

United States of America
FEDERAL COMMUNICATIONS COMMISSION
EXPERIMENTAL
SPECIAL TEMPORARY AUTHORIZATION

EXPERIMENTAL
(Nature of Service)

KE2XAG
(Call Sign)

XD MO
(Class of station)

S-2116-EX-95
(File number)

NAME ROCKWELL INTERNATIONAL CORPORATION

continental United States
(Location of station)

Special Temporary Authority is hereby granted to operate the radio transmitting apparatus described below:

Frequency (MHz)	Authorized Power (watts)	Emission Designator
1626.5 - 1660.5	60 (output)	10K0G1D/21K0G1W

Special Conditions:

- (1) In lieu of frequency tolerance, the occupied bandwidth of the emission shall not extend beyond the band limits set forth above.
- (2) Point of Communication: INMARSAT Satellite.
- (3) The station identification requirements of Section 5.152 of the Commission's Rules are waived.

This special temporary authorization is granted upon the express condition that it may be terminated by the Commission at any time without advance notice or hearing if in its discretion the need for such action arises. Nothing contained herein shall be construed as a finding by the Commission that the authority herein granted is or will be in the public interest beyond the express terms hereof.

This special temporary authorization shall not vest in the grantee any right to operate the station nor any right in the use of the frequencies designated in the authorization beyond the term hereof, nor in any other manner than authorized herein. Neither the authorization nor the right granted hereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934. This authorization is subject to the right of use of control by the Government of the United States conferred by Section 706 of the Communications Act of 1934.

This authorization effective September 23, 1995 and
will expire 3:00 A.M. EST. March 23, 1996



5-2130-EX-95
5-2116-EX-85
9/22/95
reassign

Rockwell International Corporation
Washington Office
1745 Jefferson Davis Highway
Arlington, Virginia 22202



September 18, 1995

Federal Communications Commission
Experimental Radio Service
P.O. Box 358320
Pittsburgh, PA 15251-5320

Gentlemen:

Pursuant to Sections 5.202 and 5.56 of the Commission's Rules and Regulations, Rockwell International Corporation (Rockwell) hereby requests a Special Temporary Authorization (STA) to utilize station KE2XAG for testing and/or demonstrations of its aeronautical satellite communications equipment using the Inmarsat aeronautical network.

1. The applicant is Rockwell International Corporation, 1745 Jefferson Davis Highway, Arlington, VA 22202.
2. This STA is needed to allow immediate mobile testing and/or demonstration of Rockwell's satellite communications avionics equipment using the Inmarsat aeronautical network.
3. The type of operation will be equipment testing pursuant to Section 5.202(g) and (h) and/or technical and customer demonstrations pursuant to Section 5.202 (d) and (f). Rockwell will secure a special Inmarsat authorization from an Inmarsat service provider prior to each period of operation.
4. The purpose of operation is to test and/or demonstrate the capabilities and functionality of Rockwell's aeronautical satellite communications equipment. The equipment is mounted on a portable avionics pallet and can be operated on the ground or in an airplane fitted with the correct antenna and subsystems.
5. Operations under this STA will be sporadic and non-continuous 24 hours a day from September 23 to March 23, 1995. 67
6. The STA is requested for experimental radio station call sign KE2XAG, a XD FX class station used for experimental satellite communications. A copy of the license certificate is enclosed for your convenience.

7. Operations under the STA may be conducted anywhere within the Continental United States.
8. A list of the equipment included in the avionics pallet to be operated under this STA is attached as exhibit A.
9. Operations will be conducted in the transmit band of 1626.5 to 1660.5 MHz and the receive band of 1530 to 1559 MHz. Specific frequencies used will be specified by the Inmarsat service provider's ground station facility.
10. The transmitter complies with Inmarsat guidelines and has a maximum RF output of 60 Watts.
11. A list of applicable emission types and a description of modulation methods is attached as exhibit B.
12. The overall height of the antenna above ground will vary according to the set up of each particular test and/or demonstration (See number 4 above). The antenna equipment listed in number 8 above has a height of less than six meters and will be mounted either at ground level or on the roof of a structure in which testing and/or demonstrations are taking place.

A form 159 is enclosed along with our check for \$45.00. It is requested that a date-stamped copy of this letter be returned to the undersigned. A duplicate copy of this letter and a stamped envelope are enclosed for this purpose.

Please direct any questions to the undersigned at (703) 412-6696.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Linda C. Sadler", followed by the word "for" in a smaller, less distinct script.

