



Report No.: ET-23101246E

# TEST REPORT

Applicant: Zhongshan Aihao Intelligent Technology Co., Ltd.  
Address of Applicant: 103, No. 4, Lane 2, Wencheng Village, Xiaolan Town, Zhongshan City, Guangdong Province  
Manufacturer/Factory: Zhongshan Aihao Intelligent Technology Co., Ltd.  
Address of Manufacturer/Factory: 103, No. 4, Lane 2, Wencheng Village, Xiaolan Town, Zhongshan City, Guangdong Province  
Product Name: Wireless Doorbell  
Model No.: AH-238I,AH-238N,AH-268,AH-269,AH-9527,AH-667,AH-227,P686,P687,P688,S686,S687,S688,M416,M417,M418,H416,H417,H418  
Trade Mark:   
FCC ID: 2BDMW-AH238I  
Applicable standards: FCC Part 15.231  
Test procedure: ANSI C63.10-2013  
Date of Test: Oct.25, 2023-Nov.12, 2023  
Date of report issued: Nov.20, 2023  
Test Result : PASS\*

Remark:

\* In the configuration tested, the EUT complied with the standards specified above.

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full without prior written permission of the company.

The report would be invalid without specific stamp of test institute and the signatures of compiler and approver

## Prepared By

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Project Engineer

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Approved by:



Authorized Signature



| Report Revision History |             |              |
|-------------------------|-------------|--------------|
| Report No.              | Description | Issue Date   |
| ET-23101246E            | Original    | Nov.20, 2023 |
|                         |             |              |
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## 1 Test Summary

| Test Item                                | Section in CFR 47                                          | Result | Test by |
|------------------------------------------|------------------------------------------------------------|--------|---------|
| Antenna requirement                      | 15.203<br>RSS-Gen Section 6.8                              | Pass   | /       |
| Conducted emission                       | 15.207<br>RSS-Gen Section 8.8                              | N/A    | /       |
| Transmitter field strength               | 15.231(b)<br>RSS210 Annex D                                | Pass   | Yvan    |
| Radiated emission and<br>Restricted band | 15.205 and 15.209<br>RSS-210 D&<br>RSS-Gen Clause 8.9&8.10 | Pass   | Yvan    |
| Occupied Bandwidth                       | 15.215<br>RSS-Gen 6.7                                      | Pass   | Yvan    |
| Release time                             | 15.231(a)(2)<br>RSS-210 D                                  | Pass   | Yvan    |

### Remarks:

1. Pass: The EUT complies with the essential requirements in the standard.
2. Test according to ANSI C63.10:2013

### Measurement Uncertainty

| Test Item                         | Uncertainty Criterion | Measurement Uncertainty | Notes |
|-----------------------------------|-----------------------|-------------------------|-------|
| Occupied Channel Bandwidth        | ±5%                   | ±0.55%                  | (1)   |
| RF output power, conducted        | ±1.5dB                | ±0.99dB                 | (1)   |
| Power Spectral Density, conducted | ±3dB                  | ±0.61dB                 | (1)   |
| Unwanted Emissions, conducted     | ±3dB                  | ±0.64dB                 | (1)   |
| AC Power Line Conducted Emission  | ±6dB                  | ± 3.02 dB               | (1)   |
| Radiated emissions Below 1GHz     | ±6dB                  | ±4.30 dB                | (1)   |
| Radiated emissions Above 1GHz     | ±6dB                  | ±4.35 dB                | (1)   |

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

## 2 General Information

### 2.1 General Description of EUT

|                        |                                                                                                                        |
|------------------------|------------------------------------------------------------------------------------------------------------------------|
| Product Name:          | Wireless Doorbell                                                                                                      |
| Model No.:             | AH-238I                                                                                                                |
| Model of difference:   | AH-238I,AH-238N,AH-268,AH-269,AH-9527,AH-667,AH-667,AH-227,P686,P687,P688,S686,S687,S688,M416,M417,M418,H416,H417,H418 |
| Sample(s) Status:      | Engineer sample                                                                                                        |
| Hardware Version:      | N/A                                                                                                                    |
| Software Version:      | N/A                                                                                                                    |
| Operation Frequency:   | 433.92MHz                                                                                                              |
| Channel numbers:       | 1                                                                                                                      |
| Channel separation:    | N/A                                                                                                                    |
| Modulation type:       | ASK                                                                                                                    |
| Antenna Type:          | PCB Antenna                                                                                                            |
| Antenna gain:          | 0dBi Max (Declare by applicant)                                                                                        |
| Power supply:          | DC 12V                                                                                                                 |
| Connecting I/O port(s) | Please refer to User's Manual                                                                                          |

Note: For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual

**2.2 Test mode**

| Test mode | Description                                                                                                       |
|-----------|-------------------------------------------------------------------------------------------------------------------|
| Mode 1    | TX Mode:<br>During test, Keep EUT is in continuous transmission mode, New DC 12V battery is used during all test. |

**2.3 Description of Support Units**

None.

**2.4 Deviation from Standards**

None.

**2.5 Abnormalities from Standard Conditions**

None.

**2.6 Test Facility**

Test laboratory: Shenzhen ETR Standard Technology Co., Ltd.  
CNAS Registration Number: L11864  
A2LA Certificate Number: 6640.01  
FCC Designation Number: CN1326  
FCC Test Firm Registration: 183064  
IC Company Number: 28440

**2.7 Test Location**

All tests were performed at:

Laboratory location: No.103, No.10, Phase I, Zone 3, Xinxing Industrial Park, Xinhe, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China  
Telephone: +86 755 85259392  
Fax: +86 755 27219460

**2.8 Additional Instructions**

None.

