5TH INDIA SPECTRUM MANAGEMENT CONFERENCE

KEYNOTE PRESENTATION

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About the ITU

- Established on 17th May 1865
- UN specialized agency for Information and Communication Technologies (ICTs) since 1947
- Global allocation of spectrum and satellite orbits
- Development of international radio regulations and technical standards

194
MEMBER STATES

1000+
PRIVATE SECTOR ORGANIZATIONS

170+
ACADEMIA MEMBERS

IMT-2030 (6G)

SOCIETAL GOALS

Support UN-SDG goals including environmental sustainability, efficient delivery of health care, reduction in poverty and inequality, improvements in public safety and privacy, support for aging populations and managing expanding urbanization

MARKET EXPECTATIONS

Enable significant and novel capabilities, support radically new and differentiated services, and create greater market opportunities

OPERATIONAL NECESSITIES

The need to manage complexity, drive efficiency and reduce costs with end-to-end automation and visibility is also an imperative motivation and driving factor

SPECTRUM UTILIZATION

With new services and applications towards 2030 and beyond, more spectrum may be required to accommodate the increased mobile data traffic growth

WRC Process

Year 2 of the Cycle

WRC-23

Modifies the Radio Regulations and defines the agenda for next WRC

CPM27-1

Allocates the work of the agenda items to relevant working parties of ITU-R Study Groups and defined chapter rapporteur and structure of CPM Report

ITU-R Study Groups

Conducts studies for 4 years and prepares draft CPM text

ITU-R Study Groups

- SG-1: Spectrum management
- SG-3: Radiowave propagation
- SG-4: Satellite services
- SG-5: Terrestrial services
- SG-6: Broadcasting services
- SG-7 Science services

CPM27-2

Consolidates the results of studies in CPM text which include the methods to solve each agenda item

RA-27

Appoints the Chairs and Vice Chairs of the Study Groups, revises the structure of the Study Groups, approves ITU-R recommendations, revises ITU-R solutions

WRC-27

Modifies the Radio Regulations and defines the agenda for next WRC

WRC-27 AGENDA ITEMS

Fixed-satellite and Broadcasting-satellite

1.1 — **Aeronautical/maritime earth stations in motion**
47.2-50.2 GHz / 50.4-51.4 GHz

1.2 — **Uplink earth stations** – 13.75-14 GHz

1.3 — **Gateway earth stations** – 51.4-52.4 GHz

1.4 — **Fixed/broadcasting allocation in Region 3** – 17.3-17.7/8 GHz

1.5 — **Unauthorized operations of non-GSO earth stations**

1.6 — **Space sustainability**
37.5-42.5 GHz / 42.5-43.5 GHz / 47.2-50.2 GHz / 50.4-51.4 GHz

7 — **Satellite regulatory issues**

1.7 — **IMT**
4400-4800 MHz / 7125-8400 MHz / 14.8-15.35

1.8 — **Radiolocation**
231.5-275 GHz / 275-700 GHz

1.9 — **Aeronautical mobile (OR) high frequency modernization**

1.10 — **Power flux-density / power limits**
71-76 GHz / 81-86 GHz

Fixed, Mobile and Radiolocation

Mobile-Satellite

Space-to-space links — **1.11**
1 518-1 544 MHz / 1 545-1 559 MHz
1 610-1 645.5 MHz / 1 646.5-1 660 MHz
1 670-1 675 MHz / 2 483.5-2 500 MHz

MSS - IoT development — **1.12**
1427-1432 MHz / 1645.5-1646.5 MHz
1880-1920 MHz / 2010-2025 MHz

MSS – D2D connectivity — **1.13**

MSS - Additional allocations — **1.14**
2010-2025 MHz / 2160-2170 MHz
2 120-2 160 MHz

Lunar communications — **1.15**

Radio Quiet Zones — **1.16**

Space weather sensors protection — **1.17**

Earth exploration service protection — **1.18**
≥ 76 GHz

Earth exploration-satellite service allocation — **1.19**
4200 – 4400 MHz / 8400-8500 MHz

Science

Consider the identification for IMT (terrestrial component) in the following frequency bands:

Region 1	Region 2	Region 3
4 400 - 4 800 MHz		4 400 - 4 800 MHz
7 125 - 7 250 MHz 7 750 - 8 400 MHz	7 125 - 8 400 MHz	7 125 - 8 400 MHz
14.8 - 15.35 GHz	14.8 - 15.35 GHz	14.8 - 15.35 GHz

- WP 5D is conducting the review of sharing and compatibility studies

KEY CHALLENGING ISSUES

A. **Comparing studies**
Difficulty in harmonizing study methodologies, propagation models, and parameter selection across contributions

B. **Altimeter assumptions**
For the 4 400-4 800 MHz band, there is a lack of consensus on technical assumptions for radio altimeters

