

R.F Exposure/Safety Calculation for CPE8000-PRO-1D-3.x

The E.U.T. is pole mounted.

Calculation of Maximum Permissible Exposure (MPE)

Based on FCC Section 1.1309 & RSS 102, Issue 5 Section 2.5.2 Requirements

1) FCC limit at 3657 MHz: $1 \frac{mW}{cm^2}$

(a) IC limit at 3500 MHz is: $290 \frac{mW}{cm^2}$

Using table 1 limit for general population/uncontrolled exposures, the above level is an average over 30 minutes.

(b) The power density produced by the E.U.T. is

$$S = \frac{P_t G_t}{4\pi R^2} \quad R = \sqrt{\frac{P_t G_t}{4\pi S}}$$

P_t- Transmitted Peak Power (worst case)

G_T- Antenna Gain, dBi

R- Distance from Transmitter

S- MPE =290mW/cm²

c) The calculated minimum distance between the EUT antenna and the general public is:

Operation Frequency (MHz)	Modulation	Pt (dBm)	Pt (mW)	Antenna Type	G _T (dBi)	G _T numeric	R (cm)	S (mW/cm ²)
3652.5	QPSK	24.1	257	External	15.0	31.6	50	0.258506
	16QAM	24.1	257	External	15.0	31.6	50	0.258506
	64QAM	24.1	257	External	15.0	31.6	50	0.258506
3675.0	QPSK	24.0	251	External	15.0	31.6	50	0.252471
	16QAM	24.1	257	External	15.0	31.6	50	0.258506
	64QAM	24.0	251	External	15.0	31.6	50	0.252471
3697.5	QPSK	24.1	257	External	15.0	31.6	50	0.258506
	16QAM	24.0	251	External	15.0	31.6	50	0.252471
	64QAM	24.1	257	External	15.0	31.6	50	0.258506

5MHz Bandwidth

Operation Frequency (MHz)	Modulation	Pt (dBm)	Pt (mW)	Antenna Type	G _T (dBi)	G _T numeric	R (cm)	S (mW/cm ²)
3655.0	QPSK	24.0	251	External	15.0	31.6	50	0.252471
	16QAM	24.0	251	External	15.0	31.6	50	0.252471
	64QAM	23.2	209	External	15.0	31.6	50	0.210225
3675.0	QPSK	24.3	269	External	15.0	31.6	50	0.270576
	16QAM	24.2	263	External	15.0	31.6	50	0.264541
	64QAM	24.3	269	External	15.0	31.6	50	0.270576
3695.0	QPSK	24.1	257	External	15.0	31.6	50	0.258506
	16QAM	24.3	269	External	15.0	31.6	50	0.270576
	64QAM	24.1	257	External	15.0	31.6	50	0.258506

10MHz Bandwidth

Operation Frequency (MHz)	Modulation	Pt (dBm)	Pt (mW)	Antenna Type	G _T (dBi)	G _T numeric	R (cm)	S (mW/cm ²)
3657.5	QPSK	24.5	282	External	15.0	31.6	50	0.283652
	16QAM	23.8	240	External	15.0	31.6	50	0.241406
	64QAM	24.1	257	External	15.0	31.6	50	0.258506
3675.0	QPSK	24.0	251	External	15.0	31.6	50	0.252471
	16QAM	23.8	240	External	15.0	31.6	50	0.241406
	64QAM	24.0	251	External	15.0	31.6	50	0.252471
3692.5	QPSK	24.0	251	External	15.0	31.6	50	0.252471
	16QAM	24.1	257	External	15.0	31.6	50	0.258506
	64QAM	24.3	269	External	15.0	31.6	50	0.270576

15MHz Bandwidth

Operation Frequency (MHz)	Modulation	Pt (dBm)	Pt (mW)	Antenna Type	G _T (dBi)	G _T numeric	R (cm)	S (mW/cm ²)
3660.0	QPSK	24.1	257	External	15.0	31.6	50	0.258506
	16QAM	24.0	251	External	15.0	31.6	50	0.252471
	64QAM	24.0	251	External	15.0	31.6	50	0.252471
3675.0	QPSK	24.4	275	External	15.0	31.6	50	0.276611
	16QAM	24.0	251	External	15.0	31.6	50	0.252471
	64QAM	24.2	263	External	15.0	31.6	50	0.264541
3690.0	QPSK	24.2	263	External	15.0	31.6	50	0.264541
	16QAM	24.4	275	External	15.0	31.6	50	0.276611
	64QAM	24.0	251	External	15.0	31.6	50	0.252471

20MHz Bandwidth

(c) The E.U.T. meets the limits of RSS 102, Issue 5 Section 2.5.2 and FCC Section 1.1309.