modification would be counter-productive. Further, IWG-5 notes that Resolution 27 already addresses incorporation by reference of parts of recommendations (see resolves 5). If there are instances where Recommendations are not properly incorporated by reference, or not included in Volume 4 of the Radio Regulations, this can be corrected on a case-by-case basis within the existing framework. Accordingly, IWG-5 recommends that the US preliminary view on this Resolution should be no change (NOC).

2. With respect to Resolution 229 (5 GHz WAS/RLANs), IWG-5 notes that it is highlighted as requiring further analysis before a decision can be made whether it should be modified or not. It is IWG-5's understanding that the concerns with Resolution 229 have to do with a Recommendation (or part of) that is incorporated by reference, but not included in Volume 4 of the Radio Regulations. Given that WRC-03 reached a difficult compromise on how to handle WAS/RLANs in the 5 GHz bands, and that companies need certainty in order to build and implement equipment in these bands, IWG-5 does not believe it would be useful to open up Resolution 229 for revision. Accordingly, IWG-5 recommends that the US preliminary view on this Resolution should be no change (NOC).

Draft Preliminary Views and Proposals*

for the

2007

World Radiocommunication Conference

developed by the

Executive Branch Agencies

and provided by the

National Telecommunications and Information Administration (NTIA)

* These draft preliminary views and proposals are being reviewed by the Informal Working Groups of the Advisory Committee, and a number of them have received recommendations for changes as set forth in the in the previous section of this public notice.

II. Draft Proposals on WRC-07 Agenda Items received from the National Telecommunications and Information Administration (NTIA):

Document WAC/091(27.04.06):

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Agenda Item 1.12: to consider possible changes in response to Resolution **86 (Rev. Marrakesh, 2002)** of the Plenipotentiary Conference: "Advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks" in accordance with Resolution **86 (WRC-03)**;

Coordination of the radionavigation-satellite service (space-to-space) in the bands 1 215-1 300 MHz and 1 559-1 610 MHz

Background Information: The scope and criteria to be used for the implementation of Resolution **86 (Rev. Marrakesh, 2002)** of the Plenipotentiary Conference by future world radiocommunication conferences (WRCs) is established in Resolution **86 (WRC-03)**. *Resolves 1* of Resolution **86 (WRC-03)** relates to the consideration of proposals dealing with deficiencies in the advance publication, coordination and notification procedures of the Radio Regulations for space services, and Resolves 2 relates to consideration of proposals intended to transform the content of the Rules of Procedure into regulatory text.

WRC-2000 added the space-to-space direction to the existing radionavigation-satellite service (RNSS) (space-to-Earth) allocations in the bands 1 215-1 300 MHz and 1 559-1 610 MHz, along with footnote **5.329A**. WRC-03 added footnote **5.328B**, which applied coordination between two non-GSO RNSS systems and between non-GSO and GSO RNSS systems in the bands 1 164-1 300 MHz, 1 559-1 610 MHz and 5 010-5 030 MHz under Nos. **9.12**, **9.12A** and **9.13** after 1 January 2005, without specifying direction (i.e., space-to-Earth or space-to-space).

No. **9.11A** applies the coordination provisions of Nos. **9.12** to **9.16** where the requirement to coordinate is included in a footnote to the Table of Frequency Allocations referring to No. **9.11A**. Since WRC-2000, the Rules of Procedure (RoP), issued by the Radio Regulations Board (RRB), rather than the Radio Regulations have defined the services and frequency bands for which the coordination procedure under No. **9.11A** is required. The RRB considered the application of No. **9.11A** to the bands given in No. **5.329A** (i.e., 1 215-1 300 and 1 559-1 610 MHz) and interpreted the Regulations as excluding RNSS (space-to-space) assignments in the bands given in No. **5.329A** from any obligation to coordinate with other services and with RNSS (space-to-Earth), but as obliging these RNSS (space-to-space) assignments to coordinate with each other.

In addition, many RNSS (space-to-space) network assignments are receive-only in the bands 1215-1 300 MHz and 1 559-1 610 MHz. Resolution **610 (WRC-03)**, as referenced in No.

5.328B, requires administrations to provide evidence of binding agreements for the manufacture, procurement, and launch of RNSS systems and networks. This resolution was intended to aid bilateral coordination between transmitting RNSS systems and networks by ensuring such systems are either in operation or in the process of being implemented. Requiring Resolution **610 (WRC-03)** data for receiving space stations is unnecessary.

Therefore, modifications to No. **5.329A** and No. **5.328B** are needed to reflect the RRB decision that requires RNSS (space-to-space) to coordinate only with other RNSS (space-to-space) but not with other services or with RNSS (space-to-Earth), and to remove Resolution **610 (WRC-03)** obligations from RNSS receiving space stations.

Proposal

USA/ /1 MOD

5.329A Use of systems in the radionavigation-satellite service (space-to-space) operating in the bands 1 215-1 300 MHz and 1 559-1 610 MHz is not intended to provide safety service applications, and shall not impose any additional constraints on ~~other~~radionavigation-satellite service (space-to-Earth) systems or on other services operating in accordance with the Table.

Reasons: To clarify that "other systems" in No. **5.329A** refers to the radionavigation-satellite service (space-to-Earth) and that "services" refers to services other than the radionavigation-satellite service.

USA/ /2 MOD

5.328B The use of the bands 1 164-1 300 MHz, 1 559-1 610 MHz and 5 010-5 030 MHz by systems and networks in the radionavigation-satellite service for which complete coordination or notification information, as appropriate, is received by the Radiocommunication Bureau after 1 January 2005 is subject to the application of the provisions of Nos. **9.12**, **9.12A** and **9.13**. As a consequence of No. **5.329A**, for systems or networks in the radionavigation-satellite service (space-to-space) in the bands 1 215-1 300 MHz and 1 559-1 610 MHz, the application of the provisions of Nos. **9.12**, **9.12A** and **9.13** is only with respect to other systems or networks in the radionavigation-satellite service (space-to-space). Resolution **610 (WRC-03)** shall also apply to transmitting space stations.

