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|  | ASIA-PACIFIC TELECOMMUNITY | Document No: |
| **The 4th Meeting of the APT Conference Preparatory****Group for WRC-19 (APG19-4)** | **APG19-4/OUT-04** |
| 7 – 12 January 2019, Busan, Republic of Korea | 12 January 2019 |

Working Party 3

**PRELIMINARY VIEWs on WRC-19 agenda item 9.1 (Issue 9.1.9)**

**Agenda item 9.1 - Issue 9.1.9:**

*Studies relating to spectrum needs and possible allocation of the frequency band 51.4-52.4 GHz to the fixed-satellite service (Earth-to-space), in accordance with Resolution* ***162 (WRC-15)****.*

**1. Background**

WRC-19 agenda item 9.1, issue 9.1.9, in accordance with Resolution **162 (WRC-15)**, invites ITU-R to conduct studies relating to spectrum needs and possible allocation of the frequency band 51.4-52.4 GHz to the fixed-satellite service (Earth-to-space) limited to feeder links for geostationary satellite orbit use.

Working Party 4A (WP 4A) has been identified as the responsible ITU-R group for the studies on WRC-15 Agenda item 9.1, issue 9.1.9. Until its latest WP4A meeting, following documents were developed:

* Draft new Report ITU-R S. [Specrum needs] (Attachment in document 4A/675), which conclude that the additional allocation to FSS being considered is beneficial to make broadband connections more accessible to communities regardless of their geographical location and with more affordable costs as achieved by HTS (High throughput Satellite) systems;
* Preliminary draft new Report ITU-R S.[Spectrum Sharing] (Annex 3 to document 4A/826), which address the compatibility between FSS and existing services currently allocated as FS, MS, RAS in the same bands and as EESS (passive), SRS (passive)，RAS in the adjacent bands. Preliminary conclusion has been drawn that with appropriate separation distance, FSS and FS, MS (IMT-2020 application) and RAS could share the same frequency band. However, compatibility studies between FSS and EESS (passive) in adjacent band is still on-going;
* draft CPM text for WRC-19 agenda item 9.1, issue 9.1.9 was developed, which include consideration to make an allocation of the frequency band 51.4-52.4 GHz to the fixed-satellite service (Earth‑to‑space) under the condition of compatibility with existing services currently allocated based on the results of ITU-R studies, and relevant regulatory considerations are also included*.*

**2. Documents**

* Input Documents: APG19-4/INP-9 Rev.1 (Chairman of APT), APG19-4/INP-17 (AUS), APG19-4/INP-31 (THA), APG19-4/INP-77 (KOR), APG19-4/INP-98 (CHN), APG19-4/INP-110 (BGD)
* Information Documents: APG19-4/INF-02 (ICAO) , APG19-4/INF-22 (CITEL), APG19-4/INF-23 (CEPT), APG19-4/INF-24 (RCC), APG19-4/INF-27 (NPL)

**3. Summary of discussions**

**3.1 Summary of APT Members’ views**

**3.1.1 Australia**- **Document APG19-4/INP-17**

Australia supports the possibility of an allocation to the fixed-satellite service (Earth-to-space) in the frequency band 51.4-52.4 GHz in accordance with Resolution **162 (WRC-15)**.

**3.1.2** **Thailand** - **Document APG19-4/INP-31**

Thailand supports an allocation to the fixed-satellite service (Earth-to-space) in the frequency band 51.4-52.4 GHz limited to FSS gateway links for geostationary orbit use while protecting currently allocated services in the same frequency band and in adjacent frequency bands.

**3.1.3** **Korea (Rep. of) - Document APG19-4/INP-77**

Based on the results of ITU-R studies, the Republic of Korea does not oppose making a new primary allocation to the FSS in the frequency band 51.4‑52.4 GHz (Earth-to-space) limited to FSS gateway links for geostationary orbit use, provided that appropriate regulatory provisions would be given to ensure protection of existing services including in adjacent bands.

The Republic of Korea considers that further review is required for the proposed unwanted emission limits for the FSS in Resolution **750 (Rev.WRC-15)**.

**3.1.4 China (People’s Republic of)** - **Document APG19-4/INP-98**

China supports ITU-R to further conduct and complete compatibility studies relating to EESS (passive) in the nearby band, and also supports additional spectrum allocation to the FSS (Earth-to-space) in the frequency band 51.4-52.4GHz subject to outcomes of ITU-R studies showing feasibility of sharing and compatibility between the FSS and the existing allocated services.

**3.1.5 Bangladesh (People’s Republic of)** - **Document APG19-4/INP-110**

In accordance with Resolution **162 (WRC-15)**, Bangladesh is of the view to consider the possibility of allocating spectrum to the FSS (Earth‑to‑space), limited to FSS gateway links for geostationary orbit use in the frequency band 51.4-52.4 GHz as long as the currently allocated services in the same frequency band and in adjacent frequency bands are protected.

**3.1.6 Nepal** - **Document APG19-4/INF-27**

Nepal supports further studies of ITU-R relating to sharing and compatibility between fixed-satellite service in the frequency band 51.4-52.4 GHz and other co-frequency, and adjacent band services.

