

Approved by
3060-0678

APPLICATION FOR EARTH STATION SPECIAL TEMPORARY AUTHORITY

APPLICANT INFORMATION Enter a description of this application to identify it on the main menu:
Ka band Test Range STA extension request to February 2005

1. Applicant

Name:	Hughes Network Systems, Inc.	Phone Number:	301-428-5500
DBA Name:		Fax Number:	
Street:	11717 Exploration Lane	E-Mail:	
City:	Germantown	State:	MD
Country:	USA	Zipcode:	20876 -
Attention:	Joslyn Read		



File # SES-STA-20040803-01089

Call Sign NA Grant Date 9/7/04
(or other identifier)

From 8/6/04 Term Dates To: 2/6/05

Approved: Jeanette D. Spriggs

2. Contact	
Name: John P. Janka	Phone Number: 202-637-2200
Company: Latham & Watkins	Fax Number: 202-637-2201
Street: 555 Eleventh Street, NW Suite 1000	E-Mail:
City: Washington	State: DC
Country: USA	Zipcode: 20004 -1304
Contact Title:	Relationship: Legal Counsel
3. Reference File Number SESSTA2004020300171	
4a. Is a fee submitted with this application? <input checked="" type="radio"/> If Yes, complete and attach FCC Form 159. If No, indicate reason for fee exemption (see 47 C.F.R. Section 1.1114). <input type="radio"/> Governmental Entity <input type="radio"/> Noncommercial educational licensee <input type="radio"/> Other (please explain):	
4b. Fee Classification CGX - Fixed Satellite Transmit/Receive Earth Station	
5. Type Request	
<input type="radio"/> Use Prior to Grant <input type="radio"/> Change Station Location <input checked="" type="radio"/> Other	
6. Requested Use Prior Date	
7. City Germantown	8. Latitude (dd mm ss.s h) 39 10 50.0 N

9. State MD	10. Longitude (dd mm ss.s h) 77 14 56.0 W
11. Please supply any need attachments. Attachment 1: Description Attachment 2: Attachment 1 Attachment 3:	
12. Description. (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.) <div style="border: 1px solid black; padding: 5px; margin: 5px 0;">See Description Attachment.</div>	
13. By checking Yes, the undersigned certifies that neither applicant nor any other party to the application is subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Act of 1988, 21 U.S.C. Section 862, because of a conviction for possession or distribution of a controlled substance. See 47 CFR 1.2002(b) for the meaning of "party to the application"; for these purposes. <input checked="" type="radio"/> Yes <input type="radio"/> No	
14. Name of Person Signing Joslyn Read	15. Title of Person Signing Assistant Vice President
WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND / OR IMPRISONMENT (U.S. Code, Title 18, Section 1001), AND/OR REVOCATION OF ANY STATION AUTHORIZATION (U.S. Code, Title 47, Section 312(a)(1)), AND/OR FORFEITURE (U.S. Code, Title 47, Section 503).	

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THE FOREGOING NOTICE IS REQUIRED BY THE PAPERWORK REDUCTION ACT OF 1995, PUBLIC LAW 104-13, OCTOBER 1, 1995, 44 U.S.C. SECTION 3507.

Hughes Network Systems, Inc.
Ka Band Transmit/Receive Earth Station Testing
Germantown, Maryland
Request for Extension of Special Temporary Authorization
File No. SES-STA-20040203-00171

Question 12 – Description Attachment

Hughes Network Systems, Inc. (“HNS”) hereby requests an extension of the Special Temporary Authorization (“STA”) by which HNS is conducting testing of earth station prototypes for the licensed Spaceway Ka band satellite system. HNS requests the extension for an additional 180 days through and including February 2, 2005.

