



AVIATION

EMS Technologies Canada, Ltd.,

400 Maple Grove Road
Ottawa, ONT, K2V 1B8
Telephone: (613) 591-9064

March 26, 2013

James Shaffer
Mobility Division
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

**Re: EMS Technologies Canada, Ltd.
Request for Waiver of Section 87.131, 87.137, 87.139(i)(1) and 87.141(i) to permit a
Class II permissive change to existing FCC certification grants.**

Dear Mr. Shaffer:

On March 12, 2010, the Wireless Telecommunications Bureau (“Bureau”) granted EMS Technologies Canada, Ltd. (“EMS”) a waiver of Sections 87.131, 87.133, 87.137, 87.139(i)(1), 87.139(i)(3) and 87.141(j) of the Commission’s rules to permit certification of its next generation aeronautical-mobile satellite service (“AMSS”) transceivers HSD-128, HSD-400, HSD-440-, HSD-X and HSD-Xi.¹

On April 29, 2010, the Wireless Telecommunications Bureau (“Bureau”) granted EMS Technologies Canada, Ltd. (“EMS”) a waiver of Sections 87.131, 87.133, 87.137, 87.139(i)(1), 87.139(i)(3) and 87.141(j) of the Commission’s rules to permit certification of its next generation aeronautical-mobile satellite service (“AMSS”) transceivers A781, HSD-MK2, A781-MK2, HSD-MK3, and A781-MK3.²

On July 5, 2010, the Wireless Telecommunications Bureau (“Bureau”) granted EMS Technologies Canada, Ltd. (“EMS”) a waiver of Section 87.139(i)(1) of the Commission’s rules

¹ See EMS Technologies Request for Waiver filed on March 9, 2010 and granted by the Bureau on March 12, 2010, included as an Exhibit A (“EMS Waiver Grant”).

² See EMS Technologies Request for Waiver filed on April 9, 2010 and granted by the Bureau on April 29, 2010, included as an Exhibit B (“EMS Waiver Grant”).

to permit certification of its next generation aeronautical-mobile satellite service (“AMSS”) transceiver HSD-MK2³

As discussed below, EMS Technologies Canada, Ltd, pursuant to section 1.925 of the Commission’s rules, hereby requests one additional waiver of the Commission’s rules. Specifically, EMS seeks a waiver to allow the introduction of High Data Rate, or HDR, services using new symbol rates and higher modulation schemes of 32QAM and 64QAM with the existing hardware platform. Specifically, EMS seeks a waiver of Sections 87.131, 87.137, 87.139(i)(1) and 87.141(i) of the Commission’s rules to permit a Class II permissive change to all of the existing Transceivers listed above.

These transceivers provide high-speed Internet, voice and video conferencing capabilities in the cockpit, in the cabin and at the gate. The transceivers have been marketed in the United States under FCC certification ID’s K6KHSD-128, K6KHSD-440, K6KHSD-X, K6KHSD-Xi K6KA781, K6KHSD-MK2, K6KA781-MK2, K6KHSD-MK3 and K6KA781-MK3 in support of the Inmarsat Classic, Swift64 and SwiftBroadband aircraft communications services. EMS’s transceivers provide high-speed voice and data links to Inmarsat’s world-wide satellite network in the 1525-1559 MHz receive and 1626.5-1660.5 MHz transmit bands.

The listed transceivers comply with Inmarsat technical requirements and specifications. A letter in support from Inmarsat can be provided at your request. In addition, the EMS transceiver meets the applicable ARINC Characteristics 429, 739, 600, 741 and 781; RTCA/DO-210 “The Satcom Minimum Operational Performance Standards;” and has been certified pursuant to a Federal Aviation Administration Type Certification, Supplemental Type Certification, and/or Technical Standard Order Certification as applicable to the end customer requirements. Therefore, grant of the waiver is in the public interest.

Requested Waiver – 87.139(i)(1)

As EMS explained in its previous waiver requests for the transceivers listed above, these transceivers meet the technical requirements of the Part 87 AMSS rules with respect to output power, spurious emissions, intermodulation and priority and preemption. Specifically, Swift64 and SwiftBroadband transmissions can be suspended if they would interfere with safety-related messages, or if ordered by the captain of the aircraft.⁴ 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. Inmarsat’s 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.

³ See EMS Technologies Request for Waiver filed on June 2, 2010 and granted by the Bureau on July 5, 2010, included as an Exhibit C (“EMS Waiver Grant”).

⁴ See 47 C.F.R. §87.189(e).

87.131 Authorized Emissions

Section 87.131 authorizes G1D, G1E and G1W for aircraft earth stations. The SwiftBroadband services, however, will use 32-QAM and 64-QAM (or Quadrature Amplitude Modulation) schemes, with emission type D7W in addition to QPSK and 16-QAM, which were covered under the previously submitted waiver. Therefore, EMS 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 and the authorized bandwidth for aircraft earth station emissions above 50 MHz is 25 kHz. Lower values of necessary and authorized bandwidths are also permitted. As explained above, however, SwiftBroadband service will utilize 32-QAM and 64-QAM modulation schemes, with emissions class D7W. Due to the increased symbol rates for QPSK, 16-QAM, 32-QAM and 64-QAM a larger authorized bandwidth is necessary. An adequate bandwidth for SwiftBroadband is 225 kHz.

Therefore, EMS seeks waiver of Section 87.137(a) of the Commission's rules to authorize the following emissions designators for the EMS transceivers:

| Emissions Designator | Authorized Bandwidth (kHz) (Above 50 MHz) |
|-----------------------------|--|
| 110KG7W | 225 |
| 110KD7W | 225 |
| 220KG7W | 225 |
| 220KD7W | 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 +/- 35 kHz. Under the required designs for the new modulation techniques, in many cases, ninety-nine percent of the occupied bandwidth exceeds the +/- 35 kHz offset. In other words, the new modulation schemes used for SwiftBroadband make meeting the offset impossible. In accordance with the Inmarsat

requirements, EMS requests a waiver of Section 87.139(i), note 2 to permit an absolute offset of +/- 560 kHz. The +/-560 kHz is derived from the relationship of the symbol rates. HDR has a maximum symbol rate of 168 ksps compared to 10.5 ksps for the services defined in part 87.

$$\frac{168 \text{ ksps}}{10.5 \text{ ksps}} \times (\pm 35 \text{ kHz}) = \pm 560 \text{ kHz}$$

+/- 35 kHz was based on a carrier with a symbol rate of 10.5 ksps. Hence, for the new bearer with a symbol rate of 168 ksps, the exclusion zone works out to be +/- 560 kHz from the carrier centre.

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 QPSK for higher rates. Due to the requirements of the SwiftBroadband service, the EMS transceivers use additional modulation schemes that do not meet this requirement. Specifically, the SwiftBroadband services require the use of 32-QAM and 64-QAM at transmission rates higher than 2400 bps in addition to QPSK and 16-QAM, which were covered under a previously submitted waiver. EMS therefore requests waiver of Section 87.141(j) of the Commission's rules to permit the use of 32-QAM and 64-QAM modulations.

Conclusion

EMS requests that the Commission waive the requirements of Part 87 described above to permit a Class II permissive change to all existing Inmarsat AMSS transceivers granted under FCC certification ID's K6KHSD-128, K6KHSD-440, K6KHSD-X, K6KHSD-Xi K6KA781, K6KHSD-MK2, K6KA781-MK2, K6KHSD-MK3 and K6KA781-MK3. The Commission has granted similar waivers to EMS, Rockwell Collins, Honeywell and others so that aircraft passengers and crew can receive high speed voice and data communications. Such waiver will not cause harmful interference to other services and is in the public interest.



March 26, 2013

Please feel free to contact the undersigned with any questions.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Steve Mills".

Steve Mills

EXHIBIT A



SQUIRE, SANDERS & DEMPSEY L.L.P.

