



# ECC Decision (17)04

The harmonised use and exemption from individual licensing of fixed earth stations operating with NGSO FSS satellite systems in the frequency bands 10.7-12.75 GHz and 14.0-14.5 GHz

**Approved 30 June 2017**

## EXPLANATORY MEMORANDUM

### 1 INTRODUCTION

This ECC Decision addresses the harmonised use of frequency bands 10.7-12.75 GHz (space to Earth) and 14.0-14.5 GHz (Earth to space) for fixed earth stations operating with NGSO satellite systems within the fixed-satellite service (FSS) allocation, and exemption from individual licensing of such earth stations. These NGSO systems provide a range of communications services with the main provision being broadband communication services. These earth stations are fixed at a given location with antennas that track continuously the satellites in non-geostationary orbits.

Licensing is an appropriate tool for administrations to regulate the effective use of the frequency spectrum and to avoid harmful interference. However, conditions for such licensing imposed by administrations for the purpose of the installation and use of equipment need to be proportionate. Administrations and especially users, retailers and manufacturers will benefit from a more deregulated system of authorising the use of radio equipment, such as licence exemption.

### 2 BACKGROUND

Article 5 of the Authorisation Directive (Directive 2002/20/EC) requires the use of spectrum to be facilitated under general authorisations, where, amongst other things, the risk of harmful interference to other radio services is negligible. With the implementation of the Authorisation Directive and also with the essential requirements of Radio Equipment Directive, administrations have exempted many radio equipment from individual licensing, including satellite terminals. The provision of Pan European services will be greatly assisted when all CEPT administrations exempt the same categories of radio equipment from individual licensing based on given conditions. Such conditions should only relate to harmful interference and the measures that could be adopted to mitigate the possibility of harmful interference. Consequently, the installation and use of satellite terminals that are specifically identified as operating with power levels and operational conditions that are unlikely to cause harmful interference to other authorised services might be exempted from individual licensing.

Furthermore, the Radio Equipment Directive 2014/53/EU places an emphasis on efficient and effective use of the spectrum. This is achieved by requiring the performance of the transmitter, as well as its receiver, meeting certain performance specifications. The relevant ETSI harmonised standards carry such specifications on both receiver and transmitter parameters which ensure that equipment does not cause harmful interference to other systems and services as well as equipment is built to use spectrum efficiently.

The band 14-14.5 GHz band is allocated on a worldwide and primary basis to the FSS (Earth to space) in the ITU RR and is generally available for satellite services within the CEPT and elsewhere. The band 14.25-14.5 GHz band is used by a small number of point-to-point microwave links of the fixed service in a limited number of CEPT countries.

Recommendation ERC/REC 13-03 (The Hague 1996) on the use of the band 14.0-14.5 GHz for VSAT and Satellite News Gathering recommended that the use of the band 14.25-14.5 GHz for the fixed service should be discouraged in those countries that have not already implemented fixed radio links in the band. In addition, the Recommendation said that flexible and unrestricted use of VSAT and SNG applications in the band 14.25-14.5 GHz should be allowed at least in those countries where no fixed links have been implemented so far. Subsequently, the Decision ECC/DEC/(03)04 was adopted and it provides for licence exemption of VSAT operating in the 14.25-14.5 GHz with e.i.r.p. of no more than 50 dBW subject to the conditions stipulated in the said ECC Decision.

Given the comparable operational characteristics of both VSATs and fixed earth stations operating with NGSO FSS satellite systems in the frequency bands 14.0-14.5 GHz (Earth-to-space), and noting that earth stations operating to polar orbiting satellite will have high angles of elevation, the technical and regulatory conditions that apply to VSAT as described in Decision ECC/DEC/(03)04 could also be applied to NGSO fixed earth stations mentioned in this ECC Decision.

The ECC Report 066 provides the methodology for assessment of protection for aircraft in the vicinity of an airfield from emissions from satellite earth stations. This methodology is used for such assessments concerning fixed earth stations working with NGSO satellite systems.

It is recognised that protection from unacceptable interference to geostationary satellites networks operating in the bands considered in this Decision is ensured via the applicable sections of the ITU Radio Regulations, in particular Article 22.2, 22.5C to 22.5I and Resolution 85.

### **3 REQUIREMENT FOR AN ECC DECISION**

Fixed earth stations operating with NGSO FSS satellite systems in the frequency band 10.7-12.75 GHz (space to Earth) and 14.0-14.5 GHz (Earth to space) are being planned for deployment in Europe, as a part of worldwide deployment of broadband services. Such systems are needed specially to address the broadband requirements of rural and remote areas. An ECC Decision is required to ensure that the authorisation of terminals within the CEPT will be subject to harmonised conditions stipulated in such an ECC Decision.

