



ORGANIZACION DE LOS ESTADOS AMERICANOS
ORGANIZATION OF AMERICAN STATES

Comisión Interamericana de Telecomunicaciones
Inter-American Telecommunication Commission

**33 MEETING OF PERMANENT
CONSULTATIVE COMMITTEE II:
RADIOCOMMUNICATIONS
April 8 to 12, 2019
Monterrey, Nuevo Leon, Mexico**

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**INTER-AMERICAN PROPOSALS (IAPs) FOR WRC-19
OUTPUT DOCUMENT OF THE 33rd MEETING OF THE PCC.II
(Item on the Agenda: 3.1)**

(Documents submitted by the Coordinators)

Please **note that, the 33 Meeting of PCC.II resolved to request the Secretariat of CITEL to send to the International Telecommunication Union (ITU), the Inter-American Proposals (IAPs) developed for agenda items 1.1, 1.11, 1.12, 1.16 (5250-5350MHz), (5350-5470MHz) and (5850-5925MHz), 9.1 issues 9.1.2 and 9.1.8 of WRC-19 immediately after May 31, 2019*

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**33 MEETING OF PERMANENT
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INTER-AMERICAN PROPOSALS (IAPs) FOR WRC-19

AGENDA ITEM 1.1

(Item on the Agenda: 3.1 (SGT2))

(Document submitted by CITELE Member States)

SGT 2 A - Radiolocation, Amateurs, Maritime, Aeronautical

Coordinator: Michael Razi (CAN).

Alternate Coordinator: Corali Roura (USA)

Rapporteur of the Agenda Item: Flávio A. B. Archangelo (B).

Alternate Rapporteur Agenda Item: Jonathan Siverling (USA)

Agenda Item 1.1: *to consider an allocation of the frequency band 50-54 MHz to the amateur service in Region 1, in accordance with **Resolution 658 (WRC-15)***

Background

The WRC-19 agenda item 1.1, if adopted, would facilitate global harmonization of the 50-54 MHz frequency band for the Amateur Service.

The ITU currently allocates 50 – 54 MHz frequency band to the Amateur Service on a primary basis in Regions 2 and 3. In Region 1, the band is currently allocated to only the Broadcasting Service on a primary basis. However, No. 5.169 of the Radio Regulations provides for an alternate allocation to the Amateur Service on a primary basis to a number of countries in Region 1, and No. 5.165 provides an alternate Fixed and Mobile, except Aeronautical Mobile, allocation on a primary basis to a number of countries in Region 1.

WRC-15 decided to study the sharing between the Amateur Service and incumbent services in Region 1 towards a primary allocation that would facilitate further worldwide harmonisation and international operability.

The frequency range 30 - 80 MHz marks the transition area between ionospheric and non-ionospheric propagation modes, which makes it particularly interesting for experimentation and study within the Amateur Service.

Radio amateurs utilise allocations to the Amateur Service to engage in scientific and technical investigation and experimentation, provide communication in the wake of natural disasters, provide non-commercial public service communications, and conduct other activities to advance technical education, develop radio operating technique, and enhance international goodwill.

These characteristics and the use of the band fulfill the objective of the service as defined in article 1.56 of the Radio Regulations and engage the practitioners in scientific and technical investigations, as well as helping to develop radio operating techniques also useful for emergency communications.

INTER-AMERICAN PROPOSAL

Supports:

ARG, B, BAH, CAN, CLM, CTR, DOM, ECU, HND, JMC, MEX, PRG, URG, USA

NOC

IAP/1.1/1

ARTICLE 5
Frequency allocations
Section IV – Table of Frequency Allocations
(See No. 2.1)
47-75.2 MHz

Allocation to services		
Region 1	Region 2	Region 3
	50-54 AMATEUR	

Reasons: WRC-19 agenda item 1.1 is a Region 1 issue.

IAP/1.1/2

Support:

ARG, B, BAH, CAN, CLM, CTR, DOM, ECU, HND, JMC, MEX, PRG, URG, USA

Given that WRC-19 Agenda Item 1.1 is a Region 1 only issue, no change is proposed for Region 2. Furthermore, any changes made to the Radio Regulations under WRC-19 agenda item 1.1 must not impact the existing allocation to the Amateur Service in 50-54 MHz in Region 2, nor subject Region 2 to any changed procedural or regulatory provisions.

**33 MEETING OF PERMANENT
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INTER-AMERICAN PROPOSAL FOR WRC-19

AGENDA ITEM 1.4

(Item on the Agenda: 3.1)

(Document submitted by CITELE Member States)

SGT-3 – Satellite services

Coordinator: Brandon MITCHELL – USA

Alternate Coordinator: Juan MASCIOTRA – ARG; Chantal BEAUMIER - CAN

Rapporteur Agenda Item: Giselle CREESER - USA; Esthephania FLORES AGUILAR - MEX

Alternate Rapporteur Agenda Item:

Agenda item 1.4: *to consider the results of studies in accordance with Resolution 557 (WRC-15), and review, and revise if necessary, the limitations mentioned in Annex 7 to Appendix 30 (Rev.WRC 15), while ensuring the protection of, and without imposing additional constraints on, assignments in the Plan and the List and the future development of the broadcasting-satellite service within the Plan, and existing and planned fixed-satellite service networks;*

BACKGROUND

Annex 7 of Appendix **30 (Rev.WRC-15)** contains orbital position limitations for proposed modifications to the Region 2 Plan and for proposed new or modified assignments in the Regions 1 and 3 List applicable to specific parts of the frequency band 11.7-12.7 GHz.

WRC-15 adopted a new Resolution (Resolutions **557 (WRC-15)**) to study possible revisions of the orbital limitations in Annex 7 of Appendix **30 (Rev.WRC-15)** in the Radio Regulations

As described in the CPM Report, Method B represents a delicate compromise that merged various methods that were under consideration. The ITU studies have shown that certain limitations in Annex 7 to Appendix **30 (Rev.WRC-15)** cannot be suppressed while other limitations can be removed provided that appropriate technical and regulatory provisions are adopted.

This proposal is fully consistent with Method B as described in the CPM Report, which appropriately balances the use of additional orbital resources by the BSS subject to AP**30** while also ensuring that the FSS is not overly constrained. Consistent with Method B, the proposal includes modifications to Annex 7 of AP**30**, a Resolution that provides priority on the use of new BSS orbital positions to Regions 1 and 3 countries with Plan assignments with degraded reference situations, and a revision to Article **59** of the Radio Regulations to bring into force the modification to AP**30** Annex 7 limits and related Resolutions on 23 November 2019.

INTER-AMERICAN PROPOSALS (IAPs)

**ARTICLE 59
Entry into force and provisional application
of the Radio Regulations (WRC-12)**

Supports:

B, CAN, CLM, GTM, MEX, URG, USA

ADD IAP/1.4/1

59.15 The other provisions of these Regulations, as revised by WRC 19, shall enter into force on 1 January 2021, with the following exceptions: (WRC 19)

Supports:

B, CAN, CLM, GTM, MEX, URG, USA

ADD IAP/1.4/2

59.16 – the revised provisions for which other effective dates of application are stipulated in Resolution:
draft new Resolution [D14-ENTRY-INTO-FORCE] (WRC 19) (WRC 19)

APPENDIX 30 (REV.WRC-15)*

**Provisions for all services and associated Plans and List¹ for
the broadcasting-satellite service in the frequency bands
11.7-12.2 GHz (in Region 3), 11.7-12.5 GHz (in Region 1)
and 12.2-12.7 GHz (in Region 2) (WRC-03)**

Supports:

B, CAN, CLM, GTM, MEX, URG, USA

MOD IAP/1.4/3

**ANEXO 7 (REV.CMR-03)
Orbital position limitations**^{ADD YY, ADD zz}

Supports:

B, CAN, CLM, GTM, MEX, URG, USA

^{YY} See Resolution [A14-LIMITA3] (WRC 19).

^{zz} Resolution [C14-LIMITA1A2] (WRC-19) applies to broadcasting satellites serving areas in Region 1 in the band 11.7-12.2 GHz from nominal orbital positions further west than 37.2° W and broadcasting satellites serving areas in Region 2 in the band 12.5-12.7 GHz from nominal orbital positions further east than 54° W

MOD IAP/1.4/4

- 1) No broadcasting satellite serving an area in Region 1 and using a frequency in the band 11.7-12.2 GHz shall occupy a nominal orbital position further ~~west than 37.2° W or further east than 146° E.~~

**Supports:
B, CAN, CLM, GTM, MEX, URG, USA**

MOD IAP/1.4/5

- 2) No broadcasting satellite serving an area in Region 2 and using a frequency in the band 12.2-12.7 GHz that involves an orbital position different from that contained in the Region 2 Plan shall occupy a nominal orbital position:
- ~~a) further east than 54° W in the band 12.5-12.7 GHz; or~~
 - ~~b) further east than 44° W in the band 12.2-12.5 GHz; or~~
 - ~~c) further west than 175.2° W in the band 12.2-12.7 GHz.~~

However, modifications necessary to resolve possible incompatibilities during the incorporation of the Regions 1 and 3 feeder-link Plan into the Radio Regulations shall be permitted

**Supports:
B, CAN, CLM, GTM, MEX, URG, USA**

SUP IAP/1.4/6

- 3) The purpose of the following orbital position and e.i.r.p. limitations is to preserve access to the geostationary-satellite orbit by the Region 2 fixed-satellite service in the band 11.7-12.2 GHz. Within the orbital arc of the geostationary-satellite orbit between 37.2° W and 10° E, the orbital position associated with any proposed new or modified assignment in the Regions 1 and 3 List of additional uses shall lie within one of the portions of the orbital arc listed in Table 1. The e.i.r.p. of such assignments shall not exceed 56 dBW, except at the positions listed in Table 2.

**Supports:
B, CAN, CLM, GTM, MEX, URG, USA**

SUP IAP/1.4/7

TABLE 1
Allowable portions of the orbital arc between 37.2° W and 10° E for new or modified assignments in the Regions 1 and 3 Plan and List

Orbital position	37.2° W to 36° W	33.5°W to 32.5° W	30° W to 29° W	26° W to 24° W	20° W to 18° W	14° W to 12° W	8° W to 6° W	4° W ¹	2° W to 0°	4° E to 6° E	9° E ¹
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¹ Proposed new or modified assignments in the List which involve this orbital position shall not

exceed the power flux-density limit $-138 \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$ at any point in Region 2.

Supports:

B, CAN, CLM, GTM, MEX, URG, USA

SUP IAP/1.4/8

TABLE 2
Nominal positions in the orbital arc between 37.2° W and 10° E at which the e.i.r.p. may exceed the limit of 56 dBW

Orbital position	37° W ± 0.2°	33.5° W	30° W	25° W ± 0.2°	19° W ± 0.2°	13° W ± 0.2°	7° W ± 0.2°	4° W ¹	1° W ± 0.2°	5° E ± 0.2°	9° E ¹
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¹ Proposed new or modified assignments in the List which involve this orbital position shall not exceed the power flux-density limit $-138 \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$ at any point in Region 2.

Supports:

B, CAN, CLM, GTM, MEX, URG, USA

NOC IAP/1.4/9

B The Region 2 Plan is based on the grouping of the space stations in nominal orbital positions of $\pm 0.2^\circ$ from the centre of the cluster of satellites. Administrations may locate those satellites within a cluster at any orbital position within that cluster, provided they obtain the agreement of administrations having assignments to space stations in the same cluster. (See § 4.13.1 of Annex 3 to Appendix 30A.)

Supports:

B, CAN, CLM, GTM, MEX, URG, USA

ADD IAP/1.4/10

DRAFT NEW RESOLUTION [A14-LIMITA3] (WRC-19)
Protection of implemented BSS networks in the orbital arc of the geostationary-satellite orbit between 37.2° W and 10° E in the frequency band 11.7-12.2 GHz

The World Radiocommunication Conference (Sharm el-Sheikh, 2019),

considering

- a) that the provisions applying to the broadcasting-satellite service (BSS) in the frequency bands 11.7-12.5 GHz in Region 1, 12.2-12.7 GHz in Region 2 and 11.7-12.2 GHz in Region 3 are contained in Appendix 30;
- b) that systems in the fixed-satellite service (FSS) and the broadcasting-satellite service share the frequency band 11.7-12.2 GHz;
- c) that WRC-19 suppressed the limitation in Section 3 Annex 7 to Appendix 30 (Rev.WRC-15) which determined allowable portions of the orbital arc between 37.2° W and 10° E for new or modified assignments in the frequency band 11.7-12.2 GHz in the Regions 1 and 3 List;

- d) that Section 1 of Annex 1 to Appendix 30 (Rev.WRC-15) provides criteria used for determination of coordination requirements for frequency assignments of Regions 1 and 3 Plan and List;
- e) that Section 1 of Annex 1 to Appendix 30 (Rev.WRC-15) pfd mask values are based on the parameters adopted by WRC-2000 based on the minimum earth station receiving antenna size of 60 cm;
- f) that the use of this frequency band by the BSS is subject to the coordination procedure of Article 4 of Appendix 30 (Rev.WRC-19),

noting

- a) that the ITU Radiocommunication Sector (ITU-R) has carried out a significant amount of studies in preparation for conferences on BSS planning, and has developed a number of Reports and Recommendations;
- b) that within the orbital arc of the geostationary-satellite orbit between 37.2° W and 10° E before WRC-19 there were limitations on the use of some orbital positions for any proposed new or modified assignment in the Regions 1 and 3 List of additional uses in the frequency band 11.7-12.2 GHz;
- c) that some networks with earth station receiving antenna size smaller than 60 cm were successfully implemented within the orbital arc mentioned in *noting b*), in view of protection due to the presence of limitations on the use of orbital positions in this orbital arc;
- d) that with the deletion of orbital position limitations, the protection of satellite assignments mentioned in *noting c*) shall be ensured;
- e) that the geostationary-satellite orbit between 37.2° W and 10° E is widely used by Region 1 BSS and Region 2 FSS networks;
- f) that equitable access to and efficient use of the 12 GHz frequency range should be encouraged,

resolves

- 1 that this Resolution is applicable only to implemented¹ networks with earth station receiving antenna size smaller than 60 cm (40 cm and 45 cm) as outlined in Annex 1 of this Resolution;
- 2 that frequency assignments of the networks mentioned in *resolves* 1 above are considered by the Bureau as being affected by a proposed new or modified assignment in the List filed to the GSO orbital positions mentioned in Annex 1 to this Resolution, only if the following conditions specified in Annex 1 of Appendix 30 (Rev.WRC-19) are met:
 - the minimum orbital spacing between the wanted and interfering space stations, under worst-case station-keeping conditions, is less than 9°;
 - the reference equivalent downlink protection margin corresponding to at least one of the test points of that wanted assignment, including cumulative effect of any previous modification to the List or any previous agreement, falls more than 0.45 dB below 0 dB, or if already negative, more than 0.45 dB below that reference equivalent protection margin value;

¹ For the avoidance of doubt, the “implemented” networks referred to are related to Regions 1 and 3 BSS networks in the orbital arc 37.2° W and 10° E:

- for which complete Appendix 4 information had been received by the Bureau under § 4.1.3 of Appendix 30 prior to 28 November 2015, and
- for which complete Appendix 4 information had been received by the Bureau under § 4.1.12 of Appendix 30 prior to 23 November 2019, and
- for which the complete due diligence information, in accordance with Annex 2 to Resolution 49 (Rev.WRC-15), had been received by the Bureau prior to 23 November 2019, and
- for which complete Appendix 4 information had been received by the Bureau under § 5.1.2 of Appendix 30 prior to 23 November 2019, and
- brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 23 November 2019.

3 that for cases, when a proposed new assignment in the List is filed within the geostationary orbital arc between 37.2° W and 10° E in orbital arc segments that differ from those in Annex 1 to this Resolution, appropriate provisions of Annex 1 Appendix **30 (Rev.WRC-19)** to determine the need for coordination, continue to be applied with respect to relevant frequency assignments of satellite networks mentioned in *resolves* 1.

ANNEX 1 TO DRAFT NEW RESOLUTION [A14-LIMITA3] (WRC-19)
**Satellite networks and orbital arc segments for which this
Resolution is applicable**

Satellite networks for which this Resolution applies					Orbital arc segments where the conditions specified in <i>resolves 2 of this Resolution</i> apply
Orbital position	Earth station antenna size, cm	Satellite network	Date of receipt of part A submission	Notice Id Part II	
33.5° W	45	UKDIGISAT- 4C	09.10.2014	TBD	36.0° W < □□ ≤ 35.36° W; 31.64° W ≤ □□ < 30.0° W; 29.0° W < □ ≤ 28.58° W;
30.0° W	45	HISPASAT-1	08.02.2000	99500256	34.92° W ≤ □□ < 33.5° W; 32.5° W < □□ ≤ 31.86° W; 28.14° W ≤ □□ < 26.0° W;
		HISPASAT- 37A	19.11.2014	117560019	
4.8° E	40	SIRIUS-N-BSS	17.11.2014	118560003	0 < □□ ≤ 2.85° E; 6.75° E ≤ □□ < 9.0° E; 9° E < □□ ≤ 10° E;

Where □ is the orbital position within the orbital segment defined in the table above.

NOTE - Currently, the proposed table contains all possible satellite networks that could comply with the conditions specified in resolves 1. WRC-19 will update this table to reflect the satellite networks that in fact comply with these conditions.

Supports:
B, CAN, CLM, GTM, MEX, URG, USA

ADD IAP/1.4/11

DRAFT NEW RESOLUTION [B14-PRIORITY] (WRC-19)
Additional temporary regulatory measures following deletion
of part of Annex 7 to Appendix 30 by WRC-19

The World Radiocommunication Conference (Sharm el-Sheikh, 2019),

considering

- a) that some national assignments especially those of developing countries in the Regions 1 and 3 Plan have equivalent downlink protection margin values in the RR Appendix **30** equal or below -10 dB;
- b) that implementation of a national assignment in the Regions 1 and 3 Plan with an equivalent downlink protection margin equal or below -10 dB would be difficult;
- c) that any modification of orbital position and other parameters of a national assignment in the Appendix **30** Plan would require a corresponding modification of the orbital position and other parameters in the Appendix **30A** feeder-link Plan,

recognizing

- a) that Article 44 of the ITU Constitution stipulates that: “*In using frequency bands for radio services, Member States shall bear in mind that radio frequencies and any associated orbits, including the geostationary-satellite orbit, are limited natural resources and that they must be used rationally, efficiently and economically, in conformity with the provisions of the Radio Regulations, so that countries or groups of countries may have equitable access to those orbits and frequencies, taking account the special needs of the developing countries and the geographical situation of particular countries*”;
- b) that Resolution 71 (Rev. Busan, 2014) of the Plenipotentiary Conference, ITU includes the ITU strategic plan for 2016-2019, which contains, as one of the strategic objectives of ITU-R: “*Meet, in a rational, equitable, efficient, economical and timely way, the ITU membership’s requirements for radio-frequency spectrum and satellite-orbit resources, while avoiding harmful interference*”,

resolves

1 that as of 23 March 2020 and for a period until 21 May 2020, the special procedure outlined in the Attachment to this Resolution shall be applied in respect of submissions of Regions 1 and 3 administrations under § 4.1.3 of Appendices **30** and **30A** in Regions 1 and 3 meeting the specified requirements in § 1 of the Attachment to the Resolution at an orbital position of orbital arcs for which the Annex 7 to Appendix **30** (**Rev.WRC-15**) limitations were suppressed by WRC-19. Submissions sent before 23 March 2020 shall be returned to the administration;

2 that as of 23 November 2019 and for a period until 21 May 2020, all submissions under § 4.1.3 of Appendices **30** and **30A** in Regions 1 and 3 not meeting the specified requirements in § 1 of the Attachment to the Resolution at an orbital position within orbital arcs for which the Annex 7 to Appendix **30** (**Rev.WRC-15**) limitations were suppressed by WRC-19 shall be considered as received by BR on the 22 May 2020,

instructs the Director of the Radiocommunication Bureau

to identify the administrations that meet the conditions of Section 1 of the Attachment to this Resolution and inform these administrations accordingly.

**Additional temporary regulatory measures following deletion of part
of Annex 7 to Appendix 30 by WRC-19**

1 The special procedure described in this attachment can only be applied once by an administration with:

- a) no frequency assignments included in the List or for which complete Appendix 4 information has been received by the Bureau in accordance with the provision of § 4.1.3 of Appendix 30; and
- b) an assignment in the Regions 1 and 3 Plan of Appendix 30 when the equivalent downlink protection margin (EPM) value corresponding to a test point of its national assignment in the Regions 1 and 3 Plan is equal or below -10 dB for at least 50% of the total number of EPM values of the assignment in the Regions 1 and 3 Plan in Appendix 30.

2 Administrations seeking to apply this special procedure shall submit their request to the Bureau, with the information specified in § 4.1.3 of Appendices 30 and 30A, in particular this information shall include:

- a) in the cover letter to the Bureau, the information that the administration requests the use of this special procedure together with the name of the Plan assignments for which condition defined in § 1 above is met;
- b) a service area is limited to the national territory as defined in the GIMS software application;
- c) a set of maximum 20 test points inside the national territory;
- d) a minimal ellipse determined by the set of test points submitted in c) above. An administration may request the Bureau to create such diagram;
- e)¹ maximum ten consecutive odd or even channels with standard Appendix 30 assigned frequencies in the same polarization for a Region 1 administration or twelve consecutive odd or even channels with standard Appendix 30 assigned frequencies in the same polarization for a Region 3 administration with a bandwidth of 27 MHz;
- f) a corresponding submission for the Appendix 30A feeder-link Plan in compliance with the principle defined in items b), c), d) and e) above.

3 Upon receipt of the complete information from an administration sent under § 2 above, the Bureau shall process the submissions in date order in accordance with Article 4 of Appendices 30 and 30A.

4 The notifying administration shall request the subsequent WRCs to consider the inclusion in the Appendices 30 and 30A Plans as a replacement of its national assignments appearing in the Plans, pursuant to paragraph 4.1.27 of Article 4 of Appendices 30 and 30A.

¹ In case of submission for the Appendix 30A feeder-link Plan in the 14 GHz band, the maximum ten channels for a Region 1 administration or twelve channels for a Region 3 administration with a bandwidth of 27 MHz could be in different polarization.

