

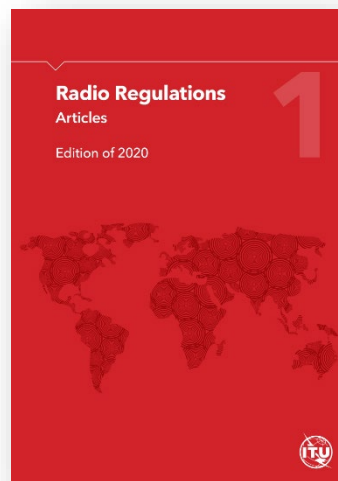
Protecting the RNSS Spectrum



Hon Fai Ng (ng@itu.int)
International Telecommunication Union
ICG-16, 2022, Online/Abu Dhabi, UAE



International
Telecommunication
Union



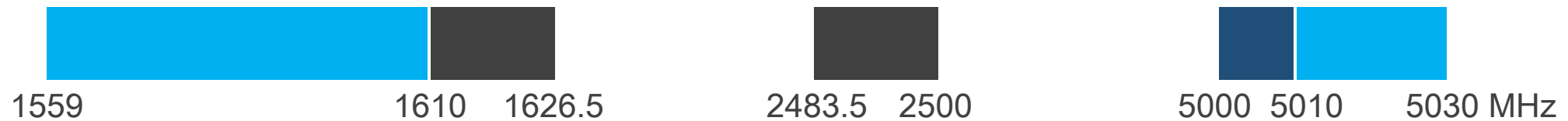
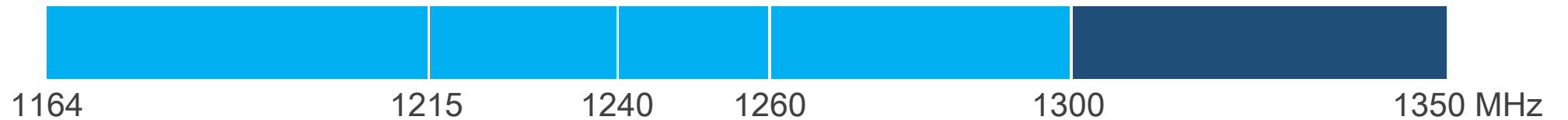
Custodian of the
Radio Regulations
www.itu.int/pub/R-REG-RR-2020






Manage radio-
frequency spectrum
and satellite orbits

RNSS/RDSS ALLOCATION

Table of Frequency Allocation in Article 5 of Radio Regulations



-  Radionavigation-Satellite Service (RNSS ↓↔)
-  Radionavigation-Satellite Service (RNSS ↑)
-  Radiodetermination-Satellite Service (RDSS ↓)

10,843

Radio-frequency interference (RFI) events
to aircraft GNSS receivers in 2021



Interference Hotspots



HARMFUL INTERFERENCE

Interference which endangers the functioning of a radionavigation service or of other safety services or seriously degrades, obstructs, or repeatedly interrupts a radiocommunication service operating in accordance with Radio Regulations

ITU sent the circular letter CR/488 to all Member States on 8 July 2022



Safety services (e.g. radionavigation) require special measures from harmful interference (RR No. 4.10)

Frequencies for safety and regularity of flight require absolute international protection (RR No. 15.28)



Freedom for military radio installations but prevent harmful interference and comply with regulations (ITU CS Art. 48)

All stations must not cause harmful interference (ITU CS Art. 45)
No transmission of false or deceptive (ITU CS Art. 47) or unnecessary / superfluous / misleading signals (RR No. 15.1)

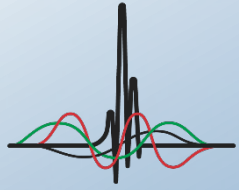


Recommendations in CR/488



- Comply with ITU legal instruments
- “GNSS jammers” or interfering equipment are prohibited (RR No. 15.1)
- Additional measures from ICAO:
 - Reinforce navigation systems resilience
 - Increase collaboration between regulatory and enforcement
 - Reinforce civil-military coordination
 - Increase coordination between aviation, military and regulatory
 - Retain essential conventional navigation infrastructure





