



# 2nd Preparatory Workshop for WRC-27

ITU-APT Foundation of India

## **Session 4:** Agenda Item 1.2

RLS-FSS

7 April 2025

# Agenda

## FSS 13.75-14 GHz Agenda Item 1.2

- Background
- Usage of the band
- Status of studies ITU-R
- Looking ahead



# FSS 13.75-14 GHz WRC-27 Agenda Item 1.2

*1.2 to consider possible revisions of sharing conditions in the frequency band 13.75-14 GHz to allow the use of uplink fixed-satellite service earth stations with smaller antenna sizes, in accordance with Resolution **129 (WRC-23)**;*

## Background & Current Situation:

- **WARC-92:** Added an allocation to the FSS (Earth-to-space) in the 13.75-14 GHz band, with constraints associated to minimum antenna size.
- **WRC-03:** Introduced changes allowing smaller antennas (1.2 meters) for geostationary satellite (GSO) FSS networks with specific Power Flux-Density (PFD) and Effective Isotropic Radiated Power (EIRP) density limits.
- **WRC-23:** Future Agenda Item was supported by Regional Groups: multi-country proposal from APT countries (incl. **India**), ATU, and CITELE.
- **WRC-27:** Working Party 4A is studying possible changes to the minimum antenna size of NGSO FSS in 13.75-14 GHz and associated power limitations.

# FSS 13.75-14 GHz WRC-27 Agenda Item 1.2

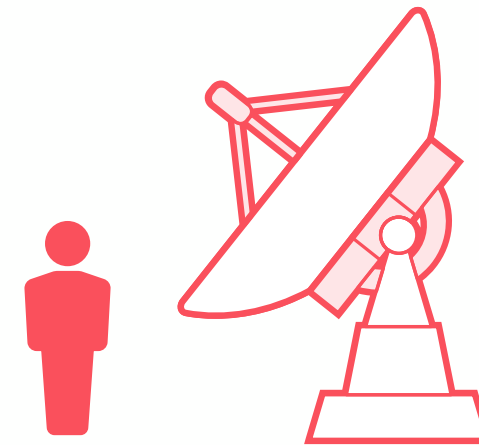
- Currently Eutelsat Group uses the frequencies from **14** to **14.5 GHz** for its User Link **Uplink**: 500 MHz available
- For the Ku band **Downlink**: 1.05 GHz available



- The 13.75-14 GHz band is shared with **Radiolocation** on a primary basis, and **Space Research Service** on a secondary basis, imposing technical limitations to balance operational needs of existing services
- The current minimum size of the earth station antenna, 1.2m for GSO and 4.5m for NGSO, makes this band unusable by FSS.
- **Allowing the use of smaller antennas would increase uplink capacity by 50% and limit the risk of congestion**



