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March 6th, 2023

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
Small SATCOM, Aeronautical Earth Station, Satellite Communications Transceiver
PENDING FCC ID K6KSATCOM5G**

To Whom It May Concern:

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, hereby notifies the Federal Aviation Administration of its filing with the FCC of an application for certification of the Small SATCOM Aeronautical Earth Station Satellite Communications Transceiver model referenced above.

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

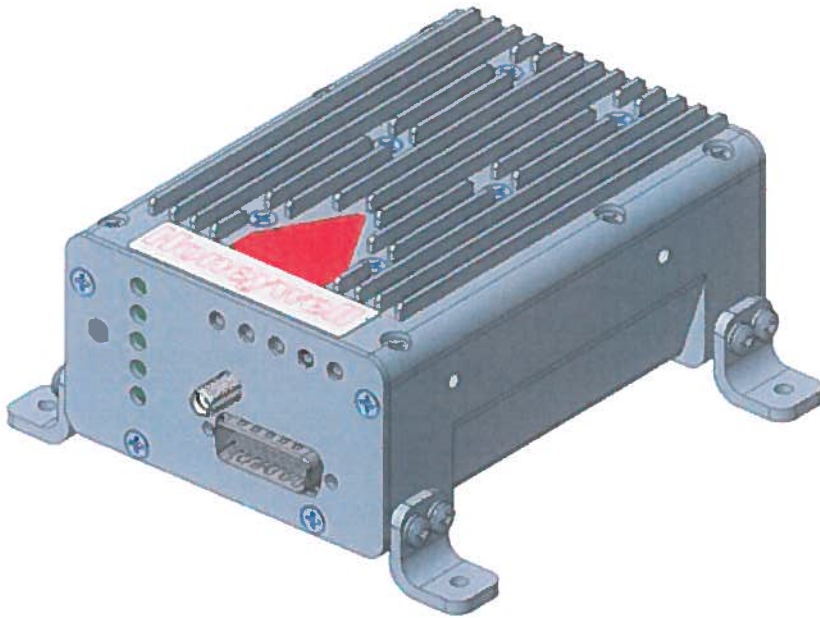
1) Description of Equipment

The Small SATCOM Aeronautical Earth Station (AES) satellite communication transceiver supports the Inmarsat SwiftBroadband aeronautical satellite communication service. It is intended for use on applications where size and weight are paramount, such as Unmanned Aerial Vehicles (UAVs) or other lightweight applications. The terminal will not be certified to DO-160G or seek airworthiness approval.

The following provides a brief description of the Small SATCOM terminal.

The terminal is an evolution of the previous Small SATCOM terminal, which was awarded FCC certification on 17th May 2021, under the FCC ID K6KSMALLSATCOM. As in the previous generation the transceiver system comprises an indoor unit and an external active antenna connected by a single cable. The next generation terminal builds on the previous generation by adding Inmarsat Class 7 and Class 16 service and 5G cellular network capabilities. The indoor unit requires a combined power input and ethernet cable. Direct Current (DC) power input powers the whole system. Universal Subscriber Identity Module (USIM) cards need to be inserted into the indoor unit for it to operate on the Inmarsat or cellular networks.

The Indoor Unit contains a stack of Radio Frequency (RF) card, application board, digital cards and BGAN Radio Module (BRM). The USIM holders and power supply are mounted on the digital and application cards. Coaxial cables provide the interconnection of the BRM with the RF board.



The BRM includes low power RF hardware, physical layer data processing, Universal Subscriber Identity Module (USIM), GNSS receiver, and high-level application interfaces.

