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| APTlogogreen3 | ASIA-PACIFIC TELECOMMUNITY | **Document No:** |
| **The 3rd Meeting of the APT Conference Preparatory Group for WRC-19 (APG19-3)** | **APG19-3/INP-54** |
| 12 – 16 March 2018, Perth, Australia | **5 March 2018** |

Japan

**preliminary views on WRC-19 agenda items 2, 4, 9.1(Issue 9.1.6 and 9.1.7) and 10**

**Agenda Item 2:**

*to examine the revised ITU-R Recommendations incorporated by reference in the Radio*

*Regulations communicated by the Radiocommunication Assembly, in accordance with Resolution 28(Rev.WRC-15), and to decide whether or not to update the corresponding references in the Radio Regulations, in accordance with the principles contained in Annex 1 to Resolution 27(Rev.WRC-12);*

**1. Background**

This agenda is discussed on the basis of Resolution 27 (Rev.WRC-12) and Resolution 28 (Rev.WRC-15) in every WRC.

At WRC-19, the ITU-R Recommendations incorporated by reference which have been revised after WRC-15 will be examined and the RR provisions that refer to them will be reviewed.

**2. Preliminary Views**

Japan supports review of the reference of the ITU-R Recommendations in the RR on the basis of Resolution 27 (Rev.WRC-12) and Resolution 28 (Rev.WRC-15).

**Agenda Item4:**

*in accordance with Resolution 95 (Rev.WRC-07), to review the Resolutions and Recommendations of previous conferences with a view to their possible revision, replacement or abrogation;*

**1. Background**

This agenda is considered on the basis of Resolution 95 (Rev.WRC-07) in every WRC.

**2. Preliminary Views**

Japan supports review of the Resolutions and Recommendations of WRC to be considered under this agenda on the basis of Resolution 95 (Rev.WRC-07).

**Agenda Item 9.1, Issue 9.1.6:**

*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;*

*9.1.6 Issue 1) in the annex to Resolution 958 (WRC-15)*

*Urgent studies required in preparation for the 2019 World Radiocommunication Conference:*

*1) Studies concerning Wireless Power Transmission (WPT) for electric vehicles:*

*a) to assess the impact of WPT for electric vehicles on radiocommunication services;*

*b) to study suitable harmonized frequency ranges which would minimize the impact on radiocommunication services from WPT for electrical vehicles.*

*These studies should take into account that the International Electrotechnical Commission (IEC), the International Organization for Standardization (ISO) and the Society of Automotive Engineers (SAE) are in the process of approving standards intended for global and regional harmonization of WPT technologies for electric vehicles.*

**1. Background**

[Editorial note: The following paragraphs are based on the PV of APG19-2 and proposed changes on them are shown using track-changes.]

Wireless power transmission (WPT) technologies are being developed worldwide to support many applications and WPT for electric vehicles (EVs) is one of the promising applications. However, since the WPT for Electric Vehicles (EVs) requires relatively high power, it should be developed not to cause harmful interference to radiocommunication services.

WRC-15 adopted Resolution 958, which identified studies on WPT for EVs as urgent studies in preparation of WRC-19. The following were listed as study subjects:

*a) to assess the impact of WPT for electric vehicles on radiocommunication services;*

*b) to study suitable harmonized frequency ranges which would minimize the impact on radiocommunication services from WPT for electrical vehicles.*

The CPM19-1 identified the studies on WPT for EVs as Issue 9.1.6 under Agenda Item 9.1

Studies on WPT have been conducted by ITU-R SG 1 since 1997. ITU-R SG 1 approved Report ITU-R SM.2303 ‘Wireless power transmission using technologies other than radio frequency beam’ in 2014 and revised it in 2015 and June 2017. The latest version of the Report contains various results of technical studies on the impact of WPT, including WPT for EVs, on radiocommunication services as well as information about Japan’s new regulation of March 2017 which allowed a 79-90 kHz range for WPT for EVs up to 7.7 kW.

The ITU-R SG 1, at its June 2017 meeting, agreed on a draft new Recommendation ‘Frequency ranges for operation of non-beam Wireless Power Transmission (WPT) systems’ which was approved via PSAA procedure and became Recommendation ITU-R SM.2110-0. Although the current version of the Recommendation recommends a 6.78 MHz band for mobile/portable devices only, WP 1A at its November 2017 meeting prepared a working document towards a draft revision of the Recommendation. The working document contained the 79-90 kHz range for WPT for EVs and carried forwarded to its next meeting to be held in June 2018.