Small Ku band terminals

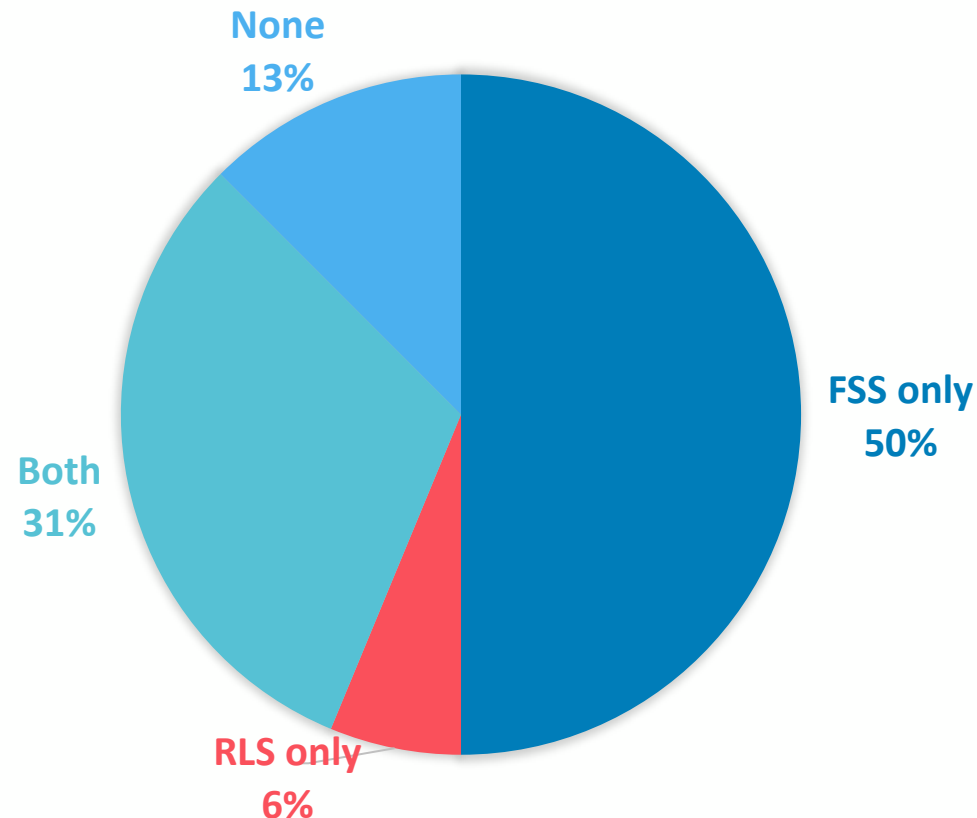


4.5-meter antenna

# Usage of the 13.75-14 GHz band in the Asia-Pacific

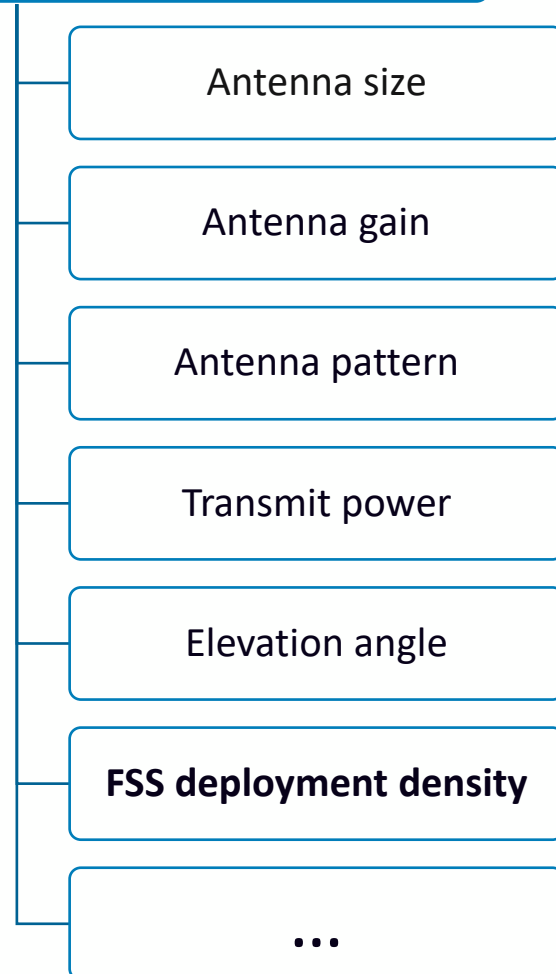
- AWG-34 has updated Report 58 a questionnaire on the band usage on APAC countries. 16 countries replied with current or planned national usage of the band.
- **India actively uses this band for FSS.**
- 81% of the countries informed that they use or plan to use FSS