Reasons: To make it clear that the application of the coordination procedure in Nos**. 9.12**, **9.12A** and **9.13** is only with respect to other radionavigation-satellite service (space-to-space) in the bands 1 215-1 300 MHz and 1 559-1 610 MHz and to limit the application of Resolution **610 (WRC-03)** to transmitting space stations.

Document WAC/092(27.04.06):

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Agenda Item 1.12: to consider possible changes in response to Resolution **86** (Rev. Marrakesh, 2002) of the Plenipotentiary Conference: "Advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks" in accordance with Resolution **86 (WRC-03)**;

Background information: In response to a request by the scientific and research community responsible for operation of active and passive sensors on satellites (as defined in Nos. **1.182** and **1.183**), and in coordination with that community, a set of technical data relating to these sensors was established for use by all administrations for registration purposes. The Director of the Radiocommunication Bureau (BR) published Circular Letter CR/137 of 14 February 2000, which requests administrations, when submitting advance publication information to the Bureau on planned Earth exploration-satellite service (EESS)/space research service (SRS) satellite networks in which active and/or passive sensors are to be deployed, to kindly also submit specific information as attached to that Circular Letter.

Following CR/137, the Director of the BR in his Report to the World Radiocommunication Conference 2003 (WRC-03)[§§§] indicated that there were additional data requirements for the EESS/SRS contained in CR/137 and suggested that the conference might wish to consider reviewing Appendix **4** to include the additional information. However, no proposals were submitted to the conference.

Currently, the additional information submitted to BR in accordance with Circular Letter CR/137 is being scanned and published in the International Frequency Information Circular (IFIC) (Space services) as an attachment to the Special Section related to the relevant advanced publication (API) only. It is not reproduced in the IFIC at the time of notification. The scanned documents are being published once on IFIC CD-ROM. These data are neither stored in the Space Network System (SNS) database nor published on Space Radiocommunication Station on CD-ROM.[****] Therefore, the information concerning EESS and SRS satellite networks where active and passive sensor systems are to be deployed is not easily available after publication of the API on the relevant IFIC. This information is useful in analyzing the compatibility of these sensors with systems operating in other services and facilitates their advance publication, notification and the subsequent entry in the Master International Frequency Register (MIFR).

To address the need, the data elements contained in Appendix **4** were reviewed to determine which existing elements should be required to best facilitate the advance publication and notification of active and passive sensors on satellites. Based on the review, the addition of two new columns to account for the advance publication and notification of active and passive sensors are proposed. The inclusion of the new columns would consequentially require modifications to the BR software and revisions to the Preface to the IFIC, *inter alia,* the inclusion of new station classes.

[§§§] See Document 4 (Add.3) at: http://www.itu.int/md/choice_md.asp?id=R03-WRC03-C-0004!A3!MSW-E&lang=e&type=sitems

[****] SRS-on-CD – see at: http://www.itu.int/ITU-R/software/space/srscdrom/index.html

Proposal

USA/ /01 MOD

APPENDIX 4

Table of characteristics to be submitted for space and radio astronomy services (WRC-03)

Items in Appendix	*A – GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK, EARTH STATION OR RADIO ASTRONOMY STATION*	Advance publication or notification of a spaceborne active or passive sensor as defined in Nos. 1.182 and 1.183 on board a non-geostationary satellite network	Advance publication or notification of a spaceborne active or passive sensor as defined in Nos. 1.182 and 1.183 on board a geostationary satellite network
A.1	**IDENTITY OF THE SATELLITE NETWORK, EARTH STATION OR RADIOASTRONOMY STATION**		
A.1.a	the identity of the satellite network	X	X
A.1.f.1	the symbol of the notifying administration (see the Preface)	X	X
A.1.f.2	if the notice is submitted on behalf of a group of administrations, the symbols of each of the administrations in the group, submitting the information on the satellite network (see the Preface)	+	+
A.1.f.3	if the notice is submitted on behalf of an intergovernmental satellite organization, the symbol of that organization (see the Preface)	+	+
A.2	**DATE OF BRINGING INTO USE**		

A.2.a	the date (actual or foreseen, as appropriate) of bringing the frequency assignment (new or modified) into use The date of bringing into use denotes the date at which the frequency assignment is brought into regular operation* to provide the published radiocommunication service with the technical parameters within the technical characteristics notified to the Bureau Whenever the assignment is changed in any of its basic characteristics (except in the case of a change under A.1.a, the date to be given shall be that of the latest change (actual or foreseen, as appropriate) * Pending further studies by ITU-R on the applicability of the term "regular operation" to non-geostationary satellite networks, the condition of regular operation shall be limited to geostationary satellite networks	**X**	**X**
A.2.b	for a space station, the period of validity of the frequency assignments (see Resolution **4 (Rev. WRC-03)**)	**X**	**X**
A.3	**OPERATING ADMINISTRATION OR AGENCY**		
A.3.a	the symbol for the operating administration or agency (see the Preface) that is in operational control of the space station, earth station or radio astronomy station In the case of Appendix **30B**, required only for notification under Article 8	**X**	**X**
A.3.b	the symbol for the address of the administration (see the Preface) to which communication should be sent on urgent matters regarding interference, quality of emissions and questions referring to the technical operation of the network or station (see Article **15**) In the case of Appendix **30B**, required only for notification under Article 8	**X**	**X**
A.4	**ORBITAL INFORMATION**		
A.4.a.1	the nominal geographical longitude on the geostationary-satellite orbit (GSO)		**X**
A.4.a.2.a	the planned longitudinal tolerance easterly limit		**X**
A.4.a.2.b	the planned longitudinal tolerance westerly limit		**X**
A.4.a.2.c	the planned inclination excursion		**X**
A.4.b.1	the number of orbital planes	**X**	
A.4.b.2	the reference body code	**X**	
A.4.b.4.a	the angle of inclination (i_j) of the orbital plane with respect to the Earth's equatorial plane ($0° \le i_j < 180°$)	**X**	
A.4.b.4.b	the number of satellites in the orbital plane	**X**	
A.4.b.4.c	the period	**X**	
A.4.b.4.d	the altitude, in kilometres, of the apogee of the space station	**X**	
A.4.b.4.e	the altitude, in kilometres, of the perigee of the space station	**X**	

