



# TEST REPORT

**Report No.** ..... : **CTC2025343007**

**FCC ID** ..... : **PX9M133WK002**

**Applicant** ..... : **Winmate Inc.**

**Address** ..... : 9F, No.111-6, Shing-De Rd., San-Chung District, New Taipei City, 241, Taiwan

**Manufacturer** ..... : Winmate Inc.

**Address** ..... : 9F, No.111-6, Shing-De Rd., San-Chung District, New Taipei City, 241, Taiwan

**Product Name** ..... : **Rugged Tablet PC**

**Trade Mark** ..... : WINMATE

**Model/Type reference** ..... : M133WK-5

**Listed Model(s)** ..... : M133xxxxxxxxxx, D140, D140xxxxxxxxxx ("x" can be A~Z, a~z, 0~9, Blank, Dash or Slash for marketing purpose only)

**Standard** ..... : **FCC Rules Part 15.225**

**Test Report Form No** ..... : CTC-TR-170\_A1

**Master TRF** ..... : Dated 2025-06-19

**Date of receipt of test sample** ..... : May 30, 2025

**Date of testing** ..... : May 30, 2025 ~ Jul. 15, 2025

**Date of issue** ..... : Oct. 09, 2025

**Result** ..... : **PASS**

Compiled by:

(Printed name + signature)

Lucy Lan

Supervised by:

(Printed name + signature)

Eric Zhang

Approved by:

(Printed name + signature)

Totti Zhao

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# 1. TEST SUMMARY

## 1.1. Test Standards

The tests were performed according to following standards:

[FCC Rules Part 15.225](#): Operation within the band 13.110-14.010MHz.

[ANSI C63.10-2020](#): American National Standard for Testing Unlicensed Wireless Devices.

## 1.2. Report Version

| Revised No. | Report No.    | Date of issue | Description |
|-------------|---------------|---------------|-------------|
| 01          | CTC2025343007 | Oct. 09, 2025 | Original    |
|             |               |               |             |
|             |               |               |             |

## 1.3. Test Description

| FCC Part 15.225                   |                  |        |               |
|-----------------------------------|------------------|--------|---------------|
| Test Item                         | Standard Section | Result | Test Engineer |
| Conducted Emission                | 15.207           | Pass   | Marrow        |
| Radiated Emissions                | 15.209&15.225(d) | Pass   | Marrow        |
| Field Strength of the Fundamental | 15.209&15.225(d) | Pass   | Marrow        |
| Occupied Bandwidth                | 15.215           | Pass   | Marrow        |
| Antenna requirement               | 15.203           | Pass   | Marrow        |
| Frequency Stability               | 15.225(e)        | Pass   | Marrow        |

Note:

N/A: Not applicable.

The measurement uncertainty is not included in the test result.

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## 1.4. Test Facility

### Address of the report laboratory

#### CTC Laboratories, Inc.

Add: Room 107, 108, 207, 208, 303 of Building A, Room 101 of Building B, No.7, Lanqing 1st Road, Luh Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China

### Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

#### A2LA-Lab Cert. No.: 4340.01

CTC Laboratories, Inc. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

#### Industry Canada (Registration No.: 9783A, CAB Identifier: CN0029)

CTC Laboratories, Inc. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 9783A on Jan, 2016.

#### FCC (Registration No.: 951311, Designation Number CN1208)

CTC Laboratories, Inc. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 951311, Aug 26, 2017.

## 1.5. Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2" and is documented in the CTC Laboratories, Inc. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Below is the best measurement capability for CTC Laboratories, Inc.

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| Test Items                              | Measurement Uncertainty | Notes |
|-----------------------------------------|-------------------------|-------|
| Transmitter power conducted             | 0.42 dB                 | (1)   |
| Transmitter power Radiated              | 2.14 dB                 | (1)   |
| Conducted spurious emissions 9kHz~40GHz | 1.60 dB                 | (1)   |
| Radiated spurious emissions 9kHz~40GHz  | 2.20 dB                 | (1)   |
| Conducted Emissions 9kHz~30MHz          | 3.20 dB                 | (1)   |
| Radiated Emissions 30~1000MHz           | 4.70 dB                 | (1)   |
| Radiated Emissions 1~18GHz              | 5.00 dB                 | (1)   |
| Radiated Emissions 18~40GHz             | 5.54 dB                 | (1)   |
| Occupied Bandwidth                      | -----                   | (1)   |

Note (1): This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 1.6. Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

|                    |           |
|--------------------|-----------|
| Temperature:       | 21°C~27°C |
| Relative Humidity: | 40%~60%   |
| Air Pressure:      | 101kPa    |

## 1.7. EUT Operation State

The EUT has been tested under typical operating condition. The applicant provides normal EUT, in the state of charge, to maintain continuous transmission mode for testing.



## 2. GENERAL INFORMATION

### 2.1. Client Information

|               |                                                                              |
|---------------|------------------------------------------------------------------------------|
| Applicant:    | Winmate Inc.                                                                 |
| Address:      | 9F, No.111-6, Shing-De Rd., San-Chung District, New Taipei City, 241, Taiwan |
| Manufacturer: | Winmate Inc.                                                                 |
| Address:      | 9F, No.111-6, Shing-De Rd., San-Chung District, New Taipei City, 241, Taiwan |
| Factory:      | Winmate Inc.                                                                 |
| Address:      | 9F, No.111-6, Shing-De Rd., San-Chung District, New Taipei City, 241, Taiwan |

### 2.2. General Description of EUT

|                       |                                                                                                                |
|-----------------------|----------------------------------------------------------------------------------------------------------------|
| Product Name:         | Rugged Tablet PC                                                                                               |
| Trade Mark:           | WINMATE                                                                                                        |
| Model/Type reference: | M133WK-5                                                                                                       |
| Listed Model(s):      | M133xxxxxxxxx, D140, D140xxxxxxxxx ("x" can be A~Z, a~z, 0~9, Blank, Dash or Slash for marketing purpose only) |
| Model Difference:     | Difference is only model name, trademark, and colour (for marketing).                                          |
| Power Supply:         | DC 20V 3.5A from AC/DC Adapter<br>DC 10.9V 6700mAh 73.03Wh from Rechargeable Li-ion Battery Pack               |
| Adapter Model         | A20-065N3A<br>Input: 100-240V~ 50/60Hz 1.6A<br>Output: 5V=3A 15W/ 9V=3A/ 12V=3A/ 15V=3A/ 20V=3.25A 65W         |
| Temperature Range:    | -20°C~60°C                                                                                                     |
| Hardware version:     | M133DRT                                                                                                        |
| Software version:     | V250428                                                                                                        |
| <b>RF Parameter</b>   |                                                                                                                |
| Modulation:           | ASK                                                                                                            |
| Operation frequency:  | 13.56MHz                                                                                                       |
| Antenna type:         | PCB Antenna                                                                                                    |

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## 2.3. Accessory Equipment Information

| Equipment Information     |               |              |              |
|---------------------------|---------------|--------------|--------------|
| Name                      | Model         | S/N          | Manufacturer |
| /                         | /             | /            | /            |
| /                         | /             | /            | /            |
| Cable Information         |               |              |              |
| Name                      | Shielded Type | Ferrite Core | Length       |
| /                         | /             | /            | /            |
| Test Software Information |               |              |              |
| Name                      | Version       | /            | /            |
| /                         | /             | /            | /            |

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## 2.4. Measurement Instruments List

| RF Test System – SRD |                                       |              |               |            |                  |               |
|----------------------|---------------------------------------|--------------|---------------|------------|------------------|---------------|
| Item                 | Test Equipment                        | Manufacturer | Model No.     | Serial No. | Cal. Date        | Cal. Until    |
| 1                    | Spectrum Analyzer                     | R&S          | FSV40-N       | 101654     | Dec. 13, 2024    | Dec. 12, 2025 |
| 2                    | MXG Vector Signal Generator           | Agilent      | N5182A        | MY47420864 | Dec. 13, 2024    | Dec. 12, 2025 |
| 3                    | PSG Analog Signal Generator           | Agilent      | E8257D        | MY46521908 | Dec. 13, 2024    | Dec. 12, 2025 |
| 4                    | USB Wideband Power Sensor             | Keysight     | U2021XA       | MY55130004 | Mar. 25, 2025    | Mar. 24, 2026 |
| 5                    | USB Wideband Power Sensor             | Keysight     | U2021XA       | MY55130006 | Mar. 25, 2025    | Mar. 24, 2026 |
| 6                    | Wideband Radio Communication Tester   | R&S          | CMW500        | 102257     | Oct. 24, 2024    | Oct. 23, 2025 |
| 7                    | RF Control Unit                       | Tonscend     | JS0806-2      | /          | Dec. 13, 2024    | Dec. 12, 2025 |
| 8                    | High and low temperature test chamber | ESPEC        | MT3035        | /          | Mar. 25, 2025    | Mar. 24, 2026 |
| 9                    | RF Cable                              | HUBER+SUHNER | SUCOFLEX101PE | RF-08      | Apr. 16, 2025    | Apr. 15, 2026 |
| Test Software        |                                       |              |               |            |                  |               |
| Name                 |                                       | Manufacturer |               |            | Software Version |               |
| JS1120-3             |                                       | Tonscend     |               |            | V2.6.88.0346     |               |

