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FCC ID QIPCT75 – predictions for Maximum Permissible Exposure

Dear Mr. Liebig,

please find our Maximum Permissible Exposure calculations for the GSM module MC75.

Best Regards

A handwritten signature in blue ink, appearing to read 'T. Lohoff', with a horizontal line extending to the left.

Torsten Lohoff

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 850 MHz band

Maximum peak output power at antenna input terminal: 31.5 dBm (1.41 W)
(see 7 layers test report 4_SIE_0504_GSM_FCCc – FCC ID QIPCT75)

Prediction distance **R**: 20 cm
Prediction frequency: 836,4 MHz

MPE limit **S**: 0.5576 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 to the center of radiation of the antenna)

Maximum allowable antenna gain: **2.98 dBi**

Prediction

The maximum allowed MPE value of 0.5576 mW/cm² will be reached in a distance of 20 cm in case that an antenna with an antenna gain of 2,98 dBi would be used. This means that the power density levels in a distance of 20 cm are in accordance with the FCC regulations as long as the used antenna has a gain below 2,98 dBi.

Calculations 1900 MHz band

Maximum peak output power at antenna input terminal: 28.6 dBm (0,7244 W)
(see 7 layers test report 4_SIE_0504_GSM_FCCa - FCC ID QIPCT75)

Prediction distance **R**: 20 cm
Prediction frequency: 1880 MHz

MPE limit **S**: 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 to the center of radiation of the antenna)

Maximum allowable antenna gain: **8.41 dBi**

Prediction

The maximum allowed MPE value of 1 mW/cm² will be reached in a distance of 20 cm in case that an antenna with an antenna gain of 8,41 dBi would be used. This means that the power density levels in a distance of 20 cm are in accordance with the FCC regulations as long as the used antenna has a gain below 8,41 dBi.