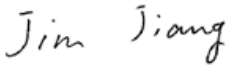
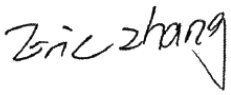
**CTC Laboratories, Inc.**

# TEST REPORT

| | |
|---|---|
| **Report No. .....:** | **CTC2024240712** |
| **FCC ID.....:** | **XUJCRT511SV2** |
| **IC .....:** | **29886-CRT511SV2** |
| **Applicant / Manufacturer .....:** | **Launch Tech Co., Ltd.** |
| FCC Address .....: | Launch Industrial Park, North of Wuhe Rd., Banxuegang, Longgang Shenzhen 518129 China |
| ISED Address .....: | Launch Industrial Park, North of Wuhe Road, Bantian Street, Longgang District, Shenzhen Guangdong 518129 China |
| **Product Name .....:** | **SMART TPMS DIAGNOSTIC SYSTEM** |
| Trade Mark .....: | LAUNCH |
| Model/Type reference.....: | Creader TPMS 511S V2 |
| Listed Model(s) .....: | Creader TPMS 5011 V2 |
| **Standard .....:** | **FCC Rules Part 15C**<br>**RSS-210 Issue 11** |
| Date of receipt of test sample……: | Oct. 14, 2024 |
| Date of testing……...: | Oct. 14, 2024 ~ Dec. 24, 2024 |
| Date of issue……....: | Dec. 24, 2024 |
| **Result……:** | **PASS** |

| | | |
|---|---|---|
| Compiled by:<br>(Printed name + signature) | Jim Jiang |  |
| Supervised by:<br>(Printed name + signature) | Eric Zhang |  |
| Approved by:<br>(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 15C: Radio Frequency Devices.
RSS-210 Issue 11: Licence-Exempt Radio Apparatus: Category I Equipment.
ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.
RSS-Gen Issue 5: General Requirements for Compliance of Radio Apparatus.

## 1.2. Report Version

| Revised No. | Report No. | Date of issue | Description |
|---|---|---|---|
| 01 | CTC2024240712 | Dec. 24, 2024 | Original |
| | | | |
| | | | |

## 1.3. Test Description

| FCC Part 15C & RSS-210 Issue 11 | | | | |
|---|---|---|---|---|
| Test Item | Standard Section | | Result | Test Engineer |
| | FCC | ISED | | |
| Conducted Emission | 15.207 | RSS-Gen 8.8 | Pass | Jim Jiang |
| Radiated Emission | 15.209 | RSS-Gen 8.9 | Pass | Jim Jiang |
| Occupied Bandwidth | / | RSS-Gen 6.7 | Pass | Jim Jiang |
| Antenna Requirement | 15.203 | RSS-Gen 6.8 | Pass | Jim Jiang |

Note:
N/A: Not applicable.
The measurement uncertainty is not included in the test result.

## 1.4. Test Facility

**Address of the report laboratory**

**CTC Laboratories, Inc.**

Add: Room 101 of Building B, Room 107, 108, 207, 208 of Building A, No. 7, Lanqing 1st Road, Luhu 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 inour 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.

| 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, to maintain continuous transmission mode for testing. Or in the state of charging.

# 2. GENERAL INFORMATION

## 2.1. Client Information

| | |
|---|---|
| Applicant / Manufacturer: | Launch Tech Co., Ltd. |
| FCC Address: | Launch Industrial Park, North of Wuhe Rd., Banxuegang, Longgang Shenzhen 518129 China |
| ISED Address: | Launch Industrial Park, North of Wuhe Road, Bantian Street, Longgang District, Shenzhen Guangdong 518129 China |

## 2.2. General Description of EUT

| | |
|---|---|
| Product Name: | SMART TPMS DIAGNOSTIC SYSTEM |
| Trade Mark: | LAUNCH |
| Model/Type reference: | Creader TPMS 511S V2 |
| Listed Model(s): | Creader TPMS 5011 V2 |
| Model Difference: | All these models are identical in the same PCB, layout, electrical circuit and enclosure. The difference is the color of the plastic sleeve. |
| Sample ID: | CTC240919-001-S001 |
| Power supply: | Vehicle Input: DC12V 1A, USB Input: DC5V 2A<br>3.7V 6000mAh from lithium battery |
| Hardware version: | V2 |
| Software version: | CRT501S_V2_V100 |
| **RF Parameter** | |
| Operation frequency: | 125kHz |
| Modulation: | ASK |
| Antenna type: | Coil Antenna |

## 2.3. Accessory Equipment Information

| **Equipment Information** | | | |
|---|---|---|---|
| Name | Model | S/N | Manufacturer |
| RF-Sensor | LTR-V | / | LAUNCH |
| Adapter | A2167 | / | Apple |
| **Cable Information** | | | |
| Name | Shielded Type | Ferrite Core | Length |
| USB Cable | Unshielded | NO | 100cm |
| **Test Software Information** | | | |
| Name | Version | / | / |
| / | / | / | / |

## 2.4. Measurement Instruments List

| RF Test System - SRD | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Calibrated Until |
| 1 | MXG Vector Signal Generator | Agilent | N5182A | MY47420864 | Dec. 12, 2024 |
| 2 | PSG Analog Signal Generator | Agilent | E8257D | MY46521908 | Dec. 12, 2024 |
| 3 | Wideband Radio Communication Tester | R&S | CMW500 | 102414 | Dec. 12, 2024 |

| Radiated Emission | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Calibrated Until |
| 1 | Trilog-Broadband Antenna | Schwarzbeck | VULB 9163 | 01026 | Dec. 18, 2024 |
| 2 | Test Receiver | Keysight | N9038A | MY56400071 | Dec. 12, 2024 |
| 3 | Broadband Amplifier | SCHWARZBECK | BBV9743B | 259 | Dec. 12, 2024 |
| 4 | Mirowave Broadband Amplifier | SCHWARZBECK | BBV9718C | 111 | Dec. 12, 2024 |

| Conducted Emission | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Calibrated Until |
| 1 | LISN | R&S | ENV216 | 101112 | Dec. 12, 2024 |
| 2 | LISN | R&S | ENV216 | 101113 | Dec. 12, 2024 |
| 3 | EMI Test Receiver | R&S | ESCS30 | 100353 | Dec. 12, 2024 |
| 4 | ISN CAT6 | Schwarzbeck | NTFM 8158 | CAT6-8158-0046 | Dec. 12, 2024 |
| 5 | ISN CAT5 | Schwarzbeck | NTFM 8158 | CAT5-8158-0046 | Dec. 12, 2024 |
| 6 | Test Software | R&S | EMC32 | 6.10.10 | / |

