



3301 E. Deseret Drive, St. George, UT 84790
www.wilsonelectronics.com • info@wilsonelectronics.com
phone 1-800-204-4104 • fax 1-435-656-2432

June 3, 2016

To: Whom it May Concern

Subject: Calculated Mobile Station Coupling Losses (MSCL) For FCCID: PWO460020

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

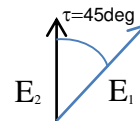
Polarity Loss dB = 10Log(E₁/E₂)² dB = P_L dB

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	43.21
Polarity Loss (dB)	3	3	3	3	3
Antenna Gain with Coax Loss	2.13	2.13	2.12	5.09	7.49
MSCL (dB)	35.57	36.44	37.04	40.39	38.72

Note: Antenna Gain with Coax Loss as measured.

Sincerely

Patrick L. Cook
Senior Electrical Engineer