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RF Exposure Calculation

Exposure of Humans to RF Fields Requirements

Applicant : Hitachi Maxell, Ltd.
Type of Equipment : Digital Pen incorporated with Bluetooth
Model No. : DP-101B
FCC ID : NEEDP01

Regulations Applied : CFR 47 FCC 15.247(b)(5)
References Documents : CFR 47 FCC 1.1307(b), 1.1310, 2.1093 and
OET65 Supplement C

RF Exposure Calculations :

The following minimum separation distance between the EUT's antenna and the human body was calculated in accordance with FCC OET65 Appendix B Table(B) "Limit for General Population / Uncontrolled Exposure".

The maximum permissible exposure level is defined with $1\text{mW}/\text{cm}^2$.

The minimum separation distance where the exposure level reaches the permitted level can be calculated as bellow:

$$\text{Where:} \quad S = P * G / 4\pi R^2 \quad \therefore R = \sqrt{P * G / 4\pi S}$$

R = minimum separation distance in cm

P = 0.324 mW(-4.9dBm) (Max. conducted output power at antenna terminal)

G = 2.14(numeric gain) = 3.30 dBi(Max. antenna Gain)

S = $1.0\text{ mW}/\text{cm}^2$ for 2.4 GHz (Max. permissible exposure level)

Then minimum separation distance is 0.234 cm.

Summary:

The EUT complies with the RF exposure requirement of the above regulation.

Masaaki Takahashi
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