A.5	**COORDINATIONS**		
A.6	**AGREEMENTS**		
A.7	**SPECIFIC EARTH STATION OR RADIO ASTRONOMY STATION SITE CHARACTERISTICS**		
A.8	**Not used**		
A.9	**Not used**		
A.10	**EARTH STATION COORDINATION AREA DIAGRAMS**		
A.11	**REGULAR HOURS OF OPERATION**		
A.12	**RANGE OF AUTOMATIC GAIN CONTROL, in dB**		
A.13	**REFERENCES TO THE PUBLISHED SPECIAL SECTIONS OF THE BUREAU'S INTERNATIONAL FREQUENCY INFORMATION CIRCULAR (see the Preface)**		
A.13.a	the reference and number of the advance publication information in accordance with No. **9.1**	**X**[3]	**X**[3]
A.14	**FOR STATIONS OPERATING IN A FREQUENCY BAND SUBJECT TO Nos. 22.5C, 22.5D OR 22.5F: SPECTRUM MASKS**		
A.15	**COMMITMENT REGARDING COMPLIANCE WITH ADDITIONAL OPERATIONAL EQUIVALENT POWER FLUX DENSITY, epfd↓, LIMITS**		
A.16	**COMMITMENT REGARDING COMPLIANCE WITH OFF-AXIS POWER LIMITATIONS OR POWER FLUX-DENSITY, pfd, LIMITS**		
A.17	**COMPLIANCE WITH POWER FLUX-DENSITY, pfd, LIMITS**		
A.17.d	the mean power flux-density produced at the Earth's surface by any spaceborne sensor, as defined in No. **5.549A** Required only for satellite systems operating in the Earth exploration-satellite service (active) or space research service (active) in the band 35.5-36 GHz	**±**	**±**
Items in Appendix	***B - CHARACTERISTICS TO BE PROVIDED FOR EACH SATELLITE ANTENNA BEAM OR EACH EARTH STATION OR RADIO ASTRONOMY ANTENNA***	**Advance publication or notification of a spaceborne active or passive sensor as defined in Nos. 1.182 and 1.183 on board a non-geostationary satellite network**	**Advance publication or notification of a spaceborne active or passive sensor as defined in Nos. 1.182 and 1.183 on board a geostationary satellite network**

B.1	**IDENTIFICATION AND DIRECTION OF THE SATELLITE ANTENNA BEAM**		
B.1.a	the designation of the satellite antenna beam For an earth station, the designation of the satellite antenna beam of the associated space station	**X**	**X**
B.1.b	an indicator showing whether the antenna beam, under B.1.a, is fixed or whether it is steerable and / or reconfigurable	**X**	**X**
B.2	**TRANSMISSION / RECEPTION INDICATOR FOR THE BEAM OF THE SPACE STATION OR THE ASSOCIATED SPACE STATION**		
B.3	**SPACE STATION ANTENNA CHARACTERISTICS**		
B.3.a.1	the maximum co-polar isotropic gain, in dBi Where a steerable beam (see No. **1.191**) is used, if the effective boresight area (see No. **1.175**) is identical with the global service area, the maximum antenna gain, in dBi, is applicable to all points on the Earth's visible surface	**X**	**X**
B.3.c.1	the co-polar antenna radiation pattern, in the case of: – non-geostationary space stations – geostationary or non-geostationary space stations where the antenna radiation beam is directed towards another satellite – elliptical antenna beams for Appendix **30**, **30A** or **30B**	**X**	**X**
B.4	**ADDITIONAL CHARACTERISTICS FOR NON-GEOSTATIONARY SPACE STATION ANTENNA**		
B.4.b.1.a	the orientation angle alpha, in degrees, (see most recent version of Recommendation ITU-R SM.1413)	**X**	**X**
B.4.b.1.b	the orientation angle beta, in degrees, (see most recent version of Recommendation ITU-R SM.1413)	**X**	**X**
Items in Appendix	***C – CHARACTERISTICS TO BE PROVIDED FOR EACH GROUP OF FREQUENCY ASSIGNMENTS FOR A SATELLITE ANTENNA BEAM OR AN EARTH STATION OR RADIO ASTRONOMY ANTENNA***	**Advance publication or notification of a spaceborne active or passive sensor as defined in Nos. 1.182 and 1.183 on board a non-geostationary satellite network**	**Advance publication or notification of a spaceborne active or passive sensor as defined in Nos. 1.182 and 1.183 on board a geostationary satellite network**

