Purpose:
This device will be used for test support on Joint Tactical Radio System (JTRS) Manpack Radio equipment. It will be used as an Experimental RNSS Test Equipment for the purpose of testing integrated GPS receivers.

The following RF analysis is for a GLI-METRO GPS Re-Radiator system, manufactured by GPS Source, being installed in the General Dynamics Mission Systems (GDMS) Roosevelt building. This GPS Re-Radiator system includes a receive-only antenna on the roof which feeds an amplifier and a re-radiating passive antenna (+3dBi Gain) installed in the specific area where a GPS test signal is required. Due to the high sensitivity of GPS receivers utilizing these signals, the radiated power levels from these systems are extremely low and range anywhere between -72 dBm (63pW) down to -85 dBm (3.2pW) EIRP.

The GLI-METRO employs an automatic control to maintain the set output signal level. This is regardless of the uncertain loss or gain in the receive antenna cable network. It is smart enough to automatically condition the signal and prevent changes in performance.

Installation Location:
This particular installation is internal to the GDMS Roosevelt Building, Area R3219J. The antenna will be mounted a minimum of 20 feet from the external wall of the building. A building layout indicating the location of R3219J is shown in Figure 1. Figure 2 illustrates the layout of the entire GDMS campus in Scottsdale, AZ. The entire campus is controlled by GDMS Security.

Equivalent Isotropically Radiated Power Calculations:
The EIRP calculations at 100 feet (30 meters) from the building are illustrated in Figure 3. The calculations are based on free space propagation loss only.

"Stop Buzzer" Point of Contact
The "Stop Buzzer" Point of Contact for this test effort will be:

Sylvia Gonzalez – P29079
General Dynamics Mission Systems
8220 E Roosevelt St
Scottsdale, AZ 85257
United States
Tele: 480-675-1957