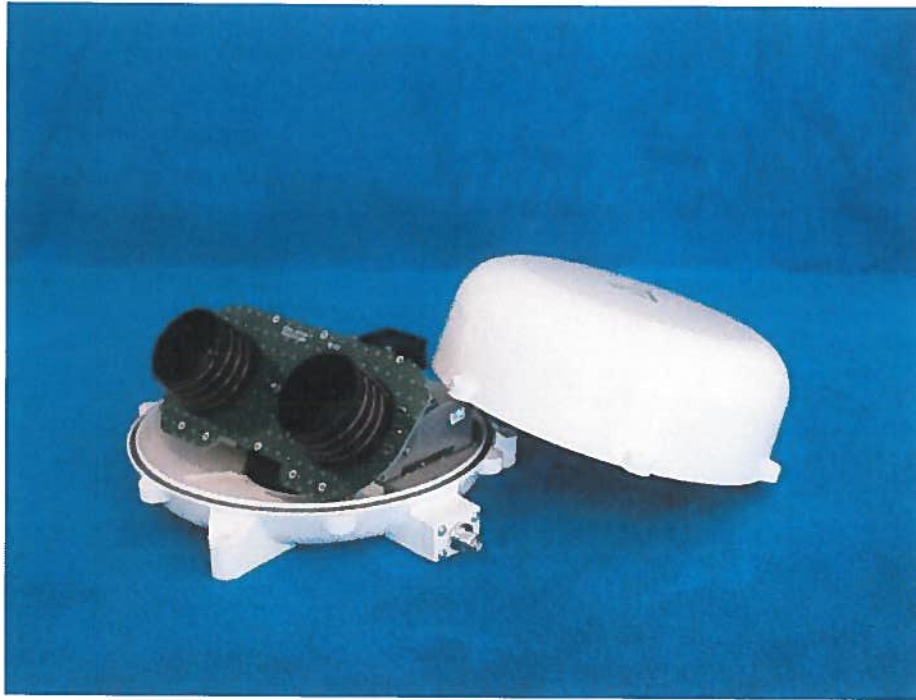
An Ethernet interface supporting Network Address Translation (NAT) allows the Small SATCOM to be used in a wide range of network configurations. A Wi-Fi connection is also available. A secure RESTful command interface over Ethernet provides the command interface.

The Inmarsat class that the device will operate on is determined by the connected antenna.

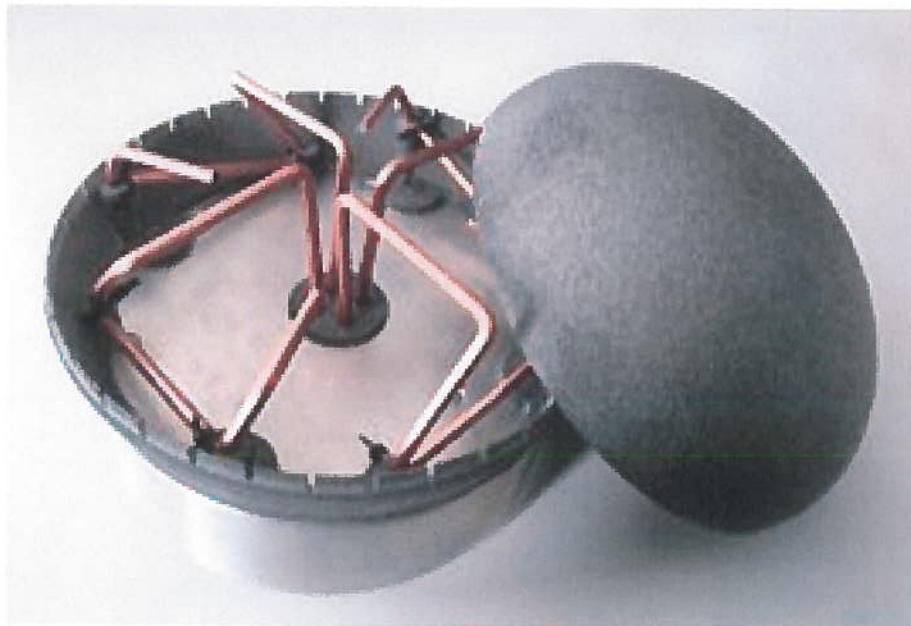
For class 15 operation, the active antenna unit is revision C of the established AeroAntenna AT1595-13. It is an omnidirectional antenna operating down to 20° elevation. The connector is a female TNC.



For Class 7 operation, the active antenna is a newly developed antenna from SpaceCom A/S. The antenna is based on their existing Class 11 Land Mobile antenna (C11E). It is a 2 axis mechanically steered tracking antenna.



