

To Whom It May Concern:

The MPE calculations for model F15G-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: Omni 3dBi
- 700 MHz band 13 :
  3. Fixed Outside Antenna: Yagi 11dBi
  4. Inside Antenna: Omni 3dBi
- 800 MHz band :
  5. Fixed Outside Antenna: Yagi 11dBi
  6. Inside Antenna: Omni 3dBi
- 1700/2100 MHz band :
  7. Fixed Outside Antenna: Panel 10 dBi
  8. Inside Antenna: Panel 10 dBi
- 1900 MHz band :
  9. Fixed Outside Antenna: Panel 10 dBi
  10. Inside Antenna: Panel 10 dBi

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 Antenna with 75' 5D N male

Kit numbers: 11-7550

Input Data

Frequency MHz	704
Pout Watts	0.23
Duty Cicuit Percent	100%
Ant. Gain dBi	10
Splitter/Coax Loss (dB)	4.6
Distance From Antenna In cm	20

Results Of Calculations

Ant.Gain less Splitter/Coax Loss (dB)i	5.4
Distance From Antenna In Inches	8
EIRP (Watts)	0.7943
FCC Power Density Limit (mw/cm <sup>2</sup> )	0.47
Calculated Power Density (mw/cm <sup>2</sup> )	0.16

Reference Data

Pout dBm	23.6
Antenna Gain (non-log)	10.0000
Coax Loss(non-log)	0.35
General FCC Limit (mw/cm <sup>2</sup> )	f/1500

Omni 3dBi Antenna with 50' 400 N Male

Kit numbers:3-50400

Input Data

Frequency MHz	734
Pout Watts	0.00347
Duty Cicuit Percent	100%
Ant. Gain dBi	3
Splitter/Coax Loss (dB)	2.8
Distance From Antenna In cm	20

Results Of Calculations

Ant.Gain less Splitter/Coax Loss (dB)i	0.2
Distance From Antenna In Inches	8
EIRP (Watts)	0.00347
FCC Power Density Limit (mw/cm <sup>2</sup> )	0.49
Calculated Power Density (mw/cm <sup>2</sup> )	0.000723

Reference Data

Pout dBm	5.4
Antenna Gain (non-log)	1.995262315
Coax Loss(non-log)	0.52
General FCC Limit (mw/cm <sup>2</sup> )	f/1500

Yagi 11dbi Antenna with 75' 5D N male

Kit numbers: 11-7550

Input Data

Frequency MHz	777
Pout Watts	0.24
Duty Cicuit Percent	100%
Ant. Gain dBi	10
Splitter/Coax Loss (dB)	4.6
Distance From Antenna In cm	20

Results Of Calculations

Ant.Gain less Splitter/Coax Loss (dB)i	5.4
Distance From Antenna In Inches	8
EIRP (Watts)	0.23988
FCC Power Density Limit (mw/cm <sup>2</sup> )	0.52
Calculated Power Density (mw/cm <sup>2</sup> )	0.17

Reference Data

Pout dBm	23.8
Antenna Gain (non-log)	10
Coax Loss(non-log)	0.35
General FCC Limit (mw/cm <sup>2</sup> )	f/1500

Omni 3dBi Antenna with 50' 400 N Male

Kit numbers:3-50400

Input Data

Frequency MHz	746
Pout Watts	0.003090295
Duty Cicuit Percent	100%
Ant. Gain dBi	3
Splitter/Coax Loss (dB)	2.8
Distance From Antenna In cm	20

Results Of Calculations

Ant.Gain less Splitter/Coax Loss (dB)i	0.2
Distance From Antenna In Inches	8
EIRP (Watts)	0.003090295
FCC Power Density Limit (mw/cm <sup>2</sup> )	0.50
Calculated Power Density (mw/cm <sup>2</sup> )	0.000644096

Reference Data

Pout dBm	4.9
Antenna Gain (non-log)	1.995262315
Coax Loss(non-log)	0.52
General FCC Limit (mw/cm <sup>2</sup> )	f/1500

Yagi 11dbi Antenna with 75' 5D N male

Kit numbers: 11-7550

Input Data

Frequency MHz	824
Pout Watts	0.23
Duty Cicuit Percent	100%
Ant. Gain dBi	10
Splitter/Coax Loss (dB)	4.6
Distance From Antenna In cm	20

Results Of Calculations

Ant.Gain less Splitter/Coax Loss (dB)i	5.4
Distance From Antenna In Inches	8
EIRP (Watts)	0.234423
FCC Power Density Limit (mw/cm <sup>2</sup> )	0.55
Calculated Power Density (mw/cm <sup>2</sup> )	0.16