Suite 500
1201 Pennsylvania Avenue, N.W.
Washington, D.C. 20004

Office: +1.202.626.6600
Fax: +1.202.626.6780

Direct: +1.202.626.6615
bolcott@ssd.com

March 4, 2010

BY CERTIFIED MAIL

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

Re: EMS Technologies Canada, Ltd. Request for Waiver of Part 87 Rules

Dear Sir or Madam:

On behalf of EMS Technologies Canada, Ltd., enclosed for filing please find a request for waiver of five (5) sections of Part 87 of the Commission's rules, along with an FCC Form 159 and a check payable to "FCC" in the amount of \$875.00.

Please date-stamp the extra copy and return it using the self-addressed, stamped envelope provided. Please feel free to contact us with any questions.

Sincerely,

Squire, Sanders & Dempsey L.L.P.

A handwritten signature in black ink, appearing to read "Bruce A. Olcott", is written over the typed name.

Bruce A. Olcott
Joshua T. Guyan

READ INSTRUCTIONS CAREFULLY
BEFORE PROCEEDING

FEDERAL COMMUNICATIONS COMMISSION
REMITTANCE ADVICE
FORM 159

Approved by OMB
3060-0589
Page No. 1 of 2

| | | | |
|--|--|---|---------------------------------|
| (1) LOCKBOX # 979097 | | SPECIAL USE ONLY | |
| | | FCC USE ONLY | |
| SECTION A - PAYER INFORMATION | | | |
| (2) PAYER NAME (if paying by credit card enter name exactly as it appears on the card) Joshua T. Guyan | | (3) TOTAL AMOUNT PAID (U.S. Dollars and cents) \$875.00 | |
| (4) STREET ADDRESS LINE NO. 1 1201 Pennsylvania Avenue, N.W. | | | |
| (5) STREET ADDRESS LINE NO. 2 Suit 500 | | | |
| (6) CITY Washington | | (7) STATE DC | (8) ZIP CODE 20004 |
| (9) DAYTIME TELEPHONE NUMBER (include area code) (202) 626-6245 | | (10) COUNTRY CODE (if not in U.S.A.) | |
| FCC REGISTRATION NUMBER (FRN) REQUIRED | | | |
| (11) PAYER (FRN) 0016829574 | | (12) FCC USE ONLY | |
| IF MORE THAN ONE APPLICANT, USE CONTINUATION SHEETS (FORM 159-C) COMPLETE SECTION BELOW FOR EACH SERVICE. IF MORE BOXES ARE NEEDED, USE CONTINUATION SHEET | | | |
| (13) APPLICANT NAME EMS Technologies Canada, Ltd. | | | |
| (14) STREET ADDRESS LINE NO. 1 400 Maple Grove Rd. | | | |
| (15) STREET ADDRESS LINE NO. 2 | | | |
| (16) CITY Ottawa | | (17) STATE Ontario | (18) ZIP CODE K2V 1B8 |
| (19) DAYTIME TELEPHONE NUMBER (include area code) (613) 591-6040 | | (20) COUNTRY CODE (if not in U.S.A.) Canada | |
| FCC REGISTRATION NUMBER (FRN) REQUIRED | | | |
| (21) APPLICANT (FRN) 0019381896 | | (22) FCC USE ONLY | |
| COMPLETE SECTION C FOR EACH SERVICE. IF MORE BOXES ARE NEEDED, USE CONTINUATION SHEET | | | |
| (23A) CALL SIGN/OTHER ID | (24A) PAYMENT TYPE CODE PDWM | (25A) QUANTITY | |
| (26A) FEE DUE FOR (PTC) \$875.00 | (27A) TOTAL FEE \$875.00 | FCC USE ONLY | |
| (28A) FCC CODE 1 | (29A) FCC CODE 2 | | |
| (23B) CALL SIGN/OTHER ID | (24B) PAYMENT TYPE CODE | (25B) QUANTITY | |
| (26B) FEE DUE FOR (PTC) | (27B) TOTAL FEE | FCC USE ONLY | |
| (28B) FCC CODE 1 | (29B) FCC CODE 2 | | |
| SECTION D - CERTIFICATION | | | |
| CERTIFICATION STATEMENT I, _____, certify under penalty of perjury that the foregoing and supporting information is true and correct to the best of my knowledge, information and belief. | | | |
| SIGNATURE _____ | | DATE _____ | |
| SECTION E - CREDIT CARD PAYMENT INFORMATION | | | |
| MASTERCARD _____ VISA _____ AMEX _____ DISCOVER _____ | | | |
| ACCOUNT NUMBER _____ | | EXPIRATION DATE _____ | |
| I hereby authorize the FCC to charge my credit card for the service(s)/authorization herein described. | | | |
| SIGNATURE _____ | | DATE _____ | |

SQUIRE SANDERS LEGAL COUNSEL WORLDWIDE

SPECIAL ACCOUNT
WASHINGTON, DC 20004

PNC Bank, N.A. 040
Alpha

10.3
5.00

Check Number **022616**

Date **March 4, 2010**

Amount ***** **\$875.00**

PAY: **Eight Hundred Seventy-Five Dollars and 00 Cents*******

To the
order of: **FCC**

Nancy K. Kondrat
ON THE ABOVE DATE OF ISSUE

⑈022616⑈ ⑆054000030⑆ 530072831⑈

March 4, 2010

BY CERTIFIED MAIL

James Shaffer
Mobility Division
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

**Re: WAVIER – EXPEDITED ACTION REQUESTED – EMS Technologies Canada, Ltd.
Request for Waiver of Part 87 Rules to Allow Equipment Certification of Aeronautical
Mobile Satellite Service Transceivers**

Dear Mr. Shaffer:

EMS Technologies Canada, Ltd. (“EMS”), by its attorneys, pursuant to section 1.925 of the Commission’s rules, hereby requests waiver of Sections 87.131, 87.133, 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”) transceivers HSD-128, HSD-400, HSD-440, HSD-X and HSD-Xi. These transceivers support the Inmarsat Classic, Swift64 and SwiftBroadband aircraft communications services.

Similar waivers of the Part 87 rules have been granted to permit certification of identical equipment manufactured by EMS but marketed by other companies and used to provide the Inmarsat Swift64 and SwiftBroadband service.¹ Such equipment is in use on aircraft to provide high-speed Internet, voice and video conferencing capabilities in the cockpit, in the cabin and at the gate. The EMS

¹ See Rockwell Collins equipment authorization for the HST-900 transceiver (which is identical to the EMS HSD-X), FCC ID AJK8221772 (2003); Rockwell Collins equipment authorization for the HST-2110 and HST-2120 transceivers, FCC IDs AJK8222231 and AJK8222233 (2006); Honeywell International Inc. equipment authorization for the HD-128 transceiver (which is identical to the EMS HSD-128), FCC ID GB8HD-128 (2007); and Rockwell Collins equipment authorization for the HST-2110B (which is identical to the EMS HSD-Xi) and HST-2120B, FCC IDs AJK8222232 and AJK8222234 (2008).

James Shaffer
March 4, 2010
Page 2

transceivers comply with Inmarsat technical requirements and specifications, and Inmarsat has expressed its support for the instant waiver. A letter in support from Inmarsat can be provided at your request. In addition, the EMS transceivers meet ARINC Characteristics 429, 739, 600 and 741/781; RTCA/DO-210; the Satcom Minimum Operational Performance Standards; and are certified pursuant to a Federal Aviation Administration Technical Standard Order authorization. Therefore, grant of the instant waiver is in the public interest and should be granted on an expedited basis.

