

To: FOR GENERAL DISTRIBUTION

From: Peter Pokorny, WIA Special Representative

Re: Report on APG19-4 meeting

Date: 16 January 2019

Background

The [Asia-Pacific Telecommunity \(APT\)](#) is a Regional Telecommunications Organisation (RTO) that, among other things, develops the Asia-Pacific regional view on WRC-19 agenda items. The fourth meeting of the APT Preparatory group for WRC-19 (APG19-4) was held in Busan, Republic of Korea, from 7-12 January 2019. 410 delegates participated from APT Members, APT affiliated and associated organisations (including the IARU).

The APT Preliminary Views from APG19-4 (as achievable) will be finalised by APG19-5, preferably leading to Preliminary APT Common Positions, prior to WRC-19. It is important that the amateur service be represented at these meetings to ensure the best outcome for Region 3 amateurs.

Regional views on WRC-19 agenda items (AIs) are important as the six Regional Telecommunication Organisations (RTOs) listed below carry considerable weight at World Radiocommunication Conferences. In general, the structure of the RTOs and their working methods is very similar to the ITU.

Region	Organisation	Org. home page.
Asia-Pacific	Asia-Pacific Telecommunity (APT)	http://www.apr.int/
The Americas	Inter-American Telecommunication Commission (CITEL)	https://www.citel.oas.org
Africa	African Telecommunications Union (ATU)	http://atu-uat.org/
Middle East	Arab Spectrum Management Group (ASMG)	http://www.itu.int/en/ITU-R/terrestrial/broadcast/ASMG
Western Europe	European Conference of Postal and Telecommunications Administrations (CEPT)	https://cept.org/
Eastern Europe	Regional Commonwealth in the Field of Communications (RCC)	http://www.en.rcc.org.ru/

The Australian Delegation of 20 members was headed by the Department of Communications and the Arts (DOCA) and supported by the Australian Communications and Media Authority (ACMA). Australian delegates represented various government departments, statutory authorities, broadcasters and satellite operators. In the absence of Dale Hughes VK1DSH, Peter Pokorny VK2EMR, represented the WIA at this meeting, and was responsible for WRC-19 agenda item 1.1 on the delegation.

Mr Ken Yamamoto JA1CJP was a member of the Japanese delegation and represented the JARL and the IARU (Region 3) delegates were Mr. Shizuo Endo JE1MUI (Japan) and Mr. Wisnu Widjaja YBOAZ (Indonesia). Other amateurs were part of various national delegations (e.g. Republic of Korea) or associate organisations covering other non-amateur specific agenda items.

WRC-19 agenda items relevant to amateurs full list of WRC-19 agenda items may be found in [Resolution 809 \(WRC-15\)](#). The main WRC-19 amateur issue is agenda item 1.1 which is for a possible new amateur allocation in all or part of the 50 – 54 MHz frequency band in ITU Region 1 and therefore is not of direct concern for Region 3 amateurs, however it is important to ensure that any decisions made by WRC-19 on this issue do not affect the Region 3 amateur allocations.

Agenda items of direct concern to the amateur service are 1.12, 1.13 and 1.16 as the relevant WRC-15 resolution covers existing amateur allocations. Other agenda items need to be followed in case any of the proposed solutions impact any amateur allocations, e.g. AIs 1.7, 1.11, 1.15, 9.1.4, and 9.1.8, or if the agenda item may cause general problems because of interference e.g. AI 9.1.6 (Wireless Power Transmission). Agenda item 1.15 is of interest because of the possibility of future band allocations to the amateur service above 275 GHz.

For APG19-4, Australia submitted input contributions on all WRC-19 agenda items and these contributions were considered in developing the APT Preliminary Views and associated output documents.

The Australian Preliminary Views on all WRC-19 agenda items may be found on the [ACMA website](#). (Note: this website is updated after each relevant meeting and it may take some time before it reflects the most up-to-date Australian Preliminary View).

The IARU Preliminary Views on WRC-19 Agenda items (as presented to APG19-4) are included as Annex 2 of this report.

Meetings

The first APG19-4 Plenary included presentations from the ITU, CEPT, CITELE and RCC. The first APG19-4 Plenary meeting also approved Working Party and Drafting Group chairs, informed the meeting of general working methods, and allocated documents to the six working parties which covered all the WRC-19 agenda items. In the absence of Dale Hughes VK1DSH, Peter Pokorny VK2EMR ended up chairing the Drafting Group 1.1 (DG 1.1) which was assigned the task of considering all the input contributions from APT Members and various information papers, adjusting the APT Preliminary Views and Other Views, as required, and considering progress of ITU studies.