Supports:
B, CAN, CLM, GTM, MEX, URG, USA

ADD IAP/1.4/12

DRAFT NEW RESOLUTION [C14-LIMITA1A2] (WRC-19)

Need for coordination of Region 2 FSS networks in the frequency band 11.7-12.2 GHz with respect to the Region 1 BSS assignments located further west than 37.2° W and of Region 1 FSS networks in the frequency band 12.5-12.7 GHz with respect to the Region 2 BSS assignments located further east than 54° W

The World Radiocommunication Conference (Sharm el-Sheikh, 2019),

considering

- a) that WRC-15 decided to conduct studies on, review, and identify possible revisions to, if necessary, the limitations mentioned in Annex 7 to Appendix **30 (Rev.WRC-15)**, while ensuring the protection of, and without imposing additional constraints on, assignments in the Plan and in the List and the future of broadcasting-satellite service (BSS) networks and existing fixed-satellite service (FSS) networks;
- b) that the provisions applying to the frequency assignments of the BSS in the frequency bands 11.7-12.5 GHz in Region 1 and 12.2-12.7 GHz in Region 2 are contained in Appendix **30**;
- c) that the FSS has primary allocations in the frequency bands 12.5-12.75 GHz in Region 1 and 11.7-12.2 GHz in Region 2;
- d) that the BSS has primary allocations in the frequency bands 11.7-12.5 GHz in Region 1 and 12.2-12.7 GHz in Region 2;
- e) that WRC-19 suppressed the limitation in Annex 7 to Appendix **30** that prevented broadcasting satellites serving an area in Region 1 and using frequency assignments in the frequency band 11.7-12.2 GHz at orbital positions further west than 37.2° W;
- f) that WRC-19 suppressed the limitation in Annex 7 to Appendix **30** that prevented broadcasting satellites serving an area in Region 2 and using frequency assignments in the frequency band 12.5-12.7 GHz at orbital positions further east than 54° W;
- g) that the result of those suppressions shall ensure the protection of, and cannot impose additional constraints on, assignments in the Plan and the List and the future development of the BSS within the Plan, and existing and planned FSS networks,

recognizing

- a) that existing FSS networks operating in the frequency bands mentioned in *considering c)* and BSS frequency assignments in the Plan and List implemented in accordance with the provisions of Annex 7 to Appendix **30 (Rev.WRC-15)** prior to WRC-19 shall continue to be protected;
- b) that the frequency bands 11.7-12.5 GHz in Region 1 and 12.2-12.7 GHz in Region 2 are widely used by BSS networks, subject to the provisions of Annex 7 to Appendix **30 (Rev.WRC-15)** prior to WRC-19;
- c) that the frequency bands 12.5-12.75 GHz in Region 1 and 11.7-12.2 GHz in Region 2 are widely used by FSS networks,

resolves

- 1 that, in the frequency band 11.7-12.2 GHz, with respect to § 7.1 a), 7.2.1 a), 7.2.1 b) and 7.2.1 c) of Article 7 of Appendix **30**, the need for coordination of a transmitting space station in the FSS of Region 2 with a transmitting space station in the BSS of Region 1 at an orbital position further west than 37.2° W and with minimum geocentric orbital separation less than 4.2 degrees between FSS and BSS

space stations, the conditions in Annex 1 to this Resolution apply instead of those contained in Annex 4 to Appendix **30**;

2 that, in the frequency band 12.5-12.7 GHz, with respect to § 7.1 *a*), 7.2.1 *a*) and 7.2.1 *c*) of Article 7 of Appendix **30**, the need for coordination of a transmitting space station in the FSS of Region 1 with a transmitting space station in the BSS of Region 2 at an orbital position further east than 54° W and not within its clusters in the Region 2 Plan of Appendix **30**, and with minimum geocentric orbital separation less than 4.2 degrees between FSS and BSS space stations, the conditions in Annex 2 to this Resolution apply instead of those contained in Annex 4 to Appendix **30**;

3 that, except the cases specified in *resolves* 1 and 2, the conditions in Annex 4 to Appendix **30** continue to apply.

ANNEX 1 TO DRAFT NEW RESOLUTION
[C14-LIMITA1A2] (WRC-19)

With respect to § 7.1 a), 7.2.1 a), 7.2.1 b) and 7.2.1 c) of Article 7 of Appendix 30, coordination of a transmitting space station in the fixed-satellite service (FSS) (space-to-Earth) of Region 2 is required with a broadcasting-satellite station serving an area in Region 1 and using a frequency assignment in the frequency band 11.7-12.2 GHz with a nominal orbital position further west than 37.2° W when, under assumed free-space propagation conditions, the power flux-density at any test point within the service area of the overlapping frequency assignments in the BSS exceeds the following values:

-147 0.23°	dB (W/(m ² · 27 MHz))	for	0°	≤	□□ <
-135.7 + 17.74 log □□	dB (W/(m ² · 27 MHz))	for	0.23°	≤	□□ < 2.0°
-136.7 + 1.66 □ ²	dB (W/(m ² · 27 MHz))	for	2.0°	≤	□□ <
3.59°					
-129.2 + 25 log □□	dB (W/(m ² · 27 MHz))	for	3.59°	≤	□□ < 4.2°

where □ is the minimum geocentric orbital separation in degrees between the wanted and interfering space stations, taking into account the respective east-west station-keeping accuracies.

ANNEX 2 TO DRAFT NEW RESOLUTION [C14-LIMITA1A2] (WRC-19)

With respect to § 7.1 a), 7.2.1 a) and 7.2.1 c) of Article 7 of Appendix 30, coordination of a transmitting space station in the fixed-satellite service (FSS) (space-to-Earth) of Region 1 is required with a broadcasting-satellite station serving an area in Region 2 and using a frequency assignment in the frequency band 12.5-12.7 GHz with a nominal orbital position further east than 54° W and not within its clusters in the Region 2 Plan of Appendix 30 when, under assumed free-space propagation conditions, the power flux-density at any test point within the service area of the overlapping frequency assignments in the BSS exceeds the following values:

-147 0.23°	dB (W/(m ² · 27 MHz))	for	0°	≤	□□ <
-135.7 + 17.74 log □□	dB (W/(m ² · 27 MHz))	for	0.23°	≤	□□ < 1.8°
-134.0 + 0.89 □ ²	dB (W/(m ² · 27 MHz))	for	1.8°	≤	□□ < 4.2°

where □ is the minimum geocentric orbital separation in degrees between the wanted and interfering space stations, taking into account the respective east-west station-keeping accuracies.

Supports:
B, CAN, CLM, GTM, MEX, URG, USA

ADD IAP/1.4/13

DRAFT NEW RESOLUTION [D14-ENTRY-INTO-FORCE] (WRC-19)
Provisional application of certain provisions of the Radio Regulations as revised by the 2019 World Radiocommunication Conference

The World Radiocommunication Conference (Sharm el-Sheikh, 2019),

considering

- a) that this conference has, in accordance with its terms of reference, adopted a partial revision to the Radio Regulations (RR), which will enter into force on 1 January 2021;
- b) that some of the provisions, as amended by this conference, need to apply provisionally before that date;
- c) that, as a general rule, new and revised Resolutions and Recommendations enter into force at the time of the signing of the Final Acts of a conference,

resolves

that, as of 23 November 2019, the following provisions of the RR, as revised or established by this conference, shall provisionally apply: Annex 7 to Appendix 30.

Supports:
B, CAN, CLM, GTM, MEX, URG, USA

SUP IAP/1.4/14

RESOLUTION 557 (WRC-15)

Consideration of possible revision of Annex 7 to Appendix 30 of the Radio Regulations

**33 MEETING OF PERMANENT
CONSULTATIVE COMMITTEE II:
RADIOCOMMUNICATIONS
April 8 to 12, 2019
Monterrey, Nuevo Leon, Mexico**

**OEA/Ser.L/XVII.4.2.33
CCP.II-RADIO-33/doc.4359-1-8B/19
9 April 2019
Original: English**

INTER-AMERICAN PROPOSAL (IAP) FOR WRC-19

AGENDA ITEM 1.8, ISSUE B

(Item on the Agenda: 3.1 (SGT2A))

(Document submitted by CITELE Member States)

SGT2A – Radiolocation, Amateurs, Maritime & Aeronautical

Coordinator: Michael Razi (CAN)

Alternate Coordinator: Corali Roura (USA)

Rapporteur Agenda Item: Donald Jansky (USA)

Alternate Rapporteur Agenda Item: Christopher Casarrubias (MEX)

Agenda Item 1.8: *to consider possible regulatory actions to support Global Maritime Distress and Safety Systems (GMDSS) modernization and to support the introduction of additional satellite systems into the GMDSS, in accordance with Resolution 359 (Rev.WRC-15)*

INTRODUCTION

WRC-15 adopted agenda item 1.8 for WRC-19, which considers possible regulatory actions to support Global Maritime Distress and Safety Systems (GMDSS) modernization and to support the introduction of additional satellite systems into the GMDSS in accordance with Resolution 359 (Rev.WRC-15). This document addresses the *Resolves 2* of Resolution 359 (Rev.WRC-15) on the introduction of additional satellite systems into the GMDSS, proposing modifications to the *Radio Regulations* to support the introduction of additional satellite systems into the GMDSS.

BACKGROUND

Until May 2018, only one mobile satellite system had been recognized by the International Maritime Organization (IMO) for use in the GMDSS “system of systems”. Advances in communications technology, the maturity of commercial satellite operations have introduced competition into the satellite sector, and the deployment of non-geostationary satellite constellations led the IMO to begin work to recognize an additional satellite system to the GMDSS as an urgent work item. In considering incorporation of additional satellite systems into the GMDSS, the IMO recognizes the need for additional satellite resources capable of providing increased coverage and competition for provision of maritime services.

At its 99th Meeting of the Maritime Safety Committee (MSC 99) held in May 2018, IMO adopted Resolution MSC.451(99), “*Statement Of Recognition Of Maritime Mobile Satellite Services Provided By Iridium Satellite LLC*”. The newly-recognized satellite system, capable of operating in the frequency band 1616-1626.5 MHz, is now being integrated with national and regional centers supporting maritime rescue and safety information for full global operation in early 2020.

The IMO has also concluded an equipment performance standard applicable to new mobile satellite GMDSS services (resolution MSC 434(98) on *Performance standards for a ship earth station for use in the GMDSS*) and has agreed an amendment to its Safety of Life at Sea (SOLAS) Convention enabling new providers of mobile satellite GMDSS services.¹

The IMO actions described above provide for the timely introduction of an additional MSS system into the GMDSS. This proposal will modify the Radio Regulations to incorporate the relevant frequency band for providing GMDSS by mobile satellite systems.

It is important to note that identification of an additional GMDSS service provider would bring forward the following benefits to the maritime community:

- Covering the entire globe – including the critical Arctic and Antarctic (Polar) regions, which makes up Sea Area A4, where there is currently no GMDSS mobile satellite services available;
- Is an “always on” system as individual satellites pass overhead approximately every five to eight minutes depending on location. The movement of the satellites across the horizon provide the

¹ MSC 98-23, “Report of the Maritime Safety Committee on its Ninety-Eighth Session”, 28 June 2017.

user with better look angles (i.e. ability to see the satellite) in rough seas, especially in northernmost and southernmost latitudes;

- Will enable both voice and data GMDSS communications in a single, small form factor maritime mobile terminal, at a low cost (currently two mobile satellite system terminals may be required to meet operational and regulatory needs of the vessel (voice and data) at much greater cost);
- Provide an opportunity for a redundant communications platform for the maritime community in the event there is a catastrophic outage which disables part, or all, of other satellite-based GMDSS services;
- Will provide for more efficient and comprehensive distress and safety communications by providing the Rescue Coordination Center with immediate voice communications capability, vessel identification, and a means to contact the vessel in distress;
- Will provide, for the first time, vessel owners with a choice of satellite-based GMDSS services, including choice of equipment with the state-of-the-art technology, new service offerings, and competitive pricing; and
- May be integrated with vessel “digital bridge” systems consolidating equipment and displays for the crew to monitor, while eliminating clutter on the bridge.

INTER-AMERICAN PROPOSALS

Supports:

Bahamas, Canada, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Honduras, Mexico, Panama, United States of America

MOD IAP/1.8B/1

Radio Regulations Volume 1

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations

1 610-1 660 MHz

Allocation to services		
Region 1	Region 2	Region 3

<p>1 610-1 610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION</p> <p>5.341 5.355 5.359 5.364 5.366 5.367 <u>MOD</u> 5.368 5.369 5.371 5.372</p>	<p>1 610-1 610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION RADIODETERMINATION- SATELLITE (Earth-to-space)</p> <p>5.341 5.364 5.366 5.367 <u>MOD</u> 5.368 5.370 5.372</p>	<p>1 610-1 610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space)</p> <p>5.341 5.355 5.359 5.364 5.366 5.367 <u>MOD</u> 5.368 5.369 5.372</p>
<p>1 610.6-1 613.8 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION</p> <p>5.149 5.341 5.355 5.359 5.364 5.366 5.367 <u>MOD</u> 5.368 5.369 5.371 5.372</p>	<p>1 610.6-1 613.8 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION RADIODETERMINATION- SATELLITE (Earth-to-space)</p> <p>5.149 5.341 5.364 5.366 5.367 <u>MOD</u> 5.368 5.370 5.372</p>	<p>1 610.6-1 613.8 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space)</p> <p>5.149 5.341 5.355 5.359 5.364 5.366 5.367 <u>MOD</u> 5.368 5.369 5.372</p>
<p>1 613.8-1 626.5 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) 5.208B</p> <p>5.341 5.355 5.359 <u>MOD</u> 5.364 5.365 5.366 5.367 <u>MOD</u> 5.368 5.369 5.371 5.372 <u>ADD 5.GMDSS</u></p>	<p>1 613.8-1 626.5 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION RADIODETERMINATION- SATELLITE (Earth-to-space) Mobile-satellite (space-to-Earth) 5.208B</p> <p>5.341 <u>MOD</u> 5.364 5.365 5.366 5.367 <u>MOD</u> 5.368 5.370 5.372 <u>ADD 5.GMDSS</u></p>	<p>1 613.8-1 626.5 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) 5.208B Radiodetermination-satellite (Earth-to-space)</p> <p>5.341 5.355 5.359 <u>MOD</u> 5.364 5.365 5.366 5.367 <u>MOD</u> 5.368 5.369 5.372 <u>ADD 5.GMDSS</u></p>
<p>1 626.5-1 660 MOBILE-SATELLITE (Earth-to-space) 5.351A 5.341 5.351 5.353A 5.354 5.355 5.357A 5.359 5.362A 5.374 5.375 5.376</p>		

Reason: To reference proposed modification to FN 5.364 and 5.368 to support the introduction of an additional satellite system into the GMDSS in accordance with Resolution **359 (Rev.WRC-15)**. Also to align with the Method B1 in the Draft CPM Text.

Supports:

Bahamas, Canada, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Honduras, Mexico, Panama, United States of America

ADD IAP/1.8B/2

5.GMDSS The band 1616-1626.5 MHz may also be used for the provision of distress, urgency, and safety communications of the Global Maritime Distress and Safety System (GMDSS). (See Table 15-2 of Appendix 15, No. 33.50 and No. 33.53 of Article 33).

Reason: To identify the band 1616-1626.5 MHz as being available for the provision of GMDSS by mobile-satellite service systems.

Supports:

Bahamas, Canada, [Chile], Colombia, Costa Rica, Dominican Republic, Ecuador, Honduras, Mexico, Panama, United States of America

MOD IAP/1.8B/3

5.364 The use of the band 1 610-1 626.5 MHz by the mobile-satellite service (Earth-to-space) and by the radiodetermination-satellite service (Earth-to-space) is subject to coordination under No. 9.11A. A mobile earth station operating in either of the services in this band shall not produce a peak e.i.r.p. density in excess of -15 dB(W/4 kHz) in the part of the band used by systems operating in accordance with the provisions of No. 5.366 (to which No. 4.10 applies), unless otherwise agreed by the affected administrations. In the part of the band where such systems are not operating, the mean e.i.r.p. density of a mobile earth station shall not exceed -3 dB(W/4 kHz). Except when used for distress and safety purposes in the band 1 616-1 626.5 MHz by the mobile-satellite service (Earth-to-space)-sStations of the mobile-satellite service shall not claim protection from stations in the aeronautical radionavigation service, stations operating in accordance with the provisions of No. 5.366 and stations in the fixed service operating in accordance with the provisions of No. 5.359. Administrations responsible for the coordination of mobile-satellite networks shall make all practicable efforts to ensure protection of stations operating in accordance with the provisions of No. 5.366. (WRC-19)

Reason: To provide allocation status parity in the band 1 616-1 626.5 MHz among maritime and aeronautical communications for distress and safety purposes and recognize the safety service aspects of GMDSS operations with this frequency band.

Supports:

Bahamas, Canada, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Honduras, Mexico, Panama, United States of America

MOD IAP/1.8B/4

5.368 With respect to the radiodetermination-satellite service and the mobile-satellite services the provisions of No. 4.10 do not apply in the band 1 610-~~1626.5~~ 616 MHz, with the exception of the aeronautical radionavigation-satellite service.

Reason: To recognize that in the necessary parts of the frequency band 1 610-1 626.5 MHz the mobile-satellite service is used for the provision of aeronautical and maritime safety services. Consequently, No. 4.10 would apply to these safety services within the appropriate frequency bands.

Supports:

Bahamas, Canada, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Honduras, Mexico, Panama, United States of America

MOD IAP/1.8B/5

33.50 § 26 Maritime safety information may be transmitted via satellite in the maritime mobile-satellite service using the bands 1 530-1 545 MHz and 1 616-1 626.5 MHz. (see Appendix 15). (WRC-19)

Reason: To include the necessary parts of the frequency band 1 610-1 626.5 MHz as being available for transmitting maritime safety information via satellite.

Supports:

Bahamas, Canada, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Honduras, Mexico, Panama, United States of America

MOD IAP/1.8B/6

33.53 § 28 Radiocommunications for safety purposes concerning ship reporting communications, communications relating to the navigation, movements and needs of ships and weather observation messages may be conducted on any appropriate communications frequency, including those used for public correspondence. In terrestrial systems, the bands 415-535 kHz (see Article 52), 1 606.5-4 000 kHz (see Article 52), 4 000-27 500 kHz (see Appendix 17), and 156-174 MHz (see Appendix 18) are used for this function. In the maritime mobile-satellite service, frequencies in the bands 1 530-1 544 MHz, 1 616-1 626.5 MHz, and 1 626.5-1 645.5 MHz are used for this function as well as for distress alerting purposes (see No. 32.2). (WRC-0719)

Reason: To apply No. 33.53 to the necessary parts of the frequency band 1 610-1 626.5 MHz for use by mobile-satellite service systems approved by the International Maritime Organization to participate in the Global Maritime Distress and Safety System.

Supports:

Bahamas, Canada, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Honduras, Mexico, Panama, United States of America

MOD IAP/1.8B/7

APPENDIX 15 (REV.WRC-~~15~~19)

Frequencies for distress and safety communications for the Global Maritime Distress and Safety System (GMDSS)

TABLE 15-2 (WRC-~~15~~19)

Frequencies above 30 MHz (VHF/UHF)

Frequency (MHz)	Description of usage	Notes
*121.5	AERO-SAR	The aeronautical emergency frequency 121.5 MHz is used for the purposes of distress and urgency for radiotelephony by stations of the aeronautical mobile service using frequencies in the frequency band between 117.975 MHz and 137 MHz. This frequency may also be used for these purposes by survival craft stations. Use of the frequency 121.5 MHz by emergency position-indicating radio beacons shall be in accordance with Recommendation ITU-R M.690-3. Mobile stations of the maritime mobile service may communicate with stations of the aeronautical mobile service on the aeronautical emergency frequency 121.5 MHz for the purposes of distress and urgency only, and on the aeronautical auxiliary frequency 123.1 MHz for coordinated search and rescue operations, using class A3E emissions for both frequencies (see also Nos. 5.111 and 5.200). They shall then comply with any special arrangement between governments concerned by which the aeronautical mobile service is regulated.
123.1	AERO-SAR	The aeronautical auxiliary frequency 123.1 MHz, which is auxiliary to the aeronautical emergency frequency 121.5 MHz, is for use by stations of the aeronautical mobile service and by other mobile and land stations engaged in coordinated search and rescue operations (see also No. 5.200). Mobile stations of the maritime mobile service may communicate with stations of the aeronautical mobile service on the aeronautical emergency frequency 121.5 MHz for the purposes of distress and urgency only, and on the aeronautical auxiliary frequency 123.1 MHz for coordinated search and rescue operations, using class A3E emissions for both frequencies (see also Nos. 5.111 and 5.200). They shall then comply with any special arrangement between governments concerned by which the aeronautical mobile service is regulated.
156.3	VHF-CH06	The frequency 156.3 MHz may be used for communication between ship stations and aircraft stations engaged in coordinated search and rescue operations. It may also be used by aircraft stations to communicate with ship stations for other safety purposes (see also Note <i>f</i>) in Appendix 18).
*156.525	VHF-CH70	The frequency 156.525 MHz is used in the maritime mobile service for distress and safety calls using digital selective calling (see also Nos. 4.9 , 5.227 , 30.2 and 30.3).
156.650	VHF-CH13	The frequency 156.650 MHz is used for ship-to-ship communications relating to the safety of navigation in accordance with Note <i>k</i>) in Appendix 18 .

*156.8	VHF-CH16	The frequency 156.8 MHz is used for distress and safety communications by radiotelephony. Additionally, the frequency 156.8 MHz may be used by aircraft stations for safety purposes only.
*161.975	AIS-SART VHF CH AIS 1	AIS 1 is used for AIS search and rescue transmitters (AIS-SART) for use in search and rescue operations.
*162.025	AIS-SART VHF CH AIS 2	AIS 2 is used for AIS search and rescue transmitters (AIS-SART) for use in search and rescue operations.