C.1	**FREQUENCY RANGE**		
C.2	**ASSIGNED FREQUENCY (FREQUENCIES)**		
C.2.a.1	the assigned frequency (frequencies), as defined in No. **1.148** – in kHz up to 28 000 kHz inclusive – in MHz above 28 000 kHz to 10 500 MHz inclusive – in GHz above 10 500 MHz If the basic characteristics are identical, with the exception of the assigned frequency, a list of frequency assignments may be provided In the case of Appendix **30B**, required only for notification under Article 8	**X**[4]	**X**[4]
C.2.b	the centre of the frequency band observed – in kHz up to 28 000 kHz inclusive – in MHz above 28 000 kHz to 10 500 MHz inclusive – in GHz above 10 500 MHz	**X**[5]	**X**[5]
C.2.c	if the frequency assignment is to be filed under No. **4.4**, an indication to that effect	**+**	**+**
C.3	**ASSIGNED FREQUENCY BAND**		
C.3.a	the bandwidth of the assigned frequency band, in kHz (see No. **1.147**) In the case of Appendix **30B**, required only for notification under Article 8	**X**[4]	**X**[4]
C.3.b	the bandwidth of the frequency band, in kHz, observed by the station	**X**[5]	**X**[5]
C.4	**CLASS OF STATION AND NATURE OF SERVICE**		
C.4.a	the class of station, using the symbols from the Preface	**X**	**X**
C.4.b	the nature of service performed, using the symbols from the Preface	**X**	**X**
C.5	**RECEIVING SYSTEM NOISE TEMPERATURE**		
C.6	**POLARIZATION**		
C.6.a	the type of polarization (see the Preface) In the case of circular polarization, this includes the sense of polarization (see Nos. **1.154** and **1.155**) In the case of a space station submitted in accordance with Appendix **30** or **30A**, see § 3.2 of Annex 5 to Appendix **30**	**X**[3]	**X**[3]
C.6.b	if linear polarization is used, the angle, in degrees, measured counter-clockwise in a plane normal to the beam axis from the equatorial plane to the electric vector of the waves as seen from the satellite In the case of a space station submitted in accordance with Appendix **30** or **30A**, see § 3.2 of Annex 5 to Appendix **30**	**+**[3]	**+**[3]

C.7	**NECESSARY BANDWIDTH AND CLASS OF EMISSION** (in accordance with Article **2** and Appendix **1)**		

C.8	**POWER CHARACTERISTICS OF THE TRANSMISSION**		
C.8.b.1	the total peak envelope power, in dBW, supplied to the input of the antenna For coordination or notification of an Appendix **30A** earth station the values shall include the maximum range of power control For notification of active sensors the values shall include the average power, in dBW. Required if C.8.a.1 is not provided	**X**[4]	**X**[4]
C.9	**INFORMATION ON MODULATION CHARACTERISTICS**		
C.10	**TYPE AND IDENTITY OF THE ASSOCIATED STATION(S)** (the associated station may be another space station, a typical earth station of the network or a specific earth station)		
C.11	**SERVICE AREA(S)**		
C.12	**REQUIRED PROTECTION RATIO**		
C.13	**CHARACTERISTICS OF OBSERVATIONS FOR RADIO ASTRONOMY STATIONS**		
C.14	**Not used**		
C.15	**DESCRIPTION OF THE GROUP(S) REQUIRED IN THE CASE OF NON-SIMULTANEOUS EMISSIONS**		
Items in Appendix	***D – OVERALL LINK CHARACTERISTICS***	**Advance publication or notification of a spaceborne active or passive sensor as defined in Nos. 1.182 and 1.183 on board a non-geostationary satellite network**	**Advance publication or notification of a spaceborne active or passive sensor as defined in Nos. 1.182 and 1.183 on board a geostationary satellite network**

Reasons: To modify Appendix **4** in order to facilitate the filing of active and passive sensors as defined in Nos. **1.182** and **1.183** respectively.

USA/ /02 MOD

ANNEX 2

Characteristics of satellite networks, earth stations or radio astronomy stations[2] (WRC-03)

Footnotes to Tables A, B, C and D

1 Not required for coordination under No. **9.7A**.

2 The most recent version of Recommendation ITU-R SF.675 should be used to the extent applicable in calculating the maximum power density per Hz. For carriers below 15 GHz, the power density is averaged over the worst 4 kHz band. For carriers at or above 15 GHz, the power density is averaged over the worst 1 MHz band. In the case of assignments with a bandwidth less than the stated averaging bandwidth, the maximum density is calculated as if the assignment occupied the averaging bandwidth.

3 Required at notification only.

4 Required only for active sensors, as defined in No. **1.182**, at notification.

5 Required only for passive sensors, as defined in No. **1.183**, at notification.

Reasons: Consequential. Definition of footnotes inserted into the spaceborne active and passive sensor column proposed in USA/ /01 is required. Due to the fact that active sensors are emitters and passive sensors are not, certain data elements are applicable only to one type of sensor.

[2] See footnote 1.

USA/ /03 MOD

APPENDIX 4

Table of characteristics to be submitted for space and radio astronomy services (WRC-03)

Items in Appendix	*A – GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK, EARTH STATION OR RADIO ASTRONOMY STATION*	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network
A.17.d	the mean power flux-density produced at the Earth's surface by any spaceborne sensor, as defined in No. **5.549A** Required only for satellite systems operating in the Earth exploration-satellite service (active) or space research service (active) in the band 35.5-36 GHz	~~+~~	~~+~~

Reasons: Consequential. The addition in Appendix **4** of data element A.17.d in the columns for spaceborne active and passive sensors as proposed in USA/ /01 makes its inclusion in the coordination and notification of satellite networks columns redundant. Therefore, it may be deleted from the two columns shown.

Document WAC/093(27.04.06):

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Agenda Item 1.12: to consider possible changes in response to Resolution **86 (Rev. Marrakesh, 2002)** of the Plenipotentiary Conference: "Advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks" in accordance with Resolution **86 (WRC-03)**;

Regulatory Procedures and associated technical criteria applicable to satellite networks

Modification to Appendix 7, Table 10

Background information: Resolution **86 (Rev. Marrakesh, 2002)** requested that WRC-03 and subsequent Conferences review the regulatory procedures associated with the advance publication, coordination, notification and recording of frequency assignments pertaining to satellite network. WRC-03 identified in Resolution **86 (WRC-03)** the scope and the criteria to be used for the implementation of Resolution **86 (Rev. Marrakesh, 2002)**. Resolves 1 of Resolution **86 (WRC-03)** specifically states that WRC-07 should "consider any proposals which deal with deficiencies in the advance publication, coordination, notification and recording procedures of the Radio Regulations (RR) for space services which have either been identified by the Board and included in the Rules of Procedure or which have been identified by administrations or by the Bureau as appropriate."

