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TTUBEOPLAYA9 MPE Calculation

As FCC rule part 2.1091(c) routine evaluation categorical exclusion applies for this device (see KDB 447498 D01 v05, section 7.1), an MPE calculation, to demonstrate 20cm compliance, is used.

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 a device to the body of a user.

The transmitter operation of the BeoPlay A9 covers the 2.4-2.4835GHz band.

The following FCC Rule Parts are applicable:

Part 1.1310:   Radiofrequency radiation exposure limits

Part 2.1091(c):   Radiofrequency radiation exposure evaluation: mobile devices

CALCULATION

The following far field power density equation is applicable:

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

Where S = Power density

$EIRP$ = Effective Isotropically Radiated Power (EIRP = P x G)

P = Conducted Transmitter Power

G = Antenna Gain (relative to an isotropic radiator)

R = distance to the centre of radiation of the antenna (safe operating distance)

Values

Transmitter frequency range = 2400MHz to 2483.5MHz

Maximum conducted power (measured) = 21.8dBm (151.4mW)

Maximum Antenna Gain = 1.6dBi

EIRP = 21.8 + 1.6dBm = 23.4dBm (218.8mW)

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

$$S = 1.0mW/cm^2$$

R = 20 cm

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Calculation

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

$$S = 218.8/12.56 \times (20)^2$$

$$S = 218.8/5026$$

$$\mathbf{S = 0.044 \ mW/cm^2}$$

Conclusion

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

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