

ELECTRONIC COMMUNICATIONS COMMITTEE

ECC Decision
of 12 November 2010
on sharing conditions in the 10.6-10.68 GHz band
between the fixed service, mobile service and Earth
exploration satellite service (passive)

(ECC/DEC/(10)01)



EXPLANATORY MEMORANDUM

1 INTRODUCTION

This ECC Decision has been developed with the aim of providing long-term coexistence conditions between fixed service (FS), mobile service (MS) and Earth exploration satellite service (EESS) (passive) in the band 10.6-10.68 GHz.

It provides relevant sharing conditions to apply to stations of the abovementioned services to ensure a relevant and long-term protection of EESS (passive) sensors.

2 BACKGROUND

World Radiocommunication Conference 2007 (WRC-07) took important decisions concerning the protection of the Earth exploration satellite service passive bands, in particular under its agenda item 1.2 with the adoption of Resolutions 751(WRC-07), referred by footnote 5.482A addressing co-sharing conditions between active services and EESS (passive) in the 10.6-10.68 GHz band.

Although this Resolution 751 (WRC-07) recommends levels, the discussions during WRC-07 showed that no administration argued against ensuring protection of EESS (passive) and that administrations having advocated recommended levels mainly presented arguments in relation to the application schedule of these limits highlighting regulatory constraints in relation with current issued licenses or requiring time for development of equipment fulfilling the requirements specified at WRC-07.

ECC further considered this WRC-07 resolution and came to the conclusion that translating the recommended levels adopted at WRC-07 into mandatory limits within an ECC Decision would provide a clear and non-ambiguous message toward reaching long term EESS (passive) bands protection and will also give a clear sign to the international community about the recognition by Europe of the societal and economical values of these applications related to climate monitoring and natural disasters prediction.

It is also to be noted that the scientific community accepted to make mandatory also the limits applicable to the EESS (passive) operations, with the understanding that any sharing agreement must imply some concessions on both sides.

3 REQUIREMENT FOR AN ECC DECISION

The allocation or designation of frequency bands under specified conditions in CEPT member countries is laid down by law, regulation or administrative action. ECC Decisions are required to deal with the carriage and use of equipment throughout Europe.

The ECC also recognizes that a clear and non-ambiguous message toward reaching long term EESS (passive) bands protection is necessary, stressing the societal and economical values of these applications related to global warming and natural disasters prediction.

The harmonisation on a European basis of the condition of use of the 10.6-10.68 GHz would be in particular consistent with the *Radio Spectrum Policy Group Report and Opinion on "a coordinated EU spectrum approach for scientific use of radio spectrum"* and would represent a clear sign to the international community about the importance of such applications.

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**on sharing conditions in the 10.6-10.68 GHz band between the
fixed service, mobile service and Earth exploration satellite service (passive)**

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“The European Conference of Postal and Telecommunications Administrations,

considering

- a) that the frequency band 10.6-10.7 GHz is allocated to the Earth exploration-satellite service (EESS) (passive), radio astronomy service and to the space research service (passive) on a primary basis;
- b) that the band 10.6-10.7 GHz is of primary interest for the measurement of rain, snow, sea state, ocean wind and soil moisture;
- c) that EESS (passive) sensors provide worldwide measurements that benefit all countries, even if these sensors are not operated by their country;
- d) that this frequency band is used by passive sensors to study natural phenomena producing radio emissions at frequencies fixed by the laws of nature, and therefore shifting frequency to avoid or mitigate interference problems may not be possible;
- e) that the band 10.68-10.7 GHz is covered by No. 5.340 of the Radio Regulation and no emission is therefore authorised in this band;
- f) that the frequency band 10.6-10.68 GHz is also allocated to the mobile, except aeronautical mobile, and the fixed services on a primary basis;
- g) that experience has shown that EESS (passive) sensors currently operating in the band 10.6-10.68 GHz are facing high interference levels from the emissions of systems of active services in some parts of the world;
- h) that studies have concluded that appropriate sharing criteria applicable to both passive and active services would reduce this interference to a level that would permit passive sensors to operate successfully, while allowing continuing operation of active services in the same band,
- i) that WRC-07 adopted Resolution 751 to urge administrations to take all reasonable steps to comply with the recommended relevant sharing criteria between EESS and FS and MS
- j) that translating these sharing criteria into mandatory limits in CEPT would ensure future EESS (passive) operations in these bands and will also give a clear sign to the international community about the recognition by CEPT of the societal and economical values of these applications related to global warming and natural disasters prediction.

