



Resolution SFCG 21-3R4

**PROTECTION OF EESS SENSORS (ACTIVE AND PASSIVE) FROM
ULTRA WIDEBAND DEVICE AND SHORT RANGE DEVICE
EMISSIONS**

The SFCG

CONSIDERING

- a) that active and passive microwave sensors on board spacecraft operating in the Earth exploration-satellite service (EESS) are an important tool for monitoring the Earth's environment;
- b) that certain frequency bands are restricted for use by the passive services only and RR No. **5.340** stipulates that all emissions are prohibited in these bands;
- c) that other frequency bands are allocated to the passive services and are shared with some active services;
- d) that the passive sensing instruments by their nature are very sensitive to any emissions within the sensor band and operate by integrating a very low signal over time across a relatively large bandwidth (tens to hundreds of MHz);
- e) that any emissions (single entry or aggregate) that raise the noise floor in bands allocated to EESS (active) and EESS (passive) service may degrade the performance of spaceborne sensors using those bands;
- f) that ultra wide-band (UWB) devices generate emissions over a very wide bandwidth but typically at low power levels;
- g) that the aggregate effect and the extreme wideband nature of such devices may cause interference in frequency bands allocated to active and passive remote sensing;
- h) that UWB and short range device (SRD) technologies enable a wide assortment of applications including, but not limited to, through-the-wall imaging, ground-penetrating radars, collision-avoidance radars as well as communication and security applications;

- i) that authorization for UWB and SRD technology usage occurs on an administration-by-administration basis;
- j) that administrations can authorize usage of spectrum, within their borders, in a manner not in accordance with the Radio Regulations with the understanding that the nationally authorized usage will not affect other administrations' spectrum usage that is in accordance with the Radio Regulations.
- k) that some administrations have adopted regulations permitting the operation of UWB and SRD devices on a license-exempt, non-interference basis;
- l) that administrations that intend to adopt national regulations authorizing UWB or SRD technology usage typically provide a process that accepts and considers comments regarding these pending national regulations;

RECOGNIZING

1. that the automotive industry has identified the band 22-29 GHz for implementation of UWB vehicular short-range radars;
2. that the band 23.6-24 GHz is part of a set of unique critical bands that are essential for numerical weather prediction and climate monitoring and is protected by RR No. **5.340**;
3. that all studies have shown that UWB vehicular short-range radars and passive sensors operating in the 23.6-24 GHz band are incompatible, and all studies have resulted in negative margins in excess of 10 dB;
4. that although UWB vehicular radars are expected to move out of the 22-29 GHz band to bands around 79 GHz, current vehicular systems using the 22-29 GHz band will likely remain in service long after newer vehicular radars have transitioned to bands around 79 GHz and thus may have a long-lasting impact on 24 GHz EESS (passive);
5. that the deployment of UWB or SRD devices may also impact other systems in the EESS and meteorological community, such as Search and Rescue and Metatids;
6. that ITU-R Recommendations SM.1755, SM.1757, SM.1538, SM.1896 provide technical characteristics and preferred frequency bands of operation for UWB and SRD devices;
7. that frequency bands commonly used by SRDs are listed in Table 1 of the latest version of Report ITU-R SM.2153, however not all of these bands are globally or regionally harmonized,

8. that PDNR ITU-R Recommendation RS.[ACTIVE_CHAR] provides characteristics and allocated frequency bands of operation for EESS (active);
9. that Recommendation ITU-R RS.1861 provides characteristics of EESS (passive) systems;
10. that Recommendations ITU-R RS.1166 and RS.2017 provide the protection criteria for EESS (active) and EESS (passive), respectively.

RESOLVES

1. that member agencies work within their administrations to ensure that UWB and SRD devices avoid emissions in bands exclusively allocated to passive services;
2. that member agencies work within their administrations to ensure that UWB and SRD devices avoid generating harmful emissions in the other bands allocated to active and passive sensors and those additional bands listed in Recommendations ITU-R RS.515 and RS.577.
3. that member agencies that become aware of an administration's intention to authorize the usage of UWB or SRD technology in bands allocated to, or adjacent to, bands allocated to EESS (active) or EESS (passive) inform the other member agencies of that fact;
4. that the member agencies, informed as in RESOLVES 3, and other affected scientific interests be encouraged to submit comments to the administration's public enquiry process regarding the proposed regulations before the UWB or SRD applications are authorised;
5. that member agencies continue to study the impact of the introduction of UWB and SRD devices into, and adjacent to, bands listed in Recommendations ITU-R RS.515 and RS.577.