A review of Appendix **7**, Table 10 (Predetermined coordination distance) indicates that the case of ground-based earth stations and aircraft terrestrial stations, except for those specifically identified cases in the table, is missing. In the past the Radiocommunications Bureau has used the predetermined distance of 500 km for this case, e.g., see Document RRB98/134(Rev.1) dated 8 December 1998. This coordination distance was derived assuming line-of-sight propagation between the aircraft and ground-based stations with a 4/3 Earth radius and the aircraft altitude of 12 km. The 500 km is consistent with the distance currently applicable to the similar cases of coordination between aircraft and ground-based stations such as i) ground-based earth stations in the bands below 1 GHz to which No. **9.11A** applies/ground-based mobile in the bands within the range 1-3 GHz to which No. **9.11A** applies and aircraft (mobile) terrestrial stations; ii) aircraft (mobile) earth stations and ground-based terrestrial stations; and iii) non-GSO MSS feeder-link earth stations and aircraft (mobile) terrestrial stations. To cover the case of ground-based earth stations and aircraft terrestrial stations, Table 10 needs to be modified to include this case with a coordination distance of 500 km.

Proposal

USA/ /01 MOD

APPENDIX 7

TABLE 10 (WRC-03)

Predetermined coordination distances

Frequency sharing situation		Coordination distance (in sharing situations involving services allocated with equal rights) (km)
Type of earth station	Type of terrestrial station	
Ground-based	Mobile (aircraft) (all bands not included elsewhere in Table 10)	500

Reasons: For No. **9.17**, this modification is needed to cover the case of ground-based earth stations and aircraft terrestrial stations.

Document WAC/094(27.04.06):

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 1.17: to consider the results of ITU-R studies on compatibility between the fixed-satellite service and other services around 1.4 GHz, in accordance with Resolution **745 (WRC-03);**

Background Information: WRC-03 made a conditional secondary allocation to the fixed-satellite service (FSS) for feeder links for non-geostationary-satellite (NGSO) networks in the mobile-satellite service (MSS) with service links below 1 GHz (NGSO-MSS) through RR **5.539A** in the bands 1 390 – 1 392 MHz (Earth-to-space) and 1 430 – 1 432 MHz (space-to-Earth). However, due to the fact that there were insufficient and/or incomplete studies and test measurements with regard to the protection of other services with allocations in these bands or in the nearby passive band 1 400 – 1 427 MHz, Resolution **745 (WRC-03)** resolves that these feederlink allocations shall not be used until the completion of all studies and the results of these studies reported to WRC-07.

The frequency band 1 350 – 1 400 MHz is allocated worldwide on a primary basis to the radiolocation service (RLS) and in Region 1 to the fixed and mobile services. The band 1 370 – 1 400 MHz is allocated worldwide on a secondary basis to the space research (SRS) (passive) and Earth exploration-satellite (EESS) (passive) services by RR **5.339**. The band 1 330 – 1 400 MHz is also used by the radio astronomy service (RAS) for observations of the red-shifted neutral hydrogen line and RR **5.149** urges administrations to take all practicable steps to protect it from harmful interference.

The band 1 400-1 427 MHz is allocated to the EESS (passive), the RAS and the SRS (passive) on a worldwide basis. For the RAS, this band is the most important band for studies of the hydrogen line and for continuum observations. This band is also used world-wide for the Very Long Baseline Interferometry (VLBI) technique which is utilized for radio astronomical studies requiring high angular resolution. For the EESS (passive), the band 1 400 – 1 427 MHz is a vital resource for measuring ocean salinity and soil moisture content of the Earth. This band is one of the select bands for which RR **5.340** prohibits all emissions, emphasizing its particular importance for the science community.

The band 1 427 – 1 452 MHz is allocated on a primary basis to the fixed and mobile services worldwide. The band 1 427 – 1 429 MHz is also allocated on a primary basis to the space operation service (Earth-to-space) in all three Regions. Additionally, RR **5.342** allocates the band 1 429 – 1 535 MHz on a primary basis in some administrations to the aeronautical mobile service exclusively for the purposes of aeronautical telemetry within their national territory.

A. Band 1 430 – 1 432 MHz (feederlink downlink)

Since the NGSO-MSS feederlinks are allocated on a secondary basis, they cannot cause harmful interference to nor claim protection from the fixed and mobile services in this band. ITU-R studies based on the fractional degradation of performance criterion used by the fixed service

have concluded that a pfd limit of –164 dBW/m² in a 4 kHz bandwidth should be adequate to protect the fixed service, as well as the mobile service.

In addition, ITU-R studies have shown that the pfd limits are necessary to protect the aeronautical telemetry systems used under the mobile service in the territory of countries identified in RR **5.342:**

$-181 \quad dB(W/m^2)$	$0 \leq \alpha \leq 4$
$-193 + 20 \log \alpha \quad dB(W/m^2)$	$4 < \alpha \leq 20$
$-213.3 + 35.6 \log \alpha \quad dB(W/m^2)$	$20 < \alpha \leq 60$
$-150 \quad dB(W/m^2)$	$60 < \alpha \leq 90$

where α is the angle of arrival (degrees above the horizontal plane).

To protect the RAS operations in the band 1 400 – 1 427 MHz, studies in the ITU-R have resulted in Recommendation ITU-R M.[8/102 Rev. 1] which recommends the following epfd limits:

- an epfd of –259 dBW/m^2 in any 20 kHz bandwidth of the band 1 400 – 1 427 MHz for more than 98% of integration periods of 2,000 seconds for spectral line observations; and
- an epfd of –243 dBW/m^2 in the entire 1 400 – 1 427 MHz band for more than 98% of integration periods of 2,000 seconds for continuum (broadband) observations.

Studies in the ITU-R have resulted in Recommendation ITU-R M.[8/101 Rev. +1] which recommends that an unwanted emission power limit of -46 dBW in the passive band 1 400 – 1 427 MHz at the satellite antenna port would be sufficient to protect all EESS systems which are expected to use the band.

No studies have been done concerning the space operations service (Earth-to-space) operating in the 1 427 – 1 429 MHz band due to the lack of participation from service providers who would be using the NGSO-MSS allocation.