On November 14, 2000, the Commission granted HNS an STA for a period of 180 days through and including May 14, 2001. The STA authorized HNS to construct and operate a Ka Band earth station test range with the technical parameters described in the STA. As indicated in HNS’s original request for STA, the purpose for the STA is to develop earth stations to be used with the Spaceway Ka band GSO FSS satellite system.¹

Pursuant to the STA, HNS developed a test fixture to continually measure transmit and receive frequencies on this range system. Single size prototype antennas are monitored twenty-four hours per day, measuring gain variations based on weather conditions.

Since the original grant of this STA, HNS has periodically requested continued STA authority to operation this Ka band earth station test range. HNS is now requesting grant of continued STA authority for an additional 180 days, from August 6, 2004 through and including February 2, 2005. HNS needs to continue this testing at the same technical parameters as described in the original request using both prototype and production antenna systems. For convenience of presentation, these technical parameters are attached hereto. Additionally, grant of this extension request will permit HNS to continue to test vendor sample antennas of varying sizes as authorized in the STA.

As set forth in greater detail in the attached technical parameters, the requested extension of the STA operations should not cause interference to any FCC-licensed user of the spectrum. In any event, HNS acknowledges that the requested extension of the STA operations will be conducted on a non-interference basis to other FCC-licensed users of the spectrum.

Grant of the extension of this STA will serve the public interest by facilitating HNS’s ability to finalize the design parameters for Spaceway earth stations and the timely and rapid deployment of the Spaceway system.

¹ Hughes Communications Galaxy, Inc., which is a subsidiary corporation of Hughes Electronics Corporation, is the FCC licensee of the Spaceway Ka band satellite system. *Hughes Communications Galaxy, Inc.*, 13 FCC Rcd. 1351 (1997).

ATTACHMENT 1

I. TECHNICAL DESCRIPTION OF KA-BAND ANTENNA TEST FACILITY

Purpose

The following sections describe a test facility for testing Spaceway prototype antenna systems from various vendors. The purpose of this test facility is to validate antenna system performance under various conditions, including clear sky, pointing degradation, rain simulation, etc.

A. Test Facility Description

The test facility will be constructed on the property of Hughes Network Systems at its Germantown, Maryland headquarters location near the existing VSAT hub location. This test facility (see Figure 1.0) will consist of a 1.0 meter source antenna which will be located on the ground behind the D building of HNS. The geographical coordinates of this antenna location will be 39° 10' 50" North Latitude and 77° 14' 56" West Longitude. The test equipment for this antenna will be protected in the shelter located next to the antenna. This antenna will be used for transmitting a CW signal using a signal generator HP 83650B with a maximum power of +5 dBm. The frequency of this signal will vary from 29.5 to 30.0 GHz for transmit tests and 19.7 to 20.2 GHz for receive tests. The maximum transmit EIRP will be approximately 23.0 dBW. The unit under test (UUT) will be located on the roof of D building having a geographical coordinates of 39° 10' 47" North Latitude and 77° 14' 58" West Longitude. The antenna will be positioned to enable a clear line of sight from the source antenna. The test equipment for the receiving station (spectrum analyzer and power meter) will be protected in the building near the antenna.

The distance between the source antenna and UUT antenna will be at least 657 feet in order to make far field measurements at the highest test frequency of 30.0 GHz for antenna sizes up to 1.0 meter. Various antenna sizes from different vendors will be tested.

B. Interference to Other Services/Systems

The requested test facility should not cause any interference to any services or systems. The particular Ka band frequencies requested are not allocated or licensed to terrestrial systems, so the earth station transmissions will not cause interference to any licensed terrestrial system. In addition, Hughes is not aware of any commercial or government satellite systems currently operating in this portion of the Ka band. In any event, the transmit earth station will be radiating at a very low EIRP of 23 dBW and at a very low elevation angle of less than five degrees. This low transmit power should ensure that no interference is received by any unknown satellite systems that are operating in this portion Ka band.

C. RF Radiation Compliance

The operation of this Ka Band Test Facility will be in full compliance with the Commission's radio frequency (RF) exposure guidelines, pursuant to Section 1.1307 (b) (1) through (b) (3) of the Commission's rules. Attachment 2 provides the radiation calculations, which demonstrate this compliance.