| RF Test System - SRD | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Calibrated Until |
| 1 | MXA Signal Analyzer | Keysight | N9020A | MY52091402 | Aug. 21, 2025 |
| 2 | MXG Vector Signal Generator | Agilent | N5182A | MY47420864 | Dec. 12, 2025 |
| 3 | PSG Analog Signal Generator | Agilent | E8257D | MY46521908 | Dec. 12, 2025 |
| 4 | USB Wideband Power Sensor | Keysight | U2021XA | MY55130004 | Mar. 21, 2025 |
| 5 | USB Wideband Power Sensor | Keysight | U2021XA | MY55130006 | Mar. 21, 2025 |
| 6 | Wideband Radio Communication Tester | R&S | CMW500 | 102414 | Dec. 12, 2025 |
| 7 | RF Control Unit | Tonscend | JS0806-2 | / | Aug. 21, 2025 |
| 8 | Test Software | Tonscend | JS1120-3 | V3.3.38 | / |
| 9 | High and low temperature test chamber | ESPEC | MT3035 | / | Mar. 21, 2025 |

| Radiated Emission | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Calibrated Until |
| 1 | Trilog-Broadband Antenna | Schwarzbeck | VULB 9163 | 01026 | Dec. 24, 2025 |
| 2 | Horn Antenna | Schwarzbeck | BBHA 9120D | 9120D-647 | Sep. 25, 2025 |
| 3 | Test Receiver | Keysight | N9038A | MY56400071 | Dec. 12, 2025 |
| 4 | Broadband Amplifier | SCHWARZBECK | BBV9743B | 259 | Dec. 12, 2025 |
| 5 | Mirowave Broadband Amplifier | SCHWARZBECK | BBV9718C | 111 | Dec. 12, 2025 |
| 6 | 3m chamber 3 | YIHENG | EE106 | / | Aug. 28, 2026 |
| 7 | Test Software | FARA | EZ-EMC | FA-03A2 | / |

| Conducted Emission | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Calibrated Until |
| 1 | LISN | R&S | ENV216 | 101112 | Dec. 12, 2025 |
| 2 | LISN | R&S | ENV216 | 101113 | Dec. 12, 2025 |
| 3 | EMI Test Receiver | R&S | ESCS30 | 100353 | Dec. 12, 2025 |
| 4 | ISN CAT6 | Schwarzbeck | NTFM 8158 | CAT6-8158-0046 | Dec. 12, 2025 |
| 5 | ISN CAT5 | Schwarzbeck | NTFM 8158 | CAT5-8158-0046 | Dec. 12, 2025 |
| 6 | Test Software | R&S | EMC32 | 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.
3. The cable loss has been calculated in test result which connection between each test instruments.

