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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-02** |
| 7 – 12 January 2019, Busan, Republic of Korea | 12 January 2019 |

Working Party 3

**Preliminary VIEWs on WRC-19 agenda item 9.1 (Issue 9.1.2)**

**Agenda Item 9.1:**

*to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the Convention on the activities of the Radiocommunication Sector since WRC-15;*

**Issue 9.1.2**: *Resolution* ***761 (WRC-15)*** *- Compatibility of International Mobile Telecommunications and broadcasting-satellite service (sound) in the frequency band 1 452-1 492 MHz in Regions 1 and 3*

**1. Background**

Pursuant to Resolution **761 (WRC-15)**, the regulatory and technical studies between International Mobile Telecommunications (IMT) and broadcasting-satellite service (sound) (BSS (sound)) in the frequency band 1 452-1 492 MHz in Regions 1 and 3 were conducted by ITU-R, taking into account IMT and BSS (sound) operational requirements.

ITU-R WP 4A and WP 5D are the responsible groups for this study. WP 4A and WP 5D have conducted the compatibility studies with respect to the protection of BSS (sound) and IMT respectively. WP 4A and WP 5D developed the 8 of possible actions for protecting IMT and BSS(sound) and those will be applied as stipulation or coordination threshold values in Radio Regulations as well as maintaining the status quo (i.e. no changes to the Radio Regulations) as follows.

Table 1

**Possible actions with respect to WRC-19 agenda item 9.1, issue 9.1.2, in Regions 1 and 3**

| **Possible action** | **Protection of IMT stations** | **Protection of BSS (sound) receivers** |
| --- | --- | --- |
| 1 | Maintain status quo (i.e. no changes to the Radio Regulations). | Maintain status quo (i.e. no changes to the Radio Regulations). |
| 2 | Maintain status quo (i.e. no changes to the Radio Regulations) for those countries for which the band is not identified for IMT. | Maintain status quo (i.e. no changes to the Radio Regulations) for those countries for which the band is not identified for IMT. |
| 3 | Stipulate pfd limit(s) for BSS (sound) space stations. Three alternatives are available in this action.  Alternative 1: The pfd limit is stipulated in RR Table **21-4** under RR No. **21.16** taking into account protection of IMT mobile stations.  Alternative 2: The pfd limit is stipulated in RR Table **21-4** under RR No. **21.16** taking into account protection of IMT base and mobile stations.  Alternative 3: The pfd limit is stipulated in a new footnote taking into account the operational requirement of BSS(sound) system. | Maintain status quo (i.e. no changes to the Radio Regulations). |
| 4 | Maintain status quo (i.e. no changes to the Radio Regulations). | Stipulate pfd limit for IMT stations by modification of RR Nos. **5.346** and **5.346A**. |
| 5 | Stipulate a new coordination threshold for RR No. **9.11** based on pfd value.  The pfd value is stipulated in a new footnote taking into account the e.i.r.p. value of 70.8 dBW for a space station of BSS (sound). | Maintain status quo (i.e. no changes to the Radio Regulations). |
| 6 | Maintain status quo (i.e. no changes to the Radio Regulations). | Stipulate a new coordination threshold for RR No. **9.19** based on pfd value to reach coexistence for protection of BSS (sound) receivers. |
| 7 | Stipulate pfd limit(s) for BSS (sound) space stations. Three alternatives are available in this action.  Alternative 1: The pfd limit is stipulated in RR Table **21-4** under RR No. **21.16** taking into account protection of IMT mobile stations.  Alternative 2: The pfd limit is stipulated in RR Table **21-4** under RR No. **21.16** taking into account protection of IMT base and mobile stations.  Alternative 3: The pfd limit is stipulated in a new footnote taking into account the operational requirement of BSS (sound) system. | Stipulate pfd limit for IMT stations by modification of RR Nos. **5.346** and **5.346A**. |
| 8 | Stipulate a new coordination threshold for RR No. **9.11** based on pfd value.  The pfd value is stipulated in a new footnote taking into account the e.i.r.p. value of 70.8 dBW for a space station of BSS (sound). | Stipulate a new coordination threshold for RR No. **9.19** based on pfd value to reach coexistence for protection of BSS (sound) receivers. |

**2. Documents**

* Input Documents : APG19-4/INP-17(AUS), 24(NZL), 31(THA), 39(VTN), 61(JPN), 77(KOR), 98(CHN), 110(BGD)
* Information Documents : APG19-4/INF-22(CITEL), 23(CEPT), 24(RCC), 27(NPL)

**3. Summary of discussions**

**3.1 Summary of APT Members’ views**

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

Australia will monitor debate on this agenda item. The 1 452-1 492 MHz frequency band was globally identified by WRC-15 for use by administrations wishing to implement International Mobile Telecommunications in accordance with Resolution **223 (Rev. WRC-15)**.

