



### **EMC TEST REPORT**

|   | Eme 120   | 1121 0111  |  |
|---|---|--|--|
| Applicant:  | Xiaomi Communications Co., Lt   | d.   |  |
| Address:  | #019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085 |  |  |
|   |   |  |  |
| Manufacturer or Supplier:   | Xiaomi Communications Co., Lt   | d.   |  |
| Address:  | #019, 9th Floor, Building 6, 33 X<br>China, 100085  | (i'erqi Middle Road, Haidian District, Beijing,    |  |
| Product:  | Mobile Phone  |  |  |
| Brand Name:   | REDMI   |  |  |
| Model Name:   | 2510DRA23L  |  |  |
| FCC ID:   | 2AFZZRA23L  |  |  |
| Date of tests:  | Aug. 11, 2025 ~ Aug. 30, 2025   |  |  |
| The submitted sa  |   | s been tested for according to the requirements of |  |
|   | Subpart B, Class A<br>Subpart B, Class B<br>2014  |  |  |
| CONCLUSION:   | The submitted sample was foun   | nd to <u>COMPLY</u> with the test requirement      |  |
| Prepared by Hanwen Xu  Engineer / Mobile Department  Approved by Peibo Sun  Manager / Mobile Department |   |  |  |
| Ru Hannen Simfei bo   |   | Simpei bo  |  |

Date: Aug. 30, 2025

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# **TABLE OF CONTENTS**

| TA     | <b>ABLE OF</b> | CONTENTS  | 2             |
|--------|----------------|---|---------------|
| RI     | ELEASE         | CONTROL RECORD  | 3             |
| 1      |                | RAL INFORMATION   |               |
|        | 1.1 GE         | ENERAL DESCRIPTION OF EUT                               | 4             |
|        | 1.2 SL         | IMMARY OF TEST RESULTS                                  | 6             |
|        | 1.3 ME         | EASUREMENT UNCERTAINTY                                  | 7             |
|        | 1.4 DE         | SCRIPTION OF TEST MODES                                 | 8             |
|        | 1.5 DE         | SCRIPTION OF SUPPORT UNITS                              | 10            |
| 2      | EMISS          | ION TEST  | 11            |
|        |                | DUCTED EMISSION MEASUREMENT                             |               |
|        |                | IMITS OF CONDUCTED EMISSION MEASUREMENT                 |               |
|        | 2.1.2          | TEST INSTRUMENTS  |               |
|        | 2.1.3          | TEST PROCEDURES   |               |
|        | 2.1.4          | DEVIATION FROM TEST STANDARD                            | 12            |
|        | 2.1.5          | TEST SETUP  |               |
|        | 2.1.6          | EUT OPERATING CONDITIONS                                |               |
|        | 2.1.7          | TEST RESULTS  | 14            |
|        | 2.2 RA         | ADIATED EMISSION MEASUREMENT                            | 16            |
|        | 2.2.1          | LIMITS OF RADIATED EMISSION MEASUREMENT                 | 16            |
|        | 2.2.2          | TEST INSTRUMENTS  | 17            |
|        | 2.2.3          | TEST PROCEDURE  | 18            |
|        | 2.2.4          | DEVIATION FROM TEST STANDARD                            | 19            |
|        | 2.2.5          | TEST SETUP  | 20            |
|        | 2.2.6          | EUT OPERATING CONDITIONS                                | 20            |
|        | 2.2.7          | TEST RESULTS  | 21            |
| 3<br>B | APPEN          | IDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGI | ES TO THE EUT |



# **RELEASE CONTROL RECORD**

| ISSUE NO.             | REASON FOR CHANGE | DATE ISSUED   |  |
|-----------------------|-------------------|---------------|--|
| PSU-QBJ2508070215EM01 | Original release  | Aug. 30, 2025 |  |

