

Anthony Serafini

From: Anthony Serafini
Sent: Tuesday, December 06, 2016 9:13 AM
To: fmd43@cornell.edu
Subject: Cornell 0064-EX-CN-2016 questions

Hello Filipe

Our International Bureau has the following comments/questions. Please review and reply to the following comments:

We note that the applicant plans to operate in an amateur band; however, we did not find a coordination letter from the International Amateur Radio Union (IARU). Has coordinate been initiate? Is so, please provide the FCC a copy of the coordination letter.

In our review of the ODAR, we notice that this document was not signed. Please forward a signed copy to the FCC once it is available.

Review of Form 442 and API file:

In Form 442, UPLINK, it shows the transmit power as 50W and 1774 W ERP. However, our calculation shows the following: $50\text{W} = 17\text{ dBW}$ and antenna gain = 18.9 dBi so the total EIRP = 35.9 dBW ; converting EIRP to ERP ($35.9\text{dBW} - 2.15\text{ dB} = 33.75\text{ dBW}$; converting from dBW to W ($33.75/10 = 3.375$; raise to $10^{3.375} = 2371\text{ W ERP}$).

Please check the ERP value and if our calculation are correct, please update all relevant documents as appropriate.

Similar observation in Form 442, DOWNLINK transmit power of 10 W and 5.4 W ERP. We calculate the ERP value to be 6.1 W. Please check the ERP value and update all relevant documents as appropriate.

We notice that the emission bandwidth is 500 Hz. We would like confirmation if this is the correct emission bandwidth value. No issues with having this value.

In the SpaceCap API file, box A.4.b.1, No. of orbital planes, it state four. We understand there will be two cubesats operating so does this mean that they will change orbital planes or will there be four cubesat. Please provide us some background for this value.

In the API file, UPLINK beam, group id 2,

- We notice that RR No. 4.4 (box C.2.c) is not marked with a "Y"; since this is not an amateur operation, please mark this box with "Y"
- Emission designator, (box C.7.a) has a value of 250 Hz yet in form 442 the emission is 500 Hz. Please verify the correct emission bandwidth value and update the appropriate documents.
- The max peak power (box C.8.a.1/C.8.b.1) and min peak power (box C.8.c.1) have a value of 20 dBW; however, FCC Form 442 has the power value as 50W (17 dBW). Please verify the power level and update all relevant documents as appropriate.

- Applicant note that if the power level and/or emission bandwidth changes so will the power spectral density in boxes C.8.a.2/C.8.b.2 and C.8.c.3. The power spectral equation $PSD = Power (dBW) - 10\log_{10} (Bandwidth \text{ in Hertz})$.
- Please provide the e.i.r.p. on the beam axis in box C.8.f.2
- Please provide the uplink antenna pattern; box C.10.d.5.a indicate a co-polar radiation diagram 1.

In the API file, DOWNLINK beam, group id **1**,

- We notice that RR No. 4.4 (box C.2.c) is not marked with a "Y"; since this is not an amateur operation, please mark this box with "Y"
- Emission designator, (box C.7.a) has a value of 250 Hz yet in form 442 the emission is 500 Hz. Please verify the correct emission bandwidth value and update the appropriate documents.
- Applicant note that if the power level and/or emission bandwidth changes so will the power spectral density in boxes C.8.a.2/C.8.b.2 and C.8.c.3. The power spectral equation $PSD = Power (dBW) - 10\log_{10} (Bandwidth \text{ in Hertz})$.

Regards,
Tony