

MPE Calculations for a fixed consumer booster.

■ model F15G:

- 800 MHz band:
 1. Fixed Outside Antenna: TDL-0627-11
 2. Inside Antenna: TDW0627-7
- 1900 MHz band:
 1. Fixed Outside Antenna: TDL-0627-11
 2. Inside Antenna: TDW0627-7
- Calculate Power Density
 - a. Calculated Power Density = $1000 \cdot \text{EIRP (Watts)} / (4 \cdot \pi \cdot (\text{Distance from Antenna (cm)}^2))$
 - b. Calculated Power Density (S) = $\text{Output Power (P)} \cdot \text{Antenna Gain (G)} / (4 \cdot \pi \cdot (\text{Distance from Antenna (r)}^2))$
 - c. $S = P \cdot G / (4 \cdot \pi \cdot r^2)$
 - i. S = Calculated Power Density
 - ii. G = Numeric antenna gain
 1. Add the Antenna gain (dBi) + Cable Loss (dB) and convert to a numeric value, this information should come from the antenna kitting information and if multiple antenna kits are provided, the worst case values need to be used.
 2. $G = \text{POWER}(10, (\text{Ant Gain} + \text{Cable loss}) / 10)$
 - iii. P = Conducted Output Power in mw
 - iv. r = Distance from antenna in cm

				Gain
Band	Uplink Frequency	Sig Gen Power	Output Power	Fixed (use formula)
	MHz	dBm	dBm	dB
824 - 849 MHz Pulsed CW	833.38	-40.4	20.69	61.1
824 - 849 MHz AWGN	833.38	-43.7	18.49	62.2
1850 - 1910 MHz Pulsed CW	1884.10	-43.6	20.03	63.6
1850 - 1910 MHz AWGN	1884.10	-46.6	18.19	64.8

				Gain
Band	Downlink Frequency	Sig gen power	Output Power	Fixed (use formula)
	MHz	dBm	dBm	dB
869 - 894 MHz Pulsed CW	881.63	-70.2	-9.77	60.4
869 - 894 MHz AWGN	881.63	-71.8	-11.51	60.3
1930 - 1990 MHz Pulsed CW	1957.60	-70.6	-5.28	65.3
1930 - 1990 MHz AWGN	1957.60	-73.2	-7.83	65.4

LPDA Antenna TDL-0627-11 & U5D NM-NM 9M

Input Data

Frequency MHz	824
Pout Watts	0.12
Duty Cicuit Percent	100%
Ant. Gain dBi	10
Coax Loss dB	1.1
Distance From Antenna In cm	20.3

Results Of Calculations

Ant.Gain less Coax Loss dBi	8.9
Distance From Antenna In Inches	8
EIRP (Watts)	0.9099
FCC Power Density Limit (mw/cm ²)	0.55
Calculated Power Density (mw/cm ²)	0.18

Reference Data

Pout dBm	20.69
Antenna Gain (non-log)	10.0000
Coax Loss(non-log)	0.78
General FCC Limit (mw/cm ²)	f/1500

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Input Data

Frequency MHz	869
Pout Watts	0.00
Duty Cicuit Percent	100%
Ant. Gain dBi	10
Coax Loss dB	1.2
Distance From Antenna In cm	20.69

Results Of Calculations

Ant.Gain less Coax Loss dBi	8.8
Distance From Antenna In Inches	8
EIRP (Watts)	0.01
FCC Power Density Limit (mw/cm2)	0.58
Calculated Power Density (mw/cm2)	0.0001

Reference Data

Pout dBm	-9.77
Antenna Gain (non-log)	10
Coax Loss(non-log)	0.76
General FCC Limit (mw/cm2)	f/1500

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Input Data

Frequency MHz	1850
Pout Watts	0.10
Duty Cicuit Percent	100%
Ant. Gain dBi	11
Coax Loss dB	1.6
Distance From Antenna In cm	20.69

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)	0.16

Reference Data

Pout dBm	20.03
Antenna Gain (non-log)	12.58925412
Coax Loss(non-log)	0.69
General FCC Limit (mw/cm ²)	1

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Input Data

Frequency MHz	1930
Pout Watts	0.000296483
Duty Cicuit Percent	100%
Ant. Gain dBi	11
Coax Loss dB	1.8
Distance From Antenna In cm	20.69

Results Of Calculations

Ant.Gain less Coax Loss dBi	9.2
Distance From Antenna In Inches	8
EIRP (Watts)	0.008317638
FCC Power Density Limit (mw/cm ²)	1.00
Calculated Power Density (mw/cm ²)	0.000458658

Reference Data

Pout dBm	-5.28
Antenna Gain (non-log)	12.58925412
Coax Loss(non-log)	0.66
General FCC Limit (mw/cm ²)	1