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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-26** |
| 7 – 12 January 2019, Busan, Republic of Korea | 11 January 2019 |

Working Party 2

**PRELIMINARY VIEWs on WRC-19 agenda item 1.16**

**Agenda Item 1.16:**

*to consider issues related to wireless access systems, including radio local area networks (WAS/RLAN), in the frequency bands between 5 150 MHz and 5 925 MHz, and take the appropriate regulatory actions, including additional spectrum allocations to the mobile service, in accordance with Resolution* ***239 (WRC-15)****.*

**1. Background**

Resolution **239 (WRC 15),** calls for ITU-R to study WAS/RLAN technical characteristics and operational requirements in the 5 GHz frequency range. It also calls for ITU-R to perform sharing and compatibility studies between WAS/RLAN applications and incumbent services in the frequency bands 5 150-5 350 MHz, 5 350-5 470 MHz, 5 725-5 850 MHz and 5 850-5 925 MHz while ensuring the protection of incumbent services including their current and planned use, to consider enabling outdoor WAS/RLAN operations in the band 5 150-5 350 MHz, and potential mobile service allocations to accommodate WAS/RLAN operations in the 5 350-5 470 MHz and 5 725-5 850 MHz frequency ranges, and identify potential WAS/RLAN use in 5 850-5 925 MHz frequency range.

In the draft CPM Report, several methods have been developed to satisfy this agenda item. For the 5 150-5 250 MHz frequency band, four methods (incl. NOC) are proposed (A1, A2, A3 and A4); for the 5 250-5 350 MHz and for the 5 350-5 470 MHz frequency bands, only one method (NOC) is proposed (B and C respectively); for the 5 725-5 850 MHz frequency band, three methods (incl. NOC) are proposed (D1, D2 and D3); for the 5 850-5 925 MHz frequency band only one method (NOC) is proposed (E).

The sharing study documents for the 5 150-5 250 MHz, 5 350-5 470 MHz and 5 725-5 850 MHz frequency bands were updated based on contributions received at the November 2018 ITU-R WP5A meeting. Work on these documents will continue at the April/May 2019 meeting of ITU-R WP5A with an attempt to finalize these documents for submission to ITU-R Study Group 5.

Among all the sharing study documents, the most complicated one is the document addressing the 5 150-5 250 MHz band. Discussions are mainly focused on whether sharing between WAS/RLANs and the MSS feeder links, ARNS and AMT is possible or not if outdoor operations of WAS/RLANs in this band is allowed. Some studies show that sharing is possible depending on the conditions of mitigation measures; some other studies show that sharing is not possible if WAS/RLANs are allowed outdoor use.

Relevant ITU-R Reports/Recommendations and ongoing studies are as follows,

* Recommendation ITU-R M.1450 - Characteristics of broadband radio local area networks
* Recommendation ITU-R M.1739 - Protection criteria for wireless access systems, including radio local area networks, operating in the mobile service in accordance with Resolution 229 (WRC-03) in the bands 5 150-5 250 MHz, 5 250-5 350 MHz and 5 470-5 725 MHz
* Recommendation ITU-R M.1652 - Dynamic frequency selection in wireless access systems including radio local area networks for the purpose of protecting the radiodetermination service in the 5 GHz band
* Annex 10 to Working Party 5A Chairman’s Report (Doc. 5A/844) - Draft CPM text for WRC-19 agenda item 1.16
* Annexes 16-20 to Working Party 5A Chairman’s Report (Doc. 5A/976)

**2. Documents**

* Input Documents: APG19-4/INP-16 (AUS), INP-23 (NZL), INP-30 (THA), INP-38 (VTN), INP-54 (MLA), INP-60 (J), INP-75(Rev.1) (KOR), INP-84 (IRN), INP-91 (SNG), INP-101 (CHN), INP-109 (BGD), INP-114 (IND)
* Information Documents: APG19-4/INF-02 (WMO), INF-03 (IARU R3), INF-04 (ICAO), INF-11 (Wireless Industry Collaboration Co., Ltd), INF-22 (CITEL), INF-23 (CEPT), INF-24 (RCC), INF-26 (NPL)

**3. Summary of Discussions**

**3.1 Summary of APT Members’ view**

**3.1.1 Australia -** **Document APG19-4/INP-16**

Australia supports Method's B, C, D1 and E, no change, in the respective frequency bands 5 250-5 350 MHz, 5 350-5 470 MHz, 5 725-5 850 MHz and 5 850-5 925 MHz, as sharing and compatibility studies have shown that no regulatory actions are required in these frequency ranges.

