

## **NARRATIVE DESCRIPTION**

Stratos Communications, Inc. (“Stratos”) is a communications service company specializing in fixed and mobile communications solutions for government, enterprise and individual customers. Among other things, Stratos is a reseller of Regional Broadband Global Area Network (“R-BGAN”) satellite communications services offered by Inmarsat Ventures Limited (“Inmarsat”). Inmarsat plans to migrate its R-BGAN services to the Inmarsat I-4 satellite, which will be launched in late 2004 and commence commercial operations in 2005.

Stratos seeks temporary experimental authority to test and demonstrate, commencing upon grant of the requested STA through March 2005, up to two (2) R-BGAN terminals in the United States prior to the launch of the I-4 satellite. These experimental operations will use the existing Inmarsat I-3 F4 Atlantic Ocean Region-West (“AOR-W”) satellite located at 54° W.L. to simulate future I-4 operations. The proposed experimental operations are designed to demonstrate the R-BGAN system’s technical performance and features for potential customers and other interested parties.

Grant of this experimental STA request would serve the public interest by ensuring that Inmarsat R-BGAN services can be effectively provided to U.S. customers upon commercial launch of the Inmarsat I-4 satellite. Furthermore, the Commission has previously granted experimental STAs to other parties to test and demonstrate R-BGAN terminals in the United States under the same terms and conditions as proposed herein, and the public interest considerations that supported grant of those applications warrant grant of Stratos’ STA request as well. *See, e.g.*, France Telecom North America LLC, Experimental Special Temporary Authorization, File No. 0561-EX-ST-2004, Call Sign WB9XZS (granted Oct. 1, 2004); Hughes Network Systems, Inc., Experimental Radio Station Construction Permit and License, File No. 0049-EX-TU-2004, Call Sign WD2XJU (granted Oct. 7, 2004).

### **I. DESCRIPTION OF EXPERIMENTAL OPERATIONS**

The proposed experimental operations will utilize Inmarsat space segment, the R-BGAN terminal and an Inmarsat Satellite Access Station (feeder link earth station) located in Fucino, Italy. The experimental operations proposed by Stratos have the same technical characteristics as the above-referenced experimental authorizations previously granted by the Commission.<sup>1</sup>

#### **A. Space Segment**

The space segment consists of the Inmarsat I-3 AOR-W satellite located at 54° W.L. The satellite characteristics are described below.

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<sup>1</sup> *See* Attachment 1.

**Stratos Communications, Inc.**  
**Experimental STA Request**

*Terminal to satellite.* The L-band spectrum bandwidth has a return/uplink range of 1626.5 MHz to 1660.5 MHz, and a forward/downlink frequency range of 1525 MHz to 1559 MHz. Terminals access the system through frequencies on a global beam and data is exchanged over frequencies that are assigned by the network. The actual L-band frequencies to be used during the I-3 AOR-W tests include:

a) Global Beam Allocation

1537.0 MHz to 1541.5 MHz for forward/downlink allocations

1638.5 MHz to 1643.0 MHz for return/uplink allocations

Carrier bandwidth -- 31.25 kHz.

b) Spot Beam Allocation:

1525.15 MHz to 1525.65 MHz for forward/downlink allocations

1626.65 MHz to 1627.15 MHz for return/uplink allocations

1529.2 MHz to 1529.535 MHz for forward/downlink allocations

1630.7 MHz to 1631.035 MHz for return/uplink allocations

1548.32 MHz to 1548.55 MHz for forward/downlink allocations

1649.82 MHz to 1650.05 MHz for return/uplink allocations

Control carrier bandwidth -- 31.25 kHz

Traffic carrier bandwidth -- 156.25 kHz.

*Satellite to base station.* C-band starts from 6424 MHz to 6459 MHz in the uplink direction and 3599 MHz to 3629 MHz in the downlink direction.

C/L Transponder:

G/T: -10 dB/K

EIRP: 48 dBW on spot beams, 39 dBW on global beam

NPR: 14 dB

Gain: Nominal – 167 dB, Min – 153 dB, Max – 177 dB

L/C Transponder:

G/T: -3 dB/K on spot beams, -10 dB/K on global beam

EIRP: 2 x 27 dBW on Global beam

NPR: 22 dB

Gain: Nominal – 159 dB, Min – 142 dB, Max – 175 dB (spot beam) and 165 dB (global)

Gain stability: Short Term: 2 dB p-p in 24 hours, Long Term: 3 dB p-p in 1 year

Gain Flatness: 0.75 dB p-p /100 kHz and 1.5 dB p-p over channel

**B. R-BGAN User Terminal**

A maximum of two R-BGAN terminals (Hughes Model 9101 R-BGAN Satellite IP Modem) will be used for this experimental demonstration program.

