



Test report No:
2390782R-RF-US-P20V02

FCC & ISSED EXPOSURE TEST REPORT

| | |
|--|--|
| Product Name | Mobile Computer |
| Trademark | Elo |
| Model and /or type reference | EMC-M51 |
| FCC ID | RBWEMCM51 |
| IC | 10757B-EMCM51 |
| Applicant's name / address | Elo Touch Solutions, Inc 670 N. McCarthy Blvd., Suite 100, Milpitas, CA 95035, USA. |
| Test method requested, standard | FCC 47CFR §2.1093 RSS-102: Issue 6, 2023 |
| Verdict Summary | IN COMPLIANCE |
| Documented By (name / position & signature) | Tim Cao / Project Manager  |
| Approved by (name / position & signature) | Jack Zhang / Manager  |
| Date of issue | 2024-11-06 |
| Report Version | V1.0 |
| Report template No | Template_FCC-MPE-RF-V1.0 |

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The results presented in this Test Report apply only to the particular item under test established in this document.

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GENERAL CONDITIONS

| | |
|----------------------|--|
| Test Location | No. 99, Hongye Road, Suzhou Industrial Park Suzhou, 215006, P.R. China |
| Date(receive sample) | Mar. 20, 2024 |
| Date (start test) | Jun. 01, 2024 |
| Date (finish test) | Jun. 30, 2024 |

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or Competent Authorities.
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ENVIRONMENTAL CONDITIONS

The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. The climatic conditions during the tests were within the following limits:

| | |
|-----------------------|---------------|
| Ambient temperature | 15 °C – 35 °C |
| Relative Humidity air | 30% - 60% |

If explicitly required in the basic standard or applied product / product family standard the climatic values are recorded and documented separately in this test report.

POSSIBLE TEST CASE VERDICTS

| | |
|---|-----------------|
| Test case does not apply to test object | N/A |
| Test object does meet requirement | P (Pass) / PASS |
| Test object does not meet requirement | F (Fail) / FAIL |
| Not measured | N/M |

ABBREVIATIONS

For the purposes of the present document, the following abbreviations apply:

| | |
|-------|-------------------------------|
| EUT | : Equipment Under Test |
| QP | : Quasi-Peak |
| CAV | : CISPR Average |
| AV | : Average |
| CDN | : Coupling Decoupling Network |
| SAC | : Semi-Anechoic Chamber |
| OATS | : Open Area Test Site |
| BW | : Bandwidth |
| AM | : Amplitude Modulation |
| PM | : Pulse Modulation |
| HCP | : Horizontal Coupling Plane |
| VCP | : Vertical Coupling Plane |
| U_N | : Nominal voltage |
| T_x | : Transmitter |
| R_x | : Receiver |
| N/A | : Not Applicable |
| N/M | : Not Measured |

DOCUMENT HISTORY

| Report No. | Version | Description | Issued Date |
|-----------------------|---------|--------------------------|-------------|
| 2390782R-RF-US-P20V02 | V1.0 | Initial issue of report. | 2024-11-06 |
| | | | |
| | | | |
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| | | | |
| | | | |

REMARKS AND COMMENTS

1. The equipment under test (EUT) does meet the essential requirements of the stated standard(s)/test(s).
2. These test results on a sample of the device are for the purpose of demonstrating Compliance with FCC 47CFR §2.1093, RSS-102 Issue 6.
3. The measurement result is considered in conformance with the requirement if it is within the prescribed limit, It is not necessary to account the uncertainty associated with the measurement result.
4. The test results relate only to the samples tested.
5. The test report shall not be reproduced without the written approval of DEKRA Testing and Certification (Suzhou) Co., Ltd.
6. This report will not be used for social proof function in China market.
7. DEKRA declines any responsibility with the following test data provided by customer that may affect the validity of result:
 - Chapter 1.1 General Description of the Item(s);
 - Chapter 1.2 Antenna Informaion;