### 3 Test Instruments list

| Item | Equipment name           | Manufacturer   | Model                   | Serial No.             | Calibration date | Due date   |
|------|--------------------------|----------------|-------------------------|------------------------|------------------|------------|
| 1    | EMI Test Receiver        | Rohde&schwarz  | ESCI7                   | 100605                 | 2023.3.02        | 2024.3.01  |
| 2    | EMI Test Receiver        | Rohde&schwarz  | ESCI3                   | 102696                 | 2023.3.02        | 2024.3.01  |
| 3    | Loop Antenna             | schwarabeck    | FMZB 1519 B             | FMZB 1519 B            | 2022.3.11        | 2024.3.10  |
| 4    | Broadband antenna        | schwarabeck    | VULB9168                | 1064                   | 2022.3.11        | 2024.3.10  |
| 5    | Horn antenna             | schwarabeck    | BBHA9120D               | 9120D-1145             | 2022.3.11        | 2024.3.10  |
| 6    | amplifier                | EMtrace        | RP01A                   | 50117                  | 2023.3.02        | 2024.3.01  |
| 7    | Artificial power network | schwarabeck    | NSLK8127                | 8127483                | 2023.3.02        | 2024.3.01  |
| 8    | Artificial power network | ETS            | 3186/2NM                | 1132                   | 2023.3.02        | 2024.3.01  |
| 9    | 10dB attenuator          | HUBER+SUHNER   | 10dB                    | /                      | 2023.3.02        | 2024.3.01  |
| 10   | amplifier                | Space-Dtronics | EWLAN0118G-P40          | 19113001               | 2023.3.02        | 2024.3.01  |
| 11   | Filter                   | Xingbo         | XBLBQ-GTA19             | 210410-3-1             | 2023.3.06        | 2024.3.05  |
| 12   | Spectrum analyzer        | KEYSIGHT       | N9020A                  | MY55370280             | 2023.3.02        | 2024.3.01  |
| 13   | Power detector box       | MWRTest        | MW100-PSB               | MW201020JYT            | 2023.10.18       | 2024.10.17 |
| 14   | Power meter              | Rohde&Schwarz  | NRP-Z11                 | 1138.3004.02-117725-vh | 2023.03.30       | 2024.3.29  |
| 15   | amplifier                | SKET           | LNPA_1840-50 (18-40GHz) | SK2019040302           | 2023.8.16        | 2024.8.15  |
| 16   | Horn antenna             | schwarabeck    | BBHA 9170               | 946                    | 2022.3.11        | 2024.3.10  |
| 17   | Spectrum analyzer        | Rohde&schwarz  | FSU40                   | 1166.1660K43           | 2023.8.16        | 2024.8.15  |

Note: the calibration interval of the above test instruments is 12 or 24 months and the calibrations are traceable to international system unit (SI).

| Software Name | Manufacturer | Model  | Version           |
|---------------|--------------|--------|-------------------|
| Conducted     | Farad        | EZ-EMC | Ver.EMC-CON 3A1.1 |
| Radiated      | Farad        | EZ-EMC | Ver.FA-03A2 RE    |

## 4 Test results and Measurement Data

### 4.1 Antenna requirement

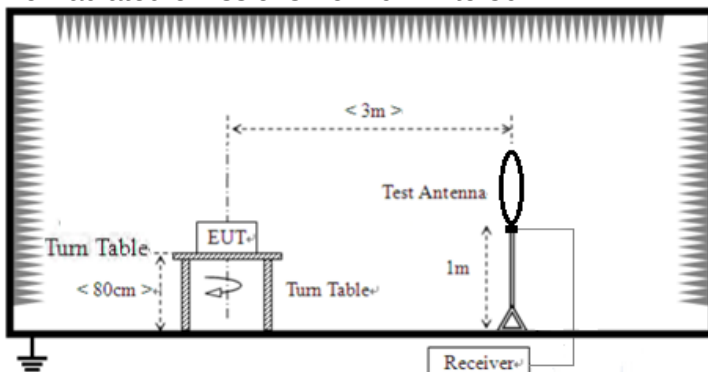
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Standard requirement:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <p><b>FCC part 15.203 requirement:</b></p> <p>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 an 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.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p><b>RSS-Gen 6.8:</b></p> <p>The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.</p> <p>For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).</p> |
| <b>EUT Antenna:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <i>The antenna is PCB antenna, the best case gain of the antenna is 0dBi, reference to the appendix II for details</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

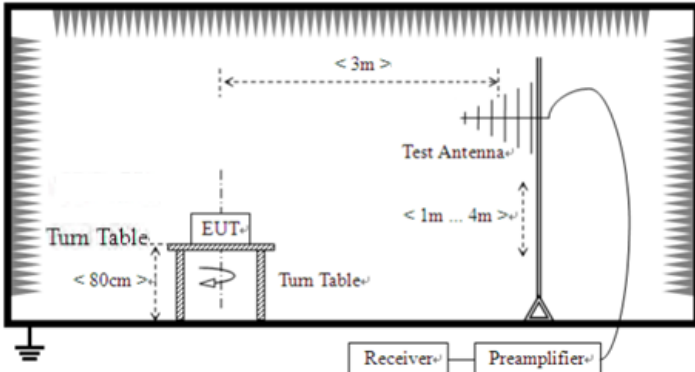
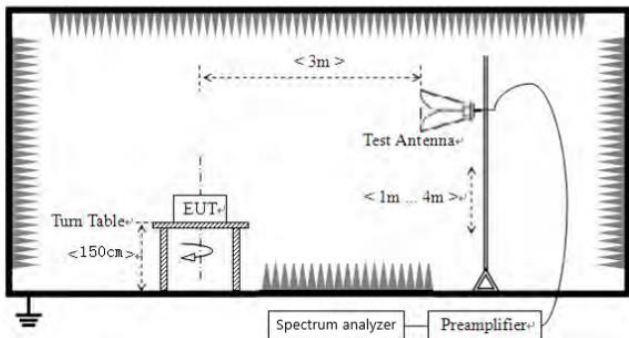


## 4.2 Conducted Emissions

|                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |              |    |           |       |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|--------------|----|-----------|-------|
| Test Requirement:                                | FCC Part15 C Section 15.207                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     |              |    |           |       |
| Test Method:                                     | ANSI C63.10:2013                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |     |              |    |           |       |
| Test Frequency Range:                            | 150KHz to 30MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |              |    |           |       |
| Class / Severity:                                | Class B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |     |              |    |           |       |
| Receiver setup:                                  | RBW=9KHz, VBW=30KHz, Sweep time=auto                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     |              |    |           |       |
| Limit:                                           | 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        |       |
| * Decreases with the logarithm of the frequency. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |              |    |           |       |
| Test setup:                                      | <div><div><div><div><div></div><div>Reference Plane</div></div><div></div><div><div></div><div>40cm</div></div></div><div><div><div>LISN</div><div>AUX Equipment</div><div>E.U.T</div></div><div>Test table/Insulation plane</div></div><div><div>80cm</div><div><div>LISN</div><div>Filter</div><div>AC power</div></div><div>EMI Receiver</div></div></div><div><div>Remark:</div><div>E.U.T: Equipment Under Test</div><div>LISN: Line Impedance Stabilization Network</div><div>Test table height=0.8m</div></div></div>                                                                                                                                                                                                         |     |              |    |           |       |
| Test procedure:                                  | <div><div>1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.</div><div>2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).</div><div>3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.</div></div> |     |              |    |           |       |
| Test Instruments:                                | Refer to section 3.0 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |     |              |    |           |       |
| Test mode:                                       | Refer to section 2.2 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |     |              |    |           |       |
| Test environment:                                | Temp.:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | /°C | Humid.:      | /% | Press.:   | /mbar |
| Test voltage:                                    | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |     |              |    |           |       |
| Test results:                                    | EUT only supports battery power supply, testing not applicable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |     |              |    |           |       |