Transmitter power:

- Bluetooth interface - Power Class 2, Maximum Power 2.5 mW (4 dBm), Minimum Power 0.25 mW (-6 dBm), Nominal Power 1 mW (0 dBm)
- Satellite terminal - Maximum power into the antenna - 0.63 W (-2 dBW), Maximum Internal Antenna gain - 14 dBi, Maximum External Antenna Gain - 21.3 dBi

Internal Antenna beam width at 3 dB (Rx and Tx)

- Rx (36 degrees +/- 10%)
- Tx (36 degrees +/- 10%)

Total equivalent noise temperature of the receiver, K degrees – System Noise temperature: 16.2dB/K Min; Operating Range: -10 deg to +55 deg C

Maximum density of the power with internal Antenna, (dBW/4 kHz) - 6.2 dBW/4 kHz

External Antenna beam width at 3 dB (Rx and Tx)

- Rx (16 degrees +/- 10%)
- Tx (16 degrees +/- 10%)

Antenna complies with following Mask:

- +/- 16 degrees - Gain 21 dBi
- 16 – 21 degrees - Gain 8 dBi
- 21 – 51 degrees - Gain  $41 - 25\log(\theta)$  dBi
- > 51 degrees - Gain -3 dBi

Maximum density of EIRP with external Antenna will be 13.5 dBW/4 kHz

Stratos proposes to conduct experimental operations using the R-BGAN terminals at or within five miles of the following Stratos or customer locations:<sup>2</sup>

6901 Rockledge Drive Bethesda, MD 20817	38° 59' 54.96" N 71° 8' 55.68" W
10700 Meridian Ave. North Seattle, WA 98133	47° 44' 24.36" N 122° 20' 41.28" W

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<sup>2</sup> Identifying a location and operational radius for experimental operations with the R-BGAN terminal is consistent with instruction from the Commission staff and prior experimental license grants for this equipment.

**Stratos Communications, Inc.**  
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1201 Louisiana St., Ste. 3408 Houston, TX 77002	29° 45' 33.84" N 95° 21' 46.8" W
17817 Davenport Rd., Ste. 225 Dallas, TX 75252	32° 59' 55.68" N 96° 47' 14.28" W
3300 Corporate Ave., Ste. 104 Weston, FL 33331	26° 3' 18.36" N 80° 22' 8.76" N

All tests and demonstrations will involve the transmission and receipt of Internet Protocol ("IP") data packets. For example, the user terminal will be connected to a computer and the user terminal will be perceived as a modem by the computer.

**C. Inmarsat Satellite Access Station**

The Inmarsat Satellite Access Station (feeder link earth station) to be used during the tests is located in Fucino, Italy. It communicates with the I-3 AOR-W satellite using C-band frequencies. The Inmarsat Satellite Access Station is responsible for radio synchronization, resource and channel management, and providing the physical interface for the IP packets received or transmitted by the terminal to be relayed to the public Internet.

**II. INTERFERENCE TO OTHER SERVICES**

The experimental operations proposed using the R-BGAN terminals is not likely to cause interference to any other licensed service or systems. The L-band frequencies Stratos requests are already assigned to and are being used by Inmarsat pursuant to the existing five-party L-band coordination agreement. Inmarsat has conducted certain tests and simulations associated with current versions of these terminals and the service migration system using the Inmarsat I-3 Indian Ocean Region satellite located at 25° E.L. and no interference events were experienced. In addition, the R-BGAN terminal has been in commercial service in Europe and the Middle East for approximately 18 months, has been CE certified and has the ITU GMPCS-MoU mark, and the external antenna has also been commercially deployed, albeit on different terminals.

The proposed experimental operations of the R-BGAN terminal will be conducted on a limited, intermittent basis in the context of equipment demonstration. Furthermore, Stratos is unaware of any interference complaints associated with other experimental operations using the R-BGAN terminals in the United States that have been previously authorized by the Commission. For these reasons, Stratos believes that grant of the instant experimental STA request will have no interference impact on any other users of the spectrum.

**III. RF RADIATION COMPLIANCE**

The operation of the R-BGAN terminals will be in full compliance with the Commission's radio frequency ("RF") exposure guidelines. Table 1 of Section 1.1307(b)(1) provides that a routine environment evaluation is not required for Experimental Radio Services if the power is less than 100 Watts ERP. Because the maximum power from the R-BGAN terminals is 51.8 Watts ERP, no routine environment evaluation is required. However, to further ensure that no RF radiation hazard exists, the R-BGAN terminals will be secured from access by the general public and will be operated only by experienced personnel.

14<sup>th</sup> October 2004

Tom Costello, Inmarsat Product Manager  
Stratos Communications, Inc

Inmarsat hereby grants your Company authority to utilise our Inmarsat AORW I3 satellite for RBGAN testing. Your Company will be using a Hughes Network Systems RBGAN terminal anywhere within the AORW I3 satellite coverage area. The frequencies, automatically controlled and assigned by Inmarsat to the RBGAN terminals, are as indicated in Hughes Network Systems FCC STA 0370-EX-ST-2004 dated June 15, 2004. The maximum terminal transmitting power density will be 6.2dBW/4kHz and the maximum channel bandwidth 187.5 KHz.

