

I. GENERAL INFO

1. Is this for IR&D or Military/Government Sponsor Test/Demo

Military Test/Demonstration

2. If it's for Military/Government Sponsor Test/Demo, provides the Government POC (Name, Office, Phone Number and Email Address and the objective/s of the Test/Demo

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C-130H/J/HC/WC Requirements
DSN 497-1978
Commercial 478-327-1978
Cell: 770-468-7267

Demo Objective: To test the performance of a BB45X antenna on a US Air Force WC-130 Hurricane Hunter aircraft during a real-world hurricane or weather system of interest.

3. Requires starting date and duration

Start: 1 Jul 21

Duration: 90 days

Initial concept is to provide a contiguous, 7-day test period to begin at any time between 1 July and 30 Sep 2021, based on a go/no-go decision to be made by the US Air Force, and which will be made in advance of an approaching hurricane/weather system of interest. Additional test period(s) remaining within this 90-day service period may be added on an as-needed basis as weather-related events present themselves.

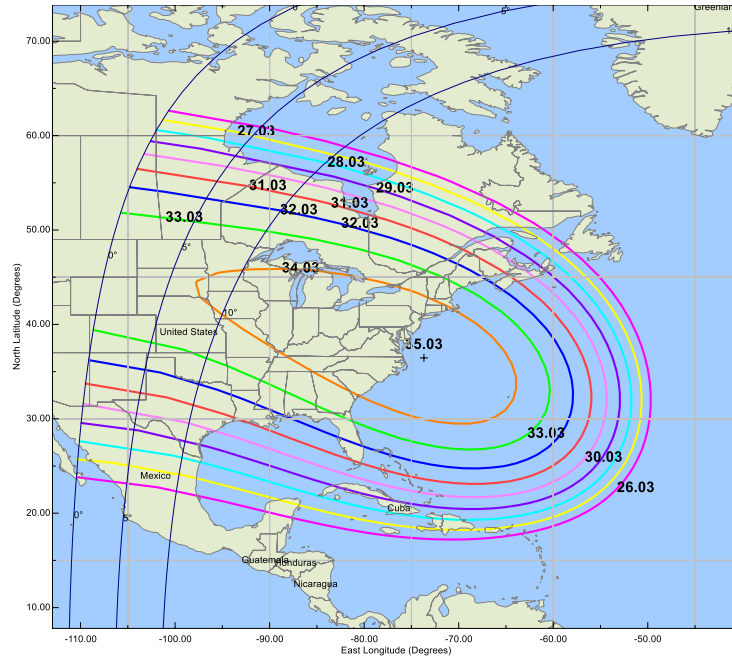
II. SATELLITE DOWNLINK

1) GSO longitude of Satellite

XTAR-LANT (Spainsat) at 30°W

2) Main beam gain of the satellite downlink transmitting antenna in the requested band/s, the point on the earth where the peak of the beam be pointed, and the downlink gain contours relative to that point on the earth

The main beam gain of the satellite downlink antenna is 35.03 dBi at 7.70 GHz. The point on the earth where the peak of the beam is pointed and the downlink gain contours relative to that point are provided on the downlink map below.



3) Maximum input spectral power density (SPD) of any downlink carrier

A diagram of the satellite network is attached. There are two carriers in the iDirect Evolution satellite network. The carrier transmitted from the 4.0m in Laurel, MD is a time division multiplexed (TDM) carrier that can be received by a remote terminal (45cm). The downlink power spectral density at the input of the satellite antenna is -59.33 dBW/Hz. The carrier transmitted from the remote terminals is a time division multiple access (TDMA) carrier with a worst case downlink power spectral density at the input of the satellite antenna of -67.33 dBW/Hz.