EMS Transceivers Background

EMS's transceivers provide high-speed voice and data links to Inmarsat's world-wide satellite network in the 1525-1559 MHz receive and 1626.5-1660.5 MHz transmit bands. The HSD-128 supports the Inmarsat Swift64 service and can be upgraded for SwiftBroadband services. The HSD-400 contains two channel card subsystems that can support four simultaneous Swift64 channels or two SwiftBroadband (BGAN) channels. The HSD-440 supports Inmarsat classic aero service as well as SwiftBroadband and can fall back to Swift64 for maximum communications flexibility and redundancy. The HSD-X extension terminal expands the channel capacity of an HSD system by providing an additional voice or 64 kbps data channel and the HSD-Xi extension terminal expands the capacity of an HSD-440 to provide one additional SwiftBroadband or Swift64 channel.

Requested Waivers – Part 87

The EMS transceivers will meet the technical requirements of Part 87 AMSS rules with respect to output power, spurious emissions, intermodulation and priority and preemption. Specifically, Swift64 and SwiftBroadband transmissions can be suspended if they would interfere with safety-related messages, or if ordered by the captain of the aircraft.² 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. 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 16 Point Quadrature Amplitude Modulation ("16-QAM") and QPSK modulation schemes, with emission types G7W and D7W. Therefore, EMS requests waiver of the authorized emissions in Section 87.131 of the Commission's rules.

87.133 Frequency Stability

Pursuant to Section 87.133(a), the frequency tolerance of an aircraft earth station operating in the 1626.5-1660.5 MHz band is +/- 320 Hz. For purposes of bench testing for certification, a tolerance of +/-

² See 47 C.F.R. §87.189(e).

James Shaffer
 March 4, 2010
 Page 3

160 Hz applies to the reference oscillator of the transmitter. The EMS transceivers contain a HSR oscillator with a guaranteed accuracy (including aging) equivalent to +/- 365 Hz. Therefore, the guaranteed accuracy of any Classic, Swift64 or SwiftBroadband transmissions will be +/- 365 Hz and EMS requests a waiver of Section 87.133(a) of the Commission's rules for this reason.

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, Swift64 and SwiftBroadband utilize a 16-QAM and QPSK modulations, with emissions classes D7W, G7W or G1E. 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, EMS seeks waiver of Section 87.137(a) of the Commission's rules to authorize the following emissions designators for the EMS transceivers:

| Emissions Designator | Authorized Bandwidth (kHz) (Above 50 MHz) |
|-----------------------------|--|
| 6K80G1E | 25 |
| 7K20G1E | 45 |
| 40K0G1E | 45 |
| 40K0G1D | 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 +/- 35 kHz. Under the required designs for the new modulation techniques, in many cases, ninety-nine percent of the occupied bandwidth exceeds the +/- 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, EMS requests a waiver of Section 87.139(i), note 2 to permit an absolute offset of +/- 504 kHz.³

³ See Inmarsat BGAN SDM Vol. 5, Ch. 3, ¶ 2.4.8.

James Shaffer
 March 4, 2010
 Page 4

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 is⁴:

| Offset from Assigned Carrier Frequency (KHz) | Relative Level (dB) Minimum | 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) |

EMS requests waiver of Section 87.139(i)(3) to allow the use of a 3 kbps BPSK emission that meets the Inmarsat mask requirements 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 QPSK for higher rates. Due to the requirements of the Swift64 and SwiftBroadband services, the EMS transceivers use 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 3 kbps signaling channel. EMS therefore requests waiver of Section 87.141(j) of the Commission's rules to permit these modulations.

Conclusion

EMS requests that the Commission waive the requirements of Part 87 described above to permit certification of its Inmarsat AMSS transceivers. The Commission has granted similar waivers to Rockwell Collins, Honeywell and others so that aircraft passengers and crew can receive high speed voice and data communications. Such waiver will not cause harmful interference to other services and is in the public interest. EMS further requests expedited treatment of the instant waiver request.

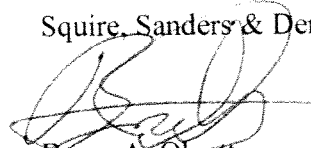
⁴ See Inmarsat Mini-M System Definition Manual, Module 2, Part 1, Section 3.5.8.2 and Figure 11.

James Shaffer
March 4, 2010
Page 5

Please feel free to contact the undersigned with any questions.

Respectfully submitted,

Squire, Sanders & Dempsey L.L.P.

A handwritten signature in black ink, appearing to read "Bruce A. Olcott", written over a horizontal line.

Bruce A. Olcott
Joshua T. Guyan

March 9, 2010

BY OVERNIGHT MAIL (202-418-0620)

James Shaffer
Mobility Division
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Erratum; EMS Technologies Canada, Ltd. Request for Waiver of Part 87 Rules

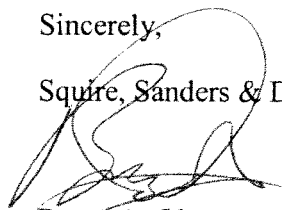
Dear Mr. Shaffer:

On behalf of EMS Technologies Canada, Ltd., enclosed for filing please find an erratum request for waiver of five (5) sections of Part 87 of the Commission's rules. The original was sent to you on March 4, 2010. The only change in the erratum is the first requested emissions designator and authorized bandwidth in the chart on page 3, which was changed from 6K80G1E with an authorized bandwidth of 25 kHz to an emissions designator of 21K0G1D with an authorized bandwidth of 45 kHz.

Please feel free to contact us with any questions.

Sincerely,

Squire, Sanders & Dempsey L.L.P.



Bruce A. Olcott
Joshua T. Guyan

March 9, 2010

BY OVERNIGHT MAIL

James Shaffer
Mobility Division
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

**Re: ERRATUM – WAVIER – EXPEDITED ACTION REQUESTED – EMS Technologies
Canada, Ltd. Request for Waiver of Part 87 Rules to Allow Equipment Certification of
Aeronautical Mobile Satellite Service Transceivers**

Dear Mr. Shaffer:

EMS Technologies Canada, Ltd. (“EMS”), by its attorneys, pursuant to section 1.925 of the Commission’s rules, hereby requests waiver of Sections 87.131, 87.133, 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”) transceivers HSD-128, HSD-400, HSD-440, HSD-X and HSD-Xi. These transceivers support the Inmarsat Classic, Swift64 and SwiftBroadband aircraft communications services.

Similar waivers of the Part 87 rules have been granted to permit certification of identical equipment manufactured by EMS but marketed by other companies and used to provide the Inmarsat Swift64 and SwiftBroadband service.¹ Such equipment is in use on aircraft to provide high-speed Internet, voice and video conferencing capabilities in the cockpit, in the cabin and at the gate. The EMS

¹ See Rockwell Collins equipment authorization for the HST-900 transceiver (which is identical to the EMS HSD-X), FCC ID AJK8221772 (2003); Rockwell Collins equipment authorization for the HST-2110 and HST-2120 transceivers, FCC IDs AJK8222231 and AJK8222233 (2006); Honeywell International Inc. equipment authorization for the HD-128 transceiver (which is identical to the EMS HSD-128), FCC ID GB8HD-128 (2007); and Rockwell Collins equipment authorization for the HST-2110B (which is identical to the EMS HSD-Xi) and HST-2120B, FCC IDs AJK8222232 and AJK8222234 (2008).

James Shaffer
March 9, 2010
Page 2

transceivers comply with Inmarsat technical requirements and specifications, and Inmarsat has expressed its support for the instant waiver. A letter in support from Inmarsat can be provided at your request. In addition, the EMS transceivers meet ARINC Characteristics 429, 739, 600 and 741/781; RTCA/DO-210; the Satcom Minimum Operational Performance Standards; and are certified pursuant to a Federal Aviation Administration Technical Standard Order authorization. Therefore, grant of the instant waiver is in the public interest and should be granted on an expedited basis.

