Exhibit 1

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 regulations[1], 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.

$$P_{T\max} = P_R + 20\log_{10} f + 20\log_{10}(30+d) - 27.55$$

Where: $P_{T\max}$ 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.

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

Applications requesting power greater than the PTmax 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 $P_{T\max(dBm)} = -140 + 20\log_{10}(1575.42) + 20\log_{10}(30) - 27.55 = -74.1$ dBm
L1 $P_{T\max(pW)} = 10\text{^}((-74.1/10) + 9) = 39.3$ pW

L2 $P_{T\max(dBm)} = -140 + 20\log_{10}(1227.6) + 20\log_{10}(30) - 27.55 = -76.2$ dBm
L2 $P_{T\max(pW)} = 10\text{^}((-76.2/10) + 9) = 23.8$ pW

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

The two distribution networks are designated Distribution Network A (with 5 re-radiating nodes) and Distribution Network B (with 1 re-radiating node). The GPS re-radiator signal strength calculations for each re-radiator follows:

The Distribution Network A path names are Star Lab Path, Eng Lab Path, AIM Factory Path, BTW Chamber Path, and Chamber 10 Path.

> Note that for Distribution Network A, the amplified received signal from the roof-mounted antenna is connected to a Leveling Amp which is set to provide -77 dBm output signal for input signals within the range -115 to -85 dBm. Therefore, -77 dBm is used as the starting point for the calculations.

Distribution Network A - Star 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	dBi		Antcom	123GM1215A4-XN-1	
RX Antenna LNA (G lna)	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
Amplifier (Ga2)	28	28	dB		Tallysman	32-0125B-00	
Cable Loss, 340 ft (Lc2)	-44.9	-39.8	dB			LMR-200	-13.2dB/100ft [L1], -11.7dB/100 ft [L2]
Re-Radiating Antenna (Gt)	3.0	3.0	dBi		Antcom	2.3G1215P-XRS-4	
GPS Transmit Power	-84.18	-77.48	dBm				
GPS Transmit Power	3.82	17.86	pW				
Path Loss at 100 ft (Lfs)	-66.1	-63.9	dB				Assume 0 ft distance from antenna to bldg wall
EIRP @ 100 ft from Bldg (Psig)	-150.28	-141.38	dBm/24 MHz				

Psig (EIRP) = Ps + Ga1 + Ld1 + Ga2 + Lc2 + Gt + Lfs

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	dBi		Antcom	123GM1215A4-XN-1	
RX Antenna LNA (G lna)	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	dBi		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 wall
EIRP @ 100 ft from Bldg (Psig)	-146.6	-142.4	dBm/24 MHz				

Psig (EIRP) = Ps + Ga1 + Ld1 + Latten + Lc2 + Gt + Lfs

Distribution Network A - AIM Factory

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	dBi		Antcom	123GM1215A4-XN-1	
RX Antenna LNA (G lna)	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
Cable Loss, 100 ft (Lc2)	-13.2	-11.7	dB			LMR-200	-13.2dB/100ft [L1], -11.7dB/100 ft [L2]
Re-Radiating Antenna (Gt)	3.0	3.0	dBi		Antcom	2.3G1215P-XRS-4	
GPS Transmit Power	-80.5	-77.4	dBm				
GPS Transmit Power	8.91	18.20	pW				
Path Loss at 100 ft (Lfs)	-66.1	-63.9	dB				Assume 0 ft distance from antenna to bldg wall
EIRP @ 100 ft from Bldg (Psig)	-146.6	-141.3	dBm/24 MHz				

Psig (EIRP) = Ps + Ga1 + Ld1 + Lc2 + Gt + Lfs

Distribution Network A - BTW Chamber

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	dBi		Antcom	123GM1215A4-XN-1	
RX Antenna LNA (G lna)	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
Cable Loss, 80 ft (Lc2)	-13.2	-11.7	dB			LMR-200	-13.2dB/100ft [L1], -11.7dB/100 ft [L2]
Power Divider Loss (Ld2)	-3.2	-3.2	dB		Mini Circuits	ZAPD-2-S+	2-way Splitter
Cable Loss, 55 ft (Lc3)	-7.3	-6.5	dB			LMR-200	-13.2dB/100ft [L1], -11.7dB/100 ft [L2]
Re-Radiating Antenna (Gt)	3.0	3.0	dBi		Antcom	2.3G1215P-XRS-4	
GPS Transmit Power	-91	-87.1	dBm				
GPS Transmit Power	0.79	1.95	pW				
Path Loss at 100 ft (Lfs)	-66.1	-63.9	dB				Assume 0 ft distance from antenna to bldg wall
EIRP @ 100 ft from Bldg (Psig)	-157.1	-151	dBm/24 MHz				

Psig (EIRP) = Ps + Ga1 + Ld1 + Lc2 + Ld2 + Lc3 + Gt + Lfs

Distribution Network A - Chamber 10

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	dBi		Antcom	123GM1215A4-XN-1	
RX Antenna LNA (G lna)	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+	
Cable Loss, 80 ft (Lc2)	-13.2	-11.7	dB			LMR-200	-13.2dB/100ft [L1], -11.7dB/100 ft [L2]
Power Divider Loss (Ld2)	-3.2	-3.2	dB		Mini Circuits	ZAPD-2-S+	8-way Splitter
Cable Loss, 55 ft (Lc3)	-7.3	-6.5	dB			LMR-200	-13.2dB/100ft [L1], -11.7dB/100 ft [L2]
Re-Radiating Antenna (Gt)	3.0	3.0	dBi		Taoglas	TG.30.8111W	
GPS Transmit Power	-91	-87.1	dBm				
GPS Transmit Power	0.79	1.95	pW				
Path Loss at 100 ft (Lfs)	-66.1	-63.9	dB				Assume 0 ft distance from antenna to bldg wall
EIRP @ 100 ft from Bldg (Psig)	-157.1	-151	dBm/24 MHz				

Psig (EIRP) = Ps + Ga1 + Ld1 + Lc2 + Ld2 + Lc3 + Gt + Lfs

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

Distribution Network B - Production 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)	3	3	dBi		GPS Source	L1L2-2GA-PM-NF	
RX Antenna LNA (G lna)	33	33	dB	(typical)			
Cable Loss, 100 ft (Lc1)	-10.2	-9	dB			LMR240	-10.2dB/100ft [L1], -9dB/100 ft [L2]
16-way Splitter, Active (Gsp)	8	8	dB	(typical)	GPS Source	RMS116-A08-P110/5-NF	16-way Splitter
Cable Loss, 100 ft (Lc2)	-10.2	-9	dB			LMR240	-10.2dB/100ft [L1], -9dB/100 ft [L2]
Amplifier (Ga1)	30	30	dB	(typical)	GPS Source	A11-P110/5-NF	
Attenuator (Latten)	-10	-10	dB		MiniCircuits	15542	
Re-Radiating Antenna (Gt)	3.0	3.0	dBi		GPS Source	L1L2-2GP	
GPS Transmit Power	-83.4	-81	dBm				
GPS Transmit Power	4.57	7.94	pW				
Path Loss at 100 ft (Lfs)	-66.1	-63.9	dB				Assume 0 ft distance from antenna to bldg wall
EIRP @ 100 ft from Bldg (Psig)	-149.5	-144.9	dBm/24 MHz				

Psig (EIRP) = Pr + Gr + Glna + Lc1 + Gsp + Lc2 + Ga1 + Latten + Gt + Lfs