

ELECTRONIC COMMUNICATIONS COMMITTEE

ECC Decision
of 24 June 2005
on the free circulation and use of Aircraft Earth Stations
(AES)
in the frequency bands
14.0-14.5 GHz (Earth-to-space), 10.7-11.7 GHz
(space-to-Earth) and 12.5-12.75 GHz (space-to-Earth)

(ECC/DEC/(05)11)



EXPLANATORY MEMORANDUM

1 INTRODUCTION

Aircraft Earth Stations (AES) are mobile earth stations in the aeronautical mobile-satellite service located on board aircraft and operate in the secondary MSS frequency allocations at 14 GHz. These AESs will be authorized for the installation and for their operations by the national regulatory authority and/or civil aviation authority in the country where the aircraft are registered. The AESs will operate within the airspace of many countries, however it is highly desirable that these administrations do not require additional authorization for operation of each AES.

The purpose of this Decision is to designate the frequency band 14.0-14.5 GHz (Earth-to-space), 10.7-11.7 and 12.5-12.75 GHz (space-to-Earth) for the use by AESs and enable operation within CEPT countries of AESs that have been authorized by their country of registration.

2 BACKGROUND

It is a general aim of the Electronic Communications Committee (ECC) to facilitate the free circulation and use of radio equipment.

The equipment under consideration in this decision, i.e. Aircraft Earth Stations (AES) installed on board aircraft, is intended to provide non-safety related broad-band data communication services (e.g. internet and other type of data services) to users on board aircraft using their own data equipment (e.g. laptop computer or PDA) or one provided by the airline. Operation of these stations without the need for individual authorisation by each of the CEPT administrations is essential for the provision of an uninterrupted service to users whilst aircraft using such equipment crosses borders of various countries, as well as in reducing the regulatory efforts for the administrations and the AMSS operators.

The AESs have the following characteristics:

- a) They operate in the 14 GHz frequency band allocated to the mobile satellite service (MSS) on a secondary basis (WRC-03), and in the fixed satellite service (FSS) allocations at 10/11/12 GHz, where they operate on a non-protection basis:
 - 14.00 GHz-14.50 GHz (Earth-to-space);
 - 10.70 GHz -11.70 GHz (space-to-Earth);
 - 12.50 GHz -12.75 GHz (space-to-Earth).
- b) They operate with geostationary orbiting satellites;
- c) The equipment is installed on board aircraft for unattended operation;
- d) The AES emissions comply with the provisions of EN 302 186 or similar technical specifications;
- e) The AES operations comply with the provisions of ITU-R Recommendation M.1643 for the protection of the fixed service (FS), FSS and radio astronomy service (RAS);

There is a potential risk that radio transmissions from AESs operating on the ground at airports could degrade the performance of electronic navigation and control equipment used on the ground and also on board other aircraft.

The users, operators and installers of the terminals should be made aware of any restrictions via information in the user manual and on the package of the equipment to be provided by manufacturers.

3 REQUIREMENT FOR AN ECC DECISION

There is a need for an ECC Decision to allow for harmonised operation of AESs in the frequency bands 14.0-14.5 GHz (Earth-to-space), 10.7-11.7 GHz (space-to-Earth) and 12.5-12.75 GHz (space-to-Earth).

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"The European Conference of Postal and Telecommunications Administrations,