As a responsible group for Issue 9.1.6, WP 1B is working for a draft CPM Text on this issue, with a completion target at its meeting in June 2018. It is also working on a draft new Report ITU-R SM.[WPT-SPEC-MNGM] “Methodology for spectrum management of wireless power transmission (WPT)”.

**2. Preliminary Views**

Japan proposes the following as APT preliminary views as of APG19-3;

* The frequency range 79-90 kHz should be included as a frequency range for WPT for EVs in an ITU-R Recommendation and the Recommendation should be approved at the latest by RA-19; and
* Depending on upcoming progress of ITU-R studies, APT should consider the possibilities to propose establishment of provisions of the Radio Regulations (RR) regarding WPT.

**Agenda Item 9.1, Issue 9.1.7:**

*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;*

**1. Background**

Issue 2) in the Annex to Resolution 958 (WRC-15)

*Urgent studies required in preparation for the 2019 World Radiocommunication Conference*

*2) Studies to examine:*

*a) whether there is a need for possible additional measures in order to limit uplink transmissions of terminals to those authorized terminals in accordance with No.* ***18.1****;*

*b) the possible methods that will assist administrations in managing the unauthorized operation of earth station terminals deployed within its territory, as a tool to guide their national spectrum management programme, in accordance with Resolution ITU-R 64 (RA-15).*

In Working Party 1B, “Working document towards a Preliminary Draft New report on studies for WRC-19 agenda item 9.1, issue 9.1.7” is being developed to resolve this issue. This report contains answers from Member States to a questionnaire on licensing and any problem that administration experienced on authorized earth stations etc. and regulatory regime provisions of administration of each type of FSS ES terminals.

**2. Preliminary Views**

Japan is of the view that it is necessary for ITU-R to conduct adequate studies so as not to be imposed unnecessary regulations and constraints on administrations, satellite network operators and authorized earth stations.

**Agenda Item 10:**

*to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention,*

**Preliminary Views**

Japan proposes the following new Draft Agenda Item for WRC-23 to consider identifications for use of high altitude platform station (HAPS) as base stations to provide IMT in the frequency bands around and below 2 GHz identified to IMT, and the details are described in the Annex.

**Annex**

**Proposal of WRC-23 new agenda item for identification for use of high altitude platform station (HAPS) as base stations to provide IMT in the frequency bands around and below 2GHz identified to IMT**

**1. Background, Issues and Discussion**

In light of growing demand for broadband, there is a need for a solution to provide broadband access to underserved communities with minimal ground-level infrastructure and maintenance. At WRC-15, Resolution 160 was adopted to study how to facilitate access to global broadband applications delivered by HAPS in the fixed service and there is ongoing study under WRC-19 Agenda Item 1.14 on HAPS using frequency bands above 6 GHz for broadband delivery.

At the same time, to utilize its capability to provide service to a large footprint (wider than 30,000 km2) at low latency (1/30 of LEO and 1/1800 of GEO), HAPS may also be used as IMT base stations in the frequency bands around and below 2 GHz for the delivery of broadband applications which provide mobile connectivity to underserved areas. Especially in providing connectivity for IoT, which is expected to become widespread in 2020 and beyond, mobile network operators (MNOs) are expected to meet the requirement for wider area coverage using their spectrum and at a reasonable cost. Indeed, satellite systems could also achieve wider area coverage, but it is difficult to have low latency similar to terrestrial IMT network against HAPS systems.

At WRC-2000, the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz in Region 1 and 3 and the bands 1 885-1 980 MHz and 2 110-2 160 MHz in Region 2 were identified in the mobile service for HAPS operating as IMT base stations in RR No.**5.388A** and Resolution **221 (Rev.WRC-07)** stipulates technical conditions for HAPS IMT base stations necessary for the protection of terrestrial IMT stations in neighboring countries and other services based on the sharing and compatibility studies with IMT-2000. Since 2000, there has been a tremendous growth in the deployment of IMT systems and significant improvement in its radio access technology (i.e. IMT-Advanced and IMT-2020). In view of these advancements, it should be studied whether any changes are necessary to existing HAPS identification.

Moreover, currently many MNOs provide services using multiple IMT frequency bands and thus many user terminals support multiple bands. Therefore, to allow flexible use of frequency bands by MNOs (especially those who do not have the 2 GHz band), additional identification for HAPS to be used as IMT base stations may be required within existing bands in the frequency ranges around and below 2 GHz identified for IMT.

