

R.F Exposure/Safety Calculation for RAU5

The E.U.T. is rack or wall mounted. The typical distance between the E.U.T. and the general population is >50cm.

Calculation of Maximum Permissible Exposure (MPE)
Based on Section 1.1310 Requirements

(a) FCC limit at 733 MHz is: $f / 1500 = 0.489 \frac{mW}{cm^2}$

(b) FCC limit at 892.8 MHz is: $f / 1500 = 0.595 \frac{mW}{cm^2}$

(c) FCC limit at 867.8 MHz is: $f / 1500 = 0.579 \frac{mW}{cm^2}$

(d) FCC limit at 1993.8 MHz is: $1 \frac{mW}{cm^2}$

(e) FCC limit at 2135 MHz is: $1 \frac{mW}{cm^2}$

Using table 1 of Section 1.1310 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

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

P_t- Transmitted Peak Power (worst case)

G_T- Antenna Gain, 12.5dBi= 17.8 numeric

R- Distance from Transmitter 50 cm

(c) Peak power density at worst case continuous transmission:

Band	Modulation	Pt (mW)	Antenna type	G _T (dBi)	G _T numeric	R (cm)	S _{AV} (mW/cm ²)	Spec (mW/cm ²)
CELL	LTE 64QAM	75.9	External	12.5	17.8	50	0.0302	0.595
	GSM	49.0	External	12.5	17.8	50	0.019496	0.595
	W-CDMA	77.6	External	12.5	17.8	50	0.030876	0.595
ESMR	LTE 64QAM	112	External	12.5	17.8	50	0.044563	0.579
	GSM	43.7	External	12.5	17.8	50	0.017388	0.579
	W-CDMA	85.1	External	12.5	17.8	50	0.03386	0.579
PCS	LTE 64QAM	174	External	12.5	17.8	50	0.069232	1
	GSM	132	External	12.5	17.8	50	0.052521	1
	W-CDMA	182	External	12.5	17.8	50	0.072415	1
LTE	LTE 64QAM	129*	External	12.5	17.8	50	0.051327	0.489
	LTE 16QAM	141*	External	12.5	17.8	50	0.056102	0.489
	LTE QPSK	129*	External	12.5	17.8	50	0.051327	0.489
AWS	LTE 64QAM	224*	External	12.5	17.8	50	0.089127	1
	GSM	166*	External	12.5	17.8	50	0.066049	1
	W-CDMA	269*	External	12.5	17.8	50	0.106634	1

*RF Output via 2 MIMO antenna ports.

(d) This is below the FCC limit.