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RF Exposure Considerations for the Raspberry Pi (Trading) Ltd Single Board Computer

FCC ID: 2ABCB-RPI0W

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 transmitters in the Raspberry Pi single board computer cover the frequency bands 2402 to 2480 for BT and 2412 -2462MHz for WLAN operation.

Simultaneous transmission is not supported by the Raspberry Pi single board computer.

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

For 2.4GHz band:

Values S = 1.0 mW/cm² for General population uncontrolled exposure
(FCC Part 1.1310, Table 1(B) Radiofrequency radiation exposure limits)

S = 1.0mW/cm²

P = 17.0dBm (50.1mW) {maximum WLAN/ BT power}

G = 2.0dBi (x1.58)

R = 20cm

Calculation:

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

$$S = 50.1 \times 1.58 / (12.56 \times (20)^2)$$

$$S = 79.4/5026$$

$$\mathbf{S = 0.0158 \text{ mW/cm}^2}$$

Conclusion

This confirms compliance to the required FCC Part 1.1310 Radio frequency radiation exposure limit of 1.0mW/cm² at 20cm operation and, hence, meets the requirements of FCC rule part 2.1091(c) and KDB447498 D01 v06, section 7.1.