

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
38	-6	30	4	300	-138.05	-140.9742936
GPS Carrier Frequency MHz			Total System Gain	Range in Miles	Total Signal Power @ Range in Watts	
L1/1575.42 MHz			66	0.06	15.7E-18	
Avg Receive Power L1 dBm North America				Range in Meters	Radiated Power dBm	
-130				91.44	-64	
Free Space loss with Isotropic Antennas				Range in Kilometers	Transmitted Power (W)	
-74.05				0.09	199.5E-12	
					Effective Radiated Power (W)	
					398.1E-12	
					Effective Radiated Power (dBW)	
					-94	

System Receive Antenna

Part Number	Gain/Loss (dB)
L1L2-2GP	38

Passive Components (Cause Loss)

Part Number	Gain/Loss (dB)
DGXZ+15NFNF-A (Surge Suppressor)	-0.1

Amplified Components (Cause Gain)

Part Number	Gain/Loss (dB)
GLI-METRO	30

Repeating Antennas

Part Number	Gain/Loss (dB)
L1L2-2GA	4

Cable Runs

Cable Type	Loss Per 100 Feet (LMR400) = -6	Feet of Cable	Cable Losses
LMR-400	-6	200	-12
			0
			0
			0
			0
			0
			0
			0
			0
			0

System Diagram