### 4.3 Radiated Emission Measurement

|                                                      |                                                                                                                                                                                                                                                                |                                                  |               |                                                         |                  |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|---------------|---------------------------------------------------------|------------------|
| Test Requirement:                                    | FCC Part15 C Section 15.209 & 15.231 (b) and 15.205(a).<br>RSS-210 D & RSS-Gen Clause 8.9&8.10                                                                                                                                                                 |                                                  |               |                                                         |                  |
| Test Method:                                         | ANSI C63.10: 2013 & RSS-Gen                                                                                                                                                                                                                                    |                                                  |               |                                                         |                  |
| Test site:                                           | Measurement Distance: 3m                                                                                                                                                                                                                                       |                                                  |               |                                                         |                  |
| Receiver setup:                                      | Frequency                                                                                                                                                                                                                                                      | Detector                                         | RBW           | VBW                                                     | Remark           |
|                                                      | 9kHz-150kHz                                                                                                                                                                                                                                                    | Quasi-peak                                       | 200Hz         | 300Hz                                                   | Quasi-peak Value |
|                                                      | 150kHz-30MHz                                                                                                                                                                                                                                                   | Quasi-peak                                       | 9kHz          | 10kHz                                                   | Quasi-peak Value |
|                                                      | 30MHz-1GHz                                                                                                                                                                                                                                                     | Quasi-peak                                       | 120KHz        | 300KHz                                                  | Quasi-peak Value |
|                                                      | Above 1GHz                                                                                                                                                                                                                                                     | Peak                                             | 1MHz          | 3MHz                                                    | Peak Value       |
|                                                      |                                                                                                                                                                                                                                                                | Peak                                             | 1MHz          | 10Hz                                                    | Average Value    |
| Limit:<br>(Field strength of the fundamental signal) | Fundamental frequency (MHz)                                                                                                                                                                                                                                    | Field strength of fundamental (microvolts/meter) |               | Field strength of spurious emissions (microvolts/meter) |                  |
|                                                      | 40.66-40.70                                                                                                                                                                                                                                                    | 2.250                                            |               | 225                                                     |                  |
|                                                      | 70-130                                                                                                                                                                                                                                                         | 1.250                                            |               | 125                                                     |                  |
|                                                      | 130-174                                                                                                                                                                                                                                                        | 11250 to 3750                                    |               | 1125 to 375                                             |                  |
|                                                      | 174-260                                                                                                                                                                                                                                                        | 3.750                                            |               | 375                                                     |                  |
|                                                      | 260-470                                                                                                                                                                                                                                                        | 13750 to 12500                                   |               | 1375 to 1250                                            |                  |
|                                                      | Above 470                                                                                                                                                                                                                                                      | 12500                                            |               | 1250                                                    |                  |
| Limit:<br>(Spurious Emissions)                       | Frequency                                                                                                                                                                                                                                                      | Limit (uV/m)                                     |               | Remark                                                  |                  |
|                                                      | 0.009MHz-0.490MHz                                                                                                                                                                                                                                              | 2400/F(kHz) @300m                                |               | Quasi-peak Value                                        |                  |
|                                                      | 0.490MHz-1.705MHz                                                                                                                                                                                                                                              | 24000/F(kHz) @30m                                |               | Quasi-peak Value                                        |                  |
|                                                      | 1.705MHz-30.0MHz                                                                                                                                                                                                                                               | 30 @30m                                          |               | Quasi-peak Value                                        |                  |
|                                                      | 30MHz-88MHz                                                                                                                                                                                                                                                    | 100 @3m                                          |               | Quasi-peak Value                                        |                  |
|                                                      | 88MHz-216MHz                                                                                                                                                                                                                                                   | 150 @3m                                          |               | Quasi-peak Value                                        |                  |
|                                                      | 216MHz-960MHz                                                                                                                                                                                                                                                  | 200 @3m                                          |               | Quasi-peak Value                                        |                  |
|                                                      | 960MHz-1GHz                                                                                                                                                                                                                                                    | 500 @3m                                          |               | Quasi-peak Value                                        |                  |
|                                                      | Above 1GHz                                                                                                                                                                                                                                                     | 500 @3m                                          | Average Value | 5000 @3m                                                | Peak Value       |
| Limit:<br>(band edge)                                | Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation. |                                                  |               |                                                         |                  |
| Test setup:                                          | For radiated emissions from 9kHz to 30MHz<br>                                                                                                                              |                                                  |               |                                                         |                  |

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | <p>For radiated emissions from 30MHz to1GHz</p>  <p>For radiated emissions above 1GHz</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Test Procedure:   | <ol style="list-style-type: none"><li>1. The EUT was placed on the top of a rotating table (0.8m for below 1GHz and 1.5 meters for above 1GHz) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.</li><li>2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li><li>3. The antenna 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.</li><li>4. 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 rota table was turned from 0 degrees to 360 degrees to find the maximum reading.</li><li>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li><li>6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</li></ol> |
| Test Instruments: | Refer to section 3.0 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Test mode:        | Refer to section 2.2 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Test environment: | Temp.: 24.3 °C    Humid.: 40%    Press.: 1012mbar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Test voltage:     | DC 12V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Test results:     | Pass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## Measurement Data

### 4.3.1 Field Strength of Fundamental

#### Peak value:

| Frequency (MHz) | Read Level (dBuV/m) | Factor (dB) | Level (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | polarization |
|-----------------|---------------------|-------------|----------------|----------------|-----------------|--------------|
| 433.92          | 86.54               | -16.01      | 70.53          | 100.83         | -30.30          | Vertical     |
| 433.92          | 85.37               | -16.01      | 69.36          | 100.83         | -31.47          | Horizontal   |

