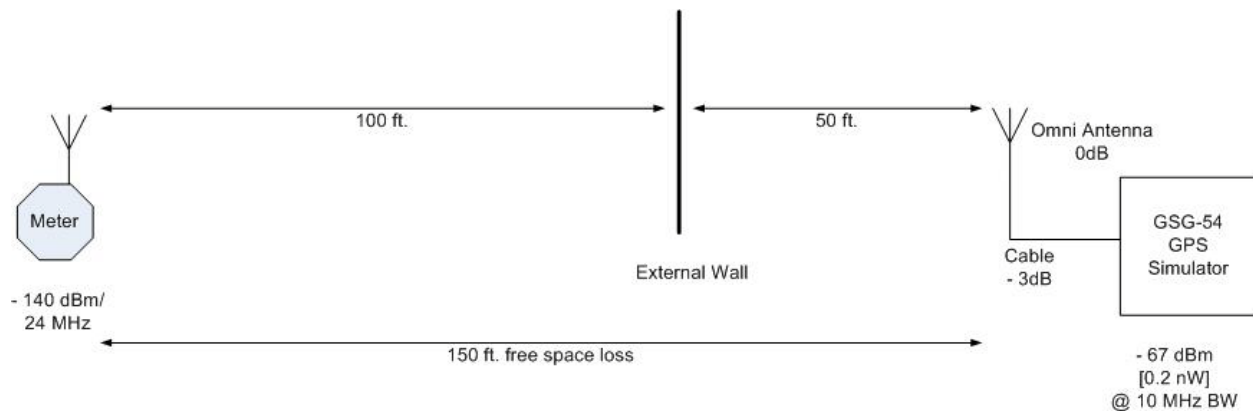


Power Level Considerations

The NTIA restricts the maximum signal level to -140 dBm (24 MHz BW) as received from an isotropic antenna at a distance of 100 feet from the building where the test is being conducted. Therefore, the maximum power level output from the GSG Signal Generator is limited to conform with this regulation.

Antenna distance to nearest exterior wall: 50 ft.
 Antenna gain: 0 dB (omni antenna)
 Cable loss, antenna to GSG simulator: 3 dB (3 ft RG-58 plus connector loss)



Using the free space loss calculation for radio propagation:

$$\text{Loss (dB)} = 20 \log_{10} (4\pi * \text{Distance} / \lambda)$$

Where λ = wavelength: @ 1575 MHz = 19 cm = 0.62 ft

Distance = 150 ft total => 50 ft from antenna exterior wall + 100 ft to restricted perimeter

$$\text{Loss} = 70 \text{ dB} = 20 \log_{10} (4\pi * 150 / 0.62)$$

Transmit Power	-67 dBm
Cable Loss	-3 dB
Transmit Antenna Gain	0 dB
Free space loss: 150 ft	-70 dB
Receive Antenna Gain	0 dB
	-140 dBm

Using the free space calculation is a worst case scenario as the wall and any other obstructions will likely reduce the signal even more. Therefore, setting the power output of the GSG-54 Simulator = -67 dBm or less will guarantee compliance.

Reference: http://en.wikipedia.org/wiki/Path_loss

Equipment to be Tested

Spectracom is a manufacturer of precision GPS-based timing equipment used in Public Safety, Aerospace and Defense, Healthcare, Transportation, Enterprise Networks, Industrial Control and many other applications. Most of our products contain a GPS receiver. In our Production Test and R*D facility, it is desirable to test these receivers and their antennas with a re-radiated signal. Furthermore, to test our equipment in many of its possible conditions, it is desirable to radiate a simulated GPS signal.

A list of the GPS-based equipment we produce can be found at our web site: [Products & Services](#)

Over the next few years, we expect to be adding to this list of GPS-based products and therefore plan to use this re-radiated signal to test future products.