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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-74 (Rev.1)** |
| 7 – 12 January 2019, Busan, Republic of Korea | **28 December 2018** |

Korea (Rep. of)

**proposed modification to the chapter 2 of the draft cpm report**

**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)****;*

As indicated in the companion document (APG19-4/INP-75(Rev.1)), the Republic of Korea proposes following modifications to the text in the draft CPM Report for WRC-19 Agenda Item 1.13.

**----------------------------- Proposed changes to 2/1.13/4.1 --------------------------**

**2/1.13/4.1 Item A: Frequency band 24.25-27.5 GHz**

MOD

**2/1.13/4.1.1 Method A1: NOC**

No change to the Radio Regulations.

**2/1.13/4.1.2 Method A2: Identification of the frequency band 24.25-27.5 GHz for IMT**

**Alternative 2**

Under this alternative, allocate the 24.25-25.25 GHz frequency band to the MS (except aeronautical mobile) on a primary basis in Regions 1 and 2 and identify the 24.25-27.5 GHz frequency band for the terrestrial component of IMT in Regions 1, 2 and 3.

*Reasons: A restriction of IMT to the LMS allocation was not felt necessary for existing IMT frequency bands and is not necessary for new IMT frequency bands since the IMT characteristics, which included deployment, are already described in ITU-R Recommendations and Reports.*

*[Korea’s view: The Republic of Korea supports Alternative 2 and its reasons above. Additionally, for IMT identifications there is no any restriction to limit within the land mobile services in the RR.]*

**2/1.13/4.1.2.1 Condition A2a: Protection measures for the EESS (passive) in the 23.6‑24 GHz frequency band**

**Option 1:**

Introduce in Table 1-1 of Resolution **750 (Rev.WRC-19)** limits on unwanted emissions in the frequency band 23.6-24 GHz from IMT BSs and IMT mobile stations within the 24.25‑27.5 GHz frequency band (see Section 2/1.13/3.2.1) and add a cross-reference to Resolution **750 (Rev.WRC‑19)** in the RR footnote that identifies the frequency band for IMT and revise RR No. **5.338A** accordingly. Resolution 750 (Rev.WRC-19) shall be applied from [YYYY] in the case of countries where IMT systems were introduced before WRC-19, as appropriate.

*[Korea’s view: In principle, the Republic of Korea could support the original text of Condition A2a-Option 1 below. However mobile services including IMT-2020 using the 24.25-27.5 GHz band or portions thereof may be implemented before WRC-19 in some countries. Therefore, the Republic of Korea proposes the revised Option 1, taking into account early implementation in some countries.]*

*Reasons: The protection of other services should merely be addressed by a Resolution and not by an ITU-R Recommendation, which does not have sufficient legal force as it is based on an optional concept nor by an ITU-R Resolution, which has merely some sort of technical and/or administrative application (see views as contained in the preliminary draft CPM text as adopted by the sixth meeting of Task Group 5/1). Moreover, inviting an administration to adopt a provision to ensure the protection of services of other administrations, is merely wishful thinking as it does not have legal and procedural support, and in no way would address the protection of services of other administrations due to the fact that the action is just limited to be taken by the interfering administration without any agreement of the validity or otherwise of that decision, if such decision is made unilaterally. In case that the interfering administration does not respond to the invitation then the protection of the victim service would be put at the mercy of the interfering service.*

*Reasons: The identification of the frequency band 24.25-27.5 GHz to IMT will require limits in Resolution****750 (Rev.WRC-15)*** *to ensure adjacent band compatibility with the EESS (passive) in the frequency band 23.6-24.0 GHz.*

**2/1.13/4.1.2.5 Condition A2e: Protection measures for the ISS and FSS (Earth-to-space) receiving space stations**

**[Option 8:**

– A mandatory limit on the maximum TRP of IMT BSs of [25/35/37/46/TBD] dB(m/200 MHz), i.e. [−5/5/7/16/TBD] dB(W/200 MHz).

*Other views were expressed that studies show that sharing is feasible based on typical deployment of IMT, therefore all those typical assumptions should not be reflected to mandatory limits as regulatory options.]*

*[Korea’s view: There is no any regulatory condition in the Radio Regulations, in order to define transmission power of IMT base station. Therefore, in principle, the Republic of Korea fully supports the option 9 due to significant margin based on study results conducted by ITU-R TG 5/1. However, if the APG would define a mandatory limit, the Republic of Korea supports following condition for a mandatory limit on the maximum TRP of IMT BSs:*

*A mandatory limit on the maximum total radiated power (TRP) of IMT BSs of 46 dB(m/200 MHz).]*

**----------------------------- Proposed changes to 2/1.13/4.3 --------------------------**

**2/1.13/4.3 Item C: Frequency band 37-40.5 GHz**

MOD

**2/1.13/4.3.1 Method C1: NOC**

No change to the Radio Regulations.