For Class 16 Operation the active antenna is developed by Honeywell, patent pending. It is of a crooked wire design, omnidirectional, working down to 5° elevation.



2) Emission Types and Characteristics

The Small SATCOM emission types and characteristics are summarized below.

Inmarsat Class	Data Rate (kbps)	Symbol Rate ksym/s	Modulation Type	Signal States (S)	Necessary Bandwidth (kHz)	FCC Designator	Authorized Bandwidth (kHz)
15 & 7	134.4	33.6	16QAM	16	50	50K0D7W	225
15 & 7	268.8	67.2	16QAM	16	100	100KD7W	225
15 & 7	604.8	151.2	16QAM	16	200	200KD7W	225
15 & 7	134.4	33.6	16QAM	4	50	50K0D7W	225
15 & 7	268.8	67.2	16QAM	4	100	100KD7W	225
15 & 7	604.8	151.2	16QAM	16	200	200KD7W	225
15, 16 & 7	134.4	67.2	4 QPSK	4	100	100KG7W	225
15, 16 & 7	302.4	151.2	4 QPSK	16	200	200KG7W	225
15, 16 & 7	33.6	16.8	4 QPSK	4	25	25K0G7W	25
15, 16 & 7	67.2	33.6	4 QPSK	16	50	50K0G7W	225
15, 16 & 7	134.4	67.2	4 QPSK	4	100	100KG7W	225
15, 16 & 7	302.4	151.2	4QPSK	4	200	200KG7W	225
15, 16 & 7	33.6	16.8	4QPSK	4	25	25K0G7W	25
15, 16 & 7	67.2	33.6	4QPSK	16	50	50K0G7W	225
15, 16 & 7	168	84	QPSK	16	110	110KG7W	225
7HDR	336	84	16QAM	32	110	110KD7W	225
7HDR	672	168	16QAM	32	200	200KD7W	225
7HDR	420	84	32QAM	64	110	110KD7W	225
7HDR	504	84	64QAM	64	110	110KD7W	225
7HDR	420	168	32QAM	4	200	200KD7W	225
7HDR	504	168	64QAM	4	200	200KD7W	225
15, 16 & 7	168	168	BPSK	2	200	200KG7W	225
15, 16 & 7	336	168	QPSK	4	200	200KG7W	225
4 & 16	50.4	16.8	8-PSK	8	21	21KG7W	25

3) Output Power

The nominal EIRP is 11.4 dBW for Class 15 operation and 15.1 dBW for Class 7 Operation.

For class 16 operation, the nominal EIRP is variable with elevation as per the following formula:

- $\geq (7.5 - 3) + [3 * \cos\{6 * (\theta - 10)\}]$ dBW for $0^\circ \leq \theta \leq 10^\circ$
- ≥ 7.5 dBW for $10^\circ < \theta < 90^\circ$

4) Frequencies of Operation

The Small Satcom transceiver is capable of operation over the following frequency ranges:

- Transmitting: 1626.5 to 1660.5 MHz and 1668.0 to 1675.0 MHz
- Receiving: 1518.0 - 1559.0 MHz
- GNSS: 1559.0 to 1610 MHz

The operational frequencies of transmission and reception are controlled by frequency channel assignments from the Inmarsat satellite system. The Small Satcom will not transmit unless assigned a valid transmit frequency by the satellite system. Note that 1668.0 to 1675.0 MHz frequency band will not be used in USA/Canada.

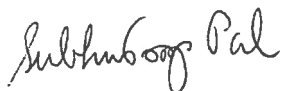
5) Receiver Characteristics

The receiving characteristics of the Small SATCOM meet the applicable requirement of the Inmarsat System Definition Manuals (SDMs) for class 15, 7 and 16 terminals.

If this information meets with your approval, Honeywell 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(dX2) 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,

A handwritten signature in black ink that reads "Subhadeep Pal". The signature is written in a cursive, flowing style.

Subhadeep Pal
Sr. Director Engineering
Honeywell International Inc.