C. **Studies "into IMT"**
Assessing impacts of existing services on IMT

WRC-27 – Agenda Item 1.13
Spectrum for MSS – D2D

Possible new allocations to the mobile-satellite service for Direct connectivity between space stations and IMT user equipment to complement terrestrial IMT network coverage (**Resolution 253** (WRC-23))

FREQUENCY BANDS AGREED TO BE STUDIED UNDER AI 1.13 (Resolves 1)
694/698 – 960 MHz
1 427 – 1 518 MHz
1 710 – 2 025 MHz 2 110 – 2 200 MHz
2 300 – 2 400 MHz
2 500 – 2 690 MHz

WP 4C

- Description and functionality of MSS systems for direct connectivity between space stations and IMT user equipment
- Sharing and compatibility studies with incumbent services

WP 5D

Technical considerations for protection of terrestrial IMT systems are being conducted and three primary approaches are currently being evaluated

KEY CHALLENGING ISSUES

A. Coexistence between satellite and terrestrial networks

B. Responsibilities and roles of satellite and mobile network operators, as well as corresponding administrations

C. Cross-border coordination

Consider allocations to the mobile-satellite service in the frequency bands required for the future development of low-data-rate NGSO MSS (Resolution 252 (WRC-23)):

Space-to-Earth	Earth-to-Space
1 427 - 1 432 MHz	
1 645.5 - 1 646.5 MHz	
1 880 - 1 920 MHz	
2 010 - 2 025 MHz	

Relevant for the development of the Internet of Things (IoT)

- WP 4C's studies include the technical description of LDR-MSS systems, spectrum requirements, technical and operational characteristics, and coexistence mechanisms for low data rate systems and existing primary services

KEY CHALLENGING ISSUES

A. Description of Low Data Rate

B. Overlapping frequency bands with other agenda items

C. Sharing among Low Data rate systems

D. Use of the 1.6GHz band

E. Transmissions in the opposite direction in the 2GHz band within Region 2

Consider regulatory measures, and implementability thereof, to limit the unauthorized operations of non-geostationary-satellite orbit earth stations in the fixed-satellite (FSS) and mobile-satellite services (MSS) (Resolution 14 (WRC-23))

Existing Regulations:

- Article 18 of the Radio Regulations
- Resolution 25 (Rev.WRC-23)
- Resolution 22 (Rev. WRC-23)

- WP 4A is collecting information on non-GSO FSS and MSS satellite systems, on how this is implemented in operational and planned satellite systems

KEY CHALLENGING ISSUES

A. Enforcement of existing regulations

B. Responsibility of notifying administration of satellite system

C. Satellite constellations filed through multiple administrations

D. Mechanisms to hinder unauthorised operation

E. Understanding of "service area"

Ongoing Work: Join the Effort

ITU-R Study Groups

Sharing and Compatibility Studies

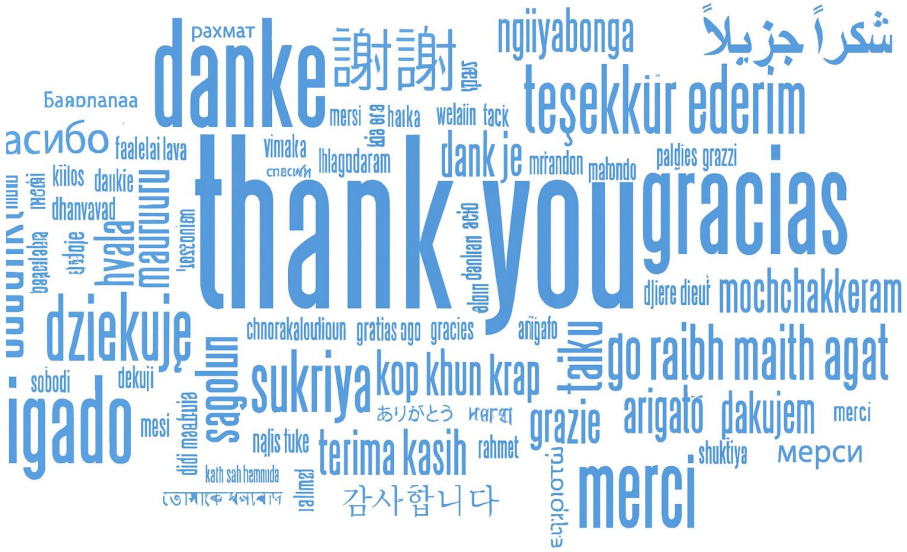
- Called upon by WRC-27 Agenda Items
- In response to ITU-R Questions or Resolutions

Development of Working Documents and CPM Text

- Compilation of Working documents
- Early stages of CPM Text

Development of Reports, Recommendations and Handbooks

- As a result of the WRC-27 process
- In response to ITU-R Questions or Resolutions
- Development of international standards and specifications



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