ITUWRC
DUBAI 2023

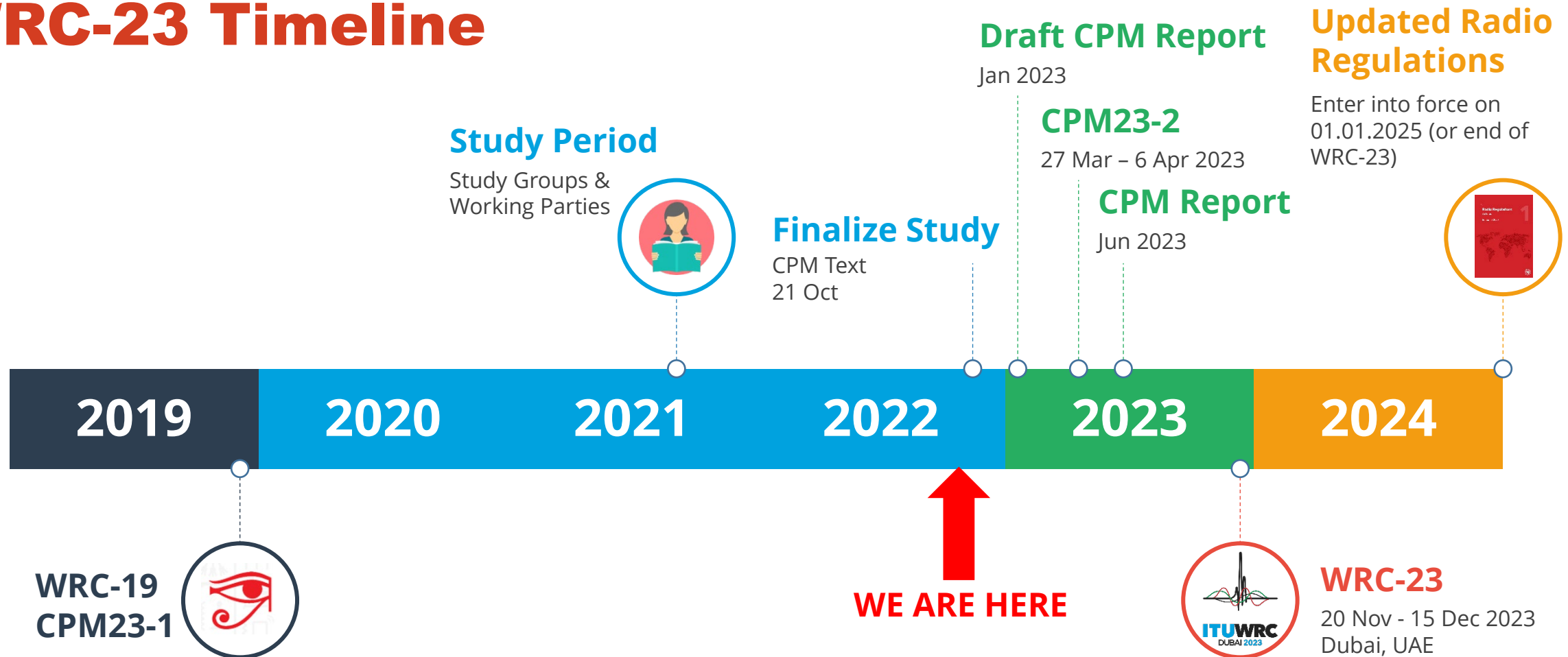
WRC-23

* World Radiocommunication Conference 2023
20 Nov - 15 Dec 2023
Dubai, UAE

* The only body that can revise the Radio Regulations



WRC-23 Timeline



Latest Schedule: <https://www.itu.int/en/events/Pages/Calendar-Events.aspx?sector=ITU-R>

World Radiocommunication Conference (WRC): <https://www.itu.int/wrc-23/>

Conference Preparatory Meeting (CPM): <https://www.itu.int/en/ITU-R/study-groups/rcpm/Pages/cpm-23.aspx>

Space Weather Sensors

WRC-23 Agenda Item 9.1 Topic a)

