

1. R.F Exposure/Safety 5GHz Transmitter 802.11b/g+802.11a Signals

Typical use of the E.U.T. is repeating WiFi signals for DAS. The typical placement of the E.U.T. is on a wall near the ceiling. The typical distance between the E.U.T. and the user in the worst case application, is >1 m.

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

(a) FCC limits at 5745 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 (Peak) 20 mW= 13 dBm

G_t - Antenna Gain, 7 dBi = 5

R - Distance from Transmitter using 1 m worst case

(c) The peak power density is :

$$S_p = \frac{20 \times 5}{4\pi(100)^2} = 0.8 \times 10^{-3} \frac{mW}{cm^2}$$

(d) The duty cycle of transmission in actual worst case is 50%.

The average power source is:

$$10mW$$

(e) The averaged power density of the E.U.T. is:

$$S_{AV} = 0.4 \times 10^{-3} \frac{mW}{cm^2}$$

(f) This is 3 orders of magnitude below the FCC limit.

2. R.F Exposure/Safety 5GHz Transmitter 802.11b/g+802.11a + CELL + PCS Signals

Typical use of the E.U.T. is repeating WiFi signals for DAS. The typical placement of the E.U.T. is on a wall near the ceiling. The typical distance between the E.U.T. and the user in the worst case application, is >1 m.

Calculation of Maximum Permissible Exposure (MPE)

Based on Section 1.1307(b)(1) Requirements

(a) FCC limits at 5745 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 (Peak) 21.3 mW= 13.28 dBm

G_t - Antenna Gain, 7 dBi = 5

R- Distance from Transmitter using 1 m worst case

(c) The peak power density is :

$$S_p = \frac{21.3 \times 5}{4\pi(100)^2} = 0.85 \times 10^{-3} \frac{mW}{cm^2}$$

(d) The duty cycle of transmission in actual worst case is 50%.

The average power source is:

$$10.65mW$$

(e) The averaged power density of the E.U.T. is:

$$S_{AV} = 0.425 \times 10^{-3} \frac{mW}{cm^2}$$

(f) This is 3 orders of magnitude below the FCC limit.