New Delhi, India

# IAFI 3rd Preparatory Workshop for WRC-27

## A view to AI 1.7 and way forward

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Architecting tomorrow

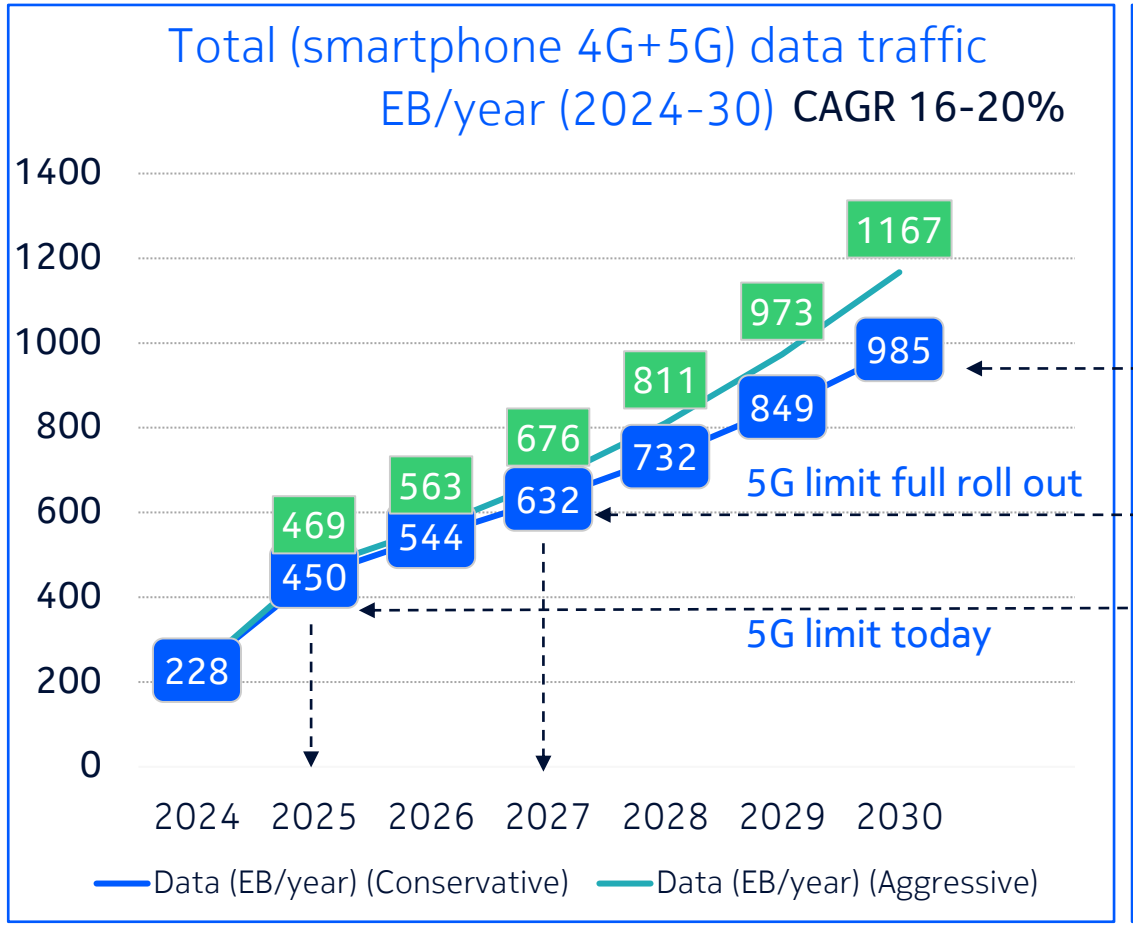
IAFI
ITU-APT Foundation of India
ITU's Association in India

