

Test Report No.: 23122202-01-RF-US-05

FCC Part 15, Subpart C Test Report

FCC ID: ARS-10BDL5051T

Applicant: Top Victory Electronics (Taiwan) Co Ltd

Address: 10F., No.230, Liancheng Rd., Zhonghe Dist., New Taipei City, 23553
Taiwan

Manufacturer: MMD(Shanghai)Electronics Technology Co Ltd

Address: Room 5060A No 2 Building 555 Dong Chan Road, Min Hang District,
SHANGHAI 200241, CHINA

Product(s): Colour Monitor

Brand(s): Philips

Test Model(s): 10BDL5051T

Series Model(s): See section 2.1

Test Date: Mar. 16, 2024~ Apr. 03, 2024

Issued Date: Apr. 03, 2024

Issued By: Hwa-Hsing (Dongguan) Testing Co., Ltd.

Address: No.101, Building N1, Yuyuan 2 Road, Yuyuan Industrial Park, HuangJiang
Town, Dongguan City, People's Republic of China

Test Firm Registration No.: 915896

Designation No.: CN1255

Standards: FCC Part 15, Subpart C, Section 15.225

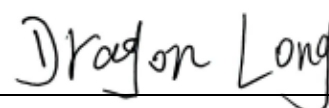
The above equipment has been tested by **Hwa-Hsing (Dongguan) Testing Co., Ltd.**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by :



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Release

Ver. 1.5

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Release Control Record

| Issue No. | Description | Date Issued |
|----------------------|------------------|---------------|
| 23122202-01-RF-US-05 | Original Release | Apr. 03, 2024 |

1 Summary of Test Results

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: FCC Part 15, Subpart C | | | |
|--|---|--------|--------------------------------|
| STANDARD SECTION | TEST TYPE AND LIMIT | RESULT | REMARK |
| 15.207 | AC Power Conducted Emission | PASS | Meet the requirement of limit. |
| 15.225 (a)&(b)&(c) | The field strength of any emissions within the band | PASS | Meet the requirement of limit. |
| 15.225 (d) | The field strength of any emissions appearing outside of the 13.110-14.010 MHz band | PASS | Meet the requirement of limit. |
| 15.225 (e) | Frequency tolerance | PASS | Meet the requirement of limit. |
| 15.215 (c) | 20dB Bandwidth | PASS | Meet the requirement of limit. |
| 15.203 | Antenna Requirement | PASS | No antenna connector is used. |

1.1 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:

The listed uncertainties are the worst-case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

| Measurement | Frequency | Expanded Uncertainty (k=2) (±) |
|--------------------------------|-----------------|--------------------------------|
| Radiated Emissions up to 1 GHz | 9KHz ~ 30MHz | 2.16 dB |
| | 30MHz ~ 1000MHz | 3.47 dB |
| Conducted emissions | 9kHz~30MHz | 2.70dB |

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

2 General Information

2.1 General Description of EUT

| | |
|-----------------------|---|
| Product(s) | Colour Monitor |
| Test Model(s) | 10BDL5051T |
| Series Model(s) | 10BDL ***** The “*” could be any alphanumeric character including blank for marketing differentiation. |
| Normal Voltage | DC 12V from Adapter or DC 48V from POE |
| Modulation Technology | NFC |
| Modulation Type | ASK |
| Operating Frequency | 13.56MHz |
| Number Of Channel | 1 |
| Maximum Output Power | 53.41dBuV/m (Measured Max.) |
| Antenna Type | Loop antenna |
| Antenna Connector | I-PEX |
| I/O Ports | Refer to user's manual |
| Data Cable Supplied | Adapter Cable: Unshielded, 180cm |

Note:

1. Please refer to the EUT photo document (Reference No.: 23122202-01-01&02) for detailed product photo.
2. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.
3. For the test results, the EUT had been tested with all conditions, and only the worst case was shown in the test report.
4. Model difference: These models are only different from model name for trade purpose.
5. For the test results, the EUT had been tested with all power supply type, and only the worst case was shown in the test report.

2.2 Description of Test Modes

The EUT only have one channel:

| CHANNEL | FREQUENCY (MHz) |
|---------|-----------------|
| 1 | 13.56 |

2.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports

The worst case was found when positioned on X axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

| EUT CONFIGURE MODE | APPLICABLE TO | | | | DESCRIPTION |
|--------------------|---------------|----|-----|----|-------------------------------------|
| | RE | FT | PLC | BW | |
| A | √ | √ | √ | √ | DC12V from adapter via AC120V input |

Where RE: Radiated Emission

PLC: Power Line Conducted Emission

FT: Frequency tolerance

BW: 20dB Bandwidth

RADIATED EMISSION TEST:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis, antenna ports (if EUT with antenna diversity architecture) and packet type.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

| EUT CONFIGURE MODE | TESTED CHANNEL | TESTED FREQUENCY (MHZ) | MODULATION TYPE | AXIS |
|--------------------|----------------|------------------------|-----------------|------|
| A | 1 | 13.56 | ASK | X |

FREQUENCY TOLERANCE:

- ☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, antenna ports (if EUT with antenna diversity architecture), and packet types.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

| EUT CONFIGURE MODE | TESTED CHANNEL | TESTED FREQUENCY (MHZ) | MODULATION TYPE | AXIS |
|--------------------|----------------|------------------------|-----------------|------|
| A | 1 | 13.56 | ASK | X |

POWER LINE CONDUCTED EMISSION TEST:

- ☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- ☒ ☐ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, antenna ports (if EUT with antenna diversity architecture), and packet types.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

| EUT CONFIGURE MODE | TESTED CHANNEL | TESTED FREQUENCY (MHZ) | MODULATION TYPE | AXIS |
|--------------------------|----------------|---------------------------|-----------------|------|
| A | 1 | 13.56 | ASK | X |

20dB BANDWIDTH:

- ☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- ☒ ☐ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, antenna ports (if EUT with antenna diversity architecture), and packet types.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

| EUT CONFIGURE MODE | TESTED CHANNEL | TESTED FREQUENCY (MHZ) | MODULATION TYPE | AXIS |
|--------------------------|----------------|---------------------------|-----------------|------|
| A | 1 | 13.56 | ASK | X |