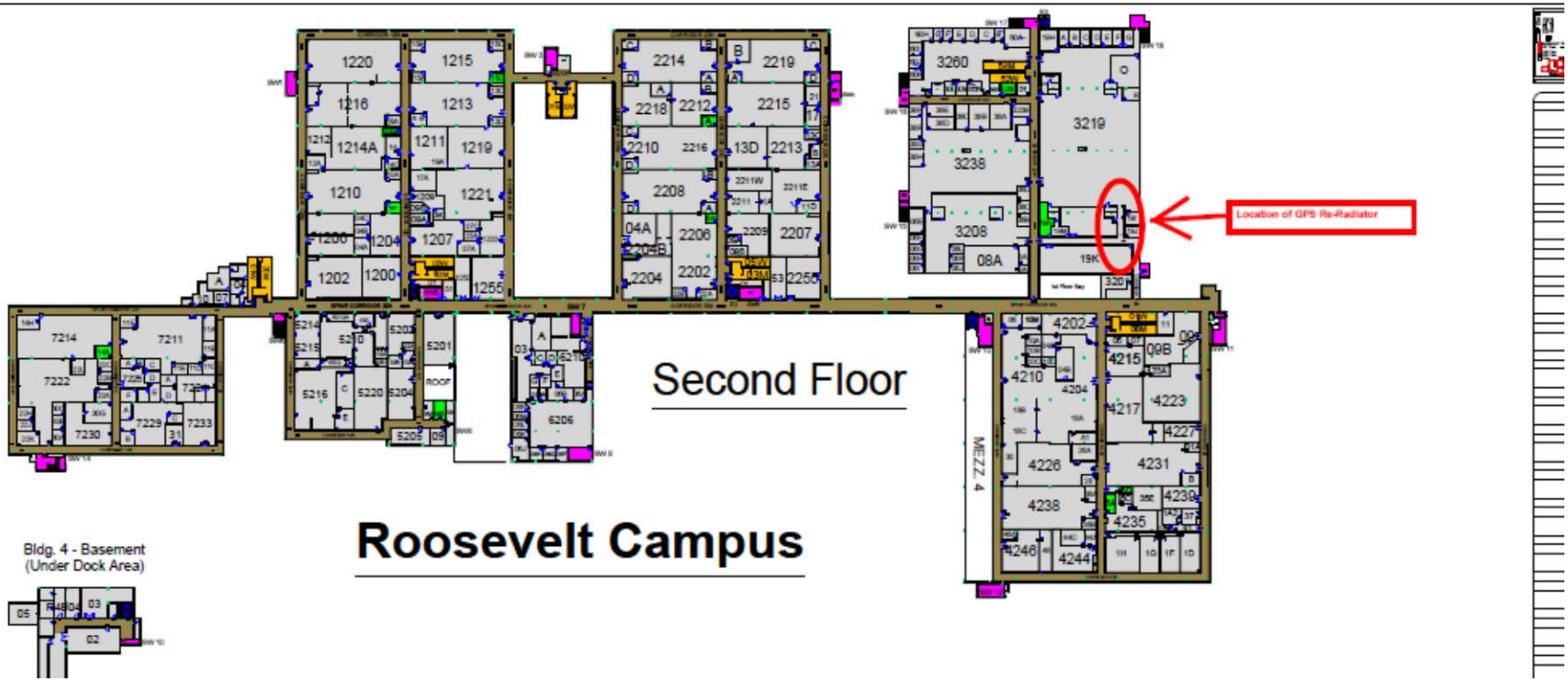

Figure 1 – Roosevelt Building 2nd Floor Layout

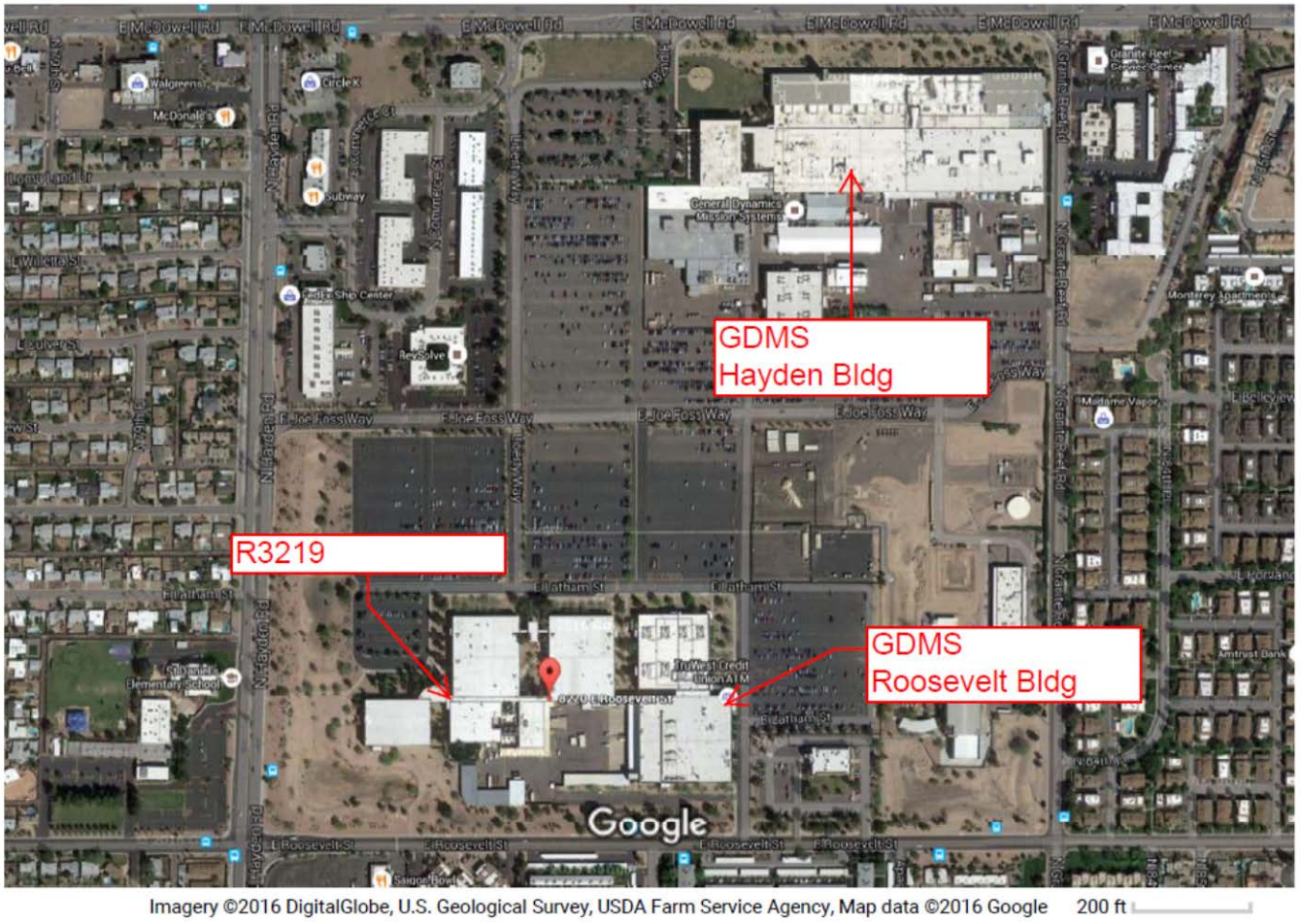

Figure 2 – General Dynamics Mission Systems Campus

Component	Signal Level			Manufacturer	Part Number	Notes
GPS Signal Input (Pr)	-130	dBm	(typical)			-110 to -149 dBm (-130dBm typ)
Antenna Gain (Gr)	3	dBi		GPS Puck Antenna	Antcom	
Rx Antenna LNA (G lna)	30	dB				
Cable Loss (Lc1)	-4	dB			LMR400-LLPL (-6dB/100ft)	
(Lc2)	-4	dB			LMR240-LL-PL (-10dB/100ft)	
Variable Attenuator (L attn)	0	dB	(nominal)			Self-Adjusting (Auto control)
Amplifier (G amp)	30	dB		GPS Source, Inc.	GLI-METRO RK	Self-Adjusting (Auto control)
Re-Radiating Antenna (Gt)	3	dBi		GPS Source, Inc.	2.5" Passive Patch	
GPS Transmit Power	-72	dBm	EIRP			Self-Adjusting (Auto control)
Path Loss @ 120ft	-68.5	dB		Path Loss = 20 Log F (MHz) + 20 Log D (feet) - 37		
EIRP @ 100ft from Bldg	**-140.5**	**dBm/24 MHz**		1575.42	MHz	Frequency L1
				100	ft	Outside Bldg
				20	ft	Antenna to Bldg Walls
				120	ft	Total Distance
P_{sig} (EIRP) = $P_R + G_R + G_{LNA} + L_{C1} + L_{C2} + L_{attn} + G_{amp} + G_T + L_{FS}$ = -130 + 3 + 30 - 8 + 27+ 3 – 66.9 = **-140.5 dBm/24 MHz**						

Figure 3 – EIRP Calculations