## 13.75 - 14 GHZ BAND USAGE IN THE APT REGION

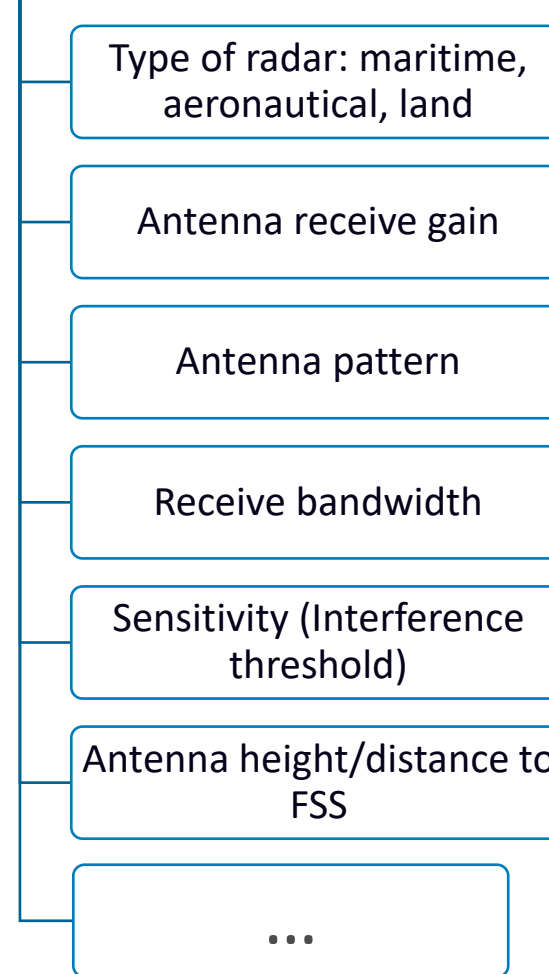


# Key elements to consider in the studies for RLS sharing

## FSS characteristics



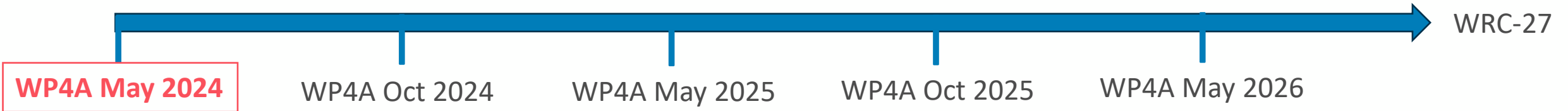
## Radar characteristics M.1644



### Open topics

- ITU-R Recommendation **M. 1644** is currently being revised by WP5B
- RLS **protection criteria** (WP5B)
- FSS **deployment density** (WP4A)

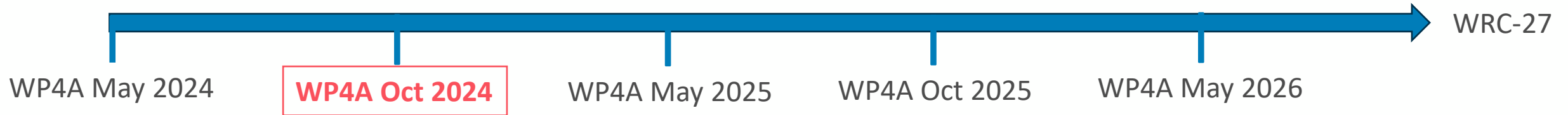
## Agenda Item 1.2 – status of work (1/2)



- Ghana and Nigeria presented an input with the GSO, MEO and LEO characteristics to be used in the studies.
- Received initial response from WP5B on RLS characteristics (M.1644) but these are **still under consideration** for revision by WP5B. WP3M provided propagation characteristics to be considered.
- Other contributions from France and China on initial elements to the preparatory work for AI 1.2 studies



## Agenda Item 1.2 – status of work (2/2)



### Single-entry analysis of smaller FSS earth stations impact on radars in the RLS band [1]

- No significant impact on radar systems beyond national borders; further studies and aggregate analyses planned for the next WP4A meeting.

### Three output documents:

- Liaison statement (5B/208) to WP5B seeking missing RLS parameters and percentage of time for protection criteria.
- Updated working document compiling inputs and technical studies. (Annex 3 to 4A/343)
- Preliminary CPM skeleton (Annex 4 to 4A/343)



## Agenda Item 1.2 – looking ahead



- Aggregate studies!
- Impact from **multiple** GSO and/or NGSO Earth stations into a maritime, aeronautical, or land radar receiver.
- Looking forward to receiving contributions

# Conclusions

- Administrations are kindly invited to support the studies of the sharing conditions in the frequency band 13.75-14 GHz to allow the use of uplink fixed-satellite service earth stations with smaller antenna sizes.
- Future work includes **aggregate FSS studies**: defining terminal deployment density for NGSO and GSO.
- **Allowing the use of smaller antennas would increase uplink capacity by 50% and limit the risk of congestion.**



# Thank you!

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