R.F Exposure/Safety Calculation for WiMAX

The E.U.T. is a WiMAX distributed antenna system. The “worst case” distance between the E.U.T. and the general population is 20 cm.

Calculation of Maximum Permissible Exposure (MPE)
Based on Section 1.1307(b)(1) Requirements

(a) FCC limits at 2630 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 Power 208.9 mw, 23.2 dBm (Peak).

G_T- Antenna Gain 7dBi (5.01 – numeric)

R- Distance from Transmitter using 20 cm worst case

(c) Peak power density:

$$S_{AV} = \frac{208.9 \times 5.01}{4\pi (20)^2} = 0.21\frac{mW}{cm^2}$$

Total power from both antennas (Two MIMO ports transmitting simultaneously)

$$S_{AV(Total)} = [0.21] \times 2 = 0.42\frac{mW}{cm^2}$$