

1、 Explain the MSCL

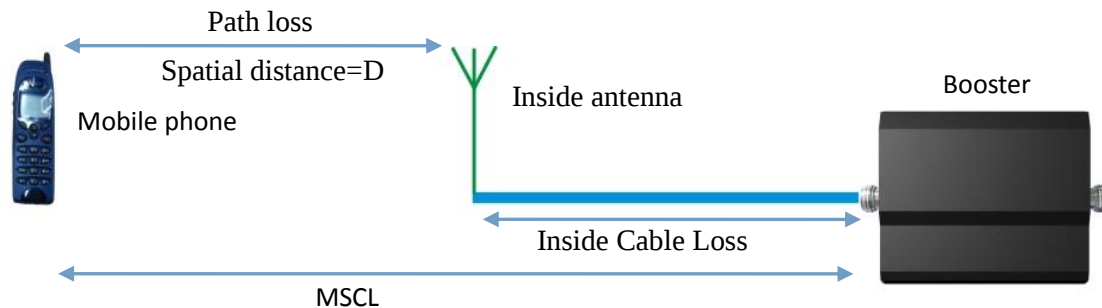


Figure 1

$$\text{MSCL} = \text{Path loss} + \text{Inside Cable Loss} - \text{Mobile Antenna Gain} - \text{Inside Antenna Gain}$$

a) Free space propagation loss calculation formula

$$\text{Path loss (dB)} = 32.45 + 20\text{Lg}f + 20\text{Lg}d \text{ or } \text{Path loss (dB)} = 20\text{Lg}f + 20\text{Lg}D - 27.5$$

f (MHz), d (km), D (m)

b) Minimum Separation Distances for MSCL base on FCC new rule

Minimum Separation Distances for MSCL Calculation or Measurements D(m)	
Inside server antenna types	Minimum separation distances D (m)
Ceiling mounted (e.g., dome-type) antennas	2
Wall mounted (i.e., panel or other type) antennas	1.0 or 2*
Table top antennas	1.0

* Note:

Wall Mounted (i.e., Panel or other type) Antennas: Alternatively, if a manufacturer clearly specifies a minimum separation distance to consumer devices in the installation manual or other user.

Documentation provided with the booster, a reasonable minimum separation distance could be up to 6feet (or 2 meters) horizontally removed from the antenna. In this case, the user would be required to ensure this minimum separation distance for all SolidRF devices authorized for use with this booster.

2、MSCL Calculations

Mobile Antenna Gain=0dBi

Frequency	D (m)	Inside Antenna Gain (dBi)	inside Cable Loss(dB)	Constant(dB)	Path loss (dB)	MSCL
UL1710-1755	2	10	1.8(20feet)	27.5	43.2	35
UL1850-1915	2	10	1.8(20feet)	27.5	43.8	35.6
UL824-849	2	7	1.35(20feet)	27.5	36.8	31.15
UL 698-716	2	7	1.3(20feet)	27.5	35.3	29.6
UL776-787	2	7	1.3(20feet)	27.5	36.3	30.6

3、Equivalent isotropic radiated power (EIRP)

Frequency	Output Power (dBm)	Outside Antenna Gain (dBi)	Outside Cable Loss (dB)	EIRP(dB m)	Limit MAx(dBm)
UL1710-1755	21	8	2.55(30feet)	26.45	30
UL1850-1915	23.6	8	2.9(30feet)	28.7	30
UL824-849	21.9	7	1.95(30feet)	26.95	30
UL 698-716	18.9	7	1.9(30feet)	24	30
UL776-787	18.7	7	1.9(30feet)	23.8	30

Frequency	Output Power (dBm)	Inside Antenna Gain (dBi)	Inside Cable Loss (dB)	EIRP(dB m)	Limit MAx(dBm)
DL2110-2155	-4.2	10	1.9 (20feet)	3.9	17
DL1930-1995	-4.4	10	1.8 (20feet)	3.8	17
DL869-894	-4.1	7	1.35 (20feet)	1.55	17
DL:728-746	-4.4	7	1.3 (20feet)	1.3	17
DL 746-757	-5.8	7	1.3 (20feet)	-0.1	17

Calculation: EIRP =Output Power -Cable loss + Antenna gain