

United States of America

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda item 1.25: *to consider possible additional allocations to the mobile-satellite service in accordance with Resolution 231 (WRC-07);*

Background

Working Party 4C was the lead ITU-R Working Party for developing information related to Agenda Item 1.25 (WRC-12). It initiated this activity through a set of Liaison statements to other Working Parties requesting information on certain spectrum allocations of interest. The bands of interest were those which were potential candidates for additional mobile-satellite service (MSS) allocations.

Working Parties to which the liaisons were sent were those with services/bands that were of potential interest. The return Liaison Statements from the Working Parties included reference to various protection criteria and related ITU-R Recommendations. These were developed to provide for the sharing of the allocations by the services in the band whether of the same service or other services. Based on the responses from other Working Parties, WP 4C undertook sharing studies to determine if compatibility with the services already using the allocations could be achieved.

The Executive Summary of the draft CPM text for this agenda item indicates that studies of possible bands for new allocations to the MSS were developed in the (Earth-to-space) and (space-to-Earth) directions, with particular focus on the range 4-16 GHz, taking into account sharing and compatibility, without placing undue constraints on existing services in this band. Based on the results of studies, an appropriate amount of spectrum may be made available to the MSS systems in the 4-16 GHz range to overcome the shortfall of spectrum for the present and future MSS systems. The total requirements for the MSS in the 4-16 GHz range for the year 2020 are estimated to be between 240 and 335 MHz in each direction, and are contained in PDNRep ITU-R M.[MSS-REQS].

The Draft CPM text sets forth several Methods for each of the bands under consideration. The bands under consideration are indicated in the Table below. In general, the Methods of interest to the MSS proponents: Method A2, B2, C2, D2, E, F2, which provide for sharing with the incumbent services, are reflected in the proposals below.

FREQUENCY BAND	MSS DIRECTION (DL = DOWNLINK) (UL = UPLINK)
5150-5250 MHZ	DL
7055-7250 MHZ	DL
8400-8500 MHZ	UL

10.5 - 10.6 GHZ	DL
13.25-13.4 GHZ	DL
15,43-15.63 GHZ	UL

This document addresses a sub-set of the above frequency bands (5150-5250 MHz, 7055-7125 MHz and 10.55-10.6 GHz). The other bands are the subject of separate proposals.

Proposals:

ARTICLE 5

Frequency allocations

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Section IV – Table of Frequency Allocations
(See No. 2.1)

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MOD USA/1.25/1

4 800-5 570 MHz

Allocation to services		
Region 1	Region 2	Region 3
* * * * *		
5 150-5 250	AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to-space) 5.447A MOBILE except aeronautical mobile 5.446A 5.446B MOBILE-SATELLITE (space-to-Earth) 5.446 5.446C 5.447 5.447B 5.447C 5.MSS	
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ADD USA/1.25/2

5.MSS Use of the band 5 150-5 250 MHz by the mobile-satellite service is limited to geostationary satellite systems and is subject to the application of the provisions of No. **9.13** with respect to non-geostationary-satellite systems in the fixed-satellite service. Use of the band 5 150-5 250 MHz by the mobile-satellite service is also subject to the application of the provisions of No. **9.14** with respect to the aeronautical mobile service in the countries listed in No. **5.446C**.

Reason: To allocate 5150-5250 MHz to MSS in the downlink direction limited to geostationary satellite systems and to apply coordination with NGSO MSS feeder link systems and AMT.

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MOD USA/1.25/3

5 570-7 250 MHz

Allocation to services		
Region 1	Region 2	Region 3
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6 700-7 055	FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441 MOBILE 5.458 5.458A 5.458B 5.458C	
7 055-7 075	FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) 5.458 5.458A 5.458B 5.458C 5.MSS1 5.MSS2	
7 075-7 125 5.459 5.MSS1	FIXED MOBILE MOBILE-SATELLITE (space-to-Earth)	5.458
7 125-7 145	FIXED MOBILE 5.458 5.459	
7 145-7 235	FIXED MOBILE SPACE RESEARCH (Earth-to-space) 5.460 5.458 5.459	
7 235-7 250	FIXED MOBILE 5.458	

ADD USA/1.25/4

5.MSS1 Use of the band 7 055-7 125 MHz by the mobile-satellite service is limited to geostationary satellite systems and is subject to application of No. **9.21**. The use of this band by the mobile-satellite service is subject to application of the provisions of No. **9.14**.

Reason: To allocate 7055-7125 MHz to MSS in the downlink direction limited to geostationary satellite systems and to apply coordination mechanisms.

ADD USA/1.25/5

5.MSS2 Use of the band 7 055-7 075 MHz by geostationary-satellite systems in the mobile-satellite service is subject to the application of the provisions of No. **9.13** with respect to non-geostationary-satellite systems in the fixed-satellite service.

Reason: To address sharing between MSS systems and NGSO FSS systems.

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MOD USA/1.25/6

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10-11.7 GHz

Allocation to services		
Region 1	Region 2	Region 3
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10.5-10.55 FIXED MOBILE Radiolocation	10.5-10.55 FIXED MOBILE RADIOLOCATION	
10.55-10.6 MOBILE-SATELLITE (space-to-Earth)	FIXED MOBILE except aeronautical mobile Radiolocation 5.MSS3	
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ADD USA/1.25/7

5.MSS3 Use of the band 10.55-10.6 GHz by the mobile-satellite service is limited to geostationary satellite systems and is subject to application of the provisions of No. **9.14**.

Reason: To allocate 10.55-10.6 GHz to MSS in the downlink direction limited to geostationary satellite systems and to apply coordination mechanisms.

