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 lna)	30	dB				
Cable Loss (Lc1)	-5	dB			LMR240 (-10dB/100ft)	
(Lc2)	-5	dB			LMR240 (-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	-74	dBm	EIRP			
Path Loss @ 120ft	-68.5	dB		Path Loss = 20 Log F (MHz) + 20 Log D (feet) - 37		
EIRP @ 100ft from Bldg	**-142.5**	**dBm/24 MHz**		1575.42	MHz	Frequency L1
				100	ft	Outside Bldg
				20	ft	Antenna to Bldg Walls
				120	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 - 5 - 5 + 30 + 3 – 68.5 = **-142.5 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 lna)	32	dB				
Cable Loss (Lc1)	-5	dB			LMR240 (-10dB/100ft)	
(Lc2)	-5	dB			LMR240 (-10dB/100ft)	
Variable Attenuator (L attn)	0	dB	(nominal)			Self-Adjusting (Auto control)
Amplifier (G amp)	28	dB		GPS Source, Inc.	P/N GPSRKXLV	
Re-Radiating Antenna (Gt)	3	dBi		GPS Source, Inc.		
GPS Transmit Power	-74	dBm	EIRP			
Path Loss @ 120ft	-66.4	dB		Path Loss = 20 Log F (MHz) + 20 Log D (feet) - 37		
EIRP @ 100ft from Bldg	**-140.4**	**dBm/24 MHz**		1227.6	MHz	Frequency L2
				100	ft	Outside Bldg
				20	ft	Antenna to Bldg Walls
				120	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 - 5 - 5 + 28 + 3 - 66.4 = **-140.4 dBm/24 MHz**