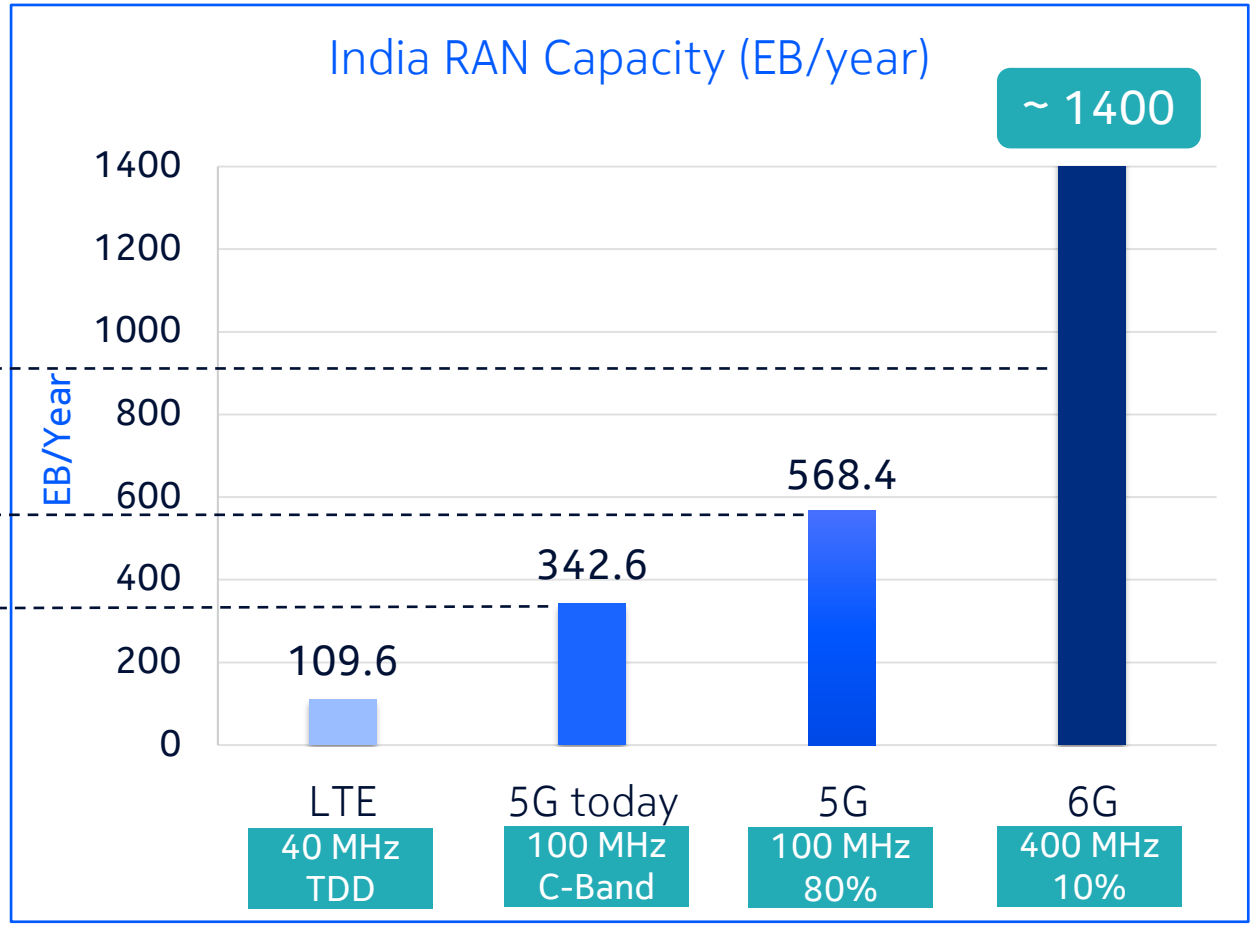
# Spectrum demand analysis

# Mobile data traffic (India)

## Demand vs Supply 2024 - 2030

- More deployments by 2027
- More spectrum post 2027
- New Radio in new 6G spectrum 2030