Australia also supports Method A1, no change, in the frequency range 5 150-5 250 MHz, as most sharing and compatibility studies undertaken recently indicate that a relaxation of the regulatory conditions of Resolution **229 (Rev.WRC-12),** to accommodate WAS/RLANs in this band, would be unable to ensure protection of incumbent services in accordance with *invites ITU-R b)* of Resolution **239 (WRC‑15)**.

**3.1.2 New Zealand** - **Document APG19-4/INP-23**

New Zealand is of the view that the existing regulatory framework applicable to the band 5 150-5 250 MHz, as contained in Resolution **229 (Rev. WRC-12)**, should be reviewed by enabling outdoor WAS/RLAN operation. New Zealand supports Method A2 or A3 as outlined in the draft CPM text for WRC-19 Agenda item 1.16.

In the band 5 725-5 850 MHz, New Zealand already permitted WAS/RLAN operation to share with other ISM applications. Therefore, New Zealand supports a primary Mobile Allocation in this band as proposed in Method D3 by adding New Zealand to footnote RR No. **5.453**.

In the bands 5 250-5 350 MHz, 5 350-5 470 MHz and 5 875-5 925 MHz, New Zealand supports no change to the Radio Regulations (i.e. Methods B, C and E, respectively).

**3.1.3 Thailand** - **Document APG19-4/INP-30**

Thailand supports ITU-R studies in accordance with Resolution 239 (WRC-15).

Thailand is of the view that the protection of incumbent services including their current and planned use in the frequency bands 5 150-5 350 MHz, 5 350-5 470 MHz, 5 725-5 850 MHz and 5 850-5 925 MHz should be ensured, without any unacceptable constraints on these services.

In the frequency bands 5 250-5 350 MHz, 5 350-5 470 MHz, and 5 850-5 925 MHz, Thailand supports NOC to the Radio Regulations to protect incumbent services.

In the frequency band 5 150-5 250 MHz, Thailand is of the view that any conditions to possibly enable outdoor WAS/RLAN operations should ensure protection of incumbent services without any unacceptable constraints on those services.

In the frequency band 5 725-5 850 MHz, taking into account RR No.5.453 in which some Administrations already have a mobile primary allocation, Thailand is of the view that any Administrations wishing to implement WAS/RLAN in the band can make additional allocation to the Mobile service.

**3.1.4 Viet Nam -** **Document APG19-4/INP-38**

Viet Nam Administration supports studies being undertaken by ITU-R on this issue and is of the view that:

Viet Nam supports the worldwide use of the band 5 725-5 850 MHz for mobile service taking into account RR **No.5.453**.

Viet Nam is of the view that the possible use of 5 875–5 925 MHz for RLAN should be thoroughly investigated for its technical compatibility and interoperability with respect to Intelligent Transport System in WRC-19 Agenda item 1.12.

**3.1.5 Malaysia -** **Document APG19-4/INP-54**

Malaysia is of the view that WAS/RLAN for outdoor operations may be implemented in the frequency band 5 150-5 250 MHz while addressing the protection of incumbent services.

Malaysia supports the single method, no change to the Radio Regulations in the frequency bands of **5 250-5 350 MHz**, **5 350-5 470 MHz** and **5 850-5 925 MHz** (Methods **B**, **C** and **E** respectively).

**3.1.6 Japan -** **Document APG19-4/INP-60**

Japan is of the view that existing services should be protected adequately in all the frequency ranges to be considered in this agenda item.

Japan supports sharing and compatibility studies being conducted in ITU-R.

Japan supports enabling outdoor WAS/RLANs operations in the frequency band 5 150- 5 250 MHz with associated conditions to protect the existing services and modifying the Radio Regulations in this regard.

Japan is of the view that the total interference level from WAS/RLANs should be limited to protect existing services, and Method A3 satisfies this requirement.