TABLE 15-2 (end) (WRC-~~15~~19)

Frequency (MHz)	Description of usage	Notes
*406-406.1	406-EPIRB	This frequency band is used exclusively by satellite emergency position-indicating radio beacons in the Earth-to-space direction (see No. 5.266).
1 530-1 544	SAT-COM	In addition to its availability for routine non-safety purposes, the band 1 530-1 544 MHz is used for distress and safety purposes in the space-to-Earth direction in the maritime mobile-satellite service. GMDSS distress, urgency and safety communications have priority in this band (see No. 5.353A).
*1 544-1 545	D&S-OPS	Use of the band 1 544-1 545 MHz (space-to-Earth) is limited to distress and safety operations (see No. 5.356), including feeder links of satellites needed to relay the emissions of satellite emergency position-indicating radio beacons to earth stations and narrow-band (space-to-Earth) links from space stations to mobile stations.
1 616-1 626.5	SAT-COM	<u>In addition to its availability for routine non-safety purposes, the band 1 616-1 626.5 MHz is used for distress and safety purposes in the Earth-to-space and space-to-Earth directions in the maritime mobile-satellite service solely by satellite networks using the same channel in both directions. GMDSS distress, urgency and safety communications have priority over non-safety communications within the same satellite system.</u>
1 626.5-1 645.5	SAT-COM	In addition to its availability for routine non-safety purposes, the band 1 626.5-1 645.5 MHz is used for distress and safety purposes in the Earth-to-space direction in the maritime mobile-satellite service. GMDSS distress, urgency and safety communications have priority in this band (see No. 5.353A).
*1 645.5-1 646.5	D&S-OPS	Use of the band 1 645.5-1 646.5 MHz (Earth-to-space) is limited to distress and safety operations (see No. 5.375).
9 200-9 500	SARTS	This frequency band is used by radar transponders to facilitate search and rescue.

Legends:

AERO-SAR These aeronautical carrier (reference) frequencies may be used for distress and safety purposes by mobile stations engaged in coordinated search and rescue operations.

D&S-OPS The use of these bands is limited to distress and safety operations of satellite emergency position-indicating radio beacons (EPIRBs).

SAT-COM These frequency bands are available for distress and safety purposes in the maritime mobile-satellite service (see Notes).

VHF-CH# These VHF frequencies are used for distress and safety purposes. The channel number (CH#) refers to the VHF channel as listed in Appendix 18, which should also be consulted.

AIS These frequencies are used by automatic identification systems (AIS), which should operate in accordance with the most recent version of Recommendation ITU-R M.1371. (WRC-07)

* Except as provided in these Regulations, any emission capable of causing harmful interference to distress, alarm, urgency or safety communications on the frequencies denoted by an asterisk (*) is prohibited. Any emission causing harmful interference to distress and safety communications on any of the discrete frequencies identified in this Appendix is prohibited. (WRC-07)

Reason: To add the necessary parts of the frequency band 1 610-1 626.5 MHz to Appendix 15 as being available for distress and safety communications for the Global Maritime Distress and Safety System (GMDSS).

Supports:

Bahamas, Canada, [Chile], Colombia, Costa Rica, Dominican Republic, Ecuador, Honduras, Mexico, Panama, United States of America

SUP IAP/1.8B/8

RESOLUTION 359 (REV.WRC-15)

Consideration of regulatory provisions for updating and modernization of the Global Maritime Distress and Safety System

The “*resolves to invite ITU-R 2)*” and associated “*invites the 2019 WRC 2)*” to be deleted

Reason: Identified elements of Resolution 359 (Rev.WRC-15) are no longer necessary.

**33 MEETING OF PERMANENT
CONSULTATIVE COMMITTEE II:
RADIOCOMMUNICATIONS
April 8 to 12, 2019
Monterrey, Nuevo, Mexico**

**OEA/Ser.L/XVII.4.2.33
CCP.II-RADIO-33/doc.4359-1-10/19
11 Abril 2019
Original: English**

INTER-AMERICAN PROPOSALS (IAP) FOR WRC-19

AGENDA ITEM 1.10

(Item on the Agenda: 3.1 (SGT2))

(Document submitted by CITEL Member States)

SGT2A – Radiolocation, Amateurs, Maritime & Aeronautical

Coordinator: Michael Razi (CAN)

Alternate Coordinator: Corali Roura (USA)

Rapporteur Agenda Item: Luiz Fernando (B)

Alternate Rapporteur Agenda Item: Sandra Wright (USA)

Agenda Item 1.10: *to consider spectrum needs and regulatory provisions for the introduction and use of the Global Aeronautical Distress and Safety System (GADSS), in accordance with Resolution 426 (WRC-15)*

INTRODUCTION

While air travel in recent years has represented some of aviation's safest years in terms of the number of accidents, the tragedy of Malaysia Airlines flight 370 in March 2014 highlighted needed improvements in the global air navigation system requiring urgent attention. To address these improvements, the aviation community embarked on a global effort to develop the concept of a global aviation distress and safety system (GADSS).

As a result of expected developments in the implementation of various elements of GADSS, modifications to the Radio Regulations may be required to facilitate emerging needs of the aviation community and related distress and safety agencies. This agenda item was adopted at WRC-15 with sufficient flexibility to address potential modifications to the Radio Regulations required to allow implementation of the GADSS, taking into consideration the incumbent services that may be impacted as a consequence of these potential modifications. Specifically, Resolution 426 (WRC-15) invited the ITU-R to conduct relevant studies taking into account information provided by ICAO on the requirements for both the terrestrial and satellite components of GADSS.

BACKGROUND

The International Civil Aviation Organization (ICAO) has developed a concept of operations (ConOps) to support the future development of GADSS.

The ConOps² describes in particular the following functions:

- Aircraft tracking
 - Typically uses existing technologies to assist in the timely identification and location of aircraft.
 - Provides an automated reporting function every 15 mins or less.
 - Aircraft tracking may be accomplished by multiple different systems over the duration of a flight.
- Autonomous distress tracking.
 - An automated method of position reporting at intervals of one minute or less to support search and rescue (SAR), triggered by indications that an aircraft is in distress which may result in an accident.
 - Distress tracking aims to establish the location of a potential accident site within a 6 nautical mile (11.11 km) radius.
- Post flight localization and recovery.
 - A combination of both the immediate need to locate and rescue possible survivors after an air accident using emergency location beacons and other methods to an accuracy of <1 nautical mile (<1.85 km), and the timely collection of aircraft components and data that will assist in the accident investigation.
- Procedures and information management.

² Version 6.0. In 2017 the ICAO Air Navigation Commission agreed to use Version 6.0 to guide the further development of ICAO performance based standards in order to support the implementation of the ConOps.

- The method of data collection and notification of flight tracking data to the relevant SAR, and rescue coordination centres.

The ConOps provides the guidelines for the development of ICAO performance-based standards, outlining specific technical and operational requirements that an aircraft shall meet. It does not identify specific systems proposed to contribute to GADSS. ICAO intends to use systems operating under existing allocations in accordance with the provisions of the RR, including the use of emergency position-indicating radio beacons (termed as emergency locator transmitters in ICAO) operating in the 406-406.1 MHz frequency band.³

The International Civil Aviation Organization (ICAO) has actively participated in ITU-R Working Party 5B to develop a Report ITU-R M.2436 and CPM text. Both ICAO and ITU-R Working Party 5B have concluded that there are no new spectrum allocations required to implement GADSS. GADSS requirements can be satisfied using existing systems operating within existing aeronautical frequency allocations and distress spectrum (e.g. 406-406.1 MHz) in accordance with the provisions in Article 5 of the Radio Regulations.

In addition, ICAO is of the view that:

- 1) systems being utilized to meet GADSS requirements should not receive any additional priority beyond that accorded by the RR to the radiocommunication service(s) under which those systems operate, and
- 2) ICAO does not support regulatory modifications that would require future WRC action in order to update or modify GADSS requirements and/or systems available for satisfying GADSS requirements.

The concept of GADSS is a ‘system of systems’ that comprises different equipment operating in various frequency bands, allocated to various services, in a similar manner to the global maritime distress and safety system (GMDSS).

The draft CPM report, contains three methods to satisfy Agenda Item 1.10. Since no new allocations are sought, the methods do not propose modifications to Article 5 of the Radio Regulations (RR).

In Method A, modifications are proposed to RR Article **30**, along with a new RR Article **34A** to recognize GADSS in the RR. Method A includes a provision in the new Article **34A** that GADSS systems should not be used under RR **4.4**.

Method B proposes different modifications to RR Article **30**, a different new RR Article **34A**, and a Resolution requiring the development of ITU-R Recommendations to list the frequency bands of the systems contributing to GADSS along with their technical characteristics and protection criteria. Method B also states that, for GADSS functions, only frequency bands that already have been allocated on a primary basis and for safety purposes should be used.

Method C proposes no change.

³ The 406-406.1 MHz frequency band is already identified for the use of emergency position-indicating radiobeacons in the provisions of RR No. **5.266**

DISCUSSION

The draft IAP in CITEL (Method A in the draft CPM text) contains several proposals to modify the Radio Regulations to recognize GADSS as a distress and safety communication system in Chapter VII – Distress and safety communications.

Method A introduces GADSS in Article 30, under Chapter VII, and establishes a new Article 34A. This regulatory approach is based on the existing articles for the global maritime distress and safety system (GMDSS). The addition of a provision in Article 30 would link the performance requirements of GADSS radiocommunications systems, utilized for functions such as aircraft tracking, autonomous distress tracking and post flight localization and recovery, to ICAO. This will indicate that relevant GADSS elements are defined in the various ICAO standards and recommended practices (SARP) contained in the Annexes to the Convention on Civil Aviation. Method A establishes a simple regulatory framework for GADSS, by recognizing GADSS in the ITU Radio Regulations and maintaining the expertise for performance standards in ICAO.

Method B further proposes, in a new Article 34A, that systems meeting GADSS performance requirements may operate in ‘appropriate’ primary radiocommunication services. It also prescribes a WRC Resolution limiting GADSS to frequency bands that are already used for safety purposes, and requiring the development of ITU-R Recommendations for the frequency bands, technical characteristics, and protection criteria for GADSS elements.

The approach in Method B introduces an element of ambiguity in the new Article on GADSS by suggesting radiocommunication services can be used that have ‘appropriate’ allocations in Article 5, and are already used for safety purposes. Since GADSS is a ‘system of systems’ concept it will likely consist of a combination of terrestrial and satellite systems to achieve functionality. For example, emergency locator transponders (ELT) and emergency position-indicating radio beacons (EPIRB), currently used by the maritime and aeronautical communities, operate in mobile-satellite service allocations. These types of systems may be an element of GADSS in the future for distress alerting, even though they do not operate in traditional frequency bands used for safety purposes.

In addition, the requirement in Method B of establishing ITU-R recommendations on the elements of GADSS would duplicate the work undertaken by ICAO to standardize aeronautical systems in their standards and recommended practices (SARP) documentation. The collaborative relationship between ICAO and the ITU-R eliminates the need for this type of duplication.

To summarize, Method A satisfies Agenda item 1.10 by establishing GADSS in the Radio Regulations as a distress and safety system in Chapter VII.

INTER-AMERICAN PROPOSALS:

ARTICLE 5

Frequency allocations

Supports:

B, CAN, DOM, MEX, PRG, URG, USA

NOC IAP/1.10/1

Reason: There is no requirement for additional spectrum allocations for GADSS.

CHAPTER VII

Distress and safety communications¹

ARTICLE 30

General Provisions

Section I – Introduction

Supports:

B, CAN, DOM, MEX, PRG, URG, USA

MOD IAP/1.10/2

30.1 § 1 Nos 30.4 - 30.13, and Articles 31, 32, 33 and 34 of This Chapter contains the provisions for the operational use of the global maritime distress and safety system (GMDSS), whose functional requirements, system elements and equipment carriage requirements are set forth in the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended. ~~This Chapter~~ These Nos and Articles also contains provisions for initiating distress, urgency and safety communications by means of radiotelephony on the frequency 156.8 MHz (VHF channel 16). ~~(WRC-07).~~ (WRC-19)

Reason: Identifies the specific articles and numbers associated with GMDSS, to allow for an additional article and numbers to address GADSS as part of Chapter VII.

Supports:

B, CAN, DOM, MEX, PRG, URG, USA

ADD IAP/1.10/3

30.1A Article 34A of this Chapter contains for a general description of the global aeronautical distress and safety system (GADSS), whose functional requirements are set forth in the Annexes to the Convention on International Civil Aviation, as amended. (WRC-19)

Reason: Includes GADSS as part of Chapter VII Distress and safety communications.

Supports:

B, CAN, DOM, MEX, PRG, URG, USA

ADD IAP/1.10/4

ARTICLE 34A

Global aeronautical distress and safety system

Reason: Initiates a new article to establish the regulatory framework for GADSS.

Supports:

B, CAN, DOM, MEX, PRG, URG, USA

ADD IAP/1.10/5

34A.1 The global aeronautical distress and safety system (GADSS) determines performance requirements for the radiocommunication systems utilized for conducting functions such as aircraft tracking, autonomous distress tracking, and post flight localization and recovery. (WRC-19)

Reason: Refers to the types of functions that may be provided by GADSS.

Supports:

B, CAN, DOM, MEX, PRG, URG, USA

ADD IAP/1.10/6

34A.2 The type of radiocommunication service(s) to be used by systems contributing to the GADSS shall be operated in conformity with the Radio Regulations but shall not be operated under the provisions of No. 4.4. In addition, the use of a particular system contributing to the GADSS shall not establish any additional priority or protection in the Radio Regulations for the radiocommunication service under which that system operates. (WRC-19)

Reason: Radiocommunication services to be used by systems contributing to GADSS should be operated in accordance with the Table of Frequency Allocations.

Supports:

B, CAN, DOM, MEX, PRG, URG, USA

SUP IAP/1.10/7

RESOLUTION 426 (WRC-15)

Studies on spectrum needs and regulatory provisions for the introduction and use of the Global Aeronautical Distress and Safety System

Reason: Resolution 426 (WRC-15) is no longer necessary.

**33 MEETING OF PERMANENT
CONSULTATIVE COMMITTEE II:
RADIOCOMMUNICATIONS
April 8 to 12, 2019
Monterrey, Nuevo Leon, Mexico**

**OEA/Ser.L/XVII.4.2.33
CCP.II-RADIO-33/doc. 4359-1-11/19 rev.1
11 April 2019
Original: English**

INTER-AMERICAN PROPOSALS (IAPs) FOR WRC-19

AGENDA ITEM 1.11

(Items on the Agenda: 3.1 (SGT-1))

(Document submitted by CITELE Member States)

SGT-1

Coordinator: Luciana CAMARGOS – B – lcamargos@gsma.com

Vice-Coordinator: José COSTA – CAN - jose.costa@ericsson.com

Agenda Item Rapporteur: David TEJEDA – MEX - david.tejeda@ift.org.mx

Agenda Item Vice-Rapporteur: [name SURNAME] – [COUNTRY] – [email]

Agenda Item 1.11: *to take necessary actions, as appropriate, to facilitate global or regional harmonized frequency bands to support railway radiocommunication systems between train and trackside within existing mobile service allocations, in accordance with Resolution 236 (WRC-15);*

BACKGROUND

Railway radiocommunication systems between train and trackside (Rail RSTT) carry train control, command, and operational information as well as monitoring data between on-board radio equipment and related radio infrastructure located along trackside. World Radiocommunication Conference (WRC) 2019 agenda item 1.11 and associated ITU-R Resolution 236 (WRC-15) were developed out of an effort by some administrations to harmonize spectrum for railway radiocommunications systems between train and trackside for command and control.

INTER-AMERICAN PROPOSALS

Supports:

Argentina, Brazil, Canada, Colombia, Costa Rica, Ecuador, Honduras, Jamaica, United States of America, Guatemala, Mexico, Panama, Paraguay, Dominican Republic, and Uruguay

NOC IAP/1.11/1

ARTICLES

Reasons: The Administrations believe it is unnecessary to identify spectrum specifically for railway radiocommunication systems. Regional and global harmonization can be satisfied by applicable ITU-R Reports and Recommendations. Therefore, no change to the Radio Regulations or regulatory action is required under this agenda item.

Supports:

Argentina, Brazil, Canada, Colombia, Costa Rica, Ecuador, Honduras, Jamaica, United States of America, Guatemala, Mexico, Panama, Paraguay, Dominican Republic, and Uruguay

NOC IAP/1.11/2

APPENDICES

Reasons: The Administrations believe it is unnecessary to identify spectrum specifically for railway radiocommunication systems. Regional and global harmonization can be satisfied by applicable ITU-R Reports and Recommendations. Therefore, no change to the Radio Regulations or regulatory action is required under this agenda item.

Supports:

Argentina, Brazil, Canada, Colombia, Costa Rica, Ecuador, Honduras, Jamaica, United States of America, Guatemala, Mexico, Panama, Paraguay, Dominican Republic, and Uruguay

SUP IAP/1.11/3

RESOLUTION 236 (WRC-15)

Railway radiocommunication systems between train and trackside

Reasons: The studies towards regional and global harmonization can be satisfied through ITU-R Recommendations and Reports.

**33 MEETING OF PERMANENT
CONSULTATIVE COMMITTEE II:
RADIOCOMMUNICATIONS
April 8 to 12, 2019
Monterrey, Nuevo Leon, Mexico**

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Original: English**

INTER-AMERICAN PROPOSALS (IAPs) FOR WRC-19

AGENDA ITEM 1.12

(Item on the Agenda: 3.1 (SGT-1))

(Document submitted by CITELE Member States)

SGT-1

Coordinator: Luciana CAMARGOS – B – lcamargos@gsma.com

Vice-Coordinator: José COSTA – CAN – jose.costa@ericsson.com

Rapporteur Agenda Item: [name SURNAME] – [ARG] – [email]

Alternate Rapporteur Agenda Item: Francisco SOARES – B – fsoares@qti.qualcomm.com

Agenda Item 1.12: *to consider possible global or regional harmonized frequency bands, to the maximum extent possible, for the implementation of evolving Intelligent Transport Systems (ITS) under existing mobile-service allocations, in accordance with Resolution 237 (WRC-15).*

BACKGROUND

An Intelligent Transportation System (ITS) uses communications and computing technologies to improve transportation applications such as safe driving and to enhance productivity through the integration of advanced communications technologies into the transportation infrastructure and into vehicles and other end users. ITS encompasses a broad range of wireless and wire line-based information and electronics technologies.

World Radiocommunication Conference 2019 (WRC-19) agenda item 1.12 and associated ITU-R Resolution 237 (WRC-15) was developed out of an effort by some administrations to harmonize spectrum for Intelligent Transport Systems (ITS). Since the ITU initiated studies on ITS in the 1990s, there have been many changes in the ITS environment, including the planned introduction of new technologies and use of various frequency ranges.

INTER-AMERICAN PROPOSALS

Supports:

Argentina, Brazil, Canada, Colombia, Costa Rica, Ecuador, Honduras, Jamaica, United States of America, Guatemala, Mexico, Panama, Paraguay, Dominican Republic, Uruguay

NOC

IAP/1.12/1

ARTICLES

Reasons: It is unnecessary to identify spectrum specifically for Intelligent Transport Systems. Regional and global harmonization can be satisfied by developing applicable ITU-R Reports and Recommendations. Therefore, no change to the Radio Regulations or regulatory action is required under this agenda item.

Supports:

Argentina, Brazil, Canada, Colombia, Costa Rica, Ecuador, Honduras, Jamaica, United States of America, Guatemala, Mexico, Panama, Paraguay, Dominican Republic, Uruguay

NOC

IAP/1.12/2

APPENDICES

Reasons: It is unnecessary to identify spectrum specifically for Intelligent Transport Systems. Regional and global harmonization can be satisfied by developing applicable ITU-R Reports and Recommendations. Therefore, no change to the Radio Regulations or regulatory action is required under this agenda item.

Supports:

| Argentina, Brazil, Canada, Colombia, Costa Rica, Ecuador, Honduras, Jamaica, United States of America, Guatemala, Mexico, Panama, Paraguay, Dominican Republic, Uruguay

SUP IAP/1.12/3

RESOLUTION 237 (WRC-15)
Intelligent Transport Systems applications

Reasons: The studies towards regional and global harmonization can be satisfied through ITU-R Recommendations and Reports.

**33 MEETING OF PERMANENT
CONSULTATIVE COMMITTEE II:
RADIOCOMMUNICATIONS
April 8 to 12, 2019
Monterrey, Nuevo Leon, Mexico**

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INTER-AMERICAN PROPOSALS (IAPs) FOR WRC-19

AGENDA ITEM 1.13 (24.25-27.5 GHz)

(Item on the Agenda: 3.1 (SGT-1))

(Document submitted by CITELE Member States)

SGT-1

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Camilo ZAMORA – COL – czamora@tmgtelecom.com

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Note: This agenda item is still under discussion.

Agenda item I.13: *to consider identification of frequency bands for the future development of International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis, in accordance with Resolution 238 (WRC-15).*

INTRODUCTION

The aim of 5G is to create a more ‘hyper connected’ society by more comprehensively, and intelligently, integrating LTE, Wi-Fi and cellular IoT technologies, together with at least one new 5G radio interface. This will allow mobile networks to dynamically allocate resources to support the varying needs of a hugely diverse set of connections – ranging from industrial machinery in factories, to automated vehicles as well as smartphones. The significant extra capacity of the 5G radio network will need to be supported with higher bandwidth backhaul, including fibre and microwave networks. Satellite networks should also be considered for 5G backhaul while noting their limited ability to satisfy 5G’s expected latency and bandwidth requirements

A central component in the evolution of all mobile technology generations has been the use of increasingly wide frequency bands to support higher speeds and larger amounts of traffic. 5G is no different, ultra-fast 5G services will require large amounts of spectrum including above 24 GHz where wide bandwidths are more readily available. Without making these higher frequency bands available for 5G, it may not be possible to deliver a step-change in mobile broadband speeds and support rapidly growing mobile data traffic, especially in busy urban areas.

Spectrum above 24 GHz is well recognized worldwide as being the key component for the fastest 5G services. Without them, 5G won’t be able to deliver significantly faster data speeds or support projected extensive mobile traffic growth.

