



3301 East Deseret Drive
St. George, Utah 84790
www.wilsonelectronics.com
info@wilsonelectronics.com
Phone 800.204.4104 • Fax 435.656.2432

July 11, 2013

To: Whom it May Concern

Subject: Calculated Mobile Station Coupling Losses (MSCL) For FCCID: PWO460004

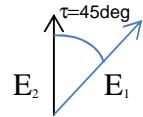
The following formulas were used to calculate MSCL with a 6' foot path loss and a 45 degree polarity mismatch between the inside antenna and the mobile device:

Path Loss dB = 36.6 dB + 20Log(F MHz) dB + 20Log(D_{miles}) dB

Polarity Loss dB = 10Log(E₁/E₂)² dB = P_L dB
P_L dB = 10Log(E₁²/(E₁sin(45_{deg}))²) dB = 20Log(1/sin(45_{deg})) 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(τ).



MSCL dB = Path Loss dB + Polarity Loss dB - Antenna Gain dB

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

Uplink Center Frequency MHz	707-710	782	836.5	1732.5	1880-1882.5
Path Loss (dB)	34.70	35.57	36.16	42.48	43.19
Polarity Loss (dB)	3	3	3	3	3
Antenna Gain with Coax Loss	2.8	2.76	2.9	4.98	4.98
MSCL (dB)	34.90	35.81	36.26	40.50	41.21

Note: Antenna Gain with Coax Loss as measured.

Sincerely

Patrick L. Cook
Senior Electrical Engineer