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ARTICLE 21

Terrestrial and space services sharing frequency bands above 1 GHz

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MOD USA/1.25/8

Section V – Limits of power flux-density from space stations

21.16 § 6 1) The power flux-density at the Earth’s surface produced by emissions from a space station, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the limit given in Table **21-4**. The limit relates to the power flux-density which would be obtained under assumed free-space propagation conditions and applies to emissions by a space station of the service indicated where the frequency bands are shared with equal rights with the fixed or mobile service, unless otherwise stated.

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TABLE 21-4 (continued) (Rev.WRC-07)

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°	
3 400-4 200 MHz	Fixed-satellite (space-to-Earth) (geostationary-satellite orbit)	-152	-152 + 0.5(δ - 5)	-142	4 kHz
3 400-4 200 MHz	Fixed-satellite (space-to-Earth) (non-geostationary-satellite orbit)	-138 - Y _{17,18}	-138 - Y _{17,18} + (12 + Y _{17,18})(δ - 5)/20	-126 ¹⁸	1 MHz
5 150-5 250 MHz	Mobile-satellite (space-to-Earth)	-113			1 MHz
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Reason: To apply provisions to protect RLANs.

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ARTICLE 22

Space services¹

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ADD USA/1.25/9

[Editorial note: Provision to be developed for Article 22 to protect NGSO FSS feeder link space station receivers.]

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¹ **A.22.1** In applying the provisions of this Article, the level of accepted interference (see No. **1.168**) shall be fixed by agreement between the administrations concerned, using the relevant ITU-R Recommendations as a guide.

APPENDIX 5 (Rev.WRC-07)

Identification of administrations with which coordination is to be effected or agreement sought under the provisions of Article 9

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MOD USA/1.25/10

TABLE 5-1 (continued) (WRC-12)

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
No. 9.13 GSO/ non-GSO	A station in a GSO satellite network in the frequency bands for which a footnote refers to No. 9.11A or No. 9.13, in respect of any other non-GSO satellite network, with the exception of coordination between earth stations operating in the opposite direction of transmission	Frequency bands for which a footnote refers to No. 9.11A or No. 9.13	1) Bandwidths overlap 2) For the band 1 668-1 668.4 MHz with respect to MSS network coordination with SRS (passive) networks, in addition to bandwidth overlap, the e.i.r.p. spectral density of mobile earth stations in a GSO network of the mobile-satellite service operating in this band exceeds -2.5 dB(W/4 kHz) or the power spectral density delivered to the mobile earth station antenna exceeds -10 dB(W/4 kHz)	1) Check by using the assigned frequencies and bandwidths 2) Check by using MSS network Appendix 4 data	
No. 9.14 Non-GSO/ terrestrial, GSO/ terrestrial	A space station in a satellite network in the frequency bands for which a footnote refers to No. 9.11A or to No. 9.14, in respect of stations of terrestrial services where threshold(s) is (are) exceeded	1) Frequency bands for which a footnote refers to No. 9.11A; or 2) 11.7-12.2 GHz (Region 2 GSO FSS)	1) See § 1 of Annex 1 to this Appendix; In the bands specified in No. 5.414A, the detailed conditions for the application of No. 9.14 are provided in No. 5.414A for MSS networks or 2) In the band 11.7-12.2 GHz (Region 2 GSO FSS): $-124 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for $0^\circ \leq \theta \leq 5^\circ$ $-124 + 0.5 (\theta - 5) \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for $5^\circ < \theta \leq 25^\circ$ $-114 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for $\theta > 25^\circ$ where θ is the angle of arrival of the incident wave above the horizontal plane (degrees)	1) See § 1 of Annex 1 to this Appendix	

		<p>3) 5 150-5 250 MHz (GSO MSS with respect to countries listed in No. 5.446C)</p> <p>4) 7 055-7 125 MHz (GSO MSS)</p> <p>5) 10.55-10.6 GHz (GSO MSS)</p>	<p>3) In the band 5 150-5 250 MHz (GSO MSS): $-135 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for $0^\circ \leq \theta \leq 5^\circ$ $-135 + 2*(\theta - 5) \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for $5^\circ < \theta \leq 15^\circ$ $-115 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for $\theta > 15^\circ$ where θ is the angle of arrival of the incident wave above the horizontal plane (degrees)</p> <p>4) In the band 7 125-7 250 MHz (GSO MSS): $-140 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for $0^\circ \leq \theta \leq 5^\circ$ $-140 + 5/3*(\theta - 5) \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for $5^\circ < \theta \leq 20^\circ$ $-115 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for $\theta > 20^\circ$ where θ is the angle of arrival of the incident wave above the horizontal plane (degrees)</p> <p>5) In the band 10.55-10.6 GHz (GSO MSS): $-140 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for $0^\circ \leq \theta \leq 5^\circ$ $-140 + 5/3*(\theta - 5) \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for $5^\circ < \theta \leq 20^\circ$ $-115 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for $\theta > 20^\circ$ where θ is the angle of arrival of the incident wave above the horizontal plane (degrees)</p>		<p>To protect aeronautical mobile telemetry in the countries specified in No. 5.446C .</p>
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Reason: To apply provisions to protect terrestrial services operating in the 7055-7125 MHz and 10.55-10.6 GHz, and AMT in 5150-5250 MHz.

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MOD USA/1.25/11

APPENDIX 7 (Rev.WRC-07)

[To be developed: Modifications to Appendix 7 for 5150-5250 MHz, 7055-7125 MHz, and 10.55-10.6 GHz for MSS earth stations (Table 7b).]

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