**2. Assumed Usage of HAPS IMT Base Stations and Sharing Studies**

For its backhaul connection, HAPS IMT base stations will use frequency bands already identified or being studied under WRC-19 Agenda Item 1.14 for HAPS as stations in the fixed service. User terminals to be used to provide service and which will connect to HAPS IMT base stations are expected to be the same as the ones used in terrestrial IMT systems.

Therefore, possible interference scenario to be assessed in sharing studies would be between HAPS IMT base stations and services in neighboring countries.



**3. Views and Proposals**

Japan proposes a new Agenda item for WRC-23 which considers identification to use high altitude platform station (HAPS) as base stations to provide IMT in the frequency bands around and below 2GHz identified to IMT, and whether changes are needed to the set of existing bands identified for use by HAPS IMT base stations. The proposal using the template in accordance with Annex 2 to Resolution **804 (Rev.WRC-12)** is provided in Attachment.

**Attachment to Annex**

**ANNEX 2 TO RESOLUTION 804 (Rev. WRC-12)**

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| ***Subject:***  Proposal for WRC-23 Agenda Item to consider identification to use high altitude platform station (HAPS) as base stations to provide IMT in the frequency bands around and below 2GHz identified to IMT, and whether changes are needed to the set of existing bands identified for use by HAPS IMT base stations. | |
| ***Origin:*** Japan | |
| ***Proposal:***  To study IMT applications using HAPS as base stations. | |
| ***Background/reason:***  In light of growing demand for broadband, there is a need for a solution to provide broadband access to underserved communities with minimal ground-level infrastructure and maintenance. At WRC-15, Resolution 160 was adopted to study how to facilitate access to global broadband applications delivered by HAPS in the fixed service and there is ongoing study under WRC-19 Agenda Item 1.14 on HAPS using frequency bands above 6 GHz for broadband delivery.  At the same time, to utilize its capability to provide service to a large footprint (wider than 30,000 km2) at low latency (1/30 of LEO and 1/1800 of GEO), HAPS may also be used as IMT base stations in the frequency bands around and below 2 GHz for the delivery of broadband applications which provide mobile connectivity to underserved areas. Especially in providing connectivity for IoT, which is expected to become widespread in 2020 and beyond, mobile network operators (MNOs) are expected to meet the requirement for wider area coverage using their spectrum and at a reasonable cost. Indeed, satellite systems could also achieve wider area coverage, but it is difficult to have low latency similar to terrestrial IMT network against HAPS systems.  At WRC-2000, the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz in Region 1 and 3 and the bands 1 885-1 980 MHz and 2 110-2 160 MHz in Region 2 were identified in the mobile service for HAPS operating as IMT base stations in RR No.**5.388A** and Resolution **221 (Rev.WRC-07)** stipulates technical conditions for HAPS IMT base stations necessary for the protection of terrestrial IMT stations in neighboring countries and other services based on the sharing and compatibility studies with IMT-2000. Since 2000, there has been a tremendous growth in the deployment of IMT systems and significant improvement in its radio access technology (i.e. IMT-Advanced and IMT-2020). In view of these advancements, it should be studied whether any changes are necessary to existing HAPS identification.  Moreover, currently many MNOs provide services using multiple IMT frequency bands and thus many user terminals support multiple bands. Therefore, to allow flexible use of frequency bands by MNOs (especially those who do not have the 2 GHz band), additional identification for HAPS to be used as IMT base stations may be required within existing bands in the frequency ranges around and below 2 GHz identified for IMT. | |
| ***Radiocommunication Services concerned:***  Mobile Service, Fixed Service, Broadcasting Service, Mobile Satellite Service, and other services | |
| ***Indication of possible difficulties:***  The proposed bands are widely used for terrestrial and space services on a co-primary basis. | |
| ***Previous/ongoing studies on the issue:***  Recommendation ITU-R M.1456 and M.1641 provide requirements and studies on the provision of mobile services from HAPS using certain bands around 1.9/2.1 GHz. | |
| ***Studies to be carried out by:***  ITU-R WP 5D | ***with participation of:***  Administrations and Sector members of the ITU-R |
| ***ITU-R Study Groups concerned:***  SG5 and other groups | |
| ***ITU resource implications, including financial implications (refer to CV 126):***  This proposed agenda item will be studied within the normal ITU-R procedures and planned budget. As the responsible group on IMT studies, ITU-R WP 5D usually has meetings three times a year which last 6 days each. | |
| ***Common regional proposal:***  Yes/No | ***Multicountry Proposal:*** Yes/No  ***Number of countries:*** |
| ***Remarks*** | |