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| APTlogogreen3 | ASIA-PACIFIC TELECOMMUNITY | **Document:**  |
| **The 2nd Meeting of the APT Conference Preparatory Group for WRC-19 (APG19-2)** | **APG19-2/OUT-20** |
| 17 – 21 July 2017, Bali, Republic of Indonesia | **21 July 2017** |

Working Party 5

**PRELIMINARY VIEWs on WRC-19 agenda item 9.1 IsSue 9.1.4**

**Agenda Item 9.1 Issue 9.1.4:**

*to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the Convention;*

*Issue 9.1.4* ***Resolution 763(WRC-15)*** *– Stations on board sub-orbital vehicles*

**1. Background**

A sub-orbital vehicle could travel to an altitude beyond 100 km, which is generally taken as the boundary between the Earth’s atmosphere and outer space, but not remain operational in outer space for an extended period of time. The introduction of such vehicles will bring a number of challenges to the spectrum and frequency management communities. Radiocommunication stations on board sub-orbital vehicles cannot necessarily be regarded as terrestrial stations. However, since the sub-orbital vehicles are not envisaged to establish an orbital trajectory or remain operational in outer space, those stations on board cannot necessarily be considered as space stations. As a result, it is not clear what radio service(s) would be appropriate. From a frequency management perspective, planning rules for stations on board sub-orbital vehicles need to consider that their field of view is significantly greater than that of an equivalent station on board an aircraft flying at an altitude around 35 000 ft.

Studies are therefore required to establish a common understanding as to how stations on board sub‑orbital vehicles should be regarded in radio regulatory terms and whether a new category of service or station needs to be established. Furthermore, studies are needed to determine what spectrum will be required to ensure their safe operation, including their passage through the airspace used by conventional aircraft. Concerning technical matters, it is also essential to identify any required technical and operational measures, in relation to stations on-board suborbital vehicles, that could assist in avoiding harmful interference between radiocommunication services. Following that ITU-R in 2015 formulated Question ITU-R No. [259/5](http://www.itu.int/pub/R-QUE-SG05.259), "Operational and radio regulatory aspects for planes operating in the upper level of the atmosphere", and that studies in the framework of that Question are expected to be completed in 2019. In particular, *decides* 3 of that Question asks, "what radio links will be required to support space planes operations and under what radiocommunication service definition will they fall?"

WRC-15 adopted Resolution **763 (WRC‑15),** and associated work for WRC-19 under agenda item 9.1 issue 9.1.4. In accordance with *resolves to invite the ITU Radiocommunication Sector 1*, it is necessary "to conduct studies to identify any required technical and operational measures, in relation to stations on-board suborbital vehicles, that could assist in avoiding harmful interference between radiocommunication services." In accordance with *resolves to invite the ITU Radiocommunication Sector 2*, it is necessary "to conduct studies to determine spectrum requirements and, based on the outcome of those studies, to consider a possible future agenda item for WRC-23."

ITU-R WP 5B，as the responsible group for agenda item 9.1 issue 9.1.4, has carried out through discussion and studies on issues of sub-orbital space flight, sub-orbital vehicle and station on board of sub-orbital vehicle, etc. These fundamental definitions and concepts will be very crucial for further studies on agenda item 9.1 issue 9.1.4. In May 2017, ITU-R WP5B has developed a working document towards a preliminary draft new report ITU-R M. [Suborbital Vehicles].