TEST CONDITION:

| APPLICABLE TO | ENVIRONMENTAL CONDITIONS | TEST VOLTAGE (SYSTEM) | TESTED BY |
|---------------|--------------------------|-------------------------------------|-----------|
| RE | 21deg. C, 63%RH | DC12V from adbpter Via AC120V input | Dragon |
| FT | 25deg. C, 60%RH | DC12V from adbpter Via AC120V input | Dragon |
| PLC | 25deg. C, 55%RH | DC12V from adbpter Via AC120V input | Dragon |
| BW | 25deg. C, 60%RH | DC12V from adbpter Via AC120V input | Dragon |

2.4 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.

| No. | Product | Brand | Model No. | Serial No. |
|-----|--------------|--------|------------|------------------|
| 1. | Mobile phone | HUWWEI | Mate30 Pro | RPTGK21518000005 |

3 Test Types and Results

3.1 Conducted Emission Measurement

3.1.1 Limits of Conducted Emission Measurement

| Frequency (MHz) | Conducted Limit (dBuV) | |
|-----------------|------------------------|---------|
| | Quasi-peak | Average |
| 0.15 - 0.5 | 66 - 56 | 56 - 46 |
| 0.50 - 5.0 | 56 | 46 |
| 5.0 - 30.0 | 60 | 50 |

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.

3.1.2 Test Instruments

| Equipment | Manufacturer | Model No. | Serial No. | Next Cal. |
|--------------------------|---------------|-----------------|--------------|------------|
| EMI Test Receiver | Rohde&Schwarz | ESR 7 | 101962 | 2024-12-17 |
| Artificial Mains Network | Rohde&Schwarz | ENV216 | 3560.6550.15 | 2024-12-17 |
| Test software | FARAD | EZ_EMV V1.1.4.2 | N/A | N/A |
| Broadcast test system | R&S | SFU | 100410 | 2024-08-06 |

Note: 1. The calibration interval of the above test instruments is 12 months.
2. The test was performed in Shielded Room.

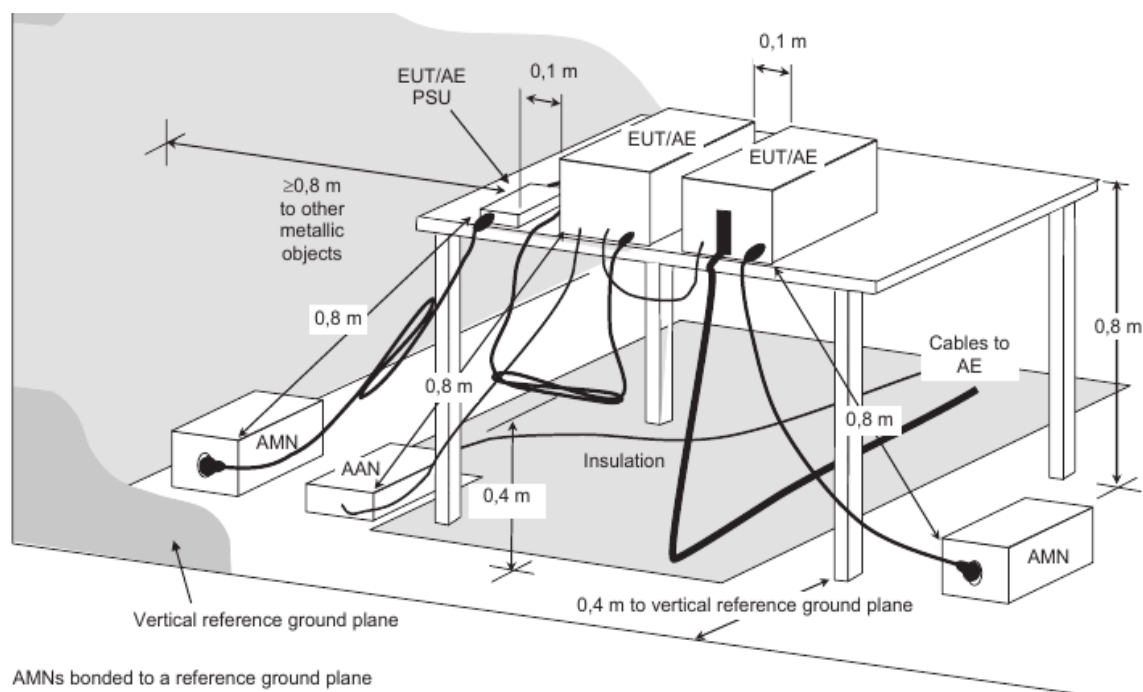
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3.1.3 Test Procedures

- 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.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit – 20dB) was not recorded.

