

Exhibit 1

In connection with this renewal application for Station WE2XXG, the following is noted:

1. This is to advise the Commission that the contract currently associated with the license has been changed to the following:

Agency/Customer: US Army
PM SAI/ ACC-APG DIVISION C

Contract No.: W56KGY-16-D-0013

Contract POC: Paul J. Kurzer, (443) 861-5368
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Because the license will also remain in effect to support non-government contract activity, no change to the 'XT' Station class should be made.

2. Attached hereto are the licensee's calculations demonstrating compliance with NTIA GPS Re-Radiation Criteria – Section 8.3.28 of NTIA Regulations Maximum Equivalent Isotropically Radiated Power.

Compliance with NTIA GPS Re-Radiation Criteria – Section 8.3.28 of NTIA Regulations Maximum Equivalent Isotropically Radiated Power

Two distribution networks are used to re-radiate the GPS L1 (1575.42 MHz) and L2 (1227.60 MHz) signals at several locations inside the building designated PTP02 located at NL 42-42-09, WL 71-25-52. These systems (dual band) are configured similarly with an active receiving antenna, a signal-boost amplifier (where necessary), a leveling amplifier, RF distribution network and a re-radiating antenna for both frequencies at several locations within the building site.

Calculations are performed based on Section 8.3.28 of the NTIA regulations¹, wherein item f states:

“The equivalent isotropically radiated power (EIRP) must be such that the emissions are no greater than -140dBm/24 MHz as received by an isotropic antenna at a distance of 100 feet (30 meters) from the building where the test is being conducted. The calculation for maximum EIRP shall be based on free space propagation with no allowance for additional attenuation (e.g., building attenuation) as shown below.

$$E_{\text{max}} = P_{\text{r}} + 20\log_{10}f + 20\log_{10}(30 + d) - 27.55$$

Where: E_{max} is the maximum permissible EIRP in dBm

- P_{r} is the power received at 30 meters from the building (i.e. -140 dBm/24 MHz)
- f is frequency in MHz (i.e. 1575.42 for L1, 1227.60 for L2, 1176.45 for L5)
- d is the distance between the radiator and the closest exterior wall of the building in meters.

E_{max} can then be converted to picowatts by using the formula: $P_{\text{max}}(\text{W}) = 10^{((E_{\text{max}} / 10) + 9)}$

Applications requesting power greater than the E_{max} calculated at $d=0$ meters (i.e. 39.3 pW for L1, 23.8 pW for L2, and 21.9 pW for L5) must provide the distance from the transmit antenna to the nearest exterior wall so that reviewing agencies can determine if the requested power meets the maximum EIRP described above.”

For this application, distance to the nearest exterior wall is assumed to be zero. Calculating the maximum transmit power:

$$L1 \ E_{\text{max}}(\text{dBm}) = -140 + 20\log_{10}(1575.42) + 20\log_{10}(30) - 27.55 = -74.1 \text{ dBm}$$

$$L1 \ P_{\text{max}}(\text{pW}) = 10^{((-74.1/10) + 9)} = 39.3 \text{ pW}$$

$$L2 \ E_{\text{max}}(\text{dBm}) = -140 + 20\log_{10}(1227.6) + 20\log_{10}(30) - 27.55 = -76.2 \text{ dBm}$$

$$L2 \ P_{\text{max}}(\text{pW}) = 10^{((-76.2/10) + 9)} = 23.8 \text{ pW}$$

¹ See *Manual of Regulations and Procedures for Federal Radio Frequency Management* Para 8.3.28 (May 2013 Edition, Rev Sept 2015).

Distribution Network A - Eng Lab Path							
Component	Signal Level L1 (1575.42 MHz)	Signal Level L2 (1227.6 MHz)			Manufacturer	Part Number	Notes
GPS Signal Input (Pr)	-130	-130	dBm	(typical)			-110 to -149 dBm (-130 dBm typical)
Antenna Gain (Gr)	7.7	4.7	dB		Antcom	123GM1215A4-XN-1	
RX Antenna LNA (G Ina)	40	40	dB	(typical)			
Cable Loss, 100 ft (Lc1)	-25.5	-21.5	dB			RG58	-25.5dB/100ft [L1], -21.5dB/100 ft [L2]
Leveling Amp Output Level (Ps)	-77	-77	dBm	set value	GPS Source	GLI-METRO	Automatic Level Control Set to -77 dBm
Amplifier (Ga1)	16.4	17.9	dB	(typical)	Mini Circuits	ZX60-33LN	
Power Divider Loss (Ld1)	-9.7	-9.6	dB		Mini Circuits	ZN8PD1-53+	8-way Splitter
Attenuator (Latten)	-10	-10	dB		Mini Circuits	BW-S10W2+	
Cable Loss, 24 ft (Lc2)	-3.2	-2.8	dB			LMR-200	-13.2dB/100ft [L1], -11.7dB/100 ft [L2]
Re-Radiating Antenna (Gt)	3.0	3.0	dB		Antcom	2.3G1215P-XRS-4	
GPS Transmit Power	-80.5	-78.5	dBm				
GPS Transmit Power	8.91	14.13	pW				
Path Loss at 100 ft (Lfs)	-66.1	-63.9	dB				Assume 0 ft distance from antenna to bldg wal
EIRP @ 100 ft from Bldg (Psig)	-146.6	-142.4	dBm/24 MHz				
$P_{sig} (EIRP) = P_s + G_{a1} + L_{d1} + L_{atten} + L_{c2} + G_t + L_{fs}$							

The only path in Distribution Network B is named Production Lab Path.

[illegible]