1 GENERAL INFORMATION

1.1 General Description of the Item(s)

| | |
|--|--|
| Product Name..... : | Mobile Computer |
| Model No. : | EMC-M51 |
| Trademark. : | Elo |
| FCC ID : | RBWEMCM51 |
| IC : | 10757B-EMCM51 |
| Hardware Version : | V1.06 |
| Software Version : | MT912NoGms_EQ000_2774.F53FD5F.FD20B6E.6EAD44F_240130_100_V01_T23 |
| Manufacturer : | Elo Touch Solutions, Inc |
| Manufacturer Address..... : | 670 N. McCarthy Blvd., Suite 100, Milpitas, CA 95035, USA. |
| Factory : | ShuoGe Intelligent Technology Co.,Ltd. |
| Factory address..... : | Room 308-310, Building 1, No.2 8th Road, Baiyang Street, Qiantang New Area, Hangzhou City, Zhejiang Province, P.R. China(310018) |
| Operating temperature..... : | -20 ~ +50℃ |
| Note: This report is based on 2390782R-RF-US-P20V01. The customer stated that the new EUT has removed the WCDMA and LTE and NR modules and the rest are identical. We verified the worst channel test on the new EUT and the test results did not get worse. Therefore, this report reuses the test data of 2390782R-RF-US-P20V01. | |

| | |
|-------------------------------------|-----------|
| Wireless Specification..... : | NFC |
| Operating frequency range(s)..... : | 13.56 MHz |
| Type of modulation : | ASK |
| Number of channel..... : | 1 |

Note: The NFC function only supports individual transmission. Doesn't work at the same time with other wireless features.

| | | |
|--------------------------|-------------------------------------|---------------------------|
| Rated power supply | Voltage and Frequency | |
| | <input type="checkbox"/> | AC: 220 - 240 V, 50/60 Hz |
| | <input type="checkbox"/> | AC: 100 - 240 V, 50/60 Hz |
| | <input checked="" type="checkbox"/> | Battery: 3.8 Vdc |
| | <input checked="" type="checkbox"/> | Adapter: |
| Adapter Model | UES45LCP-SPC | |
| | Input: 100-240 V ~ 50/60 Hz, 1.3 A | |
| | Output: 5.0 V / 3.0 A, 15.0 W; | |
| | 9.0 V / 3.0 A, 27.0 W; | |
| | 12.0 V / 3.0 A, 36.0 W; | |
| | 15.0 V / 3.0 A, 45.0 W; | |
| | 20.0 V / 2.25 A, 45.0 W Max; | |
| Mounting position..... : | <input type="checkbox"/> | Tabletop equipment |

| | | |
|--|-------------------------------------|--------------------------------|
| | <input type="checkbox"/> | Wall/Ceiling mounted equipment |
| | <input type="checkbox"/> | Floor standing equipment |
| | <input checked="" type="checkbox"/> | Hand-held/Portable equipment |
| | <input type="checkbox"/> | Other: |

1.2 Antenna Informaion

| | | | |
|----------------------------------|-------------------------------------|--------------|--|
| Antenna Delivery | <input checked="" type="checkbox"/> | 1TX + 1RX | |
| | <input type="checkbox"/> | 2TX + 2RX | |
| | <input type="checkbox"/> | Others:..... | |
| Antenna technology | <input checked="" type="checkbox"/> | SISO | |
| | <input type="checkbox"/> | MIMO | <input type="checkbox"/> CDD |
| | | | <input type="checkbox"/> Beam-forming |
| Antenna Type | <input type="checkbox"/> | External | <input type="checkbox"/> Dipole |
| | | | <input type="checkbox"/> Sectorized |
| | | | <input checked="" type="checkbox"/> Internal |
| | <input checked="" type="checkbox"/> | Internal | <input type="checkbox"/> Ceramic Chip |
| | | | <input type="checkbox"/> PIFA |
| | | | <input checked="" type="checkbox"/> LOOP |
| <input type="checkbox"/> Others: | | | |
| Antenna Gain..... | N/A | | |

Note: The general description of the Item(s), antenna information in clause 1 are provided and confirmed by the client.

2. RF Exposure Evaluation

2.1. Limits: KDB 447498 D01 and RSS-102 Issue 6

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table. The equation and threshold in 4.3.1 must be applied to determine SAR test exclusion

| MHz | 5 | 10 | 15 | 20 | 25 | mm |
|------|----|----|-----|-----|-----|---|
| 150 | 39 | 77 | 116 | 155 | 194 | SAR Test Exclusion Threshold (mW) |
| 300 | 27 | 55 | 82 | 110 | 137 | |
| 450 | 22 | 45 | 67 | 89 | 112 | |
| 835 | 16 | 33 | 49 | 66 | 82 | |
| 900 | 16 | 32 | 47 | 63 | 79 | |
| 1500 | 12 | 24 | 37 | 49 | 61 | |
| 1900 | 11 | 22 | 33 | 44 | 54 | |
| 2450 | 10 | 19 | 29 | 38 | 48 | |
| 3600 | 8 | 16 | 24 | 32 | 40 | |
| 5200 | 7 | 13 | 20 | 26 | 33 | |
| 5400 | 6 | 13 | 19 | 26 | 32 | |
| 5800 | 6 | 12 | 19 | 25 | 31 | |

