

## RF EXPOSURE REPORT



**Applicant:** Silex Technology, Inc.  
2-3-1 Hikaridai, Seika-cho, Soraku-gun, Kyoto 619-0237,  
Japan

**Manufacturer:** Silex Technology, Inc.  
2-3-1 Hikaridai, Seika-cho, Soraku-gun, Kyoto 619-0237,  
Japan

**Product Name:** Embedded wireless module

**Brand Name:** Silex Technology

**Model No.:** SX-PCEAX

**Report Number:** TESA2304000253ES

**FCC ID** N6C-PCEAX

**Date of EUT Received:** April 26, 2023

**Issue Date:** November 23, 2023

Approved By

John Yeh

**We hereby certify that:**

The above equipment was evaluate by SGS Taiwan Ltd. The evaluation in this report is in compliance with FCC Rule Part §2.1091.

The results of this report relate only to the sample identified in this report.

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## Revision History

| Report Number    | Revision | Description                 | Issue Date        | Revised By | Remark |
|------------------|----------|-----------------------------|-------------------|------------|--------|
| TESA2304000253ES | 00       | Original                    | November 03, 2023 | Yami Kuo   |        |
| TESA2304000253ES | 01       | Revise the Firmware Version | November 23, 2023 | Yami Kuo   | *      |
|                  |          |                             |                   |            |        |
|                  |          |                             |                   |            |        |
|                  |          |                             |                   |            |        |
|                  |          |                             |                   |            |        |
|                  |          |                             |                   |            |        |

**Note:**

- 1、The remark "\*" indicates modification of the report upon requests from certification body.

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## Contents

|          |                                                  |          |
|----------|--------------------------------------------------|----------|
| <b>1</b> | <b>DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)</b> | <b>4</b> |
| 1.1      | PRODUCT DESCRIPTION                              | 4        |
| 1.2      | EVALUATION SITE                                  | 4        |
| 1.3      | ANTENNA INFORMATION                              | 4        |
| <b>2</b> | <b>FCC MAXIMUM PERMISSIBLE EXPOSURE (MPE)</b>    | <b>5</b> |
| 2.1      | FCC STANDARD APPLICABLE                          | 6        |
| 2.2      | POWER DENSITY CALCULATION (WORST CASE)           | 7        |
| 2.3      | COLLOCATED POWER DENSITY CALCULATION             | 7        |

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## 1 DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

### 1.1 Product Description

|                   |                          |
|-------------------|--------------------------|
| Product Name:     | Embedded wireless module |
| Brand Name:       | Silex Technology         |
| Model No.:        | SX-PCEAX                 |
| Hardware Version: | N/A                      |
| Firmware Version: | HY103710                 |
| EUT Series No.:   | 1CBCEC011DAC             |
| Power Supply:     | 3.3Vdc                   |

### 1.2 Evaluation site

| Laboratory                                            | Site Address                        |                                                                                                   | FCC Designation number | ISED Company Number | CAB Identifier |
|-------------------------------------------------------|-------------------------------------|---------------------------------------------------------------------------------------------------|------------------------|---------------------|----------------|
| SGS Taiwan Ltd.<br>Central RF Lab.<br>(TAF code 3702) | <input checked="" type="checkbox"/> | No. 134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, 24803, Taiwan. | TW0027                 | 4620A               | TW3702         |
|                                                       | <input type="checkbox"/>            | No. 2, Keji 1st Rd., Guishan Township, Taoyuan County, 333 Taiwan.                                | TW0028                 | 4620E               |                |
|                                                       | <input type="checkbox"/>            | 1F, No. 8, Alley 15, Lane 120, Sec. 1, Nei Hu Road, Nei Hu District, Taipei City, 222 Taiwan.     | TW0029                 | 23862               |                |

### 1.3 Antenna Information:

#### 1.3.1 BT / WLAN 2.4GHz

| Antenna Type | Antenna Part No. | Freq. (MHz) | Peak Antenna Gain (dBi) | MIMO Antenna Gain (dBi) |
|--------------|------------------|-------------|-------------------------|-------------------------|
| Monopole     | 2JZ74            | 2.4GHz      | 4.90                    | 7.91                    |
| Monopole     | GW.05.0153       | 2.4GHz      | 3.69                    | 6.70                    |

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### 1.3.2 WLAN 5GHz

| Ant. Type | Part No.   | Freq.(MHz) | Peak Gain (dBi) | Directional Gain (dBi) |
|-----------|------------|------------|-----------------|------------------------|
| monopole  | 2JZ74      | 5150~5250  | 1.900           | 4.910                  |
|           |            | 5250~5350  | 1.700           | 4.710                  |
|           |            | 5470~5725  | 4.900           | 7.910                  |
|           |            | 5725~5850  | 4.600           | 7.610                  |
|           |            | 5850~5895  | 4.100           | 5.141                  |
| monopole  | GW.05.0153 | 5150~5250  | 2.460           | 5.470                  |
|           |            | 5250~5350  | 2.482           | 5.492                  |
|           |            | 5470~5725  | 4.267           | 7.277                  |
|           |            | 5725~5850  | 2.226           | 5.236                  |
|           |            | 5850~5895  | 4.043           | 5.074                  |
| Ant. Type | Part No.   | Freq.(MHz) | Peak Gain (dBi) | Directional Gain (dBi) |
| monopole  | 2JZ74      | 5925~6425  | 4.10            | 7.11                   |
|           |            | 6425~6525  | 5.40            | 8.41                   |
|           |            | 6525~6875  | 5.50            | 8.51                   |
|           |            | 6875~7125  | 4.30            | 7.31                   |
| monopole  | GW.05.0153 | 5925~6425  | 4.41            | 7.42                   |
|           |            | 6425~6525  | 3.17            | 6.18                   |
|           |            | 6525~6875  | 3.71            | 6.72                   |
|           |            | 6875~7125  | 5.33            | 8.34                   |

#### Note:

- Antenna information is provided by the applicant.
- As per section F. 2). e). (ii) of FCC KDB 662911 D01

If antenna gains are not equal and each transmit antenna is driven by only one spatial stream, directional gain may be calculated by either of the following formulas.

$$DirectionalGain = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

NSS = the number of independent spatial streams of data;

NANT = the total number of antennas

gj,k = / 20 10Gk if the kth antenna is being fed by spatial stream j, or zero if it is not;

Gk is the gain in dBi of the kth antenna.

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## 2 FCC MAXIMUM PERMISSIBLE EXPOSURE (MPE)

### 2.1 FCC Standard Applicable

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Mobile device, the MPE is required.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for Maximum Permissible Exposure (MPE)

| Frequency Range (MHz)                               | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm <sup>2</sup> ) | Averaging Time (minute) |
|-----------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|-------------------------|
| 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 <sup>2</sup> )              | 30                      |
| 30-300                                              | 27.5                          | 0.073                         | 0.2                                 | 30                      |
| 300-1500                                            | /                             | /                             | f/1500                              | 30                      |
| 1500-100000                                         | /                             | /                             | 1.0                                 | 30                      |

f = frequency in MHz

\* = Plane-wave equipment power density

Prediction of MPE limit at a given distance

$$S = PG / 4\pi R^2$$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

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## 2.2 Power Density Calculation (Worst Case)

| Operation Mode | Evaluation Frequency (MHz) | Operation Distance (cm) | Max. Output Power Include Tolerance (dBm) | Antenna Gain (dBi) | Max. EIRP (mW) | Power Density (PD) (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) | Pass / Fail | Power Density / Limit |
|----------------|----------------------------|-------------------------|-------------------------------------------|--------------------|----------------|------------------------------------------|-----------------------------|-------------|-----------------------|
| BT             | 2480                       | 20                      | 13                                        | 4.900              | 61.66          | 0.0123                                   | 1.000                       | Pass        | 0.012                 |
| WLAN 2.4G      | 2442                       | 20                      | 22                                        | 7.910              | 979.49         | 0.195                                    | 1.000                       | Pass        | 0.195                 |
| WLAN 5.2G      | 5250                       | 20                      | 22.15                                     | 5.470              | 578.10         | 0.115                                    | 1.000                       | Pass        | 0.115                 |
| WLAN 5.3G      | 5350                       | 20                      | 22.14                                     | 5.492              | 579.70         | 0.115                                    | 1.000                       | Pass        | 0.115                 |
| WLAN 5.6G      | 5725                       | 20                      | 21                                        | 7.910              | 778.04         | 0.155                                    | 1.000                       | Pass        | 0.155                 |
| WLAN 5.8G      | 5850                       | 20                      | 22                                        | 7.610              | 914.11         | 0.182                                    | 1.000                       | Pass        | 0.182                 |
| WLAN 5.9G      | 5845                       | 20                      | 19.5                                      | 5.141              | 291.14         | 0.058                                    | 1.000                       | Pass        | 0.058                 |
| WLAN 6G        | 6525                       | 20                      | 10                                        | 8.510              | 70.96          | 0.014                                    | 1.000                       | Pass        | 0.014                 |

## 2.3 Collocated Power Density Calculation

| Operation Mode | $\Sigma$<br>(Power Density / Limit) |
|----------------|-------------------------------------|
| 2.4G + 6G      | 0.209                               |
| 2.4G + 5G      | 0.377                               |
| 2.4G + 5.9G    | 0.253                               |
| 6G + BT        | 0.026                               |
| 5G + BT        | 0.194                               |
| 5.9G + BT      | 0.070                               |

### Note:

1.  $\Sigma(\text{Power Density} / \text{Limit})$ : This is a summation of [(Power Density for each transmitter/antenna included in the simultaneous transmission) / (corresponding MPE limit)].
2. Considering the collocated transmitters, the aggregated (Power Density / limit) is smaller than 1, and MPE of collocated transmitters is compliant

~ End of Report ~

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