1 Explanation of MSCL

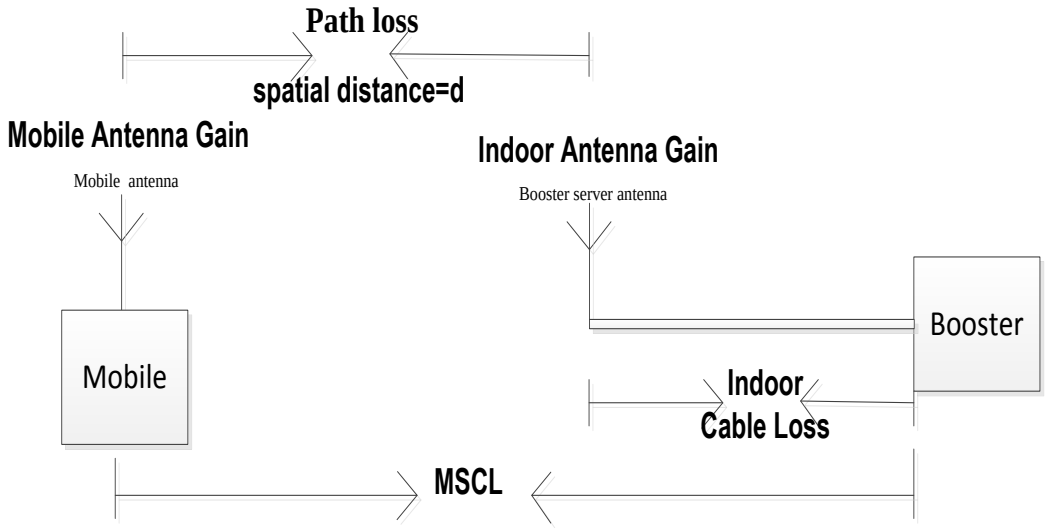

Figure 1

MSCL= Path loss + Indoor Cable Loss - Mobile Antenna Gain- Indoor Antenna Gain……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 (km) , D(m), d=1000D

1.1.1 Operation Frequency

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

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

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

1.1.2 Minimum Separation Distances for MSCL base on FCC new rule 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	2.0
Wall Mounted (i.e., Panel or other type) Antennas	1.0 or 2.0*
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 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 Tri-Flex A Antenna Kitting .

2 MSCL Calculations

Indoor Antenna			
Indoor Antenna	Indoor Antenna Gain		
	At 1900MHz(dBi)	At 800MHz(dBi)	At 700MHz(dBi)
CM222W	6	3	3
CM248W	10	7	7
MAX GAIN	10	7	7
Indoor Cable			
Indoor Cable	Indoor Cable Loss		
	At 1900MHz(dB)	At 800MHz(dB)	At 700MHz(dB)
CM240-20FN 20Feet	3.56	2.29	2.06
CM400-30NN 30Feet	2.83	2.12	2.05
MIN LOSS	2.83	2.12	2.05

Path Loss=20Lgf+20LgD-27.55				
	f(MHz)	D(m)	Constant(dB)	Path Loss(dB)
PCS(1850-1910MHz)	1850	2	27.55	43.8
Cellular(824-849MHz)	824	2	27.55	36.8
LTE(698-716MHz)	698	2	27.55	35.3

MSCL Calculations of fixed booster TriFlex-A				
MSCL				
	Path Loss(dB)	Indoor Antenna Gain(dBi)	Indoor Cable Loss(dB)	MSCL(dB)
PCS(1850-1910MHz)	43.8	10	2.83	36.6
Cellular(824-849MHz)	36.8	7	2.12	31.9
LTE(698-716MHz)	35.3	7	2.05	30.4