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Federal Aviation Administration
Office of Spectrum Policy and Management
ASR-1
800 Independence Avenue, SW
Washington D.C. 20591

Reference: FAA Notification of FCC Equipment under FCC Part 87
**HSD-MK2, and HSD-MK3, Aeronautical Earth Station
Satellite Communications Transceivers
FCC ID's K6KHSD-MK2 and K6KHSD-MK3**

Dear Sir,

In accordance with Federal Communications Commission (FCC) Rules and Regulations, Part 87.147(d), EMS Technologies Canada, Ltd. (EMS) hereby notifies the Federal Aviation Administration of its filing with the FCC of an application for certification of the HSD-MK2 and HSD-MK3 Aeronautical Earth Station Satellite Communications Transceiver models referenced above.

Please find below the information required pursuant to Part 87.147(d)(1).

1) Description of Equipment

The EMS HSD-MK2 and HSD-MK3 Aeronautical Earth Station (AES) satellite communication transceivers support the Inmarsat Classic-Aero H+, Swift64, and SwiftBroadband aeronautical satellite communications services. These transceivers meet the applicable requirements of RTCA/DO-210D "Minimum Operational Performance Standards for Geosynchronous Orbit Aeronautical Mobile Satellite Services (AMSS) Avionics".

Both the HSD-MK2 and the HSD-MK3 are product derivatives of the FCC authorized and FAA Technical Standard Order (TSO C-132) authorized HSD-440. The HSD-MK2 transceiver replaces one of the HSD-440 channel cards with a version that provides two Inmarsat Aero H+ voice channels versus one. The HSD-MK3 transceiver replaces the other HSD-440 channel card with a version that provides multiple Inmarsat services on the same circuit card assembly.

The following provides a brief description of the HSD-MK2 and HSD-MK3 transceivers. When used, the abbreviation HSD refers to either model of transceiver. Where distinction is necessary, the appropriate model name is used.

The EMS HSD is the transceiver of an Aeronautical Earth Station (AES) which incorporates the satellite data unit and the high power amplifier functions of the AES. The SDU is packaged in an eight Modular Concept Unit (8-MCU) enclosure as defined in ARINC Specification 600. The SDU contains 2 channel card circuit card assemblies (CCA), a data input/output CCA, a control processor CCA, an RF input/output module, an RF power amplifier, a multi-voltage output power supply, and interconnection wiring. The channel cards provide the interfaces between the user voice or data and the Inmarsat L-band satellite signal. Multiple L-band signals are produced on each channel card. The HSD-MK2 and HSD-MK3 differ in the type and capability of channel card used. The data input/output CCA provides the interface between user data and voice circuits, and the channel cards. The control processor CCA provides the interface to the aircraft and controls the overall operation of the AES. The RF input/output module combines the L-band signals from the channel cards and distributes the receive signal from the AES diplexer/low noise amplifier. The power amplifier provides the high power RF signal gain with a nominal maximum output power of 60 watts.

The relationship between the HSD transceiver and the other subsystems of the Aeronautical Earth Station is illustrated in Figure 1.

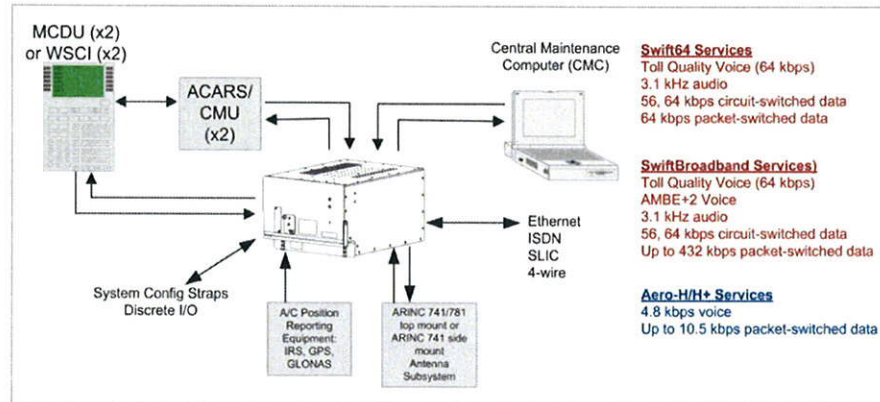


Figure 1: Aeronautical Earth Station

2) Manufacturer's Identification

The EMS model identification and the FCC Identifier for the HSD equipment are presented in Table 1. For reference, the supported Inmarsat services are included.

