

# 2<sup>nd</sup> ITU Inter-regional Workshop on WRC-19 Preparation

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[www.itu.int/go/ITU-R/wrc-19-iwsp-18](http://www.itu.int/go/ITU-R/wrc-19-iwsp-18)



Organized by:



**2<sup>nd</sup> ITU INTER-REGIONAL WORKSHOP  
ON WRC-19 PREPARATION  
(Geneva, 20-22 November 2018)**

**Land mobile and fixed  
services**

**WRC-19 agenda items  
1.11,1.12,1.14,1.15**

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## WRC-19 related agenda items (AI)

**AI 1.11** - Railway radiocommunication systems between train and trackside. **Resolution 236 (WRC-15)**

**AI 1.12** - Intelligent Transport Systems applications. **Resolution 237 (WRC-15)**

**AI 1.14** - Facilitating access to broadband applications delivered by high-altitude platform stations. **Resolution 160 (WRC-15)**

**AI 1.15** - Studies towards an identification for use by administrations for land-mobile and fixed services applications operating in the frequency range 275-450 GHz. **Resolution 767 (WRC-15)**



## 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)***



## Agenda Item 1.11

### Methods:

#### **Method A: No change to the RR except suppression of Res. 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. Recommendation ITU-R M.[RSTT\_FRQ]).

#### **Method B: Add a new Resolution [A111-METHOD B] (WRC-19) and consequently suppress Res. 236 (WRC-15)**

A new WRC Resolution specifying frequency ranges for RSTT provides a regulatory framework for global and/or regional harmonization for RSTT, and provides guidance to administrations when making frequency plans for RSTT.

#### **Method C: Add a new Resolution [B111-METHOD C] (WRC-19) with references to the Recommendation ITU-R M.[RSTT\_FRQ] and consequently suppress Res. 236 (WRC-15)**

A new WRC Resolution specifying frequency ranges for RSTT can provide a regulatory framework to guide the harmonization process. At the same time, an ITU-R Recommendation can recommend possible global and/or regional harmonization of frequency arrangements for RSTT and can provide flexibility.



## 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)***



### Methods:

#### **Method A – No change to the Radio Regulations other than to suppress Res. 237 (WRC-15)**

**Reasons:** ITS operate within existing mobile service allocations. Harmonization of frequencies for ITS pertaining to the exchange of information to improve traffic management and to assist driving safety can be achieved through the course of ITU-R Study Group work by applicable ITU-R Rec. and/or Reports (e.g., Rec. ITU-R M.[ITS\_FRQ]).

#### **Method B – Add a new WRC Resolution and also suppress Res. 237 (WRC-15)**

No change to the RR Table of Frequency Allocations and to add a new WRC Resolution to encourage administrations to use globally or regionally harmonized frequency bands for ITS applications.

This method provides a regulatory framework for global harmonization for ITS applications through a new WRC Resolution.

#### **Method C – Add a new WRC Resolution with non-mandatory reference to ITU-R Rec. and suppress Res. 237 (WRC-15)**

No change to the RR Table of Frequency Allocations and the new WRC Resolution is to encourage administrations to use globally and regionally harmonized frequency bands for ITS applications through reference to ITU-R Recommendation(s).

This method provides a regulatory framework for worldwide or regional harmonization for ITS applications through a new WRC Resolution and the most recent version of Recommendation ITU-R M.[ITS\_FRQ].



## 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;*



### Methods:

As a first step, The following methods are considered under this agenda item and may be applied to potential candidate frequency bands:

- Method A – No change.
- Method B – Designation of bands for HAPS, in accordance with Resolution **160 (WRC-15)** with options:
  - Method B1 – Revision of the regulatory provisions for HAPS in the fixed service (FS) with a primary status in bands already designated for HAPS.
  - Method B2 – Add new designation(s) for HAPS in bands already allocated to the FS with a primary status.
  - Method B3 – Add a primary allocation to the FS and a new designation for HAPS in the band 24.25-25.25 GHz (Region 2) not already allocated to the FS.
- Method C – Suppress the existing HAPS designation, pursuant to *resolves* 3 of Resolution **160 (WRC-15)**.



### Methods:

As a second step, when considering the band-by-band approach, the relevant methods that could be considered as applicable to a given frequency band are indicated below.

Section 1/1.14/	Bands	Methods and options		
		Method A	Method B	Method C
4.1/5.1	6 440- 6 520 MHz	√	B1	√
4.2/5.2	6 560- 6 640 MHz	√	Not proposed	√
4.3/5.3	21.4-22 GHz (R2 only)	√	B2	N/A
4.4/5.4	24.25-25.25 GHz (R2 only)	√	B3	N/A
4.5/5.5	25.25-27.5 GHz (R2 only)	√	B2	N/A
4.6/5.6	27.9-28.2 GHz	√	B1	√
4.7/5.7	31-31.3 GHz	√	B1	√
4.8/5.8	38-39.5 GHz	√	B2	N/A
4.9/5.9	47.2-47.5 GHz / 47.9-48.2 GHz	√	B1	√



## 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)***



## Agenda Item 1.15

### Methods:

The following methods are considered to satisfy this agenda item and may be applied to the candidate frequency bands.