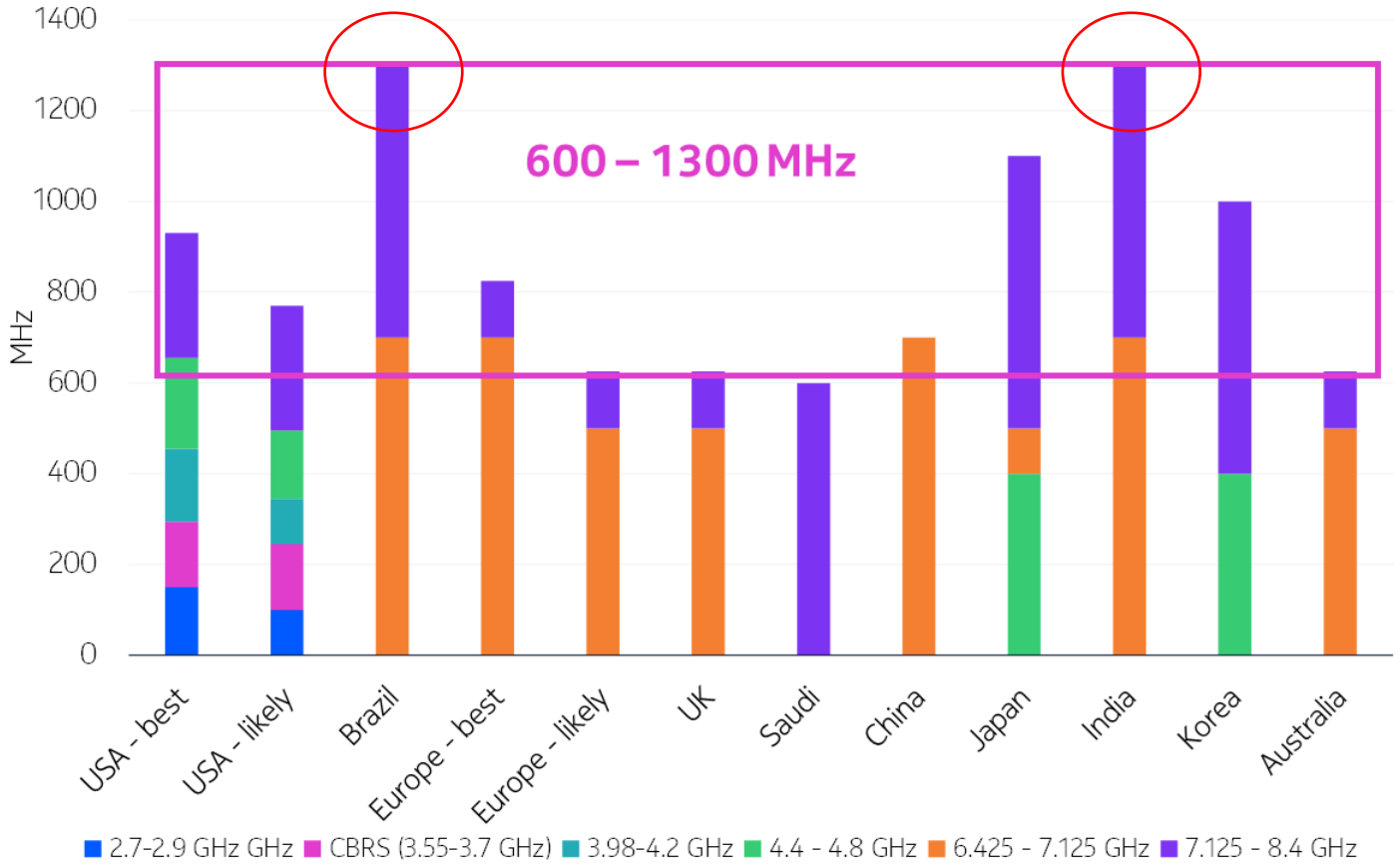



# Expected new mid-band spectrum globally for 6G

1
Real estate

**India uniquely placed for success with u6GHz and 7/8GHz for 6G**

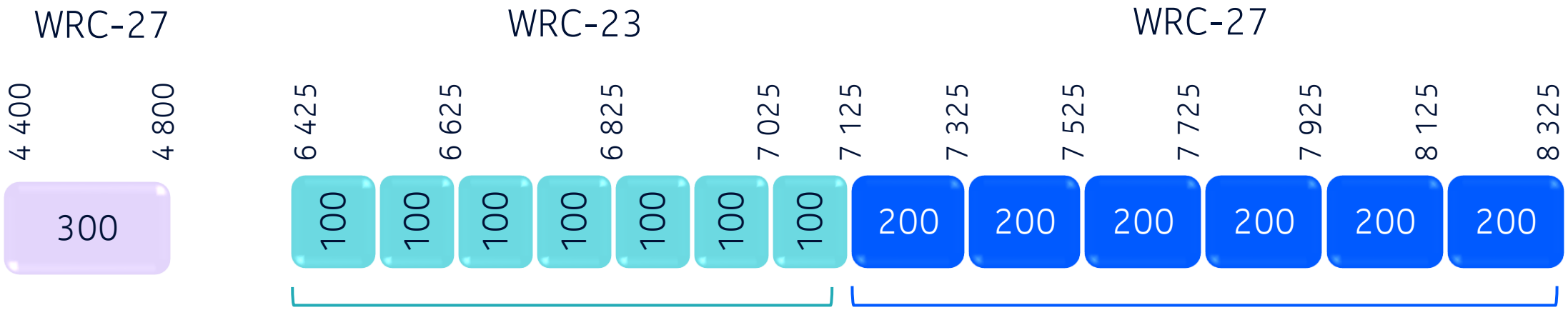
Rapid 5G deployments in 3.5 GHz is the evidence – Starting Oct 2022, India became #2 market globally




- Most global markets expected to get new spectrum around 7 GHz band
- **6G target is 400 MHz per operator**
- **Channel size 200 MHz**
- Early spectrum roadmaps and timelines for release of frequency bands are key to a successful 6G roll out
- **Harmonization of 6-8 MHz is key to economies of scale !**