Table 1: Equipment Identification

Equipment Identification		Inmarsat Services		
EMS Model	FCC ID	Classic Aero	Swift64	SwiftBroadband
HSD-MK2	K6KHSD-MK2	PRT Data 2 SCPC voice	64kbps MPDS 64kbps ISDN voice (optional) 64kbps CS data (optional)	PS Background Class PS Streaming Class 64kbps CS data AMBE 4kbps voice
HSD-MK3	K6KHSD-MK3	PRT Data 1 SCPC voice	64kbps MPDS 64kbps ISDN voice (optional) 64kbps CS data (optional)	2 of the following: PS Background Class PS Streaming Class 64kbps CS data AMBE 4kbps voice

3) Antenna Characteristics

The HSD equipment is designed to operate with Inmarsat approved Satcom aeronautical antenna systems. These antennas meet the requirements of ARINC Characteristic 741 and/or ARINC Characteristic 781, and RTCA/DO-210.

4) Rated Output Power

60 watts



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5) Emission Types and Characteristics

The HSD equipment emission types and characteristics are summarized in Table 2.

Table 2: Emission Types and Characteristics

Inmarsat Service	Data Rate (kbps)	Symbol Rate ksym/s	Modulation Type	Signal States (S)	Performance Factor (K)	Necessary Bandwidth (kHz)	FCC Designator	Authorized Bandwidth (kHz)
Classic R/T	0.6	0.6	PI/2 BPSK	2	0.70	0.840	840HG1D	25
Classic R/T	1.2	1.2	PI/2 BPSK	2	0.70	1.68	1K68G1D	25
Classic R/T	10.5	5.25	Aviation QPSK	4	1.00	10.5	10K5G1D	25
Classic C	8.4	4.2	Aviation QPSK	4	0.81	6.80	6K80G1E	25
Swift64: TDM Signaling	3	3	BPSK	2	3.50	21.0	21K0G1D	25
Swift64: Mini M AMBE Voice	5.6	2.8	Offset QPSK	4	1.29	7.20	7K20G1E	45
Swift64	134.4	33.6	16 QAM	16	0.60	40.0	40K0G1E	45
Swift64 MFDS	134.4	33.6	16 QAM	16	0.60	40.0	40K0G1D	45
SwiftBroadband	33.6	16.8	QPSK	4	0.74	25.0	25K0G7W	225
SwiftBroadband	67.2	33.6	QPSK	4	0.74	50.0	50K0G7W	225
SwiftBroadband	134.4	67.2	QPSK	4	0.74	100	100K0G7W	225
SwiftBroadband	302.4	151.2	QPSK	4	0.66	200	200K0G7W	225
SwiftBroadband	134.4	33.6	16 QAM	16	0.74	50.0	50K0D7W	225
SwiftBroadband	268.8	67.2	16 QAM	16	0.74	100	100K0D7W	225
SwiftBroadband	604.8	151.2	16 QAM	16	0.66	200	200K0D7W	225

6) Frequencies of Operation

1626.5 to 1660.5 MHz transmitting
1525 to 1559 MHz receiving

7) Receiver Characteristics

The receiving characteristics of the HSD equipment meet the applicable requirement of the Inmarsat System Definition Manuals (SDMs) and RTCA/DO-210.

If this information meets with your approval, EMS herein requests that your office notify the FCC's Office of Engineering and Technology Laboratory, Authorization and Evaluation Division, in order to indicate that, pursuant to Section 87.147(d)(2) of the FCC's rules, the FAA does not have an objection to the certification of the equipment described in this letter.

If you have any questions on the above information, please feel free to contact me directly.

Sincerely,

Ron Halka
Director of Business Process Improvement and Quality
EMS Aviation Ottawa