

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

Proposals:

ARTICLE 5

Frequency allocations

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

MOD USA/1.25/1

4800-5570 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 <u>MOBILE-SATELLITE (space-to-Earth) 5.MSS</u> 5.446 5.446C 5.447 5.447B 5.447C	

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 orbit 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. No. **22.2** does not apply. 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**.

MOD USA/1.25/3

5 570-7 250 MHz

Allocation to services		
Region 1	Region 2	Region 3
* * * * *		
6 700-7 055	FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441 MOBILE 5.458 5.458A 5.458B 5.458C	Deleted: 075
7 055-7 075	FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) 5.MSS2 5.MSS3 5.MSS5 5.458 5.458A 5.458B 5.458C	
7 075-7 145	FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.MSS2 5.MSS3 5.458 5.459	Deleted: ¶
7 145-7 235	FIXED MOBILE SPACE RESEARCH (Earth-to-space) 5.460 MOBILE-SATELLITE (space-to-Earth) 5.MSS2 5.MSS3 5.MSS4 5.458 5.459	
7 235-7 250	FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.MSS2 5.MSS3 5.458	

ADD USA/1.25/4

5.MSS2 Use of the band 7 055-7 250 MHz by the mobile-satellite service is limited to geostationary orbit systems.

ADD USA/1.25/5

5.MSS3 The use of the band 7 055-7 250 MHz by the mobile-satellite service is subject to application of the provisions of No. **9.14**.

ADD USA/1.25/6

5.MSS4 In the band 7 145-7 235 MHz, Resolution [SRS-MSS] shall apply. In this band, earth stations in the mobile-satellite service shall not claim protection from earth stations in the space research service.

ADD USA/1.25/7

5.MSS5 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. No. **22.2** does not apply.

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ADD USA/1.25/8

7 250-8 500 MHz

Allocation to services		
Region 1	Region 2	Region 3
* * * * *		
8 400-8 500	FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) 5.465 5.466 <u>MOBILE-SATELLITE (Earth-to-space) 5.MSS6 5.MSS7</u>	
* * * * *		

ADD USA/1.25/9

5.MSS6 In the band 8 400-8 500 MHz, Resolution MSS2 shall apply.

ADD USA/1.25/10

5.MSS7 Use of the bands 8 400-8 500 MHz by the mobile-satellite service is limited to geostationary orbit systems.

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MOD USA/1.25/11

10-11.7 GHz

Allocation to services		
Region 1	Region 2	Region 3
* * * * *		
10.5-10.55 FIXED MOBILE <u>MOBILE-SATELLITE (space-to-Earth) 5.MSS8</u> Radiolocation	10.5-10.55 FIXED MOBILE RADIOLOCATION <u>MOBILE-SATELLITE (space-to-Earth) 5.MSS8</u>	
10.55-10.6	FIXED MOBILE except aeronautical mobile <u>MOBILE-SATELLITE (space-to-Earth) 5.MSS8</u> Radiolocation	
* * * * *		

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ADD USA/1.25/12

5.MSS8 Use of the band 10.5-10.6 GHz by the mobile-satellite service is limited to geostationary orbit systems and is subject to application of the provisions of No. **9.14**.

ARTICLE 21

Terrestrial and space services sharing frequency bands above 1 GHz

MOD USA/1.25/13

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.

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 + (12 + Y)(δ - 5)/20 _{17,18}	-126 ¹⁸	1 MHz
<u>5 150-5 250 MHz</u>	<u>Mobile-satellite (space-to-Earth)</u>	<u>-113</u>			<u>1 MHz</u>

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ARTICLE 22

Space services¹

ADD USA/1.25/14

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.

Section VII – Control of interference to space research service space stations

22.40 In the frequency band 7 145-7 190 MHz, the maximum power flux-density produced in deep space (space at distances from the Earth equal to, or greater than, 2×10^6 km) by a geostationary-satellite system in the mobile-satellite service shall not exceed -199.5 dB(W/m²) in any 20 Hz band.