Issues of interest to the amateur service were scattered across several working parties:

WP	CPM Report Chapter	WRC-19 agenda item
WP 1	Chapter 1: Land mobile and fixed services	1.11, 1.12 & 1.15
WP 2	Chapter 2: Broadband applications in the mobile service	1.13 & 1.16
WP 3	Chapter 3: Satellite services	

WP 4	Chapter 4: Science services	1.7
WP 5	Chapter 5: Maritime, aeronautical and amateur services	1.1
WP 6	Chapter 6: General issues	9.1.6

Draft output documents which give the APT Preliminary Views on WRC-19 agenda items are created based on consensus by the DG assigned to each agenda item. The draft documents are reviewed, edited where necessary, and approved by a relevant working party session before being possibly edited again and approved at the final APG19-4 plenary session.

Meeting Results

The APG19-4 meeting is the penultimate APG meeting in the WRC-19 cycle, and views on WRC agenda items are starting to crystallise and will be finalised at the final APG meeting (APG19-5) to be held from 31 July to 6 August 2019 in Tokyo (Japan).

However, several “Other Views” were inserted on some agenda items since no consensus was achieved. The next meeting, APG19-5 is where APT Members will be faced with final decisions on their preferred Methods on the agenda items.

A summary of the main results from APG19-4 is given in the following table:

Agenda Item	Working Party	Issue	Preliminary View
1.1	WP5	Region 1 50 – 54 MHz amateur allocation	Good
1.7	WP4	Additional spectrum for small satellites	OK, but watch
1.11	WP1	Railway systems; possible new allocation	OK, but watch
1.12	WP1	Spectrum for Intelligent Transport Systems	OK, remains a threat
1.13	WP2	mm-wave spectrum for IMT	OK, but watch
1.15	WP1	275-450 GHz for land-mobile and fixed services	OK, but watch
1.16	WP2	Additional RLAN spectrum at 5 GHz	OK, remains a threat
9.1.4	WP5	Stations aboard sub-orbital vehicles	OK, but watch
9.1.6	WP6	Wireless Power Transmission for electric vehicles	OK, but remains a threat
9.1.8	WP2	NB and WB machine-type communications	Good

Agenda item 1.1

Working Party 5 created Drafting Group (DG) 1.1, which was able to finish its work in one session and considered six input contributions and eight information contributions.

Agenda item 9.1.6

Working Party 5 created DG 9.1.6 was able to finish its work in three sessions and considered eight input contributions and seven information contributions.

Next APG meetings

The next and final APG meeting for this ITU study cycle, is planned as follows:

- APG19-5 31 July – 6 August 2019, Tokyo (Japan)

It is important that we attend these meetings to ensure that the concerns of the amateur service are adequately expressed and incorporated in the relevant APT views and output texts.

Conference Preparatory Meeting 2019 (2nd session)

- CPM19-2, 18 to 28 February 2019, Geneva (Switzerland)

APG19-5 will need to consider the outcome of CPM19-2 as the Draft CPM Report may well be modified, new Methods inserted, or there may be a consolidation of Methods to address the agenda items.

Radiocommunication Assembly 2019

- RA-19, 21-25 October 2019, Sharm el-Sheikh (Egypt)

World Radiocommunication Conference 2019

- WRC-19, 28 October to 22 November 2019, Sharm-el-Sheik (Egypt)

Future issues and actions

For all of the relevant agenda items we need to ensure that the views of the WIA are addressed through participation in the Australian WRC preparatory process and attendance at the relevant [Australian Radio Study Groups](#) (particularly [ARSG-5](#)) and [PG WRC-19](#) meetings held by the ACMA and DOCA.

Conclusion and acknowledgements

APG19-4 was well run and successful; the views of the amateur service were represented in a professional manner and were noted in the relevant output documents. Input to future APG meetings through the WRC processes of each national administration (where possible) and the IARU on agenda items relevant to the amateur service is important and such input must be refined to clearly reflect the needs and concerns of the amateur service.

I thank the WIA President and Board for making the funds available to attend APG19-4. I also acknowledge the DOCA and ACMA organisational skills and administrative support in all aspects of WRC-19 preparation.