**3.1.7 Korea** - **Document APG19-4/INP-75Rev.1**

The Republic of Korea is of the view that for RLAN operation in the frequency band 5 150-5 250 MHz, Method A3 of the draft CPM Report is preferable which is revision to Resolution **229 (Rev.WRC-12)** to enable outdoor RLAN operations by applying the same conditions of use as defined for the 5 250‑5 350 MHz frequency band in resolves 4 of Resolution **229 (Rev.WRC-12)**.

The Republic of Korea is of the view that for accommodation of RLAN in the frequency band 5 725-5 850 MHz, Method D2 of the draft CPM Report is preferable which is the worldwide use of the band 5 725-5 850 MHz for mobile service taking into account RR **N**o.**5.453**.

**3.1.8 Iran** - **Document APG19-4/INP-84**

This Administration support conducted studies in ITU-R in accordance with Resolution **239 (WRC-15).**

This Administration is of the view that the protection of incumbent services including their current and planned use in the frequency bands 5 150-5 350 MHz, 5 350-5 470 MHz, 5 725-5 850 MHz and 5 850-5 925 MHz needs be ensured. However, since the 5 250-5 350 MHz frequency band is adjacent to the 5 150-5 250 MHz frequency band and discrimination between indoor and outdoor RLAN applications in real world is always mixed with ambiguity, this Administration is of the view that the conditions of these sub-bands fully be as such that full protection of incumbent services should also to be ensured

In the frequency band 5 350-5 470 MHz, 5 725-5 850 MHz and 5 850-5 925 MHz, this Administration support NOC to the Radio Regulations for the use of WAS/RLAN to protect incumbent services.

**3.1.9 Singapore -** **Document APG19-4/INP-91**

In view of Singapore’s existing and planned services, including ITS, in the band 5 850 – 5 925 MHz, Singapore supports Method E, with no change to the Radio Regulations, except suppression of Resolution **239 (WRC-15)**.

**3.1.10 China -** **Document APG19-4/INP-101**

In the frequency bands 5 150-5 250 MHz, China supports NOC to the Radio Regulations, due to the negative sharing results between outdoor WAS/RLAN applications and MSS feeder links showed in several ITU-R studies.

In the frequency bands 5 250-5 350 MHz, 5 350- 5 470 MHz and 5 850-5 925 MHz, China also supports NOC to the Radio Regulations, due to unfeasible sharing results showed in ITU-R studies.

**3.1.11 Bangladesh -** **Document APG19-4/INP-109**

Bangladesh supports method A2 for the Frequency Band A, method B, method C, method D2 for the Frequency band D and method E.

**Frequency Band A2: (5150-5250 MHz)**

Method A2 defines the revision of Resolution 229 (WRC-12) to enable outdoor RLAN operations including possible associated conditions for new e.i.r.p limits while addressing the protection of incumbent services.

**Frequency Band B: (5250-5350 MHz)**

Method B defines No change to RR in the frequency band 5250-5350 MHz.

**Frequency Band C: (5350-5470 MHz)**

Method C defines No change to RR in the frequency band 5350-5470 MHz.

**Frequency Band D: (5725-5850 MHz)**

Method D2 defines the use of 5725-5850 MHz bands by the mobile service for the implementation of WAS, including RLAN.

**Frequency Band E: (5850-5925 MHz)**

Method E defines No change to RR in the frequency band 5850-5925 MHz.

**3.1.12 India** - **Document APG19-4/INP-114**

India supports Methods of no change to the Radio Regulations as follows to satisfy this agenda item-

**Frequency band 5 150-5 250 MHz :** **Method A1 -** **No change to the RR**

No changes are proposed to the RR, with the exception of the suppression of Resolution **239 (WRC-15)**. The provisions of Resolution **229 (Rev.WRC-12)** applied to RLAN in this band should be retained to protect incumbents as supported by some ITU-R studies.

**Frequency band 5 250-5 350 MHz : Method B - No change to the RR**

Only one method is proposed, with no change to the RR, except suppression of **Resolution 239 (WRC‑15)**. The provisions of **Resolution 229 (Rev.WRC-12)** continue to be applied to RLAN in this band to protect incumbents.

