GPS Networking Link Budget Calculator

The following spreadsheet calculates the effective radiated power for a GPS Networking reradiating 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.

Receiving Antenna Gain	*Antenna Cable Insertion Loss*	*System Gain*	*Nominal Antenna Gain Best Case*	*Distance to Nearest External Wall (FT)*	*Signal Power at Nearest External Wall Building*	*Signal Power at 100' Outside of Nearest External Wall In dBm*
40	**-30.60**	**50**	**4**	**300**	**-142.24**	-144.73

GPS Carrier Frequency MHz 1575	**Total System Gain** 63.4	**Range in Miles** 0.06	**Total Signal Power @ Range in Watts** 6.0E-18
Avg Receive Power L1 dBm North America -130		**Range in Meters** 91.44	**Radiated Power dBm** -66.6
Free Space loss with Isotropic Antennas -75.64		**Range in Kilometers** 0.09	**Power (pW)** 109.65

Helpful Links:

Get an FCC Registration Number:	https://apps.fcc.gov/coresWeb/publicHome.do
FCC Experimental Broadcast Form 442:	https://apps.fcc.gov/oetcf/els/forms/442Entry.cfm
Cable Loss Calculator	https://www.timesmicrowave.com/Calculator
GPS Networking Store	https://www.gpsnetworking.com/store
Tim's Email Address (if you need help)	mailto:tim@gpsnetworking.com

Effective Radiated Power (pW) 218.78	
Effective Radiated Power (dBW) -96.6	

GPS NETWORKING

Distance to Nearest External Wall (FT): 300

System Receive Antenna

Part Number	Gain/Loss (dB)
L1/L2GPSA-T	40

Passive Components (Cause Loss)

Part Number	Gain/Loss (dB)

Amplified Components (Cause Gain)

Part Number	Gain/Loss (dB)
PNRRKAMP Re-Radiating AMP	30
LA20FPDC	20

Repeating Antennas

Part Number	Gain/Loss (dB)
L1RRKPA-S	4

Cable Runs

Cable Type	Loss Per 100 Feet (LMR240) = -10.2	Feet of Cable	Cable Losses
LMR-240	-10.2	150	-15.3
LMR-240	-10.2	150	-15.3
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0

System Diagram