

RF Exposure Evaluation

The EUT is a Wireless device used in a fixed or mobile application (wall mounted) at least 20 cm from any body part of the user or nearby persons. For this device the RF Exposure Limit is the Maximum Permissible Exposure (MPE).

EUT consists of one Zigbee radio, one Zwave radio, one WiFi radio and one CDMA radio (not a part of this certification).

EIRP of CDMA radio 160mW (conducted 23.4dBm, Antenna gain -1.36dBi). EIRP of WiFi radio is 76 mW (conducted: 15.8dBm, Antenna gain 3dBi). EIRP of Zigbee radio is 0.95mW (conducted: 2.8dBm, Antenna gain -3dBi). EIRP of Zwave radio is 0.057mW (Field Strength: 82.9 dB(μ V/m) at 3m).

Total EIRP is 0.237 mW (23.8 dBm)

Therefore, to comply with RF Exposure Requirement, the Power Density is calculated.

The Power Density can be calculated using the formula

$$S = \text{EIRP} / 4\pi D^2$$

Where: S is Power Density in W/m²

D is the distance from the antenna in meters.

It is considered that 20 cm is the minimum distance that any persons can be next to the EUT.

At 0.2 m, $S = 0.471 \text{ W/m}^2$, which is below the FCC MPE Limit (worst case limit) of 5.5 W/m^2 at 824 MHz for uncontrolled environment.