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Your letter	FCC TUI600
Our reference	21wiTUI600
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MPE Calculation - FCC ID: 2AJRO-TUI600

Ladies and gentlemen,

The FCC requires that the calculated MPE be equal to or less than a given limit dependent on frequency at a distance of 20 cm from a device to the body of a user.

The transmitter operation for the Electronic Trip Unit ETU600 covers the 2.4 GHz operating band.

Simultaneous transmission is not supported.

The following FCC Rule Parts are applicable:

Part 1.1310 – Radiofrequency radiation exposure limits

Part 2.1091(c) – Radiofrequency radiation exposure evaluation: mobile devices

CALCULATION

The following far field power density equation is applicable

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

Where

S = Power density (mW/cm²)

EIRP = Effective Isotropically Radiated Power (EIRP = P x G) (mW)

P = Conducted Transmitter Power (dBm)

G = Antenna Gain (relative to an isotropic radiator)

R = distance to the centre of radiation of the antenna (safe operating distance) (cm)

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Calculation for 2.4 GHz Bluetooth Low Energy:

Values:

Transmitter frequency range = 2402 to 2480 MHz

P = 8.0 dBm

G = 0.5 dBi (x 1.12)

EIRP = 8.5 dBm (7.08 mW)

R = 20 cm

– Power Density Requirement

From table 1 (b) - Limits for General Population/ Uncontrolled Exposure of
FCC Rule Part 1.1310 for 2.4 GHz

$$S_{\text{req1}} = 1.0 \text{ mW/cm}^2$$

Calculation:

$$\begin{aligned} S &= \text{EIRP} / 4 \pi R^2 \\ &= 7.08 / (12.56 \times 20^2) \\ &= 7.08 / (5024) \end{aligned}$$

$$S_1 = 0.0014 \text{ mW/cm}^2$$

(Equivalent to 0.75 cm safe operating distance)

Conclusion

The required 20 cm RF exposure limits for General Population/ Uncontrolled Exposure FCC Rule Part 1.1310 limits will not be exceeded for the Electronic Trip Unit ETU600 using an antenna having a maximum gain of 0.5 dBi.

Sincerely yours,

Siemens Aktiengesellschaft



Jens Witlatschil