### 1 GENERAL INFORMATION

### 1.1 GENERAL DESCRIPTION OF EUT

| PRODUCT*                | Mobile Phone                                   |   |  |
|-------------------------|--|---|--|
| BRAND NAME*             | REDMI  |   |  |
| MODEL NAME*             | 2510DRA23L                                     |   |  |
| NOMINAL<br>VOLTAGE*     | 5/3.6-11V dc(adapter of 3.92Vdc(Li-ion,battery |   |  |
|                         | BT_LE  | GFSK  |  |
|                         | Bluetooth                                      | GFSK, π/4-DQPSK, 8DPSK  |  |
| MODULATION              | WLAN   | DSSS, OFDM  |  |
| TYPE*                   | GSM/GPRS/EDGE                                  | GMSK, 8PSK  |  |
|                         | WCDMA  | QPSK/16QAM  |  |
|                         | LTE  | QPSK/16QAM/64QAM  |  |
|                         | Bluetooth/BT_LE                                | 2402MHz ~ 2480MHz   |  |
| OPERATING<br>FREQUENCY* | WLAN   | 2412 ~ 2462MHz for 11b/g/n(HT20)<br>5180 ~ 5240MHz, 5260 ~ 5320 MHz,<br>5500 ~ 5720MHz, 5745 ~ 5825 MHz for 11a/<br>n(HT20)/ n(HT40) / ac(VHT20)/ ac(VHT40) /<br>ac(VHT80)  |  |
|                         | GSM  | 824.2MHz ~ 848.8MHz (FOR GSM 850)<br>1850.2MHz ~ 1909.8MHz (FOR GSM 1900)   |  |
|                         | WCDMA  | 1852.4MHz ~ 1907.6MHz(FOR WCDMA Band 2)<br>1712.4MHz ~ 1752.6MHz(FOR WCDMA Band 4)<br>826.4MHz ~ 846.6MHz (FOR WCDMA Band 5)  |  |
| OPERATING<br>FREQUENCY  | LTE  | 1850.7MHz ~ 1909.3MHz (FOR LTE Band2)<br>1710.7MHz ~ 1754.3MHz (FOR LTE Band4)<br>824.7MHz ~ 848.3MHz (FOR LTE Band5)<br>2502.5MHz ~ 2567.5MHz (FOR LTE Band7)<br>699.7MHz ~ 715.3MHz (FOR LTE Band12)<br>779.5MHz ~ 784.5MHz (FOR LTE Band13)<br>814.7MHz ~ 848.3MHz (FOR LTE Band26)<br>2572.5MHz ~ 2617.5MHz (FOR LTE Band38)<br>2498.5MHz ~2687.5MHz (FOR LTE Band41)<br>1710.7MHz ~ 1779.3MHz (FOR LTE Band66) |  |
| HW VERSION*             | 99007_1_12                                     |   |  |
| SW VERSION*             | Xiaomi HyperOS 2.2                             |   |  |



| I/O PORTS*            | Refer to user's manual  |
|-----------------------|---|
| CABLE<br>SUPPLIED*    | USB cable1: non-shielded cable, with w/o ferrite core, 1.0 meter USB cable2: non-shielded cable, with w/o ferrite core, 1.0 meter USB cable3: non-shielded cable, with w/o ferrite core, 1.0 meter USB cable4: non-shielded cable, with w/o ferrite core, 1.0 meter |
| ACCESSORY<br>DEVICES* | Refer to note as below  |

#### NOTE:

- 1. \*Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information, Test Lab is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.
- 2. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- 3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in the test report.

### 1.2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: FCC Part 15, Subpart B              |                                       |            |           |
|---|---------------------------------------|------------|-----------|
| Standard Section                                      | Test Item                             | Result     | Test lab* |
| FCC Part 15,<br>Subpart B, Class B<br>ANSI C63.4:2014 | Conducted Test                        | Compliance | А         |
|   | Radiated Emission Test (30MHz ~ 1GHz) | Compliance | А         |
| ANSI 003.4.2014                                       | Radiated Emission Test (Above 1GHz)   | Compliance | А         |

### \*Test Lab Information Reference

#### Lab A:

Huarui 7Layers High Technology (Suzhou) Co., Ltd.

#### Lab Address:

Tower N, Innovation Center, 88 Zuyi Road, High-tech District, Suzhou City, Anhui Province, China Accredited Test Lab Cert 6613.01

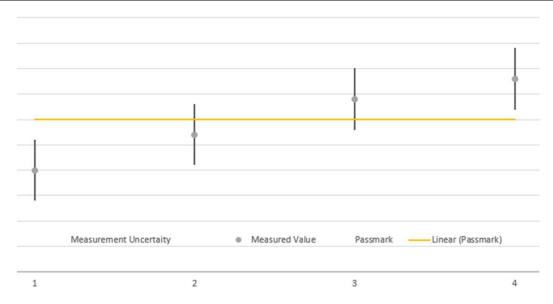
The FCC Site Registration No. is 434559; The Designation No. is CN1325.

### 1.3 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

| MEASUREMENT            | FREQUENCY      | UNCERTAINTY |
|------------------------|----------------|-------------|
| Conducted emissions    | 150kHz ~ 30MHz | ±2.70dB     |
|                        | 30MHz~1GHz     | ±4.98dB     |
| De diete de enciacione | 1GHz ~6GHz     | ±4.70dB     |
| Radiated emissions     | 6GHz ~18GHz    | ±4.60dB     |
|                        | 18GHz ~40GHz   | ±4.12dB     |



The verdicts in this test report are given according the above diagram:

| Case | Measured Value  | Uncertainty Range | Verdict |
|------|-----------------|-------------------|---------|
| 1    | below pass mark | below pass mark   | Passed  |
| 2    | below pass mark | within pass mark  | Passed  |
| 3    | above pass mark | within pass mark  | Failed  |
| 4    | above pass mark | above pass mark   | Failed  |

That means, the laboratory applies, as decision rule (see ISO/IEC 17025:2017), the so-called shared risk principle.

