

To Whom It May Concern:

The MPE calculations for model C27G-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/cm<sup>2</sup>) is calculated using the following formula:

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

Yagi 11dbi with 30' 400 N male

Input Data

Frequency MHz	704
Pout Watts	0.21
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)	2.16
FCC Power Density Limit (mw/cm <sup>2</sup> )	0.47
Calculated Power Density (mw/cm <sup>2</sup> )	0.4178

Reference Data

Pout dBm	23.2
Antenna Gain (non-log)	12.59
Coax Loss(non-log)	0.82
General FCC Limit (mw/cm <sup>2</sup> )	f/1500

Panel 10dbi with 3' 5D N Male

Input Data

Frequency MHz	734
Pout Watts	0.00
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 <sup>2</sup> )	0.49
Calculated Power Density (mw/cm <sup>2</sup> )	0.00609

Reference Data

Pout dBm	5.19
Antenna Gain (non-log)	10.00
Coax Loss(non-log)	0.95
General FCC Limit (mw/cm <sup>2</sup> )	f/1500

Yagi 11dbi with 30' 400 N male

Input Data

Frequency MHz	777
Pout Watts	0.18
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 <sup>2</sup> )	0.52
Calculated Power Density (mw/cm <sup>2</sup> )	0.35077

Reference Data

Pout dBm	22.49
Antenna Gain (non-log)	12.59
Coax Loss(non-log)	0.81
General FCC Limit (mw/cm <sup>2</sup> )	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	1.98
Distance From Antenna In Inches	8
EIRP (Watts)	0.009550
FCC Power Density Limit (mw/cm <sup>2</sup> )	0.50
Calculated Power Density (mw/cm <sup>2</sup> )	0.00563

Reference Data

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

General FCC Limit (mw/cm <sup>2</sup> )	f/1500
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Yagi 11dbi with 30' 400 N male

Input Data

Frequency MHz	824
Pout Watts	0.13
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 <sup>2</sup> )	0.55
Calculated Power Density (mw/cm <sup>2</sup> )	0.23934

Reference Data

Pout dBm	21.03
Antenna Gain (non-log)	12.58925412
Coax Loss(non-log)	0.78
General FCC Limit (mw/cm <sup>2</sup> )	f/1500

Panel 10dbi with 3' 5D N Male

Input Data

Frequency MHz	869
Pout Watts	0.00
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 <sup>2</sup> )	0.58
Calculated Power Density (mw/cm <sup>2</sup> )	0.003828

Reference Data

Pout dBm	3.17
Antenna Gain (non-log)	10.00

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

Yagi 11dbi with 30' 400 N male

Input Data

Frequency MHz	1710
Pout Watts	0.20
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 <sup>2</sup> )	1.00
Calculated Power Density (mw/cm <sup>2</sup> )	0.344364

Reference Data

Pout dBm	22.91
Antenna Gain (non-log)	12.59
Coax Loss(non-log)	0.72
General FCC Limit (mw/cm <sup>2</sup> )	1

Panel 10dbi with 3' 5D N Male

Input Data

Frequency MHz	2110
Pout Watts	0.002618
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 <sup>2</sup> )	1.00
Calculated Power Density (mw/cm <sup>2</sup> )	0.004508

Reference Data

Pout dBm	4.18
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Antenna Gain (non-log)	10.00
Coax Loss(non-log)	0.89
General FCC Limit (mw/cm <sup>2</sup> )	1

Yagi 11dbi with 30' 400 N male

Input Data

Frequency MHz	1850
Pout Watts	0.16
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 <sup>2</sup> )	1.00
Calculated Power Density (mw/cm <sup>2</sup> )	0.270407

Reference Data

Pout dBm	22.06
Antenna Gain (non-log)	12.58925412
Coax Loss(non-log)	0.69
General FCC Limit (mw/cm <sup>2</sup> )	1

Panel 10dbi with 3' 5D N Male

Input Data

Frequency MHz	1930
Pout Watts	0.000933
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 <sup>2</sup> )	1.00
Calculated Power Density (mw/cm <sup>2</sup> )	0.001683

Reference Data

Pout dBm	-0.3
Antenna Gain (non-log)	10.00
Coax Loss(non-log)	0.93
General FCC Limit (mw/cm <sup>2</sup> )	1