

## GPS Re-Radiator Signal Strength Calculation for L2 Frequency

Component	Signal Level	Manufacturer	Part Number	Notes												
GPS Signal Input (Pr)	-130 dBm (typical)			-110 to -149 dBm (-130dBm typ)												
Antenna Gain (Gr)	3.3 dBi	Antcom Puck Antenna	P/N 3G1215													
Rx Antenna LNA (G Ina)	35 dB															
Cable Loss (Lc1)	-4 dB		LMR400-PL (-6dB/100ft)													
	(Lc2) -10 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.	P/N GPSRKXLV													
Re-Radiating Antenna (Gt)	3 dBi	GPS Source, Inc.														
GPS Transmit Power	-72.7 dBm															
Path Loss @ 160ft	-68.9 dB	Path Loss = 20 Log F (MHz) + 20 Log D (feet) - 37 <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">1227.6</td> <td style="text-align: center;">MHz</td> <td style="text-align: center;">Frequency L2</td> </tr> <tr> <td style="text-align: center;">100</td> <td style="text-align: center;">ft</td> <td style="text-align: center;">Outside Bldg</td> </tr> <tr> <td style="text-align: center;">60</td> <td style="text-align: center;">ft</td> <td style="text-align: center;">Antenna to Bldg Walls</td> </tr> <tr> <td style="text-align: center;">160</td> <td style="text-align: center;">ft</td> <td style="text-align: center;">Total Distance</td> </tr> </table>			1227.6	MHz	Frequency L2	100	ft	Outside Bldg	60	ft	Antenna to Bldg Walls	160	ft	Total Distance
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100	ft	Outside Bldg														
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EIRP @ 100ft from Bldg	<b>-141.6 dBm/24 MHz</b>															
$P_{sig} (EIRP) = P_R + G_R + G_{LNA} + L_{C1} + L_{C2} + L_{attn} + G_{amp} + G_T + L_{FS} = -130 + 3.3 + 35 - 4 - 10 + 30 + 3 - 68.9 = \mathbf{-141.6 \text{ dBm/24 MHz}}$																

## GPS Re-Radiator Signal Strength Calculation for L1 Frequency

Component	Signal Level	Manufacturer	Part Number	Notes
GPS Signal Input (Pr)	-130 dBm (typical)			-110 to -149 dBm (-130dBm typ)
Antenna Gain (Gr)	4.7 dBi	Antcom Puck Antenna	P/N 3G1215	
Rx Antenna LNA (G Ina)	33 dB			
Cable Loss (Lc1)	-4 dB		LMR400-PL (-6dB/100ft)	
	(Lc2) -10 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.	P/N GPSRKXLV	
Re-Radiating Antenna (Gt)	3 dBi	GPS Source, Inc.		
GPS Transmit Power	-73.3 dBm			
Path Loss @ 160ft	-71.0 dB	Path Loss = 20 Log F (MHz) + 20 Log D (feet) - 37 <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <span>1575.42 MHz</span> <span>Frequency L1</span> </div> <div style="display: flex; justify-content: space-between; margin-top: 2px;"> <span>100 ft</span> <span>Outside Bldg</span> </div> <div style="display: flex; justify-content: space-between; margin-top: 2px;"> <span>60 ft</span> <span>Antenna to Bldg Walls</span> </div> <div style="display: flex; justify-content: space-between; margin-top: 2px;"> <span>160 ft</span> <span>Total Distance</span> </div>		
EIRP @ 100ft from Bldg	<b>-144.3 dBm/24 MHz</b>			
$P_{sig} (EIRP) = P_R + G_R + G_{LNA} + L_{C1} + L_{C2} + L_{attn} + G_{amp} + G_T + L_{FS} = -130 + 4.7 + 33 - 4 - 10 + 30 + 3 - 71 = \mathbf{-144.3 \text{ dBm/24 MHz}}$				