B. Band 1 390 – 1 392 MHz (feederlink uplink)

The protection of the fixed and mobile services within the band 1 390-1 392 MHz can be accomplished by requiring appropriate separation distances between the NGSO-MSS feederlink earth stations and the fixed and mobile stations. However, detailed information on these separation distances is not available in any ITU-R studies at this time.

The protection of the radiolocation service stations operating in the 1 350 – 1 400 MHz band has not been extensively studied. However, one ITU-R study on the compatibility of the NGSO-MSS feederlink uplinks that may operate in the 1 390 – 1 392 MHz band with aeronautical radiolocation receivers indicates that the interference from the NGSO-MSS feederlink uplinks exceeds the aeronautical radiolocation receivers interference criteria by anywhere from 37.9 dB to as much as 85.4 dB. The study concludes that sharing is not feasible between these two types of systems.

To protect the radioastronomy service operations in the 1 330 – 1 400 MHz band, Recommendation ITU-R M.[8/102 Rev. 1] recommends that the NGSO-MSS feederlink earth stations be separated from radio astronomy stations which conduct observations in the band 1 400 – 1 427 MHz, such that the total data loss due to feederlink uplink and downlink emissions does not exceed 2%.

To protect the EESS (passive) operations in the band 1 400 – 1 427 MHz, Recommendation ITU-R M. [8/101 Rev. 1] recommends that an unwanted emission power limit of –63 dBW in the passive band 1 400 – 1 427 MHz at the antenna port of the NGSO-MSS feederlink earth station would be sufficient to protect all EESS passive sensors which are expected to use the band.

One ITU-R study was done on the potential interference from NGSO-MSS feederlink uplinks that may operate in the 1 390 – 1 392 MHz band into passive sensors operating in the secondary allocation to EESS (passive) in the 1 370 – 1 400 MHz band. The results of this study indicate that the co-channel interference into the passive sensor would exceed the interference threshold by as much as 82 dB and as often as 42% of the time.

Summary

From these study results given in Resolution **745 (WRC-03)**, it is likely that the NGSO-MSS feederlinks will be able to use the allocated bands only with significant constraints required to protect the existing services. It is clear that some studies have indicated problems sharing the 1 390 – 1 392 MHz band with existing services. Furthermore, no service providers are continuing to pursue opportunities or participating in relevant studies to use this allocation. Their absence indicates a lack of need for the allocation. Therefore, suppression of the conditional allocation to the NGSO-MSS feederlink allocations in the 1 390 – 1 392 MHz and 1 430 – 1 432 MHz bands is proposed.

The absence of NGSO-MSS interests indicated the lack of need for the allocation.

Proposals

ARTICLE 5

USA/ /1 MOD

1 300-1 525 MHz

Allocation to services		
Region 1	Region 2	Region 3
1 350-1 400 FIXED MOBILE RADIOLOCATION 5.149 5.338 5.339 ~~5.339A~~	**1 350-1 400** RADIOLOCATION 5.149 5.334 5.339 ~~5.339A~~	
1 400-1 427	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	
1 427-1 429	SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile 5.341	
1 429-1 452 FIXED MOBILE except aeronautical mobile ~~5.339A~~ 5.341 5.342	**1 429-1 452** FIXED MOBILE 5.343 ~~5.339A~~ 5.341	

USA/ /2 SUP

5.339A

Reasons: Suppression of the conditional allocation to the FSS for NGSO-MSS feederlinks is warranted due to lack of need for such an allocation and the sharing and/or compatibility difficulties with existing services using the allocated bands or the nearby passive band.

USA/ /3 SUP

RESOLUTION 745 (WRC-03)

Protection of existing services in all Regions from non-geostationary-satellite networks in the fixed-satellite service using the frequency bands around 1.4 GHz on a secondary basis

Reasons: Consequential to the above proposals.

Document WAC/095(27.04.06):

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

WRC-07 Agenda Item 1.20[1]: to consider the results of studies, and proposals for regulatory measures, if appropriate, regarding the protection of the Earth exploration-satellite service (passive) from unwanted emissions of active services in accordance with Resolution **738 (WRC–03)**;

Background Information: The *resolves* in Resolution **738** calls for three actions: 1) study the compatibility between EESS (passive) and the corresponding active services listed in the Table in Resolution **738** to update Recommendation ITU-R SM.1633 or develop additional Recommendations; 2) further study the impact of implementing the values in *considering f*) and *g*) in the bands 31–31.3 GHz and 51.4–52.6 GHz for unwanted emissions of systems operating in Region 2 and 3, taking into account that the impact on fixed-service systems in Region 1 is documented in ITU-R Recommendation SM.1633; and 3) review the results of studies in 1) and 2) in order to consider regulatory measures, if appropriate, to ensure the protection of the EESS (passive) operating in the bands listed in the table in Resolution **738 (WRC 03)** from unwanted emissions of active services operating in the corresponding bands while taking into account the impact on all concerned services of implementing or not implementing such measures. The table below shows the frequency band and radiocommunication service combinations within the scope of the agenda item.

EESS (passive) band	Active service band	Active service
1 400-1 427 MHz	1 350-1 400 MHz	Fixed service (FS) Mobile service (MS) Radiolocation service (RLS)
	1 427-1 429 MHz	FS, MS (except aeronautical mobile service (AMS)) and space operation service (Earth-to-space)[1]
	1 429-1 452 MHz	FS and MS
23.6-24 GHz	22.55-23.55 GHz	Inter-satellite service (ISS)
31.3-31.5 GHz	30-31 GHz	FSS (Earth-to-space)
	31-31.3 GHz	FS (except HAPS)
50.2-50.4 GHz[2]	50.4-51.4 GHz[2]	FSS (Earth-to-space)[2]
	47.2-50.2 GHz (Regions 2 and 3) 49.44-50.2 GHz[2] (Region 1)	FSS[2]
52.6-54.25 GHz	51.4-52.6 GHz	FS

[1] Resolution 738 (WRC 03) incorrectly refers to the space research service instead of the space operation service.

