MPE Calculation / RF Exposure

Product: RTLS AP
Applicant: Geoplan Co., Ltd.
Model: GEO-DA300
Address: #501, Anyang Finance Center, Simin-daero 260 Dongan-gu, Anyang-si, Gyeonggi-do, 14067, Korea
FCC ID: 2ASPN-GEO-DA300

The FCC requires that the calculated MPE be equal to or less than a given limit dependent on frequency at a distance of 20 cm from the device to the body of the user. According to §2.1091, §2.1093 and §1.1307(b), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

▣ UWB

Classfication The antenna of this product is at least 20 cm away from the body of the user. So this product is classified as mobile device.

$$S = EIRP/4 \pi R^2$$

Where
S = Power density
EIRP = Effective Isotropically Radiated Power
R = distance to the centre of radiation of the antenna

Values
S = 1.0 mW/cm^2 for General population uncontrolled exposure (FCC Part 1.1310 Radiofrequency radiation exposure limits)
S = 1.0 mW/cm^2
PT(BDR/EDR) = -21.33 dBm (0.007 mW) : measured maximum output power
G = Antenna gain = 3.50 dBi (2.239 in linear terms)
EIRP = PT x G
R = 20 cm

Calculation
EIRP(BDR/EDR) = 0.007 x 2.239 = 0.016 mW
S(BDR/EDR) = 0.016/12.56 x (20)^2 = 0.016/5024
S(BDR/EDR**) = 0.000003 mW/cm^2**

Conclusion **This confirms compliance to the required radio frequency radiation exposure limit of 1.0 mW/cm^2 at 20 cm operation.**

▣ DXX

Classfication The antenna of this product is at least 20 cm away from the body of the user. So this product is classified as mobile device.

$$S = EIRP/4 \pi R^2$$

Where S = Power density

EIRP = Effective Isotropically Radiated Power

R = distance to the centre of radiation of the antenna

Values S = 1.0 mW/cm^2 for General population uncontrolled exposure (FCC Part 1.1310 Radiofrequency radiation exposure limits)

S = 1.0 mW/cm^2

PT(BDR/EDR) = -7.43 dBm (0.18 mW) : measured maximum output power

G = Antenna gain = 0.00 dBi (1.00 in linear terms)

EIRP = PT x G

R = 20 cm

Calculation EIRP(BDR/EDR) = 0.18 x 1.00 = 0.18 mW

S(BDR/EDR) = 0.18/12.56 x (20)^2 = 0.18/5024

S(BDR/EDR**) = 0.00004 mW/cm^2**

Conclusion **This confirms compliance to the required radio frequency radiation exposure limit of 1.0 mW/cm^2 at 20 cm operation.**

▣ Simultaneously MPE

Simultaneously MPE = PSD1/Limit1 + PSD2/Limit2 + PSD3/Limit

UWB + DXX Module 1 + DXX Module 2

Simultaneously MPE = (0.000 003 mW/cm^2 / 1) + (0.000 04 mW/cm^2 / 1) + (0.000 04 mW/cm^2 / 1)

= 0.000 083