

Radio Exposure Evaluation Report

FCC ID : BKMAE-STI6200B

Equipment : WLAN/BT Module

Brand Name : EPSON

Model Name : STI6200B

Applicant : SEIKO EPSON CORPORATION
3-3-5 Owa Suwa-shi Nagano-ken 392-8502 Japan

Manufacturer : SEIKO EPSON CORPORATION
6925 Tazawa, Toyoshina Azumino-shi, Nagano
399-8285 Japan

Standard : 47 CFR FCC Part 2 Subpart J, section 2.1091

The product was received on Jul. 21, 2021, and testing was started from Aug. 04, 2021 and completed on Aug. 17, 2021. We, SPORTON INTERNATIONAL INC. Hsinhua Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in 47 CFR FCC Part 2 Subpart J, section 2.1091 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. Hsinhua Laboratory, the test report shall not be reproduced except in full.



Approved by: Allen Lin

SPORTON INTERNATIONAL INC. Hsinhua Laboratory
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Table of Contents

HISTORY OF THIS TEST REPORT3

1 GENERAL DESCRIPTION5

1.1 Information.....5

1.2 Testing Location6

2 MAXIMUM PERMISSIBLE EXPOSURE7

2.1 Limit of Maximum Permissible Exposure7

2.2 MPE Calculation Method7

2.3 Calculated Result and Limit.....8

Photographs of EUT V01



Summary of Test Result

| Report Clause | Ref Std. Clause | Test Items | Result (PASS/FAIL) | Remark |
|---------------|-----------------|---------------------|--------------------|--------|
| 2 | - | Exposure evaluation | PASS | - |

| |
|--|
| Declaration of Conformity: |
| The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. |
| Comments and Explanations: |
| None |

Reviewed by: Ben Tseng

Report Producer: Jenny Yang



1 General Description

1.1 Information

1.1.1 EUT General Information

| RF General Information | | | |
|------------------------|------------------------|---------------------------|---|
| Evaluation Mode | Frequency Range (MHz) | Operating Frequency (MHz) | Modulation Type |
| 2.4GHz WLAN | 2400-2483.5 | 2412-2462 | 802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) |
| 5GHz WLAN | 5150-5250 5725-5850 | 5180-5240 5745-5825 | 802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM) |
| Bluetooth | 2400-2483.5 | 2402-2480 | BR / EDR: FHSS (GFSK / $\pi/4$ -DQPSK / 8DPSK) LE: DSSS (GFSK) |

1.1.2 Antenna Information

| Ant. | Brand | Model Name | Antenna Type | Connector |
|------|--------|------------|--------------|-----------|
| 1 | HONGBO | 290-40488 | PIFA | I-Pex |
| 2 | HONGBO | 290-40488 | PIFA | I-Pex |

| Ant. | Port | Gain (dBi) | | |
|------|------|------------|------|------|
| | | 2.4G | 5G | BT |
| 1 | 2 | 2.34 | 5.29 | - |
| 2 | 1 | 2.74 | 4.50 | 2.74 |

Note 1: The EUT has two antennas.

For 2.4GHz function:

For IEEE 802.11 b mode (1TX/2RX)

Only Ant. 2 (port 1) can be used as transmitting/receiving antenna.

Ant. 1 (port 2) and Ant. 2 (port 1) could receive simultaneously.

For IEEE 802.11 g/n mode (2TX/2RX)

Ant. 1 (port 2) and Ant. 2 (port 1) could transmit/receive simultaneously.

For BT function:

For IEEE 802.15.1 Bluetooth mode (1TX/1RX)

Only Ant. 2 (port 1) can be used as transmitting/receiving antenna.

For 5GHz function:

For IEEE 802.11 a/n/ac mode (2TX/2RX)

Ant. 1 (port 2) and Ant. 2 (port 1) could transmit/receive simultaneously.



1.2 Testing Location

| Test Lab. : Sporton International Inc. Hsinhua Laboratory | | |
|---|-----------------------------|---|
| <input checked="" type="checkbox"/> | Hsinhua (TAF: 3785) | ADD: No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.) |
| | | TEL: 886-3-327-3456 FAX: 886-3-327-0973 |
| Test site Designation No. TW3785 with FCC. | | |
| <input type="checkbox"/> | Wen 33rd.St. (TAF: 3785) | ADD: No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) |
| | | TEL: 886-3-318-0787 FAX: 886-3-318-0287 |
| Test site Designation No. TW0008 with FCC. | | |

2 Maximum Permissible Exposure

2.1 Limit of Maximum Permissible Exposure

(A) Limits for Occupational / Controlled Exposure

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/ cm ²) | Averaging Time E ² , H ² or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|--|--|
| 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

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/ cm ²) | Averaging Time E ² , H ² or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|--|--|
| 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 |

Note: f = frequency in MHz ; *Plane-wave equivalent power density

Multiple Transmitters Condition

Co-location as simultaneously transmitting (co-transmitting) and the evaluation shall be consider that simultaneous transmissions from co-located devices the individual transmitters are evaluated separately. After sum of the individual value (basic restriction / reference level) are measured/calculated also have to under basic restriction / reference level.

Co-transmitting mode: WLAN 2.4GHz+Bluetooth, WLAN 5GHz+Bluetooth

2.2 MPE Calculation Method

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:

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric field (V/m)

P = RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$



2.3 Calculated Result and Limit

Exposure Environment: General Population / Uncontrolled Exposure
WLAN 2.4GHz+Bluetooth

| Mode | DG (dBi) | Power (dBm) | EIRP (dBm) | Tolerance (dB) | Tune-up EIRP (dBm) | Tune-up EIRP (W) | Distance (cm) | S (mW/cm2) | Lim (mW/cm2) | Ratio (S/Limit) |
|------------|-------------|----------------|---------------|-------------------|-----------------------|---------------------|------------------|---------------|-----------------|--------------------|
| 2.4G;D1D | 2.74 | 23.34 | 26.08 | 0.50 | 26.58 | 0.45499 | 20 | 0.09052 | 1.00000 | 0.09052 |
| 2.4G;BT-BR | 2.74 | 8.42 | 11.16 | 0.50 | 11.66 | 0.01466 | 20 | 0.00292 | 1.00000 | 0.00292 |
| | | | | | | | | | Sum Ratio | 0.09344 |
| | | | | | | | | | Ratio Limit | 1 |

WLAN 5GHz+Bluetooth

| Mode | DG (dBi) | Power (dBm) | EIRP (dBm) | Tolerance (dB) | Tune-up EIRP (dBm) | Tune-up EIRP (W) | Distance (cm) | S (mW/cm2) | Lim (mW/cm2) | Ratio (S/Limit) |
|------------|-------------|----------------|---------------|-------------------|-----------------------|---------------------|------------------|---------------|-----------------|--------------------|
| 5.8G;D1D | 5.29 | 22.77 | 28.06 | 0.50 | 28.56 | 0.71779 | 20 | 0.14280 | 1.00000 | 0.14280 |
| 2.4G;BT-BR | 2.74 | 8.42 | 11.16 | 0.50 | 11.66 | 0.01466 | 20 | 0.00292 | 1.00000 | 0.00292 |
| | | | | | | | | | Sum Ratio | 0.14572 |
| | | | | | | | | | Ratio Limit | 1 |

—————THE END—————