Australia supports the APT Preliminary view on this Issue from APG19-3.

**3.1.2 New Zealand** - **Document APG19-4/INP-24**

New Zealand supports no change to the Radio Regulations.

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

Since the frequency band 1 452 – 1 492 MHz in Thailand is part of the frequency band that has been already identified for terrestrial IMT, Thailand is of the view that technical and operational measures is required to safeguard terrestrial IMT operating in the band   
1 452 – 1 492 MHz as needed

**3.1.4 Viet Nam - Document APG19-4/INP-39**

Viet Nam is of the view that support possible action 3.

**3.1.5 Japan - Document APG19-4/INP-61**

Japan supports the results of regulatory and technical studies conducted by ITU-R in order to achieve compatibility of IMT and BSS (sound) in the frequency band 1 452-1 492 MHz in Regions 1 and 3.

For the long-term stable operations of IMT systems in this frequency band, Japan believes that it would be preferable to apply Possible action 3 Alternative 2 in the draft CPM text for WRC-19 agenda item 9.1, Issue 9.1.2. which stipulates a PFD limit for BSS (sound) in Table 21-4 under RR No.21.16 with respect to the protection of IMT base and mobile stations and no change to the Radio Regulations with respect to the protection of BSS (sound) receivers.

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

Under the current Radio Regulations, the application of RR No. **9.11** does not provide long-term stability for the operation of IMT due to the fact that only the IMT systems that would come into operation within the next three years would be protected if their coordination is agreed, and only for those three years. This situation implies that IMT systems may not be protected appropriately in those countries planning to deploy them in future.

Therefore, Korea (Rep. of) is of view that IMT should be protected from the emission of BSS space station through appropriate technical and/or regulatory actions such as establishing the pfd limit of BSS downlink and supports that pfd limit in Alternative 1 or Alternative 2 is stipulated in the RR Table 21-4.

Alternative 1:

–112.0 dB (W/m2) in 1 MHz for all angles of arrival above the horizontal plane,

where this pfd limit is derived from the results of sharing and compatibility studies regarding protection of IMT mobile stations assuming 1 dB body loss.

Or,

Alternative 2:

–131.3 dB (W/m2) in 1 MHz for angles of arrival (0 ≤ δ ≤ 5) above the horizontal plane,

–131.3 + 16/20(δ – 5) dB (W/m2) in 1 MHz for angles of arrival (5 ≤ δ ≤ 25) above the horizontal plane,

–115.3 dB (W/m2) in 1 MHz for angles of arrival (25 ≤ δ ≤ 90) above the horizontal plane,

where these pfd limits are derived from the results of sharing and compatibility studies regarding protection of both IMT base and mobile stations.

**3.1.7 China –Document APG19-4/INP-98**

China is of the following preliminary views:

1. The principle for all allocation frequency for either terrestrial or space service should not establish undue constraints on the services to which the frequency band is allocated. Furthermore, the pfd limitation when it is agreed to be proposed should firstly cover existing and planned BSS (sound) operational requirements pursuant to Resolution **761 (WRC-15)**, where it is imposed for BSS (sound) space station in the frequency band 1 452-1 492 MHz in Table **21-4** under RR No. **21.16**. China proposes that there should be no pfd mandatory limitation in the RR Art. **21** to the BSS (sound) space station in the 1 452-1 492 MHz frequency band;
2. Considering that the current Radio Regulation and technical conditions could sufficiently ensure compatibility of IMT and broadcasting-satellite service (BSS) (sound) in the frequency band 1 452-1 492 MHz in Regions 1 and 3, China supports NOC as the possible action with respect to Issue 9.1.2.

**3.1.8 Bangladesh - Document APG19-4/INP-110**

Bangladesh supports the APT Preliminary View on this Issue from APG19-3 as follows:

The view from APG 19-3:[[

APT Members support the regulatory and technical studies being conducted by ITU-R in order to achieve compatibility of IMT and BSS (sound) in the frequency band 1 452-1 492 MHz in Regions 1 and 3 in accordance with Resolution **761 (WRC-15).**

APT Members are of view that appropriate regulatory and technical measures should be developed to ensure coexistence and compatibility between IMT and BSS (Sound) in the frequency band 1 452 – 1 492 MHz taking into account the results of ITU-R studies.

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

The frequency band 1 452-1 492 MHz is identified as one of the potential 5G frequency band in Nepal. At present, Nepal does not have any broadcasting satellite service in use in this band. Nepal prefers IMT to broadcasting satellite service in this band.