**2/1.13/4.3.2 Method C2: Identification of the frequency band 37-40.5 GHz for IMT**

MOD

**Alternative 2**

Under this alternative, identify the 37-40.5 GHz frequency band for the terrestrial component of IMT in Regions.

*Reasons: A restriction of IMT to LMS allocation was not felt necessary for existing IMT bands and is not necessary for new IMT bands since the IMT characteristics, which included deployment, are already described in ITU-R Recommendations and Reports.*

*[Korea’s view: The Republic of Korea supports Alternative 2 and its reasons above. Additionally, for IMT identifications there is no any restriction to limit within the land mobile services in the RR.]*

**---------------------------- Proposed changes to 2/1.13/5.1 --------------------------**

**2/1.13/5 Regulatory and procedural considerations**

In this section various alternatives and/or options are contained as footnotes to the Table of Frequency Allocations reflecting contributions from membership to ITU-R corresponding to options/alternatives contained in Section 2/1.13/4 of the draft CPM Report. CPM19-2 is invited to carefully examine the language used in these footnotes to ensure their accuracy and consistencies with past practices of WRCs.

MOD

**2/1.13/5.1 For Item A: Frequency band 24.25-27.5 GHz**

**2/1.13/5.1.1 For Method A1, see Section 2/1.13/5.14.1**

**2/1.13/5.1.2 For Method A2**

**For Method A2, Alternative 2, Condition A2a**

**ADD**

**5.A113b** The frequency band 24.25-27.5 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. Resolution **750 (Rev.WRC‑19)** shall be applied from [YYYY] in the case of countries where IMT systems are introduced before WRC-19, as appropriate.     (WRC‑19)

*[Korea’s view: Resolution* ***750 (Rev.WRC-19)*** *does not need to be applied to all administrations, which not or will not introduce EESS passive in 23.6-24 GHz band. In addition, mobile services including IMT-2020 using the 24.25-27.5 GHz band or portions thereof might be implemented before WRC-19 in some countries. Therefore, effective date to apply the Resolution* ***750 (Rev.WRC-19)*** *should be taken into account at WRC-19.]*

**For Method A2, Alternatives 1 and 2, Condition A2a, Options 1, and for Alternative 1, Condition A2g, Options 1 and 2**

**MOD**

**.338A** In the frequency bands 1 350-1 400 MHz, 1 427-1 452 MHz, 22.55-23.55 GHz, 24.25-[TBD] / [24.45 / 25.25 / 27.5] GHz, 30-31.3 GHz, 49.7‑50.2 GHz, 50.4-50.9 GHz, 51.4-52.6 GHz, 81-86 GHz and 92-94 GHz, Resolution **750 (Rev.WRC‑19)** applies.     (WRC‑19)

**For Method A2, Alternatives 1 and 2, Condition A2c, Option 1**

**MOD**

**5.536A** Administrations operating earth stations in the Earth exploration-satellite service or the space research service shall not claim protection from stations in the fixed and mobile services operated by other administrations. In addition, earth stations in the Earth exploration-satellite service or in the space research service should be operated taking into account the most recent version of Recommendation ITU‑R SA.1862.     (WRC‑19)

**MOD**

**5.536B** In Saudi Arabia, Austria, Bahrain, Belgium, Brazil, China, Korea (Rep. of), Denmark, Egypt, United Arab Emirates, Estonia, Finland, Hungary, India, Iran (Islamic Republic of), Ireland, Israel, Italy, Jordan, Kenya, Kuwait, Lebanon, Libya, Lithuania, Moldova, Norway, Oman, Uganda, Pakistan, the Philippines, Poland, Portugal, the Syrian Arab Republic, Dem. People’s Rep. of Korea, Slovakia, the Czech Rep., Romania, the United Kingdom, Singapore, Sweden, Tanzania, Turkey, Viet Nam and Zimbabwe, earth stations operating in the Earth exploration-satellite service in the frequency band 25.5-27 GHz shall not claim protection from, or constrain the use and deployment of, stations of the fixed and mobile services.     (WRC‑15)

