



**INFORMATION AND COMMUNICATION
TECHNOLOGIES AUTHORITY (ICTA)**

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**Information and Communication Technologies Authority
Decision of 4 October 2010 on Aeronautical Mobile Satellite Service**

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Explanatory memorandum

- 1) the ICT Authority has as one of its functions, under section 18(p) of the Information and Communication Technologies Act 2001, to *“allocate frequencies and manage, review, and, where appropriate, reorganise the frequency spectrum”*;
- 2) the ICT Authority has as one of its objects, under section 16(g) of the Information and Communication Technologies Act 2001, to *“further the advancement of technology, research and development relating to information and communication technologies through modern and effective infrastructure taking into account the convergence of information technology, media, telecommunications, and consumer electronics”*;
- 3) The World Radio Conference 2003 (WRC-03) has allocated the band 14 – 14.5 GHz to the Aeronautical Mobile Satellite Service (AMSS) on a secondary basis;
- 4) The ICT Authority has conducted a public consultation exercise in order to gather the views of all stakeholders on the provision of AMSS on board both Mauritian and foreign aircrafts.

1. BACKGROUND

The ITU Radio Regulations (RR) defines AMSS as *“A mobile-satellite service in which mobile earth stations are located on board aircraft; survival craft stations and emergency position-indicating radiobeacon stations may also participate in this service”*

World Radio Conference 2003 (WRC-03) allocated the band 14 – 14.5 GHz to AMSS on secondary basis. As per RR 5.28, stations of a Secondary service:

- a) shall not cause harmful interference to stations of primary services to which frequencies are already assigned or to which frequencies may be assigned at a later date;
- b) cannot claim protection from harmful interference from stations -
 1. of a primary service to which frequencies are already assigned
 2. or may be assigned at a later date.
- c) can claim protection, however, from harmful interference from stations of the same or other secondary service(s) to which frequencies may be assigned at a later date.

2. AMSS OVERVIEW

AMSS networks have been designed to provide in-flight data (e.g. access to Internet on board aircraft) and entertainment content to passengers and operators of commercial and business aircraft.

According to the ECC Report 026¹ these networks are composed of four segments (see Figure 1):

¹ **ELECTRONIC COMMUNICATIONS COMMITTEE (ECC), REPORT 026: THE COMPATIBILITY & SHARING OF THE AERONAUTICAL MOBILE SATELLITE SERVICE WITH EXISTING SERVICES IN THE BAND 14.0-14.5 GHZ, FEBRUARY 2003**

- a “space segment”, which consists of forward-link transponders in the 14-14.5 GHz band (Earth-space) and return-link transponders;
- an “aircraft earth station (AES) segment”, which consists of AES terminals installed on multiple aircraft;
- a “land earth station (LES) segment”, which consists of one or more LES providing feeder-link to the satellites;
- and a “network control and monitoring centre (NCMC) segment”, which, among other functions, controls the aggregate emissions of the AMSS network in order to prevent interference to other systems. The LES segment is connected to the NCMC segment with high speed data connections.

