RF Exposure / MPE Calculation

No.	14568085S
Customer	Sony Group Corporation
Description of EUT	IEEE 802.11 1X1 a/b/g/n/ac/ax Wireless LAN + Bluetooth 5.2 + 802.15.4 Tri-radio 12 x 12 LGA Module
Model Number of EUT	AW-XM553
FCC ID	AK8XM553

Sony Group Corporation declares that Model: AW-XM553 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-XM553" 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 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 1 mW/cm^2 uncontrolled exposure limit. The Friis formula used was:

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

Where

P = 35.73 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 = 1.472 Numerical Antenna gain; equal to 1.68 dBi

r = 20 cm (Separation distance)

Power Density Result S = **0.01047 mW/cm^2**

[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/cm^2 uncontrolled exposure limit. The Friis formula used was:

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

Where

P = 1.83 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 = 1.091 Numerical Antenna gain; equal to 0.38 dBi

r = 20 cm (Separation distance)

Power Density Result S = **0.00040 mW/cm^2**

[Bluetooth (BR/EDR) part]

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

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

Where

P = 1.98 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 = 1.091 Numerical Antenna gain; equal to 0.38 dBi

r = 20 cm (Separation distance)

Power Density Result S = **0.00043 mW/cm^2**

Therefore, if WLAN (5 GHz band) and Bluetooth Low Energy transmit simultaneously,

S= 0.01047 mW/cm^2 + 0.0004 mW/cm^2

= 0.01087 mW/cm^2

Therefore, if WLAN (5 GHz band) and Bluetooth (BR/EDR) transmit simultaneously,

S= 0.01047 mW/cm^2 + 0.00043 mW/cm^2

= 0.0109 mW/cm^2