INTER-AMERICAN PROPOSALS

Supports:

[Argentina], Brazil, Canada, Colombia, Costa Rica, United States of America, [Peru], Dominican Republic, Uruguay

MOD IAP/1.13/4

ARTICLE 5

Frequency allocations

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

22-24.75 GHz

Allocation to services		
Region 1	Region 2	Region 3
24.25-24.45 FIXED MOBILE <u>except aeronautical mobile ADD 5.A113 MOD 5.338A</u>	24.25-24.45 <u>MOBILE except aeronautical mobile ADD 5.A113 MOD 5.338A</u> RADIONAVIGATION	24.25-24.45 RADIONAVIGATION FIXED MOBILE <u>ADD 5.A113 MOD 5.338A</u>
24.45-24.65 FIXED INTER-SATELLITE MOBILE <u>except aeronautical mobile ADD 5.A113 MOD 5.338A*</u>	24.45-24.65 INTER-SATELLITE <u>MOBILE except aeronautical mobile ADD 5.A113 MOD 5.338A*</u> RADIONAVIGATION 5.533	24.45-24.65 FIXED INTER-SATELLITE MOBILE <u>ADD 5.A113 MOD 5.338A*</u> RADIONAVIGATION 5.533
24.65-24.75 FIXED FIXED-SATELLITE (Earth-to-space) 5.532B INTER-SATELLITE MOBILE <u>except aeronautical mobile ADD 5.A113 MOD 5.338A*</u>	24.65-24.75 INTER-SATELLITE <u>MOBILE except aeronautical mobile ADD 5.A113 MOD 5.338A*</u> RADIOLOCATION-SATELLITE (Earth-to-space)	24.65-24.75 FIXED FIXED-SATELLITE (Earth-to-space) 5.532B INTER-SATELLITE MOBILE <u>ADD 5.A113 MOD 5.338A*</u> 5.533

** This is included as the active service band is still not agreed and may need to be editorially modified when agreed.*

Reasons: The identification of the band 24.25-27.5 GHz to IMT will help satisfy the need for additional spectrum in the bands above 24 GHz. As studies show sharing with other services operating in 24.25-27.5 GHz is feasible, these modifications provide an identification for IMT in the frequency range 24.25-27.5 GHz and a primary allocation to the Mobile service, except aeronautical mobile, in 24.25-25.25 GHz. Protection of passive services in 23.6-24 GHz is addressed through the modification of No. 5.338A.

Supports:

[Argentina], Brazil, Canada, Colombia, Costa Rica, United States of America, [Peru], Dominican Republic, Uruguay

MOD IAP/1.13/5

24.75-29.9 GHz

Allocation to services		
Region 1	Region 2	Region 3
24.75-25.25 FIXED FIXED-SATELLITE (Earth-to-space) 5.532B MOBILE <u>except aeronautical mobile ADD 5.A113 MOD 5.338A*</u>	24.75-25.25 FIXED-SATELLITE (Earth-to-space) 5.535 MOBILE <u>except aeronautical mobile ADD 5.A113 MOD 5.338A*</u>	24.75-25.25 FIXED FIXED-SATELLITE (Earth-to-space) 5.535 MOBILE <u>ADD 5.A113 MOD 5.338A*</u>
25.25-25.5 FIXED INTER-SATELLITE 5.536 MOBILE <u>ADD 5.A113</u> Standard frequency and time signal-satellite (Earth-to-space)		
25.5-27 EARTH EXPLORATION-SATELLITE (space-to Earth) 5.536B FIXED INTER-SATELLITE 5.536 MOBILE <u>ADD 5.A113</u> SPACE RESEARCH (space-to-Earth) 5.536C Standard frequency and time signal-satellite (Earth-to-space) 5.536A		
27-27.5 FIXED INTER-SATELLITE 5.536 MOBILE <u>ADD 5.A113</u>	27-27.5 FIXED FIXED-SATELLITE (Earth-to-space) INTER-SATELLITE 5.536 5.537 MOBILE <u>ADD 5.A113</u>	

** This is included as the active service band is still not agreed and may need to be editorially modified when agreed.*

Reasons: The identification of the band 24.25-27.5 GHz to IMT will help satisfy the need for additional spectrum in the bands above 24 GHz. As studies show sharing with other services operating in 24.25-27.5 GHz is feasible, these modifications provide an identification for IMT in the frequency range 24.25-27.5 GHz and a primary allocation to the Mobile service, except aeronautical mobile, in the frequency range 24.25-25.25 GHz.

Supports:

[Argentina], Brazil, Canada, Colombia, Costa Rica, United States of America, [Peru], Dominican Republic, Uruguay

ADD IAP/1.13/6

5.A113 The frequency band 24.25-27.5 GHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use

of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. Resolution [A113-IMT 26 GHz] (WRC-19) applies.

Reasons: The identification of the band 24.25-27.5 GHz to IMT will help satisfy the need for additional spectrum in the bands above 24 GHz. As studies show sharing with other services operating in 24.25-27.5 GHz is feasible, these modifications provide an identification for IMT in the frequency range 24.25-27.5 GHz. This facilitates harmonized worldwide bands for IMT, which are highly desirable in order to achieve global roaming and the benefits of economies of scale.

Supports:

[Argentina], Brazil, Canada, Colombia, Costa Rica, United States of America, Dominican Republic, Uruguay

MOD IAP/1.13/7

5.338A In the frequency bands 1 350-1 400 MHz, 1 427-1 452 MHz, 22.55-23.55 GHz, [24.25-24.45] or [24.25-24.75] or [24.25-25.25] GHz, 30-31.3 GHz, 49.7-50.2 GHz, 50.4-50.9 GHz, 51.4-52.6 GHz, 81-86 GHz and 92-94 GHz, Resolution **750 (Rev.WRC-19~~5~~)** applies.

Reasons: The identification of the band 24.25-27.5 GHz to IMT will require limits in Resolution **750 (Rev. WRC-15)** to ensure near adjacent band compatibility with EESS (passive) in the band 23.6-24.0 GHz.

Supports:

[Argentina], Brazil, Canada, Colombia, Costa Rica, United States of America, Dominican Republic, Uruguay

MOD IAP/1.13/8

[Note: Discussions on Resolution 750 limits and active service bands to which they would be applied are not finalized and need to be completed at the next CITEEL PCC.II meeting.]

RESOLUTION 750 (Rev.WRC-19~~5~~)

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

The World Radiocommunication Conference (~~Geneva, 2015~~Sharm-el-Sheikh, 2019),

...

recognizing

- a) that studies documented in Report ITU-R SM.2092 do not consider point-to-multipoint communication links in the fixed service in the frequency bands 1 350-1 400 MHz and 1 427-1 452 MHz;
- b) that, in the frequency band 1 427-1 452 MHz and 24.25-27.5 GHz, mitigation measures, such as channel arrangements, improved filters and/or guardbands, may be necessary in order to meet the limits of unwanted emission for IMT stations in the mobile service specified in Table 1-1 of this Resolution;
- c) that, in the frequency band 1 427-1 452 MHz and 24.25-27.5 GHz, IMT mobile stations typically perform better than the equipment specifications as stated by relevant standards organizations, which may

be taken into account in meeting the limits specified in Table 1-1 (see also sections 4 and 5 of Report ITU-R RS.2336),

resolves

1 that unwanted emissions of stations brought into use in the frequency bands and services listed in Table 1-1 below shall not exceed the corresponding limits in that table, subject to the specified conditions;

...

TABLE 1-1

EESS (passive) band	Active service band	Active service	Limits of unwanted emission power from active service stations in a specified bandwidth within the EESS (passive) band ¹
...
23.6-24.0 GHz	[24.25-24.45] or [24.25-24.75] or [24.25-25.25] GHz	Mobile	<u>[-20] [-37.0] dBW in any 200 MHz of the EESS (passive) band for IMT base stations</u> <u>[-20] [-37.0] dBW in any 200 MHz of the EESS (passive) band for IMT mobile stations</u>
...

¹ The unwanted emission power level is to be understood here as the level measured at the antenna port, unless it is specified in terms of total radiated power (TRP) in the unwanted domain. TRP is the aggregate of the radiated power from all antenna elements.

Reasons: The identification of the band 24.25-27.5 GHz to IMT will require limits in Resolution **750 (Rev. WRC-15)** to ensure near adjacent band compatibility with EESS (passive) in the band 23.6-24.0 GHz.

Supports:

[Argentina], Brazil, [Canada], Colombia, Costa Rica, United States of America, Dominican Republic, Uruguay

ADD IAP/1.13/9

DRAFT NEW RESOLUTION [A113-IMT 26 GHZ] (WRC-19)

International Mobile Telecommunications in frequency band 24.25-27.5 GHz

The World Radiocommunication Conference (Sharm el-Sheikh, 2019),

considering

- a) that International Mobile Telecommunications (IMT), including IMT-2000, IMT-Advanced and IMT-2020, is the ITU vision of global mobile access;
- b) that the evolution of IMT is being studied within ITU-R;

- c) that harmonized worldwide bands for IMT are desirable in order to achieve global roaming and the benefits of economies of scale;
- d) that IMT systems are envisaged to provide increased peak data rates and capacity that may require a larger bandwidth;
- e) that IMT systems are now being evolved to provide diverse usage scenarios and applications such as enhanced mobile broadband, massive machine-type communications and ultra-reliable and low-latency communications;
- f) that ultra-low latency and very high bit-rate applications of IMT will require larger contiguous blocks of spectrum than those available in frequency bands that are currently identified for use by administrations wishing to implement IMT;
- g) that the properties of higher frequency bands, such as shorter wavelength, would better enable the use of advanced antenna systems including MIMO and beam-forming techniques in supporting enhanced broadband,

noting

Recommendation ITU-R M.2083 provides “IMT Vision – Framework and overall objectives of the future development of IMT for 2020 and beyond”,

recognizing

- a) that **5.536A** states that administrations operating earth stations in the Earth exploration satellite service or the space research service shall not claim protection from stations in the fixed or mobile services operated by other administrations;
- b) that Resolution **750 (Rev.WRC-19)** establishes limits on unwanted emissions in the frequency band 23.6-24 GHz from IMT base stations and IMT mobile stations within the [24.25-24.45]or[24.25-24.75]or[24.25-25.25] GHz frequency band,

resolves

1 that administrations wishing to implement IMT consider the use of frequency band 24.25-27.5 GHz identified for IMT in No. **5.A113**, and the benefits of harmonized utilization of the spectrum for the terrestrial component of IMT taking into account the latest relevant ITU-R Recommendations;

[*Note: The resolves 2 below needs to be further discussed at the next CITELE PCC.II meeting.*]

2 that, when deploying outdoor base stations, it shall be ensured that each antenna normally¹ transmits only with the main beam pointing below the horizon and the antenna shall have mechanical pointing below the horizon except when the base station is only receiving,

invites ITU-R

- 1 to develop harmonized frequency arrangements to facilitate IMT deployment in the frequency band 24.25-27.5 GHz, taking into account the results of sharing and compatibility studies;
- 2 to develop ITU-R Recommendations, as appropriate, to provide information on possible coordination measures for IMT and existing and future SRS/EESS earth stations operating in the frequency band 25.5-27 GHz;
- 3 to update existing ITU R Recommendations or develop a new ITU R Recommendation, as appropriate, to provide information and assistance to the administrations on possible coordination and

¹ With reference to *resolves 2* it is assumed that only a very limited number of indoor terminals with positive elevation will be communicating with base stations.

protection measures for the radio astronomy service in the frequency band 23.6-24 GHz from the IMT deployment.

Reasons: The identification of the band 24.25-27.5 GHz to IMT will help satisfy the need for additional spectrum in the bands above 24 GHz.

**33 MEETING OF PERMANENT
CONSULTATIVE COMMITTEE II:
RADIOCOMMUNICATIONS
April 8 to 12, 2019
Monterrey, Nuevo León, México**

**OEA/Ser.L/XVII.4.2.33
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INTER-AMERICAN PROPOSALS (IAPs) FOR WRC-19

AGENDA ITEM 1.13 (31.8-33.4 GHz)

(Item on the Agenda: 3.1 (SGT-1))

(Document submitted by CITELE Member States)

SGT-1

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Agenda Item 1.13: *To consider identification of frequency bands for the future development of International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis, in accordance with Resolution 238 (WRC-15);*

BACKGROUND

The draft CPM text developed for Agenda item 1.13 is organized into a consistent structure to help to manage the complexity of the discussion and the number of potential variations in proposals.

Each of the 12 candidate bands for identification is indicated with a letter: A (24.25-27.5 GHz), B (31.8-33.4 GHz), C (37-40.5 GHz), D (40.5-42.5 GHz), E (42.5-43.5 GHz), F (45.5-47 GHz), G (47-47.2 GHz), H (47.2-50.2 GHz), I (50.4-52.6 GHz), J (66-71 GHz), K (71-76 GHz) and L (81-86 GHz).

For Band B (31.8-33.4 GHz), there is currently only a proposal for no change due to incompatibility of IMT with other primary services to which the band is allocated.

INTER-AMERICAN PROPOSALS

ARTICLE 5

Frequency allocations

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

Supports:

Argentina, Canada, Colombia, United States of América, Guatemala, Mexico, Paraguay, Uruguay

NOC IAP/1.13/1

29.9-34.2 GHz

Allocation to services		
Region 1	Region 2	Region 3
29.9-30	FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539 MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.543 5.525 5.526 5.527 5.538 5.540 5.542	
30-31	FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE-SATELLITE (Earth-to-space) Standard frequency and time signal-satellite (space-to-Earth) 5.542	

31-31.3	FIXED 5.338A 5.543A 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	
31.5-31.8 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.546	31.5-31.8 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	31.5-31.8 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149
31.8-32	FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.547B 5.548	
32-32.3	FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.547C 5.548	
32.3-33	FIXED 5.547A INTER-SATELLITE RADIONAVIGATION 5.547 5.547D 5.548	
33-33.4	FIXED 5.547A RADIONAVIGATION 5.547 5.547E	
33.4-34.2	RADIOLOCATION 5.549	

Reasons: Studies have shown the IMT identification is not compatible with other co-primary services in the band, in particular with the radionavigation service.

**33 MEETING OF PERMANENT
CONSULTATIVE COMMITTEE II:
RADIOCOMMUNICATIONS
April 8 to 12, 2019
Monterrey, Nuevo León, México**

**OEA/Ser.L/XVII.4.2.33
CCP.II-RADIO-33/doc. 4359-1-13-70-
80/19
12 April 2019
Original: English**

INTER-AMERICAN PROPOSALS (IAPs) FOR WRC-19

AGENDA ITEM 1.13 (71-76 GHz, 81-86 GHz)

(Item on the Agenda: 3.1 (SGT-1))

(Document submitted by CITELE Member States)

SGT-1

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Agenda item 1.13: *to consider identification of frequency bands for the future development of International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis, in accordance with Resolution 238 (WRC-15);*

BACKGROUND

Resolution 238 (WRC-15) calls for studies to determine the spectrum needs for the terrestrial component of IMT in the frequency range between 24.25 GHz and 86 GHz, as well as sharing and compatibility studies, taking into account the protection of services to which the frequency band is allocated on a primary basis, for the frequency bands:

- 24.25-27.5 GHz, 37-40.5 GHz, 42.5-43.5 GHz, 45.5-47 GHz, 47.2-50.2 GHz, 50.4-52.6 GHz, 66-76 GHz and 81-86 GHz, which have allocations to the mobile service on a primary basis; and
- 31.8-33.4 GHz, 40.5-42.5 GHz and 47-47.2 GHz, which may require additional allocations to the mobile service on a primary basis.

The 71-76 GHz frequency band, or part of it, is allocated in the RR to the Broadcasting Service, Broadcasting-Satellite Service, Fixed Service, Fixed-Satellite Service (space-to-Earth), Mobile Service and Mobile-Satellite Service (space-to-Earth) on a primary basis and to Space Research (space-to-Earth) on a secondary basis.

The 81-86 GHz frequency band, or part of it, is allocated in the RR to the Fixed Service, Fixed-Satellite Service (Earth-to-space), Mobile Service and Mobile-Satellite Service (Earth-to-space), Radio Astronomy on a primary basis and Space Research (space-to-Earth) on a secondary basis.

Mobile broadband plays an increasingly crucial role in providing access to businesses and consumers worldwide. According to International Telecommunications Union (ITU) statistics, “Mobile-broadband subscriptions have grown more than 20% annually in the last five years and are expected to reach 4.3 billion globally by end 2017.” while “Mobile-broadband prices as a percentage of GNI per capita halved between 2013 and 2016 worldwide.”⁴

The rising demand for mobile broadband has created increased capacity requirements in the backhaul or transport network. The 71–76 GHz and 81–86 GHz frequency ranges are important for the provision of Fixed Service (FS) backhaul for mobile broadband services. These frequency ranges offer very wide bandwidth, enabling capacities on the order of 10 Gigabit per second or more over distances of a few kilometers and represent an alternative to fiber deployment: this data rate cannot be achieved in other frequency bands that are bandwidth-limited. It is expected that the demand for high-capacity backhaul will create momentum for the transition from lower bands to these frequency ranges. Point-to-point microwave radios used by FS are a key component in many mobile networks, as well as Fixed Service microwave links for various uses including broadcast, utilities and public safety. The 71-76 GHz and 81-86 GHz frequency ranges are expected to experience major growth in Fixed Service use and represent up to 20 percent of new backhaul deployments annually by 2020⁵.

In order to provide important backhaul services including those, which support IMT-2020 deployments, no changes are proposed for the 71-76 GHz and 81-86 GHz frequency ranges.

⁴ ICT Facts and Figures 2017, p 4 and 5. See: <https://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2017.pdf>

⁵ <https://docs.fcc.gov/public/attachments/FCC-17-152A1.pdf>

In addition, no change to these bands would facilitate compatibility with adjacent band services, in particular with automotive radars in the band 76-81 GHz.

INTER-AMERICAN PROPOSALS

Supports:

Argentina, Canada, Colombia, United States of America, Guatemala, Mexico

NOC IAP/1.13/2

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations

(See No. 2.1)

66-81 GHz

Allocation to services		
Region 1	Region 2	Region 3
71-74	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	
74-76	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth) 5.561	

Reasons: No change in the 71-76 GHz frequency range provides for increasing use of these bands for backhaul and other fixed uses in support of IMT-2020. Also facilitates compatibility with automotive radars in the adjacent 76-81 GHz band.

Supports:

Argentina, Canada, Colombia, United States of America, Guatemala, Mexico

NOC IAP/1.13/3

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations

(See No. 2.1)

81-86 GHz

Allocation to services		
Region 1	Region 2	Region 3
81-84	FIXED 5.338A FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Space research (space-to-Earth) 5.149 5.561A	
84-86	FIXED 5.338A FIXED-SATELLITE (Earth-to-space) 5.561B MOBILE RADIO ASTRONOMY 5.149	

Reasons: No change to the 81-86 GHz frequency range provides for increasing use of these bands for backhaul and other fixed uses in support of IMT-2020. Also facilitates compatibility with automotive radars in the adjacent 76-81 GHz band.

**33 MEETING OF PERMANENT
CONSULTATIVE COMMITTEE II:
RADIOCOMMUNICATIONS
April 8 to 12, 2019
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10 April 2019
Original: English**

INTER-AMERICAN PROPOSALS (IAPs) FOR WRC-19

AGENDA ITEM 1.14 (21.4-22 GHz)

(Item on the Agenda: 3.1 (SGT-1))

(Document submitted by CITELE Member States)

SGT-1

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Agenda Item Rapporteur: Eduardo LIMA – B – eduardo.lima@accesspartnership.com

Agenda Item Vice-Rapporteur: Vassilios MIMIS – CAN – vmimis@primus.ca

Note: This agenda item is still under discussion.

Agenda Item 1.14: *to consider, on the basis of ITU-R studies in accordance with Resolution 160 (WRC-15), appropriate regulatory actions for high-altitude platform stations (HAPS), within existing fixed-service allocations.*

BACKGROUND

Refer to “Background” section in Document “doc. 4357-1-14-6GHz” for the 6 440-6 520 MHz and 6 560-6 640 MHz frequency ranges.

BROADBAND HAPS (connectivity applications)

Refer to “Broadband HAPS (connectivity applications)” section in Document “doc. 4357-1-14-6GHz” for the 6 440-6 520 MHz and 6 560-6 640 MHz frequency ranges.

BROADBAND HAPS (specific applications)

Refer to “Broadband HAPS (specific applications)” section in Document “doc. 4357-1-14-6GHz” for the 6 440-6 520 MHz and 6 560-6 640 MHz frequency ranges.

SHARING STUDIES

Refer to “Sharing Studies” section in Document “doc. 4357-1-14-6GHz” for the 6 440-6 520 MHz and 6 560-6 640 MHz frequency ranges.

METHODS

Refer to “Methods” section in Document “doc. 4357-1-14-6GHz” for the 6 440-6 520 MHz and 6 560-6 640 MHz frequency ranges.

Table 1: Summary of methods to satisfy agenda item 1.14 for band 21.4-22 GHz

Bands	Methods and Options		
	Method A	Method B	Method C
21.4-22 GHz	√	B2	N/A

The proposal in this document is based on the following method of the CPM Report.

Table 2

Region	Bands	Sections	Method
Region 2	21.4-22 GHz	4.1/5.1	Method 3B2, Option 1b

HAPS Broadband spectrum requirements

Refer to “HAPS Broadband spectrum requirements” section in Document “doc. 4357-1-14-6GHz” for the 6 440-6 520 MHz and 6 560-6 640 MHz frequency ranges.

HAPS Broadband spectrum requirements for *specific* applications

Refer to “HAPS Broadband spectrum requirements” section in Document “doc. 4357-1-14-6GHz” for the 6 440-6 520 MHz and 6 560-6 640 MHz frequency ranges.

INTER-AMERICAN PROPOSALS

Supports:

Bahamas, Brazil, Canada, Guatemala, Mexico, Dominican Republic

MOD IAP/1.14/1

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations

(See No. 2.1)

18.4-22 GHz

Allocation to services		
Region 1	Region 2	Region 3
21.4-22 FIXED MOBILE BROADCASTING- SATELLITE 5.208B 5.530A 5.530B 5.530D	21.4-22 FIXED <u>ADD 5.B114</u> MOBILE 5.530A	21.4-22 FIXED MOBILE BROADCASTING- SATELLITE 5.208B 5.530A 5.530B 5.530D 5.531

Reasons: To add the text of the footnote allowing HAPS to operate in the fixed service allocation in the 21.4-22 GHz band.

Supports:

Bahamas, Brazil, Canada, Guatemala, Mexico, Dominican Republic

ADD IAP/1.14/2

5.B114 The allocation to the fixed service in the band 21.4-22 GHz is identified for use in Region 2 by high-altitude platform stations (HAPS). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated on a co-primary basis and does not establish priority in the Radio Regulations. Such use of the fixed-service allocation by HAPS is limited to the HAPS-to-ground direction and shall be in accordance with the provisions of Resolution [B114] (WRC 19). (WRC-19)

Reasons: To add the text of the footnote allowing HAPS to operate in the fixed service allocation in the 21.4-22 GHz band.

