From: Perry Jones

To: Leann Nguyen
Date: May 12, 2017

Subject: Request for Info - File # 0089-EX-CN-2017

Message:

Additional questions (#1 & 7) answers provided that were not provided on last response dated 4 May 2017.

Please provide the following information as soon as possible before the coordinators reject the application:

1) Antenna pattern(s) showing vertical and horizontal axis for each frequency band (C-Band, Ku-band) and side lobe levels between 10 degrees to 180 degrees. This could be a representative antenna pattern if a measured one is not available.

Patten’s for the 3.5m source antenna and steerable reflector attached as .pdf; to include pictures and description of referenced “Fly Swatter” steerable reflector antenna.

2) The minimum antenna size for each frequency band.

3.5m source dish has interchangeable filtered, RF band Feeds, positioned on the ground at the base of a 500ft tower which points to zenith and strikes an elevation only steerable 3’ x 5’ flat reflector panel to steer the source beam 90 degrees from the main source vertical beam to our receive only antenna’s under test located at our test range 2.35 miles away. All antenna’s under test are receive only from the source antenna mentioned; antenna’s under test range from 1.2m to 11m

3) What type of transmit antenna will be used (i.e., parabolic dish, electronically phased array)?

Source is a 3.5m parabolic dish located on the ground which points strait upward (zenith position) and strikes a flat reflector panel at 490ft above which is adjustable in Elevation axis only to steer the beam parallel to the ground to a receive location located 40ft off the ground at 2.35miles away. Receiving station look angle to the source panel (fly swatter located 490ft point on 500ft tower) is ~ +1.5 degrees elevation at the 40ft level.

4) What is the maximum transmitting antenna height above ground level for each antenna being tested?

The source reflector is located 490ft above the ground. All antennas under test are tested in a receive mode only at the test range.

5) Provide all the directions the transmit antenna will be pointing during the test.

Source points approximately 85 degrees to the East as an LOS from source to receive station.

6) Is there an instantaneous emission bandwidth other than N0N? We assume a 1 Hz bandwidth which indicates that all the EIRP is carry in 1 Hz.

No, the RF source is an HP 83640A signal generator. The source is only used in a CW mode, fixed frequency, and never used in a modulated more. All RF emissions are limited to the CW signal.

7) Does the experimental transmitter use filtering and if so what is the filter roll-off (in dB per decade)?

No, RF filtering is not required because all feeds are tuned to the band only in which they operate and we do not radiate in a modulated mode. All of our test are performed using a signal generator as our RF source, operating in a CW mode only.

8) What mitigation techniques are plan to be used to avoid harmful interference to incumbent stations?

- RF power is limited to 10 watts in all frequency bands
- Source antenna is only operated in a CW, non-modulated mode
- RF source (490ft reflector) angle variation is very limited in elevation and azimuth is fixed.
- No un-manned testing is ever performed
- Local airport Frequency Contingency Officer has our contact information.
- We are only one of two FAA certified test facilities in the USA
- ~ 20 years of testing under trained RF technicians, has been on-going with no issues reported; all while licensed under FCC.