| Radiated emission |                              |                  |              |                      |               |               |
|-------------------|------------------------------|------------------|--------------|----------------------|---------------|---------------|
| Item              | Test Equipment               | Manufacturer     | Model No.    | Serial No.           | Cal. Date     | Cal. Until    |
| 1                 | Trilog-Broadband Antenna     | Schwarzbeck      | VULB 9163    | 01026                | Dec. 25, 2024 | Dec. 24, 2025 |
| 2                 | Horn Antenna                 | Schwarzbeck      | BBHA 9120D   | 9120D-647            | Sep. 26, 2024 | Sep. 25, 2025 |
| 3                 | Test Receiver                | Keysight         | N9038A       | MY56400071           | Dec. 13, 2024 | Dec. 12, 2025 |
| 4                 | Broadband Amplifier          | Schwarzbeck      | BBV9743B     | 259                  | Dec. 13, 2024 | Dec. 12, 2025 |
| 5                 | Mirowave Broadband Amplifier | Schwarzbeck      | BBV9718C     | 111                  | Dec. 13, 2024 | Dec. 12, 2025 |
| 6                 | RE33L-001                    | COMM             | /            | 014<br>(9kHz-1GHz)   | Feb. 09, 2025 | Feb. 08, 2026 |
| 7                 | RE33L-002                    | COMM             | /            | 015<br>(9kHz-1GHz)   | Feb. 09, 2025 | Feb. 08, 2026 |
| 8                 | RE33H-001                    | SUHB<br>SUCOFLEX | /            | 016<br>(1GHz-18GHz)  | Feb. 09, 2025 | Feb. 08, 2026 |
| 9                 | RE33H-002                    | HUBENR           | /            | 017<br>(1GHz-18GHz)  | Feb. 09, 2025 | Feb. 08, 2026 |
| 10                | RE33H-003                    | HUBENR           | /            | 018<br>(1GHz-18GHz)  | Feb. 09, 2025 | Feb. 08, 2026 |
| 11                | RE33H-003                    | HUBENR           | /            | 019<br>(18GHz-40GHz) | Feb. 09, 2025 | Feb. 08, 2026 |
| 12                | 3m chamber 3                 | YIHENG           | EE106        | /                    | Aug. 29, 2023 | Aug. 28, 2026 |
| 13                | SHF-EHF Horn Antenna         | Schwarzbeck      | BBHA 9170    | 013551               | Dec. 13, 2024 | Dec. 12, 2025 |
| 14                | Low noise Amplifier          | Tonscend         | TAP180040048 | AP24C8060348         | Dec. 13, 2024 | Dec. 12, 2025 |

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| Test Software |              |                  |
|---------------|--------------|------------------|
| Name          | Manufacturer | Software Version |
| EZ-EMC        | FARA         | FA-03A2          |

| Conducted emission |                   |              |           |                  |               |               |
|--------------------|-------------------|--------------|-----------|------------------|---------------|---------------|
| Item               | Test Equipment    | Manufacturer | Model No. | Serial No.       | Cal. Date     | Cal. Until    |
| 1                  | LISN              | R&S          | ENV216    | 101112           | Dec. 13, 2024 | Dec. 12, 2025 |
| 2                  | LISN              | R&S          | ENV216    | 101113           | Dec. 13, 2024 | Dec. 12, 2025 |
| 3                  | EMI Test Receiver | R&S          | ESCI      | 100524           | Dec. 13, 2024 | Dec. 12, 2025 |
| 4                  | ISN CAT6          | Schwarzbeck  | NTFM 8158 | CAT6-8158-0046   | Dec. 13, 2024 | Dec. 12, 2025 |
| 5                  | ISN CAT5          | Schwarzbeck  | NTFM 8158 | CAT5-8158-0046   | Dec. 13, 2024 | Dec. 12, 2025 |
| 6                  | CE-001            | COMM         | /         | 001              | Feb. 09, 2025 | Feb. 08, 2026 |
| Test Software      |                   |              |           |                  |               |               |
| Name               |                   | Manufacturer |           | Software Version |               |               |
| EMC32              |                   | R&S          |           | 6.10.10          |               |               |

## Note:

1. The Cal. Interval was one year.
2. The cable loss has calculated in test result which connection between each test instruments.

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### 3. TEST ITEM AND RESULTS

#### 3.1. Conducted Emission

##### Limit

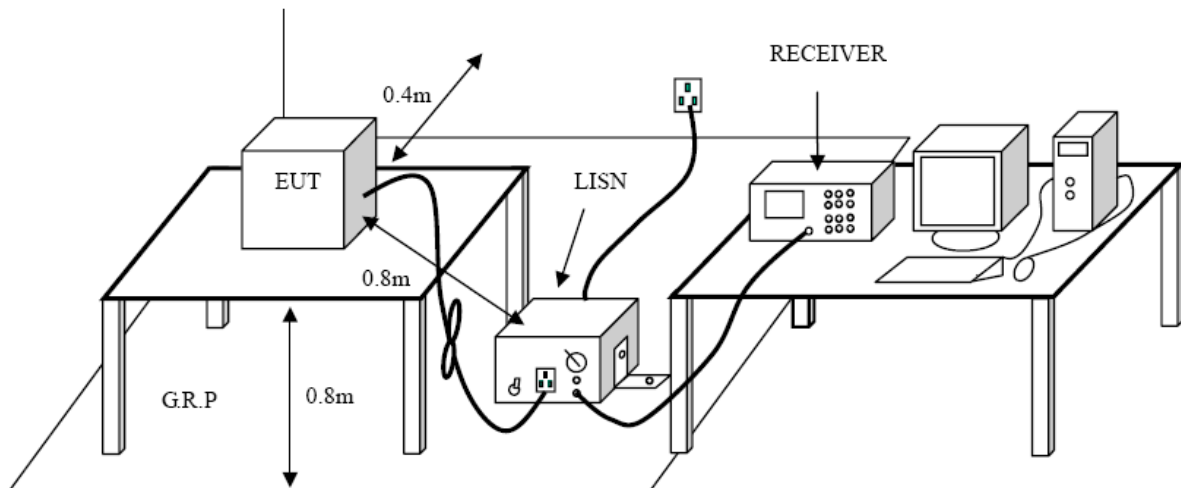
FCC CFR Title 47 Part 15 Subpart C Section 15.207

| Frequency range (MHz) | Limit (dBuV) |           |
|-----------------------|--------------|-----------|
|                       | Quasi-peak   | Average   |
| 0.15-0.5              | 66 to 56*    | 56 to 46* |
| 0.5-5                 | 56           | 46        |
| 5-30                  | 60           | 50        |

Notes:

- (1) \*Decreasing linearly with logarithm of the frequency.
- (2) The lower limit shall apply at the transition frequencies.
- (3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

##### Test Configuration



##### Test Procedure

1. The EUT was setup according to ANSI C63.10:2020 requirements.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
4. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
5. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
6. Conducted Emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
7. During the above scans, the emissions were maximized by cable manipulation.

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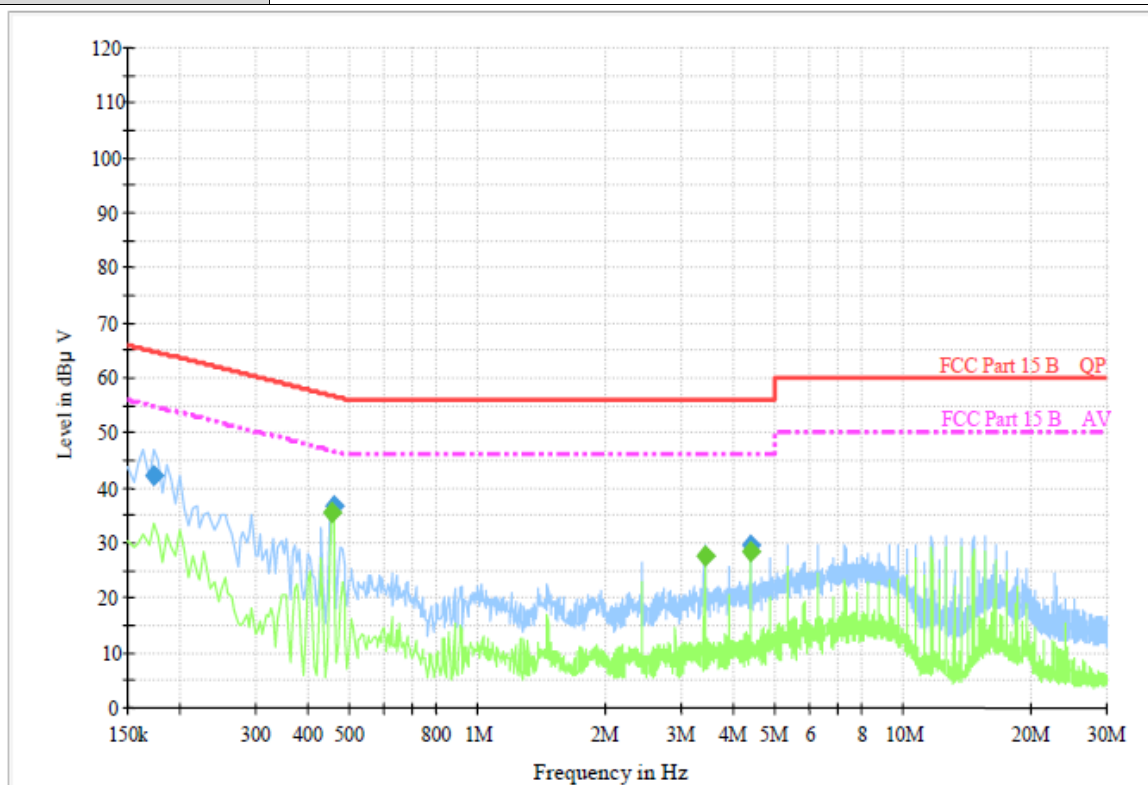
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**Test Mode**

