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October 31, 2013

Subject: RF MPE EXPOSURE
Re: FCC ID: PWO460005

To Whom It May Concern:

The MPE calculations for model 460005 signal booster were done for each frequency band: 800 MHz and 1900 MHz. For each band two calculations were done; these included the different possibilities of antennas that may be connected to this signal booster: fixed outside and inside antennas. The order of the attached calculations is as follows:

800 MHz band:

1. Fixed Outside Antenna: 311124-400100
2. Inside Antenna: 311135

1900 MHz band:

1. Fixed Outside Antenna: 314473-0640
2. Inside Antenna: 311135

A booster's uplink power must not exceed 1 watt equivalent isotropic radiated power (EIRP) for each band of operation. Composite downlink power must not exceed 0.05 watt EIRP for each band of operation (20.21(e)(8)(i)(D)). The following formula was used to calculate the equivalent isotropic radiated power:

$$\text{EIRP} = \text{Power Out (Watts)} * \text{Duty Cycle Percent} * \text{Antenna Gain (non-log)} * \text{Coax loss (non-log)}$$

The power density (mW/cm^2) is calculated using the following formula:

$$\text{Calculated Power Density} = 1000 * \text{EIRP (Watts)} / (4 * \pi * (\text{Distance from Antenna (cm)}^2))$$

Sincerely,

A handwritten signature in black ink, appearing to read 'Patrick L. Cook', written in a cursive style.

Patrick L. Cook
Senior Research and Development Engineer



Minimum Safe Distance From Antennas Based upon FCC OET Bulletin 65 and other FCC Sources

INPUT DATA

Frequency MHz	824
Pout Watts	0.30867
Duty Cycle Percent	100.0%
Ant. Gain dBi	9.64
Coax Loss dB	4.74
Distance From Antenna In cm	20.3

RESULTS OF CALCULATIONS

Ant. Gain less Coax Loss dBi	4.90
Distance From Antenna In Inches	8.00
EIRP (Watts)	0.9539
FCC Power Density Limit (mw/cm ²)	0.55
Calculated Power Density (mw/cm ²)	0.1840

REFERENCE DATA

Pout dBm	24.89
Antenna Gain (non-log)	9.20
Coax loss (non-log)	0.34
General FCC Limit (mw/cm ²)	f/1500

Antenna # 311124-400100



Minimum Safe Distance From Antennas Based upon FCC OET Bulletin 65 and other FCC Sources

INPUT DATA

Frequency MHz	869
Pout Watts	0.00060
Duty Cycle Percent	100.0%
Ant. Gain dBi	6.10
Coax Loss dB	0.00
Distance From Antenna In cm	20.3

RESULTS OF CALCULATIONS

Ant. Gain less Coax Loss dBi	6.10
Distance From Antenna In Inches	8.00
EIRP (Watts)	0.0025
FCC Power Density Limit (mw/cm ²)	0.58
Calculated Power Density (mw/cm ²)	0.0005

REFERENCE DATA

Pout dBm	-2.20
Antenna Gain (non-log)	4.07
Coax loss (non-log)	1.00
General FCC Limit (mw/cm ²)	f/1500

Antenna # 311135



Minimum Safe Distance From Antennas Based upon FCC OET Bulletin 65 and other FCC Sources

INPUT DATA

Frequency MHz	1850
Pout Watts	0.17800
Duty Cycle Percent	100.0%
Ant. Gain dBi	10.04
Coax Loss dB	5.30
Distance From Antenna In cm	20.3

RESULTS OF CALCULATIONS

Ant. Gain less Coax Loss dBi	4.74
Distance From Antenna In Inches	8.00
EIRP (Watts)	0.5302
FCC Power Density Limit (mw/cm ²)	1.00
Calculated Power Density (mw/cm ²)	0.1023

REFERENCE DATA

Pout dBm	22.50
Antenna Gain (non-log)	10.09
Coax loss (non-log)	0.30
General FCC Limit (mw/cm ²)	1.00

Antenna # 314473-0640



Minimum Safe Distance From Antennas Based upon FCC OET Bulletin 65 and other FCC Sources

INPUT DATA

Frequency MHz	1930
Pout Watts	0.00062
Duty Cycle Percent	100.0%
Ant. Gain dBi	6.70
Coax Loss dB	0.00
Distance From Antenna In cm	20.3

RESULTS OF CALCULATIONS

Ant. Gain less Coax Loss dBi	6.70
Distance From Antenna In Inches	8.00
EIRP (Watts)	0.0029
FCC Power Density Limit (mw/cm ²)	1.00
Calculated Power Density (mw/cm ²)	0.0006

REFERENCE DATA

Pout dBm	-2.10
Antenna Gain (non-log)	4.68
Coax loss (non-log)	1.00
General FCC Limit (mw/cm ²)	1.00

Antenna # 311135