

RF Exposure Considerations for the Fibar Group S.A. Motion Sensor

FCC ID: 2AA9MFGBHMS001

The FCC requires that the calculated MPE for mobile equipment to be equal to or less than a given limit dependent on frequency at a distance of 20 cm from a device to the body of a user.

The transmitter in the Fibar Group S.A., Motion Sensor covers the 2402-2480MHz frequency band using Bluetooth Low Energy technology.

The following FCC Rule Parts and procedures are applicable:

Part 1.1310 – Radiofrequency radiation exposure limits

Part 2.1091 – Radiofrequency radiation exposure evaluation: mobile devices

KDB447498 D01 v06

Mobile and Portable Devices RF Exposure Procedures and Equipment Authorisation Policies

MPE calculation

$$S = \text{EIRP} / (4 \pi R^2)$$

Where

S = Power density

EIRP = P x G

P = Maximum transmitter power

G = Antenna gain

R = distance to the centre of radiation of the antenna

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For the 2.4GHz band (Bluetooth Low Energy):

Values $S = 1.0 \text{ mW/cm}^2$ for General population uncontrolled exposure
(FCC Part 1.1310, Table 1(B) Radiofrequency radiation exposure limits)

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

$P_{\text{max}} = 6.0 \text{ dBm}$ (3.98mW)

$G = 3 \text{ dBi}$ (x2.00)

$R = 20 \text{ cm}$

Calculation:

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

$$S = 3.98 \times 2.00 / (12.56 \times (20)^2)$$

$$S = 7.96/5026$$

$$\mathbf{S = 0.0016 \text{ mW/cm}^2}$$

Conclusion

This confirms compliance to the required FCC Part 1.1310 Radio frequency radiation exposure limit of 1.0 mW/cm^2 at 20cm operation and, hence, meets the requirements of FCC rule part 2.1091(c) and KDB447498 D01 v06, section 7.1.

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