4) Center frequency and emission designator of any downlink carrier

There are two carriers being transmitted in the network. The 4.0m terminal will transmit a 1024 kbps carrier with an emission designator of 1M68G1D and center frequency of 8,326.175 MHz (RHCP) uplink / 7,676.175 MHz (LHCP) downlink. The remote terminal will transmit a 5120 kbps carrier with an emission designator of 5M69G1D and center frequency of 8,321.200 MHz (RHCP) uplink / 7,671.200 MHz (LHCP) downlink.

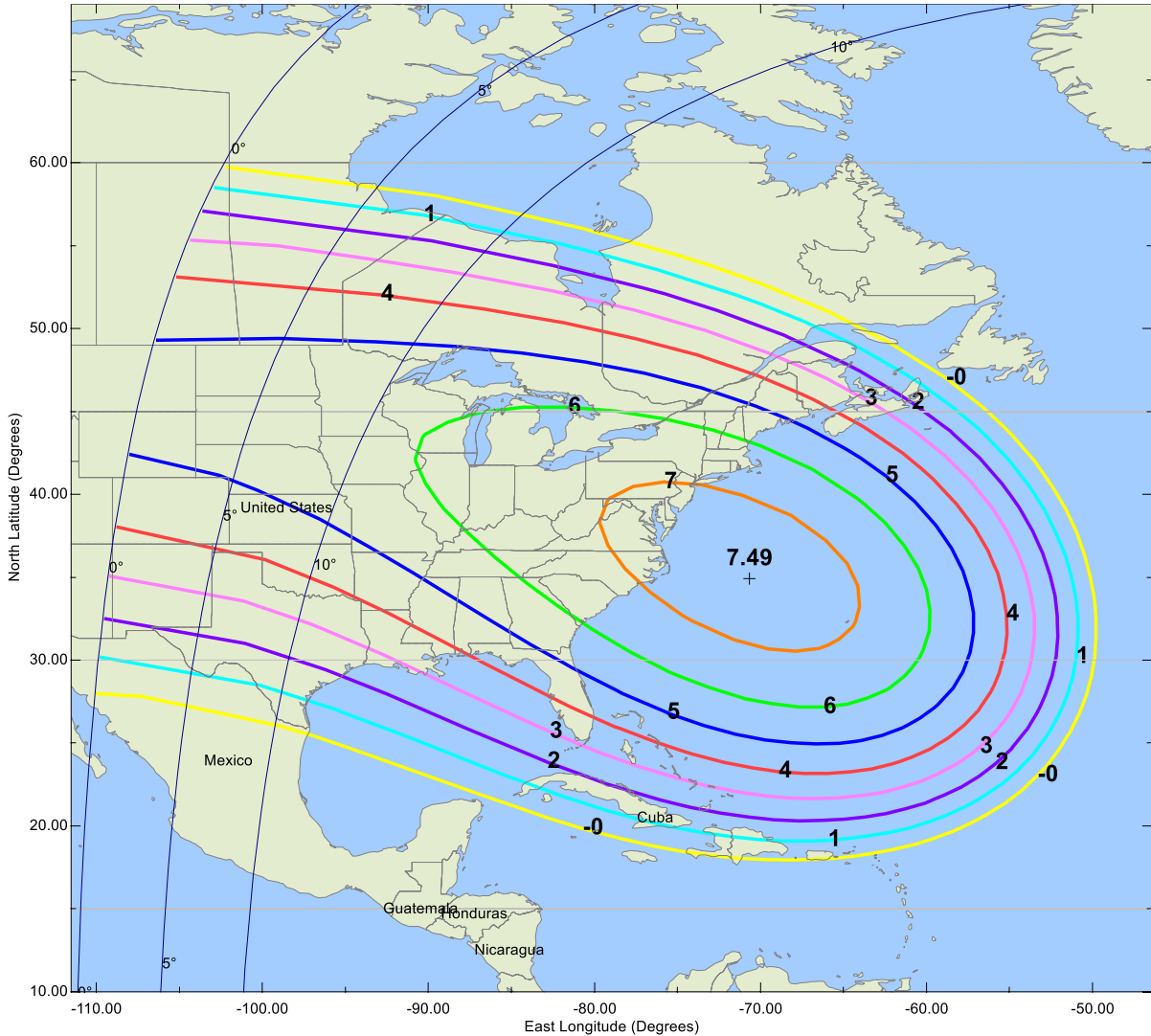
5) If it is multiple carriers, provides all emissions designators and downlink EIRPs for each. If it is a single carrier, then how many of those single carriers can be operated into the same downlink beam simultaneously during the testing.