* * * * *

APPENDIX 5 (Rev.WRC-07)

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

MOD USA/1.25/15

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

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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	

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		<p>3) <u>5 150-5 250 MHz (GSO MSS with respect to countries listed in No. 5.446C)</u></p>	<p>3) <u>In the band 5 150-5 250-MHz (GSO MSS):</u> <u>-135 dB(W/(m² · MHz)) for 0° ≤ θ ≤ 5°</u> <u>-135 + 2*(θ - 5) dB(W/(m² · MHz)) for 5° < θ ≤ 15°</u> <u>-115 dB(W/(m² · MHz)) for θ > 15°</u> <u>where θ is the angle of arrival of the incident wave above the horizontal plane (degrees)</u></p>		<p><u>To protect aeronautical mobile telemetry in the countries specified in No. 5.446C.</u></p>	<p>Formatted: German (Germany)</p> <p>Formatted: Not Highlight</p> <p>Formatted: Font: Bold</p> <p>Formatted: German (Germany)</p> <p>Formatted: Not Highlight</p> <p>Formatted: Not Highlight</p> <p>Formatted: Not Highlight</p>
		<p>4) <u>7 055-7 250 MHz (GSO MSS)</u></p>	<p>4) <u>In the band 7 055-7 250 MHz (GSO MSS):</u> <u>-140 dB(W/(m² · MHz)) for 0° ≤ θ ≤ 5°</u> <u>-140 + 5/3*(θ - 5) dB(W/(m² · MHz)) for 5° < θ ≤ 20°</u> <u>-115 dB(W/(m² · MHz)) for θ > 20°</u> <u>where θ is the angle of arrival of the incident wave above the horizontal plane (degrees)</u></p>			<p>Formatted: German (Germany)</p> <p>Formatted: German (Germany)</p> <p>Formatted: German (Germany)</p> <p>Formatted: German (Germany)</p> <p>Formatted: Not Highlight</p> <p>Formatted: Not Highlight</p>
		<p>5) <u>10.5-10.6 GHz (GSO MSS)</u></p>	<p>5) <u>In the band 10.5-10.6 GHz (GSO MSS):</u> <u>-140 dB(W/(m² · MHz)) for 0° ≤ θ ≤ 5°</u> <u>-140 + 5/3*(θ - 5) dB(W/(m² · MHz)) for 5° < θ ≤ 20°</u> <u>-115 dB(W/(m² · MHz)) for θ > 20°</u> <u>where θ is the angle of arrival of the incident wave above the horizontal plane (degrees)</u></p>			<p>Formatted: German (Germany)</p> <p>Formatted: Not Highlight</p>

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MOD USA/1.25/16

APPENDIX 7 (Rev.WRC-07)

[To be developed: Modifications to Appendix 7 for 5150-5250 MHz, 7055-7250 MHz and 10.5-10.6 GHz.]

MOD USA/1.25/17

APPENDIX 7 (Rev.WRC-07)

Methods for the determination of the coordination area around an earth station in frequency bands between 100 MHz and 105 GHz

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TABLE 7b (WRC-12)

Parameters required for the determination of coordination distance for a transmitting earth station

* * * * *

Transmitting space radiocommunication service designation		Fixed-satellite, mobile-satellite, meteorological-satellite	
Frequency bands (GHz)		7.900-8.500	
Receiving terrestrial service designations		Fixed, mobile	
Method to be used		§ 2.1	
Modulation at terrestrial station ¹		A	N
Terrestrial station interference parameters and criteria	p_0 (%)	0.01	0.005
	n	2	2
	p (%)	0.005	0.0025
	N_L (dB)	0	0
	M_S (dB)	33	37
Terrestrial station parameters	W (dB)	0	0
	G_x (dBi) ⁴	46	46
	T_e (K)	750	750
Reference bandwidth	B (Hz)	4×10^3	10^6
Permissible interference power	$P_f(p)$ (dBW) in B	-131	-103

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RESOLUTION [SRS-MSS] (WRC-12)

Provisions for operational coordination of mobile-satellite service space stations with space research service space stations during periods of operation at less than 2×10^6 km from the Earth in the band 7 145-7 235 MHz