The expected duration of the testing period is from August 2004 until March 2005. Your Company can utilise the AORW I3 satellite for testing within this period, subject to previous coordination with Inmarsat for each period of testing.

Furthermore, Inmarsat confirms that the FCC, in a decision by the full Commission, has granted United States market access over the AORW I3 satellite.

Sincerely



Davide Carpegna  
Regional BGAN Product Manager  
Inmarsat

**United States of America  
FEDERAL COMMUNICATIONS COMMISSION  
EXPERIMENTAL  
SPECIAL TEMPORARY AUTHORIZATION**

EXPERIMENTAL  
(Nature of Service)  
  
XD FX MO  
(Class of Station)

WD2XJU  
(Call Sign)  
  
0370-EX-ST-2004  
(File Number)

NAME Hughes Network Systems, Inc.

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 the Government of the United States conferred by Section 706 of the Communications Act of 1934.

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

**Purpose Of Operation:**

Conducting manufacturer trials of user terminals using the existing Inmarsat 3 satellite in preparation for operations on the upcoming Inmarsat 4 satellite network.

**Station Locations**

- (1) San Diego (SAN DIEGO), CA - NL 32-54-31; WL 117-11-26
- (2) MOBILE: At temporarily fixed locations within 60 km of Gaithersburg (MONTGOMERY), MD, within 60 km, centered around NL 39-09-02; WL 77-12-31

**Frequency Information**

San Diego (SAN DIEGO), CA - NL 32-54-31; WL 117-11-26

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
1626.65-1627.15 MHz	FX	156KD7W	51.8 W (ERP)	
1626.65-1627.15 MHz	FX	156KG7W	51.8 W (ERP)	
1626.65-1627.15 MHz	FX	31K2D7W	51.8 W (ERP)	
1626.65-1627.15 MHz	FX	31K2G7W	51.8 W (ERP)	
1630.7-1631.035 MHz	FX	156KD7W	51.8 W (ERP)	
1630.7-1631.035 MHz	FX	156KG7W	51.8 W (ERP)	
1630.7-1631.035 MHz	FX	31K2D7W	51.8 W (ERP)	
1630.7-1631.035 MHz	FX	31K2G7W	51.8 W (ERP)	
1638.5-1643 MHz	FX	31K2D7W	51.8 W (ERP)	
1638.5-1643 MHz	FX	31K2G7W	51.8 W (ERP)	

This authorization effective June 15, 2004 and will expire 3:00 A.M. EST September 16, 2004

**FEDERAL COMMUNICATIONS COMMISSION**



Frequency Information

San Diego (SAN DIEGO), CA - NL 32-54-31; WL 117-11-26

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
1649.82-1650.05 MHz	FX	156KD7W	51.8 W (ERP)	
1649.82-1650.05 MHz	FX	156KG7W	51.8 W (ERP)	
1649.82-1650.05 MHz	FX	31K2D7W	51.8 W (ERP)	
1649.82-1650.05 MHz	FX	31K2G7W	51.8 W (ERP)	

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1626.65-1627.15 MHz	FX	156KG7W	51.8 W (ERP)	
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1638.5-1643 MHz	FX	31K2G7W	51.8 W (ERP)	
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1649.82-1650.05 MHz	FX	31K2G7W	51.8 W (ERP)	
1649.82-1650.05 MHz	FX	156KD7W	51.8 W (ERP)	
1649.82-1650.05 MHz	FX	156KG7W	51.8 W (ERP)	

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) Prior to operation of this experimental earth station with any INMARSAT satellite system, the satellite service provider must obtain an appropriate authorization from the International Bureau of the Federal Communications Commission.



**United States of America  
FEDERAL COMMUNICATIONS COMMISSION  
EXPERIMENTAL  
RADIO STATION CONSTRUCTION PERMIT  
AND LICENSE**

EXPERIMENTAL  
(Nature of Service)  
  
FX  
(Class of Station)

WD2XJU  
(Call Sign)  
  
0116-EX-PL-2004  
(File Number)

NAME Hughes Network Systems, Inc.

Subject to the provisions of the Communications Act of 1934, subsequent acts, and treaties, and all regulations heretofore or hereafter made by this Commission, and further subject to the conditions and requirements set forth in this license, the licensee hereof is hereby authorized to use and operate the radio transmitting facilities hereinafter described for radio communications in accordance with the program of experimentation described by the licensee in its application for license.

Station Locations

- (1) San Diego (SAN DIEGO), CA - NL 32-54-31; WL 117-11-26
- (2) Gaithersburg, MD - NL 39-09-02; WL 77-12-31

Frequency Information

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This authorization effective June 08, 2004 and will expire 3:00 A.M. EST June 01, 2005

**FEDERAL COMMUNICATIONS COMMISSION**



## Frequency Information

Gaithersburg, MD - NL 39-09-02; WL 77-12-31

Frequency	Station Class	Emission Designator	Authorized Power	Frequency Tolerance (+/-)
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