

The following formulas were used to calculate MSCL with a 6' foot path loss and a 45 degree polarity mismatch between the inside antenna and the mobile device:

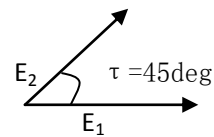
$$\text{Path Loss} = 36.6 + 20\text{Lg} (F \text{ MHz }) + 20\text{Lg} (D_{\text{miles}}) \text{ dB}$$

$$\text{Polarity Loss} = 10\text{Lg}(E_1/E_2)^2 = 10\text{Lg}((E_1/E_1\sin(45_{\text{deg}}))^2 = 20\text{Lg}((1/\sin(45_{\text{deg}}))) = 3.0 \text{ dB}$$

Where:

E_1 = Maximum Possible Magnitude of the Electric Field from the Mobile Device

E_2 = Magnitude of the electric field from the Mobil Device with a 45deg polarity mismatch = $E_1\sin(\tau)$



$$\text{MSCL} = \text{Path Loss} + \text{Polarity Loss} - \text{Antenna Gain with Coax Loss dB}$$

The results of the calculations are shown in the following table :

Uplink Frequency (MHz)	707.0	781.5	836.5	1732.5	1880.0
Path Loss (dB)	34.7	35.6	36.2	42.5	43.2
Polarity Loss (dB)	3	3	3	3	3
Antenna Gain with Coax Loss(dB)	1.5	1.5	1.5	2.5	2.5
MSCL (dB)	36.2	37.1	37.7	43.0	43.7