Supports:

Bahamas, Brazil, Canada, Guatemala, Mexico, Dominican Republic

ADD IAP/1.14/3

RESOLUTION [B114] (WRC-19)

Use of the band 21.4-22 GHz by high altitude platform stations in the fixed service for Region 2

The World Radiocommunication Conference (Sharm el-Sheikh, 2019),

considering

- a) that WRC-15 considered that there is a need for greater broadband connectivity in underserved communities and in rural and remote areas, that current technologies can be used to deliver broadband applications by high-altitude platform stations (HAPS), which can provide broadband connectivity and disaster recovery communications with minimal ground network infrastructure;
- b) that WRC-15 decided to study additional spectrum needs for fixed HAPS links to provide broadband connectivity, including within the band 21.4-22 GHz, recognizing that the existing HAPS identifications were established without reference to today's broadband capabilities;
- c) that HAPS can provide broadband connectivity with minimal ground network infrastructure;
- d) that ITU-R has conducted studies dealing with compatibility between systems using HAPS and existing services in the band 21.4-22 GHz in Region 2 leading to Report ITU-R F.[HAPS-21],

recognizing

- a) that HAPS is defined in No. **1.66A** of the Radio Regulations as a station located on an object at an altitude of 20-50 km and at a specified, nominal, fixed point relative to the Earth, and is subject to No. **4.23**,

resolves

1 that for the purpose of protecting fixed service systems in territory of other administrations in the band 21.4-22 GHz, the power flux density level per HAPS at the surface of the Earth in territory of other administrations shall not exceed the following limits, under clear-sky conditions, , unless the explicit agreement of the affected administration is provided at the time of notification of HAPS:

0.7 θ – 135	dB(W/(m ² · MHz))	for	0° ≤ θ < 10°
2.4 θ – 152	dB(W/(m ² · MHz))	for	10° ≤ θ < 20°
0.45 θ – 113	dB(W/(m ² · MHz))	for	20° ≤ θ < 60°
–86	dB(W/(m ² · MHz))	for	60° ≤ θ ≤ 90°

where θ is the angles of arrival of the incident wave above the horizontal plane, in degrees. These limits relate to the power flux density which would be obtained under clear-sky conditions with assumed free-

space propagation. These limits were derived by taking into account the impact of gaseous attenuation and polarization loss.

2 that in order to ensure the protection of EESS (passive), the e.i.r.p. density, in the bands 21.2-21.4 GHz and 22.21-22.5 GHz, per HAPS operating in the band 21.4-22 GHz, shall not exceed:

-0.76 θ - 9.5	dB(W/100 MHz)	for	$-4.53^\circ \leq \theta < 35.5^\circ$
-36.5	dB(W/100 MHz)	for	$35.5^\circ \leq \theta \leq 90^\circ$

where θ is the elevation angle in degrees (angles of arrival above the horizontal plane).

3 that in order to ensure the protection of the radio astronomy service, the power flux density produced by unwanted emissions from HAPS downlink transmissions in the band 21.4-22 GHz, shall not exceed -176 dB(W/(m²/290 MHz)) for continuum observations, and -192 dB(W/(m².250 kHz)) for spectral line observations in the band 22.21-22.5 GHz at an RAS station location at a height of 50m. This limit relates to the power flux density which would be obtained using a time percentage of 2% in the relevant propagation model:

4 that *resolves 3* shall apply at any radio astronomy station that was in operation prior to 22 November 2019; and that has been notified to the Bureau in the band 22.21-22.5 GHz before 22 May 2020, or at any radio astronomy station that was notified before the date of receipt of the complete Appendix 4 information for notification for the HAPS system to which *resolves 3* applies. Radio astronomy stations notified after this date may seek an agreement with administrations that have notified HAPS.

5 that administrations planning to implement a HAPS system in the 21.4-22 GHz shall notify the frequency assignments by submitting all mandatory elements of Appendix 4 to the Bureau for the examination of compliance with respect to the Radio Regulations with a view to their registration in the Master International Frequency Register;

instructs the Director of the Radiocommunication Bureau
to take all necessary measures to implement this Resolution.

Reasons: To add the text of a resolution specifying the operating requirements for HAPS to protect other incumbent services.

**33 MEETING OF PERMANENT
CONSULTATIVE COMMITTEE II:
RADIOCOMMUNICATIONS
April 8 to 12, 2019
Monterrey, Nuevo Leon, Mexico**

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INTER-AMERICAN PROPOSALS (IAPs) FOR WRC-19

AGENDA ITEM 1.14 (38-39.5 GHz)

(Item on the Agenda: 3.1 (SGT-1)

(Document submitted by CITELE Member States)

SWG-1

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Agenda Item Rapporteur: Eduardo LIMA – B – eduardo.lima@accesspartnership.com

Agenda Item Vice-Rapporteur: Vassilios MIMIS – CAN – vmimis@primus.ca

Note: This agenda item is still under discussion.

Agenda Item 1.14: *to consider, on the basis of ITU-R studies in accordance with Resolution 160 (WRC-15), appropriate regulatory actions for high-altitude platform stations (HAPS), within existing fixed-service allocations*

BACKGROUND

Refer to “Background” section in Document “doc. 4357-1-14-6GHz” for the 6 440-6 520 MHz and 6 560-6 640 MHz frequency ranges.

BROADBAND HAPS (connectivity applications)

Refer to “Broadband HAPS (connectivity applications)” section in Document “doc. 4357-1-14-6GHz” for the 6 440-6 520 MHz and 6 560-6 640 MHz frequency ranges.

BROADBAND HAPS (specific applications)

Refer to “Broadband HAPS (specific applications)” section in Document “doc. 4357-1-14-6GHz” for the 6 440-6 520 MHz and 6 560-6 640 MHz frequency ranges.

SHARING STUDIES

Refer to “Sharing Studies” section in Document “doc. 4357-1-14-6GHz” for the 6 440-6 520 MHz and 6 560-6 640 MHz frequency ranges.

METHODS

Refer to “Methods” section in Document “doc. 4357-1-14-6GHz” for the 6 440-6 520 MHz and 6 560-6 640 MHz frequency ranges.

Table 3: Summary of methods to satisfy agenda item 1.14 for band 38-39.5 GHz

Bands	Methods and Options		
	Method A	Method B	Method C
38-39.5 GHz	√	B2	N/A

The proposal in this document is based on the following method of the CPM Report.

Table 4

Region	Bands	Sections	Method
Global	38-39.5 GHz	4.1/5.1	Method 8B2, Option 1C

HAPS BROADBAND SPECTRUM REQUIREMENTS

Refer to “HAPS Broadband spectrum requirements” section in Document “doc. 4357-1-14-6GHz” for the 6 440-6 520 MHz and 6 560-6 640 MHz frequency ranges.

INTER-AMERICAN PROPOSALS

Supports:

Bahamas, Brazil, Canada, Colombia, Dominican Republic, [Ecuador], Guatemala, Mexico, [Peru]

MOD IAP/1.14/4

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations

(See No. 2.1)

38-39.5 GHz

Allocation to services		
Region 1	Region 2	Region 3
38-39.5	FIXED <u>ADD 5.G114</u> FIXED-SATELLITE (space-to-Earth) MOBILE Earth exploration-satellite (space-to-Earth) 5.547	

Reasons: To add a footnote to the 38-39.5 GHz band allowing HAPS to operate in the fixed service allocation.

Supports:

Bahamas, Brazil, Canada, Colombia, Dominican Republic, [Ecuador], Guatemala, Mexico, [Peru]

ADD IAP/1.14/5

5.G114 The allocation to the fixed service in the band 38-39.5 GHz is identified for worldwide use by high-altitude platform stations (HAPS). Such use of the fixed-service allocation by HAPS is limited to the ground-to-HAPS direction. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated on a co-primary basis and does not establish priority in the Radio Regulations. Administrations planning to implement a HAPS system in the 38-39.5 GHz band shall notify the frequency assignments by submitting all mandatory elements of Appendix 4 to the Bureau for the examination of compliance with respect to the Radio Regulations with a view to their registration in the Master International Frequency Register. (WRC-19)

Reasons: To add the text of the footnote allowing HAPS to operate in the fixed service allocation in the 38-39.5 GHz band.

**33 MEETING OF PERMANENT
CONSULTATIVE COMMITTEE II:
RADIOCOMMUNICATIONS
April 8 to 12, 2019
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INTER-AMERICAN PROPOSALS (IAPs) FOR WRC-19

AGENDA ITEM 1.16 (5 150-5 250 MHz)

(Item on the Agenda: 3.1 (SGT-1))

(Document submitted by CITELE Member States)

SGT-1

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Agenda Item Vice-Rapporteur: TBD

Note: This band item is still under discussion.

Agenda Item 1.16: *to consider issues related to wireless access systems, including radio local area networks (WAS/RLAN), in the frequency bands between 5 150 MHz and 5 925 MHz, and take the appropriate regulatory actions, including additional spectrum allocations to the mobile service, in accordance with Resolution 239 (WRC-15)*

BACKGROUND

Radio Local Area Networks (RLANs) have proven to be a tremendous success in providing affordable and ubiquitous broadband connectivity. Introduced by some administrations in limited spectrum in the 2.4 GHz band and subsequently expanded into the 5 GHz band, RLANs, specifically Wi-Fi devices, now are an integral component of the world's connectivity infrastructure. According to the latest statistics, more than 50% of all global IP traffic will be delivered over Wi-Fi⁶, and forecasts suggest that with the introduction of 5G and gigabit wireless technologies, the demand will continue to grow rapidly in the coming years. In spite of the growing demand, however, the spectrum available globally for RLAN access has remained unchanged since World Radiocommunication Conference 2003 (WRC-03). This lack of adequate spectrum threatens to degrade RLAN performance and limit connectivity for billions of consumers worldwide. This problem is particularly acute for RLAN outdoor deployments. Since WRC-03, requirements for RLAN outdoor deployments have evolved, for example:

- Smart cities and communities;⁷
- Mobile Data – volume of mobile data traffic offloaded to Wi-Fi significantly exceeds traffic carried (remaining) on cellular networks;⁸
- Locations which are increasingly expected to offer ubiquitous Wi-Fi access including outdoor areas such as sports arenas, municipal/private networks, parks, and other high traffic areas as well as indoor areas such as shopping malls, airports, hotels, restaurants office buildings and schools;
- Sensors and connectivity for public transport, automotive, utilities, etc. rely on Wi-Fi connectivity;
- Internet of Things (IoT) technologies entail both indoor and outdoor deployments;
- Connected wearables and other consumer applications rely on Wi-Fi to support various use cases.

The problem of inadequate spectrum access for RLANs is exacerbated further by the fact that except for the band 5 150-5 250 MHz, other spectrum in the 5 GHz range harmonized for RLANs on a world-wide basis is subject to the dynamic frequency selection (DFS) constraint. The DFS constraint, albeit necessary, reduces spectrum access and raises equipment cost and complexity for RLAN implementation. Thus, the 5 150-5 250 MHz band offers unique advantages in addressing the growing need for RLAN outdoor access. Recognizing this fact, in 2014, the United States adopted regulations that protect other operations while allowing limited RLAN operations outdoors in the 5 150-5 250 MHz band. In particular, the United States regulations have promoted RLAN use of this band in co-existence with mobile-satellite-service (MSS) operations through E.I.R.P. limitations at higher antenna elevation angles. The United States rules generally permit indoor and outdoor RLAN operations in the 5 150-5 250 MHz

⁶ <https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/vni-hyperconnectivity-wp.html>

⁷ <https://www.itu.int/en/ITU-T/ssc/Pages/default.aspx>

⁸ <https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/vni-hyperconnectivity-wp.html>

band at up to 1 Watt conducted or 4 Watt E.I.R.P., except that operations with antenna elevation angles in excess of 30 degrees from the horizon must not exceed 125 mW E.I.R.P.⁹ These rules are intended to prevent harmful interference to MSS Earth-to-space communications by limiting the aggregate noise received by the satellite.

Since the United States adoption of these more permissive regulations for 5 150-5 250 MHz, other countries authorized similar outdoor RLAN deployments. The proposal below establishes an international regulatory framework that will enable much-needed RLAN outdoor deployments while ensuring protection of other operations in the 5 150-5 250 MHz band.

INTER-AMERICAN PROPOSALS

Supports:

Belize, Colombia, Costa Rica, United States of America, Guatemala, Mexico, Nicaragua

MOD IAP/1.16/4

RESOLUTION 229 (REV.WRC-~~12~~19)

Use of the bands 5 150-5 250 MHz, 5 250-5 350 MHz and 5 470-5 725 MHz by the mobile service for the implementation of wireless access systems including radio local area networks

The World Radiocommunication Conference (~~Geneva, 2012~~Sharm el-Sheikh, 2019),

considering

- a) that WRC-03 allocated the bands 5 150-5 350 MHz and 5 470-5 725 MHz on a primary basis to the mobile service for the implementation of wireless access systems (WAS), including radio local area networks (RLANs);
- b) that WRC-03 decided to make an additional primary allocation for the Earth exploration-satellite service (EESS) (active) in the band 5 460-5 570 MHz and space research service (SRS) (active) in the band 5 350-5 570 MHz;
- c) that WRC-03 decided to upgrade the radiolocation service to a primary status in the 5 350-5 650 MHz band;
- d) that the band 5 150-5 250 MHz is allocated worldwide on a primary basis to the fixed-satellite service (FSS) (Earth-to-space), this allocation being limited to feeder links of non-geostationary-satellite systems in the mobile-satellite service (No. **5.447A**);
- e) that the band 5 150-5 250 MHz is also allocated to the mobile service, on a primary basis, in some countries (No. **5.447**) subject to agreement obtained under No. **9.21**;
- f) that the band 5 250-5 460 MHz is allocated to the EESS (active) and the band 5 250-5 350 MHz to the SRS (active) on a primary basis;
- g) that the band 5 250-5 725 MHz is allocated on a primary basis to the radiodetermination service;
- h) that there is a need to protect the existing primary services in the 5 150-5 350 MHz and 5 470-5 725 MHz bands;
- i) that results of studies in ITU-R indicate that sharing in the band 5 150-5 250 MHz between WAS, including RLANs, and the FSS is feasible under specified conditions;

⁹ 47 C.F.R. § 15.407(a)(1)(i).

- j) that studies have shown that sharing between the radiodetermination and mobile services in the bands 5 250-5 350 MHz and 5 470-5 725 MHz is only possible with the application of mitigation techniques such as dynamic frequency selection;
- k) that there is a need to specify an appropriate e.i.r.p. limit and, where necessary, operational restrictions for WAS, including RLANs, in the mobile service in the bands 5 250-5 350 MHz and 5 470-5 570 MHz in order to protect systems in the EESS (active) and SRS (active);
- l) that the deployment density of WAS, including RLANs, will depend on a number of factors including intrasystem interference and the availability of other competing technologies and services;
- ~~m) that the means to measure or calculate the aggregate pfd level at FSS satellite receivers specified in Recommendation ITU-R S.1426 are currently under study;~~
- ~~n) that certain parameters contained in Recommendation ITU-R M.1454 related to the calculation of the number of RLANs tolerable by FSS satellite receivers operating in the band 5 150-5 250 MHz require further study;~~
- ~~o) that an aggregate pfd level has been developed in Recommendation ITU-R S.1426 for the protection of FSS satellite receivers in the 5 150-5 250 MHz band,~~

further considering

- a) that the interference from a single WAS, including RLANs, complying with the operational restrictions under *resolves* 2 will not on its own cause any unacceptable interference to FSS receivers on board satellites in the band 5 150-5 250 MHz;
- b) that such FSS satellite receivers may experience an unacceptable effect due to the aggregate interference from these WAS, including RLANs, especially in the case of a prolific growth in the number of these systems;
- c) that the aggregate effect on FSS satellite receivers will be due to the global deployment of WAS, including RLANs, and it may not be possible for administrations to determine the location of the source of the interference and the number of WAS, including RLANs, in operation simultaneously,

noting

- a) that, prior to WRC-03, a number of administrations have developed regulations to permit indoor and outdoor WAS, including RLANs, to operate in the various bands under consideration in this Resolution;
- b) that, in response to Resolution **229 (WRC-03)**^{*}, ITU-R developed Report ITU-R M.2115, which provides testing procedures for implementation of dynamic frequency selection,

recognizing

- a) that in the band 5 600-5 650 MHz, ground-based meteorological radars are extensively deployed and support critical national weather services, according to footnote No. **5.452**;
- ~~b) that the means to measure or calculate the aggregate pfd level at FSS satellite receivers specified in Recommendation ITU-R S.1426 are currently under study;~~
- ~~c) that certain parameters contained in Recommendation ITU-R M.1454 related to the calculation of the number of RLANs tolerable by FSS satellite receivers operating in the band 5 150-5 250 MHz require further study;~~
- ~~db) that the performance and interference criteria of spaceborne active sensors in the EESS (active) are given in Recommendation ITU-R RS.1166;~~
- ~~ec) that a mitigation technique to protect radiodetermination systems is given in Recommendation ITU-R M.1652;~~
- ~~f) that an aggregate pfd level has been developed in Recommendation ITU-R S.1426 for the protection of FSS satellite receivers in the 5 150-5 250 MHz band;~~
- gd) that Recommendation ITU-R RS.1632 identifies a suitable set of constraints for WAS, including RLANs, in order to protect the EESS (active) in the 5 250-5 350 MHz band;

^{*} *Note by the Secretariat:* This Resolution was revised by WRC-12.

- he)* that Recommendation ITU-R M.1653 identifies the conditions for sharing between WAS, including RLANs, and the EESS (active) in the 5 470-5 570 MHz band;
- if)* that the stations in the mobile service should also be designed to provide, on average, a near-uniform spread of the loading of the spectrum used by stations across the band or bands in use to improve sharing with satellite services;
- ig)* that WAS, including RLANs, provide effective broadband solutions, future demand has increased since the frequency range was first identified for this application;
- kh)* that there is a need for administrations to ensure that WAS, including RLANs, meet the required mitigation techniques, for example, through equipment or standards compliance procedures,

resolves

- 1 that the use of these bands by the mobile service ~~will be~~ for the implementation of WAS, including RLANs, as described in the most recent version of Recommendation ITU-R M.1450;
- 2 that in the band 5 150-5 250 MHz, stations in the mobile service shall be restricted to indoor use with a maximum mean e.i.r.p. conducted output of 1 W provided the maximum antenna gain does not exceed 6 dBi (i.e. a total maximum mean e.i.r.p. of 36 dBm)¹, and, of 200 mW and a maximum mean e.i.r.p. density of 10 mW/MHz in any 1 MHz band or equivalently 0.25 mW/25 kHz in any 25 kHz band in addition, the maximum power spectral density shall not exceed 17 dBm in any 1 MHz band, and, for the outdoor operation of stations in the mobile service the maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon shall not exceed 125 mW (21 dBm), and finally, for WAS/RLAN transmitters operating in the 5 150-5 250 MHz band, all unwanted emissions outside of the 5 150-5 350 MHz band shall not exceed an e.i.r.p. of -27 dBm/MHz;
- 3 ~~that administrations may monitor whether the aggregate pfd levels given in Recommendation ITU-R S.1426² have been, or will be exceeded in the future, in order to enable a future competent conference to take appropriate action;~~
- 43 that in the band 5 250-5 350 MHz, stations in the mobile service shall be limited to a maximum mean e.i.r.p. of 200 mW and a maximum mean e.i.r.p. density of 10 mW/MHz in any 1 MHz band. Administrations are requested to take appropriate measures that will result in the predominant number of stations in the mobile service being operated in an indoor environment. Furthermore, stations in the mobile service that are permitted to be used either indoors or outdoors may operate up to a maximum mean e.i.r.p. of 1 W and a maximum mean e.i.r.p. density of 50 mW/MHz in any 1 MHz band, and, when operating above a mean e.i.r.p. of 200 mW, these stations shall comply with the following e.i.r.p. elevation angle mask where θ is the angle above the local horizontal plane (of the Earth):

-13 dB(W/MHz)	for	$0^\circ \leq \theta < 8^\circ$
-13 - 0.716($\theta - 8$) dB(W/MHz)	for	$8^\circ \leq \theta < 40^\circ$
-35.9 - 1.22($\theta - 40$) dB(W/MHz)	for	$40^\circ \leq \theta \leq 45^\circ$
-42 dB(W/MHz)	for	$45^\circ < \theta$;
- 54 that administrations may exercise some flexibility in adopting other mitigation techniques, provided that they develop national regulations to meet their obligations to achieve an equivalent level of protection to the EESS (active) and the SRS (active) based on their system characteristics and interference criteria as stated in Recommendation ITU-R RS.1632;
- 65 that in the band 5 470-5 725 MHz, stations in the mobile service shall be restricted to a maximum transmitter power of 250 mW^{3,2} with a maximum mean e.i.r.p. of 1 W and a maximum mean e.i.r.p. density of 50 mW/MHz in any 1 MHz band;

¹ In the context of this Resolution, “mean e.i.r.p.” refers to the e.i.r.p. during the transmission burst which corresponds to the highest power, if power control is implemented.

² ~~= -124 - 20 log₁₀ ($h_{SAT}/1\,414$) dB(W/(m² · 1 MHz)), or equivalently, -140 - 20 log₁₀ ($h_{SAT}/1\,414$) dB(W/(m² · 25 kHz)), at the FSS satellite orbit, where h_{SAT} is the altitude of the satellite (km).~~

76 that in the bands 5 250-5 350 MHz and 5 470-5 725 MHz, systems in the mobile service shall either employ transmitter power control to provide, on average, a mitigation factor of at least 3 dB on the maximum average output power of the systems, or, if transmitter power control is not in use, then the maximum mean e.i.r.p. shall be reduced by 3 dB;

87 that, in the bands 5 250-5 350 MHz and 5 470-5 725 MHz, the mitigation measures found in Annex 1 to Recommendation ITU-R M.1652-1 shall be implemented by systems in the mobile service to ensure compatible operation with radiodetermination systems,

invites administrations

to ~~adopt~~consider appropriate ~~regulation if they intend to permit~~measures when allowing the operation of stations in the mobile service using the e.i.r.p. elevation angle mask referred in resolves 43 above, to ensure the equipment is operated in compliance with this mask,

invites ITU-R

~~1 to continue work on regulatory mechanisms and further mitigation techniques to avoid incompatibilities which may result from aggregate interference into the FSS in the band 5 150-5 250 MHz from a possible prolific growth in the number of WAS, including RLANs;~~

21 to continue studies on mitigation techniques to provide protection of EESS from stations in the mobile service;

32 to continue studies on suitable test methods and procedures for the implementation of dynamic frequency selection, taking into account practical experience.

