

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)	3	dBi	GPS Puck Antenna	Antcom	
Rx Antenna LNA (G Ina)	30	dB			
Cable Loss (Lc1)	-2	dB		LMR600 (-3.3dB/100ft)	
Cable Loss (Lc2)	-3	dB		LMR240 (-10dB/100ft)	
Variable Attenuator (L attn)	0	dB	(nominal)		Self-Adjusting (Auto control)
Amplifier (G amp)	25	dB	GPS Source, Inc.	P/N GPSRKXLV	
Re-Radiating Antenna (Gt)	3	dBi	GPS Source, Inc.		
GPS Transmit Power	-74	dBm			
Path Loss @ 130ft	-69.2	dB	Path Loss = 20 Log F (MHz) + 20 Log D (feet) - 37		
EIRP @ 100ft from Bldg	-143.2 dBm/24 MHz		1575.42	MHz	Frequency L1
			100	ft	Outside Bldg
			30	ft	Antenna to Bldg Walls
			130	ft	Total Distance
$P_{sig} (EIRP) = P_R + G_R + G_{LNA} + L_{C1} + L_{C2} + L_{attn} + G_{amp} + G_T + L_{FS} = -130 + 3 + 30 - 2 - 3 + 25 + 3 - 69.2 = \mathbf{-143.2 \text{ dBm/24 MHz}}$					

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	dBi	GPS Puck Antenna	Antcom	
Rx Antenna LNA (G Ina)	32	dB			
Cable Loss (Lc1)	-2	dB		LMR600 (-3.3dB/100ft)	
(Lc2)	-3	dB		LMR240 (-10dB/100ft)	
Variable Attenuator (L attn)	0	dB	(nominal)		Self-Adjusting (Auto control)
Amplifier (G amp)	20	dB	GPS Source, Inc.	P/N GPSRKXLV	
Re-Radiating Antenna (Gt)	3	dBi	GPS Source, Inc.		
GPS Transmit Power	-77	dBm			
Path Loss @ 130ft	-67.1	dB	Path Loss = 20 Log F (MHz) + 20 Log D (feet) - 37		
EIRP @ 100ft from Bldg	-144.1 dBm/24 MHz		1227.6	MHz	Frequency L2
			100	ft	Outside Bldg
			30	ft	Antenna to Bldg Walls
			130	ft	Total Distance
$P_{sig} (EIRP) = P_R + G_R + G_{LNA} + L_{C1} + L_{C2} + L_{attn} + G_{amp} + G_T + L_{FS} = -130 + 3 + 32 - 2 - 3 + 20 + 3 - 67.1 = \mathbf{-144.1 \text{ dBm/24 MHz}}$					