



# Radio Frequency Exposure

Applicant : Micro-Star Int'l Co.,Ltd.

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Address : No.69, Lide St., Zhonghe Dist. New Taipei City 235  
Taiwan

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Equipment : Wireless Keyboard

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Model No. : MS-8ZAC

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Trade Name : msi

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FCC ID : I4L-MS-8ZAC

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## I HEREBY CERTIFY THAT :

The sample was received on Jun. 16, 2025 and the testing was completed on Jun. 25, 2025 at CerpPASS Technology Corp. The test result refers exclusively to the test presented test model / sample. Without written approval of CerpPASS Technology Corp., the test report shall not be reproduced except in full.

Approved by:

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Mark Liao / Supervisor

Laboratory Accreditation:

CerpPASS Technology Corporation Test Laboratory





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### History of this test report

| Report No.       | Issued Date   | Description |
|------------------|---------------|-------------|
| 25060276-TRFCC02 | Jul. 16, 2025 | Original    |
|                  |               |             |
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## 1. Summary of Test Procedure and Test Results

### 1.1. Applicable Standards

#### FCC Rules and Regulations Part 2.1091

| FCC Rule | Description of Test      | Result |
|----------|--------------------------|--------|
| 2.1091   | Radio Frequency Exposure | PASS   |

\*The lab has reduced the uncertainty risk factor from test equipment, environment and staff technicians which according to the standard on contract. Therefore, the test result will only be determined by standard requirement, measurement uncertainty evaluation is not considered.



## 2. Test Configuration of Equipment under Test

### 2.1. Feature of Equipment under Test

|                           |                |
|---------------------------|----------------|
| Operation Frequency Range | 2400-2483.5MHz |
| Center Frequency Range    | 2408-2474MHz   |
| Modulation Type           | GFSK           |
| Modulation Technology     | DTS            |
| Data Rate                 | 1Mbps          |
| Antenna Type              | PCB Antenna    |
| Antenna Gain              | 2.08 dBi       |

Note: For more details, please refer to the User's manual of the EUT.



## 2.2. General Information of Test

|                              |                                                                                                                                                                                        |                  |  |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--|
| Organization                 | CerpPASS Technology Corp.                                                                                                                                                              |                  |  |
| ☒ Test Site                  | CerpPASS Technology Corporation Test Laboratory<br>Address: No.10, Ln. 2, Lianfu St., Luzhu Dist., Taoyuan City 33848, Taiwan (R.O.C.)<br>Tel: +886-3-3226-888<br>Fax: +886-3-3226-881 |                  |  |
|                              | FCC                                                                                                                                                                                    | TW1439, TW1079   |  |
|                              | IC                                                                                                                                                                                     | 4934E-1, 4934E-2 |  |
| Frequency Range Investigated | Conducted: from 150kHz to 30 MHz<br>Radiation: from 30 MHz to 40,000MHz                                                                                                                |                  |  |
| Test Distance                | The test distance of radiated emission from antenna to EUT is 3 M.                                                                                                                     |                  |  |

| Test Item                        | Test Site  | Test period | Environmental Conditions | Tested By  |
|----------------------------------|------------|-------------|--------------------------|------------|
| RF Conducted                     | RFCON01-NK | 2025/06/25  | 26.3°C / 48%             | Leon Huang |
| Radiated Emissions               | 3M03-NK    | 2025/06/20  | 21.6°C / 57%             | Leon Huang |
| Radiated Emissions               | 3M03-NK    | 2025/06/23  | 23.1°C / 58%             | Leon Huang |
| AC Power Line Conducted Emission | CON02-NK   | 2025/06/20  | 21.5°C / 56%             | Leon Huang |

## 2.3. Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

| Measurement Item                         | Uncertainty |
|------------------------------------------|-------------|
| AC Power Line Conduction(150K~30MHz)     | ±3.2dB      |
| Radiated Spurious Emission(9KHz~30MHz)   | ±3.5dB      |
| Radiated Spurious Emission(30MHz~1GHz)   | ±5.1dB      |
| Radiated Spurious Emission(1GHz~40GHz)   | ±5.2dB      |
| Conducted Spurious Emission              | ±2.1dB      |
| 6dB Bandwidth                            | ±5.4%       |
| 20dB Bandwidth                           | ±4.4%       |
| Occupied Bandwidth                       | ±4.5%       |
| Peak Output Power(Conducted Power Meter) | ±1.1dB      |
| Dwell Time / Deactivation Time           | ±7.6%       |
| Power Spectral Density                   | ±2.0dB      |
| Duty Cycle                               | ±3.5%       |



