NATIONAL PREPARATORY COMMITTEE TOWARDS WRC-27 AGENDA ITEM 1.7 BRIEF

Chapter: *2*
Service: *Mobile, fixed, satellite, aeronautical and science service issues*
Agenda Item: *1.7*

Description of Agenda Item: *Studies on sharing and compatibility and development of technical conditions for the use of International Mobile Telecommunications (IMT) in the frequency bands 4 400-4 800 MHz, 7 125-8 400 MHz, or parts thereof, and 14.8-15.35 GHz, taking into account existing primary services operating in these and adjacent frequency bands (Resolution 256 (WRC-23)).*

Focus: *Possible IMT identification in candidate bands for IMT-2030 and beyond, subject to sharing and compatibility with incumbent services.*

Status of Studies

The ITU-R studies for WRC-27 Agenda Item 1.7 are being conducted by Working Party 5D (WP 5D) as the responsible group under Resolution 256 (WRC-23). The most recent meeting of WP5D, the 51st meeting of WP5D, the Sub-Working Group on Agenda Item 1.7, met and considered 94 input contributions covering sharing and compatibility studies, draft CPM text, methodology, and related matters.

The studies have progressed across the three candidate frequency ranges: 4 GHz, 7/8 GHz and 14/15 GHz.

However, the work is not yet mature. Variations remain in study methodologies and assumptions, including propagation models, TVG/Monte Carlo/MCL methods, clutter loss, apportionment, polarisation loss, network loading, satellite footprint modelling and NGSO satellite selection. These differences affect study results and will require further consolidation before the draft CPM text can be finalised.

Objective of the Studies

The objective is to determine whether the candidate bands, or parts thereof, can be identified for the terrestrial component of IMT while ensuring the protection of services already allocated in the same and adjacent frequency bands.

The studies aim to:

I. Assess sharing and compatibility between IMT systems and incumbent services in the candidate bands and adjacent bands;
II. Develop technical conditions and regulatory measures that may be required for any possible IMT identification;
III. Support future IMT-2030 and beyond capacity requirements through consideration of additional wide and contiguous spectrum;
IV. Ensure that incumbent fixed, mobile, satellite, aeronautical, radiolocation, radio astronomy, space research and other relevant services remain protected.

Studied Frequency Bands

The candidate frequency bands under study are:

Frequency band	Regional scope	Main services/issues under study
4 400-4 800 MHz	Region 1 and Region 3	Fixed service, FSS under RR Appendix 30B, aeronautical radionavigation/radio altimeters, radiolocation and RAS-related adjacent-band issues.
7 125-8 400 MHz	Region 2 and Region 3; in Region 1: 7 125-7 250 MHz and 7 750-8 400 MHz, or parts thereof	Multiple incumbent services; comparison of study results remains central, with 109 studies conducted.
14.8-15.35 GHz	All Regions	Fixed service, aeronautical mobile service, space research service and radio astronomy compatibility in the adjacent 15.35-15.4 GHz band.

Methods to Satisfy the Agenda Item

The draft CPM methods are still under development and have not been finalised. Based on the current work, the broad regulatory options are expected to include:

I. Method A - No Change (NOC): no modification to the Radio Regulations and no IMT identification for the band concerned where studies do not support regulatory change;
II. Method B - IMT identification with conditions: identification of one or more candidate bands, or parts thereof, for IMT, subject to technical and regulatory conditions developed from the studies;
III. Method C - partial or regional identification: identification limited to certain frequency portions, Regions, or country footnotes, where this better balances IMT requirements and incumbent protection;
IV. Method D - coordination or constraint-based approach: use of coordination zones, technical limits, deployment restrictions or other measures before IMT introduction in specific circumstances.

Regulatory and Technical Framework

The emerging framework is expected to combine technical sharing criteria, regulatory safeguards and national implementation flexibility. Key elements include:

I. Clear specification of the frequency ranges and Regions where any IMT identification may apply;
II. Protection of existing primary services and relevant adjacent-band services;
III. Agreement on consistent study assumptions and comparison tables to allow objective assessment of study results;
IV. Coordination procedures for cross-border operation and for sensitive receiving systems;
V. Recognition that national administrations retain discretion on whether and when to implement any IMT identification domestically.

Interference Protection Mechanisms

The protection mechanisms under consideration include:

I. Power and emission limits for IMT base stations and user equipment, including out-of-band and unwanted emission controls;
II. Geographical separation distances, exclusion zones or coordination zones around sensitive incumbent systems;
III. Antenna and deployment controls, including antenna height, downtilt, beamforming characteristics and site restrictions;

IV. Service-specific protection criteria, including interference-to-noise ratios, power flux-density limits and other applicable thresholds;
V. Bilateral and regional coordination arrangements, particularly for border areas and high-altitude or wide-area incumbent systems.

Technical and Regulatory Challenges

I. Study result divergence: different assumptions and methodologies have produced varying results, and WP 5D has not yet agreed on how all comparison tables should be interpreted.
II. Protection of safety-related services: in the 4 GHz range, radio altimeter/ARNS scenarios remain sensitive, including landing, approach, take-off and helicopter operations.
III. FSS and satellite considerations: studies involving FSS under RR Appendix 30B and satellite footprint modelling require careful treatment, including possible consultation with the Radiocommunication Bureau.
IV. Radio astronomy and science services: There are divergent views on the scope and treatment of RAS-related studies, especially where adjacent-band interpretation is disputed.
V. Regional harmonisation: the candidate bands have different regional scopes, making common regional positions important for Uganda within ATU and ITU Region 1.

Preliminary National Considerations

For Uganda, Agenda Item 1.7 is relevant to long-term IMT spectrum planning, especially as demand for future mobile broadband capacity and IMT-2030 services grows. The lower portions of the 7/8 GHz range may be of particular strategic interest because they could provide wider channel bandwidths than many existing IMT bands.
Uganda should continue monitoring the WP 5D studies and African regional positions, while also reviewing national incumbent use in the candidate bands. Any national support for IMT identification should be conditional on clear technical conditions, protection of incumbent services, and preservation of national flexibility in implementation.

Conclusion

Agenda Item 1.7 is a key WRC-27 issue for future IMT and IMT-2030 spectrum planning. Although the studies have made substantial progress, their results are still being consolidated and the CPM text remains under development. Upcoming WP 5D meetings are expected to complete the comparison tables, refine the study summaries, resolve outstanding methodological issues, and advance the draft CPM text.

Uganda should continue supporting the studies and develop a balanced position that addresses future IMT spectrum needs while protecting existing services and remaining aligned with regional harmonization priorities.