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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

Aspire 400, Aeronautical Earth Station Satellite Communications Transceivers

Transceiver FCC I.D. K6K-MK5 and HPA FCC I.D. K6K-HP

Dear Sir,

In accordance with 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 of its filing with the FCC of an application for certification of the Aspire 400 Aeronautical Earth Station Satellite Communications Transceiver model referenced above.

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

1) Description of Equipment

The Aspire 400 AES6, AES7 SATCOM Avionics is an integral part of the complete L-band Inmarsat Satellite communications system, as shown in Figure 1 and is composed of the following components:

- Compact Satellite Data Unit (CSDU)
- SDU Configuration Module (SCM)
- High Power Amplifier (HPA)
- RF Diplexer and LNA (DLNA)

- High Gain Antenna (HGA) for AES6
- Intermediate Gain Antenna (IGA) for AES7
- Associated wiring

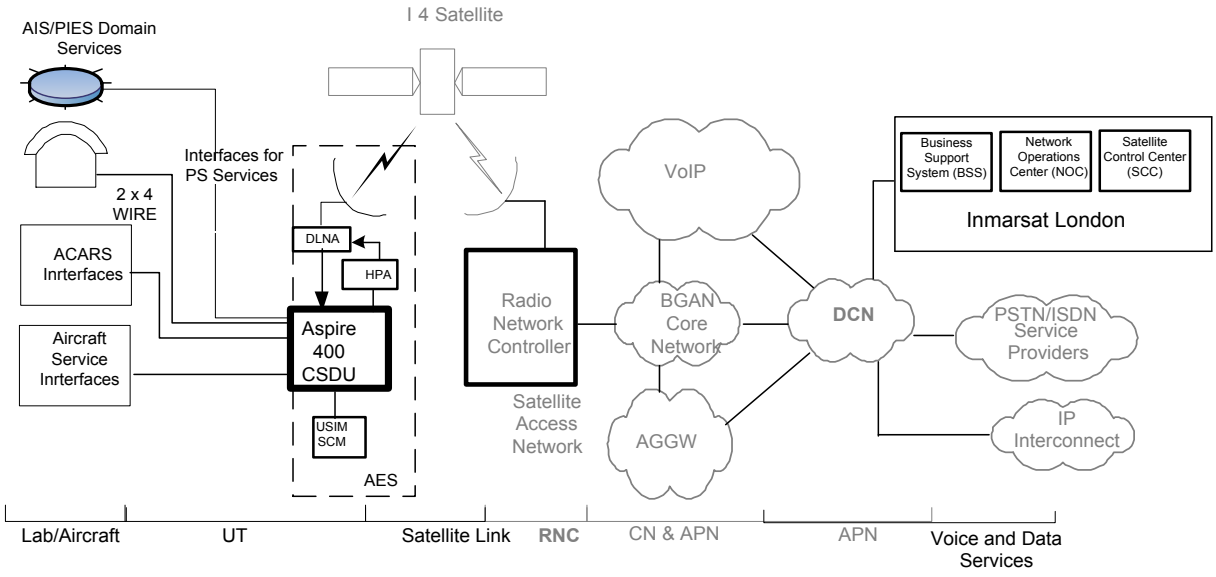

Figure 1: Aspire 400 System Overview

The CSDU 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 CSDU in relation to modulation/demodulation, error correction, coding, interleaving and data rates associated with the communication channel(s). The CSDU contains circuits for conversion of digital and/or analog inputs/outputs to/from radio frequency (RF). The CSDU requires external Amplifier and Antenna functions in order to complete the SATCOM Avionics Suite. The CSDU is capable of sending and receiving various data rates. The rate is dynamically selected by the individual applications and by the network assessment of current operating conditions.

The external SCM contains the Secure Owner Requirements Table (ORT), the User Owner Requirements Table (ORT), and the 2 SwiftBroadband Universal Subscriber Identity Module (USIM). The SCM also contains the AES PKI information (Public/Private Keys and certificate information stored in a UICC smart card).

The High Power Amplifier (HPA) provides signal amplification to attain the required EIRP level for the given services and class definition.