# 3. TEST ITEM AND RESULTS

## 3.1. Conducted Emission

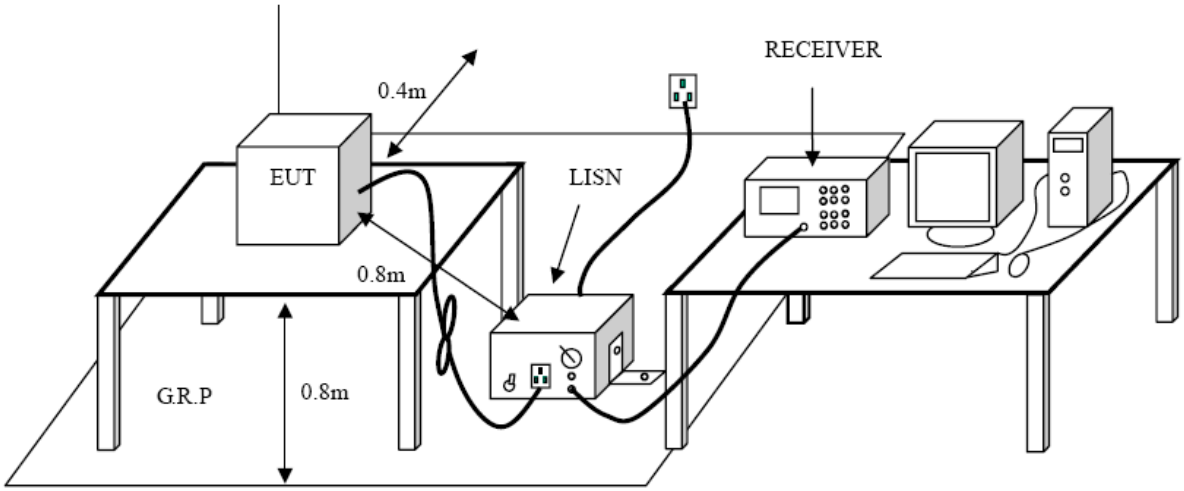
**Limit**

FCC CFR Title 47 Part 15 Subpart C Section 15.207, RSS-Gen 8.8

| 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**

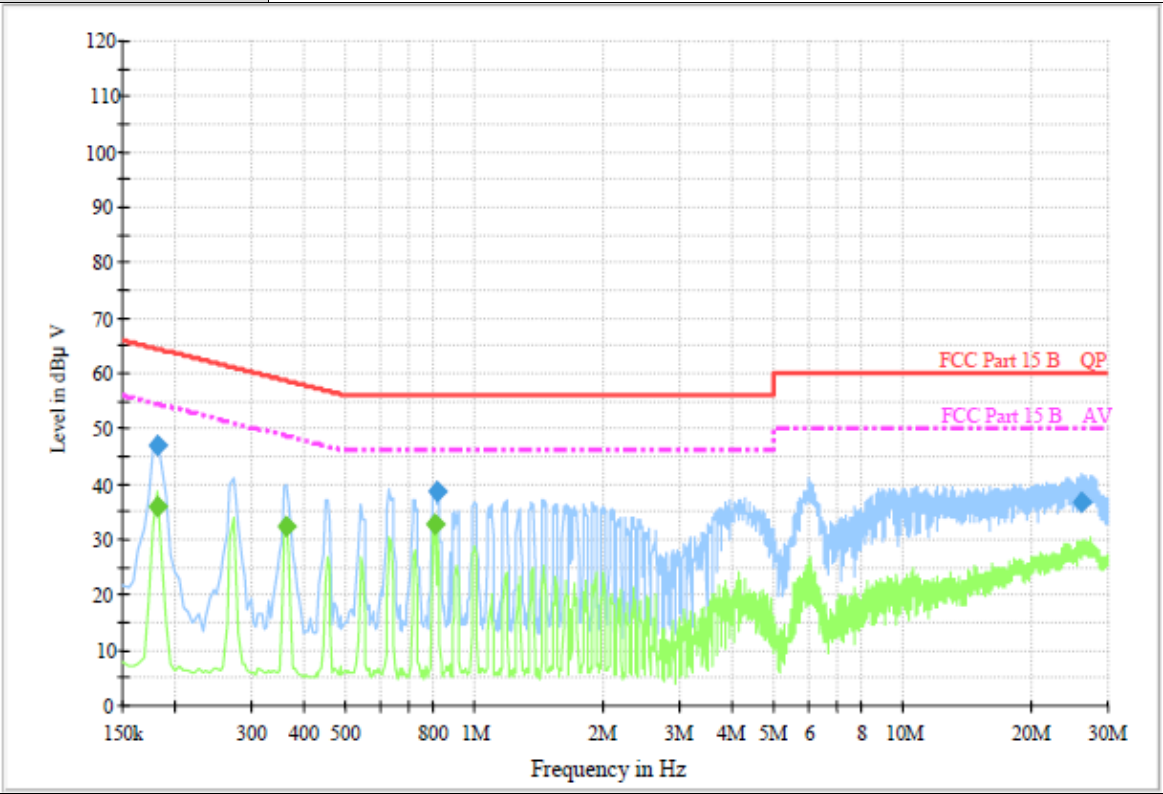
1. The EUT was setup according to ANSI C63.10:2013 requirements.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from 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.

**Test Mode**

Please refer to the clause 1.7.

**Test Results**

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




**Final Measurement Detector 1**

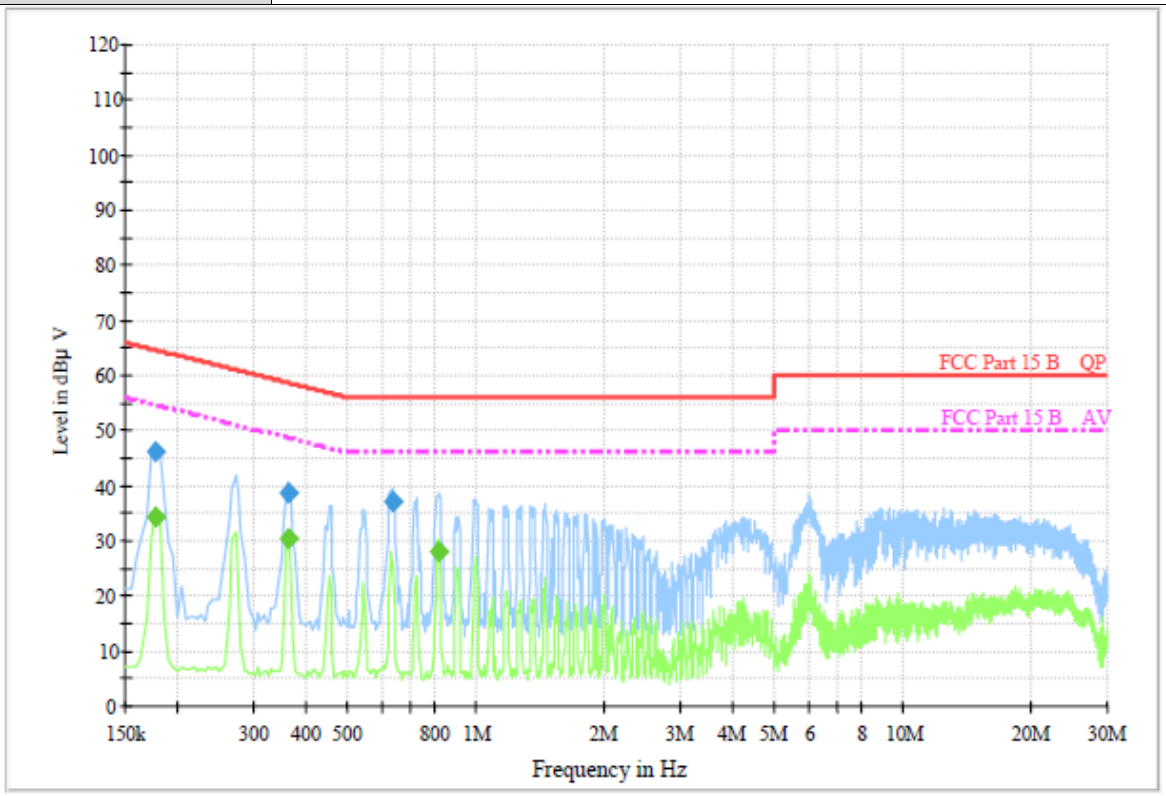
| Frequency (MHz) | QuasiPeak (dBµ V) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµ V) | Comment |
|---|---|---|---|---|---|---|---|---|---|
| 0.181500 | 47.0 | 1000.00 | 9.000 | On | L1 | 9.5 | 17.4 | 64.4 | |
| 0.816000 | 38.6 | 1000.00 | 9.000 | On | L1 | 9.5 | 17.4 | 56.0 | |
| 26.160000 | 36.5 | 1000.00 | 9.000 | On | L1 | 9.7 | 23.5 | 60.0 | |

**Final Measurement Detector 2**

| Frequency (MHz) | Average (dBµ V) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµ V) | Comment |
|---|---|---|---|---|---|---|---|---|---|
| 0.181500 | 35.8 | 1000.00 | 9.000 | On | L1 | 9.5 | 18.6 | 54.4 | |
| 0.361500 | 32.6 | 1000.00 | 9.000 | On | L1 | 9.5 | 16.1 | 48.7 | |
| 0.802500 | 32.7 | 1000.00 | 9.000 | On | L1 | 9.5 | 13.3 | 46.0 | |