DECIDES

1. that this ECC Decision defines sharing conditions for the use in CEPT countries for fixed service, mobile service and Earth exploration satellite service (passive) in the 10.6-10.68 GHz band;
2. that the technical requirements detailed in the Annex apply to fixed service, mobile service and Earth exploration satellite service (passive) stations under this ECC Decision;
3. that this Decision enters into force on 12 November 2010;
4. that the preferred date for implementation of this Decision shall be 30 May 2011;
5. that CEPT administrations shall communicate the national measures implementing this Decision to the ECC Chairman and the Office when the Decision is nationally implemented.”

Note:

Please check the Office web site (www.ero.dk) for the up to date position on the implementation of this and other ERC/ECTRA/ECC Decisions.

ANNEX

SHARING CRITERIA IN THE BAND 10.6-10.68 GHz

Note :

For the purpose of this Annex:

- *point-to-point communication is defined as radiocommunication provided by a link, for example a radio-relay link, between two stations located at specified fixed points;*
- *point-to-multipoint communication is defined as radiocommunication provided by links between a single station located at a specified fixed point (also called “hub station”) and a number of stations located at specified fixed points (also called “customer stations”);*
- *automatic transmit-power control (ATPC) is a technique in which the output power of a microwave transmitter is automatically varied to compensate for path propagation conditions; in normal propagation conditions, ATPC maintains the transmitter output power at a reduced level; ATPC is characterized by its range, which is defined as the difference between the maximum and minimum values of transmitted power, and has no impact on the design of the related link,*

Parameter	Value
Incidence angle (defined as the angle at the Earth’s surface between the local vertical and the direction of the passive sensor)	$\leq 60^\circ$
Spatial resolution (defined as the maximum cross-section of the passive sensor -3 dB contour on the Earth’s surface)	≤ 50 km (See Note 1)
Main-beam efficiency (defined as the energy of main and cross-polarization components within 2.5 times the -3 dB beamwidth region, relative to the total energy within all angles)	$\geq 85\%$ (See Note 1)

NOTE 1 – These parameters only apply to real-aperture EESS (passive) systems.

Table 1: Earth exploration-satellite service (passive)

Parameter	Value
Maximum elevation angle	20°
Maximum transmitter power at the antenna port	-15 dBW (See Note 2)

NOTE 2 – In the case of point-to-point systems using ATPC, the maximum transmitter power at the antenna port may be increased by a value corresponding to the ATPC range, up to a maximum of -3 dBW.

Table 2: Stations of point-to-point systems in the fixed service

Parameter	Value
Hub stations (See Note 3)	
Maximum transmitter power at the antenna port	-7 dBW
Maximum off-axis e.i.r.p. above 20° from the horizontal plane	-6 dBW
Maximum off-axis e.i.r.p. above 45° from the horizontal plane	-11 dBW
Maximum off-axis e.i.r.p. at 90° from the horizontal plane	-13 dBW
Customer stations (See Note 3)	
Maximum elevation angle	20°
Maximum transmitter power at the antenna port	-8 dBW
Maximum off-axis e.i.r.p. above 45° from the horizontal plane	-18 dBW (See Note 4)

NOTE 3 – Administrations planning point-to-multipoint deployment in the band 10.6-10.68 GHz, paired with another frequency band, are encouraged to only deploy return links (i.e. emissions from customer stations) in the 10.6-10.68 GHz band.

NOTE 4 – In the case of point-to-multipoint systems using ATPC, the maximum transmitter power at the antenna port may be increased by a value corresponding to the ATPC range, up to a maximum of -3 dBW.

Table 3: Stations of point-to-multipoint systems in the fixed service

Parameter	Value
Maximum transmitter power at the antenna port	-17 dBW

Table 4: Stations in the mobile service