

# TEST REPORT

**Application No.:** KSCR2207001196AT  
**FCC ID:** 2ADTD-S010201211  
**Applicant:** Hangzhou Hikvision Digital Technology Co., Ltd.  
**Address of Applicant:** No.555 Qianmo Road,Binjiang District Hangzhou 310052,China  
**Manufacturer:** Hangzhou Hikvision Digital Technology Co., Ltd.  
**Address of Manufacturer:** No.555 Qianmo Road,Binjiang District Hangzhou 310052,China  
**Factory:** 1, Hangzhou Hikvision Electronics Co., Ltd.  
 2, Hangzhou Hikvision Technology Co., Ltd.  
 3, CHONGQING HIKVISION TECHNOLOGY CO.,LTD.  
**Address of Factory:** 1, No.299,Qiushi Road,Tonglu Economic Development Zone,Tonglu County, Hangzhou,Zhejiang  
 2, No.700 Dongliu Road, Binjiang District, Hangzhou 310052, China  
 3, No. 118, Haikang Road, Area C, Jianqiao Industrial Park, Dadukou District, Chongqing, 401325,China

**Equipment Under Test (EUT):**

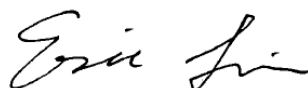
**EUT Name:** Wireless Intercom Sounder  
**Model No.:** DS-PS1-II-WB, DS-PS1-II-WBUHK, DS-PS1-II-WBCKV,  
 DS-PS1-II-WBUVS, DS-PS1-II-WBKVO, DS-PS1-II-WBHUN ♣

♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.

**Trade Mark:** HIKVISION  
**Standard(s) :** 47 CFR Part 15, Subpart C 15.231  
**Date of Receipt:** 2022-07-13  
**Date of Test:** 2022-07-14 to 2022-07-28  
**Date of Issue:** 2022-08-11

|                     |              |
|---------------------|--------------|
| <b>Test Result:</b> | <b>Pass*</b> |
|---------------------|--------------|

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



Eric Lin  
 EMC Laboratory Manager



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| Revision Record |         |            |          |          |
|-----------------|---------|------------|----------|----------|
| Version         | Chapter | Date       | Modifier | Remark   |
| 01              |         | 2022-08-11 |          | Original |
|                 |         |            |          |          |
|                 |         |            |          |          |

|                                 |  |                                    |  |
|---------------------------------|--|------------------------------------|--|
| <b>Authorized for issue by:</b> |  |                                    |  |
|                                 |  | <i>Damon Zhou</i>                  |  |
|                                 |  | <b>Damon Zhou/Project Engineer</b> |  |
|                                 |  | <i>Eric Lin</i>                    |  |
|                                 |  | <b>Eric Lin/Reviewer</b>           |  |



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## 2 Test Summary

| Radio Spectrum Technical Requirement |                                  |        |                                  |        |
|--------------------------------------|----------------------------------|--------|----------------------------------|--------|
| Item                                 | Standard                         | Method | Requirement                      | Result |
| Antenna Requirement                  | 47 CFR Part 15, Subpart C 15.231 | N/A    | 47 CFR Part 15, Subpart C 15.203 | Pass   |

| Radio Spectrum Matter Part                           |                                  |                                    |  |        |
|--|----------------------------------|------------------------------------|--|--------|
| Item   | Standard                         | Method                             | Requirement  | Result |
| 20dB Bandwidth                                       | 47 CFR Part 15, Subpart C 15.231 | ANSI C63.10 (2013) Section 6.9     | 47 CFR Part 15, Subpart C 15.231(c)                  | Pass   |
| Dwell Time (15.231(e))                               |                                  | ANSI C63.10 (2013) Section 7.8.4   | 47 CFR Part 15, Subpart C 15.231(e)                  | Pass   |
| Field Strength of the Fundamental Signal (15.231(e)) |                                  | ANSI C63.10 (2013) Section 6.5     | Field Strength of the Fundamental Signal (15.231(e)) | Pass   |
| Radiated Emissions below 1GHz                        |                                  | ANSI C63.10 (2013) Section 6.4&6.5 | 47 CFR Part 15C Section 15.231(b) and 15.209         | Pass   |
| Dwell Time (15.231(a))                               |                                  | ANSI C63.10 (2013) Section 7.5     | 47 CFR Part 15, Subpart C 15.231(a)                  | Pass   |
| Field Strength of the Fundamental Signal (15.231(b)) |                                  | ANSI C63.10 (2013) Section 6.5     | 47 CFR Part 15, Subpart C 15.231(b)                  | Pass   |
| Radiated Emissions above 1GHz                        |                                  | ANSI C63.10 (2013) Section 6.6     | 47 CFR Part 15C Section 15.231(b) and 15.209         | Pass   |