[2] Studies in this band must take into account No. **5.340.1**.

[1] This is a counter proposal to the one contained in FCC Public Notice DA 05–1011 as WAC/052(04.04.05).

Studies documented in Recommendation ITU–R SM.1633 show that active services in some of these bands do not produce significant unwanted emissions in the adjacent passive band. However, active services in other bands produce unwanted emissions in excess of EESS (passive) protection requirements. Because of the differences between the active services, and the differences in the use of the active and passive services from band to band, the solutions for this agenda item have been determined on a band-by-band and service-by-service basis. The proposed solutions were determined considering the impact to both the active and passive services.

Resolution **738** can be suppressed, and there is no need for an agenda item dealing with unwanted emission levels in EESS (passive) bands for the next Conference.

Proposal:

USA/ /1 MOD

1 300-1 525 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
……		
1 350-1 400 FIXED ADD 5.AAA MOBILE RADIOLOCATION 5.149 5.338 5.339 5.339A	**1 350-1 400** RADIOLOCATION 5.149 5.334 5.339 5.339A	
1 400-1 427	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	
1 427-1 429	SPACE OPERATION (Earth-to-space) ADD 5.BBB FIXED ADD 5.AAA MOBILE except aeronautical mobile 5.341	
1 429-1 452 FIXED ADD 5.AAA MOBILE except aeronautical mobile 5.339A 5.341 5.342	**1 429-1 452** FIXED ADD 5.AAA MOBILE 5.343 5.339A 5.341	
……..		

USA/ /2 ADD

5.AAA In order to ensure the protection of the Earth exploration-satellite (passive) service in the band 1 400–1 427 MHz, the unwanted emissions power delivered to the antenna of any station in the fixed service operating in the band 1 350–1 400 MHz or in the band 1 427–1 452 MHz shall be limited to –45 dBW in the 27 MHz reference bandwidth of the band 1 400–1 427 MHz. Fixed service systems in operation at the date of entry into force of the Final Acts of WRC-07 are not subject to this limit.

Reasons: Results of studies documented in Recommendation ITU–R SM.1633 show that large numbers of higher power fixed service transmitters can cause significant levels of unwanted emissions in the 1 400–1 427 MHz passive band. Considering equitable burden-sharing between the active and passive services, the single-entry unwanted emission limit proposed for future systems will slightly exceed the desired protection level of the EESS (passive) sensors in some cases, but will still allow the collection of valuable scientific data and will not place an undue burden on the future development and use of the fixed service in these nearby bands.

USA/ /3 NOC

No change to Radio Regulations regarding the radiolocation service allocation in the band 1 350–1 400 MHz.

Reasons: Although studies documented in Recommendation ITU–R SM.1633 show that the radiolocation unwanted emissions in the EESS (passive) band at 1 400–1 427 MHz would exceed the permissible interference threshold in Recommendation ITU–R SA.1029–2, any interference would occur for only short time periods and would be readily discernible by users of the remote sensing data, allowing corrupted data to be discarded. The remaining uncorrupted data is expected to satisfy the scientific objectives of the EESS missions. Studies also show that radars would experience unacceptable degradation in operational coverage and range, target resolution, and accuracy if required to meet unwanted emission limits in the 1 400–1 427 MHz band. As with other pairs of active and passive bands, use of portions of the allocated bands must not be restricted. Radars would suffer an increased likelihood of interference from other radars and a reduction in coverage range, while a reduced bandwidth would be inadequate for remote sensing requirements.

USA/ /4 ADD

5.BBB In order to ensure the protection of the Earth exploration-satellite (passive) service in the band 1 400–1 427 MHz, the unwanted emissions e.i.r.p. of any earth station in the space operation service (Earth-to-space) operating in the band 1 427–1 429 MHz shall be limited to 8 dBW in the 27 MHz reference bandwidth of the band 1 400–1 427 MHz. Space operation service earth stations in operation at the date of entry into force of the Final Acts of WRC-07 are not subject to this limit.

Reasons: Results of studies documented in Recommendation ITU–R SM.1633 show that earth station transmitters in the 1 427–1 429 MHz band can cause significant levels of unwanted emissions in the 1 400–1 427 MHz passive band. Considering equitable burden-sharing between the active and passive services, the single-entry unwanted emission limit proposed for future systems will slightly exceed the desired protection level of the EESS (passive) sensors in some cases, but will still allow the collection of valuable scientific data and will not place an undue burden on the future development and use of the space operation service (Earth-to-space) in the 1 427–1 429 MHz band.

22-24.75 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
….		
22.55-23.55	FIXED INTER-SATELLITE MOBILE 5.149	
23.55-23.6	FIXED MOBILE	
23.6-24	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	
….		

USA/ /5 NOC

No change to Radio Regulations regarding the inter-satellite service allocation in the band 22.55–23.55 GHz.

Reasons: Results of studies documented in Recommendation ITU–R SM.1633 show that unwanted emissions from the ISS in the 22.55–23.55 GHz band are well below the recommended protection criteria for the EESS (passive) in the 23.6–24.0 GHz band. Therefore, no changes are needed to the Radio Regulations to protect the EESS (passive) in the 23.6–24.0 GHz band from unwanted emissions from the ISS in the 22.55–23.55 GHz band.

USA/ /6 MOD

29.9-34.2 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
….		
30-31	FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) Standard frequency and time signal-satellite (space-to-Earth) 5.542	
31-31.3	FIXED 5.543A ADD 5.CCC MOBILE Standard frequency and time signal-satellite (space-to-Earth) Space research 5.544 5.545 5.149	
31.3-31.5	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	
….		

USA/ /7 NOC

No change to Radio Regulations regarding the fixed-satellite service (Earth-to-space) allocation in the band 30-31 GHz.