Reasons: The band 5 150-5 250 MHz is the only worldwide harmonized spectrum for RLANs in the 5 GHz range that is not subject to the dynamic frequency selection constraint. Studies confirm that RLAN operations outdoors in the band 5 150-5 250 MHz will not cause harmful interference to other operations in the band. The results of these studies are further confirmed by the real-world operational experience with some countries allowing RLAN operations outdoors in the 5 150-5 250 MHz with appropriate constraints. Allowing RLAN access to outdoor use in the band 5 150-5 250 MHz would address the growing demand for continuous and ubiquitous connectivity.

Supports:

Belize, Colombia, Costa Rica, United States of America, Guatemala, Mexico, Nicaragua

MOD IAP/1.16/5

5.446A The use of the bands 5 150-5 350 MHz and 5 470-5 725 MHz by the stations in the mobile, except aeronautical mobile, service shall be in accordance with Resolution **229 (Rev.WRC-19)**

Reasons: Consequential change to update reference to the revised Resolution **229 (Rev.WRC-19)**.

³² Administrations with existing regulations prior to WRC-03 may exercise some flexibility in determining transmitter power limits.

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Monterrey, Nuevo Leon, Mexico**

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INTER-AMERICAN PROPOSALS (IAPs) FOR WRC-19

AGENDA ITEM 1.16 (5 250-5 350 MHz)

(Item on the Agenda: 3.1 (SGT-1))

(Document submitted by CITELE Member States)

SGT-1

Coordinator: Luciana CAMARGOS – B – lcamargos@gsma.com

Vice-Coordinator: José COSTA – CAN - jose.costa@ericsson.com

Agenda Item Rapporteur: Jayne STANCAVAGE – USA - jayne.stancavage@intel.com

Agenda Item Vice-Rapporteur: TBD

Agenda Item 1.16: *To consider issues related to wireless access systems, including radio local area networks (WAS/RLAN), in the frequency bands between 5 150 MHz and 5 925 MHz, and take the appropriate regulatory actions, including additional spectrum allocations to the mobile service, in accordance with Resolution 239 (WRC-15)*

BACKGROUND

Since WRC-03, the demand for mobile broadband applications especially for WAS/RLANs has been growing rapidly. Resolution 239 (WRC-15) states “that the results of ITU-R studies indicate that the minimum spectrum need for WAS/RLAN in the 5 GHz frequency range in the year 2018 is estimated at 880 MHz; this figure includes 455-580 MHz already utilized by non-IMT mobile broadband applications operating within the 5 GHz range resulting in 300-425 MHz additional spectrum being required.” In particular, Resolution 239 (WRC-15) looks at studying possible RLAN operations in the frequency bands from 5 150-5 925 MHz.

Resolution 239 (WRC-15) calls for the ITU-R to study WAS/RLAN technical characteristics and operational requirements in the 5 GHz frequency range. The resolution also calls for the ITU-R to conduct studies with a view to identify potential WAS/RLAN mitigation techniques to facilitate sharing with incumbent systems in the frequency bands 5 150-5 350 MHz, 5 350-5 470 MHz, 5 725-5 850 MHz and 5 850-5 925 MHz, while ensuring the protection of incumbent services including their current and planned use.

The frequency band 5 250-5 350 MHz is allocated in all regions on a primary basis to the EESS (active), MS (except aeronautical), RLS, SRS and SRS (active) with associated footnotes. The studies towards WRC-19 in response to *invites* ITU-R c) of Resolution 239 (WRC-15) have concluded that relaxation of the WAS/RLAN operating conditions in 5 250-5 350 MHz, as given in Resolution 229 (Rev.WRC-12), would not ensure protection of the radiodetermination service and EESS (active) sensors. Furthermore, it was confirmed that the current operating conditions are sufficient for the operating needs of WAS/RLAN. Therefore, no change to the Radio Regulations is proposed. The operating conditions of Resolution 229 (Rev.WRC-12) should continue to be applied to WAS/RLAN in this band to protect incumbents.

INTER-AMERICAN PROPOSALS

Supports:

Argentina, Brazil, Canada, Colombia, Costa Rica, United States of America, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Paraguay, Dominican Republic, Uruguay

ARTICLE 5

Frequency Allocations

Section IV – Table of Frequency Allocations

5 250-5 570 MHz

Allocation to services		
Region 1	Region 2	Region 3
5 250-5 255	EARTH EXPLORATION-SATELLITE (active) MOBILE except aeronautical mobile 5.446A 5.447F RADIOLOCATION SPACE RESEARCH 5.447D 5.447E 5.448 5.448A	
5 255-5 350	EARTH EXPLORATION-SATELLITE (active) MOBILE except aeronautical mobile 5.446A 5.447F RADIOLOCATION SPACE RESEARCH (active) 5.447E 5.448 5.448A	

Reasons: Since the adoption of Resolution 229 (Rev. WRC-12) at WRC-03, millions of WAS/RLAN (such as Wi-Fi) devices have been deployed in the band 5 250-5 350 MHz. Studies in response to invite c of Resolution 239 (WRC-15) have shown that changing the WAS/RLAN operating conditions in the band 5 250-5 350 MHz would not ensure protection of incumbent radiodetermination services and EESS (active) sensors.

**33 MEETING OF PERMANENT
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INTER-AMERICAN PROPOSALS (IAPs) FOR WRC-19

AGENDA ITEM 1.16 (5 350-5 470 MHz)

(Item on the Agenda: 3.1 (SGT-1))

(Document submitted by CITELE Member States)

SGT-1

Coordinator: Luciana CAMARGOS – B – lcamargos@gsma.com

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Agenda Item Rapporteur: Jayne STANCAVAGE – USA - jayne.stancavage@intel.com

Agenda Item Vice-Rapporteur: TBD

Agenda Item 1.16: *To consider issues related to wireless access systems, including radio local area networks (WAS/RLAN), in the frequency bands between 5 150 MHz and 5 925 MHz, and take the appropriate regulatory actions, including additional spectrum allocations to the mobile service, in accordance with Resolution 239 (WRC-15)*

BACKGROUND

Since WRC-03, the demand for mobile broadband applications especially for WAS/RLANs has been growing rapidly. Resolution 239 (WRC-15) states “that the results of ITU-R studies indicate that the minimum spectrum need for WAS/RLAN in the 5 GHz frequency range in the year 2018 is estimated at 880 MHz; this figure includes 455-580 MHz already utilized by non-IMT mobile broadband applications operating within the 5 GHz range resulting in 300-425 MHz additional spectrum being required.” In particular, Resolution 239 (WRC-15) looks at studying possible RLAN operations in the frequency bands from 5 150-5 925 MHz.

The band 5 350 – 5 470 MHz is allocated to different co-primary services in the RR Table of Allocations, including Earth Exploration Satellite, Radiolocation, Aeronautical Radionavigation, and Space Research (active). In the frequency band 5 350 to 5 470 MHz there are no primary mobile allocations. Earth exploration-satellite service (EESS) (active) allocations in the frequency bands 5 350-5 460 MHz and 5 460-5 470 MHz are essential for Earth-observation programs and the data these provide is vital for reliable and up-to-date information on how our planet and its climate are changing. In addition, the band 5 350-5 460 MHz is also allocated to the aeronautical radionavigation service (ARNS) and the Radiolocation service on a primary basis.

WRC-15 examined the possibility of additional global allocations to the mobile service in the frequency band 5 350-5 470 MHz. The compatibility studies performed by ITU-R in preparation for WRC-15 indicated that when assuming the use of WAS/RLAN mitigation measures limited to the regulatory provisions of Resolution 229 (Rev.WRC-12), sharing between WAS/RLAN and the EESS (active) systems in the frequency band 5 350 to 5 470 MHz would not be feasible, as well as being insufficient to ensure protection of certain radar types in this frequency band. For these cases, sharing would only be feasible if additional WAS/RLAN mitigation measures are implemented. However, no agreement was reached on the applicability of any additional WAS/RLAN mitigation techniques. As such, WRC-15 concluded no change (NoC) for this frequency band and established a WRC-19 agenda item to continue the work.

In the work performed under WRC-19 agenda item 1.16, further study of currently available mitigation measures indicate that there are no feasible mitigation techniques to facilitate sharing between RLAN and EESS (active) in the band 5 350-5 470 MHz. Therefore, NOC is proposed to the Table of Frequency Allocations for this frequency band. Other consequential changes to Resolution 239 (WRC-15) may be required.

INTER-AMERICAN PROPOSALS

Supports:

Argentina, Brazil, Canada, Colombia, Costa Rica, United States of America, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Paraguay, Dominican Republic, Uruguay

ARTICLE 5

Frequency allocations

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

5 250-5 570 MHz

Allocation to services		
Region 1	Region 2	Region 3
5 350-5 460	EARTH EXPLORATION-SATELLITE (active) 5.448B RADIOLOCATION 5.448D AERONAUTICAL RADIONAVIGATION 5.449 SPACE RESEARCH (active) 5.448C	
5 460-5 470	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION 5.448D RADIONAVIGATION 5.449 SPACE RESEARCH (active) 5.448B	

Reasons: No change to the Table of Frequency Allocations in the band 5 350-5 470 MHz as further study of currently available mitigation measures indicate that there are no viable mitigation techniques to facilitate sharing between Radio Local Area Networks (RLAN) and the Earth Exploration Satellite Service (active) or radiolocation systems in the band 5 350-5 470 MHz.

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INTER-AMERICAN PROPOSALS (IAPs) FOR WRC-19

AGENDA ITEM 1.16 (5 725-5 850 MHz)

(Item on the Agenda: 3.1 (SGT-1))

(Document submitted by CITELE Member States)

SGT-1

Coordinator: Luciana CAMARGOS – B – lcamargos@gsma.com

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Agenda Item Rapporteur: Jayne STANCAVAGE – USA - jayne.stancavage@intel.com

Agenda Item Vice-Rapporteur: TBD

Note: This band is still under discussion.

Agenda Item 1.16: *To consider issues related to wireless access systems, including radio local area networks (WAS/RLAN), in the frequency bands between 5 150 MHz and 5 925 MHz, and take the appropriate regulatory actions, including additional spectrum allocations to the mobile service, in accordance with Resolution 239 (WRC-15)*

BACKGROUND

Since WRC-03, the demand for mobile broadband applications especially for WAS/RLANs has been growing rapidly. Resolution 239 (WRC-15) states “that the results of ITU-R studies indicate that the minimum spectrum need for WAS/RLAN in the 5 GHz frequency range in the year 2018 is estimated at 880 MHz; this figure includes 455-580 MHz already utilized by non-IMT mobile broadband applications operating within the 5 GHz range resulting in 300-425 MHz additional spectrum being required.” In particular, Resolution 239 (WRC-15) looks at studying possible RLAN operations in the frequency bands from 5 150-5 925 MHz.

Resolution 239 (WRC-15) calls for the ITU-R to study WAS/RLAN technical characteristics and operational requirements in the 5 GHz frequency range. The resolution also calls for the ITU-R to conduct studies with a view to identify potential WAS/RLAN mitigation techniques to facilitate sharing with incumbent systems in the frequency bands 5 150-5 350 MHz, 5 350-5 470 MHz, 5 725-5 850 MHz and 5 850-5 925 MHz, while ensuring the protection of incumbent services including their current and planned use.

Recognizing results of the ITU-R studies and existing uses, this proposal is for NOC for the 5 725-5 850 MHz. Countries wishing to implement WAS/RLANs in the frequency should take into account RR No. 5.453.

INTER-AMERICAN PROPOSALS

Supports:

Brazil, Canada, Colombia, Costa Rica, United States of America, Paraguay

NOC IAP/1.16/6

5 570-6 700 MHz

Allocation to services						
Region 1		Region 2			Region 3	
5 725-5 830 FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur 5.150 5.451 5.453 5.455		5 725-5 830 RADIOLOCATION Amateur 5.150 5.453 5.455				

<p>5 830-5 850 FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur Amateur-satellite (space-to-Earth) 5.150 5.451 5.453 5.455</p>	<p>5 830-5 850 RADIOLOCATION Amateur Amateur-satellite (space-to-Earth) 5.150 5.453 5.455</p>
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Reasons: WAS/RLAN already operate in various countries throughout the world within the frequency band 5 725-5 850 MHz. In Region 2, the band 5 725-5 825 MHz is also used by WAS/RLAN.

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INTER-AMERICAN PROPOSALS (IAPs) FOR WRC-19

AGENDA ITEM 1.16 (5 850-5 925 MHz)

(Item on the Agenda: 3.1 (SGT-1))

(Document submitted by CITELE Member States)

SGT-1

Coordinator: Luciana CAMARGOS – B – lcamargos@gsma.com

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Agenda Item Vice-Rapporteur: TBD

Agenda Item 1.16: *To consider issues related to wireless access systems, including radio local area networks (WAS/RLAN), in the frequency bands between 5 150 MHz and 5 925 MHz, and take the appropriate regulatory actions, including additional spectrum allocations to the mobile service, in accordance with Resolution 239 (WRC-15)*

BACKGROUND

Since WRC-03, the demand for mobile broadband applications especially for WAS/RLANs has been growing rapidly. Resolution 239 (WRC-15) states “that the results of ITU-R studies indicate that the minimum spectrum need for WAS/RLAN in the 5 GHz frequency range in the year 2018 is estimated at 880 MHz; this figure includes 455-580 MHz already utilized by non-IMT mobile broadband applications operating within the 5 GHz range resulting in 300-425 MHz additional spectrum being required.” In particular, Resolution 239 (WRC-15) looks at studying possible RLAN operations in the frequency bands from 5 150-5 925 MHz.

Resolution 239 (WRC-15) calls for the ITU-R to study WAS/RLAN technical characteristics and operational requirements in the 5 GHz frequency range. The resolution also calls for the ITU-R to conduct studies with a view to identify potential WAS/RLAN mitigation techniques to facilitate sharing with incumbent systems in the frequency bands 5 150-5 350 MHz, 5 350-5 470 MHz, 5 725-5 850 MHz and 5 850-5 925 MHz, while ensuring the protection of incumbent services including their current and planned use.

The frequency band 5 850-5 925 MHz is allocated on a primary basis to the FS, FSS (Earth-to-space) and MS in all regions; on a secondary basis to RLS in Regions 2 and 3; and, on a secondary basis to amateur service in Region 2. The mobile service is co-primary in this band and applications under the mobile service have already been implemented in various countries throughout the world.

INTER-AMERICAN PROPOSALS

Supports:

Argentina, Brazil, Canada, Colombia, Costa Rica, United States of America, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Paraguay, Dominican Republic, Uruguay

NOC IAP/1.16/3

5 570-6 700 MHz

Allocation to services		
Region 1	Region 2	Region 3
5 850-5 925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.150	5 850-5 925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Amateur Radiolocation 5.150	5 850-5 925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Radiolocation 5.150

Reasons: No change to the Table of Frequency Allocations in the 5 850-5 925 MHz frequency band, because the mobile service is co-primary and applications are already implemented in this segment.

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INTER-AMERICAN PROPOSAL FOR WRC-19

AGENDA ITEM 7, ISSUE C5

(Item on the Agenda: 3.1 (SGT3))

(Document submitted by the Coordinator)

SGT3 – Satellite services

Coordinator: Brandon MITCHELL – USA

Alternate Coordinator: Juan MASCIOTRA – ARG; Chantal BEAUMIER - CAN

Rapporteur Agenda Item: Michelle CALDEIRA

Alternate Rapporteur Agenda Item: Ángeles GALLEGO – MEX; [Carolina DAZA – COL]

Agenda item 7: *to consider possible changes, and other options, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, an advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution 86 (Rev. WRC-07) to facilitate rational, efficient, and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit;*

Issue C5 – Bureau reminder to notifying administrations per RR No. **11.46**

BACKGROUND:

Issue C is a collection of several different topics that are viewed as being straightforward and for which consensus was readily achieved within ITU-R. The issues address such things as resolving inconsistencies in regulatory provisions, clarifying certain existing practices, or increasing transparency in the regulatory process.

Pursuant to RR No. **11.46**, the Bureau allows Notifying Administrations six months to resubmit their notified frequency assignments, which were returned due to an unfavorable finding with respect to RR Nos. **11.32**, **11.32A** or **11.33**. Any notification resubmitted beyond six months is considered as a new notification with a new date of receipt and would be subject to cost recovery fees. However, neither RR No. **11.46** nor any other provision in the Radio Regulations requires the Bureau to send a reminder to the Notifying Administration at any point during the six-month period. If the Notifying administration resubmits the notice to the Bureau beyond the required six-month period, the Bureau assigns a new date of receipt and reviews whether the notice complies with the period in RR No. **11.44.1** or RR No. **11.43A** and takes the appropriate action. In the case that a notice resubmitted beyond the six-month deadline is receivable, cost recovery fees would be required for the resubmitted assignments. Addressing this lack of a reminder would be beneficial to Administrations who may have experienced difficulties receiving or addressing the Bureau's return of notice and the need to ensure that frequency assignments that are in use are properly recorded in the Master Register.

A single method has been identified to address this issue. It would be considered advantageous to Notifying Administrations if the Bureau sends a reminder of the option to resubmit returned frequency assignments under RR No. **11.37** or **11.38**. Modification of RR No. **11.46** requiring the Bureau to remind the Notifying Administration of the six-month deadline would aid Administrations who may have had difficulties in receiving the communication of returned frequency assignments.

INTER-AMERICAN PROPOSAL:

ARTICLE 11

Notification and recording of frequency assignments^{1, 2, 3, 4, 5, 6, 7, 8} (WRC-15)

Section II – Examination of notices and recording of frequency assignments in the Master Register

Supports:

B, CAN, COL, MEX, URG, USA

MOD 7(C5)/1

11.46 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 notification with a new date of receipt ~~ADDx~~. For frequency assignments to a space station, should the new date of receipt of such a notice not comply with the period specified in No. **11.44.1** or No. **11.43A**, as appropriate, the notice shall be returned to the notifying administration in the case of No. **11.44.1**, and the notice shall be examined as a new notice of a change in the characteristics of an assignment already recorded with a new date of receipt in the case of No. **11.43A**. The Bureau shall reflect the resubmission within 30 days of receipt on the ITU website, as appropriate. (WRC-~~0719~~)

*Reasons: To include a reference to a footnote provision requiring the Bureau to send a reminder 2 months prior to the end of the six-month period referred to in No. **11.46**.*

Supports:

B, CAN, COL, MEX, URG, USA

ADD 7(C5)/2

^x **11.46.1** If the resubmitted notice is not received by the Bureau within four months from the date on which the original notice was returned by the Bureau, the Bureau shall promptly send a reminder to the notifying administration. (WRC-19)

Reasons: To implement the requirement for reminders during the six-month period and reduce the risk of a resubmission beyond the end 6-month period referred to in No. **11.46**.

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INTER-AMERICAN PROPOSAL FOR WRC-19

AGENDA ITEM 7, ISSUE K

(Item on the Agenda: 3.1 (SGT3))

(Document submitted by CITELE Member States)

SGT3 – Satellite services

Coordinator: Brandon MITCHELL – USA

Alternate Coordinator: Juan MASCOTRA – ARG; Chantal BEAUMIER - CAN

Rapporteur Agenda Item: Michelle CALDEIRA

Alternate Rapporteur Agenda Item: Ángeles GALLEGO – MEX; [Carolina DAZA – COL]

Agenda item 7: *to consider possible changes, and other options, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, an advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution 86 (Rev. WRC-07) to facilitate rational, efficient, and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit;*

Issue K – Difficulties for Part B examinations under § 4.1.12 or 4.2.16 of RR Appendices 30 and 30A and § 6.21 c) of RR Appendix 30B

BACKGROUND: Examination under RR Appendices **30** and **30A** § 4.1.12 or 4.2.16 or RR Appendix **30B** § 6.21 c) is based on the assignments for which the Bureau has previously received complete information even though the senior network's Part B notice has already been published with reduced characteristic (e.g. reduced service area and coverage area) and from that Part B publication, the senior network's Part A no longer exists in the AP**30**, AP**30A** or AP**30B** databases.

This creates difficulties to the notifying administration of a satellite network and may prevent its Part B notice submitted from entering into the List or Plan with favorable findings as the examination of its submission in respect of a senior network's Part A notice is unfavorable even though in reality, its network (Part B notice) can co-exist with the senior network in the List or Plan (senior network's Part B notice) and if examination in respect of the senior network is based on its Part B notice, examination result will become favorable.

To overcome the difficulties encountered by the notifying administration in the Part B examination of its junior network under RR Appendices **30** and **30A** § 4.1.12 or 4.2.16 or RR Appendix **30B** § 6.21 c), Agenda Item 7, Issue K proposes to add one more examination under § 4.1.12 or 4.2.16 RR Appendices **30** and **30A** and § 6.21 c) of RR Appendix **30B** such that should any remaining affected networks whose assignments have been entered in the List or Plan, as appropriate, before the submission under § 4.1.12 or 4.2.16 of RR Appendices **30** and **30A** or § 6.17 of RR Appendix **30B**, the Bureau shall further examine if the remaining corresponding assignments in the List or Plan are still considered as being affected.

This additional examination allows networks to receive a favorable finding in respect to senior networks that are no longer considered to be affected. Further, it avoids overprotection of senior networks based on the characteristics which are outdated and no longer valid while ensuring that the senior networks are adequately protected.

INTER-AMERICAN PROPOSAL:

APPENDIX 30 (Rev.WRC-15)*

**Provisions for all services and associated Plans and List¹ for
the broadcasting-satellite service in the frequency bands
11.7-12.2 GHz (in Region 3), 11.7-12.5 GHz (in Region 1)
and 12.2-12.7 GHz (in Region 2) (WRC-03)**

ARTICLE 4 (REV.WRC-15)

**Procedures for modifications to the Region 2 Plan or
for additional uses in Regions 1 and 3³**

4.1 Provisions applicable to Regions 1 and 3

Supports:

B, CAN, COL, MEX, URG, USA

MOD 7/K/1

4.1.12~~XX~~ If agreement has been reached with the administrations identified in the publication referred to under § 4.1.5 above, the administration proposing the new or modified assignment may continue with the appropriate procedure in Article 5, and shall so inform the Bureau, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached. (WRC-~~15~~19)

ADD

~~XX~~ Should any remaining affected networks identified in the publication referred to under § 4.1.5 above whose assignments have been entered in the List before the notice received under § 4.1.12, the Bureau shall use the method of Annex 1 to further examine if the remaining corresponding assignments in the List are still considered as being affected. The examination in respect of those remaining affected networks is conducted independently using the RR Appendix ~~30-30A~~ master database corresponding to the Part B Special Section for the remaining affected network(s) published under § 4.1.15. Resolution ~~548~~ (Rev.WRC-12) applies. (WRC-19)

Reasons: This method adds one more examination under § 4.1.12 of RR Appendix 30 such that should any remaining affected networks whose assignments have been entered in the List before the submission under § 4.1.12 of RR Appendix 30, the Bureau shall further examine if the remaining corresponding assignments in the List are still considered as being affected. The network being examined will not be subject to any new requirements beyond those specified in its Part A publication.

