

RF Exposure / MPE Calculation

No. : 12219846H-B
Applicant : Sony Interactive Entertainment Inc.
Type of Equipment : Wireless communication module
Model No. : J20H096
 *WLAN (2.4 GHz), Bluetooth Low Energy parts
FCC ID : AK8M18DFT1

Sony Interactive Entertainment Inc. declares that Model: J20H096 complies with FCC radiation exposure requirement specified in the FCC Rule 2.1091 (for mobile).

RF Exposure Calculations:

The following information provides the minimum separation distance for the highest gain antenna provided with the "J20H096" as calculated from (B) Limits for General Population / Uncontrolled Exposure of TABLE 1- LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE) of §1.1310 Radiofrequency radiation exposure limits.

[WLAN (2.4 GHz) part]

This calculation is based on the highest EIRP possible from the system, considering maximum power and antenna gain, and considering a 1mW/cm² uncontrolled exposure limit. The Friis formula used was:

$$S = \frac{P \times G}{4 \times \pi \times r^2}$$

Where

$P =$ 13.19 mW (Maximum average output power)

Time average was used for the above value in consideration of 6-minutes time-averaging

Burst power average was used for the above value in consideration of worst condition.

$G =$ 7.261 Numerical Antenna gain; equal to 8.61 dBi

$r =$ 20 cm (Separation distance)

Power Density Result $S = 0.01905 \text{ mW/cm}^2$

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[Bluetooth Low Energy part]

This calculation is based on the highest EIRP possible from the system, considering maximum power and antenna gain, and considering a 1mW/cm² uncontrolled exposure limit. The Friis formula used was:

$$S = \frac{P \times G}{4 \times \pi \times r^2}$$

Where

$P =$ 1.06 mW (Maximum average output power)

Time average was used for the above value in consideration of 6-minutes time-averaging

Burst power average was used for the above value in consideration of worst condition.

$G =$ 5.012 Numerical Antenna gain; equal to 7.0 dBi

$r =$ 20 cm (Separation distance)

Power Density Result $S = 0.00106 \text{ mW/cm}^2$

Reference:

[Bluetooth part]

This calculation is based on the highest EIRP possible from the system, considering maximum power and antenna gain, and considering a 1mW/cm² uncontrolled exposure limit. The Friis formula used was:

$$S = \frac{P \times G}{4 \times \pi \times r^2}$$

Where

$P =$ 1.40 mW (Maximum average output power)

Time average was used for the above value in consideration of 6-minutes time-averaging

Burst power average was used for the above value in consideration of worst condition.

$G =$ 5.012 Numerical Antenna gain; equal to 7.0 dBi

$r =$ 20 cm (Separation distance)

Power Density Result $S = 0.00140 \text{ mW/cm}^2$

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Reference:**[WLAN (5 GHz) part]**

This calculation is based on the highest EIRP possible from the system, considering maximum power and antenna gain, and considering a 1mW/cm² uncontrolled exposure limit. The Friis formula used was:

$$S = \frac{P \times G}{4 \times \pi \times r^2}$$

Where

$P =$ 15.28 mW (Maximum average output power)

Time average was used for the above value in consideration of 6-minutes time-averaging

Burst power average was used for the above value in consideration of worst condition.

$G =$ 6.792 Numerical Antenna gain; equal to 8.32 dBi

$r =$ 20 cm (Separation distance)

$$\text{Power Density Result } S = 0.02065 \text{ mW/cm}^2$$

Therefore, if WLAN 2.4GHz and Bluetooth Low Energy transmit simultaneously,
 $S=0.01905 \text{ mW/cm}^2 + 0.00106 \text{ mW/cm}^2$
 $=0.02011 \text{ mW/cm}^2$

Therefore, if WLAN 2.4GHz and Bluetooth transmit simultaneously,
 $S=0.01905 \text{ mW/cm}^2 + 0.00140 \text{ mW/cm}^2$
 $=0.02045 \text{ mW/cm}^2$

Therefore, if Bluetooth Low Energy and WLAN 5GHz transmit simultaneously,
 $S=0.00106 \text{ mW/cm}^2 + 0.02065 \text{ mW/cm}^2$
 $=0.02171 \text{ mW/cm}^2$

Even taking into account the tolerance, this device can be satisfied with the limits.

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