The IARU Region 3 also deserves considerable thanks for presenting valuable information contributions to APG19-4 and participating in the deliberations on the agenda items of interest.

Annex follows: IARU Views on WRC-19 agenda items 1.1, 1.7, 1.11, 1.12, 1.13, 1.15, 1.16 and 9 (ISSUES 9.1.4, 9.1.6 AND 9.1.8)



International Amateur Radio Union (IARU)

**VIEWS ON WRC-19 AGENDA ITEMS 1.1, 1.7, 1.11, 1.12, 1.13, 1.15, 1.16 AND 9 (ISSUES
9.1.4, 9.1.6 AND 9.1.8)**

1. About the IARU

The International Amateur Radio Union (IARU) was founded in 1925 and is the peak body that represents the interests of the amateur and amateur-satellite services at the ITU Radiocommunications sector (ITU-R), the ITU Development Sector (ITU-D) and Regional Telecommunication Organizations. Through these various organizations the IARU takes part in discussions on issues that may affect the amateur and amateur-satellite services. The IARU especially focuses on ITU World Radiocommunication Conference (WRC) agenda items where spectrum allocations are made. Global in scope, the IARU represents more than 160 national amateur radio societies.

The IARU is headed by an International Secretariat which supports the activities of three regional groups that deal with issues for each of the three ITU-R radio regions. IARU-Region 3 covers the Asia-Pacific region and it interacts with the [Asia-Pacific Telecommunity](#) (APT) through a Memorandum of Understanding.

IARU-Region 3 is pleased to take part in the [APT Conference Preparatory Group for WRC](#) (APG) meetings and present the views of the amateur and amateur-satellite services for consideration at this fourth meeting of the APG ([APG19-4](#)). The preliminary IARU views on WRC-19 agenda items that are relevant to the amateur and amateur-satellite services are presented below.

2. 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)

2.1 Background

The frequency band 50-54 MHz is currently allocated to the amateur service on a primary basis in Region 2 and Region 3. In Region 1 this band is allocated to the broadcasting service on a primary basis, with additional or alternative allocations to the amateur, fixed, mobile, and/or radiolocation (limited to wind profiler radars) services in some countries.

In response to Resolution **658**, studies on spectrum needs for the amateur service in the frequency band 50-54 MHz in Region 1 and sharing studies with incumbent services have been conducted by ITU-R WP 5A.

The study results including proposed methods to satisfy this agenda item are summarized in Chapter 5 of Draft CPM [Report](#) for WRC-19

The working document toward preliminary draft new report has been elevated to Preliminary Draft New Report [ITU-R M.\[AMATEUR 50 MHz\]](#): Studies on spectrum needs for the amateur service in the frequency band 50-54 MHz in Region 1 and sharing with mobile, fixed, radiolocation and broadcasting services are planned to be completed at May 2019 meeting of WP5A.

In order to achieve inter-regional operability, it is desirable to allocate the frequency band 50-54 MHz to the amateur service in Region 1.

2.2 IARU view on agenda item 1.1

The IARU supports modification of the Table of Frequency Allocations to allocate the band 50-54 MHz to the amateur service on a primary basis in Region 1 and so provide a harmonized allocation across all three Regions. The IARU supports Method A in order to achieve inter-regional operability.

Method A: An allocation to the amateur service on a primary basis in all the band 50-54 MHz, or part thereof, with appropriate footnotes to provide protection to services which already have an allocation in the band.

3. Agenda Item 1.7:

to study the spectrum needs for telemetry, tracking and command in the space operation service for non-GSO satellites with short duration missions, to assess the suitability of existing allocations to the space operation service and, if necessary, to consider new allocations, in accordance with Resolution 659 (WRC-15)

3.1 Background

Resolution **659** invites ITU-R to study the spectrum requirements for telemetry, tracking and command in the space operation service for the growing number of non-GSO satellites with short duration missions, taking into account RR No. **1.23** (space operation service) and assess the suitability of existing allocations to the space operation service in the frequency range below 1 GHz, taking into account current use.

If studies of the current allocations to the space operations service indicate that operational requirements cannot be met in existing space operation service bands below 1 GHz, then ITU-R should conduct sharing and compatibility studies, and study mitigation techniques to protect the incumbent services, both in-band as well as in adjacent bands, in order to consider possible new allocations or an upgrade of the existing allocations to the space operation service within the frequency ranges 150.05-174 MHz and 400.15-420 MHz.

