RF Exposure / MPE Calculation

No.	:	13671144H
Applicant	:	Sony Interactive Entertainment Inc.
Type of Equipment	:	Wireless communication module
Model No.	:	AW-XM501
FCC ID	:	AK8M20DAL1

Sony Interactive Entertainment Inc. declares that Model: AW-XM501 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 "AW-XM501" 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 band part]

This calculation is based on the highest EIRP possible from the system, considering maximum power and antenna gain, and considering a 1mW/cm^2 uncontrolled exposure limit. The Friis formula used was:

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

Where

P = 14.23 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 = 4.742 Numerical Antenna gain; equal to 6.76dBi

r = 20 cm (Separation distance)

Power Density Result S = **0.01343 mW/cm^2**

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[WLAN 5 GHz band part]

This calculation is based on the highest EIRP possible from the system, considering maximum power and antenna gain, and considering a 1mW/cm^2 uncontrolled exposure limit. The Friis formula used was:

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

Where

P = 15.06 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 = 6.745 Numerical Antenna gain; equal to 8.29dBi

r = 20 cm (Separation distance)

Power Density Result S = **0.02021 mW/cm^2**

[Bluetooth part (BT1)]

This calculation is based on the highest EIRP possible from the system, considering maximum power and antenna gain, and considering a 1mW/cm^2 uncontrolled exposure limit. The Friis formula used was:

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

Where

P = 1.22 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 = 3.802 Numerical Antenna gain; equal to 5.8dBi

r = 20 cm (Separation distance)

Power Density Result S = **0.00092 mW/cm^2**

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[Bluetooth part (BT2)]

This calculation is based on the highest EIRP possible from the system, considering maximum power and antenna gain, and considering a 1mW/cm^2 uncontrolled exposure limit. The Friis formula used was:

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

Where

P = 1.34 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 = 3.802 Numerical Antenna gain; equal to 5.8dBi

r = 20 cm (Separation distance)

Power Density Result ***S*** **= 0.00101 mW/cm^2**

Therefore, if WLAN 2.4 GHz, Bluetooth (BR/EDR/LE) (BT1) and Bluetooth (BR/EDR/LE) (BT2) transmit simultaneously,

S= 0.01343 mW/cm^2 + 0.00092 mW/cm^2 + 0.00101 mW/cm^2

= 0.01536 mW/cm^2

Therefore, if WLAN 5 GHz, Bluetooth (BR/EDR/LE) (BT1) and Bluetooth (BR/EDR/LE) (BT2) transmit simultaneously,

S= 0.02021 mW/cm^2 + 0.00092 mW/cm^2 + 0.00101 mW/cm^2

= 0.02214 mW/cm^2

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

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