#### Average value:

| Frequency (MHz) | Peak Level (dBuV/m) | DC Factor (dB) | Level (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | polarization |
|-----------------|---------------------|----------------|----------------|----------------|-----------------|--------------|
| 433.92          | 70.53               | -10.42         | 60.11          | 80.83          | -20.72          | Vertical     |
| 433.92          | 69.36               | -10.42         | 58.94          | 80.83          | -21.89          | Horizontal   |

Remark: Average=Peak+ Duty Cycle factor (see 4.5 clause)

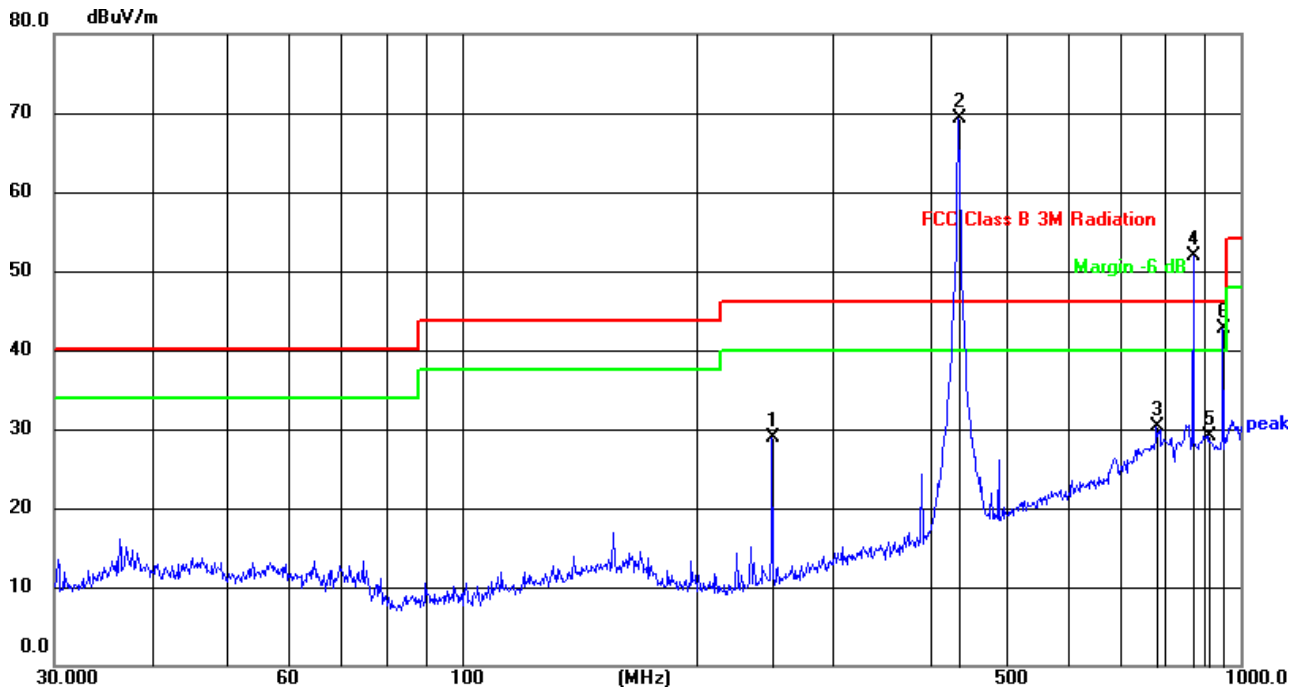
### 4.3.2 Spurious emissions and Bandedge

#### ■ Below 30MHz

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

#### ■ Below 1GHz

Horizontal:



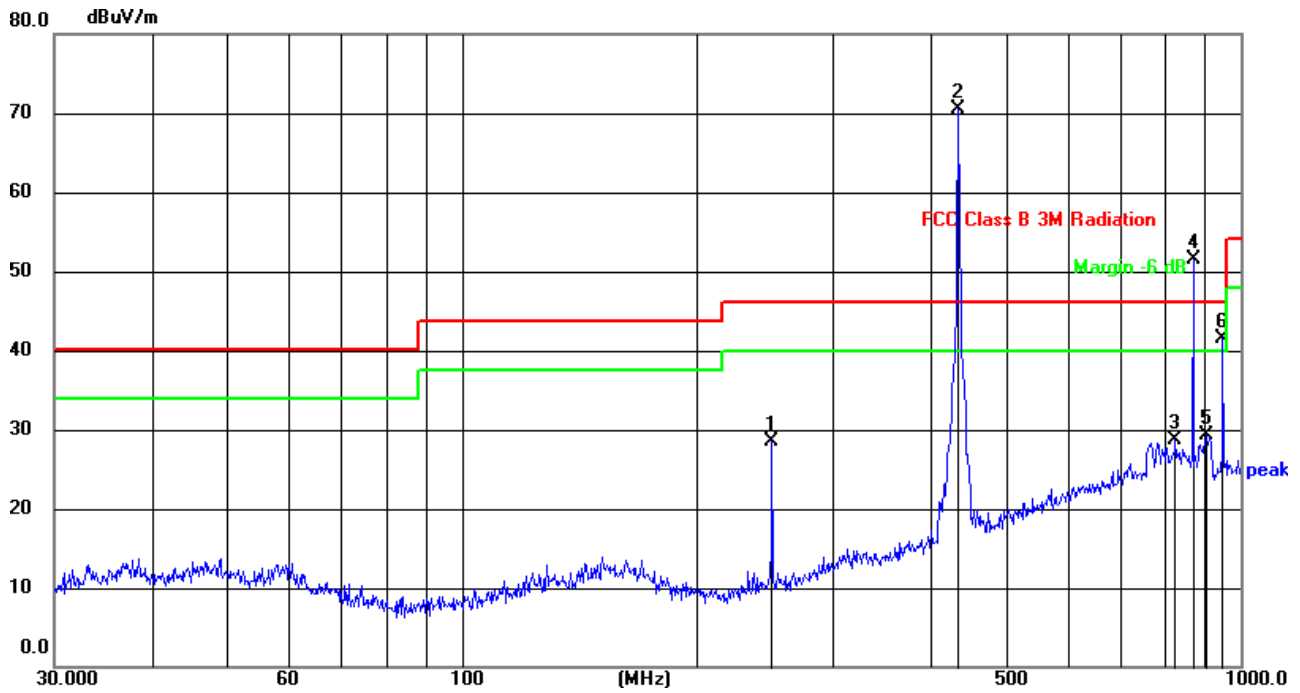
| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 250.3012        | 51.09          | -22.25        | 28.84          | 46.00          | -17.16      | QP       |
| 2   | 434.0651        | 85.37          | -16.01        | 69.36          | 46.00          | 23.36       | peak     |
| 3   | 779.6068        | 37.40          | -7.15         | 30.25          | 46.00          | -15.75      | QP       |
| 4   | 869.1301        | 57.80          | -5.95         | 51.85          | 46.00          | 5.85        | peak     |
| 5   | 909.6667        | 34.33          | -5.13         | 29.20          | 46.00          | -16.80      | QP       |
| 6   | 948.7610        | 46.58          | -3.85         | 42.73          | 46.00          | -3.27       | QP       |