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

3.1.4 Test Setup



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

3.1.5 EUT Operating Condition

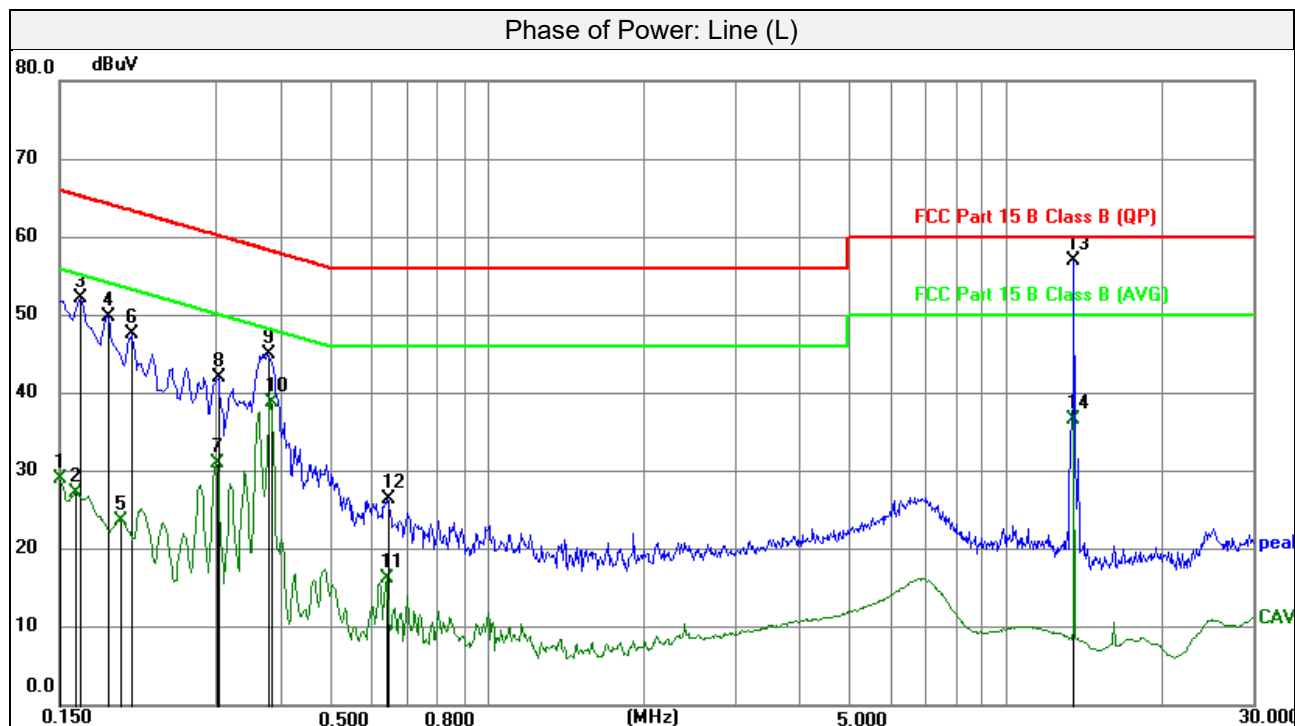
Set the EUT under transmission condition continuously at specific channel frequency.

3.1.6 Deviation from Test Standard

No deviation.

3.1.7 Test Results

| | | | |
|-----------------|----------------|--|--------------------------------------|
| Frequency Range | 150kHz ~ 30MHz | Detector Function & Resolution bandwidth | Quasi-Peak (QP) / Average (AV), 9kHz |
|-----------------|----------------|--|--------------------------------------|



| No. | Frequency (MHz) | Reading (dBuV) | Correction Factor dB | Emission Level (dBuV) | Limit (dBuV) | Margin (dB) | Remark Detector |
|-----|--------------------|-------------------|----------------------------|--------------------------|-----------------|----------------|--------------------|
| 1 | 0.1500 | 18.76 | 10.19 | 28.95 | 56.00 | -27.05 | AVG |
| 2 | 0.1613 | 17.11 | 10.17 | 27.28 | 55.40 | -28.12 | AVG |
| 3 | 0.1635 | 41.97 | 10.17 | 52.14 | 65.28 | -13.14 | peak |
| 4 | 0.1860 | 39.66 | 10.15 | 49.81 | 64.21 | -14.40 | peak |
| 5 | 0.1973 | 13.46 | 10.14 | 23.60 | 53.72 | -30.12 | AVG |
| 6 | 0.2063 | 37.38 | 10.14 | 47.52 | 63.35 | -15.83 | peak |
| 7 | 0.3007 | 20.84 | 10.18 | 31.02 | 50.22 | -19.20 | AVG |
| 8 | 0.3030 | 31.86 | 10.18 | 42.04 | 60.16 | -18.12 | peak |
| 9 | 0.3772 | 34.89 | 10.11 | 45.00 | 58.34 | -13.34 | peak |
| 10 | 0.3840 | 28.79 | 10.10 | 38.89 | 48.19 | -9.30 | AVG |
| 11 | 0.6427 | 6.15 | 10.10 | 16.25 | 46.00 | -29.75 | AVG |
| 12 | 0.6450 | 16.41 | 10.10 | 26.51 | 56.00 | -29.49 | peak |
| 13 | 13.5508 | 46.72 | 10.25 | 56.97 | 60.00 | -3.03 | peak |
| 14 | 13.5508 | 26.45 | 10.25 | 36.70 | 50.00 | -13.30 | AVG |

Remarks:

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 = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

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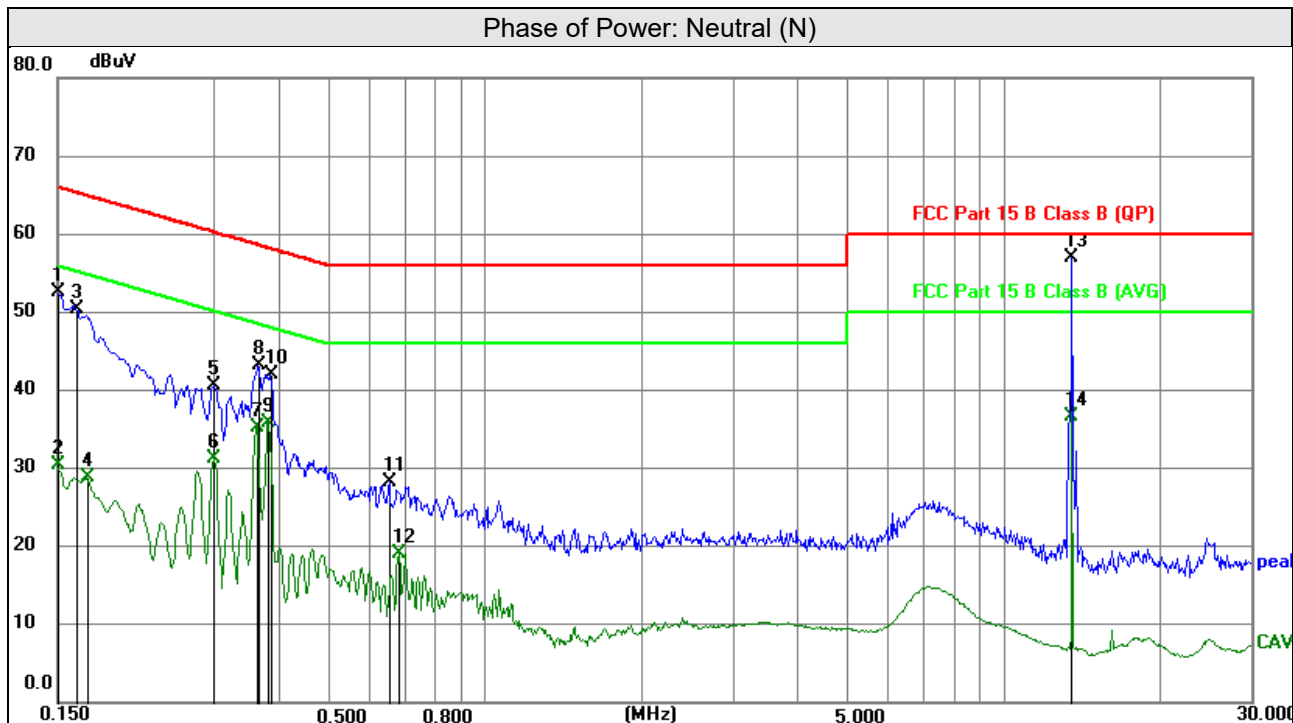
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| | | | |
|-----------------|----------------|--|--------------------------------------|
| Frequency Range | 150kHz ~ 30MHz | Detector Function & Resolution bandwidth | Quasi-Peak (QP) / Average (AV), 9kHz |
|-----------------|----------------|--|--------------------------------------|



| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor dB | Emission Level (dBuV) | Limit (dBuV) | Margin (dB) | Remark Detector |
|-----|--------------------|-------------------|----------------------|--------------------------|-----------------|----------------|--------------------|
| 1 | 0.1500 | 42.30 | 10.19 | 52.49 | 66.00 | -13.51 | peak |
| 2 | 0.1500 | 20.14 | 10.19 | 30.33 | 56.00 | -25.67 | AVG |
| 3 | 0.1624 | 40.23 | 10.17 | 50.40 | 65.34 | -14.94 | peak |
| 4 | 0.1703 | 18.62 | 10.16 | 28.78 | 54.95 | -26.17 | AVG |
| 5 | 0.3007 | 30.45 | 10.18 | 40.63 | 60.22 | -19.59 | peak |
| 6 | 0.3007 | 21.01 | 10.18 | 31.19 | 50.22 | -19.03 | AVG |
| 7 | 0.3615 | 25.16 | 10.13 | 35.29 | 48.69 | -13.40 | AVG |
| 8 | 0.3660 | 32.99 | 10.12 | 43.11 | 58.59 | -15.48 | peak |
| 9 | 0.3817 | 25.78 | 10.10 | 35.88 | 48.24 | -12.36 | AVG |
| 10 | 0.3862 | 31.82 | 10.10 | 41.92 | 58.15 | -16.23 | peak |
| 11 | 0.6561 | 18.07 | 10.10 | 28.17 | 56.00 | -27.83 | peak |
| 12 | 0.6832 | 9.05 | 10.10 | 19.15 | 46.00 | -26.85 | AVG |
| 13 | 13.5600 | 46.73 | 10.25 | 56.98 | 60.00 | -3.02 | peak |
| 14 | 13.5600 | 26.39 | 10.25 | 36.64 | 50.00 | -13.36 | AVG |

Remarks:

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 = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

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3.2 Radiated Emission And Bandedge Measurement**3.2.1 Limits Of Radiated Emission And Bandedge Measurement**

The field strength of any emissions shall not exceed the following limits:

- (a) 15.848mV/m(84dBuV/m) at 30m, within the band 13.553-13.567 MHz;
- (b) 334uV/m(50.5dBuV/m) at 30m, within the band 13.410-13.553 MHz and 13.567-13.710MHz;
- (c) 106uV/m(40.5dBuV/m) at 30m, within the band 13.110-13.410 MHz and 13.710-14.010MHz;

The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

| FREQUENCIES (MHz) | FIELD STRENGTH (microvolts/meter) | MEASUREMENT DISTANCE (meters) |
|-------------------|-----------------------------------|-------------------------------|
| 0.009 ~ 0.490 | 2400/F(kHz) | 300 |
| 0.490 ~ 1.705 | 24000/F(kHz) | 30 |
| 1.705 ~ 30.0 | 30 | 30 |
| 30 ~ 88 | 100 | 3 |
| 88 ~ 216 | 150 | 3 |
| 216 ~ 960 | 200 | 3 |
| Above 960 | 500 | 3 |

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. The measured field strength was extrapolated to distance 30 meters, using the formula that the limit of field strength varies as the inverse distance square (40dB per decade of distance)

Example:

$$\begin{aligned} 13.56\text{MHz} &= 15848\text{uV/m} && 30\text{m} \\ &= 84\text{dBuV/m} && 30\text{m} \\ &= 84+20\log(30/3)^2 && 3\text{m} \\ &= 124\text{dBuV/m} \end{aligned}$$

3.2.2 Test Instruments

(9kHz-30MHz, 966 Chamber):

| Equipment | Manufacturer | Model No. | Serial No. | Next Cal. |
|---------------------|---------------|----------------------|------------|------------|
| EMI Test Receiver | Rohde&Schwarz | ESU40 | 100449 | 2025-01-02 |
| Active Loop Antenna | SCHWARZBECK | FMZB 1519B | 1519B-045 | 2024-05-09 |
| Amplifier | Burgeon | BPA-530 | 100220 | 2025-02-21 |
| Coaxial RF Cable | / | / | / | 2024-06-24 |
| Test Software | ADT | ADT_Radiated_V8.7.07 | N/A | N/A |

(30MHz-1GHz, 966 Chamber):

| Equipment | Manufacturer | Model No. | Serial No. | Next Cal. |
|--------------------------------------|---------------|-----------------|------------|--------------|
| EMI Test Receiver (9kHz~7GHz) | Rohde&Schwarz | ESPI 7 | 101978 | 2024-12-17 |
| Broadband antenna (25MHz~2500MHz) | Schwarzbeck | VULB 9168 | 937 | 2024-08-18 |
| 3m Semi-anechoic Chamber | MAORUI | 9m*6m*6m | HS-2018037 | 2026-03-12** |
| Signal Amplifier (30MHz~1000MHz) | Com-power | PAM-103 | 18020051 | 2024-08-06 |
| Attenuator | R&S | TS2GA-6dB | 18101101 | N/A |
| Test software | EZ | EZ EMC V1.1.4.2 | N/A | N/A |

NOTE:

1. The test was witness in 966 Chamber and RF Oven room.
2. The calibration interval of the above test instruments is 12/24*/36** months and the calibrations are traceable to LISAI/CHINA.

