



## **GVF position on AI 1.14**

**Overview:** WRC-19 Agenda Item 1.14 considers, based on the spectrum requirements of HAPS, the review of current HAPS identifications and the consideration of certain new bands identified for HAPS. Some of these current and new bands under consideration overlap with the Fixed Satellite Service.

Several of the bands being considered under this agenda item for HAPS overlap allocations to the FSS, including the 27.9-28.2 GHz band, and the 38-39.5 GHz band, and the 47.2-47.5/47.9-48.2 GHz bands. Each of these bands is addressed here:<sup>1</sup>

### **The 27.9-28.2 GHz Band**

The **27.9-28.2 GHz** band is used today to provide broadband connectivity around the world. There are over one hundred commercial Ka band satellites in orbit and many more are under development.

The ITU-R has conducted sharing studies to address the compatibility between FSS and HAPS limited to the HAPS-to-ground direction in the 27.9-28.2 GHz band. The results of these studies show that interference from the HAPS platform into the FSS space station receivers would be acceptable for the considered technical characteristics of the HAPS systems, provided that the emissions from the HAPS platform are limited above certain off-nadir pointing angles. For the case of potential interference from FSS earth station transmitters into receiving HAPS ground stations, the separation distances that would be needed to protect HAPS ground station from the interference that FSS earth stations generate in their antenna side lobes can be up to tens of kilometers.

In the countries where HAPS in the fixed service is identified today, the identification is on a secondary basis – in other words, the HAPS ground stations cannot claim protection from FSS earth station interference. The study resolution for Agenda Item 1.14 (Resolution **160 (WRC-15)**) recognizes that no undue constraints are to be imposed on the future development of existing services by the introduction or possible extension of HAPS identifications. The required separation distances, considering the current and planned deployment of FSS earth station in the 27.9-28.2 GHz band, indicate that sharing between both services in the same status of priority will not be feasible, therefore we propose to do not modify the current regulatory status of the band, so that HAPS shall not constraint the development of, cause harmful interference to, nor claim protection from, other services including FSS.

### **The 38-39.5 GHz Band**

With respect to the 38-39.5 GHz band, one of the options that will be considered at WRC-19 is an identification for HAPS in the fixed service on a worldwide basis in the HAPS-to-ground direction, which would be co-directional with the use of the band by the FSS in the space-to-Earth direction. See Method

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<sup>1</sup> Other bands being considered under this agenda item for HAPS that overlap allocations to the FSS – 6,440-6,520, 6 560-6 640 MHz and 24.25-27.5 GHz – are not addressed here.

8B2 – Option 1A of the CPM Report. Such co-directional operation is likely to result in substantial disruption to planned FSS services in the band due to a high risk of interference, and should be avoided. Even if an identification is sought to allow HAPS in the ground-to-HAPS direction, it is clear that separation distances will be required between HAPS ground stations and FSS receiving earth stations. To the extent that an administration chooses to operate HAPS in the FS in portions of this band, there will need to be power limits on HAPS to protect FSS earth stations in neighboring countries. Method 8B2 Option 2 of the CPM Report addresses protection of the FSS in this direction, but it is not yet agreed that the option offers adequate protection to the FSS in this band.

#### **The 47.2-47.5 GHz and 47.9-48.2 GHz Bands**

With respect to the 47.2-47.5 and 47.9-48.2 GHz bands, HAPS is presently authorized under the conditions of Resolution **122 (Rev. WRC-07)**, which contains provisions for sharing with the FSS. Fade compensation of up to 5 dB is permitted during periods of rain. Any increase in the permitted fade compensation should be limited to the extent necessary and conditioned upon no PFD increase observed at an FSS space station.

The GVF prefers the status quo, which permits the operation of HAPS in these bands, be maintained (Method 9A of the CPM Report). If additional fade compensation is granted to HAPS, it should be limited to the extent necessary to compensate for the rain. Method 9B1 Example 2 would allow for this while providing sufficient protection to FSS in these bands. Also, if HAPS is allowed in the HAPS-to-ground direction, there will need to be added an off-nadir e.i.r.p. density limit on HAPS to protect receiving FSS space stations.

**The GVF recommends** any identification of additional HAPS spectrum in FS bands under Agenda Item 1.14 should be made only with regulatory conditions that ensure the protection and future deployment of FSS, and do not impose undue constraints (including coordination) on the FSS.

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