1 Explanation of MSCL

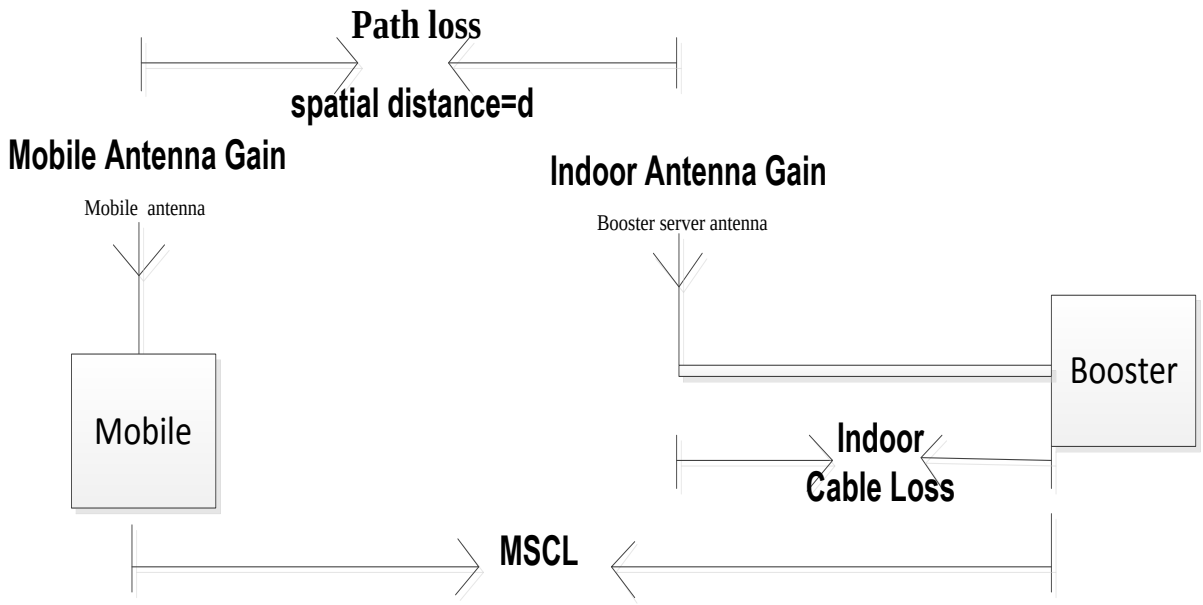


Figure 1

MSCL= Path loss + Indoor Cable Loss - Mobile Antenna Gain- Indoor Antenna Gain + Polarity Loss……①

1.1 Decibel version of free-space propagation loss equation:

Path loss (dB) =20Lgf+20LgD+32.45 ……② or Path loss (dB) =20Lgf+20Lgd-27.55 ……③

f (MHz), D (m), d (km), D=1000d.

1.1.1 Operation Frequency

At PCS (1850-1910) f (MHz) =1850

At Cellular (824-849) f (MHz) =824

At LTE (698-716) f (MHz) =698

1.1.2 Minimum Separation Distances for MSCL Calculation or Measurements d (m)

Minimum Separation Distances for MSCL Calculation or Measurements d (m)	
Indoor server antenna types	Minimum Separation Distances d (m)
Ceiling Mounted (i.e., Dome-type) Antennas	2
Wall Mounted (i.e., Panel or other type) Antennas	1
Table Top Antennas	1

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

1.2 Mobile Antenna Gain

Mobile Antenna Gain=0dBi

1.3 Indoor Cable Loss And Indoor Antenna Gain

Indoor Cable Loss and Indoor Antenna Gain are listed in the separate submitted file of TriFlex-2Go-A Antenna Kitting.

1.4 Polarity Loss

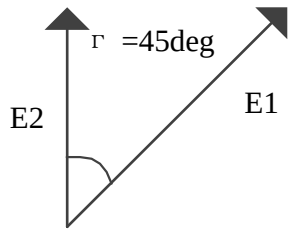
Polarity Loss dB = 10Log (E1/E2)2 dB = PL dB

PL dB= 10Log (E12/ (E1Sin (45deg)) 2) dB = 20Log (1/Sin (45deg)) dB = 3.01dB

Where:

E1 = Maximum Possible Magnitude of the Electric Field from the Mobile Device.

E2 = Magnitude of the electric field from the Mobile device with a 45deg polarity mismatch = E1Sin (r).



2 MSCL Calculations

2.1 Vehicle Kit :

Path loss =20Lgf+20Lgd-27.55				
Band	f(MHz)	d(m)	Constant（dB）	Path loss（dB）
PCS(1850-1910)	1850	0.4	27.55	29.8
Cellular(824-849)	824	0.4	27.55	22.8
LTE (698-716)	698	0.4	27.55	21.4

MSCL					
Band	Path loss (dB)	Indoor Antenna Gain(dBi)	Indoor Cable Loss(dB)	Polarity Loss(dB)	MSCL(dB)
PCS (1850-1910)	29.8	3	8.8	3	38.6
Cellular (824-849)	22.8	1.1	4.3	3	29.0
LTE (698-716)	21.4	1.1	3.8	3	27.1

2.2 Marine Kit:

Path loss=20Lgf+20Lgd-27.55				
Band	f(MHz)	d(m)	Constant（dB）	Path loss（dB）
PCS(1850-1910)	1850	0.9	27.55	36.9
Cellular(824-849)	824	0.9	27.55	30.3
LTE (698-716)	698	0.9	27.55	28.4

MSCL					
Band	Path loss (dB)	Indoor Antenna Gain(dBi)	Indoor Cable Loss(dB)	Polarity Loss(dB)	MSCL(dB)
PCS (1850-1910)	36.9	10	3.56	3	33.4
Cellular (824-849)	30.3	7	2.29	3	28.6
LTE (698-716)	28.4	7	2.06	3	26.5

2.3 Desk top/RV kit:

Path loss=20Lgf+20Lgd-27.55				
Band	f(MHz)	d(m)	Constant（dB）	Path loss（dB）
PCS(1850-1910)	1850	0.6	27.55	33.3
Cellular(824-849)	824	0.6	27.55	26.3
LTE (698-716)	698	0.6	27.55	24.9

MSCL					
Band	Path loss (dB)	Indoor Antenna Gain(dBi)	Indoor Cable Loss(dB)	Polarity Loss(dB)	MSCL(dB)
PCS (1850-1910)	33.3	3	0.3	3	35
Cellular (824-849)	26.3	1.2	0.3	3	29.8
LTE (698-716)	24.9	1.2	0.3	3	27