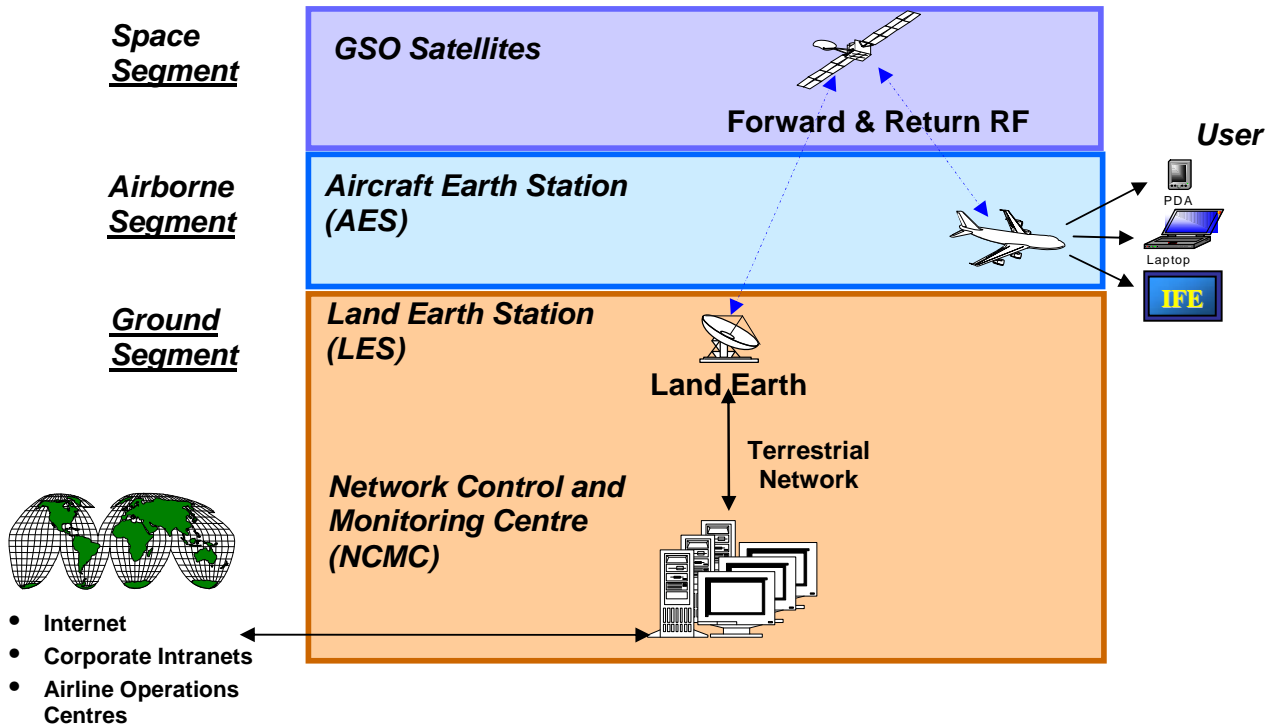


Figure 1: AMSS network architecture (Source: ECC Report 026¹)

AMSS networks protect terrestrial services by limiting emissions towards the ground in locations and frequency bands where terrestrial services are operating. The NCMC is aware of the location of AES terminals within its AMSS network and can enforce operational limits based on the location of AES terminals. In order to protect Fixed Service (FS) links, AMSS networks can restrict AES power flux density (pfd) at the Earth surface when AES terminals are visible to territories where FS is operating. In order to protect the Radio Astronomy Service (RAS) and Space Research Service (SRS), AMSS networks can restrict AES terminal operating frequencies and power when AES terminals are visible to specific RAS and SRS sites. Operational limits may be tailored to the needs of specific sites and territories.

**ICT Authority Decision
of 4 October 2010
on Aeronautical Mobile Satellite Service (AMSS).**

(ICTA/DEC/02/2010)

The Information and Communication Technologies Authority in exercise of its statutory functions under the Information and Communication Technologies Act 2001 as amended issues the following Decision pursuant to Section 17(3) combined with Sections 18(p) and 16 (g) of the said Act. This decision shall come into force with immediate effect.

The Information and Communication Technologies Authority,

considering,

- a. that the ICT Authority had conducted a public consultation exercise on the operation of AMSS on board both foreign and Mauritian aircrafts ;
- b. that the ICT Authority has received two responses to the consultation exercise, namely from the Civil Aviation Department, one Public Land Mobile Network operator in Mauritius;
- c. that the Civil Aviation Department has specified that the AMSS equipment have to meet all the Safety Standards defined by the Radio Technical Commission for Aeronautics (RTCA).
- d. that the Public Land Mobile Network operator suggested that the Aircraft Earth Station (AES) should only be operational while the aircraft is cruising.
- e. That the Public Land Mobile Network operator suggested that sufficient preventive measures should be defined in order to mitigate interference risk between the AMSS and lawfully operating stations in the primary services.

DECIDES

that AMSS may be installed and operated on board of Mauritian Aircraft and for aircraft *in flight* in the Mauritian airspace subject to the following conditions:-

1. The AMSS equipment to be used on board of Mauritian aircrafts shall be duly type approved by the ICT Authority;
2. The AMSS equipment to be used on board of Mauritian aircrafts shall have to be certified by the Primary Certification Authority and the State of Design of the aircraft which shall have issued:-
 - a. the necessary certificates of conformity to safety standards defined by the RTCA and;
 - b. supplemental type certificate data sheet for the aircraft.
3. The AMSS equipment to be used on board of Mauritian aircrafts shall be licensed under their Aircraft Licence;
4. Aircraft earth station (AES) shall not be operated while aircraft is on ground or during take-off and landing but only while cruising;

5. The provider of the AMSS system shall not cause harmful interference to, and shall not claim protection from, any other lawfully operating station in particular in the Fixed Service (FS) in the band 14.3 – 14.5 GHz, the Fixed Satellite Service (FSS) (Earth-to-Space) in the band 14 – 14.5 GHz and the Radio Astronomy Service (RAS) in the band 14.47 – 14.5 GHz;
6. The AMSS system provider shall ensure that it system operates strictly in compliance with any limits established by the International Telecommunication Union (ITU) to protect other services allocated internationally, especially those limits defined in the ITU-R Recommendation M.1643.
7. Should harmful interference result from the operation pursuant to an authorisation, the AMSS system provider shall cease operations immediately upon notification of such interference, and shall immediately inform the ICT Authority, in writing, of the incident;
8. Aircraft earth stations operating under any AMSS system shall be monitored and controlled by a ground-based network control and monitoring centre. Such stations shall be able to receive "enable transmission" and "disable transmission" commands from the network control centre and shall cease transmission immediately after receiving any "parameter change" command until receiving an "enable transmission" command from the network control centre.
9. The network control centre shall monitor operation of each aircraft earth station to determine if it is malfunctioning, and each aircraft earth station shall self-monitor and automatically cease transmission on detecting an operational fault that could potentially cause harmful interference to a fixed satellite service network.
10. Stations operated under any AMSS system shall not be used to provide air traffic control communications.
11. Any AMSS system provider shall take all reasonable measures to prevent human exposure to harmful non-ionizing radiation exceeding the maximum permissible International Commission on Non-Ionizing Protection (ICNIRP) exposure limits. The exterior surface of the antenna shall be prominently marked with a warning of the potential for exposure to high levels of radiofrequency energy.