The World Radiocommunication Conference (Geneva) 2012,

considering

- a) that the band 7 145-7 235 MHz is allocated to the space research service (Earth-to-space), the fixed service and the mobile service;
- b) that WRC-12 added an allocation in the band 7 145-7 235 MHz to the mobile-satellite service (MSS) in the space-to-Earth direction limited to geostationary satellite orbit systems (GSO);
- c) that No. **5.460** provides that use of the band 7 145-7 190 MHz by the space research service (Earth-to-space) is restricted to deep space;
- d) that deep space missions include rare but critical near Earth phases such as launch and early operation phases, Earth fly-bys or sample returns where the mission operates at less than 2×10^6 km from the Earth and thus it may suffer harmful interference from the transmissions of GSO MSS space stations;
- e) that these near earth phases of deep space missions occur infrequently and for limited durations of time;
- f) that deep space transmissions occur in predetermined 3 MHz channels at predetermined times;
- g) that the MSS operator can control the timing of its transmissions in the space-to-Earth direction in a particular 3 MHz band;
- h) that the 7 190-7 235 MHz band is used by near Earth SRS systems, which operate at less than 2×10^6 km from the Earth;
- i) that the near Earth SRS space stations could employ orbits where harmful interference could be received from MSS space stations;
- j) that the near Earth SRS space stations in the 7 190-7 235 MHz band have regular orbits and transmit in predetermined channels;

k) that there are likely to be a limited number of operational GSO MSS satellites due to necessary orbital separations to avoid interference to small MSS earth stations;

l) that the information on channel, launch, orbit and transmissions of SRS operating in this band are predictable,

recognizing

a) that Article 9 has provisions applicable to coordination between satellite systems and networks operating in the same band;

b) that the provisions in Article 9 are not sufficient for addressing the relatively short term and infrequent nature of the interference situations described in *considerings d) and e)* above,

resolves

1) that under the provisions of Annex 1 to this Resolution, the operator of a MSS network shall coordinate its operations in the 7 145-7 190 MHz band with the operators of deep space systems and shall coordinate its operations in the 7 190-7 235 MHz band with the operators of near earth systems;

2) that when information of anticipated deep space transmissions are provided to the operators of MSS networks in accordance with Annex 1, the MSS network operators will effect the cessation of space station transmissions that could cause harmful interference to the SRS mission.

Annex 1 to Resolution [SRS-MSS]

Procedures for operational coordination of mobile-satellite service space stations with space research service space stations during periods of operation at less than 2×10^6 km from the Earth in the band 7 145-7 235 MHz

1) The notifying administration for MSS systems in this band shall ensure that such systems follow the provisions of this Annex.

2) The potentially concerned administrations referred to in the previous item 1) are those who have submitted advance publication information for systems in the space research service in the band 7 145-7 235 MHz.

3) Administrations who have submitted the advance publication information in previous item 2) shall maintain a list of contact points for operational coordination of its SRS systems under this Resolution.

- 4) Administrations referred to in previous item 3) shall provide this contact information to the Bureau for maintenance in a list of SRS contact points under this Resolution. The contact information shall include names, addresses, email addresses and telephone numbers. The Bureau shall maintain the list of contact information on its website.
- 5) Prior to launch of an MSS system, the MSS system operator shall provide the name, address, email address and telephone number for its contact point for operation coordination to the SRS contact points on the Bureau's website.
- 6) Prior to launch of an MSS system, the MSS system operator shall provide information on the frequency plan, coverage area and other relevant technical details on its satellite system to the list of SRS contact points. This information may be supplied by referencing the associated coordination request publication, or by providing additional information, as deemed most appropriate by the MSS system operator.
- 7) The SRS system operators shall analyze this information and use it to determine when one of their near Earth phase operations as described in *considerings d) and h)* might receive harmful interference from MSS downlink transmissions.
- 8) With respect to near Earth phase operations of a deep space as described in *considering d)*:
 - a) As early as possible but not less than 60 days prior to a planned near Earth phase operation of a deep space mission, the SRS system operator shall provide the details of the requirement for MSS interruption of transmissions including the basis for the request (information described in Annex 2) to the MSS system operators using the contact information provided under previous item 5). The SRS system operator will minimize the time period associated with its request for alteration of MSS operations to the minimum necessary period, in order to minimize the constraints on the MSS systems.
 - b) The MSS system operator, having received this information, will not operate on the described 3 MHz channel during the requested time period. Should any dialogue be required, the MSS system operator shall inform the SRS system operator as soon as possible but at least within 30 days of receiving the notification.
- 9) With respect to near Earth missions as described in *considerings h) and i)*:
 - a) As early as possible prior to operation of a near Earth mission that the SRS operator believes may receive harmful interference based on its analysis under previous item 7), the SRS system operator shall provide the details of its analysis including the information described in Annex 2 to the MSS system operators using the contact information provided under previous item 5). The two operators shall work together to reach a solution where

the MSS system does not cause harmful interference to the SRS near Earth mission.