RADIATION CALCULATIONS FOR 1.00 meter EARTH STATION			
Nomenclature	Formula	Value	Unit
INPUT PARAMETERS			
D = Antenna Diameter		1.00	meters
d = Diameter of Feed Mouth		0.051	meters
P = Max Power into Antenna		0.010	Watts
n = Aperture Efficiency		65%	
k = Wavelength @ 30 GHz		0.0100	meters
CALCULATED VALUES			
A = Area of Reflector	$P_{D0} \times 2/A$	0.785	meters ²
f = Length of Near Field	$D^2/4k$	25	meters
L = Beginning of Far Field	$0.5D^2/k$	60	meters
G = Antenna Gain @ 30 GHz	$n(P/D0k)^2$	64,161 (48.1) DBI	
a = Area of Feed Mouth	$P/D^2 \times 2/A$	0.0020	meters ²
POWER DENSITY CALCULATIONS			
Region	Formula	Value (W/m ²)	Hazard Assessment (FCC MPE Limit = 10 W/m ²)
1 Near Field	aP/A	0.03	< FCC MPE Limit
2 Far Field	$Gf/(4\pi r^2)$	0.01	< FCC MPE Limit
3 Transition	<= Nr Fld Region	0.03	< FCC MPE Limit
4 Near Reflector Surface	A/P/A	0.05	< FCC MPE Limit
5 Between Reflector & Ground	P/A	0.03	< FCC MPE Limit
6 Between Reflector and Feed	A/P/a	19.6	Potential Hazard

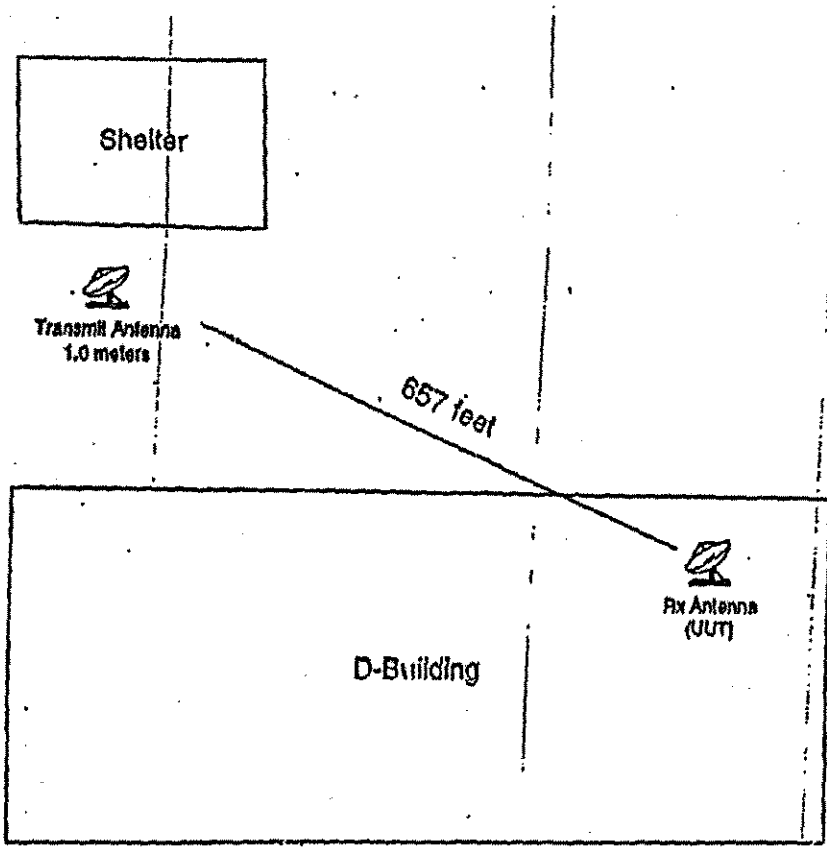


Figure 1. Ka Band Test Facility