[*Korea’s view: There is no need to restrict for IMT stations because a revision to Resolution* ***750*** *by WRC-19 would provide relevant protection limit from IMT stations appropriately.]*

**---------------------------- Proposed changes to 2/1.13/5.3 --------------------------**

MOD

**2/1.13/5.3 For Item C: Frequency band 37-40.5 GHz**

**2/1.13/5.3.1 For Method C1, see Section 2/1.13/5.14.3**

**2/1.13/5.3.2 For Method C2**

**For Method C2, Alternative 2, Condition C2a**

**ADD**

**5.B113b** The frequency band 37-40.5 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.  (WRC‑19)

*[Korea’s view: The Republic of Korea supports no condition necessary for condition C2a to C2e. Therefore, additional resolution to define specific conditions for this band would not be needed.]*

**For Method C2, Alternative 2, Condition C2b, Options 3**

See views in Section 2/1.13/4.3.2.2.

**MOD**

**5.516B** The following bands are identified for use by high-density applications in the fixed-satellite service:

17.3-17.7 GHz (space-to-Earth) in Region 1,

18.3-19.3 GHz (space-to-Earth) in Region 2,

19.7-20.2 GHz (space-to-Earth) in all Regions,

,

39.5-40 GHz (space-to-Earth) in Region 1,

40-40.5 GHz (space-to-Earth) in all Regions,

40.5-42 GHz (space-to-Earth) in Region 2,

47.5-47.9 GHz (space-to-Earth) in Region 1,

48.2-48.54 GHz (space-to-Earth) in Region 1,

49.44-50.2 GHz (space-to-Earth) in Region 1,

and

27.5-27.82 GHz (Earth-to-space) in Region 1,

28.35-28.45 GHz (Earth-to-space) in Region 2,

28.45-28.94 GHz (Earth-to-space) in all Regions,

28.94-29.1 GHz (Earth-to-space) in Region 2 and 3,

29.25-29.46 GHz (Earth-to-space) in Region 2,

29.46-30 GHz (Earth-to-space) in all Regions,

48.2-50.2 GHz (Earth-to-space) in Region 2.

This identification does not preclude the use of these bands by other fixed-satellite service applications or by other services to which these bands are allocated on a co-primary basis and does not establish priority in these Radio Regulations among users of the bands. Administrations should take this into account when considering regulatory provisions in relation to these bands. See Resolution **143 (WRC‑03)**[[1]](#footnote-1)\*.     (WRC‑0319)

*[Korea’s view: MOD to 5.516B is out of scope of WRC-19 AI 1.13.]*

**---------------------------- Proposed changes to 2/1.13/5.13 --------------------------**

MOD

**2/1.13/5.13 For some items**

*[Korea’s note: Following a draft new Resolution [A113-IMT 26 GHZ] (WRC-19) might not be necessary if Method A2-Condition A2a-Option 1 would be decided as only one method for the 26 GHz band. However, when discussions on a draft new Resolution [A113-IMT 26 GHZ] (WRC-19) might be needed, followings could be considered.]*

**ADD**

DRAFT NEW RESOLUTION [A113-IMT 26 GHZ] (WRC-19)

**International Mobile Telecommunications   
in frequency band 24.25-27.5 GHz**

The World Radiocommunication Conference (Sharm el-Sheikh, 2019),

*considering*

*[a)* that IMT encompasses IMT‑2000, IMT-Advanced, and IMT‑2020 collectively, as described in Resolution ITU‑R 56;

*b)* that International Mobile Telecommunications (IMT), including IMT‑2000, IMT‑Advanced and IMT‑2020, is the ITU vision of global mobile access;

*c)* that IMT systems provide telecommunication services on a worldwide scale regardless of location, network or terminal used;

or

*c)* that International Mobile Telecommunications (IMT) is intended to provide telecommunication services on a worldwide scale, regardless of location and type of network or terminal;

*[Korea’s view: Duplicated]*

*d)* that the evolution of IMT is being studied within ITU‑R;

*e)* that the frequency bands 450-470 MHz, 694-960 MHz, 1 427-1 518 MHz, 1 710-1 885 MHz, 1 885-2 025 MHz, 2 110-2 200 MHz, 2 300-2 400 MHz, 2 500-2 690 MHz, 3 400-3 600 MHz, or parts thereof, are identified for use by administrations wishing to implement IMT;

*f)* that harmonized worldwide bands and harmonized frequency arrangements for IMT are highly desirable in order to achieve global roaming and the benefits of economies of scale;