Emission Level = Read Level + Correct Factor

| 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 |
|---|---|---|---|---|---|---|---|---|---|
| 0.177000 | 46.0 | 1000.00 | 9.000 | On | N | 9.5 | 18.6 | 64.6 | |
| 0.361500 | 38.8 | 1000.00 | 9.000 | On | N | 9.4 | 19.9 | 58.7 | |
| 0.636000 | 37.3 | 1000.00 | 9.000 | On | N | 9.4 | 18.7 | 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 |
|---|---|---|---|---|---|---|---|---|---|
| 0.177000 | 34.2 | 1000.00 | 9.000 | On | N | 9.5 | 20.4 | 54.6 | |
| 0.361500 | 30.5 | 1000.00 | 9.000 | On | N | 9.4 | 18.2 | 48.7 | |
| 0.816000 | 28.1 | 1000.00 | 9.000 | On | N | 9.4 | 17.9 | 46.0 | |

Emission Level = Read Level + Correct Factor

## 3.2. Radiated Emission

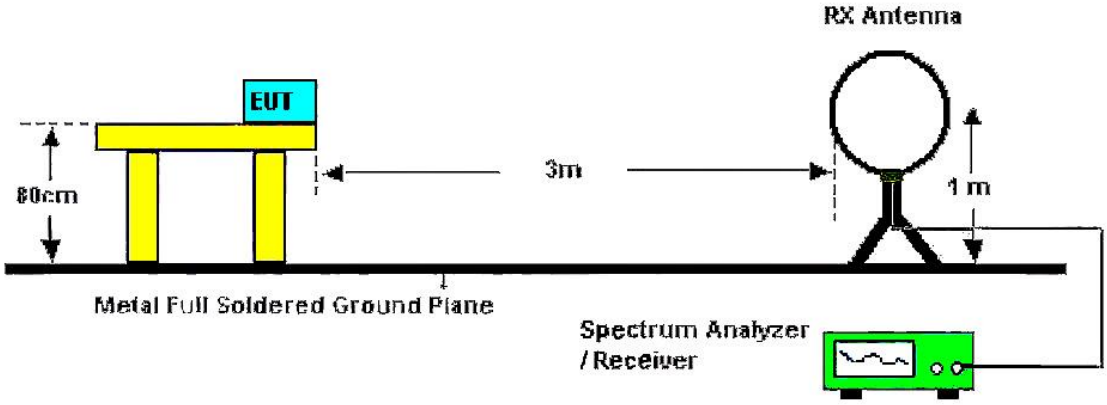
**Limit**

FCC CFR Title 47 Part 15 Subpart C Section 15.209, RSS-Gen 8.9

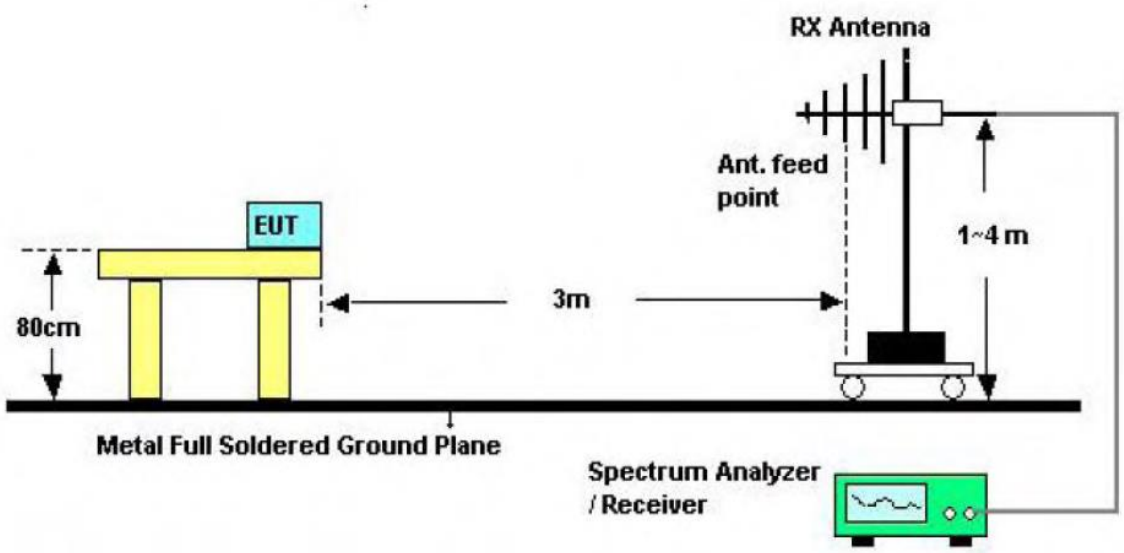
| Frequency (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|---|---|---|
| 0.009~0.490 | 2400/F (kHz) | 300 |
| 0.490~1.705 | 24000/F (kHz) | 30 |
| 1.705~30.0 | 30 | 30 |
| 30~88 | 100 | 3 |
| 88~216 | 150 | 3 |
| 216~960 | 200 | 3 |
| 960~1000 | 500 | 3 |

| Frequency Range (MHz) | dBμV/m (at 3 meters) | |
|---|---|---|
| | Peak | Average |
| Above 1000 | 74 | 54 |

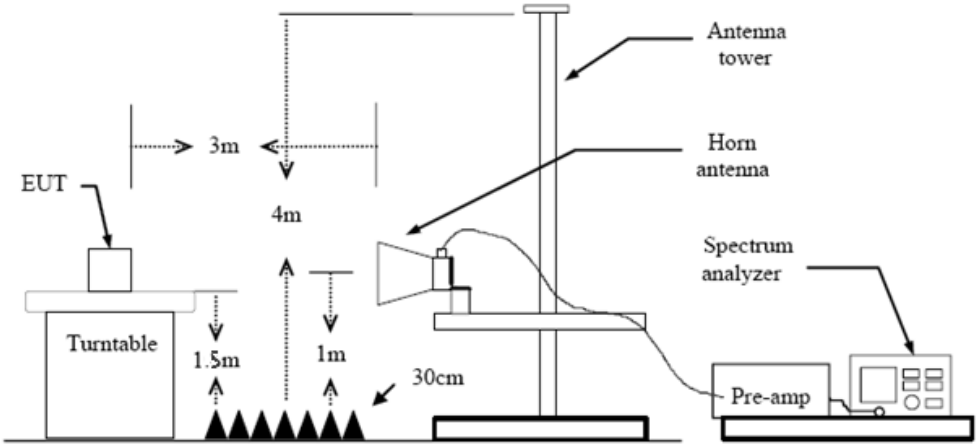
**Test Configuration**




Below 30MHz Test Setup




Below 1000MHz Test Setup




Above 1GHz Test Setup

**Test Procedure**

1. The EUT was setup and tested according to ANSI C63.10:2013
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$^{th}$ harmonic:

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

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

Note 1: For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements.