4.2 Provisions applicable to Region 2

Supports:

B, CAN, COL, MEX, URG, USA

MOD 7/K/2

4.2.16~~XX1~~ If no comments have been received on the expiry of the periods specified in § 4.2.14, or if agreement has been reached with the administrations which have made comments and with which agreement is necessary, the administration proposing the modification may continue with the appropriate procedure in Article 5, and shall so inform the Bureau, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached.
(WRC-19)

ADD

XX1 Should any remaining affected networks whose assignments have been entered in the Plan before the notice received under § 4.2.16, the Bureau shall use the method of Annex 1 to further examine if the remaining corresponding assignments in the Plan are still considered as being affected. The examination in respect of those remaining affected networks is conducted independently using the Appendix **30-30A** master database corresponding to the Part B Special Section that was published under § 4.2.19. (WRC-19)

Reasons: This method adds one more examination under § 4.2.16 of RR Appendix 30 such that should any remaining affected networks in the Plan before the submission under §4.2.16 of RR Appendix 30, the Bureau shall further examine if the remaining corresponding assignments in the Plan are still considered as being affected. The network being examined will not be subject to any new requirements beyond those specified in its Part A publication.

APPENDIX 30A (Rev.WRC-15)*

**Provisions and associated Plans and List¹ for feeder links for the broadcasting-satellite service
(11.7-12.5 GHz in Region 1, 12.2-12.7 GHz
in Region 2 and 11.7-12.2 GHz in Region 3) in the frequency bands
14.5-14.8 GHz² and 17.3-18.1 GHz in Regions 1 and 3,
and 17.3-17.8 GHz in Region 2 (WRC-03)**

ARTICLE 4 (REV.WRC-15)

**Procedures for modifications to the Region 2 feeder-link Plan
or for additional uses in Regions 1 and 3**

4.1 Provisions applicable to Regions 1 and 3

Supports:
B, CAN, COL, MEX, URG, USA

MOD 7/K/3

4.1.12~~XX~~ If agreement has been reached with the administrations identified in the publication referred to under § 4.1.5 above, the administration proposing the new or modified assignment may continue with the appropriate procedure in Article 5 and shall inform the Bureau, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached. (WRC-19~~5~~)

ADD

XX Should any remaining affected networks whose assignments have been entered in the List before the notice received under § 4.1.12, the Bureau shall use the method of Annex 1 to further examine if the remaining corresponding assignments in the List are still considered as being affected. The examination in respect of those remaining affected networks is conducted independently using the Appendix 30-30A master database corresponding to the Part B Special Section that was published under § 4.1.15. Resolution **548 (Rev.WRC-12)** applies. (WRC-19)

Reason: This method adds one more examination under § 4.1.12 of RR Appendix 30A such that should any remaining affected networks whose assignments have been entered in the List before the submission under § 4.1.12 of RR Appendix 30A, the Bureau shall further examine if the remaining corresponding assignments in the List are still considered as being affected. The network being examined will not be subject to any new requirements beyond those specified in its Part A publication.

4.2 Provisions applicable to Region 2

Supports:
B, CAN, COL, MEX, URG, USA

MOD 7/K/4

4.2.16~~xx1~~ If no comments have been received on the expiry of the periods specified in § 4.2.14, or if agreement has been reached with the administrations which have made comments and with which agreement is necessary, the administration proposing the modification may continue with the appropriate procedure in Article 5, and shall so inform the Bureau, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached.
(WRC-19)

ADD

XX1 Should any remaining affected networks whose assignments have been entered in the Plan before the notice received under § 4.2.16, the Bureau shall use the method of Annex 1 to further examine if the remaining corresponding assignments in the Plan are still considered as being affected. The examination in respect of those remaining affected networks is conducted independently using the RR Appendix 30-30A master database corresponding to the Part B Special Section that was published under § 4.2.19.
(WRC-19)

Reasons: This method adds one more examination under § 4.2.16 of RR Appendices 30A such that should any remaining affected networks in the Plan before the submission under §4.2.16 of RR Appendix 30A, the Bureau shall further examine if the remaining corresponding assignments in the Plan are still considered as being affected. The network being examined will not be subject to any new requirements beyond those specified in its Part A publication.

APPENDIX 30B (Rev.WRC-15)

**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**

ARTICLE 6 (REV.WRC-15)

**Procedures for the conversion of an allotment into an assignment, for
the introduction of an additional system or for the modification of
an assignment in the List^{1,2} (WRC-15)**

Supports:

B, CAN, COL, MEX, URG, USA

MOD 7/K/5

6.21 When the examination with respect to § 6.19 of an assignment received under § 6.17 leads to a favourable finding, the Bureau shall use the method of Annex 4 to examine if the affected administrations and the corresponding:

- a) allotments in the Plan;
- b) assignments which appear in the List at the date of receipt of the examined notice submitted under § 6.1;
- c) assignments for which the Bureau has previously received complete information in accordance with § 6.1 and has conducted the examination under § 6.5 of this Article at the date of receipt of the examined notice submitted under § 6.1⁸; indicated in the Special Section published under § 6.7 and whose agreement has not been provided under § 6.17 are still considered as being affected by that assignment. (WRC-19)

ADD

⁸ Should any remaining affected networks whose assignments have been entered in the List before the notice received under § 6.17, the Bureau shall use the method of Annex 4 to further examine if the remaining corresponding assignments in the List are still considered as being affected. The examination in respect of those remaining affected networks is conducted independently using the RR Appendix **30B** master database corresponding to the A6B Special Section that was published under § 6.23 or § 6.25. (WRC-19)

Reasons: This method adds one more examination under § 6.21c) of RR Appendix **30B** such that should any remaining affected networks whose assignments have been entered in the List before the submission under § 6.17 of RR Appendix **30B**, the Bureau shall further examine if the remaining corresponding assignments in the List are still considered as being affected. The network being examined will not be subject to any new requirements beyond those specified in its Part A publication.

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INTER-AMERICAN PROPOSALS (IAPs) FOR WRC-19

AGENDA ITEM 9.1, ISSUE 9.1.2

(Item on the Agenda: 3.1 (SGT-1))

(Document submitted by CITELE Member States)

SGT-1

Coordinator: Luciana CAMARGOS – B – lcamargos@gsma.com

Vice-Coordinator: José COSTA – CAN – jose.costa@ericsson.com

Rapporteur Agenda Item: Amy Sanders - USA

Alternate Rapporteur Agenda Item:

Agenda Item 9.1/Issue 9.1.2: *to conduct, in time for WRC-19, the appropriate regulatory and technical studies, with a view to ensuring the compatibility of IMT and BSS (sound) in the frequency band 1 452-1 492 MHz in Regions 1 and 3, taking into account IMT and BSS (sound) operational requirements*

BACKGROUND

At WRC-15, it was decided to identify the frequency band 1452-1492 MHz for International Mobile Telecommunications (IMT) in more than 50 countries in Region 1 via No. **5.346** and in Region 3 via No. **5.346A**. In Region 2, the identification for IMT for the 1452-1492 MHz frequency band is provided via No. **5.341B**.

In addition to the primary mobile service allocation in the 1452-1492 MHz frequency band, the band is allocated to the fixed, broadcasting, and broadcasting-satellite services (BSS) in all three Regions on a primary basis. In accordance with No. **5.345** use of the frequency band 1 452-1 492 MHz by the broadcasting-satellite service, and by the broadcasting service, is limited to digital audio broadcasting and is subject to the provisions of Resolution **528 (WARC-92)**, subsequently revised by WRC-03 and WRC-15. The sharing conditions between BSS (sound) and the mobile service are currently governed by No. **9.11**. However, currently there is no power flux-density (pfd) limit for the frequency band 1 452-1 492 MHz in Article 21 to protect the mobile service (service area protection).

WRC-15 could not come to agreement on the results of technical and regulatory studies carried out on sharing of the frequency band 1 452-1 492 MHz by IMT and BSS for Regions 1 and 3 and for this reason WRC-19 Issue 9.1.2, pursuant to Resolution **761 (WRC-15)**, was agreed. This resolution specifically calls for regulatory and technical studies with a view to ensuring the compatibility of IMT and BSS (sound) in the frequency band 1 452-1 492 MHz in Regions 1 and 3 taking into account only IMT and BSS (sound) operational requirements. Further, Resolution **761 (WRC-15)** invites ITU Member States in Region 1, to use guidance from the ITU-R studies to determine the need for bilateral coordination between IMT systems and BSS earth stations until WRC-19 defines regulatory and technical conditions for this bilateral coordination and Member States in Region 3, to use guidance from ITU-R studies to determine the need for bilateral coordination to protect BSS earth stations until WRC-19 defines regulatory and technical conditions for this bilateral coordination. With regard to Region 2, the interests of countries in the Region in the band 1452-1492 MHz by the mobile service extend beyond IMT applications (e.g. see No. **5.343**). Also, most of the countries in the Region enjoy long and successful multilateral and bilateral frequency coordination arrangements with their neighbors without the need for specific guidance from the ITU on the conduct of such arrangements.

INTER-AMERICAN PROPOSALS

Supports:

Argentina, Brazil, Canada, Colombia, Costa Rica, Ecuador, Honduras, Jamaica, United States, Guatemala, Mexico, Nicaragua, Paraguay, Dominican Republic, Uruguay

NOC IAP/9.1/9.1.2/1

Given that WRC-19 Agenda Item 9.1 Issue 9.1.2 is a Regions 1 and 3 issue, no change is proposed for Region 2. Furthermore, any changes made to the Radio Regulations under WRC-19 issue 9.1.2 must not impact the existing allocations to services in Region 2 in the frequency band 1 452-1 492 MHz, nor subject Region 2 to any changed procedural or regulatory provisions.

Reasons: WRC-19 issue 9.1.2 is limited to technical and regulatory studies of the mobile (IMT) and broadcasting satellite (sound) services in the band 1452-1492 MHz in Regions 1 and 3 only. Therefore, there is no basis for any changes to the Radio Regulations that would impact the services in the frequency band 1452-1492 MHz in Region 2 under this issue. Therefore, NOC is proposed with respect to any change to Article 5 that could impact Region 2 services in the frequency band 1452-1492 MHz.

Supports:

Argentina, Brazil, Canada, Colombia, Costa Rica, Ecuador, Honduras, Jamaica, United States, Guatemala, Mexico, Nicaragua, Paraguay, Dominican Republic, Uruguay

NOC IAP/9.1.2/2

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations

1 300-1 525 MHz

Allocation to services		
Region 2		
	1 452-1 492 FIXED MOBILE 5.341B 5.343 5.346A BROADCASTING BROADCASTING-SATELLITE 5.208B 5.341 5.344 5.345	

Reasons: WRC-19 issue 9.1.2 is limited to technical and regulatory studies of the mobile (IMT) and broadcasting satellite (sound) services in the band 1452-1492 MHz in Regions 1 and 3 only. Therefore, there is no basis for any changes to the Radio Regulations that would impact the services in the frequency band 1452-1492 MHz in Region 2 under this issue. Therefore, NOC is proposed with respect to any change to Article 5 that could impact Region 2 services in the frequency band 1452-1492 MHz. This proposal does not address Regions 1 and 3, so those columns of the Table of Frequency Allocations in Article 5, are thus not reproduced above.

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8 April 2019
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INTER-AMERICAN PROPOSALS (IAP) FOR WRC-19

AGENDA ITEM 9.1, ISSUE 9.1.3

(Item on the agenda: 3.1 (SGT3))

(Document submitted by the Coordinator)

SGT3 – Satellite services

Coordinator: Brandon MITCHELL – USA

Alternate Coordinator: Juan MASCIOTRA – ARG ; Chantal BEAUMIER - CAN

Rapporteur Agenda Item: Michelle CALDEIRA

Alternate Rapporteur Agenda Item: Ángeles GALLEGO – MEX; [Carolina DAZA – COL]

Agenda Item 9.1, Issue 9.1.3: Study of technical and operational issues and regulatory provisions for new non-geostationary-satellite orbit systems in the 3 700-4 200 MHz, 4 500-4 800 MHz, 5 925-6 425 MHz and 6 725-7 025 MHz frequency bands allocated to the fixed-satellite service

BACKGROUND

The Report of the Director of the Radiocommunication Bureau to WRC-15 acknowledged that there may be a need for “reviewing or confirming” assumptions that led to the development of the power limits found in Article 21 and Article 22, taking into account the characteristics of non-GSO systems recently submitted to the ITU-R. Moreover, given the growing interest in deploying non-GSO FSS systems, the Report of the Director of the BR noted that there is a need to ensure that all existing services are adequately protected.

As a result, WRC-15 adopted Resolution 157 (WRC-15), which discusses how facilitating the deployment of new types of non-GSO systems has the potential to augment the capacity, spectrum efficiency and benefits derived from GSO and non-GSO systems operating in the bands 3 700-4 200 MHz (space-to-Earth), 4 500-4 800 MHz (space-to-Earth), 5 925-6 425 MHz (Earth-to-space), 6 725-7 025 MHz (Earth-to-space).

There are approximately 170 GSO satellites currently operating in the 3700-4200 MHz band and 229 allotments in the 4500-4800 MHz band, both of which are globally allocated to provide C-Band FSS downlinks. Many highly sensitive and public services use the FSS C-band, such as satellite telemetry, disaster relief, public meteorological data distribution, and aeronautical applications in various regions. A number of next-generation NGSO systems are being developed that can provide high-capacity, low-latency communications to end users in all locations around the world, thus allowing those living and working in rural and remote areas to access the same level of connectivity as those living in more densely populated urban areas.

Resolution 157 (WRC-15) also contains a list of technical and operational issues (e.g. Article 21 and 22) to be studied for the bands identified above; requests the development of new regulatory provisions for the protection of terrestrial services in the band 4 500-4 800 MHz and non-GSO MSS feeder links receiving stations in the band 6 700-7 075 MHz; and the clarification of some existing regulatory provisions (e.g. 5.440A and 5.457C).

CITEL Administrations supported studies under Resolution 157 (WRC-15) for new non-GSO FSS satellite systems. Its view was that modification to Article 22 for the inclusion of epfd limits for non-GSO FSS systems in the bands 4 500-4 800 MHz (space-to-Earth) and 6 725-7 025 MHz (Earth-to-space) to protect the geostationary FSS allotments in the Plan and the assignments in the Appendix 30B List can only be considered in conjunction with modifications to Article 5, including No. 5.441 to authorize use of these bands by non-GSO FSS systems. This footnote specifies that the use of the bands by the FSS shall be in accordance with Appendix 30B, which is limited to the geostationary-satellite of the fixed-satellite service. This is not the case in the bands 3 700-4 200 MHz and 5 925-6 425 MHz where non-GSO FSS are currently allowed without any restrictions in Article 5.

Similarly, CITEL Administrations view was that the adoption of regulatory measures to protect terrestrial services in the band 4 500- 4 800 MHz (space-to-Earth) can only be considered in conjunction with modifications to No. 5.441.

CITEL Administrations also noted that under the current regulatory framework, the protection of the non-GSO MSS feeder link receiving earth station from non-GSO FSS transmitting earth station in the band 6 700 -6 725 MHz and 7 025- 7 075 MHz is ensured through the application of coordination procedures under No. 9.17A (see also Table 9a in Appendix 7). An extension of these coordination procedures to the band 6 725-7 025 MHz can only be achieved through modifications to No. 5.441 referred to above.

RESULTS OF STUDIES

In accordance with Resolution 157, a study was presented at the May 2017 meeting of ITU-R WP4A regarding sharing between circular-orbit non-GSO systems and GSO systems. This study considered the operation of a representative circular-orbit non-GSO system providing global broadband services. EPFD↓ profiles were generated based on the collected statistics of non-GSO system operation and compared against the protection criteria in given in Recommendation ITU-R S.1323.

The simulation results of this study indicate that the operation of a circular-orbit non-GSO system in the 6/4 GHz bands results in large exceedances when tested against the Recommendation ITU-R S.1323 protection requirements. These results can be attributed to calculation of protection to the GSO as given in Recommendation ITU-R S.1323, methodology A. This methodology computes interference based on a comparison of the degradation due to propagation loss with the degradation due to interference. In the 6/4 GHz band, there is minimal degradation due to propagation losses and thus the margin for protection is almost entirely dominated by the interference statistics.

INTER-AMERICAN PROPOSAL

[Editorial note: this proposal will be formatted to meet the ITU requirements for submission of proposals at the next meeting.]

Supports:

B, CAN, GTM, MEX, ~~NIC~~NCG, PRG, URG, USA, ~~URG~~

NOC

IAP/9.1/9.1.3/1

ARTICLE 21

Terrestrial and space services sharing frequency bands above 1 GHz

Supports:

B, CAN, GTM, MEX, ~~NIC~~NCG, PRG, URG, USA, ~~URG~~

NOC

IAP/9.1/9.1.3/2

ARTICLE 22

Space services

Supports:

B, CAN, GTM, MEX, ~~NIC~~NCG, PRG, URG, USA, ~~URG~~

SUP

IAP/9.1/9.1.3/3

RESOLUTION 157 (WRC-15)

Study of technical and operational issues and regulatory provisions for new non-geostationary-satellite orbit systems in the 3 700-4 200 MHz, 4 500-4 800 MHz, 5 925-6 425 MHz and 6 725-7 025 MHz frequency bands allocated to the fixed-satellite service

Reasons: ITU-R studies show that it would be very difficult to operate a non-GSO circular-orbit system for the purposes of a global broadband network in the 6/4 GHz frequency bands. Therefore, CITELE Administrations support no revision to Article 21, Table 21-4 for non-GSO FSS satellites in the frequency band 3700-4200 MHz (space-to-Earth) and no modifications to Article 22 efd limits applicable to non-GSO systems in the bands 3700-4200 MHz (space-to-Earth) and 5925-6425 MHz (Earth-to-Space). Similarly, CITELE Administrations propose no change to the bands 4500-4800 MHz (space-to-Earth) and 6725-7025 MHz (Earth-to-space).

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INTER-AMERICAN PROPOSAL (IAP) FOR WRC-19

AGENDA ITEM 9.1, ISSUE 9.1.4

(Item on the Agenda: 3.1 (SWG-3))

(Document submitted by CITELE Member States)

SWG2A – Radiolocation, Amateurs, Maritime & Aeronautical

Coordinator: Michael Razi (CAN)

Alternate Coordinator: Corali Roura (USA)

Rapporteur Agenda Item: Sandra Wright (USA)

Alternate Rapporteur Agenda Item: Luiz Fernando (B)

Agenda Item 9.1, Issue 9.1.4: *to determine spectrum requirements for sub-orbital vehicles (space planes) and, based on the outcome of those studies, to consider a possible future agenda item for WRC-23.*

INTRODUCTION

At present there are vehicles which may reach altitudes greater than 100 km, also known as sub-orbital flight, and then return to earth without reaching orbit or deep space. These vehicles are called sub-orbital vehicles or space planes.

Accordingly, in order to ensure the development and transition to operational use of such vehicles, all of the regulatory issues including the Radio Regulations (RR) provisions, need to be addressed, and it must be determined if the telecommunication services used by sub-orbital vehicles can be viewed as part of existing radiocommunication services or if it is necessary that a future World Radiocommunication Conference define new radiocommunication services and even if it can assign frequency bands to these services to accommodate these vehicles.

BACKGROUND:

Advances in propulsion technology and rocket power has facilitated the design of vehicles which may reach altitudes greater than 100 km, also known as sub-orbital flight, and then return to earth without reaching orbit or deep space. A sub-orbital vehicle may be used for the purposes of commercial space flight, scientific research, point to point travel, cargo transportation, or Earth observation.

Commercial space flight has become a reality with a number of companies promising the chance to experience space flight. The 2015 World Radiocommunication Conference (WRC-15) adopted Resolution **763 (WRC-15)** to deal with stations on board suborbital vehicles¹⁰. It was resolved to conduct studies during the WRC-19 study cycle:

- to identify any required technical and operational measures, in relation to stations on-board suborbital vehicles, that could assist in avoiding harmful interference between radiocommunication services.
- to determine spectrum requirements and, based on the outcome of those studies, to consider a possible future agenda item for WRC-23.

It is also noted that ITU-R in 2015 formulated Question ITU-R No. [259/5](#), "Operational and radio regulatory aspects for planes operating in the upper level of the atmosphere", and that studies in the framework of that Question are related to Resolution **763 (WRC-15)**. In particular, *decides* 3 of that Question asks, "what radio links will be required to support space planes operations and under what radiocommunication service definition will they fall?"

Suborbital vehicles, including space planes, have been developed to go beyond the major portion of the Earth's atmosphere for brief periods, however they also must share airspace with conventional aircraft during certain phases of flight. These vehicles can reach space and may perform a mission, such as deploying a space vehicle, conducting scientific research, or allowing tourists to participate in space flight, and then they return to the Earth's surface.

¹⁰ Suborbital vehicle: A vehicle intended for sub-orbital flight, all or some stages or components of which may be reusable or expendable.

Communications with those sub-orbital vehicles currently consists of telemetry, telecommand, and control (TT&C), sometimes operating under the Space Operations Service (SOS), to allow for control of the vehicle, and mission-related communications. There are currently no radiocommunications between the air traffic management (ATM) or air traffic control (ATC) functions and sub-orbital vehicles.

Sub-orbital vehicles, however, must integrate safely into the same airspace as conventional aircraft during their transition to and from space. To address this, most air navigation service providers currently ensure safe integration by completely segregating sub-orbital vehicles from other aircraft during launch and recovery operations; clearing the airspace of non-participating aircraft in three spatial dimensions and in time to maintain the required level of safety. The dimensions of the cleared airspace are driven by existing launch range facility TT&C data capability.

The current airspace segregation approach comes at the expense of space launch and recovery opportunities, air traffic efficiency, and additional fuel and time required for aircraft to avoid hazardous areas. This method of separating space launch and recovery operations from air traffic will not be sustainable with the increase in demand for space access by additional sub-orbital vehicles operating on and off traditional ranges.

