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January 18, 2019
Subject: RF MPE EXPOSURE
Re: FCC ID: PWO 460045

To Whom It May Concern:

The MPE calculations for model 460045 signal booster were done for each frequency band: 700 MHz Band 12, 700 MHz Band 13, 800 MHz, 1900 MHz, and 1700/2100 MHz. For each band one calculation was done; this included an outside antenna, and an inside antenna that may be connected to this signal booster. The order of the attached calculations is as follows:

700 MHz Band 12:
1. Inside Antenna: 311155
2. Outside Antenna: 314411-40075

700 MHz Band 13:
1. Inside Antenna: 311155
2. Outside Antenna: 311245-100100

800 MHz band:
1. Inside Antenna: 311244-0630
2. Outside Antenna: 301111-400170

1900 MHz band:
1. Inside Antenna: 309902-75F0620
2. Outside Antenna: 314453-40075

1700/2100 MHz band:
1. Inside Antenna: 304412-40010
2. Outside Antenna: 314473-0640

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:

EIRP= Power Out (Watts)*Duty Cycle Percent*Antenna Gain (non-log)*Coax loss (non-log)

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

Calculated Power Density=1000*EIRP (Watts)/(4*π*(Distance from Antenna (cm)^2))

Sincerely,

Erin Elder

Erin Elder
IP & Regulatory Compliance Engineer

Minimum Safe Distance From Antennas

Based upon FCC OET Bulletin 65 and other FCC Sources

INPUT DATA

Frequency MHz	728
Pout Watts	0.01901
Duty Cycle Percent	100.0%
Ant. Gain dBi	4.16
Coax Loss dB	0.00
Distance From Antenna In cm	20.3

RESULTS OF CALCULATIONS

Ant. Gain less Coax Loss dBi	4.16
Distance From Antenna In Inches	8.00
EIRP (Watts)	0.0495
FCC Power Density Limit (mw/cm^2)	0.49
Calculated Power Density (mw/cm^2)	0.0096

REFERENCE DATA

Pout dBm	12.79
Antenna Gain (non-log)	2.61
Coax loss (non-log)	1.00
General FCC Limit (mw/cm^2)	f/1500

Minimum Safe Distance From Antennas

Based upon FCC OET Bulletin 65 and other FCC Sources

INPUT DATA

Frequency MHz	698
Pout Watts	0.32659
Duty Cycle Percent	100.0%
Ant. Gain dBi	7.30
Coax Loss dB	2.80
Distance From Antenna In cm	20.3

RESULTS OF CALCULATIONS

Ant. Gain less Coax Loss dBi	4.50
Distance From Antenna In Inches	8.00
EIRP (Watts)	0.9204
FCC Power Density Limit (mw/cm^2)	0.47
Calculated Power Density (mw/cm^2)	0.1776

REFERENCE DATA

Pout dBm	25.14
Antenna Gain (non-log)	5.37
Coax loss (non-log)	0.52
General FCC Limit (mw/cm^2)	f/1500

Minimum Safe Distance From Antennas

Based upon FCC OET Bulletin 65 and other FCC Sources

INPUT DATA

Frequency MHz	746
Pout Watts	0.01675
Duty Cycle Percent	100.0%
Ant. Gain dBi	4.2
Coax Loss dB	0.0
Distance From Antenna In cm	20.3

RESULTS OF CALCULATIONS

Ant. Gain less Coax Loss dBi	4.16
Distance From Antenna In Inches	8.00
EIRP (Watts)	0.0437
FCC Power Density Limit (mw/cm^2)	0.50
Calculated Power Density (mw/cm^2)	0.0084

REFERENCE DATA

Pout dBm	12.24
Antenna Gain (non-log)	2.61
Coax loss (non-log)	1.00
General FCC Limit (mw/cm^2)	f/1500

Minimum Safe Distance From Antennas

Based upon FCC OET Bulletin 65 and other FCC Sources

700
2.60

INPUT DATA

Frequency MHz	777
Pout Watts	0.29444
Duty Cycle Percent	100.0%
Ant. Gain dBi	7.1
Coax Loss dB	2.6
Distance From Antenna In cm	20.3

RESULTS OF CALCULATIONS

Ant. Gain less Coax Loss dBi	4.46
Distance From Antenna In Inches	8.00
EIRP (Watts)	0.8222
FCC Power Density Limit (mw/cm^2)	0.52
Calculated Power Density (mw/cm^2)	0.1586

REFERENCE DATA

Pout dBm	24.69
Antenna Gain (non-log)	5.08
Coax loss (non-log)	0.55
General FCC Limit (mw/cm^2)	f/1500

