7 layers

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FCC ID QIPCT75 – predictions for Maximum Permissable Exposure

Dear Mr. Liebig,

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

Best Regards

Torsten Lohoff

Maximum Permissable Exposure

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

Frequency range (MHz)	Power density (mW/cm²)
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: $S = P*G / (4\pi R^2)$

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/cm²will 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: $S = P*G / (4\pi R^2)$

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.