Both carriers specified will be simultaneously downlinked onto the beam described in question 2 above. The downlink EIRP of the 4.0m to 45cm carrier in the direction of beam center is 37.9 dBW. The downlink EIRP of the 45cm to 4.0m carrier in the direction of beam center is 35.3 dBW.

III. EARTH STATION UPLINK

1) Coordinate of earth station

The 4.0m earth station is located in Laurel, MD at approximately 39.11°N, 76.83°W. The remote earth station could be anywhere within the footprint of the satellite beam in the eastern portion of the U.S. to the 2 dB/K G/T contour line (see below).



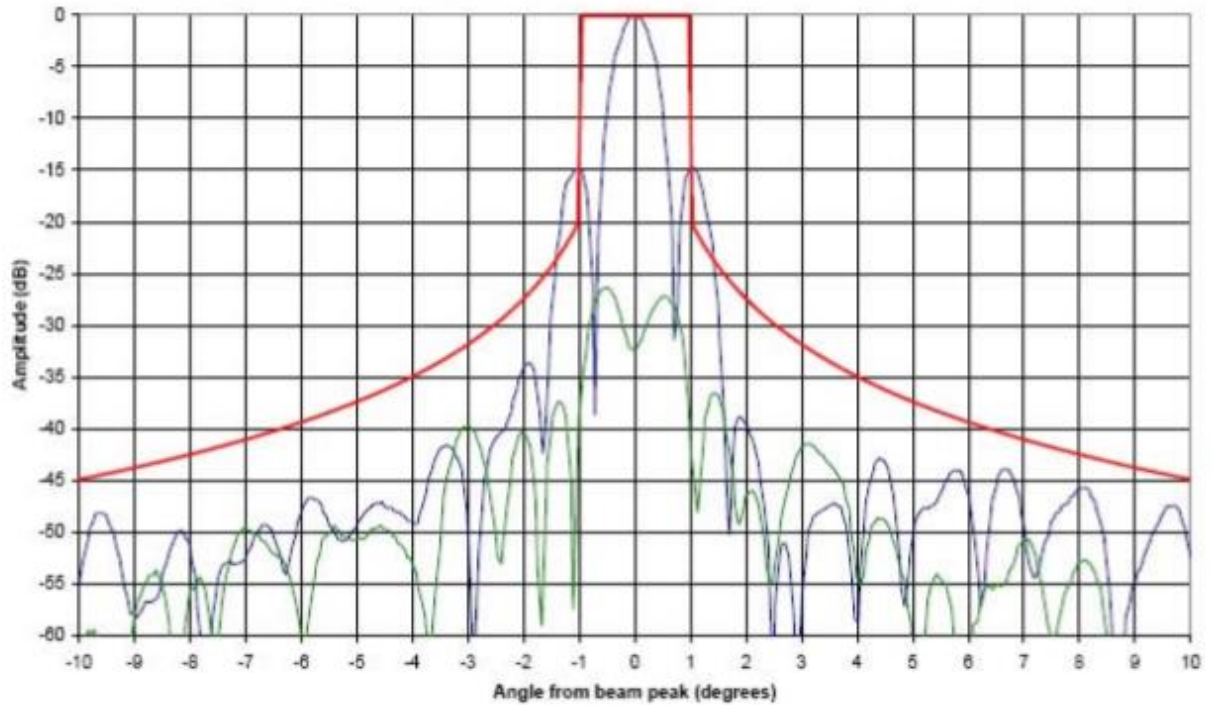
2) Name and/or nomenclature of the terminal, if known/assigned

The 4.0m antenna is an SC-11A and the 45cm terminal is a BB45X.