Minimum Safe Distance From Antennas

Based upon FCC OET Bulletin 65 and other FCC Sources

INPUT DATA

Frequency MHz	869
Pout Watts	0.01667
Duty Cycle Percent	100.0%
Ant. Gain dBi	7.25
Coax Loss dB	2.60
Distance From Antenna In cm	20.3

RESULTS OF CALCULATIONS

Ant. Gain less Coax Loss dBi	4.65
Distance From Antenna In Inches	8.00
EIRP (Watts)	0.0486
FCC Power Density Limit (mw/cm^2)	0.58
Calculated Power Density (mw/cm^2)	0.0094

REFERENCE DATA

Pout dBm	12.22
Antenna Gain (non-log)	5.31
Coax loss (non-log)	0.55
General FCC Limit (mw/cm^2)	f/1500

Minimum Safe Distance From Antennas

Based upon FCC OET Bulletin 65 and other FCC Sources

INPUT DATA

Frequency MHz	824
Pout Watts	0.32063
Duty Cycle Percent	100.0%
Ant. Gain dBi	10.80
Coax Loss dB	6.30
Distance From Antenna In cm	20.3

RESULTS OF CALCULATIONS

Ant. Gain less Coax Loss dBi	4.50
Distance From Antenna In Inches	8.00
EIRP (Watts)	0.9036
FCC Power Density Limit (mw/cm^2)	0.55
Calculated Power Density (mw/cm^2)	0.1743

REFERENCE DATA

Pout dBm	25.06
Antenna Gain (non-log)	12.02
Coax loss (non-log)	0.23
General FCC Limit (mw/cm^2)	f/1500

Minimum Safe Distance From Antennas

Based upon FCC OET Bulletin 65 and other FCC Sources

INPUT DATA

Frequency MHz	1930
Pout Watts	0.01648
Duty Cycle Percent	100.0%
Ant. Gain dBi	7.8
Coax Loss dB	3.0
Distance From Antenna In cm	20.3

RESULTS OF CALCULATIONS

Ant. Gain less Coax Loss dBi	4.8
Distance From Antenna In Inches	8.00
EIRP (Watts)	0.0500
FCC Power Density Limit (mw/cm^2)	1.00
Calculated Power Density (mw/cm^2)	0.0096

REFERENCE DATA

Pout dBm	12.17
Antenna Gain (non-log)	6.05
Coax loss (non-log)	0.50
General FCC Limit (mw/cm^2)	1.00

Minimum Safe Distance From Antennas

Based upon FCC OET Bulletin 65 and other FCC Sources

INPUT DATA

Frequency MHz	1850
Pout Watts	0.32810
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)	0.9772
FCC Power Density Limit (mw/cm^2)	1.00
Calculated Power Density (mw/cm^2)	0.1885

REFERENCE DATA

Pout dBm	25.16
Antenna Gain (non-log)	10.09
Coax loss (non-log)	0.30
General FCC Limit (mw/cm^2)	1.00

Minimum Safe Distance From Antennas

Based upon FCC OET Bulletin 65 and other FCC Sources

INPUT DATA

Frequency MHz	2110
Pout Watts	0.01750
Duty Cycle Percent	100.0%
Ant. Gain dBi	5.30
Coax Loss dB	0.90
Distance From Antenna In cm	20.3

RESULTS OF CALCULATIONS

Ant. Gain less Coax Loss dBi	4.40
Distance From Antenna In Inches	8.00
EIRP (Watts)	0.0482
FCC Power Density Limit (mw/cm^2)	1.00
Calculated Power Density (mw/cm^2)	0.0093

REFERENCE DATA

Pout dBm	12.43
Antenna Gain (non-log)	3.39
Coax loss (non-log)	0.81
General FCC Limit (mw/cm^2)	1.00

Minimum Safe Distance From Antennas

Based upon FCC OET Bulletin 65 and other FCC Sources

INPUT DATA

Frequency MHz	1710
Pout Watts	0.32734
Duty Cycle Percent	100.0%
Ant. Gain dBi	8.21
Coax Loss dB	4.40
Distance From Antenna In cm	20.3

RESULTS OF CALCULATIONS

Ant. Gain less Coax Loss dBi	3.81
Distance From Antenna In Inches	8.00
EIRP (Watts)	0.7870
FCC Power Density Limit (mw/cm^2)	1.00
Calculated Power Density (mw/cm^2)	0.1518

REFERENCE DATA

Pout dBm	25.15
Antenna Gain (non-log)	6.62
Coax loss (non-log)	0.36
General FCC Limit (mw/cm^2)	1.00