**Method A** – No change to the Radio Regulations.

**Method B** – Modifying the existing footnote RR No. **5.565** is proposed for FS/LMS applications in portions of the 275-450 GHz frequency range.

**Method C** – This method suggests to modify RR No. **5.565** for use by FS/LMS applications in portions of the 275-450 GHz band, while considering the evolving guidance of ITU-R Recommendations and Reports.

**Method D** – Adding a new footnote RR No. **5.A115** (option 1) / No. **5.B115** (option 2) is proposed for FS/LMS applications in portions of the 275-450 GHz band.

**Method E** – Adding a new footnote RR No. **5.C115** and modifying the existing footnote RR No. **5.565** are proposed for FS/LMS applications in portions of the 275-450 GHz band.

## Methods:

**Method B**  
Modifying the existing footnote RR No. **5.565** is proposed for FS/LMS applications in portions of the 275-450 GHz frequency range.

### **MOD**

**5.565** The following frequency bands in the range 275-1 000 GHz are [designated] for use by administrations for passive service applications:

- radio astronomy service: 275-323 GHz, 327-371 GHz, 388-424 GHz, 426-442 GHz, 453-510 GHz, 623-711 GHz, 795-909 GHz and 926-945 GHz;
- Earth exploration-satellite service (passive) and space research service (passive): 275-286 GHz, 296-306 GHz, 313-356 GHz, 361-365 GHz, 369-392 GHz, 397-399 GHz, 409-411 GHz, 416-434 GHz, 439-467 GHz, 477-502 GHz, 523-527 GHz, 538-581 GHz, 611-630 GHz, 634-654 GHz, 657-692 GHz, 713-718 GHz, 729-733 GHz, 750-754 GHz, 771-776 GHz, 823-846 GHz, 850-854 GHz, 857-862 GHz, 866-882 GHz, 905-928 GHz, 951-956 GHz, 968-973 GHz and 985-990 GHz.

Moreover, the following frequency bands within the range of 275-450 GHz are also [designated] for use by administrations for implementing active service applications mentioned as below:

- land mobile service applications: 275-296 GHz, 306-313 GHz, 318-333GHz, and 356-450 GHz;
- fixed service applications: 275-296 GHz, 306-313 GHz, 318-333 GHz, and 356-450 GHz.

The use of the range 275-1 000 GHz by the passive services does not preclude use of this range by active services. Administrations wishing to make frequencies in the 275-1 000 GHz range available for active service applications in particular for land mobile service and fixed service are urged to take all practicable steps to protect these passive services from harmful interference until the date when the Table of Frequency Allocations is established in the above-mentioned 275-1 000 GHz frequency range.

All frequencies in the range 1 000-3 000 GHz may be used by both active and passive services. (WRC-19)

### Methods:

#### Method C

This method suggests to modify RR No. **5.565** for use by FS/LMS applications in portions of the 275-450 GHz band, while considering the evolving guidance of ITU-R Recommendations and Reports.

#### MOD

**5.565** The following frequency bands in the range 275-1 000 GHz are identified for use by administrations for **active and** passive service applications:

- radio astronomy service: 275-323 GHz, 327-371 GHz, 388-424 GHz, 426-442 GHz, 453-510 GHz, 623-711 GHz, 795-909 GHz and 926-945 GHz;
- Earth exploration-satellite service (passive) and space research service (passive): 275-286 GHz, 296-306 GHz, 313-356 GHz, 361-365 GHz, 369-392 GHz, 397-399 GHz, 409-411 GHz, 416-434 GHz, 439-467 GHz, 477-502 GHz, 523-527 GHz, 538-581 GHz, 611-630 GHz, 634-654 GHz, 657-692 GHz, 713-718 GHz, 729-733 GHz, 750-754 GHz, 771-776 GHz, 823-846 GHz, 850-854 GHz, 857-862 GHz, 866-882 GHz, 905-928 GHz, 951-956 GHz, 968-973 GHz and 985-990 GHz;
- fixed and land mobile service: 275-296 GHz, 306-313 GHz, 320-330 GHz and 356-450 GHz.

In the frequency bands 275-296 GHz, 306-313 GHz, 320-330 GHz and 356-450 GHz, no specific conditions are necessary by fixed and/or land mobile service applications to protect Earth exploration-satellite service (passive) applications.

In the frequency bands 275-323 GHz, 327-371 GHz, 388-424 GHz and 426-442 GHz, some specific conditions (e.g. minimum separation distances and/or avoidance angles) may be necessary to ensure protection of radio astronomy sites from fixed and/or land mobile service applications, on a case-by-case basis.

The use of the range 275-1 000 GHz by the passive services does not preclude use of this range by active services. Administrations wishing to make frequencies in the 275-1 000 GHz range available for active service applications are urged to take all practicable steps to protect these passive services from harmful interference until the date when the Table of Frequency Allocations is established in the above-mentioned 275-1 000 GHz frequency range. When applying this provision, administrations should take into account the latest relevant ITU-R Recommendations and may consider the latest relevant ITU-R Reports.