*[Korea’s view: Taking into account ongoing development of Recommendation of ITU-R M.1036, harmonized frequency arrangements would be supportive due to efficient deployment and implementation of IMT networks.]*

*g)* that adequate and timely availability of spectrum is important to support and to realize the objectives in Recommendation ITU‑R M.2083;

*h)* that IMT systems are envisaged to provide increased peak data rates and capacity that may require a larger bandwidth;

*i)* that there is a need to continually take advantage of technological developments in order to increase the efficient use of spectrum and facilitate spectrum access;

*j)* that IMT‑2020 systems aims to provide diverse usage scenarios and applications such as enhanced mobile broadband (eMBB), massive machine-type communications (mMTC) and low-latency communications (URLLC) described in Recommendation ITU-R M.2083;

*k)* that ultra-low latency and very high bit-rate applications of IMT will require larger contiguous blocks of spectrum than those available in frequency bands that are currently identified for use by administrations wishing to implement IMT;

*l)* that advanced antenna systems including beam-forming techniques will be used by IMT in frequency bands above 24.25 GHz having the properties such as shorter wavelength;

*m)* that IMT systems have contributed to global economic and social development;

*n)* that ITU‑R has studied, in preparation for WRC‑19, sharing and compatibility with services allocated in bands identified for IMT above 24 GHz and in adjacent bands, based on the assumed characteristics of Recommendation ITU‑R M.2101;

*o)* that WRC‑19 identified the frequency band 24.25-27.5 GHz for IMT with certain regulatory conditions to address protection of services to which the band is allocated on a primary basis;

*p)* that any identification of frequency bands for IMT should take into account the use of the bands by other services and the evolving needs of these services;

or

*p)* that identification of frequency bands allocated to the mobile service on a co-primary basis for IMT may change the sharing situation regarding applications of services to which the frequency band is already allocated, and may require additional regulatory actions;

*q)* that low latency and high bit-rate applications of IMT‑2020 will require large contiguous blocks of spectrum which is not available in frequency bands below 24.25 GHz;

*[Korea’s view: Duplicated with considering f]]*

*s)* that the results of ITU‑R compatibility studies of IMT‑2020 systems are probabilistic, and therefore the deployment parameters of IMT‑2020 systems that affect compatibility with satellite receivers may vary during practical implementation and deployment of IMT‑2020 networks;

*t)* that the identification of frequency bands for IMT‑2020 requires technical and regulatory measures to ensure compatibility with and future development of incumbent services having an allocation in identified frequency bands;

*[Korea’s view: Duplicated with considering n]]*

*v)* the need to protect existing services and to allow for their continued development when considering frequency bands for possible additional allocations to any service;

*[Korea’s view: Duplicated with considering p]]*

*x)* the need to ensure the protection of existing earth stations and the deployment of future receiving earth stations under the EESS (space-to-Earth) and SRS (space-to-Earth) allocations in the frequency band 25.5-27 GHz;

*y)* that some frequency bands or portions of some frequency bands in which IMT may be implemented are already allocated to the fixed, mobile, space research, fixed-satellite, mobile-satellite and Earth exploration-satellite services on a co-primary basis and are already in use by incumbent services,]

*noting*

[*a)* Resolutions **223 (Rev.WRC‑15)**, **224 (Rev.WRC‑15)** and **225 (Rev.WRC‑12)**, which also relate to IMT;

*b)* Recommendation ITU‑R M.2083 provides IMT Vision – “Framework and overall objectives of the future development of IMT for 2020 and beyond”;

*c)* that currently operating mobile communication systems may evolve to IMT in their existing frequency bands;

*[Korea’s view: This could not be a part of noting.]*

*e)* that Resolution ITU‑R 65 addresses the principles for the process of development of IMT for 2020 and beyond, and that Question ITU‑R 77‑7/5 considers the needs of developing countries in the development and implementation of IMT;

*f)* that Question ITU‑R 229/5 seeks to address the further development of IMT;

*g)* that IMT encompasses IMT‑2000, IMT-Advanced, and IMT‑2020 collectively, as described in Resolution ITU‑R 56‑2;

*h)* that Report ITU‑R M.2320 addresses future technology trends of terrestrial IMT systems;

*i)* Report ITU‑R M.2376, on technical feasibility of IMT in the frequency bands above 6 GHz;

*j)* that Report ITU‑R M.2370 analyses trends impacting future IMT traffic growth beyond the year 2020 and estimates global traffic demands for the period 2020 to 2030;

*k)* that there are ongoing studies within ITU‑R on the propagation characteristics for mobile systems in higher frequency bands;

