

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:

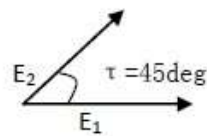
$$\text{Path Loss} = 36.6 + 20\text{Lg} ( F \text{ MHz } ) + 20\text{Lg} ( D_{\text{miles}} ) \text{ dB}$$

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

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 =  $E_1\text{Sin}(\tau)$



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

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   |

**Note: \* Maximum allowable Antenna Gain with Coax Loss for DL EIRP not exceeding 17 dBm eirp**

**\*\* MSCL calculated from Maximum allowable Antenna Gain with Coax Loss**