Reasons: Results of studies documented in Recommendation ITU–R SM.1633 show that unwanted emissions from the FSS in the 30-31 GHz band do not exceed the recommended protection criteria for the EESS (passive) in the 31.3-31.5 GHz band. The FSS allocation is separated from the EESS (passive) allocation by 300 MHz, which greatly reduces the possibility of FSS unwanted emissions exceeding the protection criteria in the EESS (passive) band. Unwanted emission limits in the EESS (passive) band are unnecessary, and could constrain the future development of FSS uplink transmitters in the 30-31 GHz band.

USA/ /8 ADD

5.CCC In order to ensure the protection of the Earth exploration-satellite (passive) service in the band 31.3–31.5 GHz, the unwanted emissions power delivered to the antenna of any station in the fixed service operating in the band 31.0–31.3 GHz shall be limited to –38 dBW in any 100 MHz reference bandwidth in the band 31.3–31.5 GHz (see also No. **5.543A**). Fixed service systems in operation at the date of entry into force of the Final Acts of WRC–07 are not subject to this limit.

Reasons: Studies documented in Recommendation ITU–R SM.1633 indicate that EESS (passive) systems in the 31.3–31.5 GHz band are protected if unwanted emissions in that band from fixed service transmitters in the 31.0–31.3 GHz band do not exceed –38 dBW in any 100 MHz reference bandwidth. Measures to ensure that future FS systems in the 31.0–31.3 GHz band do not exceed this level will not constitute an undue burden on the fixed service.

USA/ /9 MOD

40-47.5 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
….		
47.2-47.5	FIXED FIXED-SATELLITE (Earth-to-space) 5.552 <u>ADD 5.DDD</u> MOBILE 5.552A	

47.5-51.4 GHz

<table>
<tr><th colspan="3">Allocation to services</th></tr>
<tr><th>Region 1</th><th>Region 2</th><th>Region 3</th></tr>
<tr><td>47.5-47.9
FIXED
FIXED-SATELLITE
(Earth-to-space) 5.552 ADD 5.DDD
(space-to-Earth) 5.516B 5.554A
MOBILE</td><td colspan="2">47.5-47.9
FIXED
FIXED-SATELLITE (Earth-to-space) 5.552 ADD 5.DDD
MOBILE</td></tr>
<tr><td>47.9-48.2</td><td colspan="2">FIXED
FIXED-SATELLITE (Earth-to-space) 5.552 ADD 5.DDD
MOBILE
5.552A</td></tr>
<tr><td>48.2-48.54
FIXED
FIXED-SATELLITE
(Earth-to-space) 5.552 ADD 5.DDD
(space-to-Earth) 5.516B 5.554A 5.555B
MOBILE</td><td colspan="2" rowspan="3">48.2-50.2
FIXED
FIXED-SATELLITE (Earth-to-space) 5.516B 5.552 ADD 5.DDD
MOBILE</td></tr>
<tr><td>48.54-49.44
FIXED
FIXED-SATELLITE
(Earth-to-space) 5.552 ADD 5.DDD
MOBILE
5.149 5.340 5.555</td></tr>
<tr><td>49.44-50.2
FIXED
FIXED-SATELLITE
(Earth-to-space) 5.552 ADD 5.DDD
(space-to-Earth) 5.516B 5.554A 5.555B
MOBILE</td></tr>
<tr><td>50.2-50.4</td><td colspan="2">EARTH EXPLORATION-SATELLITE (passive)
SPACE RESEARCH (passive)
5.340</td></tr>
<tr><td>50.4-51.4</td><td colspan="2">FIXED
FIXED-SATELLITE (Earth-to-space) ADD 5.DDD
MOBILE
Mobile-satellite (Earth-to-space)</td></tr>
</table>

USA/ /10 ADD

5.DDD In order to ensure the protection of the Earth exploration-satellite (passive) service in the band 50.2-50.4 GHz, the unwanted emissions e.i.r.p. of any earth station in the fixed-satellite service operating in the band 47.2-50.2 GHz in Regions 2 and 3, 49.44-50.2 GHz in Region 1, and 50.4-51.4 GHz in all Regions shall be limited to 30 dBW in the 200 MHz reference bandwidth of the band 50.2-50.4 GHz. Fixed-satellite service systems in operation at the date of entry into force of the Final Acts of WRC-07 are not subject to this limit.

Reasons: Results of studies documented in Recommendation ITU–R SM.1633 show that fixed-satellite service uplink transmitters operating in bands adjacent to then 50.2-50.4 GHz passive band can cause significant levels of unwanted emissions in the 50.2-50.4 GHz passive band.

USA/ /11 MOD

51.4-55.78 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
51.4-52.6	FIXED <u>ADD 5.EEE</u> MOBILE 5.547 5.556	
52.6-54.25	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340 5.556	
….		

USA/ /12 ADD

5.EEE In order to ensure the protection of the Earth exploration-satellite (passive) service in the band 52.6–54.25 GHz, the unwanted emissions power delivered to the antenna of any station in the fixed service operating in the band 51.4–52.6 GHz shall be limited to –33 dBW in any 100 MHz reference bandwidth in the band 52.6–54.25 GHz. Fixed-service systems in operation at the date of entry into force of the Final Acts of WRC-07 are not subject to this limit.

Reasons: Studies documented in Recommendation ITU–R SM.1633 indicate that EESS (passive) systems in the 52.6–54.25 GHz band are protected if unwanted emissions in that band from fixed service transmitters in the 51.4–52.6 GHz band do not exceed –33 dBW in any 100 MHz reference bandwidth. Measures to ensure that future FS systems in the 51.4–52.6 GHz band do not exceed this level will not constitute an undue burden on the fixed service.

USA/ /13 SUP

RESOLUTION 738 (WRC-03)

Compatibility analyses between the Earth exploration-satellite service (passive) and active services

Reasons: Consequential to completion of this agenda item. All of the actions required under this Resolution will have been completed at WRC-07 and it may be suppressed. The technical studies will either have confirmed that the unwanted emissions do not interfere with the EESS (passive) or appropriate regulatory measures, if necessary, will have been determined and decided by WRC-07.

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