

From: Laura Stefani

To: Nimesh Sangani

Date: February 14, 2019

Subject: Additional Information Request

Message:

“1) Emission Designator

Bandwidth is missing from your application. The Frequency request in your application has a bandwidth of 2.5 MHz while the emission designator in the form 442 in the AT&T letter is 5M that is 5MHz.”

Response: The requested operating bandwidth is 2.5 MHz. The Form 442 attached to the AT&T letter was a draft form (as indicated in the list of attachments at the bottom of the letter, which refers to the application as a “draft”). The actual bandwidth that will be used, however, will be the 2.5 MHz.

“2) Letter from AT&T

The maximum transmit power in the AT&T letter is 10W. Your application has ERP request of above 3kW.”

Response: The 10 W mentioned in the AT&T letter refers to the effective RF power level that is fed to the antenna for radiation. The antenna gain is stated, as 28 dBi. This results in a 38 dBW EIRP (or 6309 W EIRP). 6309 W EIRP is equivalent to 3847 W ERP requested in the application, as $EIRP (W) = 1.64 * ERP (W)$.

As the Narrative attached to the application explains, at p. 2, “The maximum available power is about 600 W, aggregating the RF power from all the phased array elements. However, the power will be backed off for linear operation and the output to each beam will be controlled to maintain the beam EIRP at approximately 38 dBW EIRP.” Therefore, the ERP in the application is same as the one derived from the AT&T letter, i.e. 3847 W. This is consistent with the “ERP request above 3kW” that you note.

“3) Record from form 442 in the AT&T letter doesn't match your current application 0884-EX-CN-2018. The ERP is above 40kW, the application ERP is above 3kW while the AT&T letter is 10watt.”

Response: The draft Form 442 that was attached to the AT&T letter requested an ERP of 40 kW, or 40,000 Watts. 40 kW will be the output power of the system when it is in space, and is not needed for experimental testing. Therefore, Form 442 was amended before filing to reflect the lower 3847 W (“application ERP is above 3kW,” as you state) requested for experimental operations. However, the ERP of 40 kW in the draft Form 442 attached to the AT&T letter indicates that AT&T was aware of, and agreeable to, the proposed power of the system.

“4) Please provide antenna pattern.”

Response: The antenna pattern is located on the last page of the AT&T letter attachment.