R.F Exposure/Safety Calculation for MRU – CELL/ESMR

The E.U.T. is rack or wall mounted. The typical distance between the E.U.T. and the general population is >100cm.

Calculation of Maximum Permissible Exposure (MPE)

Based on Section 1.1310 Requirements

(a) FCC limit at 891.5 MHz is: $f/1500 = 0.594 \frac{mW}{cm^2}$

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

Using table 1 of Section 1.1310 limit for general population/uncontrolled exposures, the above level is an average over 30 minutes.

(c)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 100 cm

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

Band	Modulation	Pt (dBm)	Pt (mW)	Antenna type	G_T (dBi)	G_T numeric	R (cm)	S_{AV} (mW/cm^2)	Spec (mW/cm^2)
CELL	LTE 64QAM	32.6	1820	External	12.5	17.8	100	0.257799	0.594
	GSM	32.0	1585	External	12.5	17.8	100	0.224512	0.594
	W-CDMA	33.0	1995	External	12.5	17.8	100	0.282588	0.594
ESMR	LTE 64QAM	31.7	1479	External	12.5	17.8	100	0.209497	0.579
	GSM	32.3	1698	External	12.5	17.8	100	0.240518	0.579
	W-CDMA	32.2	1660	External	12.5	17.8	100	0.235136	0.579

(e) This is below the FCC limit.