10) The parties involved in a near Earth coordination under this Resolution shall cooperate to the maximum extent possible to minimize the constraints on both parties.

11) MSS system operators shall comply with any additional limitations agreed by the licensing and other concerned administrations.

Annex 2 to Resolution [SRS-MSS]

Information on near Earth phases of deep space missions or near Earth missions to be provided to MSS operators

[To be developed]

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ADD USA/1.25/19

RESOLUTION [SRS-MSS2] (WRC-12)

Provisions for coordination of stations in the mobile-satellite service with space research systems in the band 8 400-8 500 MHz

The World Radiocommunication Conference (Geneva 2012),

considering

- a) that the band 8 400-8 500 MHz is allocated to the space research service (space-to-Earth), the fixed service and the mobile service;
- b) that No. **5.465** provides that use of the band 8 400-8 450 MHz by the space research service (Earth-to-space) is limited to deep space;
- c) that WRC-12 added an allocation in the band 8 400-8 500 MHz to the mobile-satellite service (MSS) in the Earth-to-space direction limited to geostationary satellite orbit systems (GSO);
- d) that deep space missions include rare but very critical near Earth phases such as launch and early operation phases, Earth fly-bys or sample returns, where the mission's orbit may be such that it may cause harmful interference to GSO MSS space stations;

- e) that these near earth phases of deep space missions occur infrequently and for limited durations of time;
- f) that deep space transmissions occur in predetermined channels of typically up to 12 MHz of bandwidth at predetermined times;
- g) that the MSS operator can control the timing of its transmissions in the space-to-Earth direction in a particular band;
- h) that the 8 450-8 500 MHz band is used by near Earth SRS systems, which operate at less than 2×10^6 km from the Earth;
- i) that the near Earth SRS space stations could employ orbits where interference could be caused to receiving MSS space stations;
- j) that the near Earth SRS space stations in the 8 450-8 500 MHz band have regular orbits and transmit in predetermined channels;
- k) that there are likely to be a limited number of GSO MSS space stations due to necessary orbital separations to avoid interference to small MSS earth stations;
- l) that the information on channel, launch, orbit and transmissions of SRS operating in this band is predictable;
- m) that coordination can be facilitated on an operational basis between the space stations of the MSS and the near Earth phases of deep space missions;
- n) that SRS earth stations require protection in the band 8 400-8 500 MHz, and that such protection can be achieved through requiring that MSS earth stations observe certain separation distances;
- o) that the MSS earth station separation distances referenced in *considering m)* depend on the azimuth angles in the direction of the SRS station;
- p) that technology exists for MSS earth stations to implement such separation distances;

recognizing

- a) that Article 9 has provisions applicable to coordination between satellite systems and networks operating in the same band;
- b) that the provisions in Article 9 are not sufficient for addressing the relatively short term and infrequent nature of the interference situations described in *considerings d), e) and i)* above,

c) that without special regulatory provisions MSS earth stations could place an extra burden on near Earth SRS systems in the band 8 450-8 500 MHz;

resolves

1) that under the provisions of Annex 1 to this Resolution, the operator of a MSS network shall coordinate its operations in the 8 400-8 500 MHz band with the operators of SRS systems;

2) that MSS earth stations operating in the band 8 400-8 500 MHz shall track the MSS satellite to facilitate protection of SRS earth stations regardless of location;

3) that MSS earth stations shall observe the exclusion zones established in accordance with Annex 3 through the incorporation of software in the MSS system to ensure cessation of transmissions in the exclusion zones near SRS earth stations;

Annex 1 to Resolution [SRS-MSS2]

Procedures for operational coordination of mobile-satellite service space stations with space research service space stations in the band 8 400-8 500 MHz

1) The notifying administration for MSS systems in this band shall ensure that such systems follow the provisions of this Annex and thus minimize the potential to receive unacceptable interference from the space research services of other concerned administrations.

2) The potentially concerned administrations referred to in the previous item 1) are those who have submitted advance publication information for systems in the space research service in the band 8 400-8 500 MHz.

3) Administrations who have submitted the advance publication information in previous item 2) shall maintain a list of contact points for operational coordination of its SRS systems under this Resolution.

4) Administrations referred to in previous item 3) shall provide this contact information to the Bureau for maintenance in a list of SRS contact points under this Resolution. The contact information shall include names, addresses, email addresses and telephone numbers. The Bureau shall maintain the list of contact information on its website.

