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Maximum Permissible Exposure for product: Cinterion Wireless Module PH8-P

Dear Mr. Liebig,

please find enclosed your Maximum Permissible Exposure calculations for the
Cinterion Wireless Module PH8-p.

Best Regards

Yao Jing (Project Manager)

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 – 1500	f/1500
1,500 – 100000	1.0

General Comment
Calculations 850 MHz band

Maximum average output power at Antenna terminal: 33.59 dBm

Prediction distance R: 20 cm
Prediction frequency: 836.6 MHz

MPE limit S: 0.5577 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 (Table 1B of 47 CFR 1.1310):   **0.89 dBi**

Prediction

The maximum allowed MPE value of 0.5577 mW/cm²will be reached in a distance of 20 cm in case that an antenna with an antenna gain of 0.89 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 or equal 0.89 dBi.
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Calculations 1900 MHz band

Maximum average output power at Antenna terminal: 30.85 dBm

Prediction distance R: 20 cm
Prediction frequency: 1850.2 MHz

MPE limit S: 1 mW/cm²

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

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 (Table 1B of 47 CFR 1.1310):   **6.16 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 6.16 dBi is 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 or equal 6.16 dBi.