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To: Whom it May Concern

Subject: Calculated Mobile Station Coupling Losses (MSCL)

FCCID: PWO460052

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

Distance (feet): 6

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

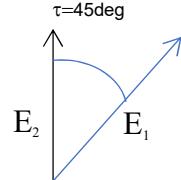
Polarity Loss dB =  $10\log(E_1/E_2)^2$  dB =  $P_L$  dB

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

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 =  $E_1 \sin(t)$ .



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)	34.72	35.58	36.16	42.49	43.20
Polarity Loss (dB)	3	3	3	3	3
Inside Antenna Gain with Coax Loss (dBi)	-2.43	-1.69	-3.09	-0.33	-1.29
<b>MSCL (dB)</b>	<b>40.15</b>	<b>40.27</b>	<b>42.25</b>	<b>45.82</b>	<b>47.49</b>

Note: Antenna Gain with Coax Loss as measured.

Sincerely

Patrick L. Cook