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| **The 4th Meeting of the APT Conference Preparatory Group for WRC-23 (APG23-4)** | **APG23-4/INP-XX** |
| 15 – 20 August 2022, Bangkok, Thailand | XX August 2022 |

Thailand (Kingdom of)

**preliminary views on WRC-23 agenda itemS 1.7, 1.8, 1.9 AND 1.11**

**Agenda Item 1.7:**

*to consider a new aeronautical mobile-satellite (R) service (AMS(R)S) allocation in accordance with Resolution* ***428 (WRC-19)*** *for both the Earth-to-space and space-to-Earth directions of aeronautical VHF communications in all or part of the frequency band 117.975-137 MHz, while preventing any undue constraints on existing VHF systems operating in the AM(R)S, the ARNS, and in adjacent frequency bands.*

**1. Background**

This agenda item is to consider a new aeronautical mobile-satellite (R) service (AMS(R)S) allocation for both the Earth-to-space and space-to-Earth directions of aeronautical VHF communications in all or part of the frequency band 117.975-137 MHz, while preventing any undue constraints on existing VHF systems operating in the AM(R)S, the ARNS, and in adjacent frequency bands. The ITU-R is invited to:

1. define the relevant technical characteristics and to study, taking into account International Civil Aviation Organization (ICAO) standards and taking into account RR No. **5.200**, compatibility between potential new AMS(R)S systems that operate within the frequency band 117.975-137 MHz in the Earth-to-space and space-to-Earth directions and existing primary services in band and in adjacent frequency bands, while ensuring protection of systems using existing primary services in those frequency bands and not constraining planned usage of those systems;
2. take into account the results of the studies, to provide technical and regulatory recommendations relative to a possible new allocation to AMS(R)S within the frequency band 117.975-137 MHz, taking into consideration the responsibility of ICAO.

**2. Preliminary Views**

Thailand supports APT Preliminary View on agenda item 1.7 reached at APG23-3 Meeting. Thailand is also of the view that a new AMS(R)S allocation in the 117.975-137 MHz band shall not adversely impact existing services in this frequency band and in adjacent frequency bands.

**Agenda Item 1.8:**

*to consider, on the basis of ITU R studies in accordance with Resolution* ***171 (WRC-19)****, appropriate regulatory actions, with a view to reviewing and, if necessary, revising Resolution* ***155 (Rev.WRC-19****) and No.* ***5.484B*** *to accommodate the use of fixed-satellite service (FSS) networks by control and non-payload communications of unmanned aircraft systems.*

**1. Background**

WRC-15 agenda item 1.5 considered possibility to use fixed-satellite service (FSS) networks to provide control and non-payload communications (CNPC) links of unmanned aircraft system (UAS) and established Resolution **155 (WRC-15)** in order to benefit of the opportunity of using existing satellite transponders. Recognizing the need for further studies on regulatory provisions and technical criteria both within ICAO and ITU, WRC-15 decided that consideration of the outcome of these studies, also taking into account the progress obtained by ICAO in the completion of its Standards and Recommended Practices (SARPs) on the use of FSS for the UAS CNPC links would again be considered by WRC 23.

Accordingly, this agenda item was established by WRC-19, in accordance with Resolution **171 (WRC 19)**, to consider appropriate regulatory actions, with a view to reviewing and, if necessary, revising Resolution **155 (Rev.WRC 19)** and RR No. **5.484B** to accommodate the use of FSS networks by UAS CNPC. The ITU-R is invited to:

1. continue and complete in time for WRC-23 relevant studies of the technical, operational and regulatory aspects, based on the frequency bands mentioned in resolves 1 of Resolution **155 (Rev.WRC-19)**, in relation to the implementation of Resolution **155 (Rev.WRC-19)**, taking into account the progress obtained by ICAO in the completion of SARPs on use of the FSS for the UAS CNPC links;
2. review No. **5.484B** and Resolution **155 (Rev.WRC-19)** taking into account the results of the above studies.

**2. Preliminary Views**

Thailand supports ITU-R studies currently carried out in accordance with Resolution **171 (WRC-19)** to consider appropriate regulatory actions up to the extent of revising Resolution **155 (Rev.WRC-19)** and RR No. **5.484B**, if necessary, to accommodate the use of FSS for   
the UAS CNPC links, taking into account the developing SARPs by ICAO.

**Agenda Item 1.**9**:**

*to review Appendix* ***27*** *of the Radio Regulations and consider appropriate regulatory actions and updates based on ITU-R studies, in order to accommodate digital technologies for commercial aviation safety-of-life applications in existing HF bands allocated to the aeronautical mobile (route) service and ensure coexistence of current HF systems alongside modernized HF systems, in accordance with Resolution* ***429 (WRC-19)****;*

**1. Background**

HF Radio communications is the long-range communication system supporting safe, efficient air travel over long range routes beyond the range of ground-based VHF radiocommunication systems. However, technology now provides for satellite communications which have also been recognized by regulatory authorities for use in long range communications.

Communications using both satellite and terrestrial means for long-range communication provides diversity and synergy that offers increased availability and reliability.