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### 1.4 DESCRIPTION OF TEST MODES

| Test<br>Mode | Test Condition  |
|--------------|---|
|              | Radiated emission test  |
| 1            | GSM850 Idle + Adapter 1 + USB cable 1 + Front Camera On + SIM1 + sample1 + SD Card                            |
| 2            | WCDMA B5 Idle + Adapter 2 + USB cable 2 + Back Camera On + SIM2 + sample1                                     |
| 3            | LTE B5 Idle + Adapter 1 + USB cable 3 + flashlight on + SIM1 + sample1 + SD Card                              |
| 4            | LTE B12 Idle + Adapter 2 + USB cable 4 + MPG4 + SIM2 + sample1  |
| 5            | LTE B13 Idle + Wired reverse charging + SIM1 + sample1 + SD Card  |
| 6            | LTE B26 Idle + Powered by battery + SIM2 + sample1 + Earphone + Playing music                                 |
| 7            | GSM850 Idle + USB Link + Data Transmission + Notebook to EUT + SIM1 + sample1 + SD Card + USB cable 1/2       |
| 8            | WCDMA B5 Idle + USB Link + Data Transmission + SD Card to Notebook + SIM1 + sample1 + SD Card + USB cable 3/4 |
| 9            | worse of 1~8 (mode7) + sample2  |
| 10           | worse of 1~8 (mode7) + sample3  |
| 11           | worse of 1~8 (mode7) + sample4  |
| 12           | worse of 1~8 (mode7) + sample5  |
| 13           | worse of 1~8 (mode7) + sample6  |
| 14           | worse of 1~8 (mode7) + sample7  |

| Test<br>Mode          | Test Condition   |
|-----------------------|--|
|                       | Conducted emission test  |
| 1                     | GSM850 Idle + Adapter 1 + USB cable 1 + Front Camera On + SIM1 + sample1 + SD<br>Card                        |
| 2                     | WCDMA B5 Idle + Adapter 2 + USB cable 2 + Back Camera On + SIM2 + sample1                                    |
| 3                     | LTE B5 Idle + Adapter 1 + USB cable 3 + flashlight on + SIM1 + sample1 + SD Card                             |
| 4                     | LTE B12 Idle + Adapter 2 + USB cable 4 + MPG4 + SIM2 + sample1   |
| 5                     | LTE B13 Idle + USB Link + Data Transmission + Notebook to EUT + SIM1 + sample1 + SD Card + USB cable 1/2     |
| 6                     | LTE B26 Idle + USB Link + Data Transmission + SD Card to Notebook + SIM1 + sample1 + SD Card + USB cable 3/4 |
| 7                     | worse of 1~6 (mode3) + sample2   |
| 8                     | worse of 1~6 (mode3) + sample3   |
| 9                     | worse of 1~6 (mode3) + sample4   |
| 10                    | worse of 1~6 (mode3) + sample5   |
| 11                    | worse of 1~6 (mode3) + sample6   |
| 12                    | worse of 1~6 (mode3) + sample7   |
| <b>NOTE:</b> 1. For r | radiated emission test, Pre-scan all mode, test mode 10 was the worst case and only this                     |

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mode was presented in this report

2. For conducted emission test, Pre-scan all mode, mode 7 was the worst case and only this mode was presented in this report.



### 1.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

### **FOR All TESTS**

| NO. | PRODUCT                              | BRAND         | MODEL NO.    | SERIAL NO. | FCC ID |
|-----|--------------------------------------|---------------|--------------|------------|--------|
| 1   | Laptop                               | Lenovo        | Thinkpad E14 | SL10W47313 | N/A    |
| 2   | Micro SD                             | SAM SUNG      | N/A          | N/A        | N/A    |
| 3   | Universal radio communication tester | Rohde&Schwarz | CMW500       | 169399     | N/A    |
| 4   | WIFI Router                          | HUAWEI        | N/A          | N/A        | N/A    |
| 5   | Adapter                              | N/A           | N/A          | N/A        | N/A    |
| 6   | USB Cable                            | N/A           | N/A          | N/A        | N/A    |

| NO. | SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS |
|-----|---|
| 1   | USB Line: Shielded, Detachable 1m;                  |

### 2.1.1 CONDUCTED EMISSION MEASUREMENT

### 2.1.2 IMITS OF CONDUCTED EMISSION MEASUREMENT

TEST STANDARD: FCC Part 15, Subpart B (Section: 15.107 a CLASS B)

| FREQUENCY OF EMISSION (MHz)     | CONDUCTED LIMIT (dBµV) |          |  |
|---------------------------------|------------------------|----------|--|
|                                 | Quasi-peak             | Average  |  |
| 0.15 ~ 0.5<br>0.5 ~ 5<br>5 ~ 30 | 66 to 56               | 56 to 46 |  |
|                                 | 56                     | 46       |  |
|                                 | 60                     | 50       |  |

TEST STANDARD: FCC Part 15, Subpart B (Section: 15.107 b CLASS A)

| FREQUENCY OF EMISSION (MHz) | CONDUCTED LIMIT (dBµV) |          |  |
|-----------------------------|------------------------|----------|--|
|                             | Quasi-peak             | Average  |  |
| 0.15 ~ 0.5<br>0.5 ~ 30      | 79<br>73               | 66<br>60 |  |

NOTE: 1. The lower limit shall apply at the transition frequencies.

- 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
- 3. All emanations from a class A/B digital device or system, including any network of conductors

and apparatus connected thereto, shall not exceed the level of field strengths specified above.