EMS Transceivers Background

EMS's transceivers provide high-speed voice and data links to Inmarsat's world-wide satellite network in the 1525-1559 MHz receive and 1626.5-1660.5 MHz transmit bands. The HSD-128 supports the Inmarsat Swift64 service and can be upgraded for SwiftBroadband services. The HSD-400 contains two channel card subsystems that can support four simultaneous Swift64 channels or two SwiftBroadband (BGAN) channels. The HSD-440 supports Inmarsat classic aero service as well as SwiftBroadband and can fall back to Swift64 for maximum communications flexibility and redundancy. The HSD-X extension terminal expands the channel capacity of an HSD system by providing an additional voice or 64 kbps data channel and the HSD-Xi extension terminal expands the capacity of an HSD-440 to provide one additional SwiftBroadband or Swift64 channel.

Requested Waivers – Part 87

The EMS transceivers will meet the technical requirements of Part 87 AMSS rules with respect to output power, spurious emissions, intermodulation and priority and preemption. Specifically, Swift64 and SwiftBroadband transmissions can be suspended if they would interfere with safety-related messages, or if ordered by the captain of the aircraft.² 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. 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 16 Point Quadrature Amplitude Modulation ("16-QAM") and QPSK modulation schemes, with emission types G7W and D7W. Therefore, EMS requests waiver of the authorized emissions in Section 87.131 of the Commission's rules.

87.133 Frequency Stability

Pursuant to Section 87.133(a), the frequency tolerance of an aircraft earth station operating in the 1626.5-1660.5 MHz band is +/- 320 Hz. For purposes of bench testing for certification, a tolerance of +/-

² See 47 C.F.R. §87.189(e).

James Shaffer
 March 9, 2010
 Page 3

160 Hz applies to the reference oscillator of the transmitter. The EMS transceivers contain a HSR oscillator with a guaranteed accuracy (including aging) equivalent to +/- 365 Hz. Therefore, the guaranteed accuracy of any Classic, Swift64 or SwiftBroadband transmissions will be +/- 365 Hz and EMS requests a waiver of Section 87.133(a) of the Commission's rules for this reason.

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, Swift64 and SwiftBroadband utilize a 16-QAM and QPSK modulations, with emissions classes D7W, G7W or G1E. 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, EMS seeks waiver of Section 87.137(a) of the Commission's rules to authorize the following emissions designators for the EMS transceivers:

| Emissions Designator | Authorized Bandwidth (kHz) (Above 50 MHz) |
|-----------------------------|--|
| 21K0G1D | 45 |
| 7K20G1E | 45 |
| 40K0G1E | 45 |
| 40K0G1D | 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 +/- 35 kHz. Under the required designs for the new modulation techniques, in many cases, ninety-nine percent of the occupied bandwidth exceeds the +/- 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, EMS requests a waiver of Section 87.139(i), note 2 to permit an absolute offset of +/- 504 kHz.³

³ See Inmarsat BGAN SDM Vol. 5, Ch. 3, ¶ 2.4.8.

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 is⁴:

| Offset from Assigned Carrier Frequency (KHz) | Relative Level (dB) Minimum | 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) |

EMS requests waiver of Section 87.139(i)(3) to allow the use of a 3 kbps BPSK emission that meets the Inmarsat mask requirements 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 QPSK for higher rates. Due to the requirements of the Swift64 and SwiftBroadband services, the EMS transceivers use 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 3 kbps signaling channel. EMS therefore requests waiver of Section 87.141(j) of the Commission's rules to permit these modulations.

Conclusion

EMS requests that the Commission waive the requirements of Part 87 described above to permit certification of its Inmarsat AMSS transceivers. The Commission has granted similar waivers to Rockwell Collins, Honeywell and others so that aircraft passengers and crew can receive high speed voice and data communications. Such waiver will not cause harmful interference to other services and is in the public interest. EMS further requests expedited treatment of the instant waiver request.

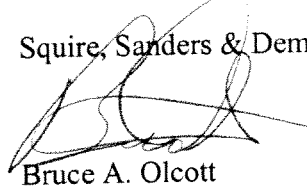
⁴ See Inmarsat Mini-M System Definition Manual, Module 2, Part 1, Section 3.5.8.2 and Figure 11.

James Shaffer
March 9, 2010
Page 5

Please feel free to contact the undersigned with any questions.

Respectfully submitted,

Squire, Sanders & Dempsey L.L.P.

A handwritten signature in black ink, appearing to be "Bruce A. Olcott", written over a horizontal line.

Bruce A. Olcott
Joshua T. Guyan



Federal Communications Commission
Washington, D.C. 20554

March 12, 2010

Bruce A. Olcott
Squire, Sanders & Dempsey L.L.P.
1201 Pennsylvania Avenue, N.W., Suite 500
Washington, D.C. 20004

RE: EMS Technologies Canada, Ltd. (EMS) Request for Waiver of Part 87 Rules

Dear Mr. Olcott:

We have before us your letter, dated March 4, 2010, amended by erratum on March 9, 2010, requesting on behalf of EMS Technologies Canada, Ltd. (EMS) a waiver of certain provisions¹ of the Commission's Part 87 Rules to permit the certification of EMS's aeronautical-mobile satellite service transceivers HSD-128, HSD-400, HSD-440, HSD-X and HSD-Xi. You state that this equipment is used on aircraft to provide Inmarsat Classic, Swift64, and SwiftBroadband aircraft communications services. You note that previous waivers have been granted by the Commission to permit certification of identical equipment manufactured by EMS but marketed by other companies.²

We have reviewed your request, and find that grant of a waiver is warranted under the circumstances presented. Specifically, we conclude that the underlying purpose of the rules would not be served by application to the instant case, and that grant of the requested waiver would be in the public interest.³ We therefore grant the waiver request, without prejudice to enforcement action.

Accordingly, pursuant to the authority contained in Sections 0.131 and 0.331 of the Commission's Rules, 47 C.F.R. §§ 0.131, 0.331, the request for waiver filed by EMS Technologies Canada, Ltd. on March 4, 2010, and amended March 9, 2010, IS GRANTED without prejudice to enforcement action.

FEDERAL COMMUNICATIONS COMMISSION

A handwritten signature in black ink, appearing to read "Scot Stone".

Scot Stone
Deputy Chief, Mobility Division
Wireless Telecommunications Bureau

¹ Specifically, 47 C.F.R. §§ 87.131, 87.133, 87.137, 87.139(i)(1), 87.139(i)(3), 87.141(j).

² You also state that EMS's transceivers comply with ARINC Characteristics 429, 739, 600, and 741/781; RTCA DO-210; and the Satcom Minimum Operational Performance Standards; and are certified pursuant to Federal Aviation Administration Technical Standards Order authorization. Further, you state that the equipment complies with Inmarsat technical requirements and that Inmarsat has expressed support for EMS's request for waiver.

³ See 47 C.F.R. § 1.925(b)(3).

EXHIBIT B

April 9, 2010

BY CERTIFIED MAIL

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

Re: EMS Technologies Canada, Ltd. Request for Waiver of Part 87 Rules

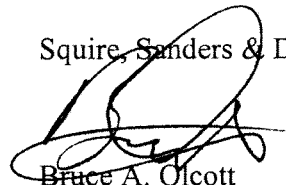
Dear Sir or Madam:

On behalf of EMS Technologies Canada, Ltd., enclosed for filing please find a request for waiver of five (5) sections of Part 87 of the Commission's rules, along with an FCC Form 159 and a check payable to "FCC" in the amount of \$875.00.

Please date-stamp the extra copy and return it using the self-addressed, stamped envelope provided. Please feel free to contact us with any questions.

Sincerely,

Squire, Sanders & Dempsey L.L.P.



