MDE_GEMALTO_1404

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Maximum Permissible Exposure for product: BGS8

Dear Mr. Heike,

please find enclosed your Maximum Permissible Exposure calculations for the model BGS8.

Best Regards

i.A. Adyl Mssalak
(Senior 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

(as specified in Table 2 in EN 1999/519-EC)

Frequency range (MHz)	*Power density (mW/cm²)*
400 – 2000	f/2000
2000 - 300000	1 mW/cm²

General Comment
Calculations 850 MHz band

Maximum RMS output power at Antenna terminal: 27.47 dBm
(Max RMS = 33.49 dBm – 6.02 dBm duty cycle)
Maximum output power at Antenna terminal: 33.92 dBm

Prediction distance R: 20 cm
Prediction frequency: 824.8 MHz

MPE limit S: 0.5494 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): **6.942 dBi**

Maximal permissible antenna gain considering output power limitation of 7 Watts ERP (FCC §22.931).

G=10*log(7000)-33.92+2.15 **6.67 dBi**

Prediction

The maximum allowed MPE value of 0. 5494 mW/cm² will be reached in a distance of 20 cm in case that an antenna with an antenna gain of 6.942 dBi is used. Considering the max output power of 7 Watts ERP (FCC §22.931) for mobile stations the maximum antenna gain is 6.67 dBi, which is lower than 6.942 dBi. For mobile stations the antenna gain is limited to 6.67 dBi in accordance to the FCC regulations.

Calculations 1900 MHz band

Maximum RMS output power at Antenna terminal: 25.16 dBm
(Max RMS = 31.18 dBm – 6.02 dBm duty cycle)
Maximum output power at Antenna terminal:
31.60 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): **11.8525 dBi**
Maximum permissible antenna gain for mobile / portable stations: **1.41 dBi**
(Considering 2 Watts EIRP FCC §24.235: G=10*log(2000)-31.60)

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 11.8525 dBi is used. Considering the max output power of 2 Watts EIRP (FCC §24.235) for mobile / portable stations the maximum antenna gain is 1.41 dBi, which is lower than 11.8525 dBi. For mobile and portable stations the antenna gain is limited to 1.41 dBi in accordance with the FCC regulations.