### 2.1.3 TEST INSTRUMENTS

| Equipment                                | Manufacturer  | Model No. | Serial No. | Last Cal. | Next Cal. |
|--|---------------|-----------|------------|-----------|-----------|
| WIDEBANDRADIO<br>COMMUNICATION<br>TESTER | Rohde&Schwarz | CMW500    | 169399     | Jun.19,24 | Jun.18,26 |
| EMI Test Receiver                        | Rohde&Schwarz | ESR3      | 102749     | Mar.28,24 | Mar.27,26 |
| ELEKTRA test software                    | Rohde&Schwarz | ELEKTRA   | NA         | N/A       | N/A       |
| LISN network                             | Rohde&Schwarz | ENV216    | 102640     | Mar.28,24 | Mar.27,26 |
| CABLE                                    | Rohde&Schwarz | W61.01    | N/A        | Apr.26,25 | Apr.25,26 |
| CABLE                                    | Rohde&Schwarz | W601      | N/A        | Apr.26,25 | Apr.25,26 |

**NOTE:** 1. The test was performed in CE shielded room.

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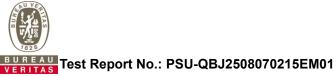
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- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150 kHz to 30MHz was searched. Emission levels under (Limit 20dB) were not recorded.

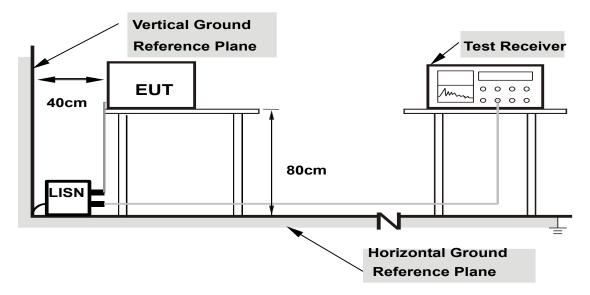
**NOTE:** All modes of operation were investigated and the worst-case emissions are reported.

### 2.1.4 DEVIATION FROM TEST STANDARD

No deviation.



### 2.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

For the actual test configuration, please refer to the attached file (Test Setup Photo).

### 2.1.6 EUT OPERATING CONDITIONS

- a. Turned on the power and connected of all equipment.
- b. EUT was operated according to the use type described in the manufacturer's specifications or the user's manual.

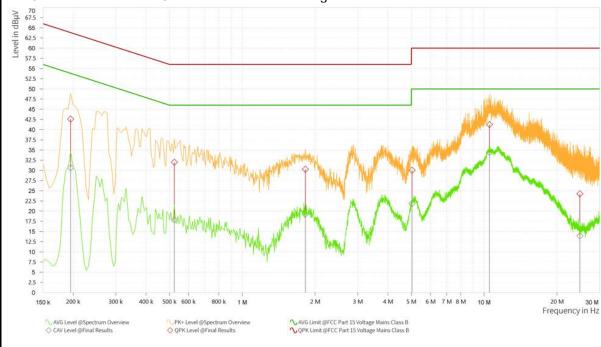


### 2.1.7 TEST RESULTS

| TEST VOLTAGE             | Unnut 120 Vac 60 Hz |           | Quasi-Peak (QP) /<br>Average (AV), 9 kHz |
|--------------------------|---------------------|-----------|--|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 51%RH     | TESTED BY | Hanwen Xu                                |

| Rg | Frequency<br>[MHz] | QPK<br>Level<br>[dBμV] | QPK<br>Limit<br>[dBμV] | QPK<br>Margin<br>[dB] | CAV<br>Level<br>[dBµV] | CAV:<br>AVG<br>Limit<br>[dBµV] | CAV<br>Margin<br>[dB] | Correction<br>[dB] | Line | Meas.<br>BW<br>[kHz] |
|----|--------------------|------------------------|------------------------|-----------------------|------------------------|--------------------------------|-----------------------|--------------------|------|----------------------|
| 1  | 0.195              | 42.59                  | 63.82                  | 21.23                 | 30.63                  | 53.82                          | 23.19                 | 9.79               | L1   | 9.000                |
| 1  | 0.524              | 32.01                  | 56.00                  | 23.99                 | 17.88                  | 46.00                          | 28.12                 | 9.75               | L1   | 9.000                |
| 1  | 1.824              | 30.28                  | 56.00                  | 25.72                 | 19.30                  | 46.00                          | 26.70                 | 9.80               | L1   | 9.000                |
| 1  | 5.033              | 30.05                  | 60.00                  | 29.95                 | 21.88                  | 50.00                          | 28.12                 | 10.13              | L1   | 9.000                |
| 1  | 10.527             | 41.25                  | 60.00                  | 18.75                 | 34.46                  | 50.00                          | 15.54                 | 11.12              | L1   | 9.000                |
| 1  | 24.869             | 24.23                  | 60.00                  | 35.77                 | 13.93                  | 50.00                          | 36.07                 | 13.73              | L1   | 9.000                |

- 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
- 2. The emission levels of other frequencies were very low against the limit.
- 3. Margin value = Limit value- Emission level
- 4. Correction factor = Insertion loss + Cable loss + Attenuate
- 5. Emission Level = Correction Factor + Reading Value.

