



ASIA-PACIFIC TELECOMMUNITY

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India (Republic of)

## **PROPOSAL FOR PRELIMINARY VIEWS ON WRC-27 AGENDA ITEM 1.8**

Agenda Item 1.8: to consider possible additional spectrum allocations to the radiolocation service on a primary basis in the frequency range 231.5-275 GHz and possible new identifications for radiolocation service applications in frequency bands within the frequency range 275-700 GHz for millimetric and sub-millimetric wave imaging systems, in accordance with Resolution 663 (Rev.WRC-23);

*Resolution 663 (WRC-23) – Studies on possible additional spectrum allocations to the radiolocation service on a primary basis in the frequency range 231.5-275 GHz and possible new identifications for radiolocation service applications in frequency bands within the frequency range 275-700 GHz.*

### **Background:**

Agenda Item 1.8 recognizes the growing importance and potential of millimetric and sub-millimetric wave imaging systems for radiolocation service applications across various domains. It mandates studies to explore:

1. Possible additional primary spectrum allocations to the radiolocation service in the frequency range 231.5-275 GHz. This range is currently allocated to various services, including Fixed, Mobile, Amateur Satellite, Radio Astronomy, Earth exploration-satellite service (passive), and Space Research Service (passive).
2. Possible new identifications for radiolocation service applications in frequency bands within the frequency range 275-700 GHz. This vast frequency range, often referred to as sub-millimetric or terahertz (THz) frequencies, holds significant promise for advanced imaging technologies.

These frequency ranges offer unique advantages for radiolocation applications, including emerging applications of Millimetric and Sub-millimetric Wave Imaging, as detailed below.

- i. High Resolution Imaging - Shorter wavelengths enable the development of imaging systems with significantly higher spatial resolution compared to traditional radar systems operating at lower frequencies.
- ii. Detection of Concealed Objects - Millimetric and sub-millimetric waves can penetrate certain materials, allowing for the detection of concealed weapons, explosives, and other hidden objects in security screening.
- iii. Short-Range High-Precision Sensing - These frequencies are suitable for short-range, high-accuracy distance and velocity measurements in applications like autonomous vehicles, industrial automation, and medical imaging.

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- iv. Atmospheric Sensing - Certain frequencies within these ranges are sensitive to atmospheric constituents, enabling advanced meteorological radar and environmental monitoring.
- v. Enhanced Radiolocation Capabilities - Various sectors, including security, transportation, industry, science, and defense, have a growing need for the enhanced capabilities offered by millimetric and sub-millimetric wave imaging.

Accordingly, the development of appropriate technical and regulatory frameworks, including well-defined emission limits and coordination procedures, is necessary to ensure the effective coexistence of different services and the efficient management of the allocated spectrum. Likewise, identifying appropriate spectrum allocations and harmonizing their use globally will be very useful in facilitating the development and deployment of affordable and interoperable radiolocation systems, ultimately stimulating innovation and market growth

#### **India's Preliminary Views:**

India proposes to support the spirit of Resolution 663 in exploring the potential of the 231.5-700 GHz range for radiolocation services and emphasizes the need for thorough technical studies and robust protection measures for existing primary services, particularly in the 231.5-275 GHz band, as new allocations will promote international harmonization and long-term needs of all countries.