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| **The 4th Meeting of the APT Conference Preparatory Group for WRC-19 (APG19-4)** | **APG19-4/INP-38** |
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Socialist Republic of Viet Nam

**preliminary views on WRC-19 agenda items 1.13, 1.16, 9.1.1**

# 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)****;*

 Resolution **238 (WRC‑15)** – *Studies on frequency-related matters for International Mobile Telecommunications identification including possible additional allocations to the mobile services on a primary basis in portion(s) of the frequency range between 24.25 GHz and 86 GHz for the future development of International Mobile Telecommunications for 2020 and beyond*

**1. Background**

 International Mobile Telecommunications (IMT) systems have contributed to global economic and social development of both developed and developing countries. IMT systems are now being evolved to provide diverse usage scenarios and applications such as enhanced mobile broadband (eMBB), massive machine-type (mMTC) and ultra-reliable and low-latency communications (URLLC) requiring larger contiguous blocks of spectrum than currently available bandwidth to realize those applications, as described in Recommendation ITU-R M.2083.

It is then 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 enhanced broadband.

Adequate and timely availability of spectrum with appropriate regulatory provisions, as well as improved technologies, are essential to support the future growth of IMT. Harmonized worldwide frequency bands and harmonized frequency arrangements for these systems are highly desirable in order to facilitate global roaming and the benefits of economies of scale.

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 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.

**2. Preliminary Views**

 The development of new mobile generation has taken up most of the below 6 GHz planned bands for IMT. It is necessary to seek new higher bands to identify for IMT, especially, for systems requiring large bandwidth.

 Viet Nam Administration supports studies being undertaken by ITU-R on this issue and support the band 24.25-27.5 GHz and 37-43.5 GHz listed in Resolution 238 (WRC-15).

# 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)****;*

 *Resolution* ***239 (WRC‑15)*** *– Studies concerning Wireless Access Systems including radio local area networks in the frequency bands between 5 150 MHz and 5 925 MHz*

**1. Background**

The 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)**. Resolution **229** **(Rev.WRC‑12)** resolves that the use of these bands by the mobile service will be for the implementation of WAS, including RLANs.

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.”

WRC-15 examined the possibility of additional global allocations to the mobile service for terrestrial mobile broadband applications, including in the 5 GHz range, to facilitate contiguous spectrum for WAS/RLAN, thereby enabling the use of wider channel bandwidths to support higher data throughput. The compatibility studies performed by ITU-R in preparation for WRC-15 indicated that when assuming the use of WAS/RLAN mitigation measures limited to the regulatory provisions of Resolution **229 (Rev.WRC-12)**, sharing between WAS/RLAN and the 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 studies were agreed 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.

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 performsharing 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.

**2. Preliminary Views**

 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.

**Agenda Item 9** *to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with* ***Article 7*** *of the Convention:*

**9.1.** *on the activities of the Radiocommunication Sector since WRC-15;*

**Issue 9.1.1: Resolution 212 (Rev.WRC-15)**

*Implementation of International Mobile Telecommunications in the frequency bands 1 885-2 025 MHz and 2 110 -2 200 MHz*

**1. Background**

Pursuant to Resolution 212 (Rev.WRC-15), the technical and operational studies for the
implementation of International Mobile Telecommunications (IMT) in the frequency bands
1 980-2 010 MHz and 2 170-2 200 MHz were conducted by the ITU-R. The studies considered the issue of coexistence and compatibility of terrestrial (composed of base station(s) (BS(s)) and user equipment (UE) and later on referred to as IMT BS(s) and IMT UE(s)) and satellite (composed of MSS space stations and mobile earth station(s) (MES(s)) and later on referred to as IMT space station(s) and IMT MES(s)) components of IMT in neighbouring countries/different concerned countries/adjacent geographical areas across different countries for four interference scenarios, and concluded as follows:

* For Scenario A1, in the 1 980-2 010 MHz frequency band, it was observed that the level
of potential interference from IMT BS into IMT space stations is high, while the level of
potential interference from IMT UE into IMT space stations is low. The studies have
identified technical and operational measures to mitigate the potential interference from
IMT BS and IMT UE. For IMT UEs, the measures can wholly eliminate the potential
excess interference. For IMT BSs, there is no agreement on whether the measures can
wholly eliminate the potential excess interference.
* For Scenario A2, in the frequency band 2 170-2 200 MHz, it was observed that potential
interference from IMT BS into IMT MES may occur. The potential interference may be
mitigated by one or more of: assessment of terrain and clutter effects and system
characteristics, deployment environments, and separation distance. Given the varying
characteristics of the border area across various countries, administrations can
bilaterally determine the appropriate mitigation techniques on a case-by-case basis.
* For Scenario B1, in the frequency band 1 980-2 010 MHz, potential interference from
IMT MESs to IMT BSs and IMT UEs, could be managed by bilateral/multilateral
negotiation, in which actual technical/operational characteristics and mitigation
measures for satellite and terrestrial components of IMT could be taken into account.
* For Scenario B2, in the frequency band 2 170-2 200 MHz, potential interference from
the IMT space stations to IMT UEs, could be managed by bilateral/multilateral
negotiation, in which actual technical/operational characteristics and mitigation
measures for satellite and terrestrial components of IMT could be taken into account.
Details of studies are documented in the working document towards a PDN [Recommendation or Report] ITU-R M.[MSS&IMT-ADVANCED SHARING].

**2. Preliminary Views**

* This Administration supports studies done by ITU-R Working Party 4C and 5D within Resolution **212 (Rev. WRC-15),** including studies to evaluate the coexistence and compatibility of terrestrial and satellite components of IMT deployed in neighbouring countries;
* Terrestrial component of IMT in these bands is preferred and need to be protected.

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