# Potential inventory for 6G

## Marco IMT Deployments




- RALT issues
- Conclusions on LRTC is important to leverage the range for macro deployments

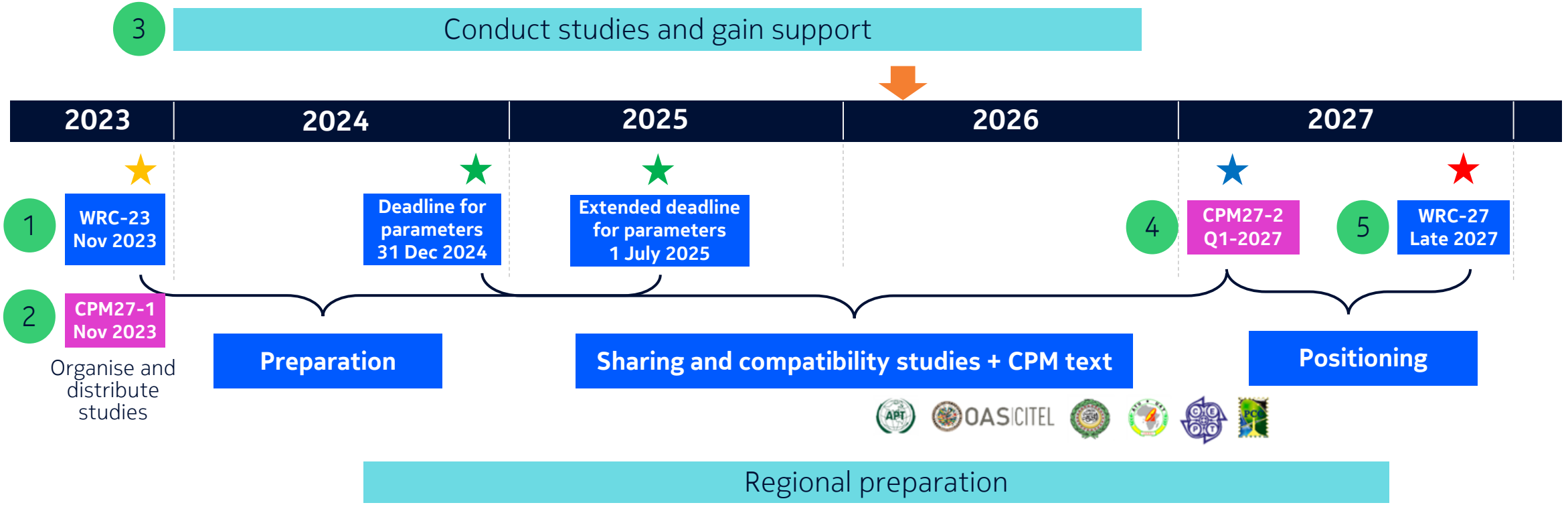
Ideal target is 400 MHz per MNO for 6G

- **This continuous range is precious spectrum for 6G**
- **6 to 8.4 GHz has the potential to offer 400 MHz contiguous per network**
- **Important to consider 6-8 GHz as a continuous range, to optimise radio design for wider IBW and minimum TCO**
- Spectrum identification, regulatory preparation and final assignment is a long cycle.