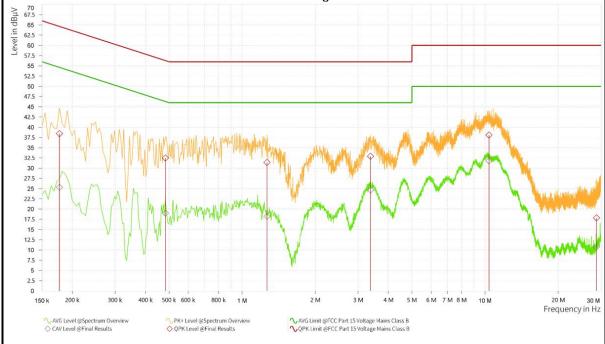




| TEST VOLTAGE             | Input 120 Vac. 60 Hz |           | Quasi-Peak (QP) /<br>Average (AV), 9 kHZ |
|--------------------------|----------------------|-----------|--|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 51%RH      | TESTED BY | Hanwen Xu                                |

| Rg | Frequency<br>[MHz] | QPK<br>Level<br>[dBµV] | QPK<br>Limit<br>[dBμV] | QPK<br>Margin<br>[dB] | CAV<br>Level<br>[dBµV] | CAV:<br>AVG<br>Limit<br>[dBµV] | CAV<br>Margin<br>[dB] | Correction [dB] | Line | Meas.<br>BW<br>[kHz] |
|----|--------------------|------------------------|------------------------|-----------------------|------------------------|--------------------------------|-----------------------|-----------------|------|----------------------|
| 1  | 0.177              | 38.42                  | 64.63                  | 26.21                 | 25.32                  | 54.63                          | 29.31                 | 9.82            | Ν    | 9.000                |
| 1  | 0.483              | 32.48                  | 56.29                  | 23.81                 | 19.00                  | 46.29                          | 27.29                 | 9.76            | Ν    | 9.000                |
| 1  | 1.266              | 31.38                  | 56.00                  | 24.62                 | 18.24                  | 46.00                          | 27.76                 | 9.79            | Ν    | 9.000                |
| 1  | 3.377              | 32.92                  | 56.00                  | 23.08                 | 24.63                  | 46.00                          | 21.37                 | 10.01           | Ν    | 9.000                |
| 1  | 10.383             | 38.11                  | 60.00                  | 21.89                 | 31.78                  | 50.00                          | 18.22                 | 11.15           | Ν    | 9.000                |
| 1  | 28.775             | 17.82                  | 60.00                  | 42.18                 | 10.76                  | 50.00                          | 39.24                 | 14.50           | Ν    | 9.000                |

- 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
- 2. The emission levels of other frequencies were very low against the limit.
- 3. Margin value = Limit value- Emission level
- 4. Correction factor = Insertion loss + Cable loss + Attenuate
- 5. Emission Level = Correction Factor + Reading Value.



### 2.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

### TEST STANDARD: FCC Part 15, Subpart B (Section: 15.109)

Emissions radiated outside of the specified bands, shall be according to the general radiated limits as following:

| Radiated Emissions Limits at 3 meters (dBμV/m) |                                 |                     |  |  |
|--|---------------------------------|---------------------|--|--|
| Frequencies (MHz)                              | FCC 15B Class A FCC 15B Class B |                     |  |  |
| 30-88  | 49.54                           | 40                  |  |  |
| 88-216   | 53.98                           | 43.5                |  |  |
| 216-960  | 56.9                            | 46                  |  |  |
| 960-1000                                       | 60                              | 54                  |  |  |
| Above 1000                                     | Avg: 60<br>Peak: 80             | Avg: 54<br>Peak: 74 |  |  |

Frequency Range (For unintentional radiators)

| Highest frequency generated or used in the device or on which the device operates or tunes (MHz) | Upper frequency of measurement range (MHz)   |
|--|--|
| Below 1.705  | 30   |
| 1.705-108  | 1000   |
| 108-500  | 2000   |
| 500-1000   | 5000   |
| Above 1000   | 5 <sup>th</sup> harmonic of the highest<br>frequency or 40GHz, whichever is<br>lower |

**NOTE:** 1. The lower limit shall apply at the transition frequencies.

- 2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
- 3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.
- 4. QP detector shall be applied if not specified.



### 2.2.2 TEST INSTRUMENTS

Frequency range below 1GHz

| Equipment                                | Manufacturer                       | Model No.                                       | Serial No. | Last Cal. | Next Cal. |
|--|------------------------------------|---|------------|-----------|-----------|
| WIDEBANDRADIO<br>COMMUNICATION<br>TESTER | Rohde&Schwarz                      | CMW500  | 169399     | Jun.19,24 | Jun.18,26 |
| 3m Semi-anechoic<br>Chamber              | TDK                                | 9m*6m*6m HRSW-SZ-<br>9m*6m*6m EMC-<br>02Chamber |            | Aug.20,25 | Aug.19,28 |
| Bilog Antenna                            | SCHWARZBECK                        | VULB 9163                                       | 1264       | Jul.04,25 | Jul.03,27 |
| EMI Test Receiver                        | R&S                                | ESW44   | 101973     | Mar.28,24 | Mar.27,26 |
| Measurement Software                     | R&S                                | ELEKTRA   | N/A        | N/A       | N/A       |
| 6DB attenuator                           | Tonscend<br>Technology Co.,<br>Ltd | N/A   | 23062787   | N/A       | N/A       |
| Pre-Amplifier                            | R&S                                | SCU08F1   | 101028     | Jan.22,24 | Jan.21,26 |
| CABLE                                    | R&S                                | W13.01  | N/A        | Apr.26,25 | Apr.25,26 |
| CABLE                                    | R&S                                | W13.02  | N/A        | Apr.26,25 | Apr.25,26 |
| CABLE                                    | R&S                                | W12.14  | N/A        | Apr.26,25 | Apr.25,26 |