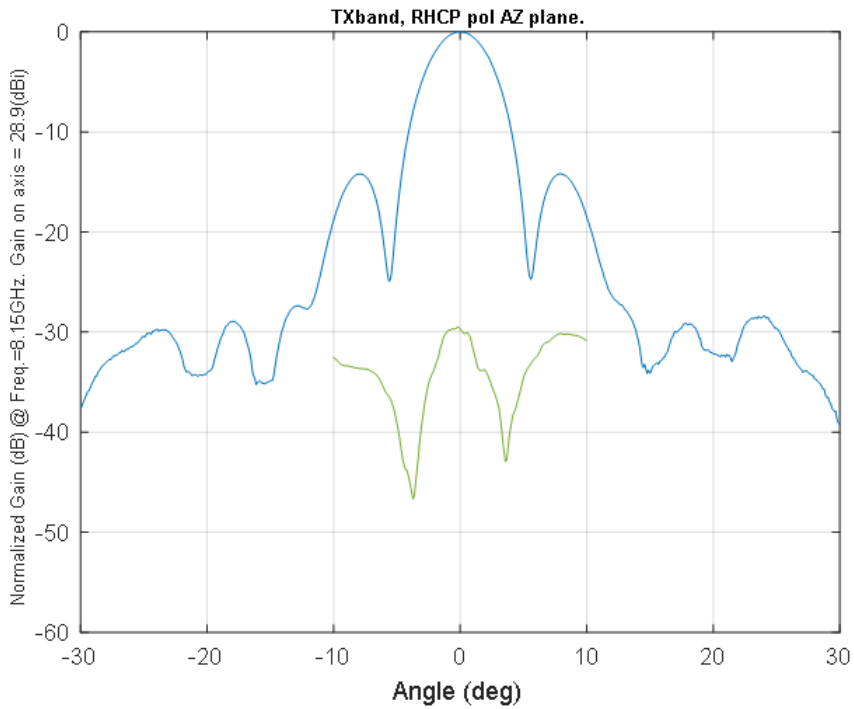
3) Main beam gain of the transmitting earth station antennas to be used for the test and the off-axis antenna pattern expressed as one of the ITU patterns or measured data

The gain of the 4.0m antenna is 48.9 dBi at 8.15 GHz. The gain of the 45cm antenna is 28.9 dBi at 8.15 GHz. Antenna patterns are found below for each antenna.

4.0m X-Band Earth Station Antenna, Radiation Pattern,
8.15 GHz, RHCP, Co and X pol, Envelope ITU 580/465 (48.9 dBi)



45 cm X-Band terminal BB45X:



4) Maximum input spectral power density (SPD) of any uplink carrier

The input spectral power density of the 1024 kbps uplink carrier transmitted from the 4.0m in Laurel, MD is -68.0 dBW/Hz. The maximum input spectral power density of the 5120 kbps uplink carrier transmitted from the 45cm terminal is -51.2 dBW/Hz.

5) Center frequency and emission designator of any uplink carrier

There are two carriers being transmitted in the network. The 4.0m terminal will transmit a 1024 kbps carrier with an emission designator of 1M68G1D and center frequency of 8,326.175 MHz (RHCP) uplink / 7,676.175 MHz (LHCP) downlink. The remote terminal will transmit a 5120 kbps carrier with an emission designator of 5M69G1D and center frequency of 8,321.200 MHz (RHCP) uplink / 7,671.200 MHz (LHCP) downlink.

6) If it is multiple carriers, provides all center frequencies and associated emissions designators and uplink EIRPs for each. If it is a single carrier, then how many of those single carriers can be operated into the same uplink beam simultaneously during the testing?

Only a single carrier will be transmitted from any earth station in the network.

