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| **World Radiocommunication Conference (WRC-15) Geneva, 2–27 November 2015** |  |
| **INTERNATIONAL TELECOMMUNICATION UNION** |  |
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| PLENARY MEETING | **Addendum 13 to Document 7-E** |
|  | **29 September 2015** |
|  | **Original: English** |
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| Member States of the Inter-American Telecommunication Commission (CITEL) | |
| Proposals for the work of the conference | |
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| Agenda item 1.13 | |

1.13 to review No. **5.268** with a view to examining the possibility for increasing the 5 km distance limitation and allowing space research service (space-to-space) use for proximity operations by space vehicles communicating with an orbiting manned space vehicle, in accordance with Resolution **652 (WRC‑12)**;

Background

WARC-92 allocated the band 410-420 MHz to the space research service (SRS) on a secondary basis for extra-vehicular activity (EVA) communications in the immediate vicinity of low earth orbit (LEO) manned space vehicles, and limited the use of the band by the SRS to EVA operation within 5 kilometres (km) of orbiting manned space vehicles. WRC‑97 upgraded the allocation to the SRS in the band 410-420 MHz to primary status and No. 5.268 specified a set of power flux-density (pfd) limits to ensure protection of the fixed and mobile services while retaining the 5 km distance limitation for EVA operation.

Resolution 652 (WRC-12), *recognizing c)*, states that “*power flux-density (pfd) limits contained in No. 5.268 ensure the protection of terrestrial stations operating in the fixed and mobile services independent of the distance from, or the source of, space-to-space communications in the SRS*.” Also, long-term space exploration objectives require new activities around a manned space station other than EVA, such as visiting vehicles for crew transportation/cargo re-supply and free-fly proximity vehicles for inspection and maintenance. These vehicles need to initiate communication over distances greater than 5 km to ensure proper vehicle positioning, data exchange and system monitoring. ITU-R sharing studies within Working Party 7B demonstrate that communication links for a variety of space vehicles other than EVA can meet the pfd limits in No. 5.268 for distances beyond 5 km by using different modulation, spreading technologies, and power control schemes (Report ITU-R SA.2271 - “Sharing conditions between space research service proximity operations links and fixed and mobile service links in the 410-420 MHz band”).

Therefore, it is necessary to modify No.5.268to remove both the 5 km distance limitation and restriction to EVA operation while maintaining the pfd limits. Removal of these two restrictions will allow for greater flexibility in using the band 410-420 MHz for space research activities while maintaining protection of the terrestrial services.

Proposals

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations  
(See No. 2.1)

MOD IAP/7A13/1

5.268 Use of the band 410-420 MHz by the space research service is limited to space-to-space communications with an orbiting, manned space vehicle. The power flux-density at the surface of the Earth produced by emissions from stations of the space research service (space-to-space) in the band 410-420 MHz shall not exceed –153 dB(W/m2) for 0 ≤ δ ≤ 5, ‑153  0.077 (δ – 5) dB(W/m2) for 5 ≤ δ ≤ 70 and –148 dB(W/m2) for 70 ≤ δ ≤ , where δ is the angle of arrival of the radio-frequency wave and the reference bandwidth is 4 kHz. In this frequency band the space research (space-to-space) service shall not claim protection from, nor constrain the use and development of, stations of the fixed and mobile services. No. 4.10 does not apply.     (WRC-15)

**Reasons:** Modify No.5.268to remove both the 5 km distance limitation and restriction to EVA operation while maintaining the pfd limits to protect the terrestrial services.

SUP IAP/7A13/2

RESOLUTION 652 (WRC‑12)

Use of the band 410-420 MHz by the space research service (space-to-space)

**Reasons:** ITU-R Working Party 7B completed required studies and this resolution is no longer needed.

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