

April 24th, 2025

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

**Subject: FAA Notification of FCC Equipment Approval under FCC Part 87
HSD Phase 4, Aircraft Earth Station Satellite Communications Transceivers
FCC ID: K6KHSD-PHASE4**

To Whom It May Concern:

In accordance with the Federal Communications Commission (FCC) Rules and Regulations, Part 87.147(d), EMS Technologies Canada, Ltd. ("EMS"), a wholly owned subsidiary of Honeywell International Inc., hereby notifies the Federal Aviation Administration (FAA) of its simultaneous filing with the FCC of an application for Certification of the HSD Phase 4 Aircraft Earth Station Satellite Communications Transceiver model referenced above.

The HSD Phase 4 is intended to transmit on frequencies set forth in Section 87.147 (d)(1).

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

1) Description of Equipment

The EMS HSD Phase 4 transceiver provides high-speed voice and data links to Viasat's world-wide satellite network in the 1525-1559 MHz receive and 1626.5-1660.5 MHz transmit bands, and supports the Viasat Classic AMS(R)S, and SwiftBroadband services. The HSD Phase 4 is an updated version of the authorized transceiver with FCC ID K6KHSD-MK2. It uses the same output power amplifier but contains EMS's 'Next Generation Channel Card' (NGCC) and is packaged in an 8 Modular Concept Unit ("MCU") equipment box.

The HSD Phase 4 Aircraft Earth Station (AES) is an integral part of the complete L-band Viasat satellite communications system, as shown Figure 1 and is composed of the following components:

- Satellite Data Unit (SDU)
- Multi-Purpose Control and Display Unit (MCDU)/ Williamsburg SDU Control Interface(WSCI)
- Aircraft Communications and Reporting System (ACARS)/ Communications Management Unit (CMU)
- Central Maintenance Computer (CMC)
- Diplexer Low Noise Amplifier (DLNA)
- High Gain Antenna (HGA) for AES Class 6
- Associated wiring

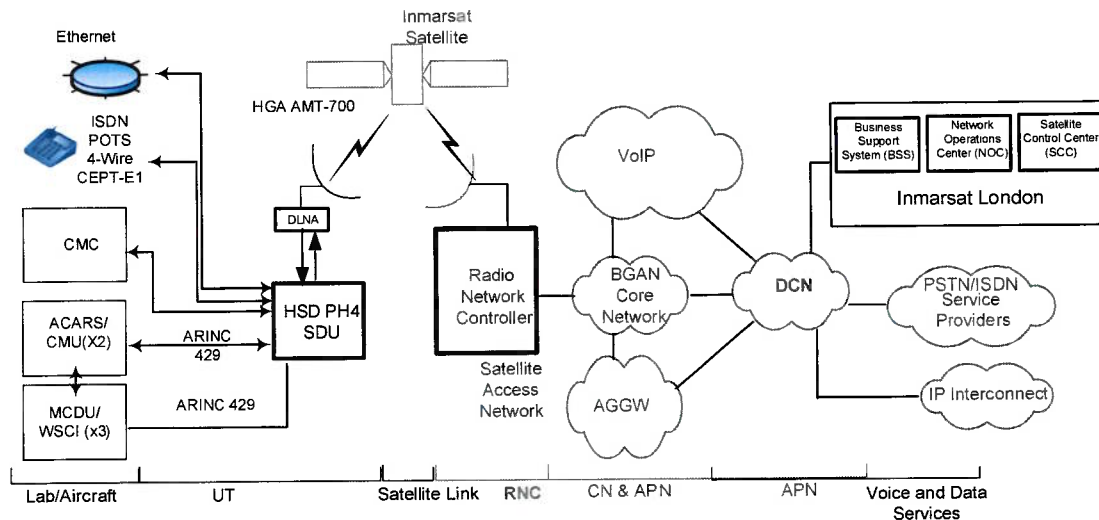


Figure 1: HSD Phase 4 CA System Diagram

The HSD Phase 4 CA SDU is the central communications processing and control unit, largely determining the functionality of the complete SATCOM system. The signal-in-space parameters are determined by the SDU in relation to modulation / demodulation, error correction, coding, interleaving and data rates associated with the communication channel(s). The rate is dynamically selected by the individual applications and by a pragmatic assessment of current operating conditions.

The SDU is composed of circuits for conversion of digital and/or analog inputs/outputs to/from radio frequency (RF), the SDU Configuration Module (SCM), which contains SwiftBroadband Universal Subscriber Identity Module (USIM), and the High Power Amplifier (HPA), which provides signal amplification to attain the required Equivalent Isotropic Radiated Power (EIRP) level for a given service.

