



# International Amateur Radio Union Region 1



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Subject:	IARU position on certain WRC-19 Agenda Items		
Society	IARU	Country:	
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## Information Paper

This paper outlines the various WRC-19 agenda items that are of interest or concern to the International Amateur Radio Union (IARU). It sets out the preliminary IARU positions as of April 2017 on those agenda items that are relevant to the amateur and/or amateur-satellite services. Most of the WRC-19 agenda items are supported by a resolution that gives more guidance as well as limitations for the agenda item. The WRC-19 agenda and related resolutions are available at <http://www.itu.int/en/ITU-R/conferences/wrc/2019/Pages/default.aspx>

### 1. Agenda Item 1.1 Amateur 50 - 54 MHz in Region 1

***to consider an allocation of the frequency band 50 - 54 MHz to the amateur service in Region 1, in accordance with Resolution 658 [COM6/6] (WRC-15)***

The resolution identifies the following tasks:

1. to study spectrum needs in Region 1 for the amateur service in the frequency band 50 - 54 MHz;
2. taking into account the results of the above studies, to study sharing between the amateur service and the mobile, fixed, radiolocation and broadcasting services, in order to ensure protection of these services.

#### 1.1 IARU position 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.

### 2. Agenda Item 1.7 Spectrum for non-GSO satellites

***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 [COM6/19] (WRC-15)***

The Resolution invites ITU-R:

1. 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 No. **1.23**;

2. to assess the suitability of existing allocations to the space operation service in the frequency range below 1 GHz, taking into account *recognizing a)* and current use;
3. if studies of the current allocations to the space operations service indicate that requirements cannot be met under *invites ITU-R 1 and 2*, to 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.

### **2.1 IARU position 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.

### **3. Agenda Item 1.11 Railway trackside communication**

***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 [COM6/12] (WRC-15)***

One of the *invites ITU-R* in the resolution reads:

to study the spectrum needs, technical and operational characteristics and implementation of railway radiocommunication systems between train and trackside,

#### **3.1 IARU position on Agenda Item 1.11:**

The IARU supports satisfying the spectrum needs for railway radiocommunication systems between train and trackside within existing mobile service allocations that are not also allocated to the amateur service.

### **4. Agenda Item 1.12 ITS**

***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 [COM6/13] (WRC-15)***

The *noting* in the resolution includes references to technologies and characteristics for dedicated short-range communications at 5.8 GHz as well as the following:

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;

#### **4.1 IARU position on Agenda Item 1.12**

The 5 GHz band is challenged by both AI 1.12 and 1.16.

The frequency band 5 650 to 5 850 MHz (5 650 to 5 925 MHz in Region 2) is allocated to the amateur service on a secondary basis.

The frequency band 5 830 to 5 850 MHz is allocated to the amateur satellite service (space-to-Earth) on a secondary basis, and in the frequency band 5 650 to 5 670 MHz, the amateur-satellite service (Earth-to-space) may operate subject to not causing harmful interference to other services operating in accordance with the Table.

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.

There is growing interest among radio amateurs in experimentation, investigation of propagation phenomena, point-to-point communication and space communication in this band.

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

## 5. Agenda Item 1.13 IMT

***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 [COM6/20] (WRC-15)***

The part of the resolution that is of concern to the IARU reads:

to conduct and complete in time for WRC-19 the appropriate sharing and compatibility studies, 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

### 5.1 IARU position on Agenda Item 1.13

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, and do not justify the allocation of 47.0-47.2 GHz to the mobile service. This narrow primary allocation to the amateur service is the only spectrum in which amateur experimentation with millimetre wavelengths can be conducted without practical constraints imposed by sharing with other services. Therefore, the IARU opposes additional allocations in this band to other services, including the mobile service. If either or both bands that are adjacent to 47.0 - 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 amateur and amateur-satellite stations in the 47.0 - 47.2 GHz band. 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.

## **6. Agenda Item 1.15 275 – 450 GHz**

***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 [COM6/14] (WRC-15)***

### **6.1 IARU position on Agenda Item 1.15**

Resolution 767 (WRC-15) recognizes that the amateur service is developing and demonstrating applications above 275 GHz. As studies proceed to identify candidate frequency bands for the land-mobile and fixed services in the frequency range 275 - 450 GHz, the IARU supports maintaining access for non-commercial experimentation by stations in the amateur service to as much of the frequency range as possible, consistent with the protection of the passive and other active services.