All frequencies in the range 1 000-3 000 GHz may be used by both active and passive services. (WRC-19)



## Agenda Item 1.15

### Methods:

#### **Method D**

Adding a new footnote RR No. **5.A115/5.B115** is proposed for FS/LMS applications in portions of the 275-450 GHz band.

Option1:

#### **MOD**

**248-3 000 GHz**

Allocation to services		
Region 1	Region 2	Region 3
275-3 000	(Not allocated) 5.565 <u>ADD 5.A115</u>	

#### **ADD**

**5.A115** The following frequency bands are identified for use by administrations for land mobile and fixed service applications:

- 275-296 GHz, 306-313 GHz, 320-330 GHz and 356-450 GHz (WRC-19)

#### **NOC**

**5.565**



## Methods:

### Method D

#### Option 2:

#### MOD

**248-3 000 GHz**

Allocation to services		
Region 1	Region 2	Region 3
275-3 000	(Not allocated) 5.565 <a href="#">ADD 5.B115</a>	

#### ADD

**5.B115** The following frequency bands are identified for use by administrations for the implementation of the following active service applications:

- land mobile service applications: 275-325 GHz;
- fixed service applications: 275-296 GHz, 306-313 GHz, 319-325 GHz.

Administrations wishing to make these above-mentioned frequency bands available for land mobile and/or fixed service applications are urged to take all practicable steps to protect passive services operating according to No. 5.565 until the date when the Table of Frequency Allocations is established in the 275-1 000 GHz frequency range.

In the frequency bands 275-325 GHz, some specific conditions (e.g. minimum separation distances and/or avoidance angles) may be necessary to ensure protection of radio astronomy sites from land mobile and/or fixed service applications, on a case-by-case basis. (WRC-19)

#### NOC

#### 5.565



## Methods:

### Method E

Adding a new footnote RR No. **5.C115** and modifying the existing footnote RR No. **5.565** are proposed for FS/LMS applications in portions of the 275-450 GHz band.

MOD

248-3 000 GHz

Allocation to services

Region 1	Region 2	Region 3
275-3 000	(Not allocated) <a href="#">MOD 5.565</a> <a href="#">ADD 5.C115</a>	

ADD

**5.C115** The following frequency bands are identified for use by administrations for the implementation of the following active service applications:

- land mobile service applications: 275-296 GHz, 306-313 GHz, 318-333GHz, and 356-450 GHz;
- fixed service applications: 275-296 GHz, 306-313 GHz, 318-333 GHz, and 356-450 GHz.

Administrations wishing to make these above-mentioned frequency bands available for land mobile and/or fixed service applications are urged to take all practicable steps to protect passive services operating according to No. **5.565** until the date when the Table of Frequency Allocations is established in the 275-1 000 GHz frequency range. Frequency bands in the 275-450 GHz range not identified under this footnote were deemed incompatible with the existing Earth exploration-satellite service (passive) and radio astronomy service applications identified in No. **5.565**.

In the frequency bands 275-296 GHz, 306-313 GHz, 318-323 GHz, 327-333 GHz, 356-371 GHz, 388-424 GHz and 426-442 GHz, some specific conditions (e.g. minimum separation distances and/or avoidance angles) may be necessary to ensure protection of radio astronomy sites from land mobile and/or fixed service applications, on a case by case basis. (WRC-19)

MOD

**5.565** The following frequency bands in the range 275-1 000 GHz are identified for use by administrations for passive service applications:

- radio astronomy service: 275-323 GHz, 327-371 GHz, 388-424 GHz, 426-442 GHz, 453-510 GHz, 623-711 GHz, 795-909 GHz and 926-945 GHz;
- Earth exploration-satellite service (passive) and space research service (passive): 275-286 GHz, 296-306 GHz, 313-356 GHz, 361-365 GHz, 369-392 GHz, 397-399 GHz, 409-411 GHz, 416-434 GHz, 439-467 GHz, 477-502 GHz, 523-527 GHz, 538-581 GHz, 611-630 GHz, 634-654 GHz, 657-692 GHz, 713-718 GHz, 729-733 GHz, 750-754 GHz, 771-776 GHz, 823-846 GHz, 850-854 GHz, 857-862 GHz, 866-882 GHz, 905-928 GHz, 951-956 GHz, 968-973 GHz and 985-990 GHz.

The use of the range 275-450 GHz by the passive services does not preclude use of this range by active services. The use of this frequency range by land mobile and fixed service applications shall be made in accordance with No. **5.C115**. Administrations wishing to make frequencies in the 275-450 GHz range available for applications under other active service than land mobile and fixed service are urged to take all practicable steps to protect the passive services from harmful interference until the date when the Table of Frequency Allocations is established in the above-mentioned 275-1 000 GHz frequency range.

The use of the range 450-1 000 GHz by the passive services does not preclude use of this range by active services. Administrations wishing to make frequencies in the 450-1 000 GHz range available for active service applications are urged to take all practicable steps to protect the passive services from harmful interference until the date when the Table of Frequency Allocations is established in the above-mentioned 275-1 000 GHz frequency range.

All frequencies in the range 1 000-3 000 GHz may be used by both active and passive services. (WRC-19)