



RF EXPOSURE EVALUATION REPORT

FCC ID : PY7-61352Q
Equipment : Observer
Brand Name : Sony Mobile
Applicant : Sony Mobile Communications Inc.
4-12-3 Higashi-shinagawa, Shinagawa-ku,
Tokyo, 140-0002, Japan
Manufacturer : Sony Mobile Communications Inc.
4-12-3 Higashi-shinagawa, Shinagawa-ku,
Tokyo, 140-0002, Japan
Standard : 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC has been evaluated in accordance with 47 CFR Part 2.1091 for the device and pass the limit.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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Approved by: Jones Tsai / Manager

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1. Description of Equipment Under Test (EUT)

| Product Feature & Specification | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------------------------------------------------------------------------|
| EUT Type | Observer | |
| Brand Name | Sony Mobile | |
| FCC ID | PY7-61352Q | |
| Integrated Chip 1: ESP32 | Wireless Technology and Frequency Range | WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz Bluetooth: 2402 MHz ~ 2480 MHz |
| | Mode | 802.11b/g/n HT20/HT40 Bluetooth LE |
| Integrated Chip 2: nRF52832 | Wireless Technology and Frequency Range | Bluetooth: 2402 MHz ~ 2480 MHz (Rx only) |
| | Mode | Bluetooth LE |
| HW Version | A | |
| SW Version | 1.0 | |
| EUT Stage | Production Unit | |
| Remark: | | |
| 1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description. | | |

Reviewed by: Eric Huang

Report Producer: Wan Liu



2. Maximum RF average output power among production units

<For ESP32>

| Band / Mode | Average Power (dBm) |
|-------------|---------------------|
| | LE |
| Bluetooth | 0.5 |

| Band / Channel / Frequency (MHz) | | | IEEE 802.11 Average Power (dBm) | | | |
|----------------------------------|-------|------|---------------------------------|------|------|------|
| | | | 11b | 11g | HT20 | HT40 |
| 2.4GHz WLAN (DTS) | Ch 1 | 2412 | 12.5 | 13 | 12.5 | |
| | Ch 3 | 2422 | | | | 11.5 |
| | Ch 6 | 2437 | 11.5 | 11.5 | 12 | 12 |
| | Ch 9 | 2452 | | | | 7.5 |
| | Ch 11 | 2462 | 11 | 10.5 | 10 | |



3. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

| Frequency range (MHz) | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm ²) | Averaging time (minutes) |
|----------------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| (A) Limits for Occupational/Controlled Exposures | | | | |
| 0.3-3.0 | 614 | 1.63 | *(100) | 6 |
| 3.0-30 | 1842/f | 4.89/f | *(900/f ²) | 6 |
| 30-300 | 61.4 | 0.163 | 1.0 | 6 |
| 300-1500 | | | f/300 | 6 |
| 1500-100,000 | | | 5 | 6 |
| (B) Limits for General Population/Uncontrolled Exposure | | | | |
| 0.3-1.34 | 614 | 1.63 | *(100) | 30 |
| 1.34-30 | 824/f | 2.19/f | *(180/f ²) | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | | | f/1500 | 30 |
| 1500-100,000 | | | 1.0 | 30 |

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna



4. Radio Frequency Radiation Exposure Evaluation

4.1. Standalone Power Density Calculation

<For ESP32>

| Band | Frequency (MHz) | Antenna Gain (dBi) | Maximum Power (dBm) | Maximum EIRP (dBm) | Maximum EIRP (W) | Average EIRP (mW) | Power Density at 20cm (mW/cm ²) | Limit (mW/cm ²) |
|-------------|-----------------|--------------------|---------------------|--------------------|------------------|-------------------|---------------------------------------------|-----------------------------|
| Bluetooth | 2402.0 | 2.5 | 0.5 | 3.000 | 0.002 | 1.995 | 0.0004 | 1.000 |
| 2.4GHz WLAN | 2412.0 | 2.5 | 13.0 | 15.500 | 0.035 | 35.481 | 0.0071 | 1.000 |

Note: For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band.

Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.