considering

- a) that the band 14-14.5 GHz is allocated to the mobile-satellite service (Earth-to-space) on a secondary basis in the ITU Radio Regulations (ITU RR);
- b) that the band 14-14.5 GHz is allocated to the fixed satellite service (FSS) (Earth-to-space) on a primary basis in the ITU RRs;
- c) that the band 14.3-14.5 GHz is allocated to the fixed service (FS) on a primary basis in the ITU RR;
- d) that the band 14.25-14.3 GHz is additionally allocated to the FS on a primary basis in some European countries by the provisions of ITU RR No. 5.508;
- e) that the radio astronomy service (RAS) is allocated on a secondary basis in the band 14.47-14.5 GHz where ITU RR No. 5.149 applies. Annex D lists radioastronomy sites operating in the band 14.47-14.5 GHz in Europe;
- f) that in some CEPT countries stations of the FS are deployed in the band 14.25-14.5 GHz;
- g) that Recommendation ITU-R M.1643 provides the technical and operational requirements for AESs in the frequency band 14.0-14.5 GHz with regard to the protection of the FSS, the FS and sharing with the RAS;
- h) that the technical characteristics of the aeronautical mobile satellite service (AMSS) systems are covered by the international co-ordination of the relevant satellite systems;
- i) that AESs in the 14 GHz range offer non-safety broad-band data services to users on board aircraft and operate in the frequency bands 10.7-11.7 GHz (space-to-Earth) and 12.5-12.75 GHz (space-to-Earth) on a non-protection basis and 14.0-14.5 GHz (Earth-to-space) on a secondary basis;
- j) that use of AESs requires authorization by the relevant national Administration and/or Civil Aviation Authority of the country where the aircraft is registered;
- k) that in some countries, operation of AES when the aircraft is on the ground, is subject to prior agreement with administrations and/or airport authorities and/or Civil Aviation Authorities;
- l) that, over some countries additional limitations on the operation of AES at low altitudes will be necessary;
- m) that, for the purpose of resolving interference situations, AMSS network operators should provide a notification to the Office relating to the operation of their network;
- n) that, notwithstanding considering m), some administrations may require that the AMSS network operator obtains a frequency authorization due to specific national requirements, while other administrations may require some form of notification, or exempt the AMSS network operator from these two requirements;
- o) that this Decision shall not impede EEA member countries from fulfilling their obligations according to Community law.

DECIDES

1. to designate the frequency bands 14.0-14.5 GHz (Earth-to-space), 10.7-11.7 GHz (space-to-Earth) and 12.5-12.75 GHz (space-to-Earth), for the harmonised use, inter alia, by AESs, in accordance with considering i);
2. that administrations shall notify the Office of their requirements relating to considerings k) and l) above, if any (see Annex A);
3. that this Decision applies only to AESs in the bands referred to in Decides 1 which meet all the following conditions:
 - a) an e.i.r.p. not greater than 50dBW;
 - b) authorised by the relevant administration of the country in which the aircraft is registered;
 - c) complying with the relevant European Telecommunication Standards (EN 302 186) which may be demonstrated by compliance with equivalent technical specifications (in the sense of art. 3(2) of the R&TTE Directive);
 - d) compliant with Recommendation ITU-R M.1643, including the essential requirements in Part B and Part C of Annex 1, respectively relating to the protection of the fixed service (FS) and sharing of the radio astronomy service (RAS) and Aircraft Earth Stations taking due account of the Annexes to this Decision;
 - e) operating under the control of a network control facility.
4. that this Decision applies only to the AESs of satellite networks for which the AES network operator has notified the Office regarding considering m) (see Annex B) and that those AESs operating within their systems comply with the requirements of this Decision including national requirements in relation to considering l);
5. that administrations shall permit operation of AES when the aircraft is on the ground; such operation being subject to the provisions of this Decision including considering k) above;
6. that administrations shall allow free circulation and use of AESs that satisfy the provisions of this Decision and considerings l) and m);
7. that, in addition to the notification for AES operators established in Annex B, administrations shall not require AES network operators to obtain additional authorizations, subject to the provisions of this Decision and compliance with the requirements related to considering l), m) and n) above;
8. that this Decision shall enter into force on 24 June 2005;
- 8bis that the preferred date for implementation of this Decision shall be 1 October 2005;
9. that 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 A

PARAMETERS THAT NEED TO BE SUBMITTED BY NATIONAL ADMINISTRATIONS TO THE OFFICE

A national Administration (National Regulatory Authority (NRA)) is required to submit to the Office the following information:

1. A written statement on procedural requirement necessary to allow operation of AES¹ on the ground at airports.
 - o If ground operations are permitted under a specific procedure the NRA shall submit the following:
 - Point of contact so that the AES network operator, airline or aircraft owner may need to contact to obtain permission for ground operations at airports.

The Point of contact need to be specified as follows:

- Title and Company/Organization;
 - Complete address;
 - Phone Number and Fax;
 - E-mail;
- o If ground operations are allowed with, or without, a written permission by the NRA, or by the Civil Aviation or Airport Authorities, the NRA may also want to submit to the Office specific areas within an airport where operations of 11-14 GHz AES is permitted, or is not permitted. Such information may be submitted as in the following example:

Airport Name (example)	Locations with corresponding agreements and conditions related to operations on the ground (example)
London XY	Gate number 345, permitted
London XY	Runway 09R/27L, not allowed
London XY	Taxiing, xyz
London XY	Within 100 metres from Main Tower, xyz
London XY	Operations permitted at all parking gates

2. Due to the requirement in considering (l), if necessary, the concerned Administration should provide to The Office a written statement stating that airborne operations of AESs over their national territory or over a specific area in the national territory, is not allowed below a given altitude (in meters above sea level).