In response to Resolution **659**, studies on spectrum requirements for telemetry, tracking and command in the space operation service for the non-GSO satellites with short duration missions have been conducted by ITU-R Working Party 7B.

The study results including proposed methods to satisfy this agenda item are summarized in Chapter 4 of Draft CPM [Report](#) for WRC-19.

3.2 IARU view on agenda item 1.7

The IARU supports satisfying the spectrum requirements for non-GSO satellites with short duration missions within the existing allocations for the space operation service or the frequency ranges identified in *invites ITU-R 3* of Resolution **659** (WRC-15), unless the satellites are amateur satellites as defined in RR Nos. **1.56** and **1.57**.

4. 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)

4.1 Background

The *invites ITU-R* section of Resolution **236** asks ITU-R to study the spectrum needs, technical and operational characteristics and implementation of railway radiocommunication systems between train and trackside (RSTT).

Currently relevant ITU-R work in response to the Resolution **236** is being conducted and a new report and working document towards a preliminary draft new recommendation have been developed.

In response to Resolution **236**, studies on spectrum needs of RSTT and technical and operational characteristics and implementation of RSTT have been conducted by ITU-R WP 5A.

The study results including proposed methods to satisfy this agenda item are summarized in Chapter 1 of Draft CPM [Report](#) for WRC-19.

4.2 IARU view on agenda item 1.11

The IARU is of the view that satisfying the spectrum needs for railway radiocommunication systems between train and trackside can be achieved within the existing mobile service allocations that are not co-allocated to the amateur service and therefore, the IARU supports a No change to the RR except suppression of Resolution **236** (WRC-15).

Reasons: Harmonization of frequencies for RSTT can be achieved through the course of ITU-R study group work by applicable ITU-R Recommendations and/or Reports (e.g. Working document towards Preliminary Draft New Recommendation [ITU-R M.\[RSTT_FRQ\]](#)).

5. 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)

5.1 Background

The *invites ITU-R* of Resolution **237** asks ITU-R to carry out studies on technical and operational aspects of evolving ITS implementation using existing mobile-service allocations.

The *noting b)* of Resolution **237** says that outlines of technologies and characteristics for dedicated short-range communications at 5.8 GHz are described in Recommendation [ITU-R 1453-2](#). In addition *noting c)* says that some administrations in each of the three Regions have deployed radiocommunication local area networks in the frequency band 5 725-5 825 MHz, which is also identified for industrial, scientific and medical (ISM) applications.

In the 5 GHz frequency band, 5 725-5 830 MHz is allocated to the amateur service on a secondary basis and 5 830-5 850 MHz is allocated to the amateur service and amateur-satellite service on a secondary basis.

The frequency band 5 760 to 5 765 MHz is used for amateur weak-signal communication activity including terrestrial and Earth-Moon-Earth communications and propagation beacons.

In response to Resolution **237**, technical and operational studies on evolving ITS implementation have been conducted by ITU-R Working Party 5A. ITU-R studies indicated that some administrations throughout the three Regions have designated the frequency band of 5 850-5 925 MHz, or parts thereof, for the deployment of ITS. Preliminary draft new Recommendation [ITU-R M.\[ITS_FRQ\]](#), “Harmonization of frequency bands for Intelligent Transport Systems in the mobile service” recommends that several frequency bands, in whole or in part, be used for current and future ITS.

The study results including proposed methods to satisfy this agenda item are summarized in Chapter 1 of Draft CPM [Report](#) for WRC-19.

5.2 IARU view on agenda item 1.12

The IARU is of the view that existing and future amateur use in this band should be protected with special attention to the bands 5 760 to 5 765 MHz and 5 830 to 5 850 MHz.

6. 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)

6.1 Background

The *resolves to invite ITU-R* section 1 of Resolution **238** asks ITU-R to conduct and complete in time for WRC-19 the appropriate studies to determine the spectrum needs for the terrestrial

component of IMT in the frequency range between 24.25 GHz and 86 GHz. The *resolves to invite ITU-R* section 2 of the Resolution asks ITU-R to conduct and complete in time for WRC-19 the appropriate sharing and compatibility studies including studies with respect to services in adjacent bands, as appropriate, taking into account the protection of services to which the 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 IARU is concerned that frequency bands which are allocated to the amateur and amateur-satellite services are included in the identified bands in the *resolves to invite ITU-R* section of the resolution. Those frequency bands are 81-81.5 GHz which is also allocated to the amateur and amateur-satellite services on a secondary basis in footnote **5.561A**, and 47-47.2 GHz which is allocated to the amateur and amateur-satellite services on a primary basis. This narrow primary allocation of 47-47.2 GHz to the amateur service is the only spectrum in which amateur experimentation with millimeter wavelengths can be conducted without practical constraints imposed by sharing with other services.