3.2.3 Test Procedures

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3&10 meter semi-anechoic chamber. 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 antenna is a broadband antenna, and its height 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.
- 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 1 GHz.
- f. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall

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be perform using fresh batteries. The turntable was rotated to maximize the emission level.

- g. For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.

NOTE:

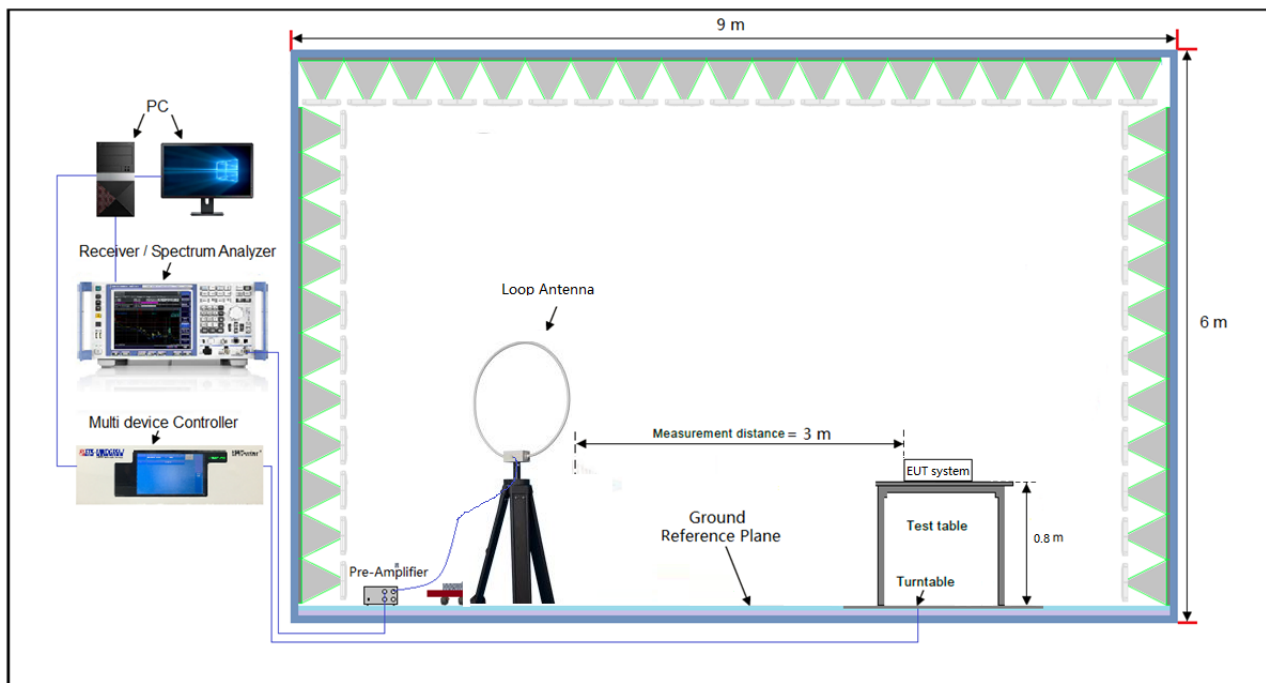
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. All modes of operation were investigated and the worst-case emissions are reported.

3.2.4 Deviation From Test Standard

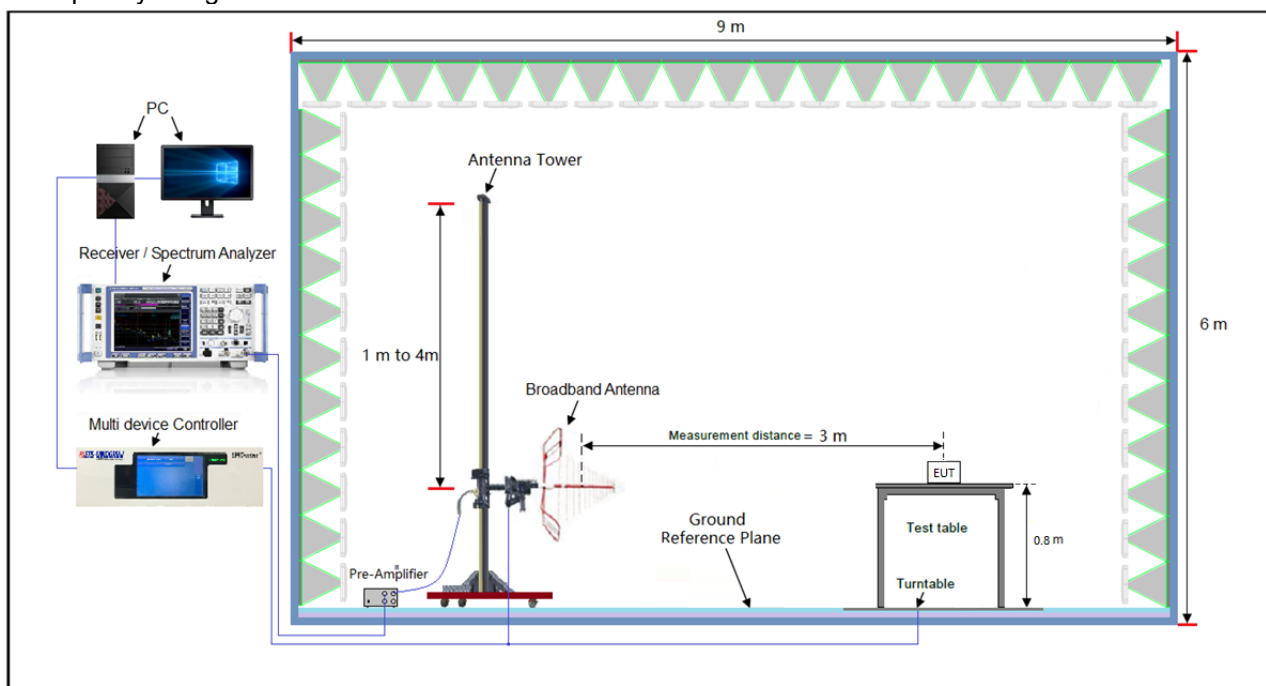
No deviation.