Please refer to the clause 1.7.

**Test Results**

|               |              |
|---------------|--------------|
| Test Voltage: | AC 120V/60Hz |
| Terminal:     | Line         |

**Final Measurement Detector 1**

| Frequency (MHz) | QuasiPeak (dBμ V) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμ V) | Comment |
|-----------------|-------------------|-----------------|-----------------|--------|------|------------|-------------|---------------|---------|
| 0.172500        | 42.2              | 1000.00         | 9.000           | On     | L1   | 9.5        | 22.6        | 64.8          |         |
| 0.456000        | 36.7              | 1000.00         | 9.000           | On     | L1   | 9.4        | 20.1        | 56.8          |         |
| 4.371000        | 29.6              | 1000.00         | 9.000           | On     | L1   | 9.4        | 26.4        | 56.0          |         |

**Final Measurement Detector 2**

| Frequency (MHz) | Average (dBμ V) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμ V) | Comment |
|-----------------|-----------------|-----------------|-----------------|--------|------|------------|-------------|---------------|---------|
| 0.451500        | 35.6            | 1000.00         | 9.000           | On     | L1   | 9.4        | 11.2        | 46.8          |         |
| 3.399000        | 27.8            | 1000.00         | 9.000           | On     | L1   | 9.4        | 18.2        | 46.0          |         |
| 4.371000        | 28.4            | 1000.00         | 9.000           | On     | L1   | 9.4        | 17.6        | 46.0          |         |

Emission Level = Read Level + Correct Factor

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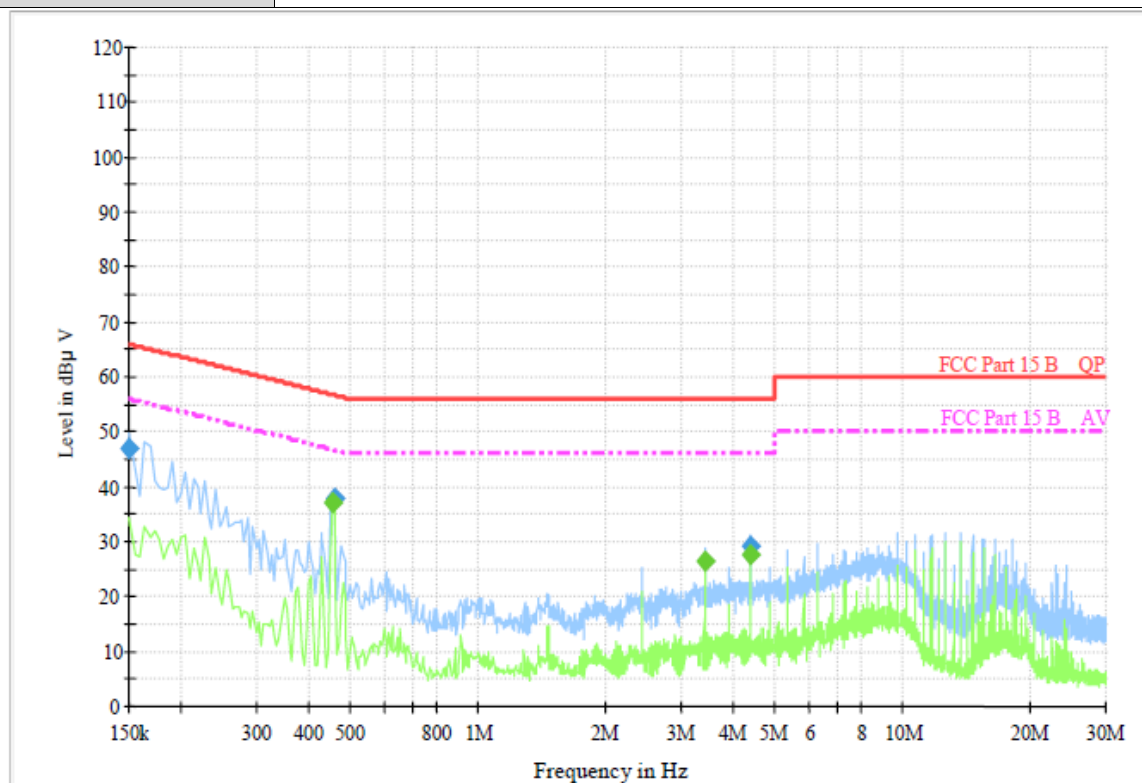
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|               |              |
|---------------|--------------|
| Test Voltage: | AC 120V/60Hz |
| Terminal:     | Neutral      |



### Final Measurement Detector 1

| Frequency (MHz) | QuasiPeak (dBμ V) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμ V) | Comment |
|-----------------|-------------------|-----------------|-----------------|--------|------|------------|-------------|---------------|---------|
| 0.150000        | 46.8              | 1000.00         | 9.000           | On     | N    | 9.4        | 19.2        | 66.0          |         |
| 0.456000        | 38.1              | 1000.00         | 9.000           | On     | N    | 9.6        | 18.7        | 56.8          |         |
| 4.371000        | 29.2              | 1000.00         | 9.000           | On     | N    | 9.5        | 26.8        | 56.0          |         |

### Final Measurement Detector 2

| Frequency (MHz) | Average (dBμ V) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμ V) | Comment |
|-----------------|-----------------|-----------------|-----------------|--------|------|------------|-------------|---------------|---------|
| 0.451500        | 37.0            | 1000.00         | 9.000           | On     | N    | 9.6        | 9.8         | 46.8          |         |
| 3.399000        | 26.6            | 1000.00         | 9.000           | On     | N    | 9.5        | 19.4        | 46.0          |         |
| 4.371000        | 27.6            | 1000.00         | 9.000           | On     | N    | 9.5        | 18.4        | 46.0          |         |

Emission Level = Read Level + Correct Factor

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## 3.2. Radiated Emission

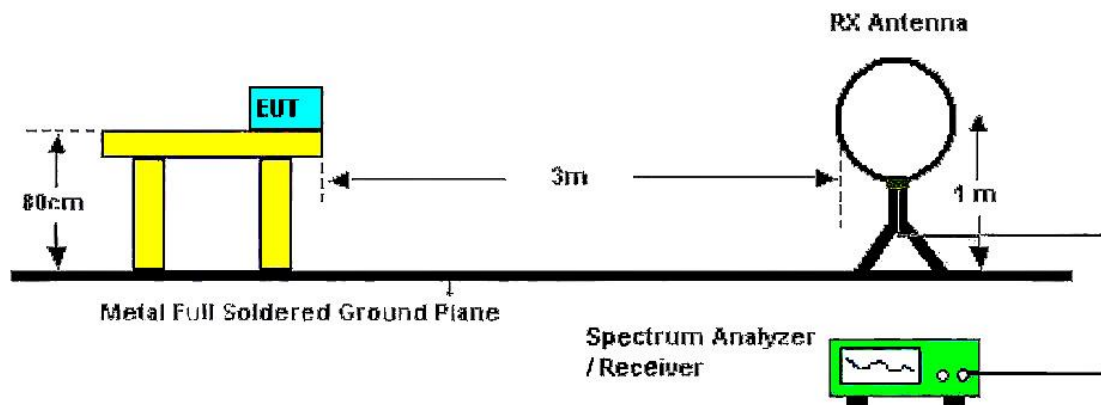
### Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.209

| Frequency<br>(MHz) | Field Strength<br>(microvolts/meter) | Measurement Distance<br>(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                                |
| 960~1000           | 500                                  | 3                                |

| Frequency Range (MHz) | dB $\mu$ V/m (at 3 meters) |         |
|-----------------------|----------------------------|---------|
|                       | Peak                       | Average |
| Above 1000            | 74                         | 54      |

