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October 17, 2013

Subject: RF MPE EXPOSURE
Re: FCC ID: PWO460002

To Whom It May Concern:

The MPE calculations for model 460002 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: mobile outside and inside antennas. The order of the attached calculations is as follows:

800 MHz band:

1. Outside Antenna: 311127
2. Inside Antenna: 311104

1900 MHz band:

1. Outside Antenna: 311101
2. Inside Antenna: 311106

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 'P. 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	0.00049
Duty Cycle Percent	100.0%
Ant. Gain dBi	2.50
Coax Loss dB	0.00
Distance From Antenna In cm	20.3

RESULTS OF CALCULATIONS

Ant. Gain less Coax Loss dBi	2.50
Distance From Antenna In Inches	8.00
EIRP (Watts)	0.0009
FCC Power Density Limit (mw/cm ²)	0.55
Calculated Power Density (mw/cm ²)	0.0002

REFERENCE DATA

Pout dBm	-3.10
Antenna Gain (non-log)	1.78
Coax loss (non-log)	1.00
General FCC Limit (mw/cm ²)	f/1500

Antenna # 311104



Minimum Safe Distance From Antennas

Based upon FCC OET Bulletin 65 and other FCC Sources

INPUT DATA

Frequency MHz	869
Pout Watts	0.21880
Duty Cycle Percent	100.0%
Ant. Gain dBi	2.20
Coax Loss dB	0.00
Distance From Antenna In cm	20.3

RESULTS OF CALCULATIONS

Ant. Gain less Coax Loss dBi	2.20
Distance From Antenna In Inches	8.00
EIRP (Watts)	0.3631
FCC Power Density Limit (mw/cm ²)	0.58
Calculated Power Density (mw/cm ²)	0.0701

REFERENCE DATA

Pout dBm	23.40
Antenna Gain (non-log)	1.66
Coax loss (non-log)	1.00
General FCC Limit (mw/cm ²)	f/1500

Antenna # 311127



Minimum Safe Distance From Antennas

Based upon FCC OET Bulletin 65 and other FCC Sources

INPUT DATA

Frequency MHz	1850
Pout Watts	0.00081
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)	0.0033
FCC Power Density Limit (mw/cm ²)	1.00
Calculated Power Density (mw/cm ²)	0.0006

REFERENCE DATA

Pout dBm	-0.92
Antenna Gain (non-log)	4.07
Coax loss (non-log)	1.00
General FCC Limit (mw/cm ²)	1.00

Antenna # 311101



Minimum Safe Distance From Antennas

Based upon FCC OET Bulletin 65 and other FCC Sources

INPUT DATA

Frequency MHz	1930
Pout Watts	0.00081
Duty Cycle Percent	100.0%
Ant. Gain dBi	0.10
Coax Loss dB	0.00
Distance From Antenna In cm	20.3

RESULTS OF CALCULATIONS

Ant. Gain less Coax Loss dBi	0.10
Distance From Antenna In Inches	8.00
EIRP (Watts)	0.0008
FCC Power Density Limit (mw/cm ²)	1.00
Calculated Power Density (mw/cm ²)	0.0002

REFERENCE DATA

Pout dBm	-0.92
Antenna Gain (non-log)	1.02
Coax loss (non-log)	1.00
General FCC Limit (mw/cm ²)	1.00

Antenna # 311106