MPE Calculation / RF Exposure

Applicant : Teltron Inc.
Product : RF Sensor module(motion sensor)
Model : TMS300
FCC ID : 2AJWPTMS300

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.

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

Where S = Power density

$EIRP$ = Effective Isotropically Radiated Power

R = distance to the centre of radiation of the antenna

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

S = 1.0 ㎽/㎝ ^{2}

P_T = -0.75 dBm (0.8414 ㎽) : measured maximum output power *[see Note]

G = Antenna gain = 5.52 ㏈ i (3.5645 in linear terms)

$EIRP = P_T \times G$

R = 20 ㎝

Calculation $EIRP$ = 0.8414 x 3.5645 = 2.999 mW

S = 2.999/12.56 x (20)^2

S = 2.999/5024

S = 5.9697 x 10^{-4} mW/cm^2

Conclusion   **This confirms compliance to the required FCC Part 1.1310 Radiofrequency radiation exposure limit of 1.0 ㎽/㎝ ^{2} at 20 ㎝ operation.**

Note

Rational for this calculation is as follows:
Measured field strength at 3 m distance is 100 dBμV/m
EIRP based on 3 m field strength is: 100 dBμV/m – 95.23 dB = 4.77 dBm
Output power is 4.77 dBm - 5.52 dBi = -0.75 dBm