### Test Configuration



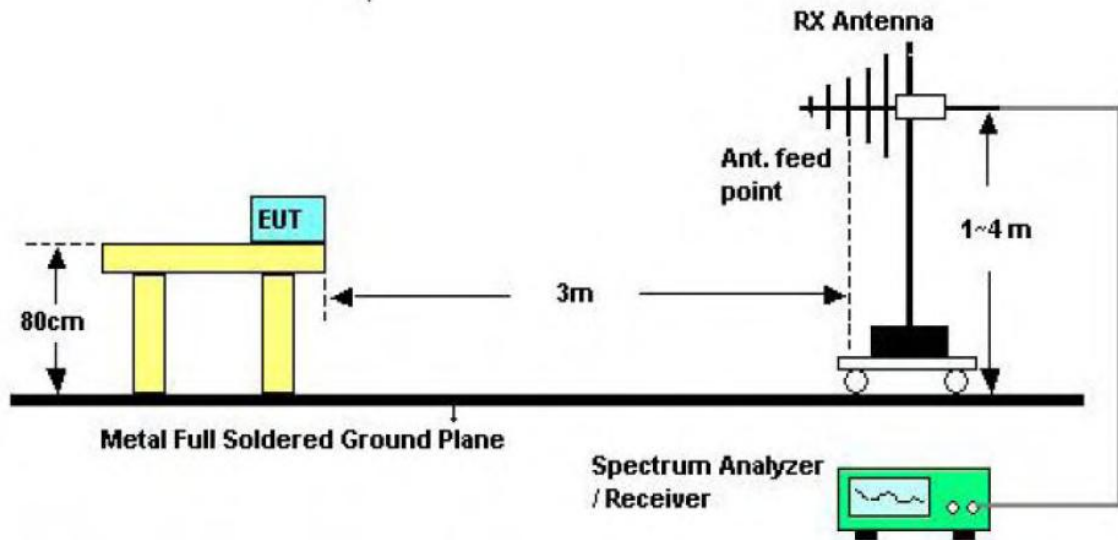
Below 30MHz Test Setup

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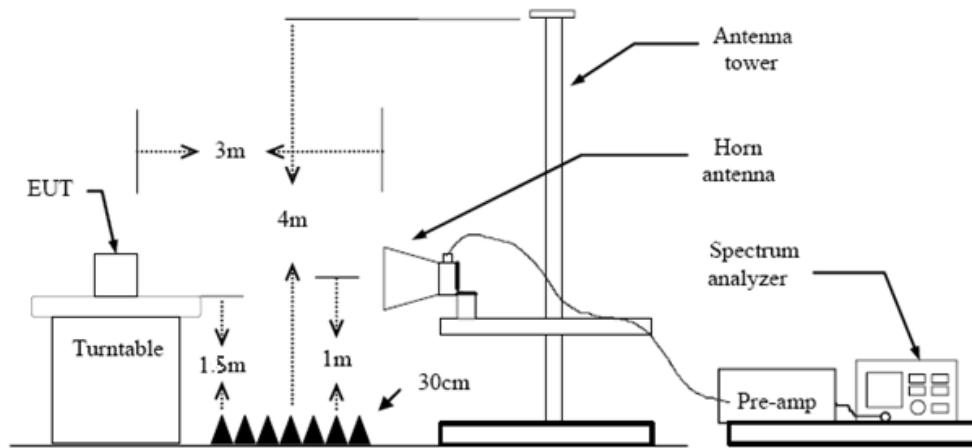
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Below 1000MHz Test Setup



Above 1GHz Test Setup

### Test Procedure

1. The EUT was setup and tested according to ANSI C63.10:2020
2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, and 1.5 m for above 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.



6. Use the following spectrum analyzer settings

(1) Span shall wide enough to fully capture the emission being measured;

(2) 9Hz - 150kHz:

RBW=300 Hz, VBW=1 kHz, Sweep=auto, Detector function=peak, Trace=max hold;

If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

(3) 150kHz - 30MHz:

RBW=10 kHz, VBW=30 kHz, Sweep=auto, Detector function=peak, Trace=max hold;

If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

(4) 30MHz - 1GHz:

RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold;

If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

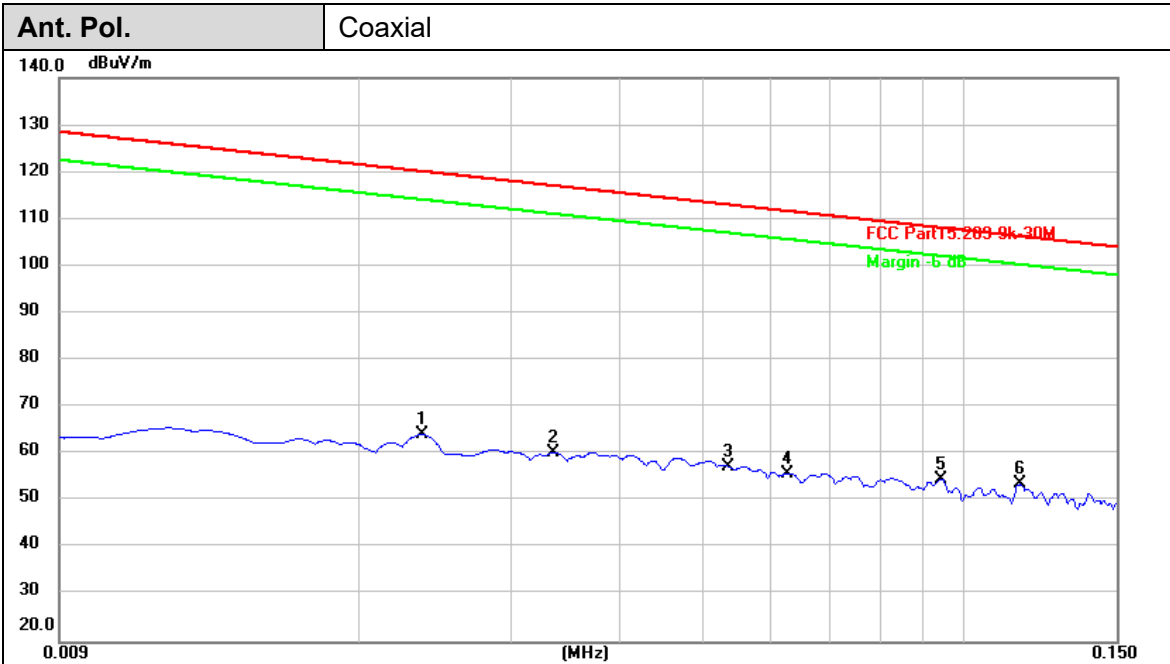
(5) From 1 GHz to 10<sup>th</sup> harmonic:

RBW=1MHz, VBW=3MHz Peak detector for Peak value.

RBW=1MHz, VBW=3MHz RMS detector for Average value.

**Test Mode**

Please refer to the clause 1.7.

**Test Result****Test Voltage:** DC 10.9V 6700mAh 73.03Wh from Rechargeable Li-ion Battery Pack**9 KHz~150 KHz**

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 0.0236          | 48.00          | 16.21         | 64.21          | 120.13         | -55.92      | peak     |
| 2   | 0.0335          | 44.18          | 16.21         | 60.39          | 117.09         | -56.70      | peak     |
| 3   | 0.0533          | 41.22          | 16.21         | 57.43          | 113.06         | -55.63      | peak     |
| 4   | 0.0625          | 39.78          | 16.21         | 55.99          | 111.68         | -55.69      | peak     |
| 5   | 0.0940          | 38.51          | 16.21         | 54.72          | 108.13         | -53.41      | peak     |
| 6 * | 0.1160          | 37.39          | 16.21         | 53.60          | 106.31         | -52.71      | peak     |

