

RF exposure information

Product information from applicant

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|--|---|---|
| Applicant | : | Renesas Electronics Corporation |
| Applicant address | : | 3-2-24 Toyosu, Koto-ku, Tokyo 135-0061, Japan |
| FCC ID | : | 2AEMXCWXMRTK1BJ |
| Product description | : | Sub-GHz Wireless Communication Evaluation Kit |
| Operating frequency range | : | 902 - 928 MHz |
| Maximum output power at SMA connector | : | 1 W (FSK), 0.251 W (OFDM) |
| Maximum antenna gain | : | +2.14 dBi |
| RF sources | : | Single |
| Separation distance | : | at least 20 cm or more |

Maximum Permissible Exposure (MPE) evaluation

The MPE limits for “General Population/ Uncontrolled Exposure” listed in the below table shall be used to evaluate the environmental impact of human exposure to RF radiation as specified in 47 CFR § 1.1307(b).

Limits for General Population/Uncontrolled Exposure

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/cm ²) | Averaging Time E ² , H ² or S (minutes) |
|-----------------------------|---|---|---|---|
| 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 |
| 300-1500 | -- | -- | f/1500 | 30 |
| 1500-100,000 | -- | -- | 1.0 | 30 |

f = frequency in MHz

*Plane-wave equivalent power density

NOTE: General population/uncontrolled exposure limits apply in situations in which the general public may be exposed, or in which persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure. For example, RF sources intended for consumer use shall be subject to the limits for general population/uncontrolled exposure.

In the case of a single radiating antenna, a prediction for power density around the RF source can be made by the following equation, in accordance with PREDICTION METHODS in FCC OET Bulletin 65.

$$S = P * G / 4\pi R^2$$

where:

S = power density (in mW/cm²)

P = power input to the antenna (in mW)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = evaluation distance, i.e. separation distance to the center of radiation of the antenna (in cm)

Using output power of 1000 mW, antenna gain of 1.64 (2.14 dBi) and separation distance of 20 cm, the power density is calculated to be 0.326 mW/cm², which is less than the power density limit (0.601 mW/cm² for 902 MHz).

Thus the product is compliant with the exposure limits with 20 cm separation and Environmental Assessments is not needed.