**Frequency band 5 350-5 470 MHz : Method C -** **No change to the RR**

Only one method is proposed, with no change to the RR, except suppression of **Resolution 239 (WRC‑15)**.

**Frequency band 5 725-5 850 MHz :** **Method D1 - No change to the RR**

No changes are proposed to the RR, with the exception of the suppression of **Resolution 239 (WRC-15)**.

**Frequency band 5 850-5 925 MHz : Method E - No change to the RR**

Only one method is proposed, with no change to the RR, except suppression of **Resolution 239 (WRC‑15)**.

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

During the drafting group sessions, some issues have been raised by APT Members as below:

* In the “APT Preliminary View(s)” section, the meeting agreed NOC to the Radio Regulations in the frequency bands 5 250-5 350 MHz, 5 350-5 470 MHz and 5 850-5 925 MHz as the APT Preliminary Views. For the frequency bands 5 150-5 250 MHz, there was a debate on how to develop the APT Preliminary View. After some discussions at the DG meeting as well offline discussions on this issue, the meeting agreed a compromised text to be included in this section on this frequency band. For the frequency band 5 725-5 850 MHz, the meeting agreed a text proposed by some APT Members as the APT Preliminary View and put another view into the “Other Views from APT Members” section.
* In the “Other Views from APT Members” section, there was a debate on how to reflect the different views from relevant APT Members in the frequency bands 5 150-5 250 MHz. The main focuses of the debate is whether to show the two different views in separate paragraphs or in one merged paragraph, and the order of these two views. After a short offline discussion, the relevant parties reached consensus on this issue.

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

* APT members support studies being conducted in ITU-R in accordance with Resolution **239 (WRC-15).**
* APT members are of the view that the protection of incumbent services including their current and planned use in the frequency bands 5 150-5 350 MHz, 5 350-5 470 MHz, 5 725-5 850 MHz and 5 850-5 925 MHz should be ensured, without unacceptable constraints on these services.
* In the frequency bands 5 250-5 350 MHz, 5 350-5 470 MHz and 5 850-5 925 MHz, APT Members support NOC to the Radio Regulations for the use of WAS/RLAN to protect incumbent services.
* In the frequency band 5150-5250 MHz, APT Members are still investigating the possibility to enable outdoor WAS/RLANs operations while protecting the incumbent services, without unacceptable constraints on these services.
* In the frequency band 5 725-5 850 MHz, APT Members support the worldwide use for mobile service taking into account RR **No.5.453**.

**5. Other Views from APT Members**

* In the frequency band 5 150-5 250 MHz, some APT Members support no change (NOC) to the Radio Regulation for the use of WAS/RLAN to protect incumbent services. Some other APT Members support to enable outdoor WAS/RLANs operations with associated conditions to protect incumbent services and modify the Radio Regulations in this regard.
* In the frequency band 5 725-5 850 MHz, some APT Members support NOC to the Radio Regulations for the use of WAS/RLAN to protect incumbent services.

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

* APT Members are encouraged to contribute to the next APG meeting on the Agenda Item 1.16, taking into account the outcome of APG19-4 and the results of ITU-R studies.

**7. Views from Other Organisations**

**7.1 Regional Groups**

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

* Follow-up studies of this agenda item for wireless access systems including radio local area networks (WAS/RLAN).
* Do not support the identification of new bands for (WAS/RLAN), unless the studies show possibility of coexistence.
* Ensure protection of the existing services without adding any new restrictions on them.

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

* A) For the band 5150- 5250 MHz (Band A)

Support Method A1 (NOC) or Method A3: consideration of this agenda in respect of the two Methods would continue at sub-regional and WG2 level with a view to achieve consensus.

* B) For the band 5250- 5350 MHz (Band B)

Method B (No Change)

* C) For the band 5350- 5470 MHz (Band C)

Method C (No Change)

* D) For the band 5725- 5850 MHz (Band D)

Method D (No Change) while continuing the consideration of Method D2 at sub-regional and WG2 levels.