Recommendation ERC/REC 01-07, adopted in 1995, lists harmonised criteria for administrations to decide whether an exemption from individual licence should be applied. This Decision, prepared within the aim of exempting fixed earth stations operating with NGSO FSS satellite systems in the frequency band 14.0-14.5 GHz from individual licensing, fulfils the criteria for exemption listed in Recommendation ERC/REC 01-07.

**ECC DECISION OF 30 JUNE 2017 ON THE HARMONISED USE AND EXEMPTION FROM INDIVIDUAL LICENSING OF FIXED EARTH STATIONS OPERATING WITH NGSO FSS SATELLITE SYSTEMS IN THE FREQUENCY BANDS 10.7-12.75 GHz AND 14.0-14.5 GHz (ECC/DEC/(17)04)**

“The European Conference of Postal and Telecommunications Administrations,

*considering*

- a) that within the CEPT administrations there is an ongoing awareness of a need for harmonisation of licensing regimes in order to facilitate the provision of Pan European services;
- b) that the introduction of new NGSO systems in the 10.7-12.75 GHz (space to Earth) and 14.0-14.5 GHz (Earth to space) bands will enhance broadband communications over all the territories in the CEPT;
- c) that the band 14--14.25 GHz is allocated on a worldwide and primary basis to the FSS (Earth-to-space) in the ITU Radio Regulations;
- d) that the band 14.25-14.5 GHz is allocated on a worldwide and primary basis to the FSS (Earth-to-space) amongst other services in the ITU Radio Regulations;
- e) that the band 14-14.3 GHz is allocated on a worldwide and primary basis to the radionavigation service in the ITU Radio Regulations;
- f) that the band 14.3-14.4 GHz in Region 1 and 14.4-14.5 GHz on a worldwide basis and 14.25-14.3 GHz in some countries (through RR footnote 5.508) are allocated to the fixed service on a primary basis, and the deployment of fixed service stations is limited to a few CEPT administrations;
- g) that the frequency band 10.68-10.7 GHz is allocated on a worldwide and primary basis to the Earth-exploration satellite service (passive), the radio astronomy service and the space research service (passive) (see also Radio Regulations No 5.340);
- h) that the frequency band 10.6-10.68 GHz is allocated on a worldwide and primary basis to the Earth-exploration satellite service (passive), the radio astronomy service and the space research service (passive);
- i) that in the frequency band 10.7-12.50 GHz, fixed service systems are being operated on a shared basis;
- j) that Decision ERC/DEC/(00)08 establishes the priority between fixed service and uncoordinated earth stations in the fixed-satellite service and the broadcasting satellite service in the band 10.7-12.50 GHz;
- k) that Radio Regulations No. 5.492 addresses the use of broadcasting-satellite service assignments by the fixed-satellite service (space-to-Earth) in the band 11.7-12.5 GHz;
- l) that Radio Regulations No. 5.149 urges administrations in making assignments to stations of other services in the band 14.47-14.5 GHz, which is also allocated to radio astronomy service on a secondary basis, to take all practicable steps to protect the radio astronomy service from harmful interference;
- m) that the deployments of fixed earth stations operating with NGSO FSS satellite systems in the frequency bands 10.7-12.75 GHz and 14.0-14.5 GHz need to maintain compatibility with other services mentioned in considerings e), f), g), h), i), k), l), above;
- n) that Radio Regulations No. 22.2 addresses the protection of geostationary satellite networks in the fixed-satellite service and the broadcasting-satellite service;
- o) that Decisions ECC/DEC/(06)02 and ECC/DEC/(06)03 provide criteria, respectively, for licence exemption of low e.i.r.p. (not greater than 34 dBW) and high e.i.r.p. (between 34 and 60 dBW) satellite

terminals operating in the 14-14.25 GHz subject to the conditions stipulated in the said ECC Decisions;

- p) that Decision ECC/DEC/(03)04 provides criteria for licence exemption of VSAT operating in the 14.25-14.5 GHz with e.i.r.p. of not greater than 50 dBW subject to the conditions stipulated in the said ECC Decision;
- q) that the deployment of fixed earth stations operating with NGSO FSS satellite systems in the frequency band 14.0-14.5 GHz band within a CEPT administration shall be subjected to relevant national regulatory requirements;
- r) that fixed earth stations operate within NGSO FSS satellites systems in the frequency bands 10.7-12.75 GHz (space-to-Earth) and 14.0-14.50 GHz (Earth-to-space) under the control of the satellite system;
- s) that in EU/EFTA countries the use of such equipment shall comply with the Radio Equipment Directive, which provides for the presumption of conformity with the essential requirements set out in its Article 3(2) by demonstrating compliance with harmonised standard EN 303 980 or equivalent technical specifications;
- t) that some CEPT administrations may require that operators of NGSO FSS satellite systems to obtain an individual authorisation for their network due to national regulatory requirements;
- u) that those administrations which do not have fixed service stations in the band 14.25-14.5 GHz and which do not have to protect those stations in their country or in the neighbouring countries should work towards the exemption of fixed earth stations from individual licensing based on harmonised criteria detailed in Recommendation ERC/REC 01-07.