Nepal supports the regulatory and technical studies being conducted by ITU-R in order to achieve compatibility of IMT and BSS (sound) in the frequency band 1 452-1 492 MHz in Regions 1 and 3 in accordance with Resolution **761 (WRC-15)**.

Appropriate regulatory and technical measures should be developed to ensure coexistence and compatibility between IMT and BSS (Sound) in the frequency bands 1452 – 1492 MHz taking into account the results of ITU-R studies.

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

APT members discussed regulatory and technical measures in order to resolve this issue taking into account the operational requirements and protection of both systems.

About the long-term stability for the operation of International Mobile Telecommunications (IMT) mentioned in the *recognizing c)* in the Resolution **761(WRC-15)**, some APT members believe that current Radio Regulations and technical conditions could sufficiently ensure the compatibility of IMT and BSS (sound) service for a long-term period. On the other hand, other APT members have a view that the stipulation of pfd limit(s) for BSS (sound) space stations should be established to ensure the long-term stability of IMT.

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

APT members support the regulatory and technical studies being conducted by ITU-R in order to achieve compatibility of IMT and BSS (sound) in the frequency band 1 452-1 492 MHz in Regions 1 and 3 in accordance with Resolution **761 (WRC-15).**

No APT member supports the possible actions 2, 5 and 6 among the 8 of possible actions in the draft CPM Report.

**5. Other View(s) from APT Members**

Some APT members have a view that the pfd limit for BSS (sound) should be established in the Table 21-4 of Article 21 in the Radio Regulations to ensure the protection of IMT, and support the possible action 3 with Alternative 1 or 2 in the draft CPM Report, accordingly..

Some other APT members have a view that the current Radio Regulation and technical conditions could sufficiently ensure compatibility of IMT and broadcasting-satellite service (BSS) (sound) in the frequency band 1 452-1 492 MHz in Regions 1 and 3 without the pfd mandatory limitation for IMT and BSS (sound) systems, and support the possible action 1 in the draft CPM Report.

Possible actions 3 with Alternative 3, 4, 7 and 8 in the draft CPM Report are under consideration by some APT members to ensure the compatibility between BSS (sound) and IMT.

Some APT members are also of view that neither the terrestrial nor space services should impose any undue constraints on the services to which the frequency band is allocated.

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

APT Members will develop the Preliminary APT common proposal (PACP) to achieve compatibility between IMT and BSS (sound) in the frequency band 1 452-1 492 MHz in Regions 1 and 3.

**7. Views from Other Organisations** (as provided in the information documents to

APG19-4)

**7.1 Regional Groups**

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

• No restrictions on the use of IMT applications for the frequency band 1452- 1492 MHz.

• No change to the ITU RR for protection for Broadcasting Satellite Service with proposing setting PFD limits on BSS in Article 21 of the RR or to 5.345 AA of RR to ensure IMT protection

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

Not available.

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

CEPT has harmonised the frequency band 1 452-1 492 MHz for supplemental downlink under the mobile service. Therefore CEPT supports the protection of this application from BSS (sound). CEPT is of the view that the new harmonized solution in the addressed Regions is necessary to be developed. In order to facilitate coexistence between IMT and BSS in the band 1 452-1 492 MHz, the current regulatory procedures governing the relation between BSS and terrestrial services need to be modified by inserting a pfd value of -112 dBW/m²/MHz for Regions 1 and 3 in Article 21 RR with the view to provide a more stable (long-term) situation to IMT. RR Appendix 5 needs to be modified so as to enable countries of Regions 1 and 3 that wish to do so to continue to apply coordination under RR No. 9.11. Therefore a pfd limit will apply to BSS in Regions 1 and 3 with respect to all terrestrial services except for countries wishing to continue to apply RR No. 9.11, because of more stringent protection requirement (e.g. in order to protect aeronautical telemetry systems (ATS)).

**7.1.4 CITEL** - **Document APG19-4/INF-22**

**((D)IAP)** Outcome should not impact Region 2 or studies do not support taking action

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

The RCC Administrations do not oppose the development of relevant regulatory and technical conditions in order to provide compatibility between IMT and broadcasting-satellite service (sound) in the frequency band 1 452-1 492 MHz in Regions 1 and 3. These conditions shall only be applied in the territory of countries where this band is identified for IMT.

The RCC Administrations consider that technical conditions and regulatory provisions developed within the framework of conducted studies shall also take into account the need to protect aeronautical telemetry systems in aeronautical mobile service.

**7.2 International Organisations**

**7.2.1 ICAO**

NONE

**7.2.2 WMO**

NONE

**7.2.2 IARU**

NONE

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