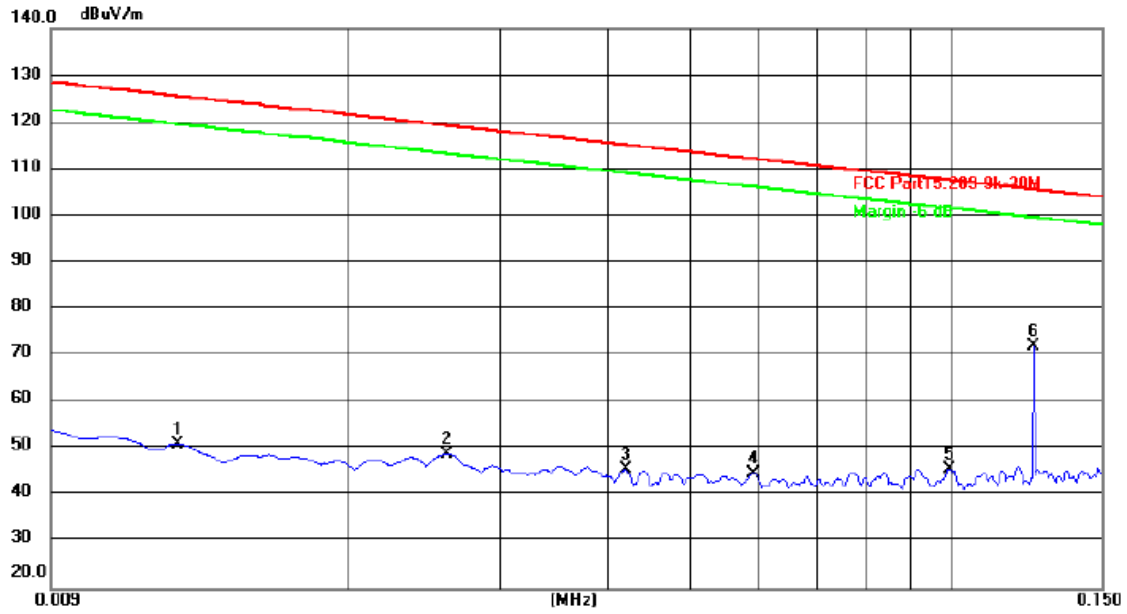
**Test Mode**

Please refer to the clause 1.7.

## Test Result

### 9 KHz~150 KHz

| Ant. Pol. | Horizontal |
|---|---|

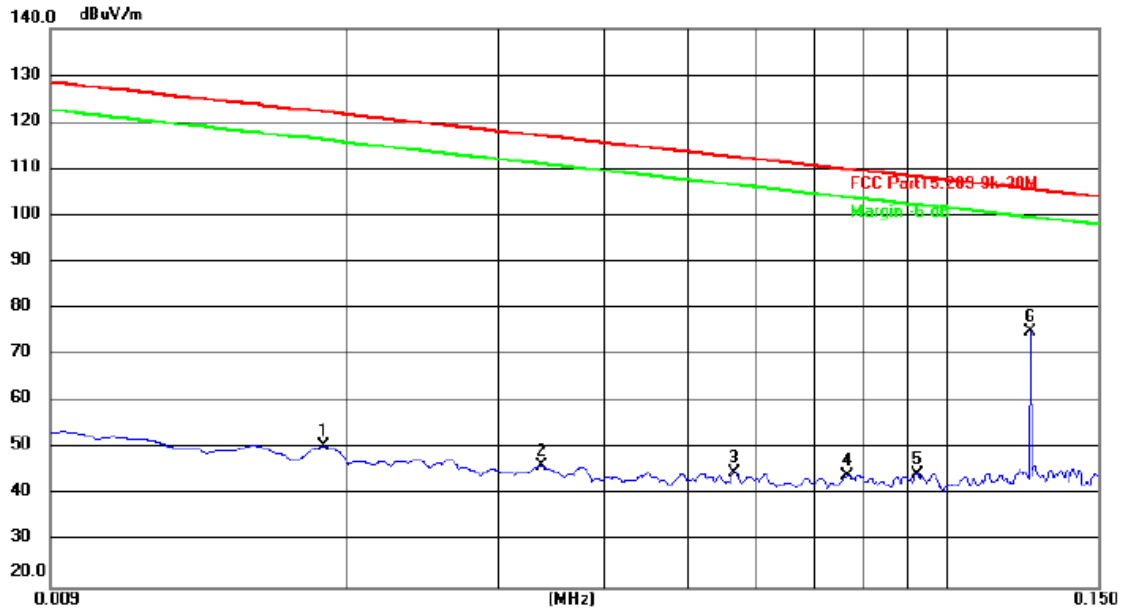



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 0.0126 | 23.93 | 27.21 | 51.14 | 125.58 | -74.44 | peak |
| 2 | 0.0260 | 26.90 | 22.11 | 49.01 | 119.29 | -70.28 | peak |
| 3 | 0.0418 | 25.67 | 19.87 | 45.54 | 115.17 | -69.63 | peak |
| 4 | 0.0591 | 25.48 | 19.21 | 44.69 | 112.16 | -67.47 | peak |
| 5 | 0.0997 | 27.92 | 17.82 | 45.74 | 107.62 | -61.88 | peak |
| 6 * | 0.1252 | 53.89 | 18.01 | 71.90 | 105.65 | -33.75 | peak |

| No. | Frequency (MHz) | Level (dBuV/m) | Level (dBuA/m) | Limit (dBuA/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|
| 1 | 0.0126 | 51.14 | -0.36 | 74.08 | -74.44 | peak |
| 2 | 0.0260 | 49.01 | -2.49 | 67.79 | -70.28 | peak |
| 3 | 0.0418 | 45.54 | -5.96 | 63.67 | -69.63 | peak |
| 4 | 0.0591 | 44.69 | -6.81 | 60.66 | -67.47 | peak |
| 5 | 0.0997 | 45.74 | -5.76 | 56.12 | -61.88 | peak |
| 6 | 0.1252 | 71.90 | 20.40 | 54.15 | -33.75 | peak |