*DECIDES*

1. that the **purpose of this ECC Decision** is to:
  - a) harmonise the use of the frequency bands 10.7-12.75 GHz (space to Earth) and 14.0-14.5 GHz (Earth to space) for the use of fixed earth stations operating with NGSO FSS satellite systems;
  - b) allow exemption from individual licensing of fixed earth stations operating with NGSO FSS satellite systems in the frequency bands 10.7-12.75 GHz (space to Earth) and 14.0-14.5 GHz (Earth to space);
2. that CEPT **administrations shall** designate the frequency bands 10.7-12.75 GHz (space to Earth) and 14.0 - 14.5 GHz (Earth to space) for the use of fixed earth stations operating with NGSO FSS satellite systems;
3. that **CEPT administrations shall** allow exemption from individual licensing of fixed earth stations that:
  - a) comply with the requirements in Annex 1;
  - b) use an equivalent isotropically radiated power (e.i.r.p.) not exceeding 60 dBW. When an antenna is coupled to more than one transmitter or a transmitter provides more than one carrier (multi-carrier operation), the above e.i.r.p. level is the sum of all simultaneous emissions from the antenna on the main lobe;
  - c) operate on a non-protected basis with regards to the fixed service stations of the frequency band 10.7-11.7 GHz;
  - d) operate with NGSO FSS satellite systems while maintaining compatibility with other services as mentioned in considerations e), f), g), h), i), k) and l) above;
  - e) fulfil considering s), without prejudice to considering t);
4. that with regards to coordination in the vicinity of airfields, the requirements given in Annex 2 may be used;
5. that this Decision **enters into force** on date 30 June 2017;
6. that the preferred **date for implementation** of this Decision shall be 30 December 2017;
7. that CEPT administrations shall communicate the national measures implementing this Decision to the ECC Chairman and the Office when this ECC Decision is nationally implemented.”

*Note:*

Please check the Office documentation database <http://www.ecodocdb.dk> for the up to date position on the implementation of this and other ECC Decisions.

**ANNEX 1: TECHNICAL AND OPERATIONAL REQUIREMENTS FOR FIXED EARTH STATIONS OPERATING WITH NGSO FSS SATELLITE SYSTEMS IN THE FREQUENCY BANDS 10.7-12.75 GHz AND 14.0-14.5 GHz**

Fixed earth stations operating with NGSO FSS satellite systems in the frequency bands 10.7-12.75 GHz and 14.0-14.5 GHz shall comply with the following technical and operational requirements:

1. The fixed earth stations shall operate under the control of a Network Control Facility (NCF);
2. The design, coordination and operation of the fixed earth stations shall take into account the following factors:
  - a) antenna mis-pointing;
  - b) variations in the antenna pattern;
  - c) variations in the transmit e.i.r.p.;
3. That use closed-loop tracking of the satellite signal shall employ an algorithm that is resistant to capturing and tracking signals from nearby satellite. Fixed earth stations shall immediately inhibit transmissions when they detect that unintended satellite tracking has happened or is about to happen;
4. Fixed earth stations shall be in conformance with the Harmonised European Standard EN 303 980.

**ANNEX 2: PROTECTION OF AIRCRAFT FROM FIXED EARTH STATIONS OPERATING WITH NGSO FSS SATELLITE SYSTEMS IN THE FREQUENCY BANDS 10.7-12.75 GHz AND 14.0-14.5 GHz IN THE VICINITY OF AN AIRFIELD**

The requirements given in this Annex are based on ECC Report 066, using a maximum EMC field strength of 20 V/m. The protection distance is determined as the coordination area from the boundary fence of the airfield. The coordination area is dependent on the e.i.r.p. of the NGSO earth station of the NGSO system.

Table 1 lists the coordination areas that could be used for the protection of aircrafts in the vicinity of airfields from fixed earth stations working to a NGSO satellite system for which the coordination areas have been specifically determined using the methodology given in ECC Report 066. The information in the below table will be of assistance to administrations.

**Table 1: Coordination area as a function of the earth station e.i.r.p.**

e.i.r.p.	34 to 37 dBW	>37 to 40 dBW	>40 to 45 dBW	>45 to 50 dBW	>50 to 55 dBW	>55 to 60 dBW
Coordination area from the airfield boundary fence	220 m	380 m	780 m	1500 m	2800 m	5100 m