### Declaration of EUT Family Grouping:

Note: There are series models mentioned in this report, and they are the identical in electrical and electronic characters. Only the model DS-PS1-II-WB was tested since their differences were the model number and appearance.



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## 4 General Information

### 4.1 Details of E.U.T.

|                      |  |
|----------------------|--|
| Power supply:        | 3V 1.6A battery or DC12V,0.55A by DC power |
| Modulation Type:     | 2GFSK                                      |
| Operation Frequency: | 434.6MHz                                   |
| Antenna Type:        | PCB Antenna                                |
| Number of Channels:  | 1  |

### 4.2 Description of Support Units

| Description     | Manufacturer | Model No. | Serial No. |
|-----------------|--------------|-----------|------------|
| DC power supply | HP           | HP6674A   | /          |

### 4.3 Measurement Uncertainty

| No. | Item                            | Measurement Uncertainty |
|-----|---------------------------------|-------------------------|
| 1   | Radio Frequency                 | 8.4 x 10-8              |
| 2   | Timeout                         | 2s                      |
| 3   | Duty cycle                      | 0.4%                    |
| 4   | Occupied Bandwidth              | 3%                      |
| 5   | RF Radiated power               | 5.2dB (Below 1GHz)      |
|     |                                 | 5.9dB (Above 1GHz)      |
| 6   | Radiated Spurious emission test | 4.2dB (Below 30MHz)     |
|     |                                 | 4.5dB (30MHz-1GHz)      |
|     |                                 | 5.1dB (1GHz-6GHz)       |
|     |                                 | 5.4dB (6GHz-18GHz)      |
| 7   | Temperature test                | 1°C                     |
| 8   | Humidity test                   | 3%                      |
| 9   | Supply voltages                 | 1.5%                    |
| 10  | Time                            | 3%                      |

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



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#### 4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. E&E Lab  
588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China

Tel: +86 21 6191 5666 Fax: +86 21 6191 5678

No tests were sub-contracted.

Note:

- 1.SGS is not responsible for wrong test results due to incorrect information (e.g. max. clock frequency, highest internal frequency, antenna gain, cable loss, etc ) is provided by the applicant. (if applicable).
- 2.SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (if applicable).

#### 4.5 Test Facility

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

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 6332.01)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the American Association for Laboratory Accreditation(A2LA).

- **FCC (Designation Number: CN1301)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been recognized as an accredited testing laboratory.

- **ISED (CAB Identifier: CN0020)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. EMC Laboratory has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory. Company Number: 8617A

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-13868, C-14336, T-12221, G-10830 respectively.

