RF Exposure Considerations for the Fibar Group S.A. Door/Window Sensor

FCC ID: 2AA9MFGBHDW002

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., Door/Window 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

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

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

For the 2.4GHz band (Bluetooth Low Energy):

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

S = 1.0mW/cm^2

P_{max} = 6.0dBm (3.98mW)

G = 3.5dBi (x2.24)

R = 20cm

Calculation:

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

$S = 3.98 \times 2.24/(12.56 \times (20)^2)$

$S = 8.92/5026$

S = 0.0018 mW/cm^2

Conclusion

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