According to RSS 102 Issue 6: From RSS-102 Issue 6, Section 6.3 Exemption
No SAR Evaluation Required if power is below the following threshold:

| Frequency (MHz) | ≤ 5 mm (mW) | 10 mm (mW) | 15 mm (mW) | 20 mm (mW) | 25 mm (mW) | 30 mm (mW) | 35 mm (mW) | 40 mm (mW) | 45 mm (mW) | > 50 mm (mW) |
|-----------------|-------------|------------|------------|------------|------------|------------|------------|------------|------------|--------------|
| ≤ 300 | 45 | 116 | 139 | 163 | 189 | 216 | 246 | 280 | 319 | 362 |
| 450 | 32 | 71 | 87 | 104 | 124 | 147 | 175 | 208 | 248 | 296 |
| 835 | 21 | 32 | 41 | 54 | 72 | 96 | 129 | 172 | 228 | 298 |
| 1900 | 6 | 10 | 18 | 33 | 57 | 92 | 138 | 194 | 257 | 323 |
| 2450 | 3 | 7 | 16 | 32 | 56 | 89 | 128 | 170 | 209 | 245 |
| 3500 | 2 | 6 | 15 | 29 | 50 | 72 | 94 | 114 | 134 | 158 |
| 5800 | 1 | 5 | 13 | 23 | 32 | 41 | 54 | 74 | 102 | 128 |

Simultaneous Transmission SAR Test Exemption with Respect to Multiple Exemption Criteria

Either SAR-based or MPE-based exemption may be considered for test exemption for fixed, mobile, or portable device exposure conditions; therefore, the contributions from each exemption in conjunction with the measured SAR (Evaluated_k term) shall be used to determine exemption for simultaneous transmission according to Formula (C.1) [repeated from § 1.1307(b)(3)(ii)(B)].

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure Limit_k} \leq 1 \quad (C.1)$$

- number of fixed, mobile, or portable RF sources claiming exemption using the § 1.1307(b)(3)(i)(B) formula for P_{th}, including existing exempt transmitters and those being added.
- number of fixed, mobile, or portable RF sources claiming exemption using the applicable § 1.1307(b)(3)(i)(C) Table 1 formula for Threshold ERP, including existing exempt transmitters and those being added.
- number of existing fixed, mobile, or portable RF sources with known evaluation for the specified minimum distance.

P_i the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source i at a distance between 0.5 cm and 40 cm (inclusive).

P_{th,i} the exemption threshold power (P_{th}) according to the § 1.1307(b)(3)(i)(B) formula for fixed, mobile, or portable RF source i. ERP_j the available maximum time-averaged power or the ERP, whichever is greater, of fixed, mobile, or portable RF source j. ERP_{th,j} exemption threshold ERP for fixed, mobile, or portable RF source j, at a distance of at least λ/2π, according to the applicable § 1.1307(b)(3)(i)(C) Table 1 formula at the location in question.

Evaluated_k the maximum reported SAR or MPE of fixed, mobile, or portable RF source k either in the device or at the transmitter site from an existing evaluation.

Exposure

Limit_k either the general population/uncontrolled maximum permissible exposure (MPE) or specific absorption rate (SAR) limit for each fixed, mobile, or portable sources, as applicable

The sum of the ratios of the applicable terms for SAR-based, MPE-based and measured SAR or MPE shall be less than 1, to determine simultaneous transmission exposure compliance.

2.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 18°C and 78% RH.

2.3. Test Result of RF Exposure Evaluation

| Mode | Exposure Condition | Pmax (dBm) | Pmax (mW) | Distance (mm) | f(MHz) | FCC Pth (mW) |
|------|--------------------|------------|-----------|---------------|--------|--------------|
| NFC | Body | -59.32 | 1.20E-06 | 5 | 13.56 | 39 |

| Mode | Exposure Condition | Pmax (dBm) | Pmax (mW) | Distance (mm) | f(MHz) | ISED Pth (mW) |
|------|--------------------|------------|-----------|---------------|--------|---------------|
| NFC | Body | -59.32 | 1.20E-06 | 5 | 13.56 | 45 |

Maximum TX Power is -59.32dBm \approx 1.20E-06 mW

Since the FCC and ISED thresholds do not control 100MHz, the linear calculation shows that the 13.56MHz threshold will be much higher than the 150MHz and 300MHz thresholds, so the FCC and ISED thresholds use a stricter minimum frequency threshold.

Conclusion: No SAR evaluation required since maximum Transmitter Pout is below FCC IC threshold.

_____ The End _____