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September 5, 2014

To: Whom it May Concern

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

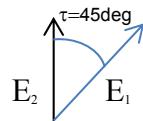
The following formulas were used to calculate MSCL with a 6' foot path loss and a 45 degree polarity mismatch between the inside antenna and the mobile device:

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

Polarity Loss dB = $10\log(E_1/E_2)^2 \text{ dB} = P_L \text{ dB}$
 $P_L \text{ dB} = 10\log(E_1^2/(E_1 \sin(45_{\text{deg}}))^2) \text{ dB} = 20\log(1/\sin(45_{\text{deg}})) \text{ dB} = 3.01 \text{ dB}$
Where:

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

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



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)	34.74	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)	35.61	36.44	37.04	40.39	38.72

Note: Antenna Gain with Coax Loss as measured.

Sincerely

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