**Remarks:**

1. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Pre-amplifier Factor

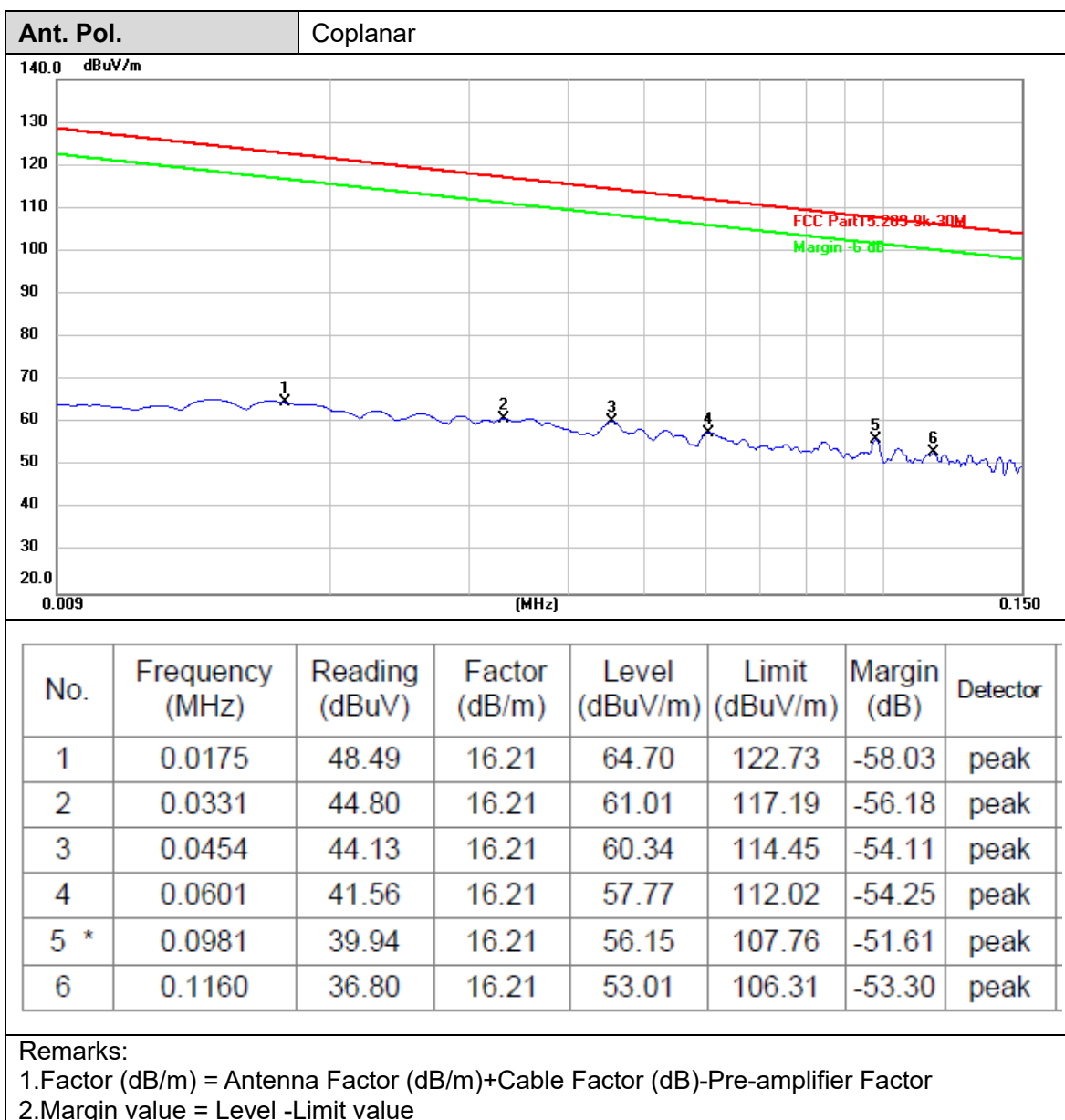
2. Margin value = Level - Limit value

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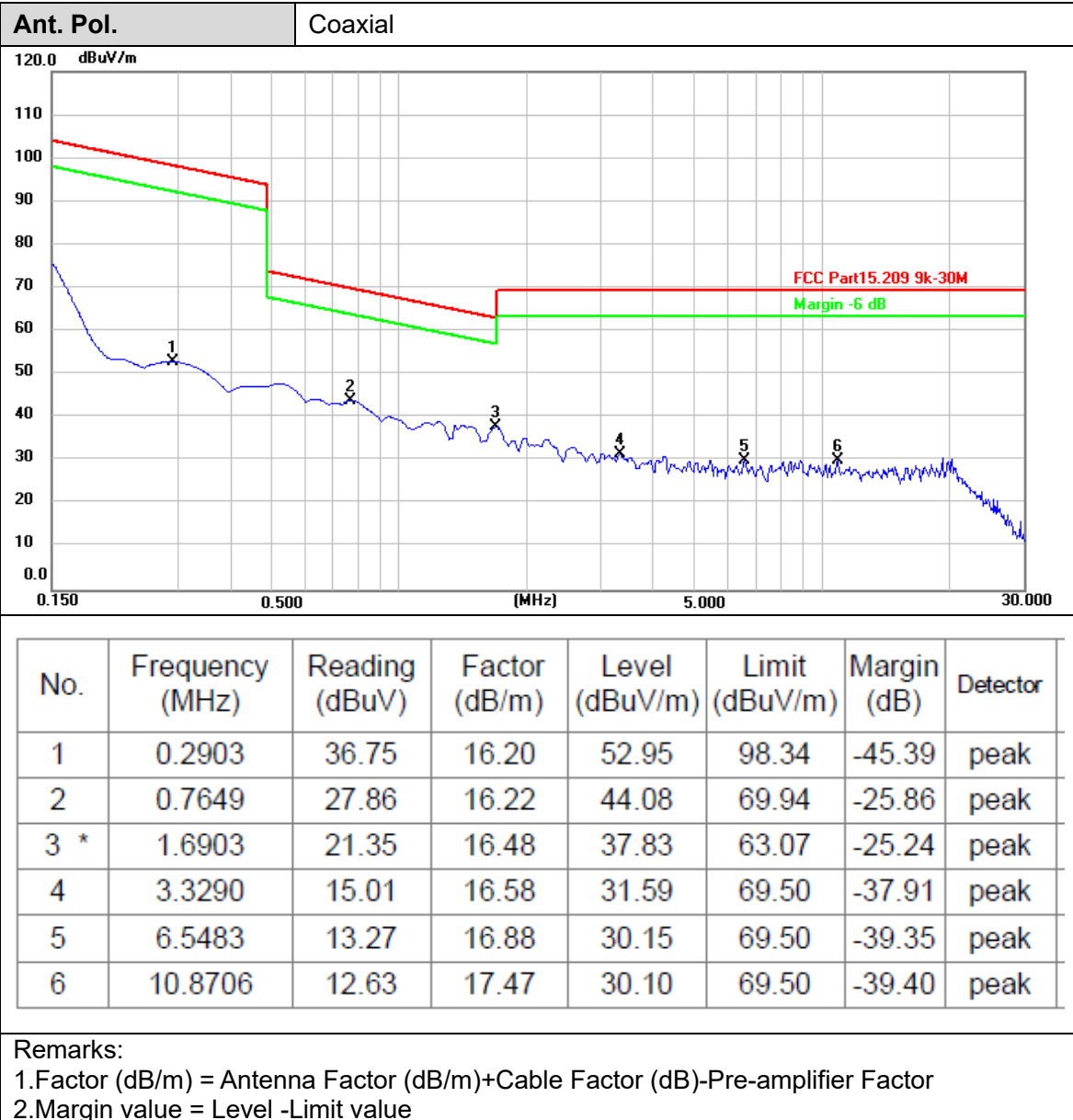
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## 150 KHz~30 MHz