## **7. Agenda Item 1.16 WAS/RLAN**

***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 [COM6/22] (WRC-15)***

Relevant portions of Resolution 239 state:

*invites ITU-R*

- b) 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;
- e) to also conduct detailed sharing and compatibility studies, including mitigation techniques, between WAS/RLAN and incumbent services in the frequency band 5 725 - 5 850 MHz with a view to enabling a mobile service allocation to accommodate WAS/RLAN use;
- f) to also conduct detailed sharing and compatibility studies, including mitigation techniques, between WAS/RLAN and incumbent services in the frequency band 5 850 - 5 925 MHz with a view to accommodating WAS/RLAN use under the existing primary mobile service allocation while not imposing any additional constraints on the existing services,

### **7.1 IARU position on Agenda Item 1.16**

The 5 GHz band is challenged by WRC-19 both by AI 1.12 and 1.16.

The frequency band 5 650 to 5 850 MHz (5 650 to 5 925 MHz in Region 2) is allocated to the amateur service on a secondary basis.

The frequency band 5 830 to 5 850 MHz is allocated to the amateur satellite service (space-to-Earth) on a secondary basis, and in the frequency band 5 650 to 5 670 MHz, the amateur-satellite service (Earth-to-space) may operate subject to not causing harmful interference to other services operating in accordance with the Table.

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.

There is growing interest among radio amateurs in experimentation, investigation of propagation phenomena, point-to-point communication and space communication in this band.

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

## **8. Urgent studies required in preparation for WRC-19**

### **8.1 Agenda Item 9, issue 9.1.4 Stations on board sub-orbital vehicles (space planes)**

***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;***

#### **8.1.1 IARU position on Agenda Item 9, issue 9.1.4:**

This issue is of concern to the IARU only if spectrum requirements for space planes are identified that are in addition to the existing allocations for aeronautical and space operation services and if, therefore, a possible future agenda item for WRC-23 is developed.

### **8.2 Agenda Item 9, issue 9.1.6 Wireless Power Transmission (WPT)**

***Studies concerning Wireless Power Transmission (WPT) for electric vehicles according to Issue 1) in the Annex to Resolution 958 [COM6/15] (WRC-15).***

#### **8.2.1 IARU position on Agenda Item 9, issue 9.1.6:**

IARU observes that High Power Wireless Power Transfer (HPWPT) is an emerging technology which will in time become deployed on a widespread basis (one in every house). We further observe the ongoing work in ITU and standards organisations to propose frequency ranges for HPWPT. IARU is of the view that radio frequency emissions resulting from any kind of Wireless Power Transmission (WPT) must be confined to the frequency ranges already identified for equipment used for industrial, scientific, and medical (ISM) applications or if found necessary, to frequencies below 100 kHz.

Since HPWPT involves very large amounts of RF power and an HPWPT installation involves components connected together in a system with associated power supplies and control equipment, the spurious emissions from all these system parts must be carefully controlled in order to avoid degrading the radio spectrum and causing interference to other radiocommunication systems or services in accordance with RR 15.12 and RR 15.13.

Sources of emissions on frequencies other than the fundamental frequency of the HPWPT include:

- High order harmonics of the fundamental WPT frequency
- Phase noise from the frequency control circuits (“jitter”) causing wideband noise
- Spurious signals from the switch-mode power supply on all control and power ports – conducted and common mode
- Common mode signals on control cables and power lines from data communication networks associated with the control of the unit
- To ensure adequate protection to authorised radio services, proper compatibility and sharing studies should be conducted.
- IARU regards cooperation between ITU and Standards organisations to be essential in the evolution of standards and frequencies for HPWPT operation.

### **8.3 Agenda Item 9, issue 9.1.8 Machine-type communications (MTC)**

***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.***

#### **8.3.1 IARU position on Agenda Item 9, issue 9.1.8:**

The IARU supports the use of spectrum efficient technologies for MTC. Because MTC devices typically will be co-located with stations in the amateur service, the use of spectrum allocated to the amateur service would be problematic for both uses.

## **9. Agenda Item 8 Removal of Country Footnotes**

***To consider and take appropriate action on requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required, taking into account Resolution 26 (Rev.WRC-07);***

### **9.1 IARU Comments on Agenda Item 8:**

This is a standard agenda item that is intended to permit administrations to propose that a WRC delete their country names from a footnote or even to entirely delete a footnote in the table of allocations in Article 5 of the Radio Regulations. WRCs regularly arrange for country names also to be *added* or new footnotes created under this agenda item. Potential changes in footnotes that could benefit the Amateur Services should be identified by member societies

and brought to the attention of their administrations. Similarly, proposals for footnotes unfavourable to the Amateur Services should be opposed.

There are a number of country footnotes that apply to amateur service allocations, some of which appear to be obsolete. In particular, the IARU invites the administrations listed in Nos. **5.98, 5.99, 5.102, 5.119, and 5.122** relating to the bands 1 810 – 1 830 kHz, 1 850 – 2 000 kHz, 3 500 – 3 750 kHz and 3 750 – 4 000 kHz to consider proposing the deletion of their country names from these footnotes.