RESOLUTION 143 (REV.WRC-19)

Guidelines for the implementation of high-density applications in the fixed-satellite service in frequency bands identified for these applications

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

considering

a) that demand has been increasing steadily for global broadband communication services throughout the world, such as those provided by high-density applications in the fixed-satellite service (HDFSS);

b) that HDFSS systems are characterized by flexible, rapid and ubiquitous deployment of large numbers of cost-optimized earth stations employing small antennas and having common technical characteristics;

c) that HDFSS is an advanced broadband communication application concept that will provide access to a wide range of broadband telecommunication applications supported by fixed telecommunication networks (including the Internet), and thus will complement other telecommunication systems;

d) that, as with other fixed-satellite service (FSS) systems, HDFSS offers great potential to establish telecommunication infrastructure rapidly;

e) that HDFSS applications can be provided by satellites of any orbital type;

f) that interference mitigation techniques have been and continue to be studied in the ITU Radiocommunication Sector (ITU-R) to facilitate sharing between HDFSS earth stations and terrestrial services;

g) that, to date, studies have not concluded on the practicability of implementation of interference mitigation techniques for all HDFSS earth stations,

noting

a) that No. **5.516B** identifies frequency bands for HDFSS;

b) that, in some of these frequency bands, the FSS allocations are co-primary with fixed- and mobile-service allocations as well as other services;

c) that this identification does not preclude the use of these frequency bands by other services or by other FSS applications, and does not establish priority in these Radio Regulations among users of the frequency bands;

d) that, in the frequency band 18.6-18.8 GHz, the FSS allocation is co-primary with the Earth exploration-satellite service (EESS) (passive) with the restrictions of Nos. **5.522A** and **5.522B**;

e) that radio astronomy observations are carried out in the frequency band 48.94-49.04 GHz, and that such observations require protection at notified radio astronomy stations;

f) that co-frequency sharing between transmitting HDFSS earth stations and terrestrial services is difficult in the same geographical area;

g) that co-frequency sharing between receiving HDFSS earth stations and terrestrial stations in the same geographical area may be facilitated through the implementation of interference mitigation techniques, if practicable;

h) that many FSS systems with other types of earth stations and characteristics have already been brought into use or are planned to be brought into use in some of the frequency bands identified for HDFSS in No. **5.516B**;

i) that HDFSS stations in these frequency bands are expected to be deployed in large numbers over urban, suburban and rural areas of large geographical extent;

j) that the frequency band 50.2-50.4 GHz, adjacent to the frequency band 48.2-50.2 GHz (Earth-to-space) identified for HDFSS in Region 2, is allocated to the EESS (passive),

recognizing

a) that in cases where FSS earth stations use frequency bands that are shared on a co-primary basis with terrestrial services, the Radio Regulations stipulate that earth stations of the FSS shall be individually notified to the Radiocommunication Bureau when their coordination contours extend into the territory of another administration;

b) that, as a consequence of their general characteristics, it is expected that the coordination of HDFSS earth stations with fixed-service stations on an individual site-by-site basis between administrations will be a difficult and long process;

c) that, to minimize the burden for administrations, simplified coordination procedures and provisions can be agreed by administrations for large numbers of similar HDFSS earth stations associated with a given satellite system;

d) that harmonized worldwide frequency bands for HDFSS would facilitate the implementation of HDFSS, thereby helping to maximize global access and economies of scale,

recognizing further

that HDFSS applications implemented on FSS networks and systems are subject to all provisions of the Radio Regulations applicable to the FSS, such as coordination and notification pursuant to Articles **9** and **11**, including any requirements to coordinate with terrestrial services of other countries, and the provisions of Articles **21** and **22**,

resolves

that administrations which implement HDFSS should consider the following guidelines:

a) make some or all of the frequency bands identified in No. **5.516B** available for HDFSS applications;

b) in making frequency bands available under *resolves a)*, take into account:

– that HDFSS deployment will be simplified in frequency bands that are not shared with terrestrial services;

– in frequency bands shared with terrestrial services, the impact that the further deployment of terrestrial stations would have on the existing and future development of HDFSS, and the further deployment of HDFSS earth stations would have on the existing and future development of terrestrial services;

c) take into account the relevant technical characteristics applicable to HDFSS, as identified by ITU-R Recommendations (e.g. the most recent versions of Recommendations ITU-R S.524, ITU-R S.1594 and ITU-R S.1783);

d) take into account other existing and planned FSS systems, having different characteristics, in frequency bands where HDFSS is implemented in accordance with *resolves a)* above, and the conditions specified in No. **5.516B**,

invites administrations

1 to give due consideration to the benefits of harmonized utilization of the spectrum for HDFSS on a global basis, taking into account the use and planned use of these frequency bands by all other services to which they are allocated, as well as other types of FSS applications;

2 to consider implementing simplified procedures and provisions that facilitate the deployment of HDFSS systems in some or all of the frequency bands identified in No. **5.516B**;

3 when considering the deployment of HDFSS systems in the upper portion of the frequency band 48.2-50.2 GHz, to take into account as appropriate the potential impact such deployment may have on the satellite passive services in the adjacent frequency band 50.2-50.4 GHz, and to participate in ITU-R studies on the compatibility between these services, taking into account No. **5.340**;

4 to consider, given *invites administrations* 3 above, and where practicable, starting the deployment of HDFSS earth stations in the lower part of the frequency band 48.2-50.2 GHz.