3.2.5 Test Setup

Radiated emission below 30MHz:



Frequency Range below 1GHz:



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

3.2.6 EUT Operating Conditions

Set the EUT under transmission condition continuously at specific channel frequency.

3.2.7 Test Results

FIELD STRENGTH (BELOW 30MHZ AT 3M)

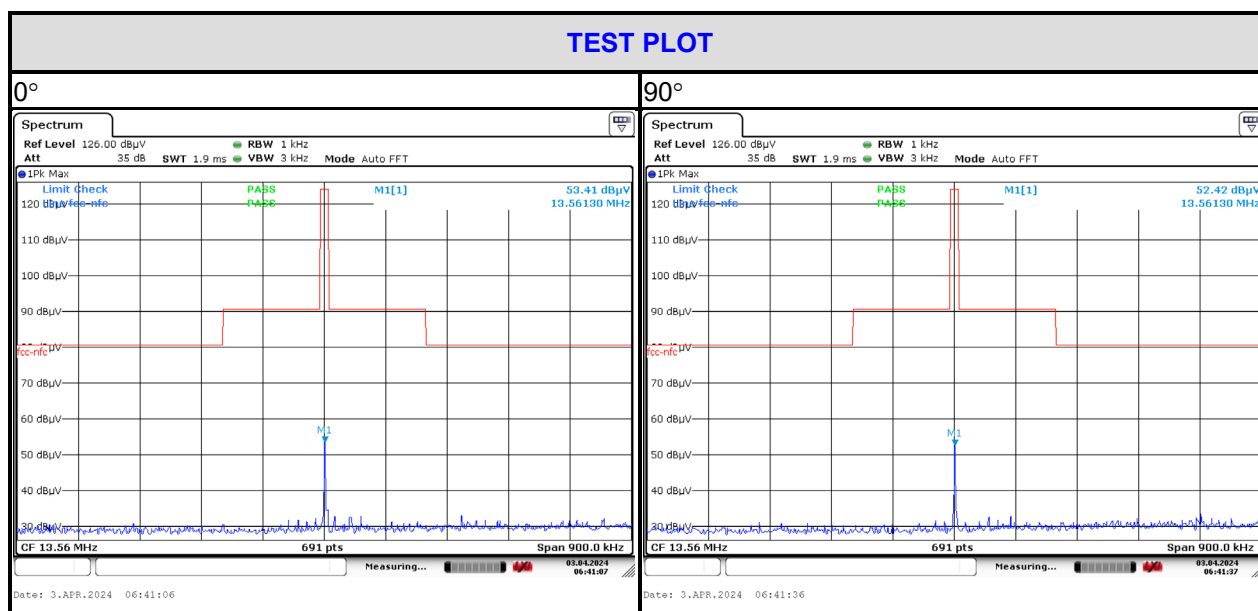
| No. | Freq. (MHz) | Emission Level (dBuV/m) | Polarity (0° / 90°) | Limit (dBuV/m) | Margin (dB) |
|-----|-------------|-------------------------|---------------------|----------------|-------------|
| 1 | *13.56(QP) | 53.41 | 0° | 124.0 | -70.59 |
| 2 | 27.12(QP) | 25.63 | 0° | 69.5 | -43.87 |
| 3 | *13.56(QP) | 52.42 | 90° | 124.0 | -71.58 |
| 4 | 27.12(QP) | 24.08 | 90° | 69.5 | -45.42 |

REMARKS: 1. The other emission levels were very low against the limit.

2. Margin value = Emission level – Limit value.

3. " * ": Fundamental frequency.

4. For the test results, both 0° and 90° polarizations of the antenna are set to make the measurement, but only the worst case was shown in test report.



BELOW 1GHz WORST-CASE DATA:

| | | | |
|------------------------|-------------|------------------------------|-----------------|
| CHANNEL | Channel 1 | DETECTOR FUNCTION | Quasi-Peak (QP) |
| FREQUENCY RANGE | 9KHz ~ 1GHz | | |

| SPURIOUS EMISSION LEVEL AT 3M | | | | |
|-------------------------------|----------------------|----------------|----------------|-------------|
| Frequency (MHz) | Antenna Polarization | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
| 0.5351 | H | 30.16 | 73.11 | -42.95 |
| 17.2071 | H | 18.06 | 69.54 | -51.48 |
| 49.7068 | H | 28.83 | 40.00 | -11.17 |
| 61.7781 | H | 24.94 | 40.00 | -15.06 |
| 77.3212 | H | 22.76 | 40.00 | -17.24 |
| 116.1321 | H | 17.68 | 43.50 | -25.82 |
| 154.8204 | H | 19.89 | 43.50 | -23.61 |
| 269.4284 | H | 29.46 | 46.00 | -16.54 |

| SPURIOUS EMISSION LEVEL AT 3M | | | | |
|-------------------------------|----------------------|----------------|----------------|-------------|
| Frequency (MHz) | Antenna Polarization | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
| 0.5366 | V | 29.68 | 73.08 | -43.40 |
| 7.3964 | V | 17.63 | 69.54 | -51.91 |
| 49.7068 | V | 19.64 | 40.00 | -20.36 |
| 61.7781 | V | 22.94 | 40.00 | -17.06 |
| 121.9755 | V | 19.26 | 43.50 | -24.24 |
| 146.3735 | V | 30.14 | 43.50 | -13.36 |
| 160.3456 | V | 20.10 | 43.50 | -23.40 |
| 229.2931 | V | 27.11 | 46.00 | -18.89 |

REMARKS:

1. The emission levels of other frequencies were less than 20dB margin against the limit.
2. Margin value = Emission level – Limit value.