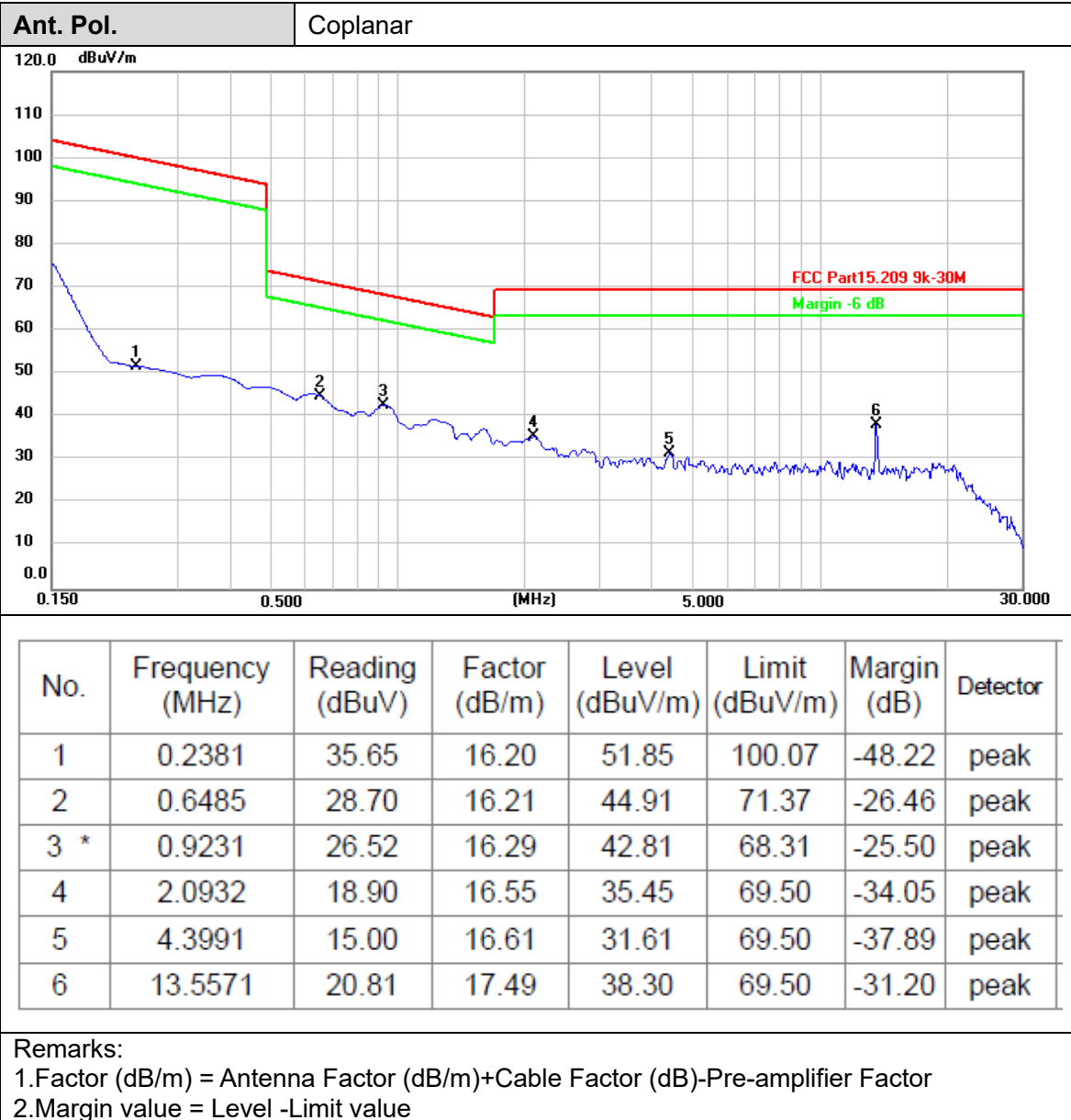


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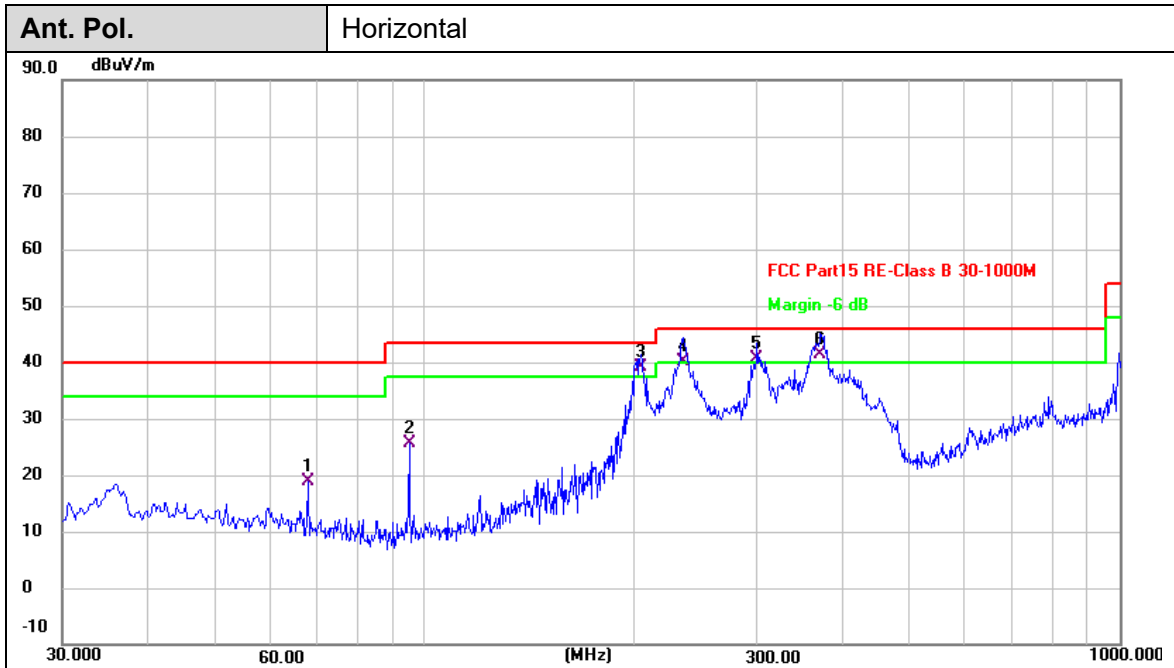
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## 30MHz-1GHz



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 67.8300         | 37.71          | -18.81        | 18.90          | 40.00          | -21.10      | QP       |
| 2   | 94.9900         | 46.09          | -20.37        | 25.72          | 43.50          | -17.78      | QP       |
| 3 * | 204.2767        | 57.85          | -18.84        | 39.01          | 43.50          | -4.49       | QP       |
| 4 ! | 235.3167        | 58.39          | -18.17        | 40.22          | 46.00          | -5.78       | QP       |
| 5 ! | 301.2767        | 55.95          | -15.44        | 40.51          | 46.00          | -5.49       | QP       |
| 6 ! | 371.7633        | 55.14          | -13.78        | 41.36          | 46.00          | -4.64       | QP       |

## Remarks:

1. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Pre-amplifier Factor

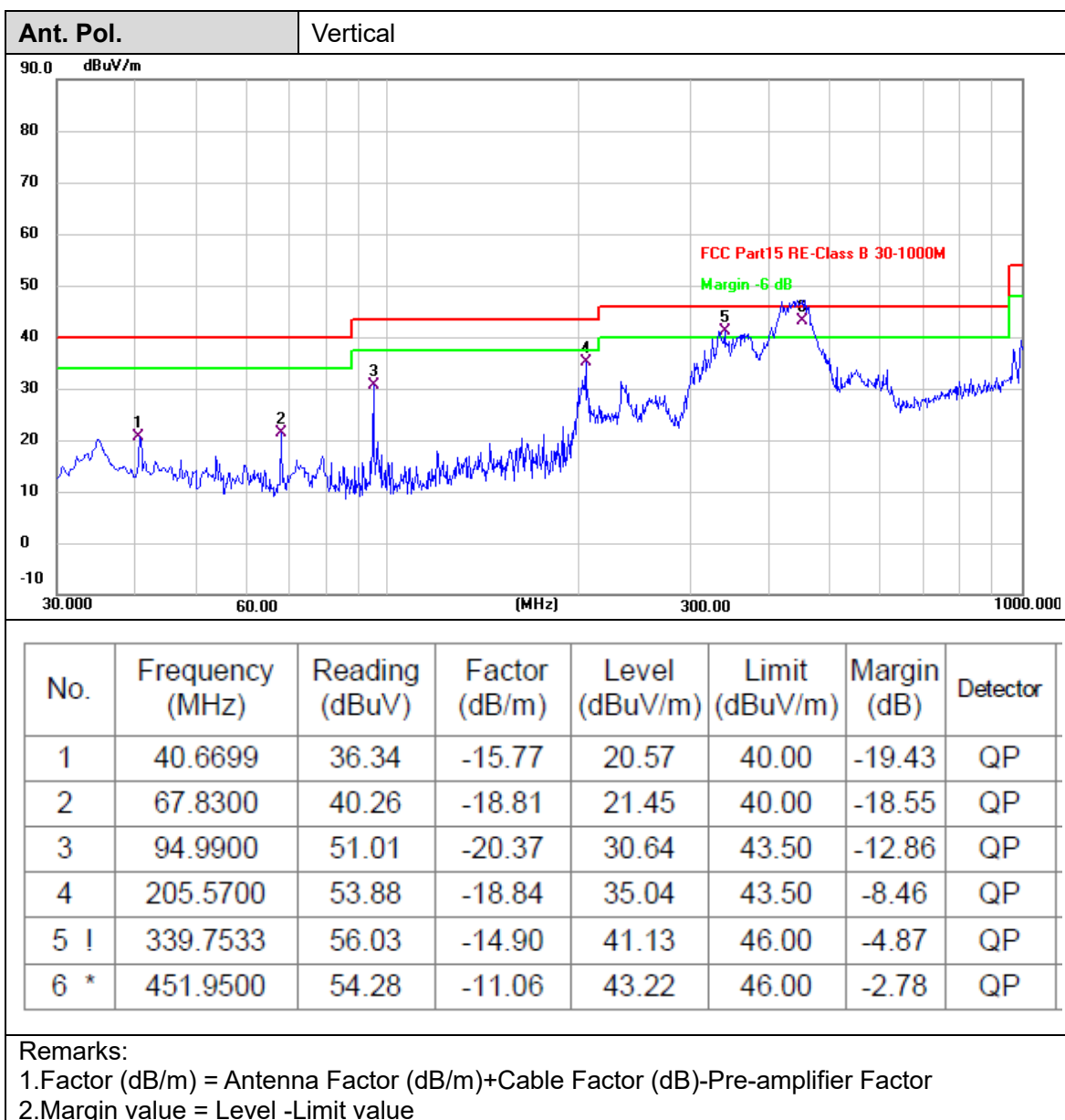
2. Margin value = Level - Limit value

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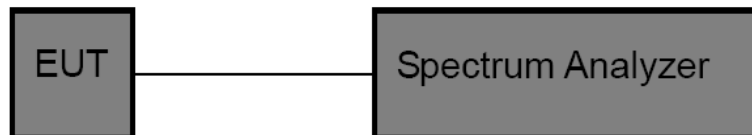
### 3.3. Bandwidth

#### Limit

##### **FCC CFR Title 47 Part 15 Subpart C Section 15.215, RSS-Gen 6.6**

Intentional radiators must be designed to ensure that the 20dB emission bandwidth in the specific band. 13.553~13.567MHz.

