## Maximum Public Exposure to RF (MPE) CFR 15.247 (i), CFR 1.1310 (e)

The maximum exposure level to the public from the RF power of the EUT shall not exceed a power density, **S** as per the respective limits in Table 1 below, at a distance, d, of 20 cm (Mobile condition) from the EUT.

**TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)**

| Frequency range (MHz) | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density ($mW/cm^2$) | Averaging time (minutes) |
|---|---|---|---|---|
| **Limits for General Population/Uncontrolled Exposure** | | | | |
| 0.3-1.34 | 614 | 1.63 | *100 | 30 |
| 1.34-30 | 824/f | 2.19/f | $*180/f^2$ | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1,500 | | | f/1500 | 30 |
| 1,500-100,000 | | | 1.0 | 30 |

f = frequency in MHz * = Plane-wave equivalent power density

Therefore, for:

### MPE for 2400 MHz – 2483.5 MHz for WiFi:

Limit: 1.0 $mW/cm^2$
Peak Power (dBm) = 18.61 dBm
Peak Power (Watts) = 0.0726 W
Gain of Transmit Antenna = +1.5 $dB_i$ = 1.41, numeric (Highest Gain Antenna)
d = Distance = 20 cm = 0.2 m

**$S = (PG/ 4\pi d^2)$** = EIRP/4A = 0.0726 (1.41)/4*$\pi$*0.2*0.2
= 0.1023/0.5030 = 0.2035 $W/m^2$
= (0.2035 $W/m^2$) (1$m^2$/W) (0.1 $mW/cm^2$)
= 0.02035 $mW/cm^2$

which is << less than S = 1.0 $mW/cm^2$

RF Exposure Evaluation – IC

According to RSS-102, 2.5.2 Exemption Limits for Routine Evaluation

At or above 300 MHz and below 6 GHz and the source based time averaged maximum EIRP of the device is equal to or less than $1.31 \times 10^{-2} \times f^{0.6834}$ in Watts (adjusted for tune up tolerance where applicable), where f= frequency in MHz

For 2.4 GHz Band:

Limit= $1.31 \times 10^{-2} \times 2440^{0.6834} = 2.7$ Watts

Max EIRP for WiFi = 18.61 dBm + 1.5 dB = 20.11 dBm = 102.6 mW << 2700 mW

Note: There is no simultaneous operation between Zigbee and WiFi and 433MHz radio.