*l)* that the FSS allocation in the frequency band 24.65-25.25 GHz was made by WRC‑12,]

*recognizing*

[*a)* that for some administrations the only way of implementing IMT would be spectrum re‑farming;

*b)* that there is a lead time between the allocation of frequency bands by world radiocommunication conferences and the deployment of systems in those bands, and that timely availability of wide and contiguous blocks of spectrum is therefore important to support the development of IMT;

*c)* that identification of frequency bands for IMT should take into account the use of the bands by other services and the evolving needs of these services;

*d)* that there should be no additional regulatory or technical constraints imposed on services to which the frequency band is currently allocated on a primary basis;

*e)* that IMT technical and deployment characteristics may evolve in the future and the result of ITU‑R compatibility and sharing studies between IMT‑2020 and satellite receivers may not be valid;

*f)* that, due to the effect of aggregation of interference from IMT‑2020 systems, the protection of satellite receivers is possible only if all administrations will follow the agreed technical characteristics and parameters of the deployment of IMT‑2020 systems;

*g)* that ITU‑R studies have shown that compatible operations of IMT and gateway-type receive satellite earth stations in the fixed-satellite service can be achieved through geographic separation between an IMT deployment and the receive earth station;

*h)* that the required geographic separation distance in *recognizing i)* will vary as a function of the earth station antenna diameter, elevation angle, surrounding terrain, and IMT network system design and can vary from a few hundred to a few thousand metres;

*i)* protection of satellite receivers in the fixed and mobile-satellite service can be achieved by controlling the emissions of IMT base stations [and user equipment] in the skyward direction;]

*j)* that Resolution **750 (Rev.WRC‑19)** establishes limits on unwanted emissions in the frequency band 23.6-24 GHz from IMT base stations and IMT mobile stations within the 24.25-27.5 GHz frequency band;

*k)* that Recommendation ITU-R SM.329 appropriately provides relevant limits for unwanted emissions in the spurious domain for radiocommunication systems,

**2/1.13/5.13.3 For the relevant condition(s) and option(s) of Methods B2, C2, D2, E2, F2, G2, H2 and I2**

*Note 1: Due to time constraints, the text in this draft new Resolution has not been fully reviewed yet, in particular the elements related to the frequency bands above 47.2 GHz. CPM 19-2 is invited to carefully examine the text with a view to resolving any issues.*

*Note 2: For those administrations proposing a new IMT Resolution, multiple options are presented below for each condition, noting that the option of not applying that condition may also be considered.*

*Note 3: Views were expressed that regulatory examples should be of a mandatory nature without any subject or qualifier in the text.*

*Note 4: The preamble to this Resolution is a compilation of input contributions and was not discussed. CPM 19-2 is invited to review the text below with a view to agreeing a minimum number of provisions and to avoid duplications.*]

*[Korea’s note: A draft new Resolution [B113-IMT 40/50 GHZ] (WRC-19) might not be necessary if Method C2-Alternative 2 would be decided as only one method for the band.]*

**2/1.13/5.13.7 For the relevant condition(s) and option(s) of Methods A2, C2, H2, L2 and I2**

**MOD**

RESOLUTION 750 (Rev.WRC‑19)

**Compatibility between the Earth exploration-satellite service (passive) and relevant active services**

The World Radiocommunication Conference (Sharm el-Sheikh, 2019),

…

*resolves*

1 that unwanted emissions of stations brought into use in the frequency bands and services listed in Table 1‑1 below shall not exceed the corresponding limits in that table, subject to the specified conditions;

…

TABLE 1-1

|  |  |  |  |
| --- | --- | --- | --- |
| **EESS (passive) band** | **Active service band** | **Active service** | **Limits of unwanted emission power from active service stations in a specified bandwidth within the EESS (passive) band1** |
| … | … | … | … |
| *Note: The row below applies only to Condition A2a Option 1* | | | |
| 23.6-24 GHz | 24.25-27.5 GHz  or  24.25-25.25 GHz  or  24.25-24.45 GHz  or  24.25-TBD GHz | Mobile | TBD (see Section 2/1.13/3.2.1)  *[Korea’s view: The Republic of Korea is of the view that this part should be proposed to the CPM19-2 based on preliminary views developed by the APG19-4.]* |
| 1 The unwanted emission power level is to be understood as/is understood to mean the level measured at the antenna port, unless specified in terms of total radiated power.  … | | | |

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1. [↑](#footnote-ref-1)