



*International Civil Aviation Organization*

ICAO

**FIFTH MEETING OF SPECTRUM REVIEW WORKING GROUP (SRWG/5)**

Video Teleconference, 15 – 17 March 2021

**Agenda Item 4:** Frequency coordination process and improvement for the Asia/Pacific Region

**FREQUENCY ASSIGNMENT PLANNING TOOL  
TO SUPPORT COMMUNICATION VIA  
SATELLITE AND NEW EMERGING TECHNOLOGIES**

(Presented by Thailand)

**SUMMARY**

Current frequency assignment planning tool within APAC have been mainly for terrestrial-based VHF communication services. New technologies are now emerging that could potentially be used as a communication relay platform to provide an effective communication means. This paper proposes to have in place frequency assignment planning tool to support voice communication via satellite and emerging technologies, taking into consideration the current frequency assignment to existing terrestrial-based VHF communication services.

**1. INTRODUCTION**

1.1 This paper proposes to have in place frequency assignment planning tool to support voice communication via satellite and emerging technologies.

**2. DISCUSSION**

2.1 Providing communication in remote and oceanic areas has always been a challenge. There were often no practical or cost-effective solutions. If a solution was required to provide communication to these areas, satellite was often the only available solution. New technologies are now emerging that could potentially be used as a communication relay platform to provide communication between aircraft and air traffic control centres in remote areas or oceanic areas. High-altitude platform station (HAPS) system is one of the emerging technologies.

2.2 The International Telecommunications Union (ITU) defines HAPS as radio stations located on an object at an altitude of 20-50 kilometers and at a specified, nominal, fixed point relative to the Earth. The “object” stated can be solar-powered aircraft and airships. With HAP’s operating altitude, advances in solar panel efficiency, lightweight composite materials, battery energy density etc., a large area can be covered and can be continuously operated for several months. HAPS are also easily deployable stations with minimal ground network infrastructure requirements. World Radiocommunication Conferences have also agreed to allocate frequencies for worldwide use by HAPS.

2.3 The performance and cost have made this new technology attractive. The quality of service for voice communication for HAP is expected to be better than those of satellite. This is due to shorter latency compared to that of the satellite, even for satellite in the low earth orbit. This is attractive for aviation use where this could allow for a reduction in the separation of aircraft in oceanic, remote and oceanic areas, enhancing airspace efficiency and capacity.

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2.4 Frequency assignment planning for Asia Pacific Region is based on Conclusion 12/9 of ICAO Third Asia/Pacific Regional Air Navigation (ASIA/PAC/3 RAN) Meeting. The procedure and software tool used to assist with frequency assignment planning have been mainly for terrestrial-based VHF communication services. As State(s) within APAC is already looking into using satellite and/or new emerging technology (HAPS), frequency assignment planning tool to support voice communication using satellite and emerging technologies as relay platform, taking into account existing VHF assignment for terrestrial-based VHF communication services is necessary. This will allow satellite and new technologies to be deployed to provide an effective communication means for radar like service in remote and oceanic. At the same time, it will allow for frequency re-use and interference free operation to existing terrestrial-based VHF communication services. This will also reduce the need to segregate portion(s) of the VHF band to terrestrial-based VHF communication services and another portion(s) to satellite-based VHF communication services in an already congested VHF band.

2.5 With reference to the aforementioned, a draft conclusion is formulated and proposed for endorsement by the SRWG as follows:

<b>Draft Conclusion SRWG/5/X - Frequency Assignment Planning Needs for Satellite and New Emerging Technology</b>	
<b>What:</b> That, ICAO is requested to have in place frequency assignment planning tool to support voice communication via satellite and new emerging technologies for the Asia/Pacific Region.	<b>Expected impact:</b> <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
<b>Why:</b> To enable States to deploy satellite and new emerging technologies as communication relay platform to provide an effective communication means for radar-like separation in remote and oceanic area, while ensuring interference free operation to existing terrestrial-based VHF communication services and their future planned usage.	<b>Follow-up:</b> <input checked="" type="checkbox"/> Required from ICAO APAC RO
<b>When:</b> 15-Mar-21	<b>Status:</b> Draft to be adopted by PIRG
<b>Who:</b> <input checked="" type="checkbox"/> Sub groups <input type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input checked="" type="checkbox"/> ICAO HQ <input type="checkbox"/> Other: XXXX	

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) review and adopt draft Conclusion proposed in paragraph 2.5.

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