* E) For the band 5850- 5925 MHz (Band E)

Method E1 (No Change)

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

Preliminary CEPT position:

* In the 5 150-5 250 MHz band, CEPT notes that an outdoor relaxation to WAS/RLAN would affect the operation of the MSS feeder links, aeronautical radionavigation and aeronautical telemetry (see No 5.446C). However, CEPT is still studying usage restrictions (e.g. in vehicle use) combined with appropriate mitigation techniques to achieve co-existence with incumbent services to enable outdoor WAS/RLAN use in this band.
* In the 5 250-5 350 MHz band, CEPT notes that the current studies have shown difficulties in achieving co-existence with incumbent services and therefore supports no change to the RR in this band.
* In the 5 350-5 470 MHz band, CEPT supports no change to the RR in this band.
* In the 5 725-5 850 MHz band, CEPT would support a new mobile allocation to accommodate WAS/RLANs use if sharing and compatibility studies can demonstrate the effectiveness of any new proposed interference mitigation techniques to ensure the protection of radars, fixed service (see No 5.455) and FSS space station receivers. It is to be noted that CEPT will take into account compatibility studies between RLAN and specific applications within CEPT (e.g. road tolling systems). At this time no effective mitigation techniques has been proposed to enable co-existence with certain modes of frequency hopping radars operated in this band in some CEPT countries.
* In the 5 850-5 925 MHz band, CEPT notes that the current studies have shown difficulties in achieving co-existence with other incumbent services without imposing any additional constraints on existing services such as FSS (space station receivers) and existing applications under the mobile service such as ITS (including urban rail). Therefore, CEPT supports no change to the RR in this band.

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

Various proposals are under considerations on this agenda item:

* In the 5 150-5 250 MHz band, DIAP to modify Res 229 (Method A2) and PP for NOC.
* In the 5 250-5 350 MHz band, IAP for NOC.
* In the 5 350-5 470 MHz band, IAP for NOC.
* In the 5 725-5 850 MHz band, PP for new mobile allocation via footnote ( Method D3) and DIAP for NOC.
* In the 5 850-5 925 MHz band, IAP for NOC.

Note:

PRELIMINARY PROPOSAL (PP): a proposal by a CITEL Member State that has not been supported by another Member State.

DRAFT INTER-AMERICAN PROPOSAL (DIAP): PP that has been supported by at least one other Member State.

INTER-AMERICAN PROPOSAL (IAP): DIAP supported by at least six Members States and not opposed by more than 50% of the number of supports obtained.

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

* The RCC Administrations are in favour of necessary protection from potential WAS/RLAN interference for all the services having allocations in the considered frequency bands, first of all for systems in radiolocation and aeronautical radionavigation services used for the safety of flights.
* The RCC Administrations oppose reduction of restrictions for the use of WAS/RLAN in the frequency bands 5150-5250 MHz and 5250-5350 MHz , since the conducted ITU-R studies did not reveal mitigation methods ensuring sharing between outdoor WAS/RLAN and the systems in existing services in the considered frequency bands.
* The RCC Administrations oppose the use of WAS/RLAN in the frequency bands 5350−5470 MHz, 5725−5850 MHz and 5850−5925 MHz, since the studies conducted by ITU-R , showed that sharing between WAS/RLAN and the systems in existing services in the considered frequency bands is not ensured.

**7.2 International Organisations**

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

* To ensure, on the basis of agreed ITU-R studies, that any new provisions, or changes to existing regulatory provisions, in the frequency bands/ranges 5 150 ‒ 5 250 MHz, 5 350 ‒5 470 MHz and 5 850 ‒ 5 925 MHz do not adversely impact aviation systems. In particular, if transmitted e.i.r.p. levels are increased, ensure that unwanted emissions into frequency bands used by aviation are maintained at current levels or reduced.

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

* Due to potential for increasing interference to the EESS (active), WMO does not support relaxation of restrictions that would allow the outdoor use of RLAN devices in the 5250-5350 MHz frequency band.
* WMO supports the conclusion that the frequency band 5350-5470 MHz is not suitable for operation of RLAN devices, and supports NOC with respect to the frequency band.

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

* The IARU is of the view that there is growing interest among radio amateurs in experimentation, investigation of propagation phenomena, point-to-point communication and space communication in this band, and existing and future amateur use in this band should be protected with special attention to the bands 5 760 to 5 765 MHz and 5 830 to 5 850 MHz.

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