Bruce A. Olcott
Joshua T. Guyan

READ INSTRUCTIONS CAREFULLY
BEFORE PROCEEDING

FEDERAL COMMUNICATIONS COMMISSION
REMITTANCE ADVICE
FORM 159

Approved by OMB
3060-0589
Page No 1 of 2

| | | | |
|---|--|---|---------------------------------|
| (1) LOCKBOX # 979097 | | SPECIAL USE ONLY | |
| | | FCC USE ONLY | |
| SECTION A - PAYER INFORMATION | | | |
| (2) PAYER NAME (if paying by credit card enter name exactly as it appears on the card) Joshua T. Guyan | | (3) TOTAL AMOUNT PAID (U.S. Dollars and cents) \$875.00 | |
| (4) STREET ADDRESS LINE NO. 1 1201 Pennsylvania Avenue, N.W. | | | |
| (5) STREET ADDRESS LINE NO. 2 Suite 500 | | | |
| (6) CITY Washington | | (7) STATE DC | (8) ZIP CODE 20004 |
| (9) DAYTIME TELEPHONE NUMBER (include area code) (202) 626-6245 | | (10) COUNTRY CODE (if not in U.S.A.) | |
| FCC REGISTRATION NUMBER (FRN) REQUIRED | | | |
| (11) PAYER (FRN) 0016829574 | | (12) FCC USE ONLY | |
| IF MORE THAN ONE APPLICANT, USE CONTINUATION SHEETS (FORM 159-C) COMPLETE SECTION BELOW FOR EACH SERVICE, IF MORE BOXES ARE NEEDED, USE CONTINUATION SHEET | | | |
| (13) APPLICANT NAME EMS Technologies Canada, Ltd. | | | |
| (14) STREET ADDRESS LINE NO. 1 400 Maple Grove Rd. | | | |
| (15) STREET ADDRESS LINE NO. 2 | | | |
| (16) CITY Ottawa | | (17) STATE Ontario | (18) ZIP CODE K2V 1B8 |
| (19) DAYTIME TELEPHONE NUMBER (include area code) (613) 591-6040 | | (20) COUNTRY CODE (if not in U.S.A.) Canada | |
| FCC REGISTRATION NUMBER (FRN) REQUIRED | | | |
| (21) APPLICANT (FRN) 0019381896 | | (22) FCC USE ONLY | |
| COMPLETE SECTION C FOR EACH SERVICE, IF MORE BOXES ARE NEEDED, USE CONTINUATION SHEET | | | |
| (23A) CALL SIGN/OTHER ID | (24A) PAYMENT TYPE CODE PDWM | (25A) QUANTITY | |
| (26A) FEE DUE FOR (PTC) \$875.00 | (27A) TOTAL FEE \$875.00 | FCC USE ONLY | |
| (28A) FCC CODE 1 | | (29A) FCC CODE 2 | |
| (23B) CALL SIGN/OTHER ID | (24B) PAYMENT TYPE CODE | (25B) QUANTITY | |
| (26B) FEE DUE FOR (PTC) | (27B) TOTAL FEE | FCC USE ONLY | |
| (28B) FCC CODE 1 | | (29B) FCC CODE 2 | |
| SECTION D - CERTIFICATION | | | |
| CERTIFICATION STATEMENT I, _____, certify under penalty of perjury that the foregoing and supporting information is true and correct to the best of my knowledge, information and belief. | | | |
| SIGNATURE _____ | | DATE _____ | |
| SECTION E - CREDIT CARD PAYMENT INFORMATION | | | |
| MASTERCARD _____ VISA _____ AMEX _____ DISCOVER _____ | | | |
| ACCOUNT NUMBER _____ | | EXPIRATION DATE _____ | |
| I hereby authorize the FCC to charge my credit card for the service(s)/authorization herein described. | | | |
| SIGNATURE _____ | | DATE _____ | |

SQUIRE SANDERS

LEGAL COUNSEL WORLDWIDE

PNC Bank, N.A. 040 Virginia

10-3 540

Check Number 022636

Date April 9, 2010

SPECIAL ACCOUNT WASHINGTON, DC 20004

Amount ***** \$875.00

PAY: Eight Hundred Seventy-Five Dollars and 00 Cents*****

To the order of: FCC

Nancy A. Kuntz MP

THE NATIONAL ARCHIVE CONTAINS THE SQUIRE SANDERS VIDEO PERIODICALLY UPDATING IN THE MULTIPLE POSITIONS. DO NOT AT AN ANGLE TO VIEW. VOID IF NOT PRESENT.

022636 054000030 5300728311

April 9, 2010

BY CERTIFIED MAIL

James Shaffer
Mobility Division
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: EMS Technologies Canada, Ltd. Request for Waiver of Part 87 Rules to Allow Equipment Certification of Aeronautical Mobile Satellite Service Transceivers

Dear Mr. Shaffer:

EMS Technologies Canada, Ltd. ("EMS"), by its attorneys, pursuant to section 1.925 of the Commission's rules, hereby requests waiver of Sections 87.131, 87.133, 87.137, 87.139(i)(1), 87.139(i)(3) and 87.141(j) of the Commission's rules to permit certification of its next generation aeronautical-mobile satellite service ("AMSS") transceivers A781, HSD-MK2, A781-MK2, HSD-MK3, and A781-MK3. These transceivers will be introduced as new EMS products in the United States once FCC certification has been secured and will support the Inmarsat Classic, Swift64 and SwiftBroadband aircraft communications services.

Similar waivers of the Part 87 rules have been granted to EMS, Honeywell International, Inc., and Rockwell Collins, Inc. to permit certification of similar equipment.¹ Such equipment is intended for use on aircraft to provide high-speed Internet, voice and video conferencing capabilities in the cockpit, in the cabin and at the gate. The EMS transceivers comply with Inmarsat technical requirements and specifications. A letter in support from Inmarsat can be provided at your request. In addition, the EMS transceivers meet the applicable ARINC Characteristics 429, 739, 600, 741 and 781; RTCA/DO-210 "The

¹ See EMS equipment authorization for the HSD-440 transceiver, FCC ID K6KHSD-440 (2010), Honeywell International, Inc. equipment authorization for the HD-128 transceiver, FCC ID GB8HD-128 (2007), and Rockwell Collins, Inc. equipment authorization for the HST-2110B and HST-2120B transceivers, FCC ID AJK8222232 and AJK8222234 (2008).

Satcom Minimum Operational Performance Standards,” and will be certified pursuant to a Federal Aviation Administration Type Certification, Supplemental Type Certification, and/or Technical Standard Order Certification as applicable to the end customer requirements. Therefore, grant of the instant waiver is in the public interest.

EMS Transceivers Background

EMS’s transceivers would provide high-speed voice and data links to Inmarsat’s world-wide satellite network in the 1525-1559 MHz receive and 1626.5-1660.5 MHz transmit bands. The next generation transceivers A781, HSD-MK2, A781-MK2, HSD-MK3, and A781-MK3 support the Inmarsat Classic AMS(R)S, Swift64, and SwiftBroadband services. The A781 is a derivative of the authorized HSD-440 (FCC ID K6KHSD-440). It uses the same transceiver channel cards, a different output power amplifier, and is packaged in a six Modular Concept Unit (“MCU”) equipment box versus an eight MCU used for the HSD-440. It is also capable of operation with its internal amplifier or with a separate external flange mounted power amplifier. The HSD-MK2 is also a derivative of the authorized HSD-440. It employs a different channel card to provide additional Inmarsat Classic channels. The A781-MK2 uses this same channel card as the HSD-MK2 but is based on the A781 package. Finally, the HSD-MK3 and the A781-MK3 transceivers employ a third type of transceiver channel card that supports transmission of different types of Inmarsat services on the same card.

Requested Waivers – Part 87

The EMS transceivers will meet the technical requirements of Part 87 AMSS rules with respect to output power, spurious emissions, intermodulation and priority and preemption. Specifically, Swift64 and SwiftBroadband transmissions can be suspended if they would interfere with safety-related messages, or if ordered by the captain of the aircraft.² 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. 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 16 Point Quadrature Amplitude Modulation (“16-QAM”) and QPSK modulation schemes, with emission types G7W and D7W. Therefore, EMS requests waiver of the authorized emissions in Section 87.131 of the Commission’s rules.

² See 47 C.F.R. §87.189(e).

