

Revised R.F Exposure/Safety Calculation for AeroScout T2 Tag

The E.U.T. is worn on a wristband for application of collecting location data. Typical uses of the E.U.T. are child tracking in amusement parks, security personnel in enterprises, hospital patients and many more. The typical distance between the E.U.T. and the general population in the worst case application is <2.5cm.

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

(a) FCC limits at 2442 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 100mw, Peak, (maximum measured power + 19.1dBm)

G_t - Antenna Gain, 0dBi

R - Distance from Transmitter using 1cm worst case

(c) Transmitter peak power using source based time averaging of 0.5% Duty cycle maximum, 500 μ sec “ON” time, “OFF” + “ON” time 100msec:

$$P_t = \frac{100 \times 0.5}{100} = 0.5mW$$

(d) Peak power density (time averaging):

$$S_{AV} = \frac{0.5}{4\pi(1)^2} = 4 \times 10^{-2} \frac{mW}{cm^2}$$

(e) The result in (d) is at least 2 orders of magnitude below the FCC limit.