



MPE Calculation / RF Exposure

Applicant: CHANG SHIN INFOTEL CO.,LTD.

Product: Access Controlled Security System with zigbee&RFID

Model: SG-3000

FCC ID : 2ABZV-SG-3000

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. The equation for the calculation is given in 47 CFR FCC Part 2 Subpart J, section 2.1091 as,

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

Where S = Power density

$EIRP$ = Effective Isotropically Radiated Power

R = distance to the centre of radiation of the antenna

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

$S = 1.0 \text{ mW/cm}^2$

$PT = -6.89 \text{ dBm}$ (0.2046 mW) : measured maximum peak output power

G = Antenna gain = 2.04 dBi (1.599 in linear terms)

$EIRP = PT \times G$

$R = 20 \text{ cm}$

Calculation $EIRP = 0.2046 \times 1.599 = 0.327 \text{ mW}$

$$S = 0.327/12.56 \times (20)^2$$

$$S = 0.327/5024$$

$$\mathbf{S = 6.51 \times 10^{-5} \text{ mW/cm}^2}$$

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