Background

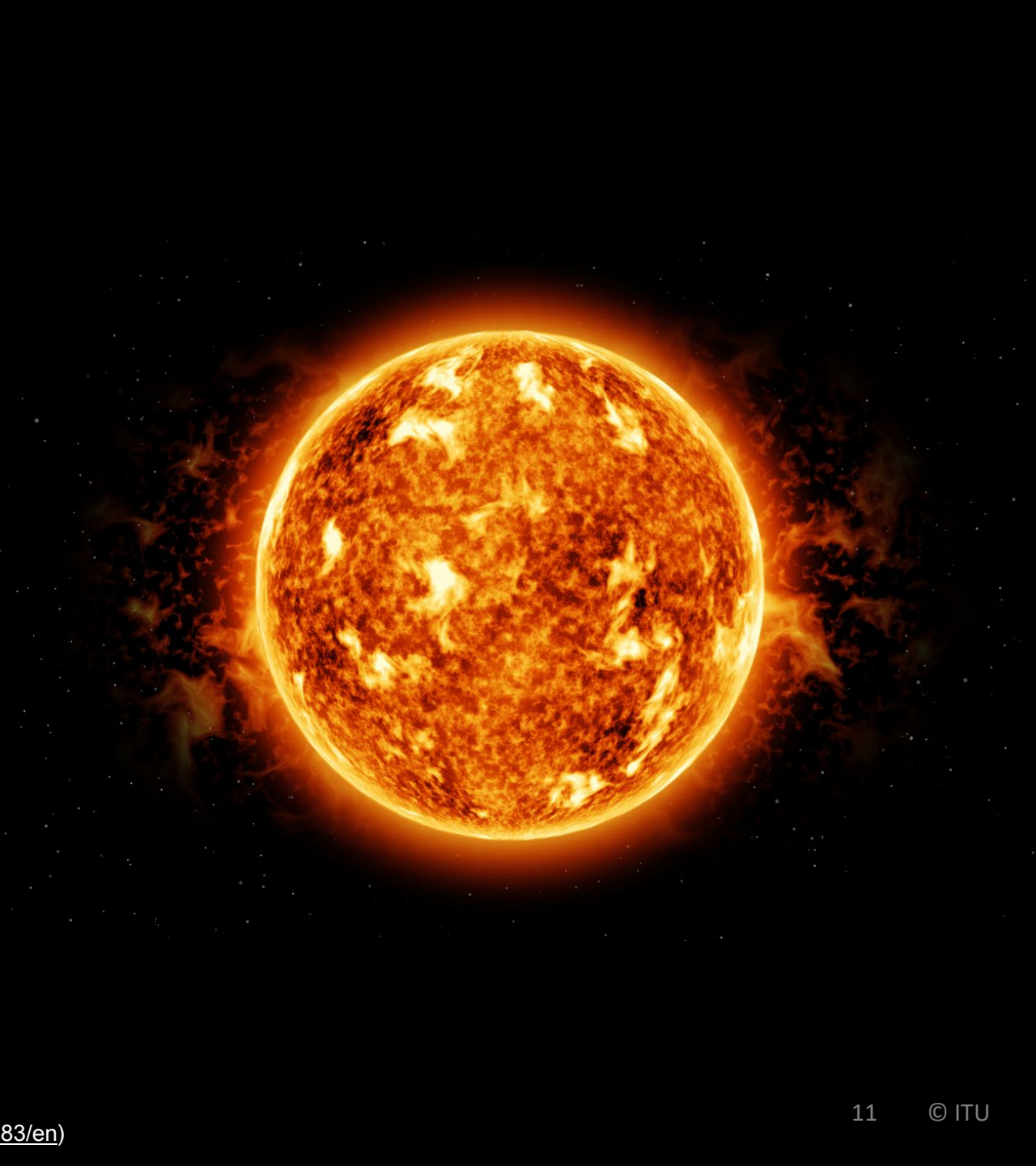
- For prediction and warnings
- Vulnerable to interference
- No definition nor allocation to space weather applications

Objective

- Appropriate recognition and protection in Radio Regulations

Possible outcome

- “Space weather” definition (RR Article 1)
- Use existing service “MetAids” for receive-only and active sensors (RR Article 4)
- New agenda item at WRC-27



Protection of RNSS from Amateur in 1240-1300 MHz

WRC-23 Agenda Item 9.1 Topic b)

