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FCC-ID : R3ZRTX3371

Maximum Permissible Exposure calculation

Dear Madams/Sirs,

please find here our Maximum Permissible Exposure calculations for the RTX3371.
The RTX3371 integrates a Telit GSM module with following FCC ID: RI7GE864.

Best Regards

A handwritten signature in blue ink, appearing to read 'i.A. Steinröder', with a long horizontal flourish extending to the right.

Carsten Steinröder

Maximum Permissible Exposure

(as specified in Table 1B of 47 CFR 1.1310 – Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure)

<i>Frequency range (MHz)</i>	<i>Power density (mW/cm²)</i>
300 – 1,500	f/1500
1,500 – 100,000	1.0

Calculations GSM 850 MHz band

Equivalent Isotropic Radiated Power (EIRP):

1691 mW (Reference: FCC ID: RI7GE864)

Prediction distance **R**: 20 cm
 Prediction frequency: 850 MHz
 Prediction Antenna Gain **G**: 2.0 dBi = 1.585 (numeric)

MPE limit **S_{limit}**: 0.566 mW/cm²

Equation OET bulletin 65, page 18, edition 97-01: $S = P \cdot G / (4\pi R^2)$

S = power density

P = power input to the antenna

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

R = distance to the centre of radiation of the antenna

$$S_{850} = (1691 \times 1.585) / 4\pi(20)^2 = \underline{0.533 \text{ mW/cm}^2}$$

$$S_{850} \quad 0.533$$

$$\frac{\text{-----}}{S_{\text{limit}}} = \frac{\text{-----}}{0.566}$$

Calculations GSM 1900 MHz

Equivalent Isotropic Radiated Power (EIRP):

355.63 mW (Reference: FCC ID: RI7GE864)

Prediction distance **R**: 20 cm
Prediction frequency: 1900 MHz
Prediction Antenna Gain **G**: 1.0 dBi = 1.260 (numeric)

MPE limit **S_{limit}**: 1 mW/cm²

Equation OET bulletin 65, page 18, edition 97-01: $S = P \cdot G / (4\pi R^2)$

S = power density

P = power input to the antenna

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

R = distance to the centre of radiation of the antenna

$$S_{1900} = (355.63 \times 1.260) / 4\pi(20)^2 = \underline{0.0891 \text{ mW/cm}^2}$$

$$\frac{S_{1900}}{S_{\text{limit}}} = \frac{0.0891}{1}$$

Calculations Bluetooth

Equivalent Isotropic Radiated Power (EIRP):

8.8105 mW (Reference: 7layers Test Report: MDE_RTX_0801_FCCa)

Prediction distance **R**: 20 cm
Prediction frequency: 2400 MHz
Prediction Antenna Gain **G**: 5.0 dBi = 3.162 (numeric)

MPE limit **S_{limit}**: 1 mW/cm²

Equation OET bulletin 65, page 18, edition 97-01: $S = P \cdot G / (4\pi R^2)$

S = power density

P = power input to the antenna

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

R = distance to the centre of radiation of the antenna

$$S_{BT} = (8.8105 \times 3.162) / 4\pi(20)^2 = \underline{0.005543 \text{ mW/cm}^2}$$

$$\frac{S_{BT}}{S_{limit}} = \frac{0.005543}{1}$$

Simultaneous Exposure

GSM 850 + Bluetooth

$$\frac{S_{850}}{S_{\text{limit}}} + \frac{S_{\text{BT}}}{S_{\text{limit}}} = \frac{0.533}{0.566} + \frac{0.005543}{1} = \underline{0.94724} < 1 = \text{Compliant}$$

GSM 1900 + Bluetooth

$$\frac{S_{1900}}{S_{\text{limit}}} + \frac{S_{\text{BT}}}{S_{\text{limit}}} = \frac{0.0891}{1} + \frac{0.005543}{1} = \underline{0.09464} < 1 = \text{Compliant}$$