### 3. Test Equipment and Ancillaries Used for Tests

| Test Item                        | Radiated Emissions           |                      |              |                  |            |
|----------------------------------|------------------------------|----------------------|--------------|------------------|------------|
| Test Site                        | Semi Anechoic Room (3M03-NK) |                      |              |                  |            |
| Instrument                       | Manufacturer                 | Model No             | Serial No    | Calibration Date | Valid Date |
| Bilog Antenna                    | Sunol                        | JB1                  | A020514-2    | 2024/07/09       | 2025/07/08 |
| Active Loop Antenna              | EMCO                         | 6507                 | 00040855     | 2025/04/28       | 2026/04/27 |
| Horn Antenna                     | EMCO                         | 3116                 | 31974        | 2024/10/18       | 2025/10/17 |
| Double Ridged Guide Horn Antenna | RF SPAN                      | DRH18-E              | 210309A18-ES | 2024/08/28       | 2025/08/27 |
| Spectrum Analyzer                | ROHDE & SCHWARZ              | FSV 40-N             | 102151       | 2024/08/22       | 2025/08/21 |
| EMI Receiver                     | ROHDE & SCHWARZ              | ESCI                 | 101423       | 2024/07/16       | 2025/07/15 |
| Preamplifier                     | EMC INSTRUMENTS              | EMC0518A45SE         | 981069       | 2024/12/17       | 2025/12/16 |
| Preamplifier                     | EMC INSTRUMENTS              | EMC184045            | 980065       | 2024/10/15       | 2025/10/14 |
| Preamplifier                     | EM Electronics corp.         | EM330                | 60611        | 2025/03/28       | 2026/03/27 |
| Cable-4m(9k-3G)                  | EMEC                         | RG-223               | 18274M       | 2024/08/08       | 2025/08/07 |
| Cable-8m(10M-26.5G)              | HUBER SUHNER                 | SF126E               | 587396/126E  | 2024/10/14       | 2025/10/13 |
| Cable-3m(10M-26.5G)              | HUBER SUHNER                 | SF126E               | 587399/126E  | 2024/10/14       | 2025/10/13 |
| Cable-1m(10M-40G)                | HUBER SUHNER                 | SF102                | 804398/2     | 2024/10/14       | 2025/10/13 |
| Cable-1m(1G-26.5G)               | HUBER SUHNER                 | SF126E               | 589848/126E  | 2024/10/14       | 2025/10/13 |
| Cable-4m(30M-1G)                 | HUBER SUHNER                 | RG-214               | 02953M       | 2024/09/04       | 2025/09/03 |
| Cable-1m(30M-1G)                 | HUBER SUHNER                 | RG-214               | 05094M       | 2024/09/04       | 2025/09/03 |
| Cable-9m(30M-1G)                 | HUBER SUHNER                 | RG-214               | 00402M       | 2024/09/04       | 2025/09/03 |
| E3                               | AUDIX                        | v8.2014-8-6          | RK-000529    | NA               | NA         |
| High Pass Filter                 | Warison                      | WFIL-H3000-18000F-03 | WRJ5CFWC2J1  | 2024/07/03       | 2025/07/02 |
| Highpass Filter                  | WOKEN                        | WFIL-H7000-18000F-01 | WR377WC2B2   | 2024/10/15       | 2025/10/14 |

| Test Item           | RF Conducted    |              |            |                  |            |
|---------------------|-----------------|--------------|------------|------------------|------------|
| Test Site           | RFCON01-NK      |              |            |                  |            |
| Instrument          | Manufacturer    | Model No     | Serial No  | Calibration Date | Valid Date |
| Spectrum Analyzer   | ROHDE & SCHWARZ | FSP 40       | 100047     | 2025/03/03       | 2026/03/02 |
| Attenuator          | KEYSIGHT        | 8491B        | MY39250703 | 2025/02/12       | 2026/02/11 |
| Cable-0.5m(30M-40G) | HUBER SUHNER    | SUCOFLEX 102 | 28420/2    | 2024/10/24       | 2025/10/23 |
| Power Meter         | Anritsu         | ML2495A      | 1224005    | 2025/02/12       | 2026/02/11 |
| Power Sensor        | Anritsu         | MA2411B      | 1207295    | 2025/02/12       | 2026/02/11 |
| Switch Box          | Theda           | 1-4          | TW5451159  | NA               | NA         |

| Test Item          | AC Power Line Conducted Emission |             |           |                  |            |
|--------------------|----------------------------------|-------------|-----------|------------------|------------|
| Test Site          | CON02-NK                         |             |           |                  |            |
| Instrument         | Manufacturer                     | Model No    | Serial No | Calibration Date | Valid Date |
| EMI Receiver       | ROHDE & SCHWARZ                  | ESCI        | 101423    | 2024/07/16       | 2025/07/15 |
| Two-Line V-Network | ROHDE & SCHWARZ                  | ENV216      | 102185    | 2024/08/27       | 2025/08/26 |
| Cable-4m(9k-3G)    | EMEC                             | RG-223      | 18274M    | 2024/08/08       | 2025/08/07 |
| E3                 | AUDIX                            | v8.2014-8-6 | RK-000536 | NA               | NA         |



