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| **World Radiocommunication Conference (WRC-19)Sharm el-Sheikh, Egypt, 28 October – 22 November 2019** |  |
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| PLENARY MEETING | **Addendum 24 toDocument 67-E** |
|  | **7 October 2019** |
|  | **Original: English** |
|  |
| Papua New Guinea |
| Proposals for the work of the conference |
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| Agenda item 10 |

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.

Introduction

Proposal for a new WRC-23 agenda item to consider identification of the frequency band 3 400-3 600 MHz, for high altitude IMT base stations as well as to consider whether changes are needed to the existing identification for high altitude IMT in accordance to Nos. **5.388A**, **5.388B.** There is also an IAP, ATU, and a multi-country (from Japan, Papua New Guinea and Mongolia, **ASP/24A24A4/2**) proposals on this same topic covering other bands below 3 400 MHz that have also been identified for IMT. It should be possible to consolidate this proposal with those under one new agenda item.

Background

In accordance with Nos. **5.430A**, **5.431B**, **5.432A**, **5.432B**, **5.433A** the frequency band 3 400-3 600 MHz is identified for IMT. This proposal will study the identification of this band for high altitude IMT base stations.

Attachment 1 contains a description of the proposal and Attachment 2 contains draft text for a possible Resolution related to the proposed new agenda item.

MOD PNG/67A24/1

RESOLUTION 810 (WRC‑19)

Preliminary agenda for the 2023 World Radiocommunication Conference

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

…

2.6 to study using the frequency band 3 400-3 600 MHz by high altitude IMT base stations and to perform studies on the platform and device capability requirements for high altitude IMT systems;

**Reasons:** Inclusion of this new agenda item for WRC-23.

ADD PNG/67A24/2

Draft New Resolution [PNG-HIGH ALTITUDE IMT] (WRC-19)

Facilitating mobile connectivity using high altitude
IMT base stations in the 3 400-3 600 MHz band

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

considering

*a)* that the frequency band 3 400-3 600 MHz is currently allocated on a primary basis to the fixed, and fixed-satellite (space-to-Earth) services globally;

*b)* that the frequency band 3 400-3 600 MHz is currently allocated on a secondary basis to the radiolocation service globally;

*c)* that studies on how to facilitate access to global broadband applications delivered by high altitude as base stations to provide IMT was conducted in accordance with Resolution **221 (Rev.WRC-07)**;

*d)* that high altitude may also be used as IMT base stations in accordance to Nos. **5.388A**, **5.388B** and their use does not preclude the use of these bands by any station in the services to which they are allocated and does not establish priority in the Radio Regulations;

*e)* that with recent technological advances such as battery and solar-panel technologies, high altitude as IMT base stations have become feasible;

*f)* that high altitude IMTwill use frequency bands already identified or being studied under WRC-19 agenda item 1.14 for HAPS in the fixed service. User equipment to be used to provide service and which will connect to high altitude IMT are expected to be the same as the ones used in ground-based IMT systems;

*g)* that high altitude IMT may be used as a part of terrestrial IMT networks to provide mobile connectivity to underserved communities and in rural and remote areas with the ability to utilise a large footprint at low latency;

*h)* that user terminals can be connected with both high altitude IMT or ground-based IMT base stations using the same frequency bands with spectrum coordination between high altitude IMT and ground-based IMT base stations;

*i)* that terrestrial IMT networks use multiple frequency bands, thus user terminals commonly support multiple bands,

recognizing

*a)* that high altitude platform station is defined in No. **1.66A** of the Radio Regulations as a station located on an object at an altitude of 20 to 50 km and at a specified, nominal, fixed point relative to the Earth;

*b)* that the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz in Regions 1 and 3 and the bands 1 885-1 980 MHz and 2 110-2 160 MHz in Region 2 are identified in No.**5.388A** for high altitude IMT and may be used in accordance with Resolution **221 (Rev.WRC‑07)**;

*c)* that Nos. **5.388A**, **5.388B** and Resolution **221 (Rev.WRC-07)** stipulate technical conditions for high altitude IMT necessary for the protection of ground-based IMT stations in neighboring countries and other services based on the sharing and compatibility studies with IMT‑2000;

*d)* that the frequency band 3 400-3 600 GHz has been already identified for IMT-2020 (Nos. **5.430A**, **5.431B**, **5.432A**, **5.432B**, **5.433A**),

resolves to invite ITU-R

1 to study the minimum performance characteristics and operational conditions for high altitude IMT operating as IMT-2020 base stations in frequency bands 3 400-3 600 MHz identified for use, on a worldwide basis, by administrations wishing to implement IMT-2020;

2 to study the sharing and compatibility issues between high altitude IMT base stations and current and planned stations of existing services with allocations in the frequency band 3 400-3 600 MHz;

3 to develop the technical conditions and regulatory provisions for the operation of high altitude IMT base stations in the frequency band 3 400-3 600 MHz, considering the results of the studies outlined in *resolves* 2.

