

**Honeywell**

**Honeywell International Inc.**  
Honeywell Aerospace  
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Phoenix, AZ 85027

**GRANTED**

FOR THE REASONS INDICATED BELOW

August 20, 2010

 9/22/10

**BY CERTIFIED MAIL**

Federal Communications Commission  
P. O. Box 979097  
St. Louis, MO 63197-9000

**RE: WAIVER – EXPEDITED ACTION REQUESTED – REQUEST FOR WAIVER OF PART 87  
RULES TO ALLOW EQUIPMENT CERTIFICATION OF AERONAUTICAL MOBILE SATELLITE  
SERVICE TRANSCEIVER**

FCC ID: GB8HS-720 (Pending)

APPLICANT: HONEYWELL INTERNATIONAL INC.

Dear Sir:

Honeywell International Inc., pursuant to Section 1.925 of the Commission's rules, hereby requests waiver of Sections 87.131, 87.137, 87.139(i)(1), 87.139(i)(3) and 87.141(j) of the Commission's rules to permit certification of its aeronautical-mobile satellite service ("AMSS") transceiver, the HS-720 High-Speed Data Unit. This transceiver supports the Inmarsat, Swift64 and SwiftBroadband aircraft communications services as implemented in the Honeywell MCS-7200 Multi-Channel SATCOM system.

**MCS-7200 System Description**

The Honeywell MCS-7200 system is comprised of three units: the SD-720 Satellite Data Unit (SDU); the HS-720 High-Speed Data Unit (HSU); and the HP-720 High Power Amplifier (HPA). The SD-720 generates the Classic Aero signals using BPSK and QPSK. The HS-720 (subject of this waiver) generates Swift64 and SwiftBroadband signals using BPSK, QPSK, and 16QAM. The SDU and HSU signals are combined and amplified for transmission by the HP-720 HPA.

The Honeywell MCS-7200 SATCOM system provides seven baseband communication channels capable of supporting six simultaneous full-duplex circuit mode voice connections and one channel of packet-mode data. In addition, the MCS-7200 system provides multiple channels of Inmarsat Swift64 and SwiftBroadband functionality. This Swift capability is configurable to support four simultaneous Swift64 channels or two SwiftBroadband channels. The system functions in the 1525-1559 MHz receive band and 1626.5-1660.5 MHz transmit band.

Background

The Honeywell HS-720 transceiver meets the technical requirements of Part 87 AMSS rules with respect to output power, spurious emissions, intermodulation and priority and preemption. Specifically, Swift64 and SwiftBroadband transmission can be suspended if they would interfere with safety-related messages, or if ordered by the captain of the aircraft [per 47 CFR, Section 87.189(e)]. The Part 87 rules, however, only contemplate the modulation types and transmission characteristics used for the Inmarsat Aero-H, Aero-L, and Aero-I services (i.e. Classic Aero services). Inmarsat's Swift64 and SwiftBroadband services offer higher data rates by utilizing more efficient modulation techniques. The Part 87 rules have not yet been updated to reflect these emissions types and bandwidth.

87.131 Authorized Emissions

Section 87.131 authorizes G1D, G1E, and G1W for aircraft earth stations. The Swift64 and SwiftBroadband services, however, use QPSK and 16 Point Quadrature Amplitude Modulation ("16-QAM") modulation schemes, with emission types G7W, D1W, and D7W. Therefore, Honeywell International Inc. requests waiver of the authorized emissions in Section 87.131 of the Commission's rules.

87.137 Types of Emissions

Section 87.137(a) of the Commission's rules authorizes for aircraft earth stations emissions designator 21K0G1D. As explained above, however, Swift 64 and SwiftBroadband utilize QPSK and 16-QAM modulations, with emissions classes G7W, D1W, or D7W. In addition, the authorized bandwidth under 87.137(a) for aircraft earth station emissions above 50 MHz is 25 kHz. Due to the increased symbol rates for 16-QAM, a larger authorized bandwidth is necessary. An adequate bandwidth for Swift64 is 45 kHz and an adequate bandwidth for SwiftBroadband is 225 kHz.

Therefore, Honeywell International Inc. seeks waiver of Section 87.137(a) of the Commission's rules to authorize the following emissions designators for the Honeywell HS-720 High Speed Data Unit transceiver:

Emissions Designator	Authorized Bandwidth (kHz) (Above 50 MHz)
7K20G1D	25
40K0D1W	45
25K0G7W	225
50K0G7W	225
100KG7W	225
200KG7W	225
50K0D7W	225
100KD7W	225
200KD7W	225

87.139(i)(1), note 2 Emission Limitations

Section 87.139(i)(1) of the Commission's rules provides the required attenuation for a modulated carrier and note 2 provides an absolute offset of  $\pm 35$  kHz. Under the required designs for the new modulation techniques, in many cases, ninety-nine percent of the occupied bandwidth exceeds the  $\pm 35$  kHz offset. In other words, the new modulation schemes used for Swift64 and SwiftBroadband make meeting the offset impossible. In accordance with the Inmarsat requirements, Honeywell International Inc. requests a waiver of Section 87.139(i)(1), note 2 to permit an absolute offset of  $\pm 504$  kHz.

87.139(i)(3) Emission Limitations

The 3 kbps BPSK signaling channel used for Swift64 does not employ the same filtering as used by other modulation types. The BPSK signal will not meet the mask requirement as stated in Section 87.139(i)(3). The mask as defined by Inmarsat is:

Offset from Assigned Carrier Frequency (kHz)	Relative Level (dB) Minimum	Relative Level (dB) Maximum
0 to 1	-1.7	+1
1 to 10	Not Specified	+1
10 to 20	Not Specified	-16-(9/10)(F-10)
20 to 40	Not Specified	-25-(6/20)(F-20)
40 to 80	Not Specified	-31-(6/40)(F-40)
80 to 100	Not Specified	-37-(23/20)(F-80)

Honeywell International Inc. requests waiver of Section 87.139(i)(3) to allow the use of a 3 kbps BPSK emission that meets the Inmarsat mask requirement above. No waiver is necessary for the SwiftBroadband service because Inmarsat's restrictions are tighter than those specified in Section 87.139(i)(3).

87.141(j) Modulation Requirements

Section 87.141(j) of the Commission's rules requires transmitters used as aircraft earth stations to employ BPSK for transmission rates up to and including 2400 bps and to employ QPSK for higher rates. Due to the requirements of the Swift64 and SwiftBroadband services, the Honeywell HS-720 High Speed Data Unit transceiver uses additional modulation schemes that do not meet this requirement. Specifically, the Swift64 and SwiftBroadband services require the use of 16-QAM at transmission rates higher than 2400 bps and the use of BPSK for the Swift64 3kbps signaling channel. Honeywell International Inc. therefore requests waiver of Section 87.141(j) of the Commission's rules to permit these modulations.

Conclusion

Honeywell International Inc. requests that the Commission waive the requirements of Part 87 as described to permit certification of its Inmarsat AMSS transceiver, the Honeywell HS-720 High Speed Data Unit. Such waiver will not cause harmful interference to other services and is in the public interest. Honeywell International Inc. further requests expedited treatment of the instant waiver request.

Respectfully submitted,

Honeywell International Inc.

*Charlie Dosdall*

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