The IARU is of the view that the spectrum requirements identified for IMT in the frequency range between 24.25 GHz and 86 GHz can be fully met in the frequency bands that are already allocated to the mobile service on a primary basis. Therefore the IARU opposes new allocations in this frequency range to other services, including the mobile service. If either or both of the bands that are adjacent to 47-47.2 GHz are identified for the terrestrial component of IMT, suitable emission limits must be included in order to ensure the protection of existing and future stations in amateur and amateur-satellite services in the 47-47.2 GHz band. The IARU is further of the view that any allocation to IMT in the frequency range 24.25-27.5 GHz shall include full consideration and protection for the amateur and amateur-satellite service's primary allocation at 24-24.05 GHz.

In response to Resolution **238**, spectrum needs for the terrestrial component of IMT and the sharing and compatibility studies in the frequency range between 24.25 GHz and 86 GHz have been conducted by ITU-R TG5/1

The study results including proposed methods to satisfy this agenda item are summarized in Chapter 2 of Draft CPM [Report](#) for WRC-19. However, sharing studies with the amateur services in frequency band 47-47.2 GHz were not performed in ITU-R.

6.2 IARU view on agenda item 1.13

In the band 24.25-27.5 GHz, the IARU supports No change

In the band 47-47.2 GHz, the IARU supports No change

In the band 81-86 GHz, the IARU supports No change

7. Agenda Item 1.15:

to consider identification of frequency bands for use by administrations for the land-mobile and fixed services applications operating in the frequency range 275-450 GHz, in accordance with Resolution 767 (WRC-15)

7.1 Background

Resolution **767** (WRC-15) recognizes that the amateur service is developing and demonstrating applications above 275 GHz.

In response to Resolution **767**, studies on spectrum needs for the land-mobile and fixed services in the frequency range of 275-450 GHz and the sharing and compatibility in the frequency range between 275 GHz and 450 GHz have been conducted by ITU-R WP1A.

The study results including proposed methods to satisfy this agenda item are summarized in Chapter 1 of Draft CPM [Report](#) for WRC-19.

7.2 IARU view on agenda item 1.15

In considering identification of frequency bands for the land-mobile and fixed service application in the frequency range of 275-450 GHz, the IARU is of the view that whichever method is taken, access for non-commercial experimentation by stations in the amateur service to as much of the frequency range as possible be maintained.

8. 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)

8.1 Background

Invites ITU-R b) of Resolution 239 asks ITU-R to conduct studies with a view to identifying 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 bands 5 650-5 850 MHz in Regions 1 and 3, and 5 650-5 925 MHz in Region 2 are allocated to the amateur service on a secondary basis. The frequency band 5 830 to 5 850 MHz is also allocated to the amateur-satellite service on a secondary basis.

The frequency band 5 760 to 5 765 MHz is used for amateur weak-signal communication activities including terrestrial and Earth-Moon-Earth communications and propagation beacons.

Studies on sharing and mitigation techniques have been conducted in the frequency bands 5 150-5 250 MHz, 5 250-5 350 MHz, 5 350-5 470 MHz, 5 725-5 850 MHz, and 5 850-5 925 MHz at ITU-R WP 5A and other relevant working parties.

The study results including proposed methods to satisfy this agenda item are summarized in Chapter 2 of Draft CPM [Report](#) for WRC-19.

8.2 IARU view on agenda item 1.16

The IARU is of the view that there is growing interest among radio amateurs in experimentation, investigation of propagation phenomena, point-to-point communication and space communication in this band, and existing and future amateur use in this band should be protected with special attention to the bands 5 760 to 5 765 MHz and 5 830 to 5 850 MHz.

9. Agenda Item 9, Issue 9.1.4:

to conduct studies to identify any required technical and operational measures, in relation to stations on board sub-orbital vehicles, that could assist in avoiding harmful interference between radiocommunication services;

9.1 Background

The study results on required and operational measures are summarized in Chapter 5 of Draft CPM [Report](#) for WRC-19.

