From: Richard Scheps

To: Doug Young
Date: December 16, 2009

Subject: Request for Info - File #0385-EX-PL-2009

Message:

File No. 0385-EX-PL-2009
Ref. No. 9858

Mr. Young:

In response to your e-mail dated December 15, 2009, the following is provided:

1. The maximum flight ceiling for the experiment would be 15,000 feet above ground level, or 4572 meters AGL. The 1219.2 meter antenna height for airborne operations specified in the application is an error. Please let me know if you can make this correction in the Commission's records, or if you need us to correct the data on the ELS system. I apologize for any confusion.

2-3. The ERP values stated in the application inadvertently did not take into account antenna gain, as you referenced. To clarify the antenna situation, the following is noted:

A. For Ground-Based transmission, there are three possible antennas which may be used, depending on UAV range requirements during the experiment. Although three possible antennas may be used, only one would be operational at any given time. For each of the three possible antennas, the transmit output power may be either 5W or 20W.

B. Taking into account gain and system losses for each scenario, the ERP values for the antennas would be as follows (a chart with more detailed technical information is being separately e-mail to you, because the ELS Reply to Correspondence link does not accept attachments):

Ground-Based Antenna 1 (5W transmit output power + 4dBi gain) = 6.08W ERP
Ground-Based Antenna 1 (20W transmit output power + 4dBi gain) = 24.32W ERP
Ground-Based Antenna 2 (5W transmit output power + 15dBi gain) = 76.55W ERP
Ground-Based Antenna 2 (20W transmit output power + 15dBi gain) = 306.22W ERP
Ground-Based Antenna 3 (5W transmit output power + 42dBi gain) = 38,368.07W ERP
Ground-Based Antenna 3 (20W transmit output power + 42dBi gain) = 153,472.30W ERP **

**The ERP for the Ku band high gain antenna is 153 KW when using a 20 watt transmitter. However this power is contained within a 3 dB beam width of only 1.2 degrees. This system will only be used on a controlled access National Guard base in northern Vermont. Propagation losses will significantly reduce this signal when it reaches the boundaries of the base. Additionally, the antenna is pointed skyward to track a UAV in controlled airspace. The likelihood of the signal causing interference is minimal. We have requested transmitter power of up to 20 watts for link budget experiments. Based on the results, we will likely operate at the 5 watt level or lower for most times. This lowers the ERP to 38 KW or less.

C. The UAV antenna is omnidirectional. To clarify, the UAV antenna may also have a transmit output power of either 5W or 20W. The gain would be 4dBi, resulting in the following ERP values:

UAV Antenna 1 (5W transmit output power + 4dBi gain) = 6.08W ERP
UAV Antenna 1 (20W transmit output power + 4dBi gain) = 24.32W ERP

In light of the above clarifications, please let me know if you can incorporate this antenna and ERP data into the Commission's records, or if you need us to correct the data on the ELS system. Again, I

apologize for any confusion.

Best regards,

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