

PLENARY MEETING

**Addendum 3 to
Document 6175(Add.14)-
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29 August 2019
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Member States of the Inter-American Telecommunication Commission (CITEL)

PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda item 1.14

1.14 to consider, on the basis of ITU-R studies in accordance with Resolution **160 (WRC-15)**, appropriate regulatory actions for high-altitude platform stations (HAPS), within existing fixed-service allocations;

Part 3 – Frequency band 38-39.5 GHz

BACKGROUND

No. 1.66A of the ITU Radio Regulations define a high-altitude platform station (HAPS) as "a station on an object at an altitude of 20 to 50 km and at a specified, nominal, fixed point relative to the Earth".

Advances in aeronautics and transmission technologies have significantly improved the capabilities of HAPS to provide effective connectivity solutions and meet the growing demand for high capacity broadband networks, particularly in currently underserved areas. Recently conducted full-scale test flights have shown that solar-powered platforms in the upper-atmosphere can now be used to carry payloads that offer reliable and cost-effective connectivity, and a growing number of applications for the new generation of HAPS are being developed. The technology appears particularly well suited to provide backhaul for terrestrial networks and facilitate emergency response in case of natural disaster.

Agenda Item 1.14 was adopted by WRC-15 to consider, in accordance with Resolution 160 (WRC-15), regulatory actions to facilitate deployment of HAPS for broadband applications. Resolution 160 resolves to invite ITU-R to study additional spectrum needs of HAPS, considering changes of regulatory provisions in existing HAPS identifications and potential new identifications in the 38-39.5 GHz band on a global basis and in 21.4-22 GHz and 24.25-27.5 GHz bands in Region 2 exclusively.

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations

(See No. 2.1)

MOD IAP/6175A14A3/1

34.2-40 GHz

Allocation to services		
Region 1	Region 2	Region 3
38-39.5	FIXED ADD 5.G114 FIXED-SATELLITE (space-to-Earth) MOBILE Earth exploration-satellite (space-to-Earth) 5.547	

Reasons: To add a footnote to the 38-39.5 GHz band allowing HAPS to operate in the fixed service allocation.

ADD IAP/6175A14A3/2

5.G114 The allocation to the fixed service in the band 38-39.5 GHz is identified for worldwide use by high-altitude platform stations (HAPS). Such use of the fixed-service allocation by HAPS is limited to the ground-to-HAPS direction. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated on a co-primary basis and does not establish priority in the Radio Regulations. (WRC-19)

Reasons: To add the text of the footnote allowing HAPS to operate in the fixed service allocation in the 38-39.5 GHz band.

ADD IAP/6175A14A3/3

DRAFT NEW RESOLUTION [IAP/G114] (WRC-19)

Use of the bands 38-39.5 GHz by high-altitude platform stations in the fixed service worldwide

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

considering

a) that WRC-15 decided to conduct studies to address the need for greater broadband connectivity in underserved communities and in rural and remote areas, that current technologies can be used to deliver broadband applications by high-altitude platform stations (HAPS), which can provide broadband connectivity and disaster recovery communications with minimal ground network infrastructure;

- b) that WRC-15 decided to study additional spectrum needs for fixed HAPS links to provide broadband connectivity, including within the band 38 – 39.5 GHz, recognizing that the existing HAPS designations were established without reference to today’s broadband capabilities;
- c) that HAPS can provide broadband connectivity with minimal ground network infrastructure;
- d) that Recommendation ITU-R P.618, “Propagation data and prediction methods required for the design of Earth-space telecommunication systems”, should be used to determine rain fade attenuation from HAPS platforms;
- e) that Recommendation ITU-R P.452, “Prediction procedure for the evaluation of interference between stations on the surface of the Earth at frequencies above about 0.1 GHz”, should be used to determine the propagation loss in the ground path from HAPS ground stations;
- f) that Recommendation ITU-R SF.1395, “Minimum propagation attenuation due to atmospheric gases for use in frequency sharing studies between the fixed-satellite service and the fixed service”, should be used to determine the gaseous attenuation;
- g) that Recommendation ITU-R P.2108, “Prediction of Clutter Loss”, should be used to determine the clutter loss,

resolves

- 1 that in making assignments identifications to HAPS ground stations in the fixed service in the bands 38-39.5 GHz, administrations shall protect the space research service (space-to-Earth) in the bands 37-38 GHz from harmful interference by unwanted emissions, taking into account the space research service (space-to-Earth) protection level of -217 dB(W/Hz) at the input terminals of the SRS receiver with 0.001% exceedance due to atmospheric and precipitation effects
- 2 that for the purpose of protecting terrestrial mobile service systems in neighboring administrations in the frequency range 38-39.5 GHz, the power flux density limit per HAPS ground station at the surface of the Earth, applied at the border of affected neighboring administrations shall not exceed a pfd limit of -107.8 (dBW/m²/MHz) without the explicit agreement from the affected administration. This limit does take into account 3 dB aggregate loss due to polarization mismatch. However, the limit does not take into account body loss.
- 3 that for the purpose of protecting FSS GSO and NGSO earth station systems in the fixed satellite service (space to-Earth) in neighboring administrations, coordination of a transmitting HAPS ground station is required when the power-flux density in dB(W/m²/MHz) at the border of a neighboring administration exceeds a pfd limit of -111.3 dB(W/m²/MHz) for NGSO operations and -108.9 dB(W/m²/MHz) for GSO operations and the pfd values shall be verified considering a percentage of time of 20% in the relevant propagation model,
- 4 that administrations planning to implement a HAPS system in the 38-39.5 GHz band shall notify the frequency assignments by submitting all mandatory elements of Appendix 4 to the Bureau for the examination of compliance with respect to the Radio Regulations with a view to their registration in the Master International Frequency Register;

instructs the Director of the Radiocommunication Bureau

to take all necessary measures to implement this Resolution.

Reasons: To allow HAPS to operate in the fixed service allocation in the 38-39.5 GHz band on a worldwide basis.