**3.2 Summary of issues raised during the meeting**

None.

**4. APT Preliminary View(s)**

APT Members support the possibility of an allocation to the fixed-satellite service (Earth-to-space) in the frequency band 51.4-52.4 GHz limited to FSS gateway links for geostationary orbit use while protecting currently allocated services in the same frequency band and in adjacent frequency bands.

APT Members are of the view that further review is required for the proposed unwanted emission limits for the FSS in Resolution **750 (Rev.WRC-15)**.

**5. Other View(s)**

None.

**6. Issues for Consideration at Next APG Meeting**

APT Members are invited to follow the progress of CPM19-2 and WP4A meetings and are encouraged to submit their contributions in the next APG meeting, if necessary.

**7. Views from Other Organisations**

**7.1 Regional Groups**

**7.1.1 ASMG** - **Document APG19-4/INP-09 (Rev.1)**

ASMG position:

* Initial support to FSS allocation in 51.4-52.4, that is limited to FSS feeder links.
* Considering results of studies in AI1.13..

**7.1.2 ATU** - **Document APG19-4/ INP-09 (Rev.1)**

ATU position:

* Support, as a matter of principle, an allocation of the frequency band 51.4-52.4 GHz to the fixed-satellite service (Earth to space), limited to FSS gateway links for geostationary orbit use while protecting currently allocated services in the same frequency band and in adjacent bands as proposed in the draft CPM text.

**7.1.3 CEPT** - **Document APG19-4/INF-23**

Preliminary CEPT position:

* Based on the results of studies on additional spectrum needs for development of the fixed-satellite service and on the sharing and compatibility studies conducted in accordance with Resolution **162 (WRC-15)**, CEPT supports the additional allocation of 1 GHz spectrum in 51.4-52.4 GHz band for the GSO FSS (Earth-to-space) gateways.
* To ensure the protection of the EESS (passive) operating in the band 52.6-54.25 GHz CEPT is proposing an unwanted emission limit of [-37/-39] dBW/100 MHz associated to a maximum elevation angle of [74°/78]° for FSS Earth stations that would operate in the 51.4 - 52.4 GHz band. For elevation angles equal or higher than [74°/78°] the proposed unwanted emission limit is -52 dBW/100 MHz. This assumes a 3 dB apportionment of the EESS (passive) protection criterion to take into account the aggregate interference from all the active services allocated in the 51.4-52.4 GHz band. CEPT supports studies regarding the impact on radio astronomy observations in the band 51.4-54.25 GHz. FSS gateways Earth stations shall operate with a minimum antenna diameter of [4.5] m.
	+ 1. **CITEL** - **Document APG19-4/INF-22**

Draft Inter‐America Proposal (DIAP):

* DIAPs supporting Example 1 for a new primary allocation limited to GSO FSS gateways with a minimum antenna diameter of 4.5 meters. Limits to protect EESS (passive) are not defined.

**7.1.5 RCC** - **Document APG19-4/INF-24**

The RCC Administrations pursuant to the results of studies of additional spectrum needs for the development of the fixed-satellite service and the sharing and compatibility studies carried out by ITU-R under **Resolution 162 (WRC-15)** do not oppose the new allocation of the frequency band 51.4-52.4 GHz on the primary basis to the GSO FSS (Earth-to-space), limited to gateway earth stations using a minimum antenna diameter of 4.5 m, provided the mandatory protection is granted to EESS (passive) – Example 1 in draft CPM Report.

The RCC Administrations consider that the technical conditions and regulatory provisions for use of the new allocation to the FSS (Earth-to-space) in the 51.4-52.4 GHz band, limited to communication links for gateway earth stations in GSO FSS satellite networks, shall ensure protection of existing services and systems in the considered and adjacent frequency bands and development of possible related regulatory measures, including revision of **Resolution 750 (Rev. WRC-15**), based on the relevant EESS (passive) protection criteria in the frequency band 52.6-54.25 GHz.

The RCC Administrations consider that the permissible aggregate out-of-band interference level from all active services, stated in Recommendation ITU-R RS. 2017, should be distributed between the active services which could be the potential interferers to EESS (passive) sensors in the frequency band 52.6-54.25 GHz, including taking into account the potential impact of IMT systems’ second harmonic, considered under WRC-19 agenda item 1.13.

**7.2 International Organisations**

**7.2.1 ICAO** - **Document APG19-4/INF-04**

None.

**7.2.2 WMO** - **Document APG19-4/INF-02**

WMO is not opposed to the possible allocation of the frequency band 51.4-52.4 GHz to the FSS (E-s) provided that protection of EESS (passive) in the bands 50.2-50.4 GHz and 52.6-54.25 GHz is ensured.

WMO requests that the necessary FSS unwanted emission limits be established to ensure the protection of all current and future EESS (passive) sensors. This may be accomplished by the establishment of appropriate limits in Resolution **750 (rev. WRC-15)**.

Furthermore, WMO would appreciate the development of a solution to ensure the continued operation of the ground-based radiometers in the 50.4-51.4 GHz frequency band.

**7.2.3 IARU** - **Document APG19-4/INF-03**

None.

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