3.3 Frequency Tolerance**3.3.1 Limit Of Frequency Tolerance**

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of -20 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

3.3.2 Test Instruments

| Equipment | Manufacturer | Model No. | Serial No. | Next Cal.Date |
|---------------------------|---------------|-----------|--------------|---------------|
| Spectrum Analyzer | Rohde&Schwarz | FSV-40N | 101783 | 2024-12-17 |
| Power Meter 10Hz~18GHz | Tonscend | JS0806-2 | 188060126 | 2024-08-06 |
| Humidity tester | Jingchuang | GSP-8A | CMA22B000592 | 2024-12-24 |

NOTE:

1. The test was performed in RF Oven room.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to LISAI/CHINA.

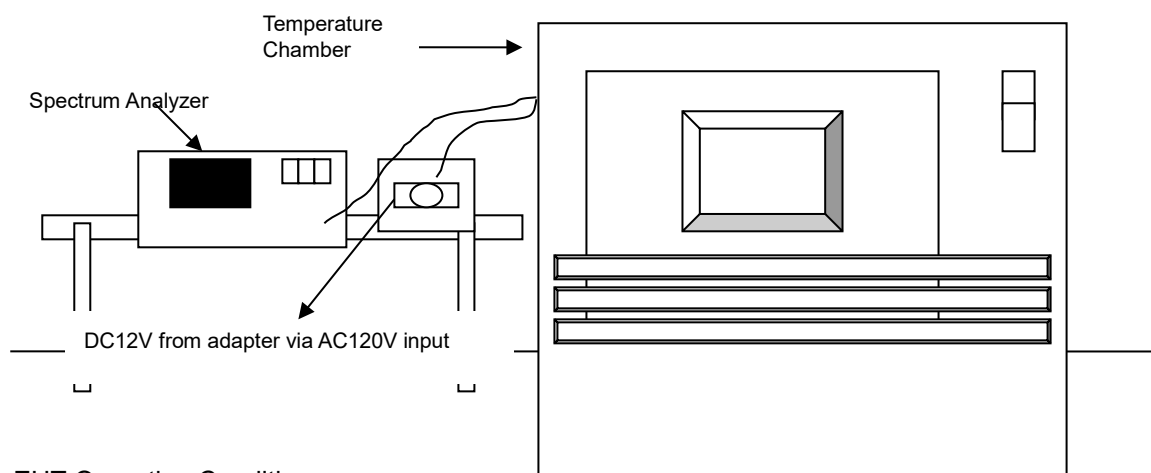
3.3.3 Test Procedures

- a) The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
- b) Turn the EUT on and couple its output to a spectrum analyzer.
- c) Turn the EUT off and set the chamber to the highest temperature specified.
- d) Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- e) Repeat step c) and d) with the temperature chamber set to the lowest temperature.
- f) The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

3.3.4 Deviation From Test Standard

No deviation.

3.3.5 Test Setup



3.3.6 EUT Operating Conditions

Set the EUT under transmission condition continuously at specific channel frequency.

3.3.7 Test Results

| FREQUENCY STABILITY VERSUS TEMP. | | | | | | | | | |
|----------------------------------|------------------------|-----------------------|--------------------|-----------------------|--------------------|-----------------------|--------------------|-----------------------|--------------------|
| TEMP. (°C) | POWER SUPPLY (V) | 0 MINUTE | | 2 MINUTE | | 5 MINUTE | | 10 MINUTE | |
| | | Measured Frequency | Frequency Drift | Measured Frequency | Frequency Drift | Measured Frequency | Frequency Drift | Measured Frequency | Frequency Drift |
| | | (MHz) | % | (MHz) | % | (MHz) | % | (MHz) | % |
| 50 | NV | 13.55996 | -0.00029 | 13.56006 | 0.00044 | 13.55996 | -0.00029 | 13.55996 | -0.00029 |
| 40 | NV | 13.56002 | 0.00015 | 13.56006 | 0.00044 | 13.56007 | 0.00052 | 13.56007 | 0.00052 |
| 30 | NV | 13.56001 | 0.00007 | 13.56000 | 0.00000 | 13.56000 | 0.00000 | 13.56000 | 0.00000 |
| 20 | NV | 13.56002 | 0.00015 | 13.56002 | 0.00015 | 13.56002 | 0.00015 | 13.56001 | 0.00007 |
| 10 | NV | 13.56006 | 0.00044 | 13.56005 | 0.00037 | 13.56006 | 0.00044 | 13.56006 | 0.00044 |
| 0 | NV | 13.56006 | 0.00044 | 13.56006 | 0.00044 | 13.56006 | 0.00044 | 13.56006 | 0.00044 |
| -10 | NV | 13.56003 | 0.00022 | 13.56002 | 0.00015 | 13.56003 | 0.00022 | 13.56003 | 0.00022 |
| -20 | NV | 13.56005 | 0.00037 | 13.56005 | 0.00037 | 13.56005 | 0.00037 | 13.56005 | 0.00037 |

| FREQUENCY STABILITY VERSUS VOLTAGE | | | | | | | | | |
|------------------------------------|------------------------|-----------------------|--------------------|-----------------------|--------------------|-----------------------|--------------------|-----------------------|--------------------|
| TEMP. (°C) | POWER SUPPLY (V) | 0 MINUTE | | 2 MINUTE | | 5 MINUTE | | 10 MINUTE | |
| | | Measured Frequency | Frequency Drift | Measured Frequency | Frequency Drift | Measured Frequency | Frequency Drift | Measured Frequency | Frequency Drift |
| | | (MHz) | % | (MHz) | % | (MHz) | % | (MHz) | % |
| 20 | LV | 13.56002 | 0.00015 | 13.56002 | 0.00015 | 13.56002 | 0.00015 | 13.56001 | 0.00007 |
| | NV | 13.56002 | 0.00015 | 13.56002 | 0.00015 | 13.56002 | 0.00015 | 13.56001 | 0.00007 |
| | HV | 13.56002 | 0.00015 | 13.56002 | 0.00015 | 13.56002 | 0.00015 | 13.56001 | 0.00007 |

