

## FCC Part 2.1091

# RF Exposure Evaluation REPORT

For

**FCC ID : MSQ-AISSENS-100AW**

**Model : AISSENS 100AW**

**Report Type : Original Report**

**Product Name : Vibration Sensor**

**Report Number : RXZ250210040SA02**

**Report Date : 2025-02-27**

**Prepared By : Bay Area Compliance Laboratories Corp. (New Taipei Laboratory)**

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## Statement of Compliance

Applicant (Certification Holder)	ASUSTeK COMPUTER INC.
	1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112, Taiwan
Brand (Trade) Name	ASUS
Product (Equipment) Name	Vibration Sensor
Model Name	AISSENS 100AW
Series Model Name	N/A
Model Discrepancy	N/A

### Measurement Procedures and Standards Used:

- ☒ FCC Part 2.1091
- ☒ FCC Part 1 1.1307

The measurement results in this report were performed at Bay Area Compliance Laboratories Corp. (New Taipei Laboratory)

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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

The determination of the test results does not require consideration of the uncertainty of the measurement, unless the assessment is required by customer agreement, regulation or standard document specification.

Bay Area Compliance Laboratories Corp. (New Taipei Laboratory) is not responsible for the authenticity of the information provided by the applicant that affects the test results.

**Report Issued Date :** 2025-02-27

**Reviewed By :** Anson Lu



Revision History

Revision	No.	Report Number	Issue Date	Description	Author/Revised by
0.0	RX250210040	RXZ250210040SA02	2025.02.27	Original Report	Sean Chen

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# 1. General Information

## Product Description for Equipment under Test (EUT)

<b>Product Name</b>	Vibration Sensor
<b>Frequency Range</b>	WiFi 2.4GHz: 802.11b / g: 2412 ~ 2462MHz 802.11n HT20: 2412 ~ 2462MHz 802.11n HT40: 2422 ~ 2452MHz BLE(1M): 2402 ~ 2480MHz Bluetooth: BT(GFSK): 2402 ~ 2480MHz BT(p/4-DQPSK): 2402 ~ 2480MHz BT(8-DPSK): 2402 ~ 2480MHz
<b>Conducted Tune-Up Power (Avg/dBm)</b>	WiFi 2.4GHz: 802.11b: 14.00 dBm 802.11g: 11.50 dBm 802.11n HT20: 11.50 dBm 802.11n HT40: 11.00 dBm BLE(1M): GFSK: 5.0 dBm
<b>Conducted Tune-Up Power (Peak/dBm)</b>	Bluetooth: BT(GFSK): 12.00 dBm BT(p/4-DQPSK): 14.50 dBm BT(8-DPSK): 15.00 dBm
<b>Modulation Technique</b>	WiFi 2.4GHz: 802.11b: DSSS 802.11g / n HT20 / n HT40: OFDM BLE(1M): GFSK Bluetooth: BT(1M): GFSK BT(2M): $\pi/4$ -DQPSK BT(3M): 8-DPSK
<b>Antenna Specification</b>	Antenna Typa: Chip Antenna Antenna Gain: 0.5 dBi

*\*All measurement and test data in this report was gathered from production sample serial number: RXZ250210040-1 (Assigned by BACL (New Taipei Laboratory)).*

## 2. RF Output Power Evaluation

Please refer to RF report No: RXZ250210040RF01, RXZ250210040RF02

WiFi 2.4GHz :

Mode	Channel	Frequency	Conducted Peak Output Power(dBm)	Conducted Avg. Output Power(dBm)	Ant. Gain	Conducted Avg. Tune-Up Output Power(dBm)
802.11b	1	2412	17.14	13.52	0.5	14.00
	6	2437	15.93	12.42	0.5	14.00
	11	2462	15.47	12.06	0.5	14.00
802.11g	1	2412	20.99	11.41	0.5	11.50
	6	2437	19.34	10.45	0.5	11.50
	11	2462	18.32	9.46	0.5	11.50
802.11n HT20	1	2412	20.90	11.39	0.5	11.50
	6	2437	19.14	10.36	0.5	11.50
	11	2462	18.14	9.35	0.5	11.50
802.11n HT40	3	2422	19.90	10.12	0.5	11.00
	6	2437	19.04	9.43	0.5	11.00
	9	2452	18.09	8.47	0.5	11.00

BLE :

