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**PRELIMINARY VIEWS FOR WRC-19  
AGENDA ITEM 1.15  
(Item on the Agenda: 3.1 (SGT-1))  
(Document submitted by CITELE Member States)**

**SGT – 1**

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*Agenda Item 1.15: to consider identification of frequency bands for use by administrations for the land-mobile and fixed services applications operating in the frequency range 275-450 GHz, in accordance with [Resolution 767 \(WRC-15\)](#).*

## BACKGROUND

Over the past few years, there has been an increasing interest to study the use of frequency bands above 275 GHz for active services.

At present, there are no international allocations for radiocommunications services above 275 GHz in the Radio Regulations (RR's). However, footnote No. **5.565** does make identifications for radio astronomy, earth exploration-satellite (passive) and space research (passive) services. Recent advances in microwave technology make possible the use of this spectrum by active services for communications and related uses. Consistent with No. **5.565**, frequencies for fixed and land mobile use could be utilized above 275 GHz, provided "all practicable steps" are taken to protect passive services.

The frequency band 275-323 GHz is identified for radio astronomy service application, and the frequency bands 275-286 GHz, 296-306 GHz and 313-356 GHz for Earth exploration-satellite service (passive) and space research service (passive) applications. In the frequency range below 275 GHz, the band 265-275 GHz is allocated to FS, FSS (Earth-to-space), MS and RAS, where No. **5.149** applies.

[Report ITU-R RA.2189](#) (2010) "Sharing between the radio astronomy service and active services in the frequency range 275-3 000 GHz" indicates that the radio astronomy service can share with terrestrial systems due to propagation conditions and power limitations of current active services technologies. The space research service (passive) and the Earth exploration-satellite service (passive) may also be able to share frequencies with the active services; however, studies are needed to demonstrate this.

## ISSUES

- What are the applications, equipment types and deployment parameters for potential fixed and mobile services use in frequencies above 275 GHz?
- What is the impact from potential fixed and mobile services use to the protection of passive services identified in 275-450 GHz (RR No. **5.565**)?

## DISCUSSION

- The latest working document towards draft CPM text for WRC-19 agenda item 1.15, is contained in [Annex 1](#) to [Doc. 1A/208](#), the WP 1A Chairman's Report of the June 2017 meeting.
- WP 1A is developing a working document towards a preliminary draft new Report ITU-R SM.[275-450GHZ\_SHARING] "Sharing and compatibility studies between land-mobile, fixed and passive services in the frequency range 275-450 GHz" ([Annex 3](#) to [Doc. 1A/208](#).)
- WP 5A and 5C have developed draft new ITU-R Reports outlining the technical characteristics of mobile and fixed services, respectively, above 275 GHz, which have been approved in ITU-R Study Group 5:
  - Report ITU-R M.2410 "Technical and operational characteristics of the land mobile service applications operating in the frequency range 275-450 GHz" (ex-[Doc. 5/80](#)): covers close

proximity mobile systems operating in the frequency bands 275–325 GHz and 275–450 GHz, including description of applications and characteristics of KIOSK downloading mobile systems, ticket gate downloading mobile systems, inter-chip communication systems, intra-device communications, and wireless links for data centers; which are all high-capacity mobile applications over short distances.

- Report ITU-R F.2416 “Technical and operational characteristics and applications of the point-to-point fixed service applications operating in the frequency band 275-450 GHz” (ex- [Doc. 5/74](#)): it is noted that the 252–275 GHz frequency range is already allocated to the fixed service and if the 275–320 GHz frequency range were to also be identified for the fixed service, a continuous 68 GHz wide band could be formed.

## **CAN**

Section 6.1 of Report ITU-R F.2416 notes that even though free space path loss increases with frequency, the overall propagation conditions in the range 275-320 GHz band are similar to the frequency range 252-275 GHz, thus the range 252-320 MHz would enable 68 GHz for radio systems capable of fulfilling high capacity transmission. Therefore, this frequency range may be used for outdoor point-to-point fixed service applications over several hundred meters, making it suitable for short distance and very high capacity fixed services as an alternative to wireline backhaul transport applications in dense urban areas.

## **PRELIMINARY VIEWS**

### **Canada, United States of America**

Canada and the United States are of the view that it may be possible to develop a similar footnote to that in No. **5.565** for land-mobile and fixed services, identifying bands for terrestrial active service use. To this end, Canada and the United States support studies in the ITU-R on sharing and compatibility between passive and active services as well as spectrum needs for the land-mobile and fixed services for WRC-19 agenda item 1.15 under the terms of [Resolution 767 \(WRC-15\)](#).

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