Average value:

| Frequency (MHz) | Peak Level (dBuV/m) | DC Factor (dB) | Level (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | polarization |
|-----------------|---------------------|----------------|----------------|----------------|-----------------|--------------|
| 869.1300        | 51.85               | -10.42         | 41.43          | 60.83          | -19.4           | Horizontal   |

Remark: Average=Peak+ Duty Cycle factor

Vertical:



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 250.3011        | 50.71          | -22.25        | 28.46          | 46.00          | -17.54      | QP       |
| 2   | 434.0650        | 86.54          | -16.01        | 70.53          | 46.00          | 24.53       | peak     |
| 3   | 824.5968        | 35.10          | -6.39         | 28.71          | 46.00          | -17.29      | QP       |
| 4   | 869.1300        | 57.39          | -5.95         | 51.44          | 46.00          | 5.44        | peak     |
| 5   | 903.3093        | 34.73          | -5.34         | 29.39          | 46.00          | -16.61      | QP       |
| 6   | 948.7609        | 45.32          | -3.85         | 41.47          | 46.00          | -4.53       | QP       |

Average value:

| Frequency (MHz) | Peak Level (dBuV/m) | DC Factor (dB) | Level (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | polarization |
|-----------------|---------------------|----------------|----------------|----------------|-----------------|--------------|
| 869.1300        | 51.44               | -10.42         | 41.02          | 60.83          | -19.81          | vertical     |

Average=Peak+ Duty Cycle factor

# ■ Above 1GHz

## Peak value:

| No. | Frequency | Meter Reading | Factor | Emission Level | Limits   | Margin | Polar      |
|-----|-----------|---------------|--------|----------------|----------|--------|------------|
|     | (MHz)     | (dBuV)        | (dB)   | (dBuV/m)       | (dBuV/m) | (dB)   | (H/V)      |
| 1   | 1301.332  | 66.05         | -15.66 | 50.39          | 74.00    | -23.61 | Horizontal |
| 2   | 1736.483  | 66.03         | -15.90 | 50.13          | 74.00    | -23.87 | Horizontal |
| 3   | 2168.510  | 59.57         | -15.38 | 44.19          | 74.00    | -29.81 | Horizontal |
| 4   | 2603.351  | 64.54         | -13.64 | 50.90          | 74.00    | -23.10 | Horizontal |
| 1   | 1301.174  | 65.49         | -15.66 | 49.83          | 74.00    | -24.17 | Vertical   |
| 2   | 1736.273  | 58.65         | -15.90 | 42.75          | 74.00    | -31.25 | Vertical   |
| 3   | 2168.247  | 58.15         | -15.38 | 42.77          | 74.00    | -31.23 | Vertical   |
| 4   | 2608.020  | 67.43         | -13.63 | 53.80          | 74.00    | -20.20 | Vertical   |

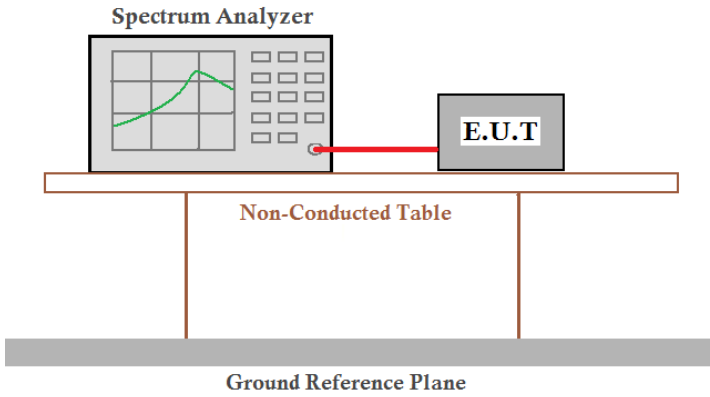
## Average value:

| No. | Frequency | Peak   | DC Factor | Result   | Limits   | Margin | Polar      |
|-----|-----------|--------|-----------|----------|----------|--------|------------|
|     | (MHz)     | (dBuV) | (dB)      | (dBuV/m) | (dBuV/m) | (dB)   | (H/V)      |
| 1   | 1301.332  | 50.39  | -10.42    | 39.97    | 54.00    | -14.03 | Horizontal |
| 2   | 1736.483  | 50.13  | -10.42    | 39.71    | 54.00    | -14.29 | Horizontal |
| 3   | 2168.510  | 44.19  | -10.42    | 33.77    | 54.00    | -20.23 | Horizontal |
| 4   | 2603.351  | 50.90  | -10.42    | 40.48    | 54.00    | -13.52 | Horizontal |
| 1   | 1301.174  | 49.83  | -10.42    | 39.41    | 54.00    | -14.59 | Vertical   |
| 2   | 1736.273  | 42.75  | -10.42    | 32.33    | 54.00    | -21.67 | Vertical   |
| 3   | 2168.247  | 42.77  | -10.42    | 32.35    | 54.00    | -21.65 | Vertical   |
| 4   | 2608.020  | 53.80  | -10.42    | 43.38    | 54.00    | -10.62 | Vertical   |

