



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.

<i>Receiving Antenna Gain</i>	<i>Antenna Cable Insertion Loss</i>	<i>System Gain</i>	<i>Nominal Antenna Gain Best Case</i>	<i>Distance to Nearest External Wall (FT)</i>	<i>Signal Power at Nearest External Wall Building</i>	<i>Signal Power at 100' Outside of Nearest External Wall In dBm</i>
38	-15.00	23	4	36	-137.22	-148.76
GPS Carrier Frequency MHz			Total System Gain	Range in Miles	Total Signal Power @ Range in Watts	
1575			50	0.01	19.0E-18	
Avg Receive Power L1 dBm North America				Range in Meters	Radiated Power dBm	
-130				10.97	-80	
Free Space loss with Isotropic Antennas				Range in Kilometers	Power (pW)	
-57.22				0.01	5.01	
Helpful Links:					Effective Radiated Power (pW)	
Get an FCC Registration Number: https://apps.fcc.gov/coresWeb/publicHome.do					10.00	
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					Effective Radiated Power (dBW)	
Tim's Email Address (if you need help) mailto:tim@gpsnetworking.com					-110	



Distance to External Wall (FT): 250

System Receive Antenna

Part Number Gain/Loss (dB)
L1GPSA-N 38

Passive Components (Cause Loss)

Part Number Gain/Loss (dB)
LDCBS1X2-N -4

Amplified Components (Cause Gain)

Part Number Gain/Loss (dB)
PNRRKAMP 27

Repeating Antennas

Part Number Gain/Loss (dB)
L1GRRKPA 4

Cable Runs

Loss Per 100 Feet (LMR400) = -6

Cable Type = -6 Feet of Cable Cable Losses
LMR-400 -6 250 -15

- 0
- 0
- 0
- 0
- 0
- 0
- 0
- 0
- 0
- 0
- 0
- 0
- 0
- 0
- 0
- 0
- 0
- 0
- 0
- 0



System Diagram