Frequency range above 1GHz

| Equipment                                | Manufacturer  | Model No. | Serial No.                    | Last Cal. | Next Cal. |
|--|---------------|-----------|-------------------------------|-----------|-----------|
| WIDEBANDRADIO<br>COMMUNICATION<br>TESTER | Rohde&Schwarz | CMW500    | 169399                        | Jun.19,24 | Jun.18,26 |
| 3m Fully-anechoic<br>Chamber             | TDK           | 9m*6m*6m  | HRSW-SZ-<br>EMC-<br>01Chamber | Nov.24,22 | Nov.23,25 |
| Horn Antenna                             | ETS-LINDGREN  | 3117      | 227836                        | Aug.20,25 | Aug.19,27 |
| EMI Test Receiver                        | R&S           | ESW44     | 101973                        | Mar.28,24 | Mar.27,26 |
| Pre-Amplifier                            | R&S           | SCU08F1   | 101028                        | Jan.22,24 | Jan.21,26 |
| Measurement Software                     | R&S           | ELEKTRA   | N/A                           | N/A       | N/A       |
| CABLE                                    | R&S           | W13.01    | N/A                           | Apr.26,25 | Apr.25,26 |
| CABLE                                    | R&S           | W13.02    | N/A                           | Apr.26,25 | Apr.25,26 |
| CABLE                                    | R&S           | W12.14    | N/A                           | Apr.26,25 | Apr.25,26 |

**NOTE:** 1. The calibration interval of the above test instruments is 12/24/36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

2. The test was performed in 3m Chamber.

### 2.2.3 TEST PROCEDURE

### <Frequency Range below 1GHz>

The basic test procedure was in accordance with ANSI C63.4:2014 (section 12).

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from 1 meter to 4 meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1GHz.

#### NOTE:

- 1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
- 2. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) (if the raw value not contains the amplifier);
- 4. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) Amplifier Gain(dB) (if the raw value contains the amplifier).
- 5. Margin value = Limit value Emission level.

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter fully-anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. The bore sight should be used during the test above 1GHz.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz

#### NOTE:

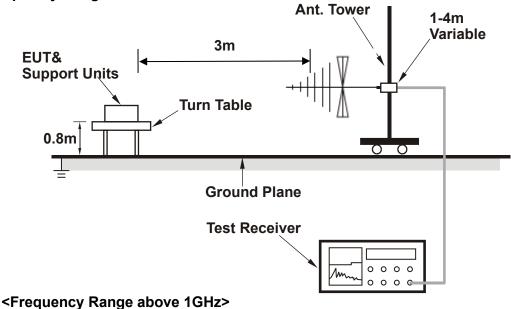
- 1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
- 2. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak detection at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth of test receiver/spectrum analyzer is 1Hz for Average detection (AV) at frequency above 1GHz.
- 3. For measurement of frequency above 1000 MHz, the EUT was set 3 meters away from the receiver antenna.
- 4. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
- 5. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) (if the raw value not contains the amplifier);
- 6. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) Amplifier Gain(dB) (if the raw value contains the amplifier)
- 7. Margin value = Limit value- Emission level.

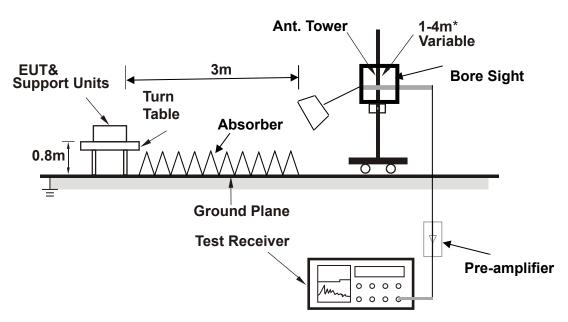
### 2.2.4 DEVIATION FROM TEST STANDARD

No deviation.



### <Frequency Range below 1GHz>





**Note**: Above 1G is a directional antenna depends on the EUT height and the antenna 3dB bandwidth both, refer to section 7.3 of CISPR 16-2-3.

### 2.2.6 EUT OPERATING CONDITIONS

Same as item 2.1.6.

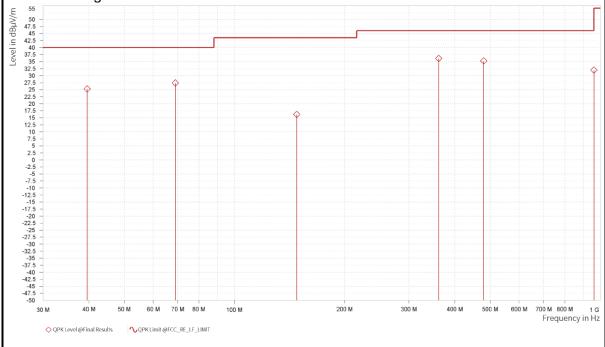


### 2.2.7 TEST RESULTS

| TEST VOLTAGE             | Input 120 Vac, 60 Hz | FREQUENCY RANGE                                | 30-1000 MHz         |
|--------------------------|----------------------|--|---------------------|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH      | DETECTOR FUNCTION<br>& RESOLUTION<br>BANDWIDTH | Quasi-Peak, 120 kHz |
| TESTED BY                | Hanwen Xu            |  |                     |