Remarks:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level-Limit value
3.Level(dBuA/m) = Level(dBuV/m)-51.5

| Ant. Pol. | Vertical |
|---|---|



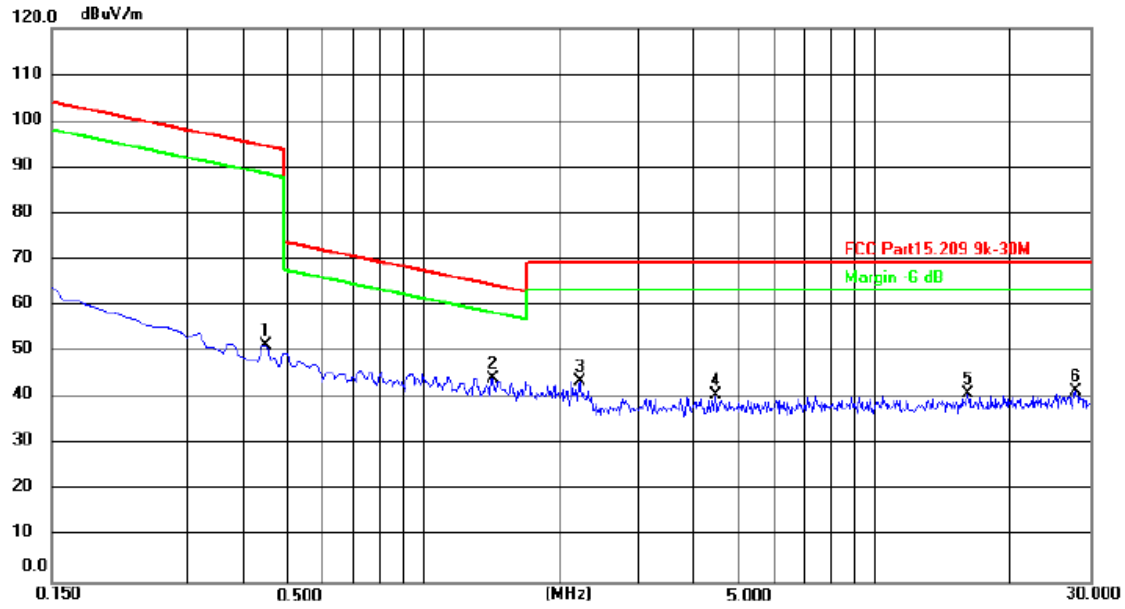

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 0.0187 | 26.52 | 23.91 | 50.43 | 122.15 | -71.72 | peak |
| 2 | 0.0336 | 25.38 | 20.89 | 46.27 | 117.06 | -70.79 | peak |
| 3 | 0.0566 | 25.53 | 19.21 | 44.74 | 112.54 | -67.80 | peak |
| 4 | 0.0767 | 25.92 | 18.18 | 44.10 | 109.90 | -65.80 | peak |
| 5 | 0.0922 | 26.37 | 18.12 | 44.49 | 108.30 | -63.81 | peak |
| 6 * | 0.1252 | 57.02 | 18.01 | 75.03 | 105.65 | -30.62 | peak |

| No. | Frequency (MHz) | Level (dBuV/m) | Level (dBuA/m) | Limit (dBuA/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|
| 1 | 0.0187 | 50.43 | -1.07 | 70.65 | -71.72 | peak |
| 2 | 0.0336 | 46.27 | -5.23 | 65.56 | -70.79 | peak |
| 3 | 0.0566 | 44.74 | -6.76 | 61.04 | -67.80 | peak |
| 4 | 0.0767 | 44.10 | -7.40 | 58.40 | -65.80 | peak |
| 5 | 0.0922 | 44.49 | -7.01 | 56.80 | -63.81 | peak |
| 6 | 0.1252 | 75.03 | 23.53 | 54.15 | -30.62 | peak |

Remarks:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level-Limit value
3.Level(dBuA/m) = Level(dBuV/m)-51.5

**150 KHz~30 MHz**

| Ant. Pol. | Horizontal |
|---|---|

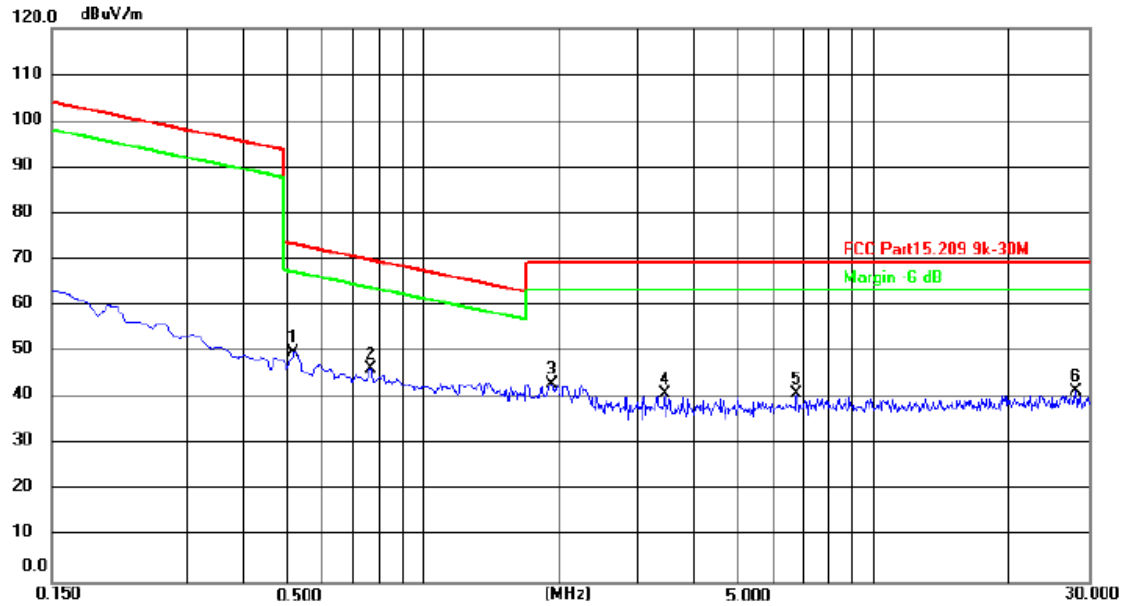



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 0.4485 | 33.61 | 17.80 | 51.41 | 94.57 | -43.16 | peak |
| 2 * | 1.4233 | 26.12 | 18.15 | 44.27 | 64.56 | -20.29 | peak |
| 3 | 2.2196 | 25.61 | 18.12 | 43.73 | 69.50 | -25.77 | peak |
| 4 | 4.4384 | 22.61 | 18.10 | 40.71 | 69.50 | -28.79 | peak |
| 5 | 16.1197 | 23.10 | 17.95 | 41.05 | 69.50 | -28.45 | peak |
| 6 | 27.8607 | 24.24 | 17.31 | 41.55 | 69.50 | -27.95 | peak |