#### 4.6 Deviation from Standards

None

#### 4.7 Abnormalities from Standard Conditions

None



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## 5 Equipment List

| Equipment                 | Manufacturer | Model No         | Inventory No          | Cal Date   | Cal Due Date |
|---------------------------|--------------|------------------|-----------------------|------------|--------------|
| <b>RF Radiated Test</b>   |              |                  |                       |            |              |
| EMI test Receiver         | R&S          | ESU40            | SHEM051-1             | 2021-12-20 | 2022-12-19   |
| Spectrum Analyzer         | R&S          | FSP-30           | SHEM002-1             | 2021-12-20 | 2022-12-19   |
| Communication Tester      | R&S          | CMW500           | SHEM183-2             | 2022-04-01 | 2023-03-31   |
| Loop Antenna (9kHz-30MHz) | Schwarzbeck  | FMZB1519         | SHEM135-1             | 2021-12-20 | 2022-12-19   |
| Antenna (25MHz-2GHz)      | Schwarzbeck  | VULB9168         | SHEM048-1             | 2021-09-11 | 2023-09-10   |
| Antenna (25MHz-2GHz)      | Schwarzbeck  | VULB9168         | SHEM202-1             | 2021-05-07 | 2023-05-06   |
| Horn Antenna (1-18GHz)    | Schwarzbeck  | HF906            | SHEM009-1             | 2020-06-09 | 2022-06-08   |
| Horn Antenna (1-18GHz)    | Schwarzbeck  | BBHA9120D        | SHEM050-1             | 2021-09-18 | 2023-09-17   |
| Horn Antenna (14-40GHz)   | Schwarzbeck  | BBHA 9170        | SHEM049-1             | 2021-09-18 | 2023-09-17   |
| Pre-Amplifier             | HP           | 8447D            | SHEM236-1             | 2021-05-27 | 2022-05-26   |
| Pre-Amplifier             | HP           | 8447D            | SHEM236-1             | 2022-05-27 | 2023-05-26   |
| Pre-Amplifier             | PANSHAN      | LNA 1-18G        | SHEM235-1             | 2021-05-27 | 2022-05-26   |
| Pre-Amplifier             | PANSHAN      | LNA 1-18G        | SHEM235-1             | 2022-05-27 | 2023-05-26   |
| High-amplifier (14-40GHz) | Schwarzbeck  | 10001            | SHEM049-2             | 2021-12-20 | 2022-12-19   |
| Band Filter               | LORCH        | 9BRX-875/X150    | SHEM156-1             | /          | /            |
| Band Filter               | LORCH        | 13BRX-1950/X500  | SHEM083-2             | /          | /            |
| Band Filter               | LORCH        | 5BRX-2400/X200   | SHEM155-1             | /          | /            |
| Band Filter               | LORCH        | 5BRX-5500/X1000  | SHEM157-2             | /          | /            |
| High pass Filter          | Wainwright   | WHK3.0/18G       | SHEM157-1             | /          | /            |
| High pass Filter          | Wainwright   | WHKS1700         | SHEM157-3             | /          | /            |
| Semi/Fully Anechoic       | ST           | 11*6*6M          | SHEM078-2             | 2020-05-25 | 2023-05-24   |
| RE test Cable             | /            | RE01, RE02, RE06 | /                     | 2022-01-07 | 2023-01-06   |
| Test software             | ESE          | E3               | Version:<br>6.111221a | /          | /            |



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## 6 Radio Spectrum Technical Requirement

### 6.1 Antenna Requirement

#### 6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203

#### 6.1.2 Conclusion

15.203 requirement:

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.

EUT Antenna:

The antenna is PCB antenna welding on the main PCB and no consideration of replacement.

Antenna location: Refer to Internal photos



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## 7 Radio Spectrum Matter Test Results

### 7.1 20dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.231(c)  
 Test Method: ANSI C63.10 (2013) Section 6.9

Limit:

| Frequency range(MHz) | Limit                                       |
|----------------------|---|
| 70-900               | No wider than 0.25% of the center frequency |
| Above 900            | No wider than 0.5% of the center frequency  |

#### 7.1.1 E.U.T. Operation

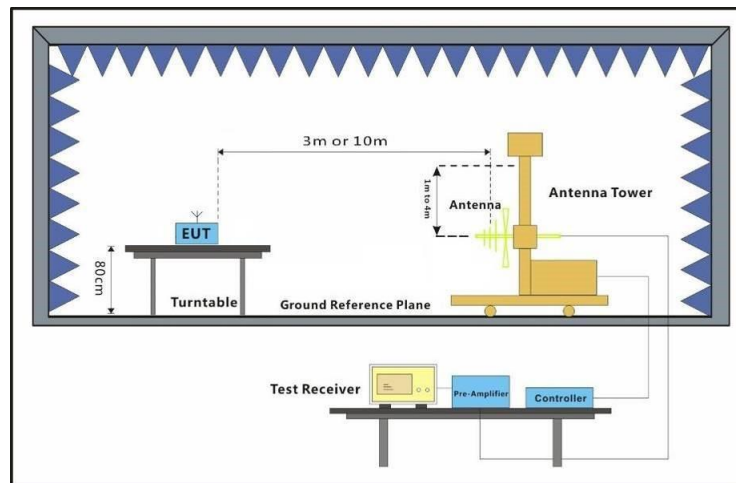
Operating Environment:

Temperature: 24.1 °C Humidity: 57.4 % RH Atmospheric Pressure: 1010 mbar

#### 7.1.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description   |
|-----------------------|-----------|---|
| Final test            | 00        | Tx mode_Keep the EUT in transmitting mode by 3V battery (worst mode). |

#### 7.1.3 Test Setup Diagram



#### 7.1.4 Measurement Procedure and Data

Please Refer to Appendix for Details



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### 7.2 Dwell Time (15.231(e))

Test Requirement 47 CFR Part 15, Subpart C 15.231(e)  
 Test Method: ANSI C63.10 (2013) Section 7.8.4  
 Limit: The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

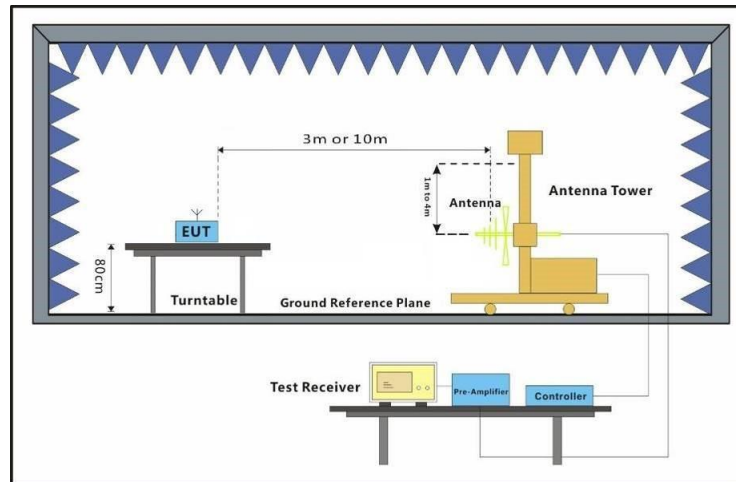
#### 7.2.1 E.U.T. Operation

Operating Environment:  
 Temperature: 24.1 °C Humidity: 57.4 % RH Atmospheric Pressure: 1010 mbar

#### 7.2.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description   |
|-----------------------|-----------|---|
| Final test            | 00        | Tx mode_Keep the EUT in transmitting mode by 3V battery (worst mode). |

#### 7.2.3 Test Setup Diagram



#### 7.2.4 Measurement Procedure and Data

Please Refer to Appendix for Details



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### 7.3 Field Strength of the Fundamental Signal (15.231(e))

Test Requirement: Field Strength of the Fundamental Signal (15.231(e))  
 Test Method: ANSI C63.10 (2013) Section 6.5

Limit:

| Fundamental frequency(MHz) | Field strength of fundamental(microvolts/meter) | Field strength of spurious emissions(microvolts/meter) |
|----------------------------|---|--|
| 40.66-40.70                | 1000  | 100  |
| 70-130                     | 500   | 50   |
| 130-174                    | 500 to 1500                                     | 50 to 150  |
| 174-260                    | 1500  | 150  |
| 260-470                    | 1500 to 5000                                    | 150 to 500   |
| Above 470                  | 5000  | 500  |

Remark: the emission limit is based on measurement instrumentation employing an average detector at a distance of 3 meters. The frequencies above 1000MHz are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

#### 7.3.1 E.U.T. Operation

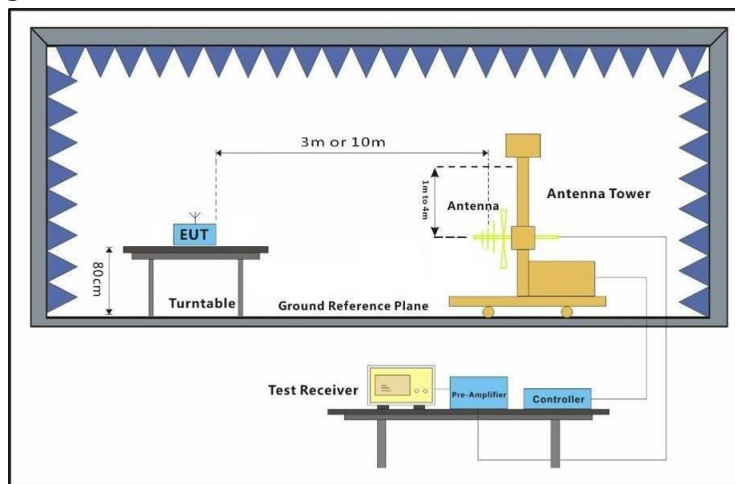
Operating Environment:

Temperature: 24.1 °C      Humidity: 57.4 % RH      Atmospheric Pressure: 1010 mbar

#### 7.3.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description   |
|-----------------------|-----------|---|
| Final test            | 00        | Tx mode_Keep the EUT in transmitting mode by 3V battery (worst mode). |

#### 7.3.3 Test Setup Diagram



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**7.3.4 Measurement Procedure and Data**

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. 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.
- e. 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. 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.
- h. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.

Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

Please Refer to Appendix for Details



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**7.4 Radiated Emissions below 1GHz**

Test Requirement 47 CFR Part 15C Section 15.231(b) and 15.209

Test Method: ANSI C63.10 (2013) Section 6.4&6.5

Limit:

| 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                            |
| Above 960      | 500                              | 3                            |

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

**7.4.1 E.U.T. Operation**

Operating Environment:

Temperature: 24.1 °C Humidity: 57.3 % RH Atmospheric Pressure: 1010 mbar

**7.4.2 Test Mode Description**

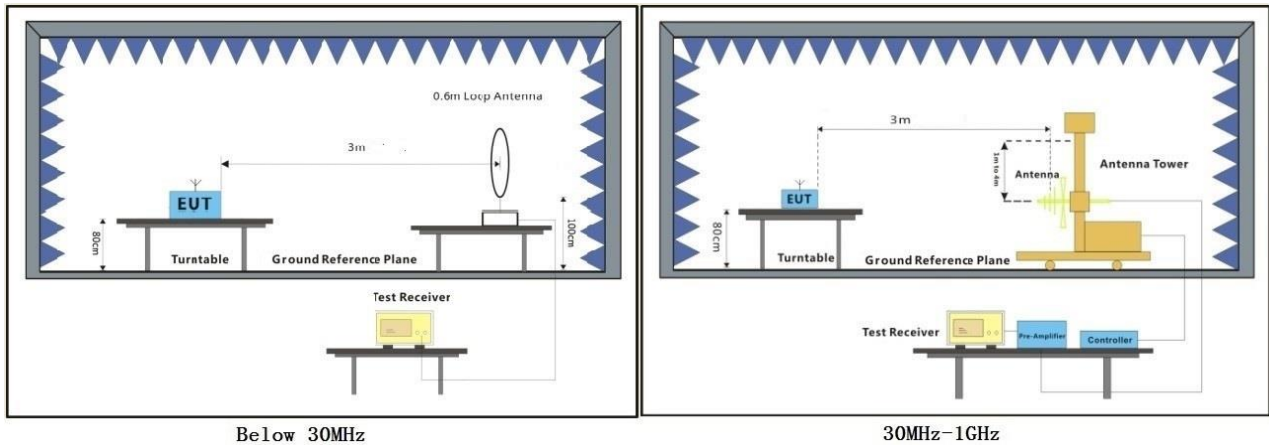
| Pre-scan / Final test | Mode Code | Description   |
|-----------------------|-----------|---|
| Final test            | 00        | Tx mode_Keep the EUT in transmitting mode by 3V battery (worst mode). |



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### 7.4.3 Test Setup Diagram



### 7.4.4 Measurement Procedure and Data

- For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.
- 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 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.
- The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.