87.133 Frequency Stability

Pursuant to Section 87.133(a), the frequency tolerance of an aircraft earth station operating in the 1626.5-1660.5 MHz band is +/- 320 Hz. For purposes of bench testing for certification, a tolerance of +/- 160 Hz applies to the reference oscillator of the transmitter. The EMS transceivers contain a HSR oscillator with a guaranteed accuracy (including aging) equivalent to +/- 365 Hz. Therefore, the guaranteed accuracy of any Classic, Swift64 or SwiftBroadband transmissions will be +/- 365 Hz and EMS requests a waiver of Section 87.133(a) of the Commission's rules for this reason.

87.137 Types of Emissions

Section 87.137(a) of the Commission's rules authorizes for aircraft earth stations emissions designator 21K0G1D and the authorized bandwidth for aircraft earth station emissions above 50 MHz is 25 kHz. Lower values of necessary and authorized bandwidth are also permitted. As explained above, Swift64 and SwiftBroadband utilize a 16-QAM and QPSK modulations, with emissions classes D7W, G7W or G1E. In addition, 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, EMS seeks waiver of Section 87.137(a) of the Commission's rules to authorize the following emissions designators and authorized bandwidth for the EMS transceivers:

| Emissions Designator | Authorized Bandwidth (kHz) (Above 50 MHz) |
|-----------------------------|--|
| 21K0G1D | 45 |
| 7K20G1E | 45 |
| 40K0G1E | 45 |
| 40K0G1D | 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 +/- 35 kHz. Under the required designs for the new modulation techniques, in many cases, ninety-nine percent of the occupied bandwidth exceeds the +/- 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, EMS requests a waiver of Section 87.139(i), note 2 to permit an absolute offset of +/- 504 kHz.³

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 is⁴:

| Offset from Assigned Carrier Frequency (KHz) | Relative Level (dB) Minimum | 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) |

EMS requests waiver of Section 87.139(i)(3) to allow the use of a 3 kbps BPSK emission that meets the Inmarsat mask requirements 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 QPSK for higher rates. Due to the requirements of the Swift64 and SwiftBroadband services, the EMS transceivers use 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 3 kbps signaling channel. EMS therefore requests waiver of Section 87.141(j) of the Commission's rules to permit these modulations.

Conclusion

EMS requests that the Commission waive the requirements of Part 87 described above to permit certification of its Inmarsat AMSS transceivers. The Commission has granted similar waivers to EMS, Rockwell Collins, Honeywell and others so that aircraft passengers and crew can receive high speed voice and data communications. Such waiver will not cause harmful interference to other services and is in the public interest.

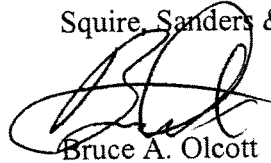
³ See Inmarsat BGAN SDM Vol. 5, Ch. 3, ¶ 2.4.8.

⁴ See Inmarsat Mini-M System Definition Manual, Module 2, Part 1, Section 3.5.8.2 and Figure 11.

Please feel free to contact the undersigned with any questions.

Respectfully submitted,

Squire, Sanders & Dempsey L.L.P.

A handwritten signature in black ink, appearing to be "Bruce A. Olcott", written in a cursive style.

Bruce A. Olcott
Joshua T. Guyan



SQUIRE, SANDERS & DEMPSEY L.L.P.

Suite 500
1201 Pennsylvania Avenue, N.W.
Washington, DC 20004

Office: +1.202.626.6600
Fax: +1.202.626.6780

Direct Dial: +1.202.626.6615
bolcott@ssd.com

April 9, 2010

GRANTED

FOR THE REASONS INDICATED BELOW

APRIL 29, 2010

BY CERTIFIED MAIL

James Shaffer
Mobility Division
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: EMS Technologies Canada, Ltd. Request for Waiver of Part 87 Rules to Allow Equipment Certification of Aeronautical Mobile Satellite Service Transceivers

Dear Mr. Shaffer:

EMS Technologies Canada, Ltd. ("EMS"), by its attorneys, pursuant to section 1.925 of the Commission's rules, hereby requests waiver of Sections 87.131, 87.133, 87.137, 87.139(i)(1), 87.139(i)(3) and 87.141(j) of the Commission's rules to permit certification of its next generation aeronautical-mobile satellite service ("AMSS") transceivers A781, HSD-MK2, A781-MK2, HSD-MK3, and A781-MK3. These transceivers will be introduced as new EMS products in the United States once FCC certification has been secured and will support the Inmarsat Classic, Swift64 and SwiftBroadband aircraft communications services.

Similar waivers of the Part 87 rules have been granted to EMS, Honeywell International, Inc., and Rockwell Collins, Inc. to permit certification of similar equipment.¹ Such equipment is intended for use on aircraft to provide high-speed Internet, voice and video conferencing capabilities in the cockpit, in the cabin and at the gate. The EMS transceivers comply with Inmarsat technical requirements and specifications. A letter in support from Inmarsat can be provided at your request. In addition, the EMS transceivers meet the applicable ARINC Characteristics 429, 739, 600, 741 and 781; RTCA/DO-210 "The

¹ See EMS equipment authorization for the HSD-440 transceiver, FCC ID K6KHSD-440 (2010), Honeywell International, Inc. equipment authorization for the HD-128 transceiver, FCC ID GB8HD-128 (2007), and Rockwell Collins, Inc. equipment authorization for the HST-2110B and HST-2120B transceivers, FCC ID AJK8222232 and AJK8222234 (2008).

CINCINNATI • CLEVELAND • COLUMBUS • HOUSTON • LOS ANGELES • MIAMI • NEW YORK • PALO ALTO • PHOENIX • SAN FRANCISCO • TALLAHASSEE • TAMPA
TYSONS CORNER • WASHINGTON, DC • WEST PALM BEACH | BOGOTÁ • BUENOS AIRES • CARACAS • LA PAZ • LIMA • PANAMÁ • RIO DE JANEIRO • SANTIAGO •
SANTO DOMINGO • SÃO PAULO | BRATISLAVA • BRUSSELS • BUCHAREST • BUDAPEST • FRANKFURT • KYIV • LONDON • MOSCOW • PRAGUE • WARSAW

BEIJING • HONG KONG • SHANGHAI • TOKYO

¹ INDEPENDENT NETWORK FIRM

www.ssd.com

EXHIBIT

Satcom Minimum Operational Performance Standards;" and will be certified pursuant to a Federal Aviation Administration Type Certification, Supplemental Type Certification, and/or Technical Standard Order Certification as applicable to the end customer requirements. Therefore, grant of the instant waiver is in the public interest.

EMS Transceivers Background

EMS's transceivers would provide high-speed voice and data links to Inmarsat's world-wide satellite network in the 1525-1559 MHz receive and 1626.5-1660.5 MHz transmit bands. The next generation transceivers A781, HSD-MK2, A781-MK2, HSD-MK3, and A781-MK3 support the Inmarsat Classic AMS(R)S, Swift64, and SwiftBroadband services. The A781 is a derivative of the authorized HSD-440 (FCC ID K6KHSD-440). It uses the same transceiver channel cards, a different output power amplifier, and is packaged in a six Modular Concept Unit ("MCU") equipment box versus an eight MCU used for the HSD-440. It is also capable of operation with its internal amplifier or with a separate external flange mounted power amplifier. The HSD-MK2 is also a derivative of the authorized HSD-440. It employs a different channel card to provide additional Inmarsat Classic channels. The A781-MK2 uses this same channel card as the HSD-MK2 but is based on the A781 package. Finally, the HSD-MK3 and the A781-MK3 transceivers employ a third type of transceiver channel card that supports transmission of different types of Inmarsat services on the same card.

