

To Whom It May Concern:

The MPE calculations for model F10G-CPAL-AB-C signal booster were done for each frequency band: 700 MHz Band 17, 700 MHz Band 13, 800 MHz, 1700/2100 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:

- 700 MHz band 17 :
 1. Fixed Outside Antenna: Yagi 11dbi
 2. Inside Antenna: Panel 10dbi
- 700 MHz band 13 :
 1. Fixed Outside Antenna: Yagi 11dbi
 2. Inside Antenna: Panel 10dbi
- 800 MHz band :
 3. Fixed Outside Antenna: Yagi 11dbi
 4. Inside Antenna: Panel 10dbi
- 1700/2100 MHz band :
 3. Fixed Outside Antenna: Yagi 11dbi
 4. Inside Antenna: Panel 10dbi
- 1900 MHz band :
 5. Fixed Outside Antenna: Yagi 11dbi
 6. Inside Antenna: Panel 10dbi

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 equivalent isotropic radiated power:

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

The power density (mW/cm²) is calculated using the following formula:

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

Yagi 11dbi with 30' 400 N male

Input Data

Frequency MHz	704
Pout Watts	0.19
Ant. Gain dBi	11
Coax Loss dB	0.85
Distance From Antenna In cm	20

Results Of Calculations

Ant.Gain less Coax Loss dBi	10.15
Distance From Antenna In Inches	8
EIRP (Watts)	1.98
FCC Power Density Limit (mw/cm ²)	0.47
Calculated Power Density (mw/cm ²)	0.38284

Reference Data

Pout dBm	22.82
Antenna Gain (non-log)	12.59
Coax Loss(non-log)	0.82
General FCC Limit (mw/cm ²)	f/1500

Panel 10dbi with 3' 5D N Male

Input Data

Frequency MHz	734
Pout Watts	0.01
Ant. Gain dBi	10
Coax Loss dB	0.2
Distance From Antenna In cm	20

Results Of Calculations

Ant.Gain less Coax Loss dBi	9.8
Distance From Antenna In Inches	8
EIRP (Watts)	0.01
FCC Power Density Limit (mw/cm ²)	0.49
Calculated Power Density (mw/cm ²)	0.0138

Reference Data

Pout dBm	8.76
Antenna Gain (non-log)	10.00
Coax Loss(non-log)	0.95
General FCC Limit (mw/cm ²)	f/1500

Yagi 11dbi with 30' 400 N male

Input Data

Frequency MHz	777
Pout Watts	0.20
Ant. Gain dBi	11
Coax Loss dB	0.9
Distance From Antenna In cm	20

Results Of Calculations

Ant.Gain less Coax Loss dBi	10.1
Distance From Antenna In Inches	8
EIRP (Watts)	0.01
FCC Power Density Limit (mw/cm ²)	0.52
Calculated Power Density (mw/cm ²)	0.389958

Reference Data

Pout dBm	22.95
Antenna Gain (non-log)	12.59
Coax Loss(non-log)	0.81
General FCC Limit (mw/cm ²)	f/1500

Panel 10dbi with 3' 5D N Male

Input Data

Frequency MHz	746
Pout Watts	0.003048
Ant. Gain dBi	10
Coax Loss dB	0.2
Distance From Antenna In cm	20

Results Of Calculations

Ant.Gain less Coax Loss dBi	4.84
Distance From Antenna In Inches	8
EIRP (Watts)	0.009550
FCC Power Density Limit (mw/cm ²)	0.50
Calculated Power Density (mw/cm ²)	0.005624

Reference Data

Pout dBm	4.84
Antenna Gain (non-log)	10.00
Coax Loss(non-log)	0.95

General FCC Limit (mw/cm ²)	f/1500
---	--------

Yagi 11dbi with 30' 400 N male

Input Data

Frequency MHz	824
Pout Watts	0.11
Ant. Gain dBi	11
Coax Loss dB	1.1
Distance From Antenna In cm	20

Results Of Calculations

Ant.Gain less Coax Loss dBi	9.9
Distance From Antenna In Inches	8
EIRP (Watts)	0.01
FCC Power Density Limit (mw/cm ²)	0.55
Calculated Power Density (mw/cm ²)	0.211845

Reference Data

Pout dBm	20.5
Antenna Gain (non-log)	12.58925412
Coax Loss(non-log)	0.78
General FCC Limit (mw/cm ²)	f/1500

Panel 10dbi with 3' 5D N Male

Input Data

Frequency MHz	869
Pout Watts	0.01
Ant. Gain dBi	10
Coax Loss dB	0.2
Distance From Antenna In cm	20

Results Of Calculations

Ant.Gain less Coax Loss dBi	9.8
Distance From Antenna In Inches	8
EIRP (Watts)	0.01
FCC Power Density Limit (mw/cm ²)	0.58
Calculated Power Density (mw/cm ²)	0.010740

Reference Data

Pout dBm	7.65
Antenna Gain (non-log)	10.00

Coax Loss(non-log)	0.95
General FCC Limit (mw/cm ²)	f/1500

Yagi 11dbi with 30' 400 N male

Input Data

Frequency MHz	1710
Pout Watts	0.09
Ant. Gain dBi	11
Coax Loss dB	1.4
Distance From Antenna In cm	20

Results Of Calculations

Ant.Gain less Coax Loss dBi	9.6
Distance From Antenna In Inches	8
EIRP (Watts)	0.01
FCC Power Density Limit (mw/cm ²)	1.00
Calculated Power Density (mw/cm ²)	0.155245

Reference Data

Pout dBm	19.45
Antenna Gain (non-log)	12.59
Coax Loss(non-log)	0.72
General FCC Limit (mw/cm ²)	1

Panel 10dbi with 3' 5D N Male

Input Data

Frequency MHz	2110
Pout Watts	0.000124
Ant. Gain dBi	10
Coax Loss dB	0.5
Distance From Antenna In cm	20

Results Of Calculations

Ant.Gain less Coax Loss dBi	9.5
Distance From Antenna In Inches	8
EIRP (Watts)	0.01
FCC Power Density Limit (mw/cm ²)	1.00
Calculated Power Density (mw/cm ²)	0.000213

Reference Data

Pout dBm	-9.07
----------	-------

Antenna Gain (non-log)	10.00
Coax Loss(non-log)	0.89
General FCC Limit (mw/cm ²)	1

Yagi 11dbi with 30' 400 N male

Input Data

Frequency MHz	1850
Pout Watts	0.12
Ant. Gain dBi	11
Coax Loss dB	1.6
Distance From Antenna In cm	20

Results Of Calculations

Ant.Gain less Coax Loss dBi	9.4
Distance From Antenna In Inches	8
EIRP (Watts)	0.01
FCC Power Density Limit (mw/cm ²)	1.00
Calculated Power Density (mw/cm ²)	0.207978

Reference Data

Pout dBm	20.92
Antenna Gain (non-log)	12.58925412
Coax Loss(non-log)	0.69
General FCC Limit (mw/cm ²)	1

Panel 10dbi with 3' 5D N Male

Input Data

Frequency MHz	1930
Pout Watts	0.000085
Ant. Gain dBi	10
Coax Loss dB	0.3
Distance From Antenna In cm	20

Results Of Calculations

Ant.Gain less Coax Loss dBi	9.7
Distance From Antenna In Inches	8
EIRP (Watts)	0.01
FCC Power Density Limit (mw/cm ²)	1.00
Calculated Power Density (mw/cm ²)	0.000153

Reference Data

Pout dBm	-10.7
Antenna Gain (non-log)	10.00
Coax Loss(non-log)	0.93
General FCC Limit (mw/cm ²)	1