#### Test Configuration



#### Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. Spectrum Setting:  
20dB bandwidth:
  - (1) Set RBW  $\geq 1\%$  of the 20dB bandwidth.
  - (2) Set the video bandwidth (VBW)  $\geq$  RBW.
  - (3) Detector = Peak.
  - (4) Trace mode = Max hold.
  - (5) Sweep = Auto couple.Occupied Bandwidth:
  - (1) Set RBW =  $1\% \sim 5\%$  occupied bandwidth.
  - (2) Set the video bandwidth (VBW)  $\geq 3$  RBW.
  - (3) Detector = Peak.
  - (4) Trace mode = Max hold.
  - (5) Sweep = Auto couple.)

#### Test Mode

Please refer to the clause 1.7.

#### Test Results

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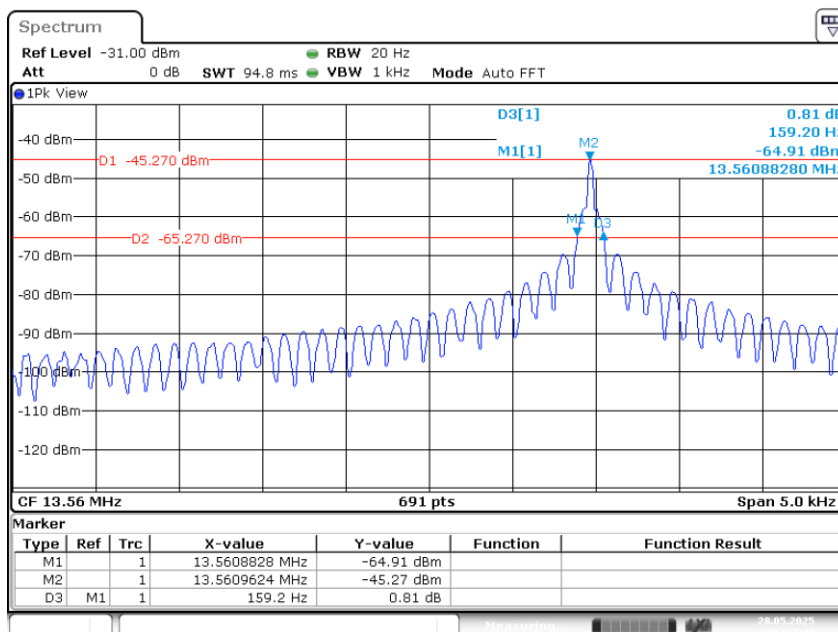
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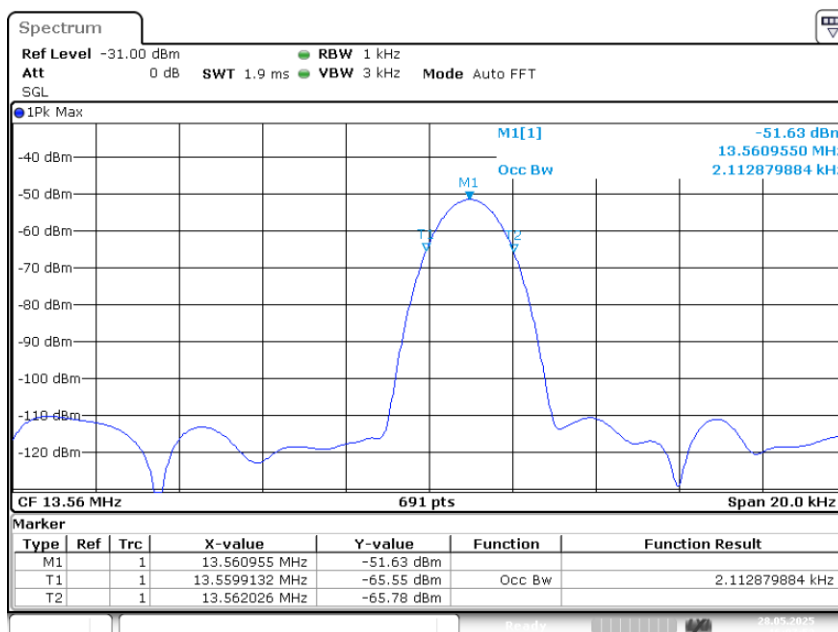
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| Channel Frequency<br>(MHz) | 20dB Bandwidth<br>(Hz) | Occupied Bandwidth<br>(Hz) | Result |
|----------------------------|------------------------|----------------------------|--------|
| 13.56                      | 159.2                  | 2110                       | PASS   |



Date: 28.MAY.2025 16:23:39



Date: 28.MAY.2025 16:07:52

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### 3.4. Field Strength of the Fundamental

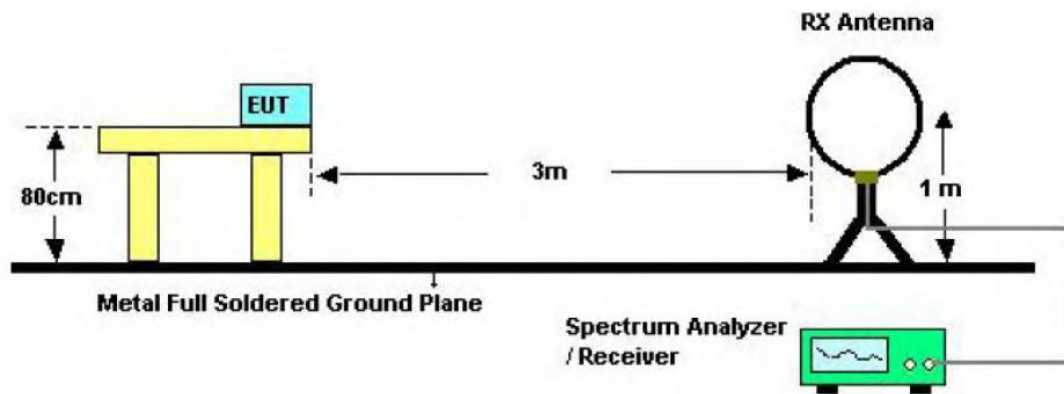
#### Limit

#### FCC CFR Title 47 Part 15 Subpart C Section 15.225(a)(b)(c)

| Fundamental frequency(MHz)  | Field strength of fundamental (uV/m @30m) | Field strength of fundamental (dBuV/m @3m) |
|-----------------------------|-------------------------------------------|--------------------------------------------|
| 13.553-13.567               | 15848                                     | 124.0                                      |
| 13.410-13.553&13.567-13.710 | 334                                       | 90.5                                       |
| 13.110-13.410&13.710-14.010 | 106                                       | 80.5                                       |

Note: Limit dBuV/m @3m =Limit dBuV/m @30m +40\*log(30/3)= Limit dBuV/m @30m + 40.

#### Test Configuration



Below 30MHz Test Setup

#### Test Procedure

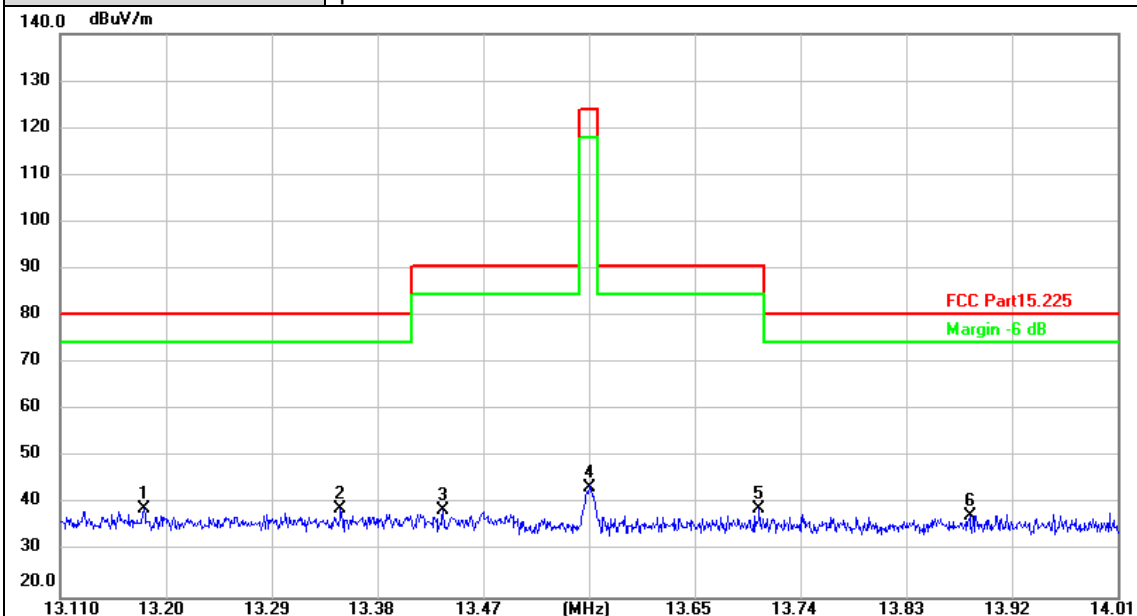
1. The EUT was setup and tested according to ANSI C63.10:2020 requirements.
2. The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2020 on radiated measurement.