As called for by Resolution **763 (WRC-15)**, ITU-R has developed a working document towards a preliminary draft new report ITU-R M.[SUBORBITAL VEHICLES] titled, “Radiocommunications for suborbital vehicles”. The work has been informed by the international civil aviation organization (ICAO) and Administrations and has identified planned future approaches to airspace integration that would avoid or reduce airspace segregation by enabling radio stations on-board sub-orbital vehicles to use frequencies allocated to terrestrial radiocommunications for the purpose of ATM/ATC voice/data communications, surveillance, and navigation services. Such approaches, if standardized by ICAO, would ensure interoperability of sub-orbital vehicles with the ATM/ATC and aircraft avionics, while maintaining flight safety of the sub-orbital vehicle and of other aircraft that occupy the airspace through which the sub-orbital vehicle traverses. This would enable ATC to regain lost air traffic efficiency, enhance airborne collision avoidance, and reduce fuel / emissions demand. The study suggests that it’s technically feasible for suborbital vehicles to operate under existing space and terrestrial radiocommunication service allocations, if permitted by the Radio Regulations, for the ATM/ATC applications identified in the report. Using existing allocations would provide international harmonization and interoperability with those systems and applications related to aviation safety, as standardized by ICAO, such as ATM/ATC and aircraft avionics.

There have been questions raised regarding whether the regulatory provisions within the ITU-R Radio Regulations (RR) for terrestrial and space services are adequate to support these types of approaches to the integration of suborbital vehicles into the ATM, and whether additional spectrum provisions may be needed.

ITU-R Working Party 5B has developed a draft new report containing several studies related to link budget analyses, Doppler shift during various phases of flight, and the possible use of existing aeronautical systems for sub-orbital vehicles. However, further study is needed:

- to assess how applications commonly operated under terrestrial services, in particular aeronautical mobile services, or under space services could be used for sub-orbital vehicles;
- to assess the potential for interference between services in the case of a sub-orbital vehicle operated with terrestrial and space stations;
- to consider under which radiocommunication services sub-orbital vehicles operate.

At CPM 19-2, the text for agenda item 9, issue 9.1.4 was finalized with a single conclusion that further operational, technical and regulatory issues may need to be addressed, which requires continuing studies.

CONCLUSIONS

Studies have shown that further consideration is needed with regards to the definition of a sub-orbital vehicle in the Radio Regulations and under which radiocommunications service(s) they should operate. Studies also indicate that at certain altitudes, additional technical and operational measures may be needed to ensure safety-of-flight operations of suborbital vehicles and aircraft, which is the responsibility of ICAO. For example, ATM applications require radio equipment that's interoperable with ICAO standardized systems, in all phases of flight, to prevent collisions with conventional aircraft. Additional technical studies and regulatory provisions are therefore necessary to improve the integration of sub-orbital vehicles into the ATM systems.

Inter-American Proposal:

Supports:

B, CAN, MEX, PRG, URG, USA

SUP

IAP/9.1/9.1.4/1

RESOLUTION 763 (WRC-15)

Stations on board sub-orbital vehicles

Reason: The studies conducted in the ITU-R study groups on this issue have been concluded; therefore, Resolution 763 is no longer necessary.

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INTER-AMERICAN PROPOSALS (IAPs) FOR WRC-19

AGENDA ITEM 9.1, ISSUE 9.1.5

(Item on the Agenda: 3.1 (SGT-1))

(Document submitted by CITELE Member States)

SGT-1

Coordinator: Luciana CAMARGOS – B – lcamargos@gsma.com

Alternate Coordinator: José COSTA – CAN - jose.costa@ericsson.com

Rapporteur Agenda Item: María Guadalupe PEREZ LOPEZ – MEX - guadalupe.perez@ift.org.mx

Alternate Rapporteur Agenda Item: José COSTA – CAN - jose.costa@ericsson.com

Agenda Item 9.1/Issue 9.1.5: *Consideration of the technical and regulatory impacts of referencing Recommendations ITU R M.1638-1 and ITU R M.1849-1 in Nos. 5.447F and 5.450A of the Radio Regulations*

BACKGROUND

Issue 9.1.5 relates to consideration of the technical and regulatory impacts of updating the references to the latest version of Recommendation ITU-R M.1638-1 “Characteristics of and protection criteria for sharing studies for radiolocation, aeronautical radionavigation and meteorological radars operating in the frequency bands between 5 250 and 5 850 MHz” and adding a reference to Recommendation ITU-R M.1849-1 “Technical and operational aspects of ground-based meteorological radars” in footnotes **5.447F** and **5.450A** of the Radio Regulations.

Radio Local Area Networks (RLANs) and radars in the 5 250-5 350 MHz and 5 470-5 725 MHz bands provide valuable services as part of national infrastructures. The global demand for RLANs is evidenced by widespread adoption of devices, increasing connection speeds, data traffic volumes and other metrics. More than half of the world’s total internet traffic and over 60% of the mobile data traffic will be carried via Wi-Fi. The surging popularity of Wi-Fi means that Wi-Fi is an essential component of the global telecom infrastructure that requires a stable regulatory framework to continue to bring users the benefits of spectrum access and functionality. Radiolocation radars in the bands 5 250-5 350 MHz and 5 470-5 725 MHz perform a variety of functions, such as tracking space launch vehicles and aeronautical vehicles, sea and air surveillance, environmental measurements in the study of ocean water cycles and weather phenomena such as hurricanes, and Earth imaging. Airborne meteorological radars are used for both hurricane research and reconnaissance. New radar technologies for ground, ship, and airborne platforms are being developed in support of the above functions as part of the critical infrastructure.

The sharing of spectrum by RLANs under the mobile service and radars under the radiolocation service in these bands is pursuant to **RR Nos. 5.447F and 5.450A**.

RR No. 5.447F In the frequency band 5 250-5 350 MHz, stations in the mobile service shall not claim protection from the radiolocation service, the Earth exploration-satellite service (active) and the space research service (active). These services shall not impose on the mobile service more stringent protection criteria, based on system characteristics and interference criteria, than those stated in Recommendations ITU-R M.1638-0 and ITU-R RS.1632-0. (WRC-03)

RR No. 5.450A In the frequency band 5 470-5 725 MHz, stations in the mobile service shall not claim protection from radiodetermination services. Radiodetermination services shall not impose on the mobile service more stringent protection criteria, based on system characteristics and interference criteria, than those stated in Recommendation ITU-R M.1638-0. (WRC-03)

For the bands 5 150-5 350 MHz and 5 470-5 725 MHz, the coexistence between WAS/RLAN and the radiolocation service is regulated by No. **5.446A**.

RR No. 5.446A The use of the bands 5 150-5 350 MHz and 5 470-5 725 MHz by the stations in the mobile, except aeronautical mobile, service shall be in accordance with Resolution 229 (Rev.WRC 12).

During the ITU-R study cycle leading up to WRC-15, Recommendation ITU-R M.1638-0, which is incorporated by reference into both RR Nos. **5.447F** and **5.450A**, was revised. In this revision process, several new radars with different system characteristics were included in Recommendations ITU-R M.1638-1 and M.1849-1.¹¹ In light of proposals to modify **Nos. 5.447F and 5.450A** to replace the reference to ITU-R M.1638-0 with ITU-R M.1638-1 and M.1849-1, WRC-15 adopted agenda item 9.1.5 and associated Resolution **764 (WRC-15)** with the objective to investigate the technical and regulatory impacts on RLANs that would result from changing these references. It is important to emphasize that WRC-15 explicitly sought to ensure that no undue constraints are imposed on the services referenced in these footnotes as the result of this modification (see Resolution **764 (WRC-15)**, *resolves 1 and 2*).

There is also a primary mobile allocation in the frequency bands 5 250-5 350 MHz and 5 470-5 725 MHz for the implementation of wireless access systems (WAS), including radio local area networks (RLANs). Recommendation ITU-R M.1849-1 (referenced as well in the updated Recommendation ITU-R M.1638-1) recommends that the aggregate protection criteria for ground-based meteorological radars should be an interference-to-noise ratio (I/N) of -10 dB.

Therefore, an appropriate regulatory approach to satisfy WRC-19 Agenda Item 9.1/Issue 9.1.5 is needed which will address the following objectives:

- a) Maintain the regulatory requirement that the mobile service cannot claim protection from the radiolocation service;
- b) Maintain the regulatory requirement not to place any additional burden on the mobile service (RLANs) through changes in the radio regulations;
- c) Keeps intact the current methods of providing co-existence between RLANs and the radiolocation service in these RR footnotes;
- d) Alleviate the need to revise RR Nos. **5.447F** and **5.450A** at future WRCs as radiolocation and mobile services evolve.

INTER-AMERICAN PROPOSALS

Supports:

Brazil, Canada, Costa Rica, United States of America, Guatemala, Mexico, Dominican Republic

MOD IAP/9.1.5/1

ARTICLE 5

▪ Frequency allocations

Section IV – Table of Frequency Allocations

5.447F In the frequency band 5 250-5 350 MHz, stations in the mobile service shall not claim protection from the radiolocation service, the Earth exploration-satellite service (active) and the space research service (active) while the radiolocation service, the Earth exploration-satellite service (active)

¹¹ Consistent with the provisions of Resolution **27 (Rev.WRC-12)**, the reference in the Radio Regulations shall continue to apply to the earlier version incorporated by reference until such time as a competent WRC agrees to incorporate the new version.

~~and the space research service (active) shall not impose more stringent technical and operational limits upon the mobile service than those in No. 5.446A. These services shall not impose on the mobile service more stringent protection criteria, based on system characteristics and interference criteria, than those stated in Recommendations ITU-R M.1638-0 and ITU-R RS.1632-0. (WRC-195)~~

Reasons: This revision of No. 5.447F maintains the current methods of providing co-existence between RLANs and the radiolocation service; ensures that no undue constraints are imposed on these services; and alleviates the need to revise this provision again at a future Conferences.

Supports:

Brazil, Canada, Costa Rica, United States of America, Guatemala, Mexico, Dominican Republic

MOD IAP/9.1.5/2

~~**5.450A** In the frequency band 5 470-5 725 MHz, stations in the mobile service shall not claim protection from radiodetermination services while the radiodetermination services shall not impose more stringent technical and operational limits upon the mobile service than those in No. 5.446A. Radiodetermination services shall not impose on the mobile service more stringent protection criteria, based on system characteristics and interference criteria, than those stated in Recommendation ITU-R M.1638-0. (WRC-195)~~

Reasons: This revision of No. 5.450A maintains the current methods of providing co-existence between RLANs and the radiolocation service; ensures that no undue constraints are imposed on these services; and alleviate the need to revise this provision again at a future Conferences.

Support:

Brazil, Canada, Costa Rica, United States of America, Guatemala, Mexico, Dominican Republic

SUP IAP/9.1.5/3

RESOLUTION 764 (WRC-15)

Consideration of the technical and regulatory impacts of referencing Recommendations ITU-R M.1638-1 and ITU-R M.1849-1 in Nos. 5.447F and 5.450A of the Radio Regulations

Reasons: Consequential: consideration of the subject issues has been completed.

**33 MEETING OF PERMANENT
CONSULTATIVE COMMITTEE II:
RADIOCOMMUNICATIONS
April 8 to 12, 2019
Monterrey, Nuevo Leon, Mexico**

**OEA/Ser.L/XVII.4.2.33
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12 April 2019
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INTER-AMERICAN PROPOSALS (IAPs) FOR WRC-19

AGENDA ITEM 9.1, ISSUE 9.1.6

(Item on the Agenda: 3.1 (SGT-1))

(Documents submitted by the CITELE Member States)

SGT – 1

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Agenda Item 9.1.6: *Urgent studies required in preparation for WRC-19 - Studies concerning Wireless Power Transmission (WPT) for electric vehicles.*

BACKGROUND

Wireless power transmission (WPT) technologies are being developed worldwide to support many applications to transfer power without employing any wired connection. WPT for electric vehicles (WPT-EV) applications are part of the WPT development efforts. The objectives of WPT-EV developments are to reduce EV battery size, reduce pollutants, increase the driving distance between charging, and improve the practicality by making EV charging stations more available and accessible for consumers, governments, and other public transit authorities.

The World Radiocommunication Conference 2015 (WRC-15) adopted Resolution 958 (WRC-15) to examine the possible impact of WPT-EV charging on the radiocommunication services, and Annex item 1 of the resolution requests, as a matter of urgency, that ITU-R study the impact of WPT-EV on radiocommunication services and study suitable harmonized frequency ranges that would minimize this impact. The ITU-R Working Party 1B was in charge of address Agenda Item 9.1, Issue 9.1.6.

The Radiocommunication Sector of the International Telecommunication Union (ITU-R) identified two frequency ranges for WPT-EV charging that might be suitable for harmonization: the 79-90 kHz frequency range for medium power and 19-25 kHz for high power. ITU-R conducted a number of impact studies between WPT-EV and radiocommunication services to assess the potential interference impact of WPT-EV applications operating within the 19-25 kHz and 79-90 kHz frequency ranges. These analyses are included in Report ITU-R SM.2303, [the working document towards a preliminary draft new] Report SM.[WPT_SPEC_MNGM], and [the preliminary draft revision of] Recommendation ITU-R SM.2110. Upon approval of these documents, the urgent studies requested in Resolution 958 (WRC-15) Annex 1 (b) will have been addressed.

WPT-EV technologies may be categorized as industrial, scientific and medical (ISM) application, short range devices (SRD), or a combination of both. As such, WPT-EV should not be categorized as an application under a radiocommunication service, and Nos. 15.12, 15.12.1, 15.13, 15.13.1 apply to provide a minimum ensure that electrical apparatus of any kind does not cause harmful interference to a radiocommunication service. Recommendation ITU-R SM.2110 provides further information on the regulatory status of WPT.

Some studies within ITU-R indicate that WPT-EV compatibility is not feasible in certain frequency bands because existing radio services would be affected by harmful interferences. Adequate technical constraints need to be developed for other potential frequency ranges in order to ensure there's no interference from unwanted emissions, including spurious emissions and harmonics.

According the CPM Report, many of the limits used in existing ITU-R studies do not necessarily ensure the protection of radio services. The exact limits and mitigation techniques, operational constraints, as well as potential other matters, need to be defined through further studies in ITU-R. Limits on unwanted emissions, including spurious emissions and harmonics, are expected to be specified in a new ITU-R Recommendation.

The result of the work in ITU-R indicate there is no need to modify the RR at WRC-19. The technical, operational and mitigation techniques for the use of WPT-EV to avoid harmful interference and to prevent the impact of WPT-EV on radiocommunication services must be assessed through the course of work in the ITU-R Study Groups.

INTER-AMERICAN PROPOSALS

Supports:

Brazil, Canada, Colombia, Mexico, Paraguay, United States of America, Dominican Republic, Uruguay

NOC IAP/9.1/9.1.6/1

ARTICLES

Reasons: The existing regulatory framework in Nos. **15.12, 15.12.1, 15.13, 15.13.1**, and regional and national administration's requirements, guided by applicable ITU-R Recommendations, can be applied for WPT-EV. Therefore, no changes are necessary to the Radio Regulations. It is necessary that the studies on the wireless power transmission for electric vehicles must ensure the protection of the existing, planned, and future radiocommunication services against harmful interferences, including unwanted emissions and harmonics, important conditions to be satisfied by developing applicable ITU-R Recommendations and Reports.

Supports:

Brazil, Canada, Colombia, Mexico, Paraguay, United States of America, Dominican Republic, Uruguay

NOC IAP/9.1/9.1.6/2

APPENDIX

Reasons: The existing regulatory framework in Nos. **15.12, 15.12.1, 15.13, 15.13.1**, and regional and national administration's requirements, guided by applicable ITU-R Recommendations, can be applied for WPT-EV. Therefore, no changes are necessary to the Radio Regulations. It is necessary that the studies on the wireless power transmission for electric vehicles must ensure the protection of the existing, planned, and future radiocommunication services against harmful interferences, including unwanted emissions and harmonics, important conditions to be satisfied by developing applicable ITU-R Recommendations and Reports.

Supports:

Brazil, Canada, Colombia, Mexico, Paraguay, United States of America, Dominican Republic, Uruguay

SUP IAP/9.1/9.1.6/3

RESOLUTION 958 (WRC-15) Urgent studies required in preparation for the 2019 World Radiocommunication Conference

- 1) Studies concerning Wireless Power Transmission (WPT) for electric vehicles:

- a) to assess the impact of WPT for electric vehicles on radiocommunication services;
- b) to study suitable harmonized frequency ranges which would minimize the impact on radiocommunication services from WPT for electric vehicles;

These studies should take into account that the International Electrotechnical Commission (IEC), the International Organization for Standardization (ISO), and the Society of Automotive Engineers (SAE) are in the process of approving standards intended for global and regional harmonization of WPT technologies for electric vehicles...

Reasons: The existing regulatory framework in Nos. **15.12, 15.12.1, 15.13, 15.13.1**, and regional and national administration's requirements, guided by applicable ITU-R Recommendations, can be applied for WPT-EV. Therefore, no changes are necessary to the Radio Regulations. It is necessary that the studies on the wireless power transmission for electric vehicles must ensure the protection of the existing, planned, and future radiocommunication services against harmful interferences, including unwanted emissions and harmonics, important conditions to be satisfied by developing applicable ITU-R Recommendations and Reports.

**33 MEETING OF PERMANENT
CONSULTATIVE COMMITTEE II:
RADIOCOMMUNICATIONS
April 8 to 12, 2019
Monterrey, Nuevo Leon, Mexico**

**OEA/Ser.L/XVII.4.2.33
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11 April 2019
Original: English**

INTER-AMERICAN PROPOSALS (IAPs) FOR WRC-19

AGENDA ITEM 9.1, ISSUE 9.1.8

(Item on the Agenda: 3.1 (SGT-1))

(Document submitted by CITELE Member States)

SGT-1

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Agenda item 9.1, Issue 9.1.8: *On the activities of the Radiocommunication Sector since WRC-15, Issue 9.1.8: – Resolution 958 (WRC-15) – Urgent studies required in preparation for WRC-19 – Narrowband and broadband machine-type communication infrastructures.*

BACKGROUND

WRC-19 Agenda item 9.1, issue 9.1.8 calls for studies on the technical and operational aspects of radio networks and systems, as well as spectrum needed, including possible harmonized use of spectrum to support the implementation of narrowband and broadband machine-type communication infrastructures, in order to develop Recommendations, Reports and/or Handbooks, as appropriate, and to take appropriate actions within the ITU Radiocommunication Sector (ITU-R) scope of work.

Machine-type communication (MTC), machine-to-machine (M2M), and Internet of Things (IoT) are all different names for the same type of application that enables machines to communicate with each other. In this proposal, MTC is the common reference for these forms of communication. In the ITU-R, these types of applications already take advantage of spectrum allocated to the mobile service, including frequency ranges identified for International Mobile Telecommunications (IMT). Input from industry and other groups developing MTC technologies, including presentations at the ITU Workshop on Spectrum Management for Internet of Things Deployment (November 2016, Geneva, Switzerland), indicated overwhelmingly that identifying specific frequency bands for MTC applications may delay or unnecessarily restrict innovation, and may cause an inefficient use of the spectrum.

CITEL Administrations have analyzed the current and future spectrum use for narrowband and broadband MTC, as expressed in Resolution **958 (WRC-15)**, with the conclusion that there is no need to identify specific spectrum for those applications.

IMT systems have been developed over years to satisfy various broadband and narrowband requirements and use cases. The support of massive MTC is one of the usage scenarios of IMT-2020. Studies that support new spectrum requirements for mobile communications, such IMT-2020, already considered massive MTC applications as one of the reasons for increase in the capacity of the IMT networks.

ITU-R Working Party 5D (WP 5D) is the responsible group to develop relevant studies on issue 9.1.8 for WRC-19. As such, WP 5D has initiated the work on this topic, with the development of technical reports. The content being developed in these reports fulfill the studies invited in Resolution **958 (WRC-15)**.

MTC applications and devices can be used effectively with all the benefits of the existent mobile broadband bands and the new frequency bands under study for IMT.

Therefore, having spectrum identified specifically for MTC is neither desired, nor necessary, and thus no changes are needed in the Radio Regulations (RR).

INTER-AMERICAN PROPOSALS

Supports:

Argentina, Brazil, Canada, Colombia, Costa Rica, Ecuador, Honduras, Jamaica, United States of America, Guatemala, Mexico, Panama, Paraguay, Dominican Republic, Uruguay

NOC

IAP/9.1/9.1.8/1

ARTICLES

Reasons: Analysis of the current and future spectrum use for narrowband and broadband machine type communications (MTC), also known as machine-to-machine (M2M) or Internet of Things (IoT), concluded that there is no need to identify specific spectrum for those applications. Therefore, no change to the Radio Regulations or regulatory action is required.

Supports:

Argentina, Brazil, Canada, Colombia, Costa Rica, Ecuador, Honduras, Jamaica, United States of America, Guatemala, Mexico, Panama, Paraguay, Dominican Republic, Uruguay

NOC

IAP/9.1/9.1.8/2

APPENDICES

Reasons: Analysis of the current and future spectrum use for narrowband and broadband machine type communications (MTC), also known as machine-to-machine (M2M) or Internet of Things (IoT), concluded that there is no need to identify specific spectrum for those applications. Therefore, no change to the Radio Regulations or regulatory action is required.

Support:

Argentina, Brazil, Canada, Colombia, Costa Rica, Ecuador, Honduras, Jamaica, United States of America, Guatemala, Mexico, Panama, Paraguay, Dominican Republic, Uruguay

SUP

IAP/9.1/9.1.8/3

ANNEX TO RESOLUTION 958 (WRC-15)

Urgent studies required in preparation for the 2019 World Radiocommunication Conference

...

3) Studies on the technical and operational aspects of radio networks and systems, as well as spectrum needed, including possible harmonized use of spectrum to support the implementation of narrowband and broadband machine-type communication infrastructures, in order to develop Recommendations, Reports and/or Handbooks, as appropriate, and to take appropriate actions within the ITU Radiocommunication Sector (ITU-R) scope of work.

Reasons: Analysis of the current and future spectrum use for narrowband and broadband machine type communications (MTC), also known as machine-to-machine (M2M) or Internet of Things (IoT), concluded that there is no need to identify specific spectrum for those applications. Therefore, no change to the Radio Regulations or regulatory action is required. No changes also apply to RR Volume 3, apart from the suppression proposed to parts of Resolution **958 (WRC-15)**.