|    | ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                       |                       |                       |                    |              |                  |                          |                   |  |  |
|----|---|-----------------------|-----------------------|-----------------------|--------------------|--------------|------------------|--------------------------|-------------------|--|--|
|    |   |                       |                       |                       |                    |              |                  |                          |                   |  |  |
| Rg | Frequency<br>[MHz]                                  | QPK Level<br>[dBμV/m] | QPK Limit<br>[dBμV/m] | QPK<br>Margin<br>[dB] | Correction<br>[dB] | Polarization | Azimuth<br>[deg] | Antenna<br>Height<br>[m] | Meas. BW<br>[kHz] |  |  |
| 1  | 39.592  | 25.27                 | 40.00                 | 14.73                 | -11.46             | Н            | 359              | 1.00                     | 120.000           |  |  |
| 1  | 68.962  | 27.36                 | 40.00                 | 12.64                 | -14.19             | Н            | 358.6            | 1.00                     | 120.000           |  |  |
| 1  | 148.071   | 16.17                 | 43.50                 | 27.33                 | -15.08             | Н            | 1.4              | 2.00                     | 120.000           |  |  |
| 1  | 361.902   | 36.13                 | 46.00                 | 9.87                  | -5.50              | Н            | 75.8             | 1.00                     | 120.000           |  |  |
| 1  | 480.026   | 35.25                 | 46.00                 | 10.75                 | -4.09              | Н            | 283              | 2.00                     | 120.000           |  |  |
| 1  | 960.068   | 31.95                 | 54.00                 | 22.05                 | 2.27               | Н            | 283              | 2.00                     | 120.000           |  |  |

- 1. Emission level(dBuV/m)=Read Value(dBuV) + Correction Factor(dB/m)
- 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) -Amplifier Gain
- 3. The other emission levels were very low against the limit.
- Margin value = Limit value –. Emission level.

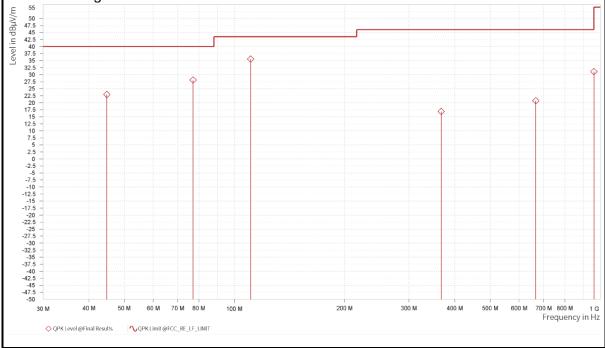




| TEST VOLTAGE             | Input 120 Vac, 60 Hz | FREQUENCY RANGE                                | 30-1000 MHz         |
|--------------------------|----------------------|--|---------------------|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70 %RH     | DETECTOR FUNCTION<br>& RESOLUTION<br>BANDWIDTH | Quasi-Peak, 120 kHz |
| TESTED BY                | Hanwen Xu            |  |                     |

|    | ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |                       |                       |                       |                    |              |                  |                          |                   |  |  |
|----|---|-----------------------|-----------------------|-----------------------|--------------------|--------------|------------------|--------------------------|-------------------|--|--|
|    |   |                       |                       |                       |                    |              |                  |                          |                   |  |  |
| Rg | Frequency<br>[MHz]                                | QPK Level<br>[dBμV/m] | QPK Limit<br>[dBμV/m] | QPK<br>Margin<br>[dB] | Correction<br>[dB] | Polarization | Azimuth<br>[deg] | Antenna<br>Height<br>[m] | Meas. BW<br>[kHz] |  |  |
| 1  | 44.819  | 22.91                 | 40.00                 | 17.09                 | -10.27             | ٧            | 359              | 1.00                     | 120.000           |  |  |
| 1  | 77.153  | 28.07                 | 40.00                 | 11.93                 | -16.49             | V            | 359              | 1.00                     | 120.000           |  |  |
| 1  | 110.726   | 35.54                 | 43.50                 | 7.96                  | -12.66             | V            | 0.9              | 2.00                     | 120.000           |  |  |
| 1  | 367.237   | 16.87                 | 46.00                 | 29.13                 | -5.16              | V            | 75.8             | 1.00                     | 120.000           |  |  |
| 1  | 665.781   | 20.70                 | 46.00                 | 25.30                 | -3.16              | V            | 4.9              | 1.00                     | 120.000           |  |  |
| 1  | 960.014   | 31.10                 | 54.00                 | 22.90                 | 2.27               | V            | 203              | 2.00                     | 120.000           |  |  |

- 1. Emission level(dBuV/m)=Read Value(dBuV) + Correction Factor(dB/m)
- 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) Amplifier Gain
- 3. The other emission levels were very low against the limit.
- 4. Margin value = Limit value –. Emission level.