## 4. Radio Frequency Exposure

### 4.1. Applicable Standards

| <div><input type="checkbox"/></div> <div>§1.1307(b)(3)(i)(A)</div>              | <div>The available maximum time-averaged power is no more than 1 mW, regardless of separation distance.</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                        |                    |   |                    |                                              |  |                  |           |  |           |                    |  |                    |   |     |   |      |       |   |        |                      |      |   |    |        |   |       |                                              |    |   |     |       |   |        |                     |     |   |       |        |   |         |                                |       |   |         |         |   |        |                    |
|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------|---|--------------------|----------------------------------------------|--|------------------|-----------|--|-----------|--------------------|--|--------------------|---|-----|---|------|-------|---|--------|----------------------|------|---|----|--------|---|-------|----------------------------------------------|----|---|-----|-------|---|--------|---------------------|-----|---|-------|--------|---|---------|--------------------------------|-------|---|---------|---------|---|--------|--------------------|
| <div><input type="checkbox"/></div> <div>§1.1307(b)(3)(i)(c)</div>              | <div>ERP is below a threshold calculated based on the distance , R between the person and t antenna / radiating structure, where <math>R &gt; \lambda / 2 \pi</math>.</div> <div><div>TABLE B.1—THRESHOLDS FOR SINGLE RF SOURCES<br/>SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION</div><table><tr><th colspan="3">RF Source<br/>Frequency</th><th colspan="3">Minimum Distance</th><th>Threshold<br/>ERP</th></tr><tr><th><math>f_L</math> MHz</th><th></th><th><math>f_H</math> MHz</th><th><math>\lambda_L / 2\pi</math></th><th></th><th><math>\lambda_H / 2\pi</math></th><th>W</th></tr><tr><td>0.3</td><td>–</td><td>1.34</td><td>159 m</td><td>–</td><td>35.6 m</td><td>1,920 R<sup>2</sup></td></tr><tr><td>1.34</td><td>–</td><td>30</td><td>35.6 m</td><td>–</td><td>1.6 m</td><td>3,450 R<sup>2</sup>/<i>f</i><sup>2</sup></td></tr><tr><td>30</td><td>–</td><td>300</td><td>1.6 m</td><td>–</td><td>159 mm</td><td>3.83 R<sup>2</sup></td></tr><tr><td>300</td><td>–</td><td>1,500</td><td>159 mm</td><td>–</td><td>31.8 mm</td><td>0.0128 R<sup>2</sup><i>f</i></td></tr><tr><td>1,500</td><td>–</td><td>100,000</td><td>31.8 mm</td><td>–</td><td>0.5 mm</td><td>19.2R<sup>2</sup></td></tr></table><div>Subscripts L and H are low and high; <math>\lambda</math> is wavelength.<br/>From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns.</div></div> | RF Source<br>Frequency |                    |   | Minimum Distance   |                                              |  | Threshold<br>ERP | $f_L$ MHz |  | $f_H$ MHz | $\lambda_L / 2\pi$ |  | $\lambda_H / 2\pi$ | W | 0.3 | – | 1.34 | 159 m | – | 35.6 m | 1,920 R <sup>2</sup> | 1.34 | – | 30 | 35.6 m | – | 1.6 m | 3,450 R <sup>2</sup> / <i>f</i> <sup>2</sup> | 30 | – | 300 | 1.6 m | – | 159 mm | 3.83 R <sup>2</sup> | 300 | – | 1,500 | 159 mm | – | 31.8 mm | 0.0128 R <sup>2</sup> <i>f</i> | 1,500 | – | 100,000 | 31.8 mm | – | 0.5 mm | 19.2R <sup>2</sup> |
| RF Source<br>Frequency                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                        | Minimum Distance   |   |                    | Threshold<br>ERP                             |  |                  |           |  |           |                    |  |                    |   |     |   |      |       |   |        |                      |      |   |    |        |   |       |                                              |    |   |     |       |   |        |                     |     |   |       |        |   |         |                                |       |   |         |         |   |        |                    |
| $f_L$ MHz                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | $f_H$ MHz              | $\lambda_L / 2\pi$ |   | $\lambda_H / 2\pi$ | W                                            |  |                  |           |  |           |                    |  |                    |   |     |   |      |       |   |        |                      |      |   |    |        |   |       |                                              |    |   |     |       |   |        |                     |     |   |       |        |   |         |                                |       |   |         |         |   |        |                    |
| 0.3                                                                             | –                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1.34                   | 159 m              | – | 35.6 m             | 1,920 R <sup>2</sup>                         |  |                  |           |  |           |                    |  |                    |   |     |   |      |       |   |        |                      |      |   |    |        |   |       |                                              |    |   |     |       |   |        |                     |     |   |       |        |   |         |                                |       |   |         |         |   |        |                    |
| 1.34                                                                            | –                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 30                     | 35.6 m             | – | 1.6 m              | 3,450 R <sup>2</sup> / <i>f</i> <sup>2</sup> |  |                  |           |  |           |                    |  |                    |   |     |   |      |       |   |        |                      |      |   |    |        |   |       |                                              |    |   |     |       |   |        |                     |     |   |       |        |   |         |                                |       |   |         |         |   |        |                    |
| 30                                                                              | –                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 300                    | 1.6 m              | – | 159 mm             | 3.83 R <sup>2</sup>                          |  |                  |           |  |           |                    |  |                    |   |     |   |      |       |   |        |                      |      |   |    |        |   |       |                                              |    |   |     |       |   |        |                     |     |   |       |        |   |         |                                |       |   |         |         |   |        |                    |
| 300                                                                             | –                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1,500                  | 159 mm             | – | 31.8 mm            | 0.0128 R <sup>2</sup> <i>f</i>               |  |                  |           |  |           |                    |  |                    |   |     |   |      |       |   |        |                      |      |   |    |        |   |       |                                              |    |   |     |       |   |        |                     |     |   |       |        |   |         |                                |       |   |         |         |   |        |                    |
| 1,500                                                                           | –                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 100,000                | 31.8 mm            | – | 0.5 mm             | 19.2R <sup>2</sup>                           |  |                  |           |  |           |                    |  |                    |   |     |   |      |       |   |        |                      |      |   |    |        |   |       |                                              |    |   |     |       |   |        |                     |     |   |       |        |   |         |                                |       |   |         |         |   |        |                    |
| <div><input checked="" type="checkbox"/></div> <div>§ 1.1307(b)(3)(i)(B).</div> | <div>Device operates between 300 MHz and 6 GHz and the maximum time-averaged power or effective radiated power (ERP), whichever is greater, <math>\leq P_{th}</math></div> <div><math display="block">P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x &amp; d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} &amp; 20 \text{ cm} &lt; d \leq 40 \text{ cm} \end{cases}</math></div> <div>Where</div> <div><math display="block">x = -\log_{10} \left( \frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}</math></div> <div>and</div> <div><math display="block">ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f &amp; 0.3 \text{ GHz} \leq f &lt; 1.5 \text{ GHz} \\ 3060 &amp; 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}</math></div> <div><math>d</math> = the separation distance (cm);</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                        |                    |   |                    |                                              |  |                  |           |  |           |                    |  |                    |   |     |   |      |       |   |        |                      |      |   |    |        |   |       |                                              |    |   |     |       |   |        |                     |     |   |       |        |   |         |                                |       |   |         |         |   |        |                    |