Background

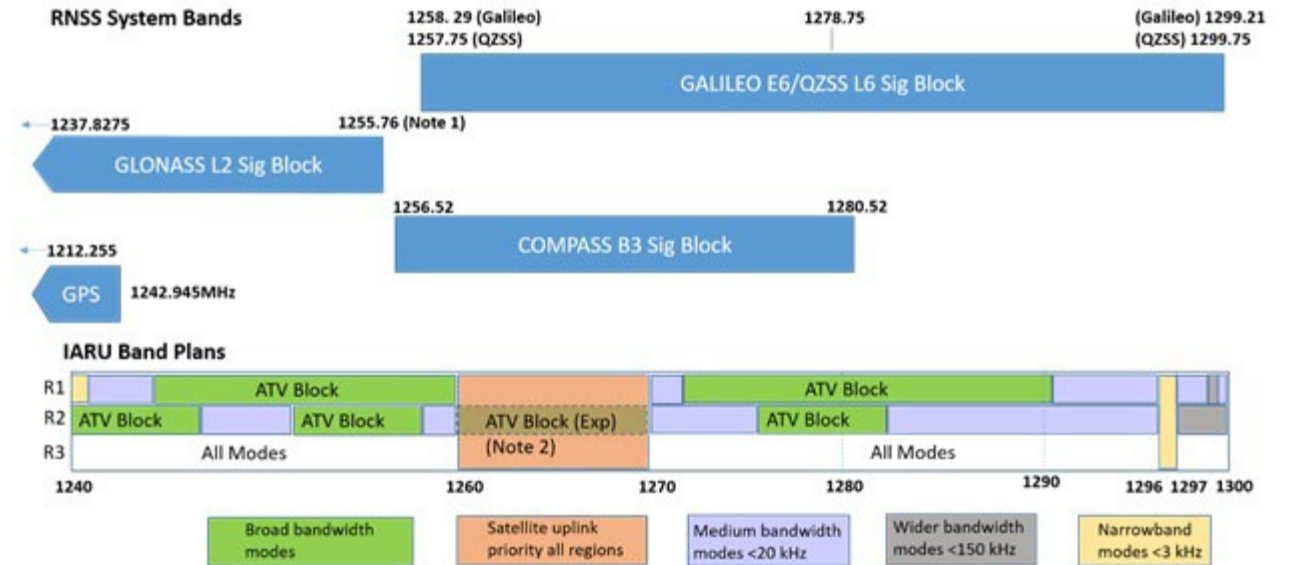
- RNSS is a primary service
- Amateur & amateur-satellite* services are secondary or subject to not causing harmful interference
- Amateur TV interfered Galileo E6 RNSS receiver

Objective

- Determine if additional measures are required to ensure protection of RNSS

Possible outcome

- Recommendation (“Guideline”) for amateur and amateur-satellite stations in 1 240-1 300 MHz e.g. frequency separation, power limits, min. distance from airport



* amateur-satellite service is allocated in 1260 – 1270 MHz (5.282)

HIBS

WRC-23 Agenda Item 1.4

Background

- High-altitude platform stations as International Mobile Telecommunications (IMT) base stations at altitudes 20-50 km

Objective

- Use of HIBS in mobile service below 2.7 GHz (694-960, 1710-1885 MHz, 2500-2 690* MHz)

Compatibility with RDSS

- Feasible with separation / not feasible when RDSS is within HIBS coverage – still under discussion



*Note: RDSS is adjacent at 2 483.5-2 500 MHz

Sources: [Res 247 \(WRC-19\)](#), [Res 811 \(WRC-19\)](#), WP5D (<https://www.itu.int/md/R19-WP5D-C-1361/en> (Chapter 4 Annexes 4.27 to 4.31))

Definition of time scale

Res 655 (WRC-15)

Background

- UTC is adjusted with “leap seconds” to approximate UT1.
- $UT1-UTC < 0.9s$
- UTC described in Recommendation ITU-R TF.460-6 shall apply until WRC-23

Objective

- To decide: maintain leap second or use continuous time scale

Possible Outcome

- “Relaxation” of UT1-UTC
- Transition period 2035 or 2040 or at least 15 years





ITUPP
BUCHAREST2022

26 September - 14 October 2022
Bucharest, Romania

Ms Doreen Bogdan-Martin
Newly elected Secretary-General 2023

Mr Mario Maniewicz
BR Director 2023



International Telecommunication Union



www.itu.int



SCAN ME