## Remark:

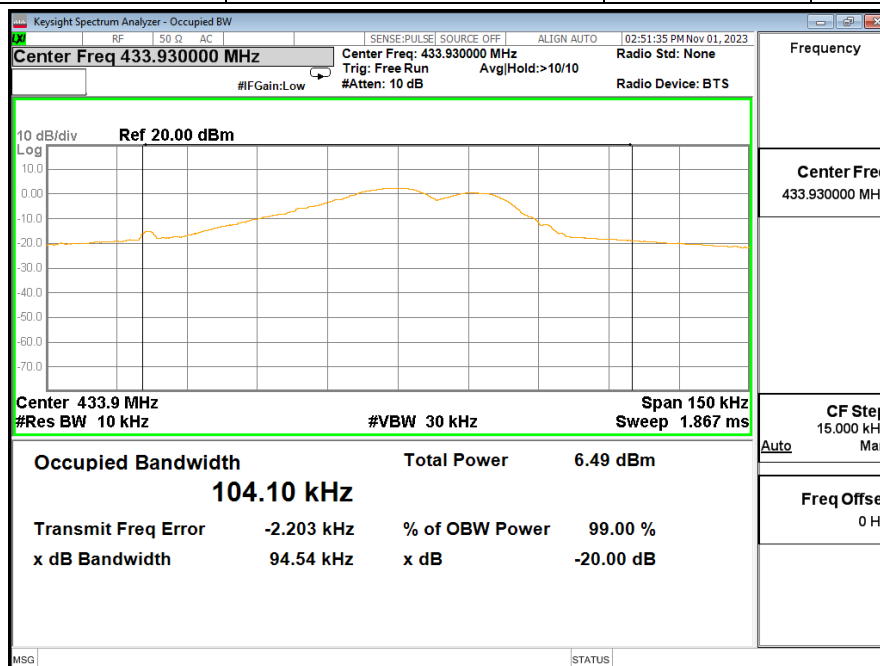
1. Final Level =Receiver Read level +Correction Factor(Antenna Factor + Cable Loss – Preamplifier Factor )
2. The emission levels of other frequencies are more than 20 dB below the limit and not show in test report.
3. “\*”, means this data is the too weak instrument of signal is unable to test.
4. Average=Peak+ Duty Cycle factor

#### 4.4 20dB Occupy Bandwidth

|                   |                                                                                                                                                                                                                    |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | FCC Part15 C Section 15.231                                                                                                                                                                                        |
| Test Method:      | ANSI C63.10:2013                                                                                                                                                                                                   |
| Limit:            | 20dB bandwidth of the emissions shall not exceed 0.25% of the center frequency                                                                                                                                     |
| Test setup:       |                                                                                                                                  |
| Test Procedure:   | With the EUT's antenna attached, the EUT's 20dB Bandwidth power was received by the test antenna which was connected to the spectrum analyzer with the START and STOP frequencies set to the EUT's operation band. |
| Test Instruments: | Refer to section 3.0 for details                                                                                                                                                                                   |
| Test mode:        | Refer to section 2.2 for details                                                                                                                                                                                   |
| Test results:     | Pass                                                                                                                                                                                                               |

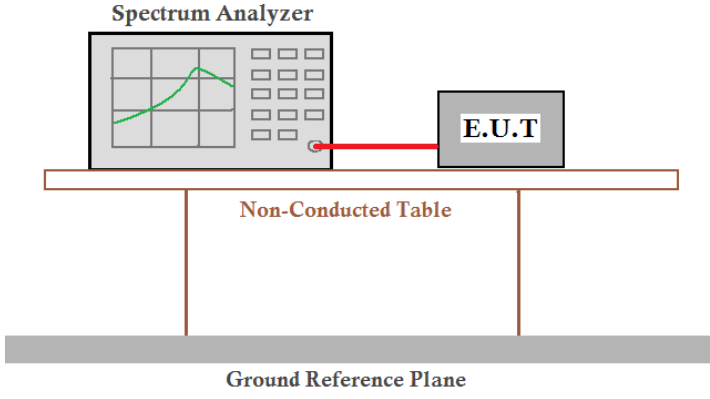
#### Measurement Data

| Center Frequency | 20dB bandwidth(kHz) | Limit(kHz) | Result |
|------------------|---------------------|------------|--------|
| 433.92MHz        | 94.54               | 1084.8     | Pass   |