#### Test Mode

Please refer to the clause 1.7.

**Test Result****Test Voltage:** DC 10.9V 6700mAh 73.03Wh from Rechargeable Li-ion Battery Pack

|                  |                                                                              |
|------------------|------------------------------------------------------------------------------|
| <b>Ant. Pol.</b> | Coaxial                                                                      |
| <b>Remark:</b>   | No report for the emission which more than 20 dB below the prescribed limit. |



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1 * | 13.1812         | 21.66          | 17.49         | 39.15          | 80.50          | -41.35      | peak     |
| 2   | 13.3489         | 21.56          | 17.49         | 39.05          | 80.50          | -41.45      | peak     |
| 3   | 13.4360         | 21.31          | 17.49         | 38.80          | 90.50          | -51.70      | peak     |
| 4   | 13.5606         | 25.96          | 17.49         | 43.45          | 124.00         | -80.55      | peak     |
| 5   | 13.7050         | 21.58          | 17.49         | 39.07          | 90.50          | -51.43      | peak     |
| 6   | 13.8842         | 20.17          | 17.49         | 37.66          | 80.50          | -42.84      | peak     |

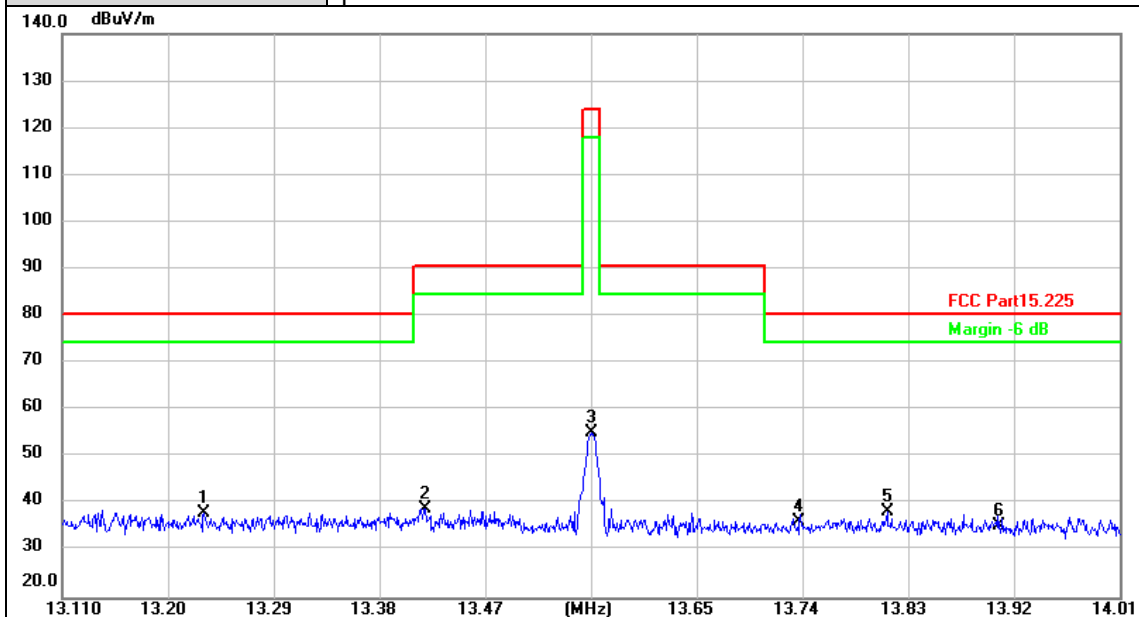
**Remarks:**

1. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Pre-amplifier Factor

2. Margin value = Level - Limit value



|           |                                                                              |
|-----------|------------------------------------------------------------------------------|
| Ant. Pol. | Coplanar                                                                     |
| Remark:   | No report for the emission which more than 20 dB below the prescribed limit. |



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 13.2308         | 20.68          | 17.49         | 38.17          | 80.50          | -42.33      | peak     |
| 2   | 13.4185         | 21.55          | 17.49         | 39.04          | 90.50          | -51.46      | peak     |
| 3   | 13.5610         | 37.75          | 17.49         | 55.24          | 124.00         | -68.76      | peak     |
| 4   | 13.7380         | 18.78          | 17.49         | 36.27          | 80.50          | -44.23      | peak     |
| 5 * | 13.8120         | 20.87          | 17.49         | 38.36          | 80.50          | -42.14      | peak     |
| 6   | 13.9077         | 18.09          | 17.49         | 35.58          | 80.50          | -44.92      | peak     |

## Remarks:

1. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Pre-amplifier Factor

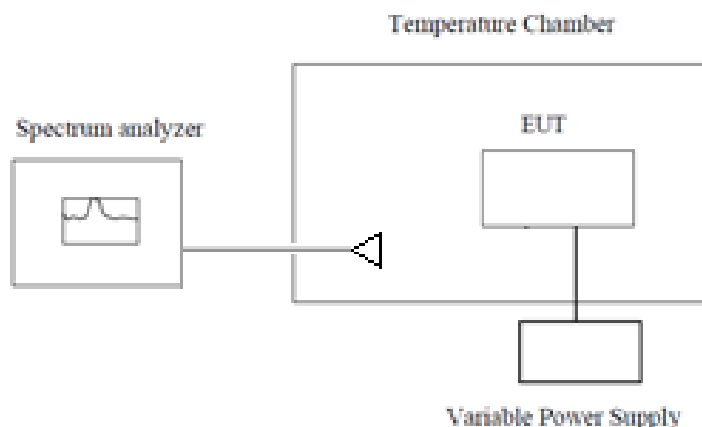
2. Margin value = Level - Limit value

### 3.5. Frequency Stability

#### Limit

The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01\%$  ( $\pm 100\text{ppm}$ ) 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. For battery operated equipment, the equipment tests shall be performed using a new battery.

#### Test Configuration



#### Test Procedure

1. The equipment under test was connected to an external power supply.
2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators.
3. The EUT was placed inside the temperature chamber.
4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency.
5. Turn EUT off and set the chamber temperature to  $-20^{\circ}\text{C}$ . After the temperature stabilized for approximately 30 minutes recorded the frequency.
6. Repeat step measure with  $20^{\circ}\text{C}$  increased per stage until the highest temperature of  $+60^{\circ}\text{C}$  reached.

#### Test Mode

Please refer to the clause 1.7.

**Test Result**

| Test Environment |                 | Frequency<br>Reading(MHz) | Deviation(ppm) | Limit(ppm) | Result |
|------------------|-----------------|---------------------------|----------------|------------|--------|
| Voltage          | Temperature(°C) |                           |                |            |        |
| Vnom             | -20             | 13.56                     | 66.37          | ±100       | Pass   |
|                  | 0               | 13.56                     | 66.37          | ±100       | Pass   |
|                  | 20              | 13.56                     | 66.37          | ±100       | Pass   |
|                  | 40              | 13.56                     | 66.37          | ±100       | Pass   |
|                  | 60              | 13.56                     | 66.37          | ±100       | Pass   |
| 85% Vnom         | 20              | 13.56                     | 66.37          | ±100       | Pass   |
| 115% Vnom        | 20              | 13.56                     | 66.37          | ±100       | Pass   |

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### 3.6. Antenna Requirement

#### Requirement

##### **FCC CFR Title 47 Part 15 Subpart C Section 15.203**

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

#### Result

PASS.

The EUT has an induction coil with a frequency of 13.56MHz.

Note: ☒ Antenna use a permanently attached antenna which is not replaceable.

☐ Not using a standard antenna jack or electrical connector for antenna replacement.

☐ The antenna has to be professionally installed (please provide method of installation).

Which in accordance to 15.203, please refer to the internal photos.

\*\*\*\*\*THE END\*\*\*\*\*

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