Some of the above conditions of operations may be dependent on specific frequencies and/or e.i.r.p.

3. Relevant to considering n), administrations requiring frequency authorisation or notification, or exempting the AMSS network operator of such requirements, should provide The Office with a corresponding statement.

¹ Since there are no co-frequency allocations of AMSS and AMS(R)/AM(R)S in the 14 GHz band, this Decision does not prohibit operation of AES within the airport fence. Although this Decision allows free circulation of AES, the operations of AESs on the ground at airports is subject to prior agreement with the NRA, and/or with Civil Aviation Authorities, and/or with concerned airport authorities. ECC Report 66 is considering the protection of aircraft from satellite earth stations operating on the ground in the vicinity of airfields.

ANNEX B

PARAMETERS THAT NEED TO BE SUBMITTED BY AES NETWORK OPERATORS TO THE OFFICE

An AES network operator is required to submit to Office the following parameters and declaration.

1. A declaration that their system complies with the requirements of the Decision, including those specified in Annex A and as specified in the Office AES webpage.
2. The AES network operator is required to submit to the Office the following information:
 - **Points of Contacts**
 - Network Operator's designated point of contact
 - Title of contact
 - Postal address
 - Telephone and fax numbers
 - email address
 - Network Control Facility (NCF) designated point of contact
 - Title of contact
 - Postal address
 - Telephone and fax numbers
 - email address
 - **Technical Specification(s) of AES equipment type(s) used in the network**
 - AES Antenna
 - Antenna type
 - Antenna size
 - Transmit peak gain
 - Max e.i.r.p. per carrier
 - Transmit frequency bands
 - Min. operating elevation
 - Antenna pointing accuracy
 - Waveform characteristics
 - Number(s) of carriers per AES
 - Occupied bandwidth(s) per carrier (as defined in Harmonised Standard EN 302 186)
 - Carrier centre frequency(-ies)
 - Modulation
 - Multiple access scheme
 - **Operating details of each satellite**
 - ITU BR Filing Information
 - ITU BR filing satellite network name
 - ITU BR circular reference number and date of publication (also to ESV)
 - Satellite operator(s) (commercial) name
 - GSO longitude (East or West from Greenwich)
 - Satellite service area (text description and/or a figure of the area)
 - Forward Channel details (Satellite to AES)
 - Transponder(s) downlink centre frequency
 - Transponder(s) downlink bandwidth
 - Return Channel details (AES to satellite)
 - Transponder(s) uplink centre frequency
 - Transponder(s) uplink bandwidth
 - **Other details**
 - In addition the AES network operators needs to notify the Office of the name of the airlines which will be using their network system. Alternatively, operators could provide to the Office a link to their webpage containing this information.

ANNEX C

THE OFFICE WEBSITE

The Office will make publicly available the information provided for Annex A on its website. It shall be possible for an AES network operator to collect the relevant information from The Office website including the latest information and to identify any modification since the latest access.

The information provided under Annex B by the AES network operators shall be accessible on the Office website only by CEPT administrations, apart from network operator contact information, which is publicly available

A simple method (e.g. automatic email) will be established in order for the AES network operators to be informed of any changes in the requirements that are imposed by the NRAs.

From time to time, an Administration may need to update the conditions notified using Annex A . If the requirements are non-safety related, the AES operator, airline or aircraft owner, will need sufficient time to comply with new conditions. In general, such changes or new conditions should be implemented within a time period of 90 days. Changes needing development of new software may take up to 180 days.

ANNEX D

List of Radioastronomy sites operating in the band 14.47 - 14.5 GHz in Europe

-Bure	(44°38'02''N, 05°54'27''E)
-Effelsberg	(50°31'30''N, 06°53'00''E)
-Floirac	(44°50'07''N, 00°31'42''W)
-Nancay	(47°23'26''N, 02°12'00''E)
-Cambridge	(52°09'59''N, 00°02'20''E)
-Jodrell Bank	(53°14'10''N, 02°18'26''W)
-Yebes	(40°31'27''N, 03°05'22''W)
-Robledo	(40°25'38''N, 04°14'57''W)
-Kalyazin	(57°13'00''N, 37°54'00''E)
-Fian Pushchino	(54°50'00''N, 37°40'00''E)
-Sao Zelenchukskaya	(43°49'00''N, 41°34'00''E)