Remark:

- The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows: Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor
- Scan from 9kHz to 1GHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

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### 7.5 Dwell Time (15.231(a))

Test Requirement 47 CFR Part 15, Subpart C 15.231(a)  
 Test Method: ANSI C63.10 (2013) Section 7.5  
 Limit:

| Device type  | Limit  |
|--|--|
| Manually operated transmitter  | The switch automatically deactivate the transmitter within not more than 5 seconds of being released |
| Automatically actived transmitter  | Cease transmission within 5 seconds after activation   |
| Periodic transmissions to determine system integrity of transmitters used in security or safety applications | The total transmission time does not exceed 2 seconds per hour                                       |

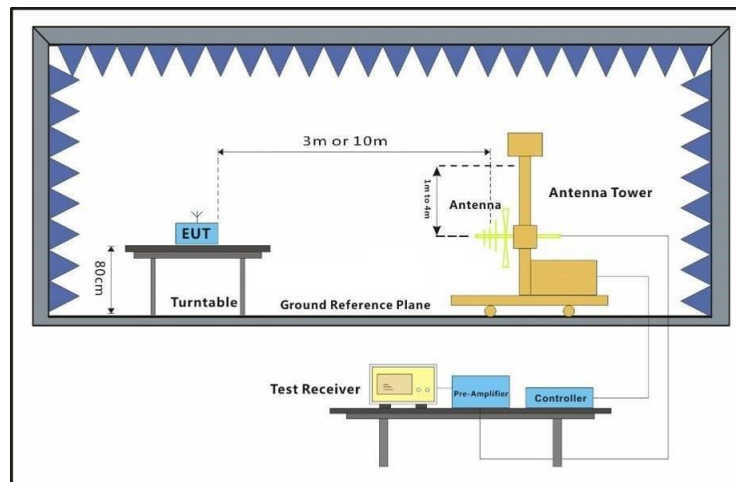
#### 7.5.1 E.U.T. Operation

Operating Environment:  
 Temperature: 24.0 °C Humidity: 57.2 % RH Atmospheric Pressure: 1010 mbar

#### 7.5.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description   |
|-----------------------|-----------|---|
| Final test            | 00        | Tx mode_Keep the EUT in transmitting mode by 3V battery (worst mode). |

#### 7.5.3 Test Setup Diagram



#### 7.5.4 Measurement Procedure and Data

Please Refer to Appendix for Details



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**7.6 Field Strength of the Fundamental Signal (15.231(b))**

Test Requirement 47 CFR Part 15, Subpart C 15.231(b)  
 Test Method: ANSI C63.10 (2013) Section 6.5

Limit:

| Fundamental frequency(MHz) | Field strength of fundamental(microvolts/meter) | Field strength of spurious emissions(microvolts/meter) |
|----------------------------|---|--|
| 40.66-40.70                | 2250  | 225  |
| 70-130                     | 1250  | 125  |
| 130-174                    | 1250 to 3750                                    | 125 to 375   |
| 174-260                    | 3750  | 375  |
| 260-470                    | 3750 to 12500                                   | 375 to 1250  |
| Above 470                  | 12500   | 1250   |

Remark: the emission limit is based on measurement instrumentation employing an average detector at a distance of 3 meters. The frequencies above 1000MHz are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

**7.6.1 E.U.T. Operation**

Operating Environment:  
 Temperature: 24.1 °C Humidity: 57.3 % RH Atmospheric Pressure: 1010 mbar

**7.6.2 Test Mode Description**

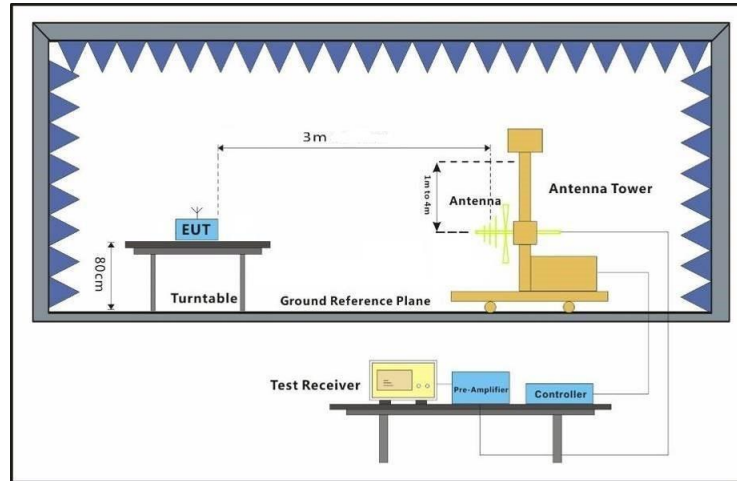
| Pre-scan / Final test | Mode Code | Description   |
|-----------------------|-----------|---|
| Final test            | 00        | Tx mode_Keep the EUT in transmitting mode by 3V battery (worst mode). |



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7.6.3 Test Setup Diagram



7.6.4 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. 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.
- e. 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. 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.
- h. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.

Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

Please Refer to Appendix for Details



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**7.7 Radiated Emissions above 1GHz**

Test Requirement 47 CFR Part 15C Section 15.231(b) and 15.209

Test Method: ANSI C63.10 (2013) Section 6.6

Limit:

For Restricted bands

| 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                            |
| Above 960      | 500                              | 3                            |

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

For Other bands

| Fundamental Frequency MHz | Field Strength of Fundamental (dBµV/m @ 3 m)         | Field Strength of Harmonics and Spurious Emissions (dBµV/m @ 3 m) |
|---------------------------|--|---|
| 40.66 to 40.70            | 67.04  | 47.04   |
| 70 to 130                 | 61.94  | 41.94   |
| 130 to 174                | **61.94 to 71.48                                     | 41.94 to 51.48  |
| 174 to 260                | 71.48  | 51.48   |
| 260 to 470                | **71.48 to 81.94                                     | 51.48 to 61.94  |
| Above 470                 | 81.94  | 61.94   |
| <b>Detector:</b>          | Peak for pre-scan                                    |   |
|                           | QP for 30MHz to1000 MHz:120 kHz resolution bandwidth |   |
|                           | Peak for Above 1 GHz: 1 MHz resolution bandwidth     |   |

\*\* linear interpolations

[Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows:

for the band 130-174 MHz, uV/m at 3 meters = 56.81818(F) - 6136.3636;

for the band 260-470 MHz, uV/m at 3 meters = 41.6667(F) - 7083.3333.

The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.]

The fundamental frequency of the EUT is 434.6 MHz



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The limit for average or QP field strength dBuV/m for the fundamental emission= 80.83 dBuV/m  
No fundamental is allowed in the restricted bands.

The limit for average field strength dBuV/m for the spurious emission=60.83 dBuV/m. Spurious in the restricted bands must be less than 60.83 dBuV/m or 15.209, whichever limit permits a higher field strength.

### 7.7.1 E.U.T. Operation

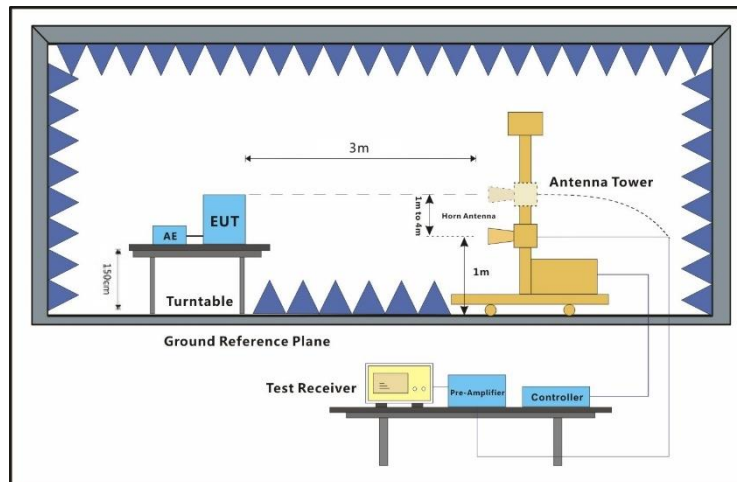
Operating Environment:

Temperature: 24.1 °C      Humidity: 57.4 % RH      Atmospheric Pressure: 1010 mbar

### 7.7.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description   |
|-----------------------|-----------|---|
| Final test            | 00        | Tx mode_Keep the EUT in transmitting mode by 3V battery (worst mode). |

### 7.7.3 Test Setup Diagram



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**7.7.4 Measurement Procedure and Data**

- a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. 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.
- g. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.