Reference Data

Pout dBm	23.7
Antenna Gain (non-log)	10
Coax Loss(non-log)	0.35
General FCC Limit (mw/cm <sup>2</sup> )	f/1500

Omni 3dBi Antenna with 50' 400 N Male

Kit numbers:3-50400

Input Data

Frequency MHz	869
Pout Watts	0.00339
Duty Cicuit Percent	100%
Ant. Gain dBi	3
Splitter/Coax Loss (dB)	2.8
Distance From Antenna In cm	20

Results Of Calculations

Ant.Gain less Splitter/Coax Loss (dB)i	0.2
Distance From Antenna In Inches	8
EIRP (Watts)	0.003388
FCC Power Density Limit (mw/cm <sup>2</sup> )	0.58
Calculated Power Density (mw/cm <sup>2</sup> )	0.00071

Reference Data

Pout dBm	5.3
Antenna Gain (non-log)	1.995262315
Coax Loss(non-log)	0.52
General FCC Limit (mw/cm <sup>2</sup> )	f/1500

Panel 10dbi Antenna with 30' 5D N male

Kit numbers:10-3050

Input Data

Frequency MHz	1710
Pout Watts	0.19
Duty Cicuit Percent	100%
Ant. Gain dBi	9.4
Splitter/Coax Loss (dB)	3.2
Distance From Antenna In cm	20

Results Of Calculations

Ant.Gain less Splitter/Coax Loss (dB)i	6.2
Distance From Antenna In Inches	8
EIRP (Watts)	0.190546
FCC Power Density Limit (mw/cm <sup>2</sup> )	1.00
Calculated Power Density (mw/cm <sup>2</sup> )	0.16

Reference Data

Pout dBm	22.8
Antenna Gain (non-log)	8.7096359
Coax Loss(non-log)	0.48
General FCC Limit (mw/cm <sup>2</sup> )	1

2 Panel 10dbi Antenna with50' 5D N male & a 50 Ohm 2-Way Splitter

Kit numbers:102-5050-50

Input Data

Frequency MHz	2110
Pout Watts	0.0030903
Duty Cicuit Percent	100%
Ant. Gain dBi	9.4
Splitter/Coax Loss (dB)	8.5
Distance From Antenna In cm	20

Results Of Calculations

Ant.Gain less Splitter/Coax Loss (dB)i	0.9
Distance From Antenna In Inches	8
EIRP (Watts)	0.00309
FCC Power Density Limit (mw/cm <sup>2</sup> )	1.00
Calculated Power Density (mw/cm <sup>2</sup> )	0.000757

Reference Data

Pout dBm	4.9
Antenna Gain (non-log)	8.7096359
Coax Loss(non-log)	0.14
General FCC Limit (mw/cm <sup>2</sup> )	1

Panel 10dbi Antenna with 30' 5D N male

Kit numbers:10-3050

Input Data

Frequency MHz	1850
Pout Watts	0.15
Duty Cicuit Percent	100%
Ant. Gain dBi	9.4
Splitter/Coax Loss (dB)	3.2
Distance From Antenna In cm	20

Results Of Calculations

Ant.Gain less Splitter/Coax Loss (dB)i	6.2
Distance From Antenna In Inches	8
EIRP (Watts)	0.154882
FCC Power Density Limit (mw/cm <sup>2</sup> )	1.00
Calculated Power Density (mw/cm <sup>2</sup> )	0.13

Reference Data

Pout dBm	21.9
Antenna Gain (non-log)	8.7096359
Coax Loss(non-log)	0.48
General FCC Limit (mw/cm <sup>2</sup> )	1

2 Panel 10dbi Antenna with50' 5D N male & a 50 Ohm 2-Way Splitter

Kit numbers:102-5050-50

Input Data

Frequency MHz	1930
Pout Watts	0.002137962
Duty Cicuit Percent	100%
Ant. Gain dBi	9.4
Splitter/Coax Loss (dB)	8.5
Distance From Antenna In cm	20

Results Of Calculations

Ant.Gain less Splitter/Coax Loss (dB)i	0.9
Distance From Antenna In Inches	8
EIRP (Watts)	0.002138
FCC Power Density Limit (mw/cm <sup>2</sup> )	1.00
Calculated Power Density (mw/cm <sup>2</sup> )	0.000524

Reference Data

Pout dBm	3.3
Antenna Gain (non-log)	8.7096359
Coax Loss(non-log)	0.14
General FCC Limit (mw/cm <sup>2</sup> )	1