The antenna and DLNA are required to be connected to the SDU to complete the SATCOM Avionics Suite.

The DLNA, which provides the interface between the SDU and the antenna, is composed of a diplexer and a low-noise amplifier. The low-noise amplifier provides the signal amplification for the receive RF signal and the diplexer provides signal filtering to separate the Tx and Rx signals.

The antenna will be a HGA to support Class 6, 6H service. The antenna will point in the direction commanded by the SDU.

2) Manufacturer's Identification

The EMS model identification and the anticipated FCC Identifier for the HSD Phase 4 equipment are presented in Table 1.

Table 1: Equipment Identification

EMS model	FCC ID
HSD Phase 4 CA	K6KHSD-PHASE4

3) Antenna Characteristics

The HSD Phase 4 equipment is designated to operate with Viasat approved Satcom aeronautical antenna systems. These antennas are designed to meet the requirements of ARINC Characteristic 741 and/or ARINC Characteristic 781 and RTCA/DO-210.

4) Rated Output Power

60 watts.

5) Emission Types and Characteristics

The HSD Phase 4 equipment emission types and characteristics are summarized in Table 2.

Note that the emissions described in Table 2 are accurate as of the date of this letter. Future emissions may be added if the satellite provider starts supporting them.

Table 2: Emission Types and Characteristics

Bearer	Service	Modulation Type	Symbol Rate (ksym/s)	Data Rate (kb/s)	Necessary Bandwidth (kHz)	FCC Designator	Authorized Bandwidth (kHz)
R/T600	Classic R/T	Pi/2 BPSK	0.6	0.6	0.840	840HG1D	25
R/T1200	Classic R/T	Pi/2 BPSK	1.2	1.2	1.68	1K68G1D	25
R/T10500	Classic R/T	Aviation QPSK	5.25	10.5	10.5	10K5G1D	25
C8400	Classic C	Aviation QPSK	4.2	8.4	6.8	6K80G1E	25
R5T1XD	SwiftBroadband	16QAM	33.6	134.4	50	50K0D7W	225
R5T2XD	SwiftBroadband	16QAM	67.2	268.8	100	100KD7W	225
R5T4.5XD	SwiftBroadband	16QAM	151.2	604.8	200	200KD7W	225
R20T1XD	SwiftBroadband	16QAM	33.6	134.4	50	50K0D7W	225
R20T2XD	SwiftBroadband	16QAM	67.2	268.8	100	100KD7W	225
R20T4.5XD	SwiftBroadband	16QAM	151.2	604.8	200	200KD7W	225
R5T2QD	SwiftBroadband	4 QPSK	67.2	134.4	100	100KG7W	225
R5T4.5QD	SwiftBroadband	4 QPSK	151.2	302.4	200	200KG7W	225
R20T0.5QD	SwiftBroadband	4 QPSK	16.8	33.6	25	25K0G7W	225
R20T1QD	SwiftBroadband	4 QPSK	33.6	67.2	50	50K0G7W	225
R20T2QD	SwiftBroadband	4 QPSK	67.2	134.4	100	100KG7W	225
R20T4.5QD	SwiftBroadband	4QPSK	151.2	302.4	200	200KG7W	225
FR80T2.5X4	SwiftBroadband	QPSK	84	168	110	110KG7W	225
FR80T5X4	SwiftBroadband	QPSK	168	336	200	200KG7W	225
FR80T2.5X16	SwiftBroadband	16QAM	84	336	110	110KD7W	225
FR80T5X16	SwiftBroadband	16QAM	168	672	200	200KD7W	225
FR80T2.5X32	SwiftBroadband	32QAM	84	420	110	110KD7W	225
FR80T2.5X64	SwiftBroadband	64QAM	84	504	110	110KD7W	225
FR80T5X32	SwiftBroadband	32QAM	168	420	200	200KD7W	225

FR80T5X6 4	SwiftBroadband	64QAM	168	504	200	200KD7W	225
R80T0.5Q	SwiftBroadband	QPSK	16.8	33.6	25	25KG7W	225
R80T1Q	SwiftBroadband	QPSK	33.6	67.2	50	50KG7W	225
USAB-1B- S64	SwiftBroadband	BPSK	168	168	200	200KG7W	225
USAB-1Q- S64	SwiftBroadband	QPSK	168	336	200	200KG7W	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 Phase 4 equipment meet the applicable requirement of the Viasat System Definition Manual (SDM), RTCA/DO-210 and RTCA/DO-262.

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 87.14 (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.

Respectfully submitted,



Subhadeep Pal
Sr. Director Engineering
EMS Technologies Canada, Ltd.
400 Maple Grove Road
Ottawa, K2V 1B8, Ontario