

R.F Exposure/Safety Calculation for RAU CELL-PCS-LTE-AWS

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 1.1307(b)(1) Requirements

(a) FCC limit at 881.5 MHz is: $f / 1500 = 0.588 \frac{mW}{cm^2}$

FCC limit at 1960 MHz is: $1 \frac{mW}{cm^2}$

FCC limit at 747 MHz is: $f / 1500 = 0.498 \frac{mW}{cm^2}$

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 ,dBi

R- Distance from Transmitter

(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	CDMA	47.32	External	12.5	17.8	50	0.026811	0.587
	LTE 64QAM	46.67	External	12.5	17.8	50	0.026443	0.587
	GSM	36.22	External	12.5	17.8	50	0.020522	0.587
	W-CDMA	59.98	External	12.5	17.8	50	0.033984	0.587
PCS	LTE 64QAM	105.20	External	12.5	17.8	50	0.059605	1.0
	CDMA	104.23	External	12.5	17.8	50	0.059056	1.0
	GSM	142.89	External	12.5	17.8	50	0.08096	1.0
	W-CDMA	119.40	External	12.5	17.8	50	0.067651	1.0
LTE	LTE 64QAM	74.4*	External	12.5	17.8	50	0.042154	0.489
	LTE 16QAM	74.1*	External	12.5	17.8	50	0.041984	0.489
	LTE QPSK	76.9*	External	12.5	17.8	50	0.043571	0.489
AWS	CDMA	203.1*	External	12.5	17.8	50	0.115075	1.0
	LTE 64QAM	338*	External	12.5	17.8	50	0.191508	1.0
	GSM	214*	External	12.5	17.8	50	0.121251	1.0
	W-CDMA	262*	External	12.5	17.8	50	0.148447	1.0

Note: The * indicates the Pt (dBm) and Pt (mW) level is the sum of 2 MIMO port readings.