The conclusions are: No change to the Radio Regulations is proposed for WRC-19. Further operational, technical and regulatory issues may need to be addressed, which require continuing studies, in particular of the status of the station aboard sub-orbital vehicles and type of applications, through the appropriate mechanism. No action has been taken with respect to retention, revision or suppression of Resolution **763 (WRC-15)**.

9.2 IARU view on agenda item 9, issue 9.1.4:

The IARU supports the conclusions on this agenda item mentioned in Chapter 5 of Draft CPM [Report](#) for WRC-19.

10. Agenda Item 9, Issue 9.1.6:

Urgent studies required in preparation for the 2019 World Radiocommunication Conference: Studies concerning Wireless Power Transmission (WPT) for electric vehicles according to Issue 1) in the Annex to Resolution 958 (WRC-15).

10.1 Background

Annex to Resolution **958** specifies the following subjects on which studies are required in preparation for the 2019 World Radiocommunication Conference.

- 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 electrical vehicles.

In response to Resolution **958**, studies on the impact of WPT for electric vehicles (EV) on radiocommunication services and suitable harmonized frequency ranges have been conducted by WP 1B.

The study results are summarized in Chapter 6 of Draft CPM [Report](#) for WRC-19.

Impact on the amateur service is described as follows:

- Among amateur radio bands, the field measurements were conducted for 135.7 kHz-137.8 kHz and 472 kHz-479 kHz. The measurement results are compared to meet the limits of CISPR/B/687/CDV. These limits do not necessarily ensure protection of radio services.
- The frequency range for WPT-EV, 79-90 kHz, does not overlap with, and has enough separation from, frequency bands for amateur radio services using 135.7-137.8 kHz. Therefore, receiver sensitivity suppression (out-of-band) by interference is not taken into consideration. Radiated emission levels of harmonics (spurious emission) from WPT-EV will need to be considered where they fall into the amateur radio services bands.
- Report ITU-R [SM.2303-2](#) states that interference to amateur services was not studied. Subsequent papers submitted to ITU-R show that the current emission limits in the spurious domain, as defined by ITU-R and/or CISPR documents, fall well short of providing adequate protection from harmful interference to amateur services from WPT-EV, given that antennas used in this service are generally located in urban/suburban residential areas.
- The high duty cycle of WPT-EV systems, their planned location close to or inside dwellings, and their anticipated deployment density show that the current CISPR or ITU limits are inadequate for such a technology deployed in this way. Harmful interference to the amateur service seems likely if WPT-EV systems operate at or near the existing limits. The necessary limits for harmonic emissions from WPT-EV systems can be less stringent (although still stricter than current limits) if:
 - a) WPT-EV systems adopt a harmonized, tightly tolerated frequency of operation; and
 - b) the phase noise and noise sidebands from WPT-EV are at least 40 dB below the equivalent of the current emission limits.

The results of the studies conducted within the ITU-R identified two frequency ranges (19-25 kHz, 55-5X kHz and 6Y-65 kHz) for high-power WPT-EV and one frequency range (79-90 kHz) for medium-power WPT-EV. Values for X and Y will be defined.

10.2 IARU view on agenda item 9, issue 9.1.6

The IARU is of the view that, although no change is required to the RR, based on these study results, further work must continue within the ITU-R to ensure that appropriate levels of spurious emission limits are defined to provide proper protection to existing radiocommunication services.

11. Agenda Item 9, Issue 9.1.8:

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.

11.1 Background

The study results on the technical and operational aspects of radio networks and systems, as well as spectrum needed are summarized in Chapter 2 of Draft CPM [Report](#) for WRC-19.

The conclusions are: ITU-R studies of the current and future spectrum use for narrowband and broadband MTC, performed as expressed in Resolution **958 (WRC-15)**, concluded that there is no need to take any regulatory action in the Radio Regulations with respect to specific spectrum for the use of those applications in the Radio Regulations. Nonetheless, there may be other ways to address the harmonized use of spectrum to support the implementation of narrowband and broadband MTC.

11.2 IARU view on agenda item 9, issue 9.1.8

The IARU supports the conclusions on this agenda item mentioned in Chapter 5 of Draft CPM [Report](#) for WRC-19.
