



MDE_SOFT_1002_MPE

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2010-12-16
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Maximum Permissible Exposure for product: WD-H WirelessHART module

Dear Mr. Hilz,

Please find enclosed your Maximum Permissible Exposure calculations for the WD-H.

Best Regards

A handwritten signature in blue ink, appearing to be 'P. Lomax', written over a light blue horizontal line.

Patrick Lomax (Project Manager)

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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 2400-2483.5 MHz band

Maximum peak output power at antenna input terminal for Bluetooth transmitter:

10.5 mW

Prediction distance **R**: 20 cm
Prediction frequency: 2.4 GHz
Prediction Antenna Gain **G**: 2.2 dBi (Bluetooth Antenna)

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 the centre of radiation of the antenna

$$= (10.5 \times 2.2) / 4\pi(20)^2 = \underline{0.0046 \text{ mW/cm}^2}$$

Maximum permissible power density: **0.0046 mW/cm²**