Requested Waivers – Part 87

The EMS transceivers will meet the technical requirements of Part 87 AMSS rules with respect to output power, spurious emissions, intermodulation and priority and preemption. Specifically, Swift64 and SwiftBroadband transmissions can be suspended if they would interfere with safety-related messages, or if ordered by the captain of the aircraft.² 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. 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 16 Point Quadrature Amplitude Modulation ("16-QAM") and QPSK modulation schemes, with emission types G7W and D7W. Therefore, EMS requests waiver of the authorized emissions in Section 87.131 of the Commission's rules.

² See 47 C.F.R. §87.189(e).

87.133 Frequency Stability

Pursuant to Section 87.133(a), the frequency tolerance of an aircraft earth station operating in the 1626.5-1660.5 MHz band is +/- 320 Hz. For purposes of bench testing for certification, a tolerance of +/- 160 Hz applies to the reference oscillator of the transmitter. The EMS transceivers contain a HSR oscillator with a guaranteed accuracy (including aging) equivalent to +/- 365 Hz. Therefore, the guaranteed accuracy of any Classic, Swift64 or SwiftBroadband transmissions will be +/- 365 Hz and EMS requests a waiver of Section 87.133(a) of the Commission's rules for this reason.

87.137 Types of Emissions

Section 87.137(a) of the Commission's rules authorizes for aircraft earth stations emissions designator 21K0G1D and the authorized bandwidth for aircraft earth station emissions above 50 MHz is 25 kHz. Lower values of necessary and authorized bandwidth are also permitted. As explained above, Swift64 and SwiftBroadband utilize a 16-QAM and QPSK modulations, with emissions classes D7W, G7W or G1E. In addition, 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, EMS seeks waiver of Section 87.137(a) of the Commission's rules to authorize the following emissions designators and authorized bandwidth for the EMS transceivers:

| Emissions Designator | Authorized Bandwidth (kHz) (Above 50 MHz) |
|-----------------------------|--|
| 21K0G1D | 45 |
| 7K20G1E | 45 |
| 40K0G1E | 45 |
| 40K0G1D | 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 +/- 35 kHz. Under the required designs for the new modulation techniques, in many cases, ninety-nine percent of the occupied bandwidth exceeds the +/- 35 kHz offset. In other words, the new modulation schemes used for Swift64 and SwiftBroadband make

EXHIBIT C

June 2, 2010

BY CERTIFIED MAIL

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

Re: EMS Technologies Canada, Ltd. Request for Waiver of Part 87 Rule

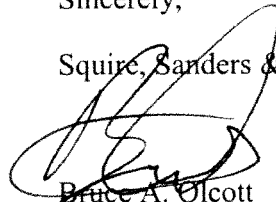
Dear Sir or Madam:

On behalf of EMS Technologies Canada, Ltd., enclosed for filing please find a request for waiver of one (1) section of Part 87 of the Commission's rules, along with an FCC Form 159 and a check payable to "FCC" in the amount of \$175.00.

Please date-stamp the extra copy and return it using the self-addressed, stamped envelope provided. Please feel free to contact us with any questions.

Sincerely,

Squire, Sanders & Dempsey L.L.P.



Bruce A. Olcott
Joshua T. Guyan

SQUIRE SANDERS | LEGAL
COUNSEL
WORLDWIDE

SPECIAL ACCOUNT
WASHINGTON, DC 20004

PNC Bank, N.A. 040
Virginia

15-3
540

Check Number **022661**

Date June 2, 2010

Amount ***** **\$175.00**

PAY: **One Hundred Seventy-Five Dollars and 00 Cents*******

To the
order of: **FCC**

Tammy A. Krasak MP

VOID 6 MONTHS AFTER DATE OF ISSUE

THE BACK OF THIS DOCUMENT CONTAINS THE SQUIRE SANDERS LOGO PRINTED IN WHITE INK IN MULTIPLE POSITIONS - HOLD AT AN ANGLE TO VIEW - VOID IF NOT PRESENT

⑈022661⑈ ⑆054000030⑆ 5300728311⑈

READ INSTRUCTIONS CAREFULLY
BEFORE PROCEEDING

FEDERAL COMMUNICATIONS COMMISSION
REMITTANCE ADVICE
FORM 159

Approved by OMB
3060-0589
Page No. 1 of 2

| | | | |
|---|--|---|---------------------------------|
| (1) LOCKBOX # 979097 | | SPECIAL USE ONLY | |
| | | FCC USE ONLY | |
| SECTION A - PAYER INFORMATION | | | |
| (2) PAYER NAME (if paying by credit card enter name exactly as it appears on the card) Joshua T. Guyan | | (3) TOTAL AMOUNT PAID (U.S. Dollars and cents) \$175.00 | |
| (4) STREET ADDRESS LINE NO. 1 1201 Pennsylvania Avenue, N.W. | | | |
| (5) STREET ADDRESS LINE NO. 2 Suite 500 | | | |
| (6) CITY Washington | | (7) STATE DC | (8) ZIP CODE 20004 |
| (9) DAYTIME TELEPHONE NUMBER (include area code) (202) 626-6245 | | (10) COUNTRY CODE (if not in U.S.A.) | |
| FCC REGISTRATION NUMBER (FRN) REQUIRED | | | |
| (11) PAYER (FRN) 0016829574 | | (12) FCC USE ONLY | |
| IF MORE THAN ONE APPLICANT, USE CONTINUATION SHEETS (FORM 159-C) COMPLETE SECTION BELOW FOR EACH SERVICE, IF MORE BOXES ARE NEEDED, USE CONTINUATION SHEET | | | |
| (13) APPLICANT NAME EMS Technologies Canada, Ltd. | | | |
| (14) STREET ADDRESS LINE NO. 1 400 Maple Grove Rd. | | | |
| (15) STREET ADDRESS LINE NO. 2 | | | |
| (16) CITY Ottawa | | (17) STATE Ontario | (18) ZIP CODE K2V 1B8 |
| (19) DAYTIME TELEPHONE NUMBER (include area code) (613) 591-6040 | | (20) COUNTRY CODE (if not in U.S.A.) Canada | |
| FCC REGISTRATION NUMBER (FRN) REQUIRED | | | |
| (21) APPLICANT (FRN) 0019381896 | | (22) FCC USE ONLY | |
| COMPLETE SECTION C FOR EACH SERVICE, IF MORE BOXES ARE NEEDED, USE CONTINUATION SHEET | | | |
| (23A) CALL SIGN/OTHER ID | (24A) PAYMENT TYPE CODE PDWM | (25A) QUANTITY | |
| (26A) FEE DUE FOR (PTC) \$175.00 | (27A) TOTAL FEE \$175.00 | FCC USE ONLY | |
| (28A) FCC CODE 1 | (29A) FCC CODE 2 | | |
| (23B) CALL SIGN/OTHER ID | (24B) PAYMENT TYPE CODE | (25B) QUANTITY | |
| (26B) FEE DUE FOR (PTC) | (27B) TOTAL FEE | FCC USE ONLY | |
| (28B) FCC CODE 1 | (29B) FCC CODE 2 | | |
| SECTION D - CERTIFICATION | | | |
| CERTIFICATION STATEMENT I, _____, certify under penalty of perjury that the foregoing and supporting information is true and correct to the best of my knowledge, information and belief. | | | |
| SIGNATURE _____ | | DATE _____ | |
| SECTION E - CREDIT CARD PAYMENT INFORMATION | | | |
| MASTERCARD _____ VISA _____ AMEX _____ DISCOVER _____ | | | |
| ACCOUNT NUMBER _____ | | EXPIRATION DATE _____ | |
| I hereby authorize the FCC to charge my credit card for the service(s) authorization herein described. | | | |
| SIGNATURE _____ | | DATE _____ | |

June 2, 2010

BY CERTIFIED MAIL

James Shaffer
Mobility Division
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

**Re: EMS Technologies Canada, Ltd. Request for Waiver of Section 87.139(i)(1) to Allow
Equipment Certification of Aeronautical Mobile Satellite Service Transceiver HSD-
MK2**

Dear Mr. Shaffer:

On April 29, 2010, the Wireless Telecommunications Bureau ("Bureau") granted EMS Technologies Canada, Ltd. ("EMS") a waiver of Sections 87.131, 87.133, 87.137, 87.139(i)(1), 87.139(i)(3) and 87.141(j) of the Commission's rules to permit certification of its next generation aeronautical-mobile satellite service ("AMSS") transceivers A781, HSD-MK2, A781-MK2, HSD-MK3, and A781-MK3.¹ As discussed below, EMS, by its attorneys and pursuant to section 1.925 of the Commission's rules, hereby requests one additional waiver of the Commission's rules. Specifically, EMS seeks a waiver of the required attenuation levels in Section 87.139(i)(1) of the Commission's rules to permit certification of the HSD-MK2.