Linda C. Sadler
Manager, Governmental Affairs

cc: Carl Huie, FCC
Frank Wright, FCC
Norm Kelley, 112-111

AVIONICS PALLET EQUIPMENT LIST

1. Satellite Data Unit (SDU-906)
Collins PN 822-0314-101
2. Radio Frequency Unit (RFU-900)
Collins PN 622-8849-100
3. High Power Amplifier Class A Type (HPA-901)
Collins PN 622-9252-101
4. High Power Amplifier Class C Type (HPA-900)
Collins PN 622-8850-100
5. High Gain Antenna (HGA)
European Antennas Ltd PN AMH16-16R-02
(INMARSAT Approved)
6. Low Gain Antenna (LGA)
Ball Communications PN 511611-500
(INMARSAT Approved)
7. Low Noise Amplifier/Diplexer (LNA/Dip)
Ball Communications PN 511610-500
8. High Power Relay (HPR)
Ball Communications PN 514344-500
9. Combiner/Divider
Collins PN 850-009-010

Multiple Interface Display Unit (MIDU)
Collins PN 622-8587
10. ACARS Data Link Management Unit (DLM-700B)
Collins PN 622-9349-001
11. Cabin Telephone Interface Unit (CIU-906)
Collins Custom (Cept E1)
12. Two to Four Wire Interface Unit (TCU-906)
Collins PN 822-1039-001

AVIONICS PALLET EQUIPMENT LIST (continued)

The following peripheral equipment will be connected at some time to the avionics pallet:

Various two and four wire telephones

PC modems

FAX machines

ARINC 429 Simulation and Recording Units (PC based)

Analog headsets for cockpit type communications

Emission types:

<u>Type</u>	<u>Modulating Signal</u>	
840HG1D	A-BPSK	600 baud (600 bits/sec)
1K68G1D	A-BPSK	1200 baud (1200 bits/sec)
3K36G1D	A-BPSK	2400 baud (2400 bits/sec)
5K25G1W	A-QPSK	2.625 kbaud (5.25 kbits/sec)
6K00G1W	A-QPSK	3.00 kbaud (6.00 kbits/sec)
10K5G1D	A-QPSK	5.25 kbaud (10.5 kbits/sec)
10K5G1W	A-QPSK	5.25 kbaud (10.5 kbits/sec)
21K0G1W	A-QPSK	10.5 kbaud (21.0 kbits/sec)

Modulation Method

A-BPSK (Aviation Binary Phase Shift Keying) is a form of differentially encoded BPSK in which alternate modulation symbols are transmitted in notational in-phase and quadrature channels. Details on A-BPSK can be found in "Differential Detection with Integrated Interference and Frequency Uncertainty," Jack H. Wintes, IEEE Transactions on Communications, January 1984, Vol. COM-32, No. 1, pp. 25-33.

A-QPSK (Aviation Quadrature Phase Shift Keying) is a particular form of Offset QPSK. Details on A-QPSK can be found in "MSK and O-QPSK Modulation," S. A. Gronemeyer, IEEE Transaction on Communications, August 1976, Vol. COM-24, pp. 809-820; and in "Quatrinary Transmission over Satellite Channels with Cascaded Non-Linear Elements and Adjacent Channel Inerference," Russel J. F. Fang, IEEE Transactions on Communications, May 1981, Vol. COM-29, No. 5, pp. 567-581.

T R A N S M I T T A L

EXA

To: Carl Huie, FCC - OET

Fax: (202) 887-5637

From: M. Brett Wilson

Date: September 18, 1995

Pages: Lead + 5

Subject: Request for STA

Carl:

I spoke with Frank Wright late last week about the attached request for STA and the short time frame involved (we would like to be able to operate at an NBAA show beginning on September 23). He did not think it would be a problem to get us on the air, but indicated that he was going to be out and that you are the person handling STAs.

This request, along with the \$45 fee and Form 159, is being sent to the Mellon bank in Pittsburgh today.

Please call me at (703) 412-6635 if you have any questions.

Thanks for your help.

Brett

M. Brett Wilson
Rockwell International
Suite 1200
1745 Jefferson Davis Highway
Arlington, VA 22202

Telephone: 703/412-6635
Fax: 703/412-6603
Connect: 747-6635/6603

FACSIMILE MESSAGE

FACSIMILE MESSAGE

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**FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF ENGINEERING AND TECHNOLOGY**

2000 M STREET, N.W., SUITE 230
WASHINGTON, D.C. 20554

September 19, 1995 12 32 pm

FROM:

Carl Huie

Telephone: (202) 776-1605
Fax #: (202) 887-5637

TO:

Name: Brett Wilson
Organization: Rockwell International Corp.
Telephone: (703) 412-6635 x
Fax #: (703) 412-6603

This cover sheet is page 1 of 2 pages

COMMENTS:

Original license will be mailed after receipt of original application.