

ATTACHMENT 1

TECHNICAL DESCRIPTION OF THE Ka-BAND SATELLITE SIMULATION TEST RANGE

A. PURPOSE

Hughes Network Systems, Inc. ("HNS") is launching the first SPACEWAY satellite during the first quarter of 2004 to provide commercial service to North America during the middle of 2004. SPACEWAY is a next generation satellite system which will operate in Ka-band spectrum globally allocated for the Fixed-Satellite Services. The SPACEWAY system will employ new technologies for on-board digital processing, packet switching and spot-beams that do not yet exist on any US commercial satellite that is currently available.

HNS is developing a Ka-band Satellite Simulation test environment comprised of a radiated far-field test environment for testing SPACEWAY satellite user terminals ("STs") using a transmitter/receiver that will simulate a SPACEWAY satellite on the ground ("Satellite Simulator Terminal"). Because HNS's Ka band satellites have not yet been launched, this test environment is necessary to allow HNS to test the user terminals designed for this unique satellite system. Such testing is designed to ensure that the technical and operational system performance specifications and features of the STs are met. The following sections of this Attachment describe this test facility.

B. TEST FACILITY DESCRIPTION

The test range is located at the Headquarters of Hughes Network Systems at 11717 Exploration Lane, Germantown, Maryland. The test range (see Figure 1) is 656 feet long and will support the testing of the STs that are 66cm, 74cm and 98cm in equivalent diameter. These transmit/receive terminals will be located at 39°10'45.9" North Latitude and 77°14'49.1" West Longitude on the ground near the D building of HNS Headquarters.

The test STs will transmit signals in the frequency band from 29.5 GHz to 30.0 GHz utilizing two types of transmitters (2.1 Watts and 3.5 Watts) and three different antennas: 98 cm circular, 74 cm elliptical, and 66 cm elliptical. The maximum output power of these transmitters will be limited to 0.5 Watts. The emission designators of these signals will be 650KG7W, 2M61G7W and 20M9G7W using QPSK modulation. This application requests authority to use 40 2.1 Watt transmitters and 40 3.5 Watt transmitters, however, only one ST will transmit using a single carrier at any given time.

The SPACEWAY Satellite Simulator Terminal employs a 74cm antenna connected to a satellite payload emulator. This terminal will be located at 39°10'43.4" North Latitude and 77°14'41.4" West Longitude on the roof of the D building. This Satellite Simulator

Terminal will transmit a broadband QPSK modulated carrier with an emission designator of 500MG7W centered at 19.95 GHz. The transmit input power to the 74cm Satellite Simulator Terminal antenna will be limited to a maximum of 10 nanowatts.

HNS would like to start the testing on this Satellite Simulation test range on November 1, 2003 and continue over a period of twenty-four months so that the performance of the various user terminal types can be thoroughly tested.

HNS is applying for an STA simultaneously with this application so that it may operate these test facilities as soon as possible.

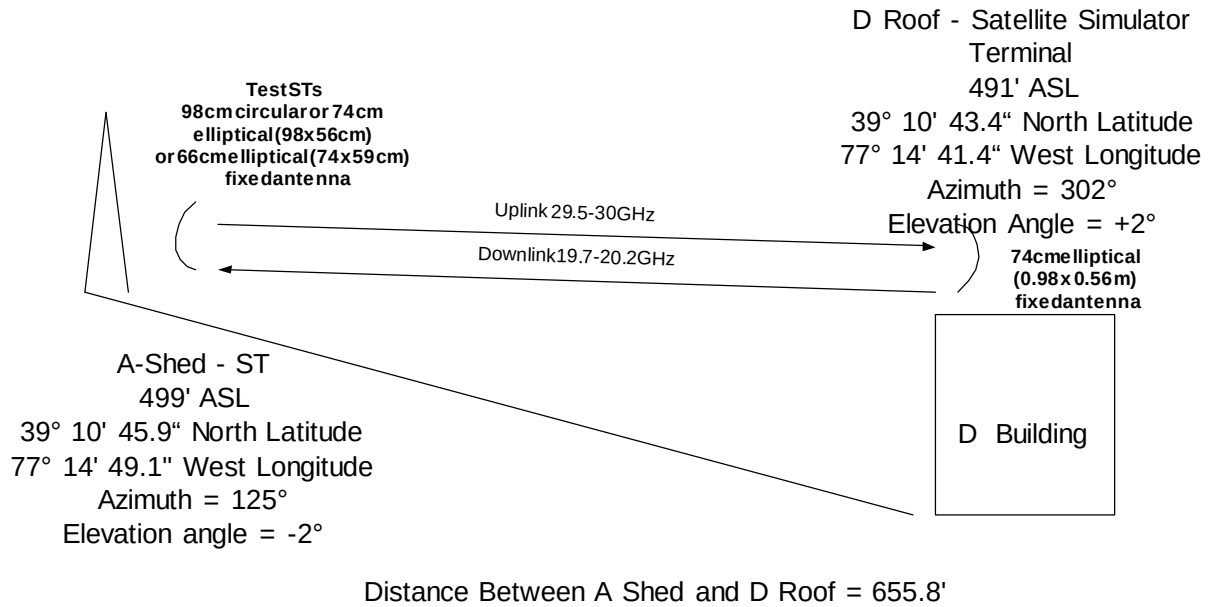
C. INTERFERENCE TO OTHER SERVICES

The test facility proposed by this application is not likely to cause interference to any other licensed services or systems. The particular Ka-band frequencies HNS requests are not allocated to terrestrial systems, so the earth station transmissions will not cause interference to any licensed terrestrial systems. The only commercial or government satellite system currently operating over the US in this portion of the Ka-band, of which HNS is aware is ACTS; however, all transmissions in this proposed test range will operate at very low elevation angles (*i.e.* close to two degrees. See Figure 1). Operation at this low elevation will ensure that interference is not received by any satellite systems that may be operating in this portion of the Ka-band.

D. RF RADIATION COMPLIANCE

The operation of these transmit/receive terminals at the HNS satellite simulation 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 for the three types of terminals to be tested in this facility. These analyses show that the power density levels will never exceed the Maximum Permissible Exposure (MPE) limit of 1 milliwatt per centimeter squared for the persons in General Population/Uncontrolled environment as specified in the Office of Engineering and Technology (OET) Bulletin No. 65 except in the region between the feed and the reflector. To ensure compliance with the FCC MPE limit, the terminal transmitter will be turned off whenever test personnel are required to work within this potentially hazardous area, and the terminals will be secured from access by the general public.

Figure 1



Satellite Simulation Farfield Range