Diplexer and Low-Noise Amplifier functions are combined into the DLNA (Type F) standalone LRU. The Low-Noise Amplifier (LNA) provides the signal amplification for the receive RF signal, and the diplexer provides signal filtering to separate the TX and RX signals. The DLNA provides the interfaces between the CSDU and the Antenna on the receive path, and between the HPA and the Antenna on the transmit path.

The antenna of the SATCOM Avionics Suite will be a High Gain Antenna (HGA) to support Inmarsat Class 6/6H SBB and SBB-S services. The CSDU can also support antenna for the SATCOM Avionics Suite for a intermediate Gain Antenna (IGA) to support Inmarsat Class 7/7H SBB and SBB-S services The Antenna will point into the direction commanded by the CSDU and provide the gain in that direction.

Note: *The figure below highlights AES6 (high gain) and AES7 (intermediate gain) configuration*

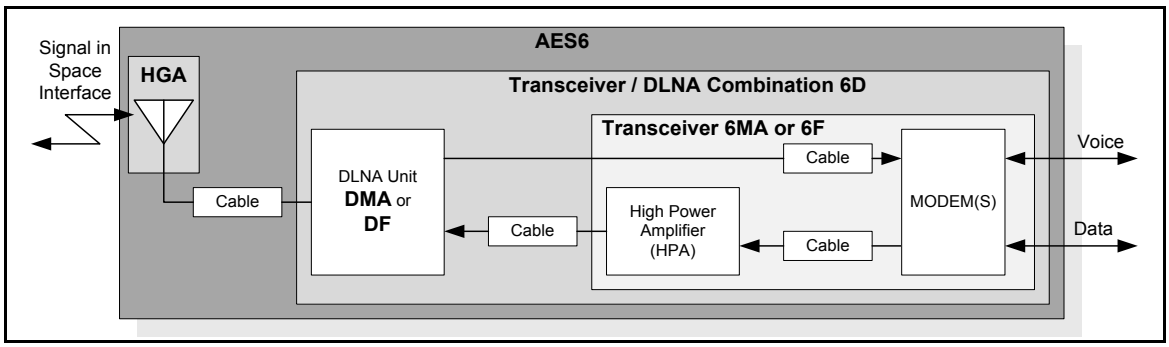

Figure 2: Aspire 400 AES6 System and Sub Part Configuration

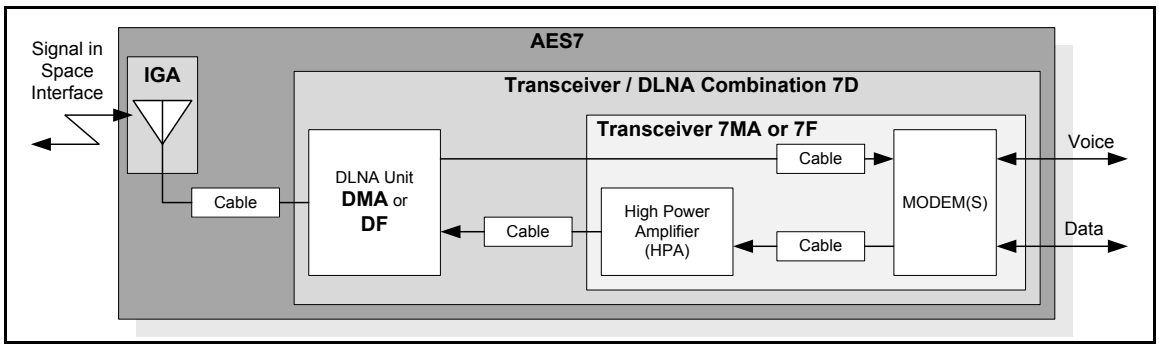

Figure 3: Aspire 400 AES7 System and Sub Part Configuration

2) System Capabilities

The CSDU provides two segregated processors that service the Aircraft Control Domain (ACD), Aircraft Information Systems Domain (AISD), on channel A of DABC and Passenger Information and Entertainment Systems Domain (PIESD), on channel B of DABC.

