



Change the values in the yellow boxes to calculate required readings

-140 or less at a range of 100 feet to meet NTIA regulations

Receive Ant Gain	Ant Cable Insertion Loss	Repeater Amp Gain	Repeater Ant Gain Best Case	Range in Feet	Repeated Signal Power @ Range In dBm
38	-3	20	3	130	-140.37

GPS Carrier Frequency MHz
1575

Total System Gain
58

Range in Miles
0.02

Total Signal Power @ Range in Watts
9.2E-18

Avg Receive Power L1 dBm North America
-130

Range in Meters
40.52

Radiated Power dBm
-72

Free Space loss with Isotropic Antennas
-68.37

Range in Kilometers
0.04

Transmitted Power (W)
31.6E-12

Effective Radiated Power (W)
63.1E-12

Effective Radiated Power (dBW)
-102





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Receive Ant Gain	Ant Cable Insertion Loss	Repeater Amp Gain	Repeater Ant Gain Best Case	Range in Feet	Repeated Signal Power @ Range In dBm
38	-5	23	3	140	-140.85

GPS Carrier Frequency MHz
1227.6

Total System Gain
59

Range in Miles
0.03

Total Signal Power @ Range in Watts
8.2E-18

Avg Receive Power L1 dBm North America
-133

Range in Meters
43.64

Radiated Power dBm
-74

Free Space loss with Isotropic Antennas
-66.85

Range in Kilometers
0.04

Transmitted Power (W)
20.0E-12

Effective Radiated Power (W)
39.8E-12

Effective Radiated Power (dBW)
-104





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Receive Ant Gain	Ant Cable Insertion Loss	Repeater Amp Gain	Repeater Ant Gain Best Case	Range in Feet	Repeated Signal Power @ Range In dBm
38	-5	22	3	140	-140.43

GPS Carrier Frequency MHz
1575

Total System Gain
58

Range in Miles
0.03

Total Signal Power @ Range in Watts
9.1E-18

Avg Receive Power L1 dBm North America
-130

Range in Meters
43.64

Radiated Power dBm
-72

Free Space loss with Isotropic Antennas
-68.43 <- based on below calcs

Range in Kilometers
0.04

Transmitted Power (W)
31.6E-12

Effective Radiated Power (W)
63.1E-12

Effective Radiated Power (dBW)
-102

Freespace loss

$$20 \cdot \log_{10}(\text{distance in km} \cdot \text{frequency in MHz}) + 32.45$$

distance in km = 0.04 (or 0.04364)

frequency in MHz = 1575 (or 1575.42)

freespace loss with less significant figures

-68.43681099

freespace loss with more significant figures

-69.19562193





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Receive Ant Gain	Ant Cable Insertion Loss	Repeater Amp Gain	Repeater Ant Gain Best Case	Range in Feet	Repeated Signal Power @ Range In dBm
38	-3	21	3	130	-140.21

GPS Carrier Frequency MHz
1227.6

Total System Gain
59

Range in Miles
0.02

Total Signal Power @ Range in Watts
9.5E-18

Avg Receive Power L1 dBm North America
-133

Range in Meters
40.52

Radiated Power dBm
-74

Free Space loss with Isotropic Antennas
-66.21

Range in Kilometers
0.04

Transmitted Power (W)
20.0E-12

Effective Radiated Power (W)
39.8E-12

Effective Radiated Power (dBW)
-104