Mode	Channel	Frequency	Conducted Peak Output Power(dBm)	Conducted Avg. Output Power(dBm)	Ant. Gain	Conducted Avg. Tune-Up Output Power(dBm)
BLE(1M)	0	2402	5.57	4.43	0.5	5.00
	19	2440	4.26	2.88	0.5	5.00
	39	2480	3.25	1.65	0.5	5.00

## Bluetooth :

Mode	Channel	Frequency	Conducted Peak Output Power(dBm)	Ant. Gain	Conducted Peak. Tune-Up Output Power(dBm)
BT GFSK	0	2402	10.87	0.5	12.0
	39	2441	11.27	0.5	12.0
	78	2480	11.99	0.5	12.0
BT $\pi/4$ -DQPSK	0	2402	13.17	0.5	14.5
	39	2441	13.37	0.5	14.5
	78	2480	14.16	0.5	14.5
BT 8-DPSK	0	2402	13.61	0.5	15.0
	39	2441	13.92	0.5	15.0
	78	2480	14.66	0.5	15.0

### 3. FCC §15.247(i), §15.407(f), §2.1091 - RF Exposure

#### Applicable Standard

According to subpart 15.407(f) and subpart §1.1307(b)(3), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

For single RF sources (*i.e.*, any single fixed RF source, mobile device, or portable device, as defined in paragraph (b)(2) of this section): A single RF source is exempt if:

(A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(ii)(A) of this section.

Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);

(B) Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold  $P_{th}$  (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive).  $P_{th}$  is given by:

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

Where

$$x = -\log_{10} \left( \frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

(C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least  $\lambda/2\pi$ , where  $\lambda$  is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of  $\lambda/4$  or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	$1,920 R^2$ .
1.34-30	$3,450 R^2/f^2$ .
30-300	$3.83 R^2$ .
300-1,500	$0.0128 R^2 f$ .
1,500-100,000	$19.2 R^2$ .



## 5.2 RF Exposure Evaluation Result

**Result: The device compliant the SAR-Based Exemption at 20cm distances.**

Project info

Band	Freq (MHz)	Tune-up Power (Avg/dBm)	Ant Gain (dBi)	Distances (mm)	Tune-up Power (Avg/mW)	ERP (dBm)	ERP (mW)
802.11b	2412	14.00	0.5	200	25.12	12.35	17.18
802.11g	2412	11.50	0.5	200	14.13	9.85	9.66
802.11nHT20	2412	11.50	0.5	200	14.13	9.85	9.66
802.11nHT40	2422	11.00	0.5	200	12.59	9.35	8.61
BLE	2402	5.00	0.5	200	3.16	3.35	2.16
Band	Freq (MHz)	Tune-up Power (Peak/dBm)	Ant Gain (dBi)	Distances (mm)	Tune-up Power (Peak/mW)	ERP (dBm)	ERP (mW)
BT(1M)	2402	12.00	0.5	200	15.85	10.35	10.84
BT(2M)	2402	14.50	0.5	200	28.18	12.85	19.28
BT(3M)	2402	15.00	0.5	200	31.62	13.35	21.63

§ 1.1307(b)(3)(i)(A) method is not applicable.

§ 1.1307(b)(3)(i)(C)

Band	Freq (MHz)	$\lambda/2\pi$ (mm)	Distances applies	ERP Limit (mW)	Result Option B
802.11b	2412	19.80	apply	768.00	exempt
802.11g	2412	19.80	apply	768.00	exempt
802.11nHT20	2412	19.80	apply	768.00	exempt
802.11nHT40	2422	19.71	apply	768.00	exempt
BLE	2402	19.88	apply	768.00	exempt
BT(1M)	2402	19.88	apply	768.00	exempt
BT(2M)	2402	19.88	apply	768.00	exempt
BT(3M)	2402	19.88	apply	768.00	exempt

The minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates

ERP (watts) is no more than the calculated value prescribed for that frequency

R must be at least  $\lambda/2\pi$

$\lambda$  is the free-space operating wavelength in meters

Note: The Tune-up output power was declared by the Applicant.

The WIFI 2.4GHz and Bluetooth(or BLE) cannot transmit simultaneously

**Result: The device compliant the MPE-Based Exemption at 20cm distances.**

\*\*\*\*\* END OF REPORT \*\*\*\*\*

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