**2. Documents**

**2.1 Input Documents**

* APG 19-2/INP-12 from Rep. of Korea
* APG 19-2/INP-24 from New Zealand
* APG 19-2/INP-48 from S.R. of Vietnam
* APG 19-2/INP-53 from P.R. of China

**2.2 Information Documents**

* APG 19-2/INF-02 from ICAO
* APG 19-2/INF-03 from ITU Radiocommunications Bureau
* APG 19-2/INF-04 from CITEL
* APG 19-2/INF-05 from RCC
* APG 19-2/INF-06 from IARU
* APG 19-2/INF-07 from ATU
* APG 19-2/INF-14 from CEPT

**3. Summary of Discussions**

**3.1 Summary of Members’ view**

**3.1.1 Republic of Korea**

The Republic of Korea supports the ITU-R studies in accordance with Resolution **763 (WRC-15)** to identify technical and operational measures in relation to on board sub-orbital vehicles needed to protect existing services from possible harmful interference and to determine spectrum requirements.

**3.1.2 New Zealand**

New Zealand supports the ITU-R studies undertaken in accordance with Resolution **763 (WRC-15)** including the need to clarify the definition of stations on board sub-orbital vehicles.

**3.1.3 S.R. of Vietnam**

Viet Nam Administration supports studies being undertaken by ITU-R on this issue and is of the view that:

* Concept, definition, operation and functions of stations on board sub-orbital vehicles should be clearly defined, including which radiocommunication service it operating on,
* Further action would be specified in accordance with above results.

**3.1.4 P.R. of China**

This administration is of the following views:

* Support ITU-R to carry out studies on issues of the stations on board suborbital vehicles in accordance with Resolution 763;
* With the development of space technology in the future, it can be predicted that suborbital flight will have a broad market prospect in the commercial and scientific research fields;
* Further studies are needed for the aspects such as relevant definitions, flight mode and safety assurance of suborbital flight;
* Further studies are needed on the type of the radio station on suborbital vehicle, the type of permitted services, the spectrum needs and the technical and operational measures to ensure the safety of the flight, in order to standardize the management and avoid causing harmful interference to other radio communication services.

**3.2 Key points raised during the meeting**

None

**4. APT Preliminary View(s)**

APT Members support the ITU-R studies in accordance with Resolution **763 (WRC-15)**.

**5. Other Views**

None

**6. Views from Other Organisations**

**6.1. CITEL**

* (Preliminary View) Canada and USA support studies called for by Resolution 763 (WRC‐15), noting that those studies need to be completed during this study cycle. Based on the outcome of those studies, consider a possible future agenda item for WRC‐23.
* (Preliminary View) Canada is of the view that existing station and service definitions in Article 1 of the Radio Regulations can be applied to sub‐orbital vehicles (space planes).

**6.2 RCC**

* The RCC Administrations are in favor of identification of services where stations ensuring sub-orbital flights shall be operated, as well as consideration of applicability of current regulatory provisions and procedures for terrestrial and space services for international recognition of relevant frequency assignments to stations on board sub-orbital vehicles.
* The RCC Administrations consider it necessary to develop technical and operational measures which would help to avoid harmful interference to radiocommunication services from stations on board sub-orbital vehicles. These technical and operational measures shall be specified in the new ITU-R Recommendation and Report. At the same time, the developed technical and operational measures shall not impose additional constraints on the operation of launch vehicles during spacecraft launching period.

**6.3 CEPT**

* + the ITU-R studies called for by Resolution 763 should be supported; based on the results of those studies, what action is to be taken should be determined;
	+ stations on board suborbital vehicles shall not cause harmful interference nor impose additional constraints on systems operating under the incumbent services.
	+ suborbital vehicles need to be differentiated from current satellite launch vehicles.

**6.4. ICAO**

* To support the studies called for by Resolution 763 (WRC 15) noting that those studies need to be completed during this study cycle.
* If the results of studies indicate that additional spectrum and/or other regulatory measures are required, seek an agenda item for WRC-23.

**6.5. IARU**

This issue is of concern to the IARU only if spectrum requirements for space planes are identified that are in addition to the existing allocations for aeronautical and space operation services and if, therefore, a possible future agenda item for WRC-23 is developed.

**7. Issues for Consideration at Next APG Meeting**

APT Members are encouraged to contribute to this Agenda Item at the next APG-19 meeting.

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