Remark:

- 1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows: Final Test Level =Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor
- 2) For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

Please Refer to Appendix for Details



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### 8 Test Setup Photo

Refer to Appendix - Test Setup Photo for KSCR2207001196AT

### 9 EUT Constructional Details (EUT Photos)

Refer to Appendix - Photographs of EUT Constructional Details for KSCR2207001196AT

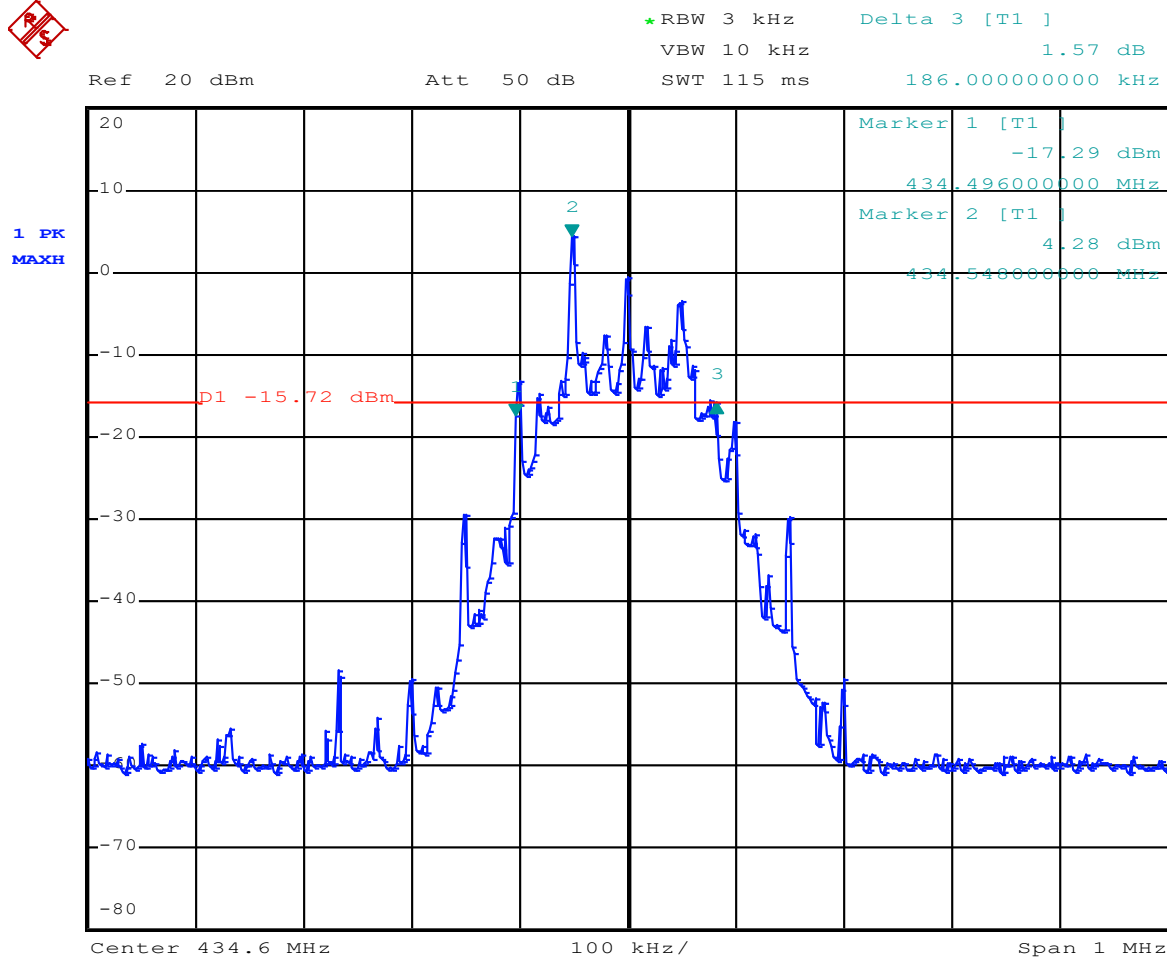
### 10 Appendix

#### 1. 20dB Bandwidth

| Frequency (MHz) | 20dB bandwidth (kHz) | Limit (kHz) | Results |
|-----------------|----------------------|-------------|---------|
| 434.6           | 186.0                | 1086.5      | Pass    |

Note: Limit=434.6MHz\*0.25%=1.0865MHz=1086.5kHz

Test plot as follows:



Date: 27.JUL.2022 13:51:17