#### 4.5 DUTY CYCLE

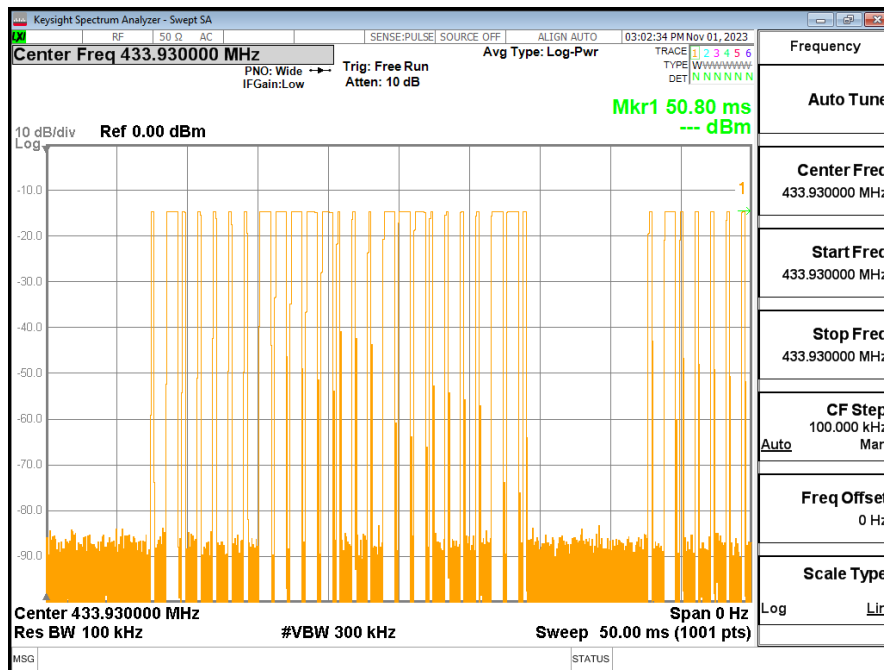
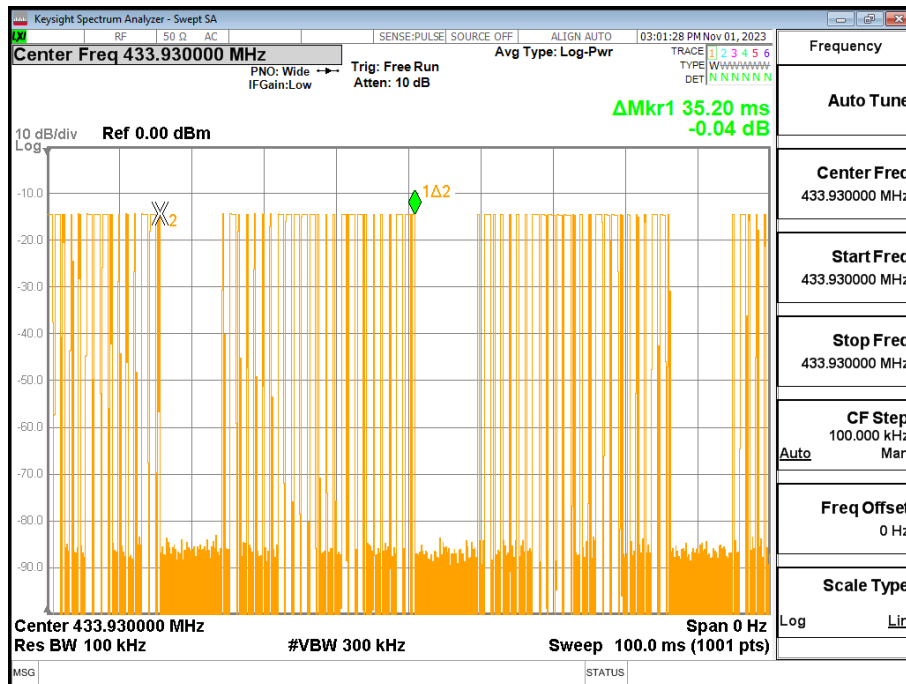
|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | FCC Part15 C Section 15.231                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Test Method:      | ANSI C63.10:2013                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Limit:            | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Test setup:       |  <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.</p>                                                                                                                                                                                                                                                               |
| Test Procedure:   | <ol style="list-style-type: none"> <li>1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.</li> <li>2. The Duty Cycle Was Determined By The Following Equation: To Calculate The Actual Field Intensity,The Duty Cycle Correction Factor In Decibel Is Needed For Later Use And Can Be Obtained From Following Conversion<br/> Duty Cycle(%)=Total On Interval In A Complete Pulse Train/ Length Of A Complete Pulse Train * %<br/> Duty Cycle Correction Factor(Db)=20 * Log10(Duty Cycle(%))</li> </ol> |
| Test Instruments: | Refer to section 3.0 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Test mode:        | Refer to section 2.2 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Test results:     | Pass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

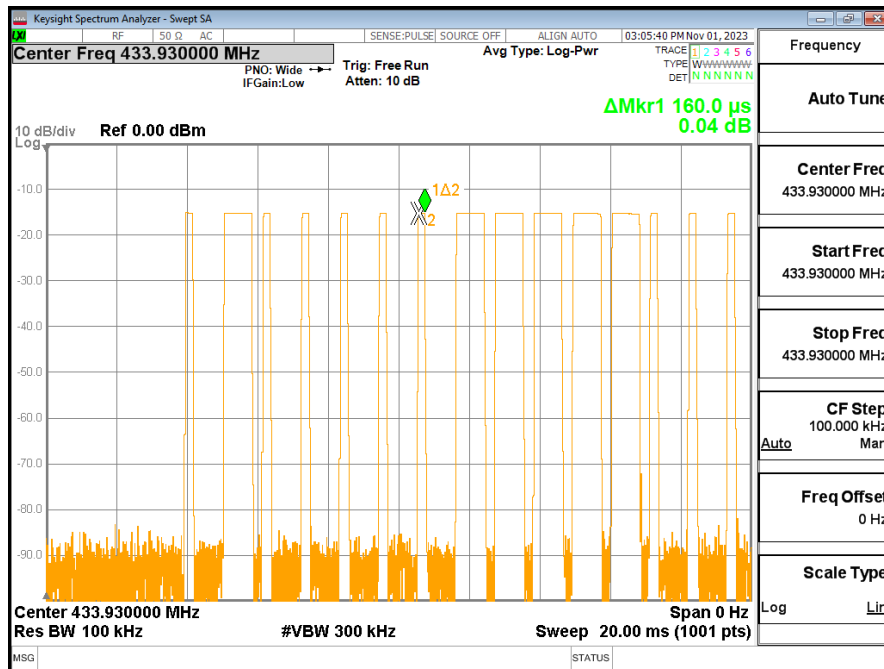
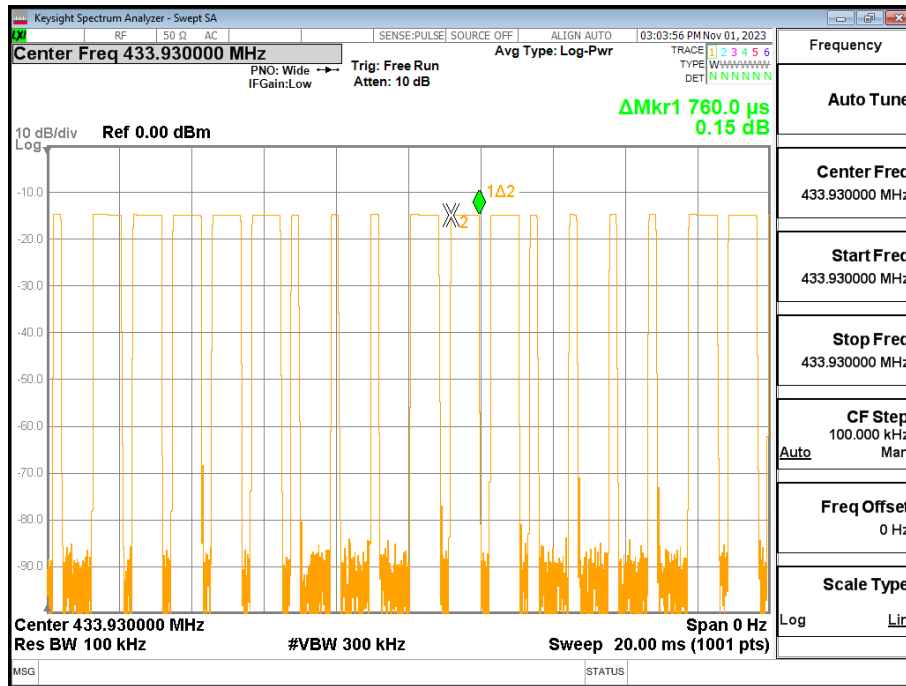
#### Test data:

$T_{on} = (0.76 \times 11 + 0.16 \times 14) \text{ms} = 10.60 \text{(ms)}$   $T_p = 35.20 \text{(ms)}$

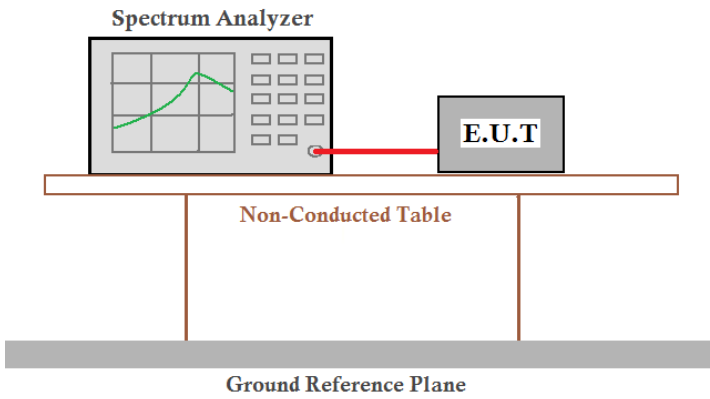
Duty cycle=  $T_{on} / T_p \times 100\% = 10.60 / 35.20 \times 100\% = 30.11\%$

DC Correction Factor=  $20 \log (T_{on} / T_p) = 20 \log (10.60 / 35.20) = -10.42 \text{dB}$

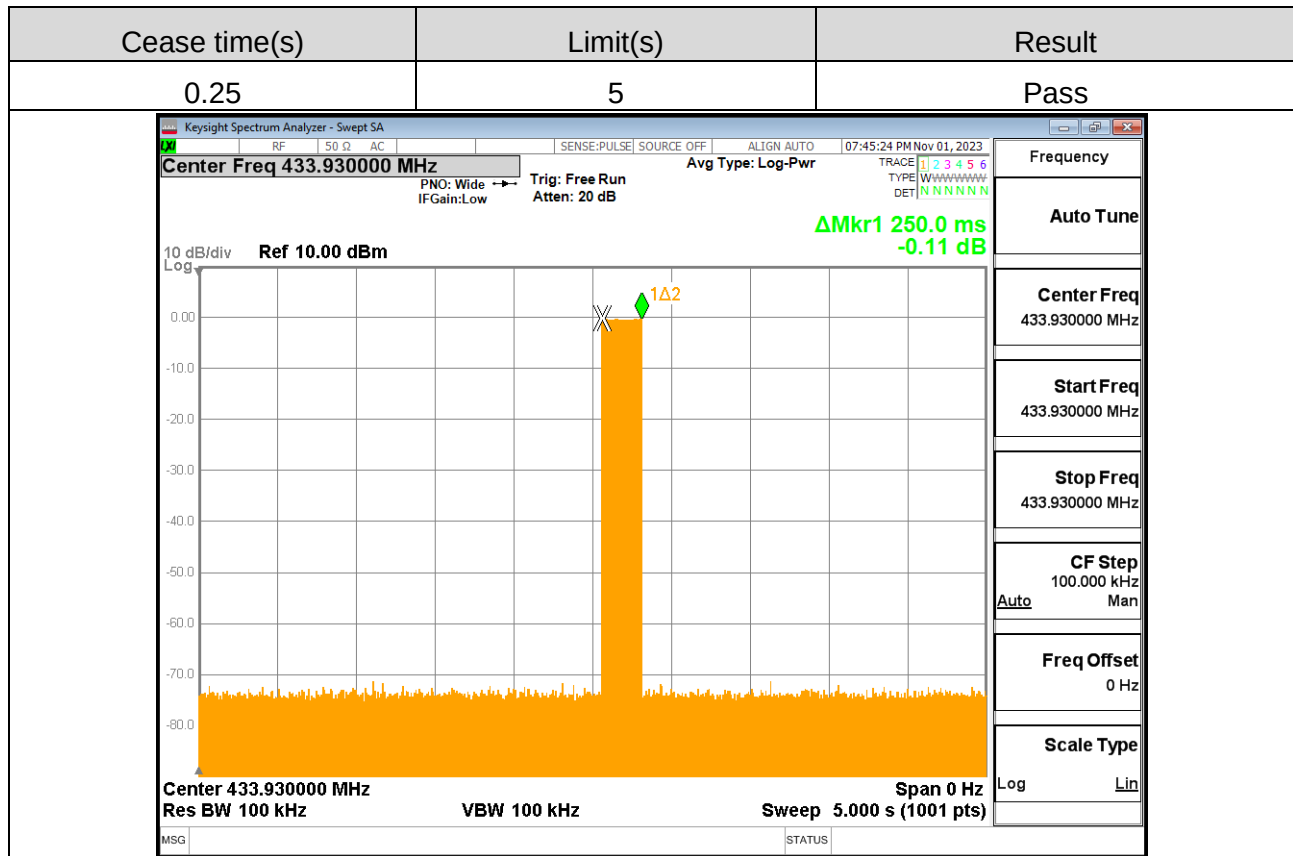




#### 4.6 Release time

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | FCC Part15 C Section 15.231                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Test Method:      | ANSI C63.10:2013                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Limit:            | .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Test setup:       |  <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane. The Spectrum Analyzer screen shows a green curve on a grid.</p>                                                                                                                                                                                           |
| Test Procedure:   | <p>The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below. Spectrum Setting: RBW= 1MHz, VBW=3MHz, Sweep time = 10s. Note:</p> <p>(1)Refer to the plot (As Below), We find a manumotive operated transmitter shall employ a switch that will automatically deactivate the transmitteri immediately, within not more than 5 seconds of being released.</p> <p>(2)The EUT is comply with FCC PART 15 clause 15.231(a)(1). Manumotive working mode are pre-tested. and only the worst result is reported</p> |
| Test Instruments: | Refer to section 3.0 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Test mode:        | Refer to section 2.2 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Test results:     | Pass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

Test Result:



## 5 Test Setup Photo

Reference to the **appendix I** for details.

## 6 EUT Constructional Details

Reference to the **appendix II** for details.

-----End-----