# WRC-27

# ITU WRC-27 Timeline

... over the 4 years



# List of studies

## 4 GHz

1. **Attachment 1:** FS and IMT operating in 4 400-4 800 MHz
2. **Attachment 2:** AMS and IMT operating in 4 400-4 800 MHz
3. **Attachment 3:** MMS and IMT in 4 400-4 800 MHz
4. **Attachment 4:** Sharing between the fixed satellite service (space-to-Earth) (RR No. 5.441) in Allotments in the RR Appendix 30B Plan, assignments in the RR Appendix 30B List, conversions of an allotment into an assignment, Article 7 requests transferred to Article 6 of RR Appendix 30B, submissions in accordance with Resolution 170 (Rev.WRC-23) and submissions for additional system under Article 6 of RR Appendix 30B operating in the frequency band 4 500-4 800 MHz and IMT operating in the frequency band 4 400-4 800 MHz.
5. **Attachment 5:** AM(R)S (RR No. 5.436) in 4 200-4 400 MHz and IMT in 4 400-4 800 MHz
6. **Attachment 6: Compatibility** of ARNS (RR No. 5.438) in 4 200-4 400 MHz and IMT in 4 400-4 800 MHz

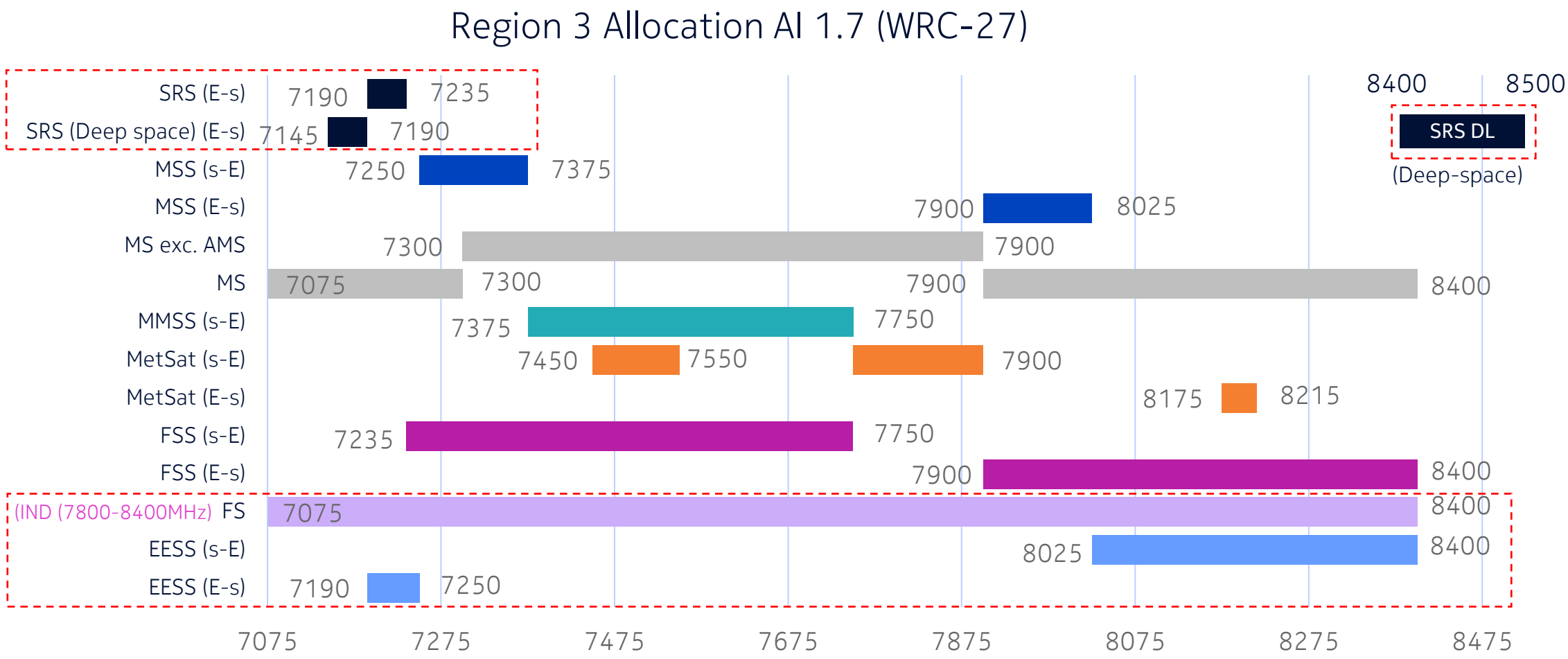
# List of studies

## 7/8 GHz

- Additional discussions are required on whether studies with EESS (7 190-7 250 MHz), MS, and MMSS are needed
  - **7 375-7 750 MHz**, MMSS earth stations (DL) shall not claim protection from stations in FS, MS as per RR No. **5.461AB**. IMT is part of MS allocation