| No. | Frequency (MHz) | Level (dBuV/m) | Level (dBuA/m) | Limit (dBuA/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|
| 1 | 0.4485 | 51.41 | -0.09 | 43.07 | -43.16 | peak |
| 2 | 1.4233 | 44.27 | -7.23 | 13.06 | -20.29 | peak |
| 3 | 2.2196 | 43.73 | -7.77 | 18.00 | -25.77 | peak |
| 4 | 4.4384 | 40.71 | -10.79 | 18.00 | -28.79 | peak |
| 5 | 16.1197 | 41.05 | -10.45 | 18.00 | -28.45 | peak |
| 6 | 27.8607 | 41.55 | -9.95 | 18.00 | -27.95 | peak |

Remarks:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level-Limit value
3.Level(dBuA/m) = Level(dBuV/m)-51.5

| Ant. Pol. | Vertical |
|---|---|



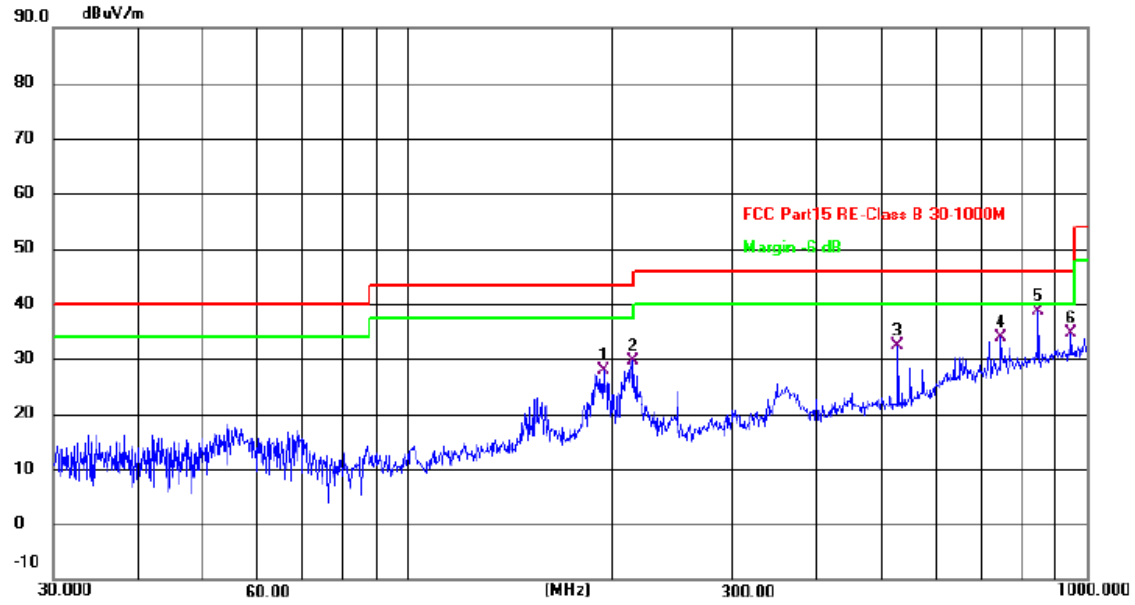

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 * | 0.5181 | 31.88 | 17.96 | 49.84 | 73.32 | -23.48 | peak |
| 2 | 0.7669 | 28.40 | 18.01 | 46.41 | 69.92 | -23.51 | peak |
| 3 | 1.9310 | 25.03 | 18.05 | 43.08 | 69.50 | -26.42 | peak |
| 4 | 3.4434 | 22.85 | 18.20 | 41.05 | 69.50 | -28.45 | peak |
| 5 | 6.7369 | 22.88 | 17.96 | 40.84 | 69.50 | -28.66 | peak |
| 6 | 28.0498 | 24.36 | 17.28 | 41.64 | 69.50 | -27.86 | peak |

| No. | Frequency (MHz) | Level (dBuV/m) | Level (dBuA/m) | Limit (dBuA/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|
| 1 | 0.5181 | 49.84 | -1.66 | 21.82 | -23.48 | peak |
| 2 | 0.7669 | 46.41 | -5.09 | 18.42 | -23.51 | peak |
| 3 | 1.9310 | 43.08 | -8.42 | 18.00 | -26.42 | peak |
| 4 | 3.4434 | 41.05 | -10.45 | 18.00 | -28.45 | peak |
| 5 | 6.7369 | 40.84 | -10.66 | 18.00 | -28.66 | peak |
| 6 | 28.0498 | 41.64 | -9.86 | 18.00 | -27.86 | peak |

Remarks:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level-Limit value
3.Level(dBuA/m) = Level(dBuV/m)-51.5

