

RF Exposure Evaluation

MPE Evaluation

The EUT is a wireless device used in stationary application, at least 20 cm from any body part of the user or nearby persons.

For 2.4 GHz radio, the maximum Peak EIRP calculated is -0.4 dBm (0.912 mW); 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/m^2

D is the distance from the antenna in meters

It is considered that 20 cm is the minimum distance that user can go closest to the EUT.

At 20cm. $S = 0.0018 \text{ W}/\text{m}^2$, which is below the MPE limit of $10 \text{ W}/\text{m}^2$

This equipment consists of an additional RFID radio in conjunction with the 2.4 GHz radio, and supports simultaneous operation.

The RFID field strength at 3m distance is $57 \text{ dB}\mu\text{V}/\text{m}$, equivalent to -38.3 dBm EIRP (0.00015mW).

Hence, RFID power density at 20 cm distance is $0.0000003 \text{ W}/\text{m}^2$.

Per KDB# 447498 D01 General RF Exposure Guidance guidelines, simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is ≤ 1.0 .

The 2.4 GHz radio power density is $0.0018 \text{ W}/\text{m}^2$ and RFID power density is $0.0000003 \text{ W}/\text{m}^2$. The sum of the MPE ratios is ≤ 1.0 . The EUT complies with the requirements of KDB# 447498 RF Exposure for simultaneous transmission operations.