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| APTlogogreen3 | ASIA-PACIFIC TELECOMMUNITY | **Document No:**  |
| **The 4th Meeting of the APT Conference Preparatory Group for WRC-19 (APG19-4)** | **APG19-4/INP-54** |
| 7 – 12 January 2019, Busan, Republic of Korea | **28 December 2018** |

Malaysia

**preliminary views on WRC-19 agenda items 1.13 and 1.16**

**Agenda Item 1.13:**

*To consider identification of frequency bands for the future development of International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis, in accordance with Resolution* ***238 (WRC-15)****.*

**1. Background**

IMT systems are now being evolved to provide diverse usage scenarios and applications such as enhanced mobile broadband (eMBB), massive machine-type communications (mMTC) and ultra-reliable and low-latency communications (URLLC) requiring larger contiguous blocks of spectrum than currently available as described in Recommendation ITU-R M.2083.

It is important to note that the properties of higher frequency bands, such as shorter wavelength, would better enable the use of advanced antenna systems, including multiple-input and multiple-output (MIMO) and beam-forming techniques in supporting eMBB.

Resolution **238 (WRC-15)** calls for studies to determine the spectrum needs for the terrestrial component of IMT in the frequency range between 24.25 GHz and 86 GHz, as well as sharing and compatibility studies, taking into account the protection of services to which the frequency band is allocated on a primary basis, for the frequency bands:

– 24.25-27.5 GHz, 37-40.5 GHz, 42.5-43.5 GHz, 45.5-47 GHz, 47.2-50.2 GHz, 50.4‑52.6 GHz, 66-76 GHz and 81-86 GHz, which have allocations to the mobile service on a primary basis; and

– 31.8-33.4 GHz, 40.5-42.5 GHz and 47-47.2 GHz, which may require additional allocations to the mobile service on a primary basis.

In Malaysia, frequency 27.0-27.5 GHz is currently being used for FSS.

The frequency bands considered as potential candidate frequency bands under this agenda item together with the applicable methods identified to satisfy the agenda item as proposed in the draft CPM report are summarized in the table below:

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| **Frequency bands** | **Methods to satisfy the agenda item** |
| **“X1” –** No change to the Radio Regulations | “**X2**” – Identification of the frequency band for IMT in accordance with two alternatives | **“X3” –** To continue studies on the possibility of identification of the frequency band for IMT with a WRC Resolution |
| 24.25-27.5 GHz | A1 | A2 | - |
| 31.8-33.4 GHz | B1 | - | - |
| 37-40.5 GHz | C1 | C2 | - |
| 40.5-42.5 GHz | D1 | D2 | - |
| 42.5-43.5 GHz | E1 | E2 | - |
| 45.5-47 GHz | F1 | F2 | - |
| 47-47.2 GHz | G1 | G2 | - |
| 47.2-50.2 GHz | H1 | H2 | - |
| 50.4‑52.6 GHz | I1 | I2 | - |
| 66-71 GHz | J1 | J2 | J3 |
| 71-76 GHz | K1 | K2 | - |
| 81-86 GHz | L1 | L2 | - |

**2. Preliminary Views**

Malaysia supports the following methods as proposed in the draft CPM Report:

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| **Frequency Bands** | **Malaysia’s Preliminary Views** |
| 24.25-27.5 GHz | Method A2 |
| 31.8-33.4 GHz | Method B1 |

Malaysia is currently evaluating other potential candidate frequency bands for IMT identification in the frequency bands above 37 GHz.

**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**

RLANs have proven to be a success in conjunction with other fixed and mobile networks at providing affordable and ubiquitous broadband wireless access to the Internet. Introduced by some administrations in the 2.4 GHz band and subsequently expanded into some of the 5 GHz frequency bands. RLANs, specifically Wi-Fi devices, now carry approximately half of all global Internet Protocol (IP) traffic. In fact, mobile carriers have increased their reliance on Wi-Fi offload, voice‑over-Wi-Fi, and similar technologies. As technology evolves to meet increasing performance demands and traffic on broadband WAS increases, the use of wider bandwidth channels in order to support high data rates creates a need for additional spectrum.

RR No. **5.446A** specifies that the use of the bands 5 150-5 350 MHz and 5 470-5 725 MHz by the stations in the mobile, except aeronautical mobile, service shall be in accordance with Resolution **229 (Rev.WRC-12)**.

Since WRC-03, the demand for mobile broadband applications especially for WAS/RLANs has been growing rapidly. Resolution **239 (WRC-15)** states “that the results of ITU-R studies indicate that the minimum spectrum need for WAS/RLAN in the 5 GHz frequency range in the year 2018 is estimated at 880 MHz; this figure includes 455-580 MHz already utilized by non-IMT mobile broadband applications operating within the 5 GHz range resulting in 300-425 MHz additional spectrum being required”.

One issue WRC-15 examined was the possibility of additional global allocations to the mobile service (MS) for terrestrial mobile broadband applications, including in the 5 GHz range, to facilitate contiguous spectrum for WAS/RLAN. This is to enable the use of wider channel bandwidths to support higher data throughput. The studies performed by ITU-R in preparation for WRC-15 indicated that if the WAS/RLAN mitigation measures were limited to the regulatory provisions of Resolution **229 (Rev.WRC-12)**, sharing between WAS/RLAN and the Earth exploration-satellite service (EESS) (active) systems in the frequency band 5 350 to 5 470 MHz may not be feasible, as well as being insufficient to ensure protection of certain radar types in this frequency band. For these cases, sharing may only be feasible if additional WAS/RLAN mitigation measures are implemented. However, no agreement was reached on the applicability of any additional WAS/RLAN mitigation techniques. No agreement was reached on the conclusions of the studies for the frequency band 5 725‑5 850 MHz. As such, WRC‑15 concluded no change (NOC) for these frequency bands and established a WRC-19 agenda item to continue the work.

The following methods are proposed in the draft CPM text to satisfy this agenda item:

1. For the 5 150-5 250 MHz frequency band, four methods are proposed as follows:
	1. Method A1 – No change to the Radio Regulations;
	2. Method A2 – Revision to Resolution 229 (Rev.WRC-12) to enable outdoor RLAN operations including possible associated conditions for new e.i.r.p. limits;
	3. Method A3 – 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); and
	4. Method A4 – Revisions to Resolution 229 (Rev.WRC-12) to enable in-vehicle use of RLAN operation with e.i.r.p. up to 40 mW;
2. For the 5 250-5 350 MHz and 5 350-5 470 MHz frequency bands, only one method, no change to the Radio Regulations is proposed (Methods B and C respectively);
3. For the 5 725-5 850 MHz frequency band, three methods are proposed as follows:
	1. Method D1 – No change to the Radio Regulations;
	2. Method D2 – A new worldwide or Regional primary MS allocation; and
	3. Method D3 – Accommodate WAS/RLAN in an existing or new footnote; and
4. For the 5 850-5 925 MHz frequency band, only one method, no change to the Radio Regulations is proposed (Method E).

**2. Preliminary Views**

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).

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