The Aspire 400 AES Class 6F or 7F service settings will be configurable and determined by ORT parameters:

Table 1: Service Configurations

ACD/AIESD	PIESD
1 PDP context for ACD safety data.	2 PDP contexts for PIES cabin multi-voice
2 PDP contexts for ACD VoIP safety voice.	1 AMBE+2 for PIES cabin voice
1 AMBE+2 ACD Safety voice.	Up to 11 PDP contexts for PIES cabin data
Up to 8 PDP contexts for the AISD	HDR bearers.

Figure 4: A781 Transceiver Block Diagram

3) Manufacturer's Identification

The EMS model identification and the anticipated FCC Identifier for the Aspire 400 equipment are presented in Table 1.

Table 2: Equipment Identification

Equipment Identification	
EMS Model	FCC ID
Aspire 400 Transceiver Head unit	K6K-MK5
Aspire 400 HPA	K6K-HP

4) Antenna Characteristics

The Aspire 400 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, RTCA/DO-210 and RTCA/DO-262.

5) Maximum Rated Output Power

40 watts

6) Emission Types and Characteristics

The Aspire 400 equipment emission types and characteristics are summarized in Table 3.

Table 3: Emission Types and Characteristics

Bearer	Class	Modulation Type	Symbol Rate ksym/s	Data Rate kb/s	Necessary Bandwidth kHz	FCC Designator	Authorized Bandwidth kHz
R5T1XD	4, 6, 7, 15, 6HDR & 7HDR	16QAM	33.6	134.4	50	50K0D7W	225
R5T2XD	4, 6, 7, 15, 6HDR & 7HDR	16QAM	67.2	268.8	100	100KD7W	225
R5T4.5XD	4, 6, 7, 15, 6HDR & 7HDR	16QAM	151.2	604.8	200	200KD7W	225
R20T1XD	4, 6, 7, 15, 6HDR & 7HDR	16QAM	33.6	134.4	50	50K0D7W	225
R20T2XD	4, 6, 7, 15, 6HDR & 7HDR	16QAM	67.2	268.8	100	100KD7W	225

R20T4.5XD	4, 6, 7, 15, 6HDR & 7HDR	16QAM	151.2	604.8	200	200KD7W	225
R5T2QD	4, 6, 7, 15, 6HDR & 7HDR	4 QPSK	67.2	134.4	100	100KG7W	225
R5T4.5QD	4, 6, 7, 15, 6HDR & 7HDR	4 QPSK	151.2	302.4	200	200KG7W	225
R2T0.5QD	4, 6, 7, 15, 6HDR & 7HDR	4 QPSK	16.8	33.6	25	25K0G7W	25
R20T1QD	4, 6, 7, 15, 6HDR & 7HDR	4 QPSK	33.6	67.2	50	50K0G7W	225
R20T2QD	4, 6, 7, 15, 6HDR & 7HDR	4 QPSK	67.2	134.4	100	100KG7W	225
R20T4.5QD	4, 6, 7, 15, 6HDR & 7HDR	4QPSK	151.2	302.4	200	200KG7W	225
R80T0.5Q	4	4QPSK	16.8	33.6	25	25K0G7W	25
R80T1Q	4	4QPSK	33.6	67.2	50	50K0G7W	225
FR80T2.5X4	4	QPSK	84	168	110	110KG7W	225
FR80T2.5X16	4, 6HDR &7HDR	16QAM	84	336	110	110KD7W	225
FR80T5X16	6HDR &7HDR	16QAM	168	672	200	200KD7W	225
FR80T2.5X32	6HDR &7HDR	32QAM	84	420	110	110KD7W	225
FR80T2.5X64	6HDR &7HDR	64QAM	84	504	110	110KD7W	225
FR80T5X32	6HDR &7HDR	32QAM	168	420	200	200KD7W	225

FR80T5X64	6HDR &7HDR	64QAM	168	504	200	200KD7W	225

7) Frequencies of Operation

1626.5 to 1660.5 MHz transmitting

1525.0 to 1559.0 MHz receiving

8) Receiver Characteristics

The receiving characteristics of the Aspire 400 equipment meets the applicable requirement of the Inmarsat System Definition Manuals (SDMs) and RTCA/DO-262 appendix E.

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,

Dennis Teske,

SR Director Engineering,