GPS Re-Rading Link Budget Calculator

The following spreadsheet calculates the effective radiated power for a GPS re-radiating system as well as the effective signal power at given range in dBm. Enter the components for the strongest repeating path in your system into the section with the **red** border. NTIA regulations require that the repeated signal be weaker than -140 dBm when measured 100 FT outside of the reradiated structure. Please feel free to reach out to GPS Networking if you need assistance.

Receive Ant Gain	Ant Cable Insertion Loss	Repeater Amp Gain	Repeater Ant Gain Best Case	Building Length (Feet)	Signal Power @ End of Building	Signal Power @ 100' Outside of Building In dBm
40	-9.9	20.2	4	250	-149.75	-152.6742936

GPS Carrier Frequency MHz
1575

Avg Receive Power L1 dBm North America
-130

Free Space loss with Isotropic Antennas
-74.05

	Total System Gain	**Range in Miles**	**Total Signal Power @ Range in Watts**	
	54.3	0.05	1.1E-18	
		Range in Meters	**Radiated Power dBm**	
		76.20	-75.7	
		Range in Kilometers	**Transmitted Power (W)**	
		0.08	13.5E-12	

Effective Radiated Power (W)
26.9E-12

Effective Radiated Power (dBW)
-105.7

REV3

System Receive Antenna

Part Number	Gain/Loss (dB)
L1/L2GHNRRKIT	40

Passive Components (Cause Loss)

Part Number	Gain/Loss (dB)
TNC Connectors (2)	0.2

Amplified Components (Cause Gain)

Part Number	Gain/Loss (dB)
L1/L2GHNRRKIT	20

*Note gain is adjustable to as low as 1dB

Repeating Antennas

Part Number	Gain/Loss (dB)
L1/L2GHNRRKIT	3

Cable Runs

Cable Type	Loss Per 100 Feet (LMR400) = -6	Feet of Cable	Cable Losses
LMR-240	-9.9	100	-9.9
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0

System Diagram