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June 6, 2016

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 Kit: 311129-400100
2. Inside Antenna: 311155

1900 MHz band:

1. Fixed Outside Antenna: 314473-0640
2. Inside Antenna: 311155

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<sup>2</sup>) 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	0.30903
Duty Cycle Percent	100.0%
Ant. Gain dBi	9.60
Coax Loss dB	5.40
Distance From Antenna In cm	20.3

### RESULTS OF CALCULATIONS

Ant. Gain less Coax Loss dBi	4.20
Distance From Antenna In Inches	8.00
EIRP (Watts)	0.8128
FCC Power Density Limit (mw/cm <sup>2</sup> )	0.55
Calculated Power Density (mw/cm <sup>2</sup> )	0.1568

### REFERENCE DATA

Pout dBm	24.90
Antenna Gain (non-log)	9.12
Coax loss (non-log)	0.29
General FCC Limit (mw/cm <sup>2</sup> )	f/1500



## 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	6.09
Coax Loss dB	0.00
Distance From Antenna In cm	20.3

### RESULTS OF CALCULATIONS

Ant. Gain less Coax Loss dBi	6.09
Distance From Antenna In Inches	8.00
EIRP (Watts)	0.0024
FCC Power Density Limit (mw/cm <sup>2</sup> )	0.58
Calculated Power Density (mw/cm <sup>2</sup> )	0.0005

### REFERENCE DATA

Pout dBm	-2.20
Antenna Gain (non-log)	4.06
Coax loss (non-log)	1.00
General FCC Limit (mw/cm <sup>2</sup> )	f/1500



## Minimum Safe Distance From Antennas

Based upon FCC OET Bulletin 65 and other FCC Sources

### INPUT DATA

Frequency MHz	1850
Pout Watts	0.17783
Duty Cycle Percent	100.0%
Ant. Gain dBi	10.0
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)	0.5297
FCC Power Density Limit (mw/cm <sup>2</sup> )	1.00
Calculated Power Density (mw/cm <sup>2</sup> )	0.1022

### REFERENCE DATA

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



## 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	9.77
Coax Loss dB	0.00
Distance From Antenna In cm	20.0

### RESULTS OF CALCULATIONS

Ant. Gain less Coax Loss dBi	9.77
Distance From Antenna In Inches	7.87
EIRP (Watts)	0.0058
FCC Power Density Limit (mw/cm <sup>2</sup> )	1.00
Calculated Power Density (mw/cm <sup>2</sup> )	0.0012

### REFERENCE DATA

Pout dBm	-2.10
Antenna Gain (non-log)	9.48
Coax loss (non-log)	1.00
General FCC Limit (mw/cm <sup>2</sup> )	1.00