The HSD-MK2 transceiver is intended for use on aircraft to provide high-speed Internet, voice and video conferencing capabilities in the cockpit, in the cabin and at the gate. The transceiver would be introduced as a new EMS product in the United States once FCC certification has been secured and will support the Inmarsat Classic, Swift64 and SwiftBroadband aircraft communications services. EMS's transceiver would provide high-speed voice and data links to Inmarsat's world-wide satellite network in the 1525-1559 MHz receive and 1626.5-1660.5 MHz transmit bands. The HSD-MK2 is a derivative of

¹ See EMS Technologies Request for Waiver filed on April 9, 2010 and granted by the Bureau on April 29, 2010, included as an Exhibit ("EMS Waiver Grant").

the authorized HSD-440.² It employs a different channel card to provide additional Inmarsat Classic channels.

The HSD-MK2 complies with Inmarsat technical requirements and specifications. A letter in support from Inmarsat can be provided at your request. In addition, the EMS transceiver meets the applicable ARINC Characteristics 429, 739, 600, 741 and 781; RTCA/DO-210 "The Satcom Minimum Operational Performance Standards;" and will be certified pursuant to a Federal Aviation Administration Type Certification, Supplemental Type Certification, and/or Technical Standard Order Certification as applicable to the end customer requirements. Therefore, grant of the instant waiver is in the public interest.

Requested Waiver – 87.139(i)(1)

As EMS explained in its previous waiver request for this device, the HSK-MK2 will meet the technical requirements of the Part 87 AMSS rules with respect to output power, spurious emissions, intermodulation and priority and preemption. Specifically, Swift64 and SwiftBroadband transmissions can be suspended if they would interfere with safety-related messages, or if ordered by the captain of the aircraft.³ 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. 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.

Section 87.139(i)(1) of the Commission's rules provides the required attenuation for a modulated carrier relative to the maximum emission envelope level. This mask is intended for use in conjunction with the authorized bandwidth in Section 87.137(a) of the Commission's rules for aircraft earth stations. The Bureau, however, granted EMS a waiver of Section 87.137(a) of the rules to operate the HSD-MK2 at a larger authorized bandwidth due to the increased symbol rates for 16-QAM.⁴

The larger authorized bandwidth requires a 9.5 dB adjustment to the emission mask set forth in Section 87.139(i)(1). At the larger bandwidth the total power is more widely distributed and the emission envelope is at a lower absolute level for an equivalent total carrier power. Therefore, EMS's request for a waiver to permit a 9.5 dB adjustment in the mask reflects the mask that would be extrapolated if the attenuation levels specified in Section 87.139(i)(1) were associated with the larger bandwidth that the Commission authorized EMS to use in its April 29, 2010 waiver grant. As a result, an adjustment of 9.5 dB in the emissions mask specified in Section 87.139(i)(1) would provide the same effective protection levels as specified currently in the Commission's rules.

² See EMS equipment authorization for the HSD-440 transceiver, FCC ID K6KHSD-440 (2010).

³ See 47 C.F.R. §87.189(e).

⁴ See EMS Waiver Grant.

The 9.5 dB adjustment is derived as follows:

$$\begin{aligned} \text{Adjustment (dB)} &= 10 * \log_{10} [(\text{larger authorized BW}) / (\text{Part 87 authorized BW})] \\ &= 10 * \log_{10} [(225 \text{ kHz}^5) / (25 \text{ kHz}^6)] \\ &= 9.5 \text{ dB} \end{aligned}$$

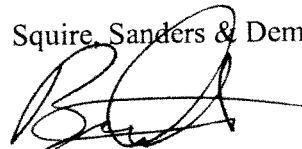
Conclusion

EMS requests that the Commission waive the attenuation requirements of Section 87.139(i)(1) described above to permit certification of its Inmarsat AMSS transceiver, the HSD-MK2. This waiver is necessary to make the HSD-MK2's authorized larger bandwidth consistent with the corresponding attenuation levels. Such waiver will provide the same protection levels as the existing mask. It will therefore not cause harmful interference to other services and is in the public interest.

Please feel free to contact the undersigned with any questions.

Respectfully submitted,

Squire, Sanders & Dempsey L.L.P.



Bruce A. Olcott
Joshua T. Guyan

Exhibit

⁵ See *id.*

⁶ See 47 C.F.R. §87.137(a).

TCB

GRANT OF EQUIPMENT AUTHORIZATION

TCB

Certification
Issued Under the Authority of the
Federal Communications Commission

By:

Compliance Testing, LLC
3356 N. San Marcos Place Suite #107
Chandler, AZ 85225-7176

Date of Grant: 07/05/2010

Application Dated: 07/05/2010

EMS Technologies Canada, Ltd.
400 Maple Grove Road
Ottawa, Ontario, K2V 1B8
Canada

Attention: Ron Halka , Director of Business Process Improvement & Quali

NOT TRANSFERABLE

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for the equipment identified hereon for use under the Commission's Rules and Regulations listed below.

FCC IDENTIFIER: **K6KHSD-MK2**
Name of Grantee: **EMS Technologies Canada, Ltd.**
Equipment Class: **Licensed Non-Broadcast Station Transmitter**
Notes: **Satcom Transceiver**

Grant Notes

| <u>FCC Rule Parts</u> | <u>Frequency Range (MHZ)</u> | <u>Output Watts</u> | <u>Frequency Tolerance</u> | <u>Emission Designator</u> |
|-----------------------|------------------------------|---------------------|----------------------------|----------------------------|
| 87 | 1626.5 - 1660.5 | 60.0 | 320.0 Hz | 840HG1D |
| 87 | 1626.5 - 1660.5 | 60.0 | 320.0 Hz | 1K68G1D |
| 87 | 1626.5 - 1660.5 | 60.0 | 320.0 Hz | 21K0G1D |
| 87 | 1626.5 - 1660.5 | 60.0 | 320.0 Hz | 6K80G1E |
| 87 | 1626.5 - 1660.5 | 60.0 | 320.0 Hz | 7K20G1E |
| 87 | 1626.5 - 1660.5 | 60.0 | 320.0 Hz | 10K5G1D |
| 87 | 1626.5 - 1660.5 | 60.0 | 320.0 Hz | 25K0G7W |
| 87 | 1626.5 - 1660.5 | 60.0 | 320.0 Hz | 40K0G1D |
| 87 | 1626.5 - 1660.5 | 60.0 | 320.0 Hz | 40K0G1E |
| 87 | 1626.5 - 1660.5 | 60.0 | 320.0 Hz | 50K0G7W |
| 87 | 1626.5 - 1660.5 | 60.0 | 320.0 Hz | 100KG7W |
| 87 | 1626.5 - 1660.5 | 60.0 | 320.0 Hz | 200KG7W |
| 87 | 1626.5 - 1660.5 | 60.0 | 320.0 Hz | 50K0D7W |
| 87 | 1626.5 - 1660.5 | 60.0 | 320.0 Hz | 100KD7W |
| 87 | 1626.5 - 1660.5 | 60.0 | 320.0 Hz | 200KD7W |