ANNEX

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| **Subject:** Proposal for WRC-23 agenda item to consider identification of frequency band 3 400-3 600 MHz for use by high altitude IMT base stations and to review the conditions for existing frequency bands identified for use by high altitude IMT base stations outlined in Nos. **5.388A**, **5.388B** |
| **Origin:** Papua New Guinea |
| ***Proposal*:** To study using the frequency band 3 400-3 600 MHz by high altitude IMT base stations and to perform studies on the platform and device capability requirements for high altitude IMT systems |
| ***Background/reason:***In light of growing demand for broadband connectivity, there is a need for a solution to provide broadband access to underserved areas with minimal ground-level infrastructure and where coverage is a problem. At WRC-15, Resolution **160 (WRC-15)** was adopted to study how to facilitate access to global broadband applications delivered by high altitude platform station in the fixed service and there is also an ongoing study under WRC-19 agenda item 1.14 on high altitude platform station.Since high altitude platforms are able to provide service to a relatively larger footprint (10,000 to 20,000 km2) and lower latency, they may also be used as IMT base stations to 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 are expected to meet the requirement for wider area coverage using their spectrum in a cost-effective manner.At WRC-2000, the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz in Regions 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 High altitude IMT in RR No. **5.388A** and Resolution **221 (Rev.WRC-07)** stipulates technical conditions for high altitude IMT necessary for the protection of ground-based IMT stations in neighbouring countries and other services based on the sharing and compatibility studies with IMT-2000. Since 2000, there has been tremendous growth in the deployment of IMT systems and significant improvement in its radio access technology (i.e. IMT-Advanced and IMT‑2020). Also, the HAPS technology had made significant advances in terms of reliability and resilience.WRC-15 identified the 3 400-3 600 MHz band for IMT in Regions 1 and 2, and in several countries in Region 3. Since WRC-15, few countries have started to deploy 5G services in this band, but the deployment has been primarily focused on densely populated urban areas. That is because rolling out 5G services terrestrially in the mid-band spectrum, such as in the 3 400-3 600 MHz band, presents logistical and technical challenges in terms of the need for tower densification and expanding fiberoptic network reach. Consequently, rural and sub-rural areas are likely to be left out of 5G deployments in mid-band spectrum if only terrestrial means are considered. This makes the HAPS technology well-suited for rolling out 5G services in rural and sub-rural areas.In view of these advancements, it should be studied whether the frequency band 3 400-3 600 MHz – specifically targeted for IMT-2020 deployment by several administrations and ITU-R regional organizations – could also be identified for high altitude IMT.High altitude IMT is envisaged to be fully integrated within the IMT network it serves, therefore giving the service provider the flexibility of using a more cost-effective platform to serve those underserved areas. High altitude IMT are also expected to use the same spectrum resources available to the terrestrial IMT service provider, given that HAPS are envisaged to be fully integrated into the service provider network.  |
| ***Radiocommunication services concerned*:**Mobile Service, Fixed Service, Fixed Satellite Service, Radiolocation, and Amateur |
| ***Indication of possible difficulties*:** None foreseen |
| ***Previous/ongoing studies on the issue*:**

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| Recommendations ITU-R M.1456 and M.1641 provide requirements and studies on the provision of mobile services from high altitude IMT base stations using certain bands around 1.9/2.1 GHz.ITU-R WP 5D is conducting co-channel sharing analysis involving IMT-Advanced systems using HIBS in accordance with RR No. **5.388A**. |

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| ***Studies to be carried out by*:** ITU-R SG 5 | ***with the participation of*:** --- |
| ***ITU‑R Study Groups concerned*:** ITU-R SG 4 |
| ***ITU resource implications, including financial implications (refer to CV126)*:**--- |
| ***Common regional proposal*:** ~~Yes/~~No | ***Multicountry proposal*:** ~~Yes/~~No***Number of countries*: -** |
| ***Remarks*** |

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