The current HF voice systems suffer from noise and propagation effects that require skilled and knowledgeable radio operators on the ground to provide reliable HF communications. Existing HF data links do not have the throughput required to sufficiently satisfy the communication needs.

In order to use digital HF aeronautical spectrum which would increase the data rates to reach required performance by modern aeronautical systems, RR Appendix **27** needs to allow the use of multiple contiguous and/or non-contiguous 3 kHz channels simultaneously.

**2. Preliminary Views**

Thailand supports necessary modifications of RR Appendix 27 to accommodate the use of wideband HF technologies for the AM(R)S, while ensuring the protection of existing services in band and in adjacent frequency bands.

**Agenda Item 1.11:**

*to consider possible regulatory actions to support the modernization of the Global Maritime Distress and Safety System and the implementation of e‑navigation, in accordance with Resolution* ***361 (Rev.WRC‑19)***

**1. Background**

Resolution **361 (Rev. WRC-19)** through the section *resolves to invite the 2023 World Radiocommunication Conference* identifies three topics which are studied and solved independently.

WP 5B is the responsible group, together with contributing groups WP 4C and WP 7D, according to the CPM23-1 results (CA/215), to address the ITU-R preparatory work for WRC-23.   
There are three issues assigned for study as follows:

**Issue A (*resolves 1*): GMDSS Modernization**

This topic is the continuation of the agenda item (AI) 1.8, Issue A of WRC-19. The modernization of global maritime distress and safety system (GMDSS), for which the work is undertaken by the International Maritime Organization (IMO) was not finalized at the time of WRC-19. That Conference has solely been able to take some preliminary decision regarding the NAVDAT in the MF and HF bands. In 2022 IMO has adopted amendments to the 1974 Safety of Life at Sea (SOLAS) Convention Chapters III and IV, together with related and consequential amendments to existing instruments other than SOLAS. These amendments will enter into force in 2024 and concluded the IMO work on modernization of the GMDSS.

One of the changes to the SOLAS Convention is the removal of non-406 MHz satellite emergency position indicating radio beacons (EPIRBs), leaving only satellite EPIRBs operating on 406 MHz. Consequently, satellite EPIRBs operating on 1.6 GHz (1 645.5-1 646.5 MHz) and EPIRBs using VHF-DSC (Very High Frequency Digital Selective Calling) operating at 156.525 MHz no longer form a part of the GMDSS. Given the removal of 1.6 GHz EPIRBs by the IMO, and noting that the use of the 1.6 GHz EPIRB has already ceased operation, WRC-23 may consider possible changes to the RR related to use of the band 1 645.5-1 646.5 MHz (Earth-to-space) for EPIRBs under issue A of AI 1.11.

**Issue B (*resolves 2*): E-navigation**

The e-navigation is a concept under study at IMO since the MSC 81 in 2005. The definition of e‑navigation is given by IMO:

“E-navigation is the harmonized collection, integration, exchange, presentation and analysis of marine information on board and ashore by electronic means to enhance berth to berth navigation and related services for safety and security at sea and protection of the marine environment.”

As shipping moves into the digital world, e-navigation is expected to provide digital communications and digital information for the benefit of maritime safety, security and protection of the marine environment, reducing the administrative burden and increasing the efficiency of maritime trade and transport.

Among the objectives of the e-navigation, quoting the strategy implementation plan (SIP) of the IMO, there are the improvements of communications in general, the standardization and automation of ship’s reporting and the integration and presentation of available information in graphical displays received via communication equipment.

Communication is a key element for e-navigation. Future communication systems should be digital and could include VHF data exchange system (VDES) and in the future NAVDAT and be developed to facilitate wide information management solutions.

**Issue C (*resolves 3*): Introduction of additional satellite systems into the GMDSS**

Two satellite systems provide safety communication in the GMDSS. IMO is considering to introduce an additional GSO MSS system for GMDSS. This may require new or modified regulatory provisions in the Radio Regulations, based on the results of the ITU-R studies, to ensure the protection of GMDSS operation, and compatible operation with other allocated services.

**2. Preliminary Views**

Issue A: GMDSS Modernization

Thailand supports the followings:

* The deletion of the NBDP for distress and safety communications from GMDSS in RR Appendices 15 and 17 for MF and HF in all bands;
* The implementation of an ACS using DSC technology on the frequencies which had previously been used by NBDP for GMDSS in MF and all HF bands in RR Article 5 and Appendix 17;
* The introduction of the NAVDAT frequencies in MF and HF in RR Appendix 15 and modification of the relevant provisions;
* To implement Automatic identification system search and rescue transmitter (AIS SART) as locating equipment for which frequencies are protected by reference in RR Appendix 15; and
* To modify RR Article 5 and Appendix 15 such that the frequency band 1 645.5-1 646.5 MHz is no longer limited to use exclusively by satellite EPIRBs. The band would be available for use for the GMDSS and for general maritime radiocommunications.

Issue B: E-navigation

Thailand supports no change to RR Article 5.

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