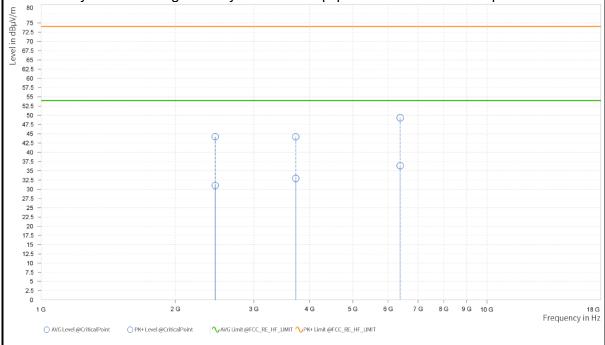




| TEST VOLTAGE             | Input 120 Vac, 60 Hz | FREQUENCY RANGE                          | 1-18 GHz            |
|--------------------------|----------------------|--|---------------------|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70 %RH     | DETECTOR FUNCTION & RESOLUTION BANDWIDTH | Peak/Average, 1 MHz |
| TESTED BY                | Hanwen Xu            |  |                     |

|    | ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                    |                       |                       |                       |                       |                       |                       |                    |              |                  |                          |
|----|---|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------------------|--------------|------------------|--------------------------|
| Ι. |   |                    |                       |                       |                       |                       |                       |                       |                    |              |                  |                          |
|    | Rg  | Frequency<br>[MHz] | PK+ Level<br>[dBμV/m] | PK+ Limit<br>[dBμV/m] | PK+<br>Margin<br>[dB] | AVG Level<br>[dBµV/m] | AVG Limit<br>[dBμV/m] | AVG<br>Margin<br>[dB] | Correction<br>[dB] | Polarization | Azimuth<br>[deg] | Antenna<br>Height<br>[m] |
|    | 1   | 2,457.500          | 44.23                 | 74.00                 | 29.77                 | 31.00                 | 54.00                 | 23.00                 | 6.26               | Н            | 1                | 1.00                     |
|    | 1   | 3,725.500          | 44.18                 | 74.00                 | 29.82                 | 32.95                 | 54.00                 | 21.05                 | 8.67               | Н            | 36.7             | 2.00                     |
| II | 1   | 6,387.000          | 49.35                 | 74.00                 | 24.65                 | 36.37                 | 54.00                 | 17.63                 | 14.48              | Н            | 36.7             | 2.00                     |

- 1. Peak detector quick scan is shown on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
- 2. Negative sign (-) in the margin column signify levels below the limit.
- 3. Frequency range scanned: 1GHz to 5th harmonic of the highest frequency or 40GHz, whichever is lower. For frequency above 18GHz, the emission was tested 20db below the limit so the data not recorded in the sheet.
- 4. Only emissions significantly above the equipment noise floor are reported.





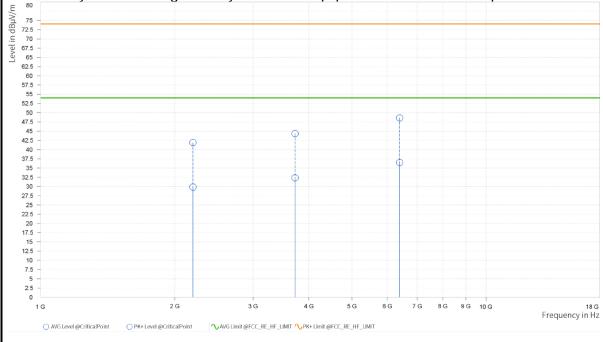
| TEST VOLTAGE             | Input 120 Vac, 60 Hz | FREQUENCY RANGE                          | 1-18 GHz            |
|--------------------------|----------------------|--|---------------------|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70 %RH     | DETECTOR FUNCTION & RESOLUTION BANDWIDTH | Peak/Average, 1 MHz |
| TESTED BY                | Hanwen Xu            |  |                     |

|    | ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |       |       |       |       |       |       |       |   |       |      |
|----|---|-------|-------|-------|-------|-------|-------|-------|---|-------|------|
| Rg | Rg Frequency PK+ Level PK+ Limit [dBμV/m] [dBμV/m] PK+ Limit [dBμV/m] AVG Level AVG Limit [dBμV/m] [dBμV/m] Polarization Azimuth Height [deg] Algebra Polarization [deg] Antenna Height [deg] PK+ Limit [deg] |       |       |       |       |       |       |       |   |       |      |
| 1  | 2,198.500   | 41.90 | 74.00 | 32.10 | 29.87 | 54.00 | 24.13 | 5.80  | V | 359.1 | 1.00 |
| 1  | 3,725.500   | 44.34 | 74.00 | 29.66 | 32.34 | 54.00 | 21.66 | 8.67  | V | 157.5 | 2.00 |
| 1  | 6,395.000   | 48.60 | 74.00 | 25.40 | 36.50 | 54.00 | 17.50 | 14.47 | V | 157.5 | 2.00 |

#### **REMARKS:**

- 1. Peak detector quick scan is shown on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
- 2. Negative sign (-) in the margin column signify levels below the limit.
- 3. Frequency range scanned: 1GHz to 5th harmonic of the highest frequency or 40GHz, whichever is lower. For frequency above 18GHz, the emission was tested 20db below the limit so the data not recorded in the sheet.

4. Only emissions significantly above the equipment noise floor are reported.





# 3 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications were made to the EUT by the lab during the test.

---END---