

# FOCUS

**WRC-  
23**

**TOPICS RELEVANT TO GNSS**



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# WRC-23 Agenda Items

## Mobile communications, etc.

IMT (3.3-10.5 GHz): 1.1, 1.2, 1.3  
High-altitude IMT (HIBS)(0.694-2.7 GHz): 1.4  
MS, BS (470-960 MHz): 1.5

## Transports

Sub-orbital vehicles: 1.6  
AMS(R)S in VHF: 1.7  
Unmanned Aircraft Systems (UAS): 1.8  
Aviation safety-of-life: 1.9  
AMS for non-safety (15.5/22 GHz): 1.10  
GMDSS & e-navigation: 1.11

## General

Recommendations: 2  
Res/Rec: 4  
Country footnotes: 8  
Director's report: 9.1, 9.2  
Resolution 80: 9.3  
WRC-27 agenda: 10

## Scientific

EESS(a) for radar sounders (45 MHz): 1.12  
SRS (14.8-15.35 GHz): 1.13  
EESS(p) remote sensing (231.5-252 GHz): 1.14

## Satellites

Aero & Maritime-ESIM (12.75-13.25 GHz): 1.15  
NGSO ESIM (Ka-band): 1.16  
Inter-satellite links: 1.17  
Narrowband MSS for IoT: 1.18  
Ka-band FSS (R2): 1.19  
Regulatory issues: 7

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9.1.a) Space weather sensors  
9.1.b) RNSS vs Amateur & Amateur-satellite service

7A) NGSO orbital tolerances

# Space Weather Sensors

WRC-23 Agenda Item 9.1 Topic a)

# RNSS vs Amateur in 1240-1300 MHz

WRC-23 Agenda Item 9.1 Topic b)

# NGSO Orbital Tolerance

WRC-23 Agenda Item 7 Topic A

## Background

- For global prediction and warnings, may be vulnerable to interference
- No bands allocated to space weather applications
- Protection of radio spectrum-reliant space weather sensors used for global prediction and warnings (Res 657)
- AI9.1 Topic a) - Review the results of studies ... for space weather sensors with a view to describing appropriate recognition and protection in the Radio Regulations (Res 811)

## Constraints/Requirements

- Included under BR Director's Report to WRC-23 (AI9.1)
- No additional constraints on incumbent services
- Not considered a safety service (Nos. 1.59 & 4.10)

# Space Weather Sensors

WRC-23 Agenda Item 9.1 Topic a)

# RNSS vs Amateur in 1240-1300 MHz

WRC-23 Agenda Item 9.1 Topic b)

# NGSO Orbital Tolerance

WRC-23 Agenda Item 7 Topic A

## Current progress

- Three new ITU-R Reports being developed on spectrum requirements, interference criteria and compatibility issues
- One ITU-R Report being revised – List of space weather sensor systems including systems that rely on reception of RNSS signals (Category 1 systems for detection, prediction, warning)

## Possible outcomes (???)

- New definition of space weather sensors in RR Article 1
- Use MetAids or other existing services but not to create a new type of service
- Regulations to protect individual sites & frequencies
- New agenda item AI1.x at WRC-27

### Background

- Interference from Amateur TV to Galileo E6 RNSS receiver
- AI9.1 Topic b) - Review amateur and amateur-satellite services allocations in 1 240-1 300 MHz to determine if additional measures are required to ensure protection of RNSS (Res811)

### Constraints/Requirements

- RNSS↓ (1240-1300 MHz) is a primary service
- Amateur (1240-1300 MHz) and Amateur-Satellite Service↑ (1260-1270 MHz) are secondary services
- Secondary cannot cause harmful interference to or cannot claim protection from Primary
- Included under BR Director's Report to WRC-23 (AI9.1)

### Current progress

- Two new ITU-R Reports being developed on the characteristics on the amateur and amateur-satellite services in 1240-1300 MHz and regarding protection of RNSS
- One ITU-R Recommendation being revised on the characteristics of systems operating in the amateur and amateur-satellite services
- CPM text being drafted

### Possible outcomes (???)

- Guideline for the use of 1 240-1 300 MHz by stations of Amateur and Amateur-Satellite Services  
e.g. frequency separation, narrowband transmissions etc.

### Background

- Follow up from WRC-19, “bringing into use” was defined for frequency assignments to non-GSO systems
- Allowable orbital tolerance between deployed and notified non-GSO is undefined

### Constraints/Requirements

- Affects bringing (back) into use (Nos. 11.44C, 11.49.2), deployment milestones (Res 35) and notified orbital characteristics (Ap4 / No.13.6)
- RNSS not covered, limited to FSS, BSS, MSS
- Under Agenda Item 7



### Current progress

- New ITU-R Report being developed on the tolerances for certain orbital characteristics of non-GSO space stations in the FSS, BSS, and MSS between notified and deployed
- 4 orbital characteristics considered - inclination, altitude of apogee/perigee and argument of perigee

### Possible outcomes (???)

- A defined allowable range of orbit deviation based on fraction / percentage / absolute / function etc. for non-GSO FSS, BSS, MSS
- Flexibility for legitimate maneuvers
- Consequences for not meeting the tolerance

# International Telecommunication Union



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# Extra Slides

## Background

- HIBS are high-altitude platform stations (HAPS) as International Mobile Telecommunications (IMT) base stations located at altitudes 20-50 km
- AI1.4 - to consider the use of HIBS in the mobile service in certain frequency bands below 2.7 GHz already identified for IMT, on a global or regional level (Res 811 & 247)

## Constraints/Requirements

- 694-960 MHz, 1 710-1 885 MHz, 2 500-2 690 MHz, already identified for IMT
- Note: RDSS allocated in 2 483.5-2 500 MHz
- Existing services to be protected (including adjacent bands) with no new regulatory constraints

## Current progress

- New report/document being developed on HIBS characteristics and on sharing and compatibility studies
- RDSS characteristics provided for study
- CPM text being drafted

# UTC

Res 655 (WRC-15)

## Background

- Until WRC-23, UTC as described in Recommendation ITU-R TF.460-6 shall continue to apply (Res655)
- UTC scale is adjusted by the insertion or deletion of seconds (positive or negative leap-seconds) to ensure approximate agreement with UT1.

## Constraints/Requirements

- BR Director to report progress to WRC-23

## Current Progress

- New report being developed on ... various aspects of current and potential future reference time scales, including their impacts and applications in radiocommunication