3.4 20db Bandwidth**3.4.1 Limits Of 20db Bandwidth**

The 20dB bandwidth shall be specified in operating frequency band.(13.11MHz – 14.01MHz)

3.4.2 Test Instruments

| Equipment | Manufacturer | Model No. | Serial No. | Next Cal.Date |
|---------------------------|---------------|-----------|--------------|---------------|
| Spectrum Analyzer | Rohde&Schwarz | FSV-40N | 101783 | 2024-12-17 |
| Power Meter 10Hz~18GHz | Tonscend | JS0806-2 | 188060126 | 2024-08-06 |
| Humidity tester | Jingchuang | GSP-8A | CMA22B000592 | 2024-12-24 |

NOTE:

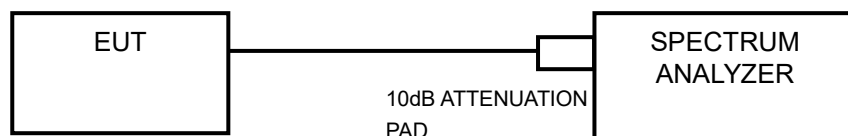
1. The test was performed in RF Oven room.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to LISAI/CHINA.

3.4.3 Test Procedure

- a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- c. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.

3.4.4 Deviation From Test Standard

No deviation.

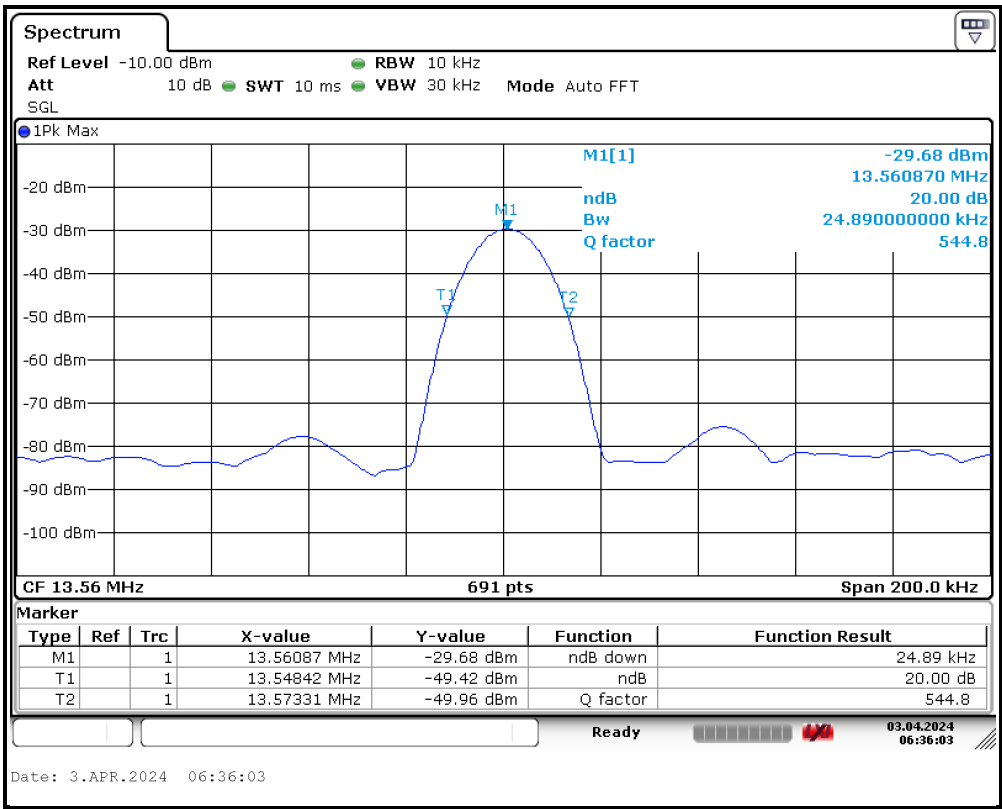
3.4.5 Test Setup**3.4.6 EUT Operating Condition**

The software provided by client to enable the EUT under transmission condition continuously.

3.4.7 Test Results

| CHANNEL | CHANNEL FREQUENCY (MHz) | 20dB BANDWIDTH (KHz) |
|---------|-------------------------|----------------------|
| 1 | 13.56 | 24.89 |

| Lower & Upper Test Frequency Point (MHz) | Test Frequency (MHz) | P/F |
|--|----------------------|------|
| Lower | 13.54842 | PASS |
| Upper | 13.57331 | PASS |



Test Report No.: 23122202-01-RF-US-05

4 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information on the Testing Laboratories

We, [Hwa-Hsing \(Dongguan\) Testing Co., Ltd.](#), A global provider of TESTING and CERTIFICATION services for consumer products, electronic products and wireless information technology products. Adhering to the core values “HONEST and TRUSTWORTHY, OBJECTIVE and IMPARTIALITY, RIGOROUS and AFFICIENT”, commitment to provide professional, perfect and efficient comprehensive ONE-STOP solution of TESTING and CERTIFICATION services for Manufacturers, Buyers, Traders, Brands, Retailers. Assist client to better manage risk, protect their brands, reduce costs and cut time to over 150 markets in global. Our laboratories are FCC recognized accredited test firms and accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Lab Address: [No.101, Building N1, Yuyuan 2 Road, Yuyuan Industrial Park, HuangJiang Town, Dongguan City, People's Republic of China](#)

Contact Tel: [0769-83078199](#)

Email: Customerservice.dg@hwa-hsing.com

Web Site: www.hwa-hsing.com

The address and road map of all our labs can be found in our web site also.

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