**30MHz-1GHz**

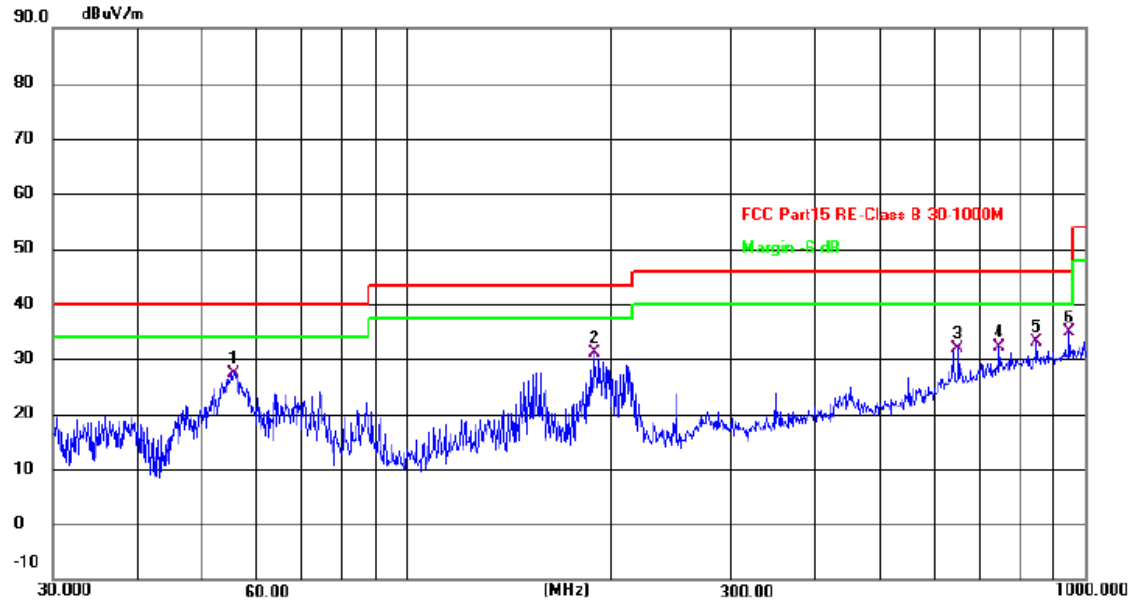
| Ant. Pol. | Horizontal |
|---|---|




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 193.7726 | 47.09 | -19.10 | 27.99 | 43.50 | -15.51 | QP |
| 2 | 214.5141 | 48.38 | -18.86 | 29.52 | 43.50 | -13.98 | QP |
| 3 | 526.3967 | 42.27 | -9.86 | 32.41 | 46.00 | -13.59 | QP |
| 4 | 747.4823 | 38.60 | -4.83 | 33.77 | 46.00 | -12.23 | QP |
| 5 * | 848.0561 | 41.82 | -3.28 | 38.54 | 46.00 | -7.46 | QP |
| 6 | 948.7608 | 36.26 | -1.71 | 34.55 | 46.00 | -11.45 | QP |

Remarks:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

| Ant. Pol. | Vertical |
|---|---|




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 55.4147 | 44.13 | -16.81 | 27.32 | 40.00 | -12.68 | QP |
| 2 | 188.4123 | 49.91 | -18.66 | 31.25 | 43.50 | -12.25 | QP |
| 3 | 649.6594 | 38.54 | -6.70 | 31.84 | 46.00 | -14.16 | QP |
| 4 | 747.4823 | 37.06 | -4.83 | 32.23 | 46.00 | -13.77 | QP |
| 5 | 848.0561 | 36.30 | -3.28 | 33.02 | 46.00 | -12.98 | QP |
| 6 * | 948.7608 | 36.67 | -1.71 | 34.96 | 46.00 | -11.04 | QP |

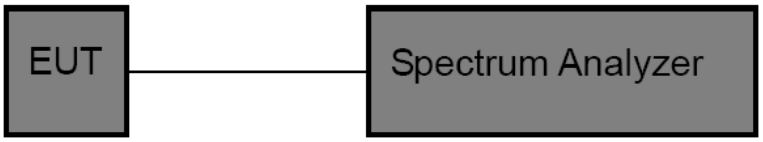
Remarks:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

## 3.3. Bandwidth

**Limit**

None.

**Test Configuration**




**Test Procedure**

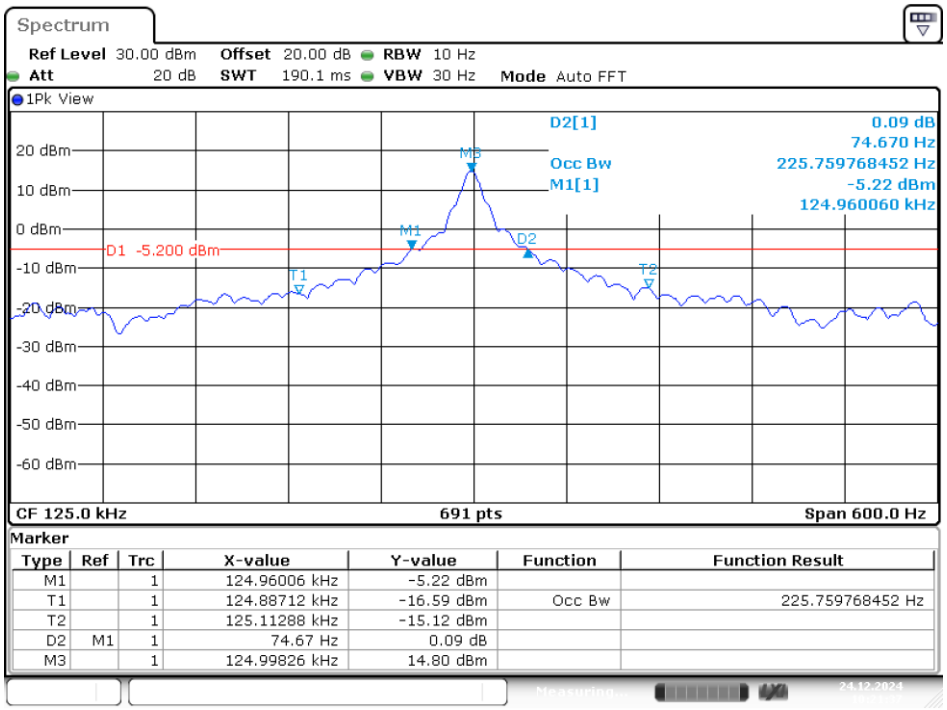
The occupied bandwidth per RSS-Gen Issue 5 Clause 6.7 was measured using the Spectrum Analyzer.
The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.
The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3 x RBW.

**Test Mode**

Please refer to the clause 1.7.

**Test Results**

| Channel Frequency(kHz) | 20dB Bandwidth(Hz) | Occupied Bandwidth(Hz) |
|---|---|---|
| 125 | 74.67 | 225.76 |

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## 3.4. 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**

The EUT's antenna is a Coil Antenna, there is no gain requirement.

**RSS-Gen Issue 5 Section 6.8:**

The applicant for equipment certification, as per RSP-100, must provide a list of all antenna types that may be used with the licence-exempt transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. Licence-exempt transmitters that have received equipment certification may operate with different types of antennas. However, it is not permissible to exceed the maximum equivalent isotropically radiated power(e.i.r.p.) limits specified in the applicable standard (RSS) for licence-exempt apparatus.

**Result**

PASS.
The EUT has a Coil Antenna with a frequency of 125kHz.
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 RSS-Gen 6.8, please refer to the internal photos.

**************************THE END**************************