5) Prior to launch of an MSS system, the MSS system operator shall provide the name, address, email address and telephone number for its contact point for operation coordination to the SRS contact points on the Bureau's website.

- 6) Prior to launch of an MSS system, the MSS system operator shall provide information on the frequency plan, coverage area and other relevant technical details on its satellite system to the list of SRS contact points.
- 7) With respect to near Earth phase operations of a deep space:
 - 7.1) As early as possible but not less than 60 days prior to a planned near Earth phase operation of a deep space mission, the SRS system operator shall provide the details of its planned operations (as described in Annex 2) to the MSS system operators using the contact information provided under previous item 5).
 - 7.2) The MSS system operator, having received this information, will determine if further dialogue is required. Should any dialogue be required, the MSS system operator shall inform the SRS system operator as soon as possible but at least within 30 days of receiving the notification.
- 8) With respect to near Earth missions:
 - 8.1) At the request of the MSS operator, the SRS system operators shall provide, within 30 days of such request, information on actual Earth-to-space transmission characteristics of their near-Earth missions which, in the view of the MSS operator, may cause harmful interference to their respective MSS satellite networks, so as to enable the MSS operators to take preventative measures. The list of characteristics to be provided is defined in Annex 2.
- 9) The parties involved in a near Earth coordination shall cooperate to the maximum extent possible to minimize the constraints on both parties.

Annex 2 to Resolution [SRS-MSS2]

Information on near Earth phases of deep space missions to be provided to MSS operators

[E.g., power levels, direction of transmissions, channel center frequencies and bandwidth, etc.; To be developed]

Annex 3 to Resolution [SRS-MSS2]

Definition of and implementation of exclusion zones where operation of MSS earth stations is not permitted around SRS earth stations

[To be developed]

USA/1.25/13.25-13.4 GHz [to be developed]

Introduction of an MSS primary downlink allocation in the band 13.25-13.4 GHz in RR Article 5, together with additional provisions in the RR to ensure necessary protection of existing services, developed based on the studies conducted in the Working Document towards a Preliminary Draft New Report ITU-R M.[MSS-SHARING], subject to the further development of the studies anticipated before WRC-12. This method entails the following provisions:

- Footnote in RR Article 5 limiting use of the MSS allocation to GSO systems.
- It may also be necessary to develop appropriate regulatory measures to address sharing between the MSS and ARNS (limited to Doppler navigation aids); and between the MSS and the EESS (active); and between the MSS and the space research (active) service. With regard to sharing with the ARNS, one option is to include MSS into the scope of RR No. **5.498A**.
- with respect to regulatory conditions for potentially affected receiving MESs, there are two options:
 - Option (1): A coordination process between terrestrial services and receiving MESs would be developed.
 - Option (2): Regulatory conditions to ensure that MESs shall not claim protection from terrestrial services (including the radiolocation service).

UAS/1.25/15.43-15.63 GHz [to be developed]

Introduction of a MSS primary uplink allocation in the band 15.43-15.63 GHz in RR Article 5, together with additional provisions in the RR to ensure necessary protection of existing services, developed based on the studies conducted in the Working Document towards a Preliminary Draft New Report ITU-R M.[MSS-SHARING], subject to the further development of the studies anticipated before WRC-12. The band allocated to MSS would take into account the possible need for an allocation in the range 15.4-15.7 GHz to address the requirements of UASs (WRC-12 Agenda item 1.3) and the requirements of radiolocation systems (WRC-12 Agenda item 1.21). For example allocations could be made to each of the three proposed new services in the range 15.4-15.7 GHz.

This method entails the following provisions:

- Footnote in RR Article 5 limiting use of the MSS allocation to GSO systems.
- It may also be necessary to develop appropriate regulatory measures to address sharing between MSS and ARNS (RR No. **4.10** applies); and between MSS and FSS (limited to non-GSO MSS feeder links).
- Measures for protection of the radio astronomy service in the nearby band, 15.35-15.4 GHz, may be required.

USA/1.25/RES 231 MOD

RESOLUTION 231 (WRC-07)

Additional allocations to the mobile-satellite service with particular focus on the bands between 4 GHz and 16 GHz

5/1.25/6.2 Methods A2, B2, C2, , D2, E2, F2, :
[TBD]