  - **7 190-7 250 MHz**, EESS (E-s) space stations shall not claim protection from stations in FS, MS as per RR No. **5.460A**. IMT is part of MS allocation
- **Attachment 1: FS and IMT** operating in the frequency band 7 125-8 400 MHz
- **Attachment 2: SRS (E-s)** in **7 145-7 235 MHz** and **IMT** in 7 125-8 400 MHz
- **Attachment 3: SoS (E-s)** (No. 5.459) in **7 100-7 155 MHz and 7 190-7 250 MHz** and IMT in 7 125-8 400 MHz
- **Attachment 4: FSS (s-E)** in **7 250-7 750 MHz** and IMT in 7 125-8 400 MHz
- **Attachment 5: FSS (E-s)** in **7 900-8 400 MHz** and IMT in 7 125-8 400 MHz
- **Attachment 6: MSS (s-E)** (RR No. 5.461) in **7 250-7 375 MHz** and IMT in 7 125-8 400 MHz
- **Attachment 7: MSS (E-s)** in **7 900-8 025 MHz** and IMT in 7 125-8 400 MHz
- **Attachment 8: MetSat (s-E)** in **7 450-7 550 MHz and 7 750-7 900 MHz** and IMT in 7 125-8 400 MHz
- **Attachment 9: MetSat (E-s)** in **8 175-8 215 MHz** and IMT in 7 125-8 400 MHz
- **Attachment 10: EESS (s-E)** in **8 025-8 400 MHz** and IMT in 7 125-8 400 MHz
- **Attachment 11: Compatibility of SRS (s-E)** in **8 400-8 500 MHz** and IMT in 7 125-8 400 MHz
- **[Attachment 12: EESS (E-s)** in **7 190-7 250 MHz** and IMT in 7 125-8 400 MHz]
- **[Attachment 13: MMSS (s-E)** in **7 375-7 750 MHz** and IMT in 7 125-8 400 MHz]
- **Attachment 14:** Potential interference from incumbent services into IMT in 7 125-8 400 MHz

# AI 1.7 (WRC-27)

## Services allocation in Region 3



# A quick view to what sharing studies in WP5D indicate

## 7-8 GHz band

| Service (Direction) | # Studies | Notes |
|---|---|---|
| Fixed Service (7125–8400 MHz) | 11 | **>50–315 km** separation |
| FSS (s-to-E) 7250–7750 MHz | 11 | **USA: 10 Kms, CAN: 34-155 Km, CHN: 65-180 Km (GSO) 45-110 Km NGSO,** many results TBD |
| FSS (E-to-s) 7900–8400 MHz | 13 | **GSO: Global beams – Meets criteria**<br>**NGSO: High exceedance report by GER, USA** (high-gain beams) |
| MSS (s-to-E) 7250–7375 MHz | 7 | **CAN: 44–186 km separation (long-term) BRA: 2 km**<br>**India Study C (No results)** |
| MSS (E-to-s) 7900–8025 MHz | 9 | **USA: Positive 4-12 dB (spot),** others show exceedance |
| EESS (s-to-E) 8025–8400 MHz | 8 | **USA: 55 km NGSO, 45–50 km GSO**, **CAN: 34 Urban / 202 Km Sub-urban NGSO, CHN: 60-220 km NGSO** |
| MetSat (s-to-E) 7450–7900 MHz | 5 | **GSMA: 1-8.5 Km (GSO), BRA: 10 Km (GSO), CHN: 65-331 km (GSO)** |
| MetSat (E-to-s) 8175–8215 MHz | 1 | **BRA: 15 dB margin – Meets criteria** |
| SRS (near-Earth & deep-space) | 8 | **50–415 km** separation |
| SOS (E-to-s) | 3 | **RUS - C/I from 21–31 dB - Meets criteria** |

76

# Some quick updates

## WP5D #51 Feb 2026

**Comparison and benchmarking studies is a serious concern** due to widely different results in various studies -

- Different approaches regarding certain **parameters and methodologies**, including **propagation models, methodology** (e.g. TVG, Monte Carlo, MCL)
- Application of **clutter loss** (with or without terrain data and whether applied on one or both sides of the link)
- **Apportionment, polarization losses, selection of Ra/Rb values, network loading** assumptions, **satellite system characteristics, satellite footprint** modelling, and **NGSO modelling** strategies including **satellite selection** methodology
- **Guiding contributions are important to resolve at the next meeting.**

# Some quick updates

## WP5D #51 Feb 2026 (4 400-4 800 MHz)

### FSS

- Regarding **FSS (s-E) (RR No. 5.441)** in Appendix 30B Plan and IMT, **clarification needed from BR** concerning the appropriate methodology and technical characteristics to follow
- Debate continues on potential interference from **FSS (s-E) into IMT**. In one view, such study is necessary under Resolution **256 (WRC-23)** . Another view is to consider the study for information only. **No agreement was reached.**

### RAS

- **Issue of "adjacent bands" in respect of Res. 256 (WRC-23)** – To consider immediate adjacent bands as defined in RRs, or adjacency in relation to the studied IMT channel bandwidth
- RAS in **4 800-4 990 MHz** is **secondary allocation** in **RR 5.149**
- **CRAF 5D/853 -** RAS in 4 990-5 000 MHz has a **primary allocation** RR No. **5.149** in **all regions**. Spurious emissions in RAS band expected. If IMT channel is 100 MHz, RAS band is still in the 2nd adjacent channel potentially affected by out-of-band emission. New Attachment 7 to Annex 1 was prepared (for Primary). However, **no agreement was reached and further discussion needed**

### ARNS/RALT

- Extensive debates held on the **landing scenario baseline**. A subset of **baseline elements was agreed**. **Additional operational scenarios to be agreed and contributions invited to next meeting**.

# Some quick updates

WP5D #51 Feb 2026

## 7.125-8.4 GHz

- **Comparison of study results remains the central issue** for this band. **Nailing down to wide divergence in results** is needed
- **Issue is that meeting time goes in inputs contributions only and no time is left for debates and drafting work.**

## 14.8-15.35 GHz

- Work is stable on this band compared to other bands.

## CPM Text

- Five input contributions proposed edits to the CPM compilation document. The meeting agreed to divide the 7 125-8 400 MHz range into three parts in accordance with Resolution 256 (WRC-23), enabling reorganization of the document.
- Text was proposed in all sections; however, only Sections 1 and 2 were reviewed. A note in the document identifies unreviewed sections and invites future inputs.
- **Further contributions to APG and 5D are important.**

# Summary

6G will move **networks beyond connectivity** to become **AI-native intelligent platforms**

**Spectrum** is the **raw material** to realize **Bharat 6G Vision** with **affordable, accessible** and **sustainable access**

6G's **foundations are being laid** today through wide **ecosystem collaboration and co-creation**

India has strong readiness plans and stands to succeed immensely.. if it plays its cards well !!!