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17.08.2009
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FCC ID XOI6071MID – *predictions for Maximum Permissible Exposure*

Dear Mr. Shay,

please find our Maximum Permissible Exposure calculations for the GSM / UMTS module MID Card.

Best Regards

Holger Leutfeld

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)

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

Calculations 850 MHz band

Maximum output power at antenna input terminal: 29.39 dBm

Prediction distance **R**: 20 cm
Prediction frequency: 824,20 MHz

MPE limit **S**: 0.5495 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 the centre of radiation of the antenna

Maximum permissible antenna gain: **5.02 dBi**

Prediction

The maximum allowed MPE value of 0.5495 mW/cm²will be reached in a distance of 20 cm in case that an antenna with an antenna gain of 0,5495 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 5.02 dBi.

This calculation has been med under the consideration of the duty cycle effect.

Calculations 1900 MHz band

Maximum peak output power at antenna input terminal: 26.88 dBm

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 the centre of radiation of the antenna

Maximum permissible antenna gain: **10.13 dBi**
Maximum permissible antenna gain for mobile / portable stations   **6.13 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 10.13 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 10.13 dBi. Considering the max output power of 2 Watts EIRP (FCC §24.235) for mobile / portable stations the maximum antenna gain is 6.13 dBi, which is below 10.13 dBi and in accordance to the FCC regulations.

This calculation has been med under the consideration of the duty cycle effect.