#### 4.2. EUT Specification

|                                                                                                                                         |                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequency band (Operating)                                                                                                              | <input checked="" type="checkbox"/> SRD: 2408MHz -2474MHz                                                                                                                                                                      |
| Device category                                                                                                                         | <input checked="" type="checkbox"/> Portable (<20cm separation)<br><input type="checkbox"/> Mobile (>20cm separation)                                                                                                          |
| Antenna diversity                                                                                                                       | <input checked="" type="checkbox"/> Single antenna<br><input type="checkbox"/> Multiple antennas<br><input type="checkbox"/> Tx diversity<br><input type="checkbox"/> Rx diversity<br><input type="checkbox"/> Tx/Rx diversity |
| Evaluation applied                                                                                                                      | <input type="checkbox"/> Blanket 1 mW Blanket Exemption<br><input type="checkbox"/> MPE-based Exemption<br><input checked="" type="checkbox"/> SAR-based Exemption                                                             |
| <b>Remark:</b><br>The maximum conducted output power is <u>-0.89dBm (0.815mW)</u> at <u>2474MHz</u> (with <u>2.08dBi</u> antenna gain.) |                                                                                                                                                                                                                                |

#### 4.3. Result

GFSK(1Mbps)

| Channel Frequency (MHz) | Max. Conducted output power (dBm) | Max. Tune up power (dBm) | Max. Tune up power (mW) | Antenna Gain(dBi) | Max.Tune up e.i.r.p. Power (dBm) | Max.Tune up e.r.p. Power (dBm) | Max.Tune up e.r.p. Power (mW) | Distance (mm) | SAR test exclusion thresholds (mW) |
|-------------------------|-----------------------------------|--------------------------|-------------------------|-------------------|----------------------------------|--------------------------------|-------------------------------|---------------|------------------------------------|
| 2408-2474               | -0.89                             | -0.39                    | 0.91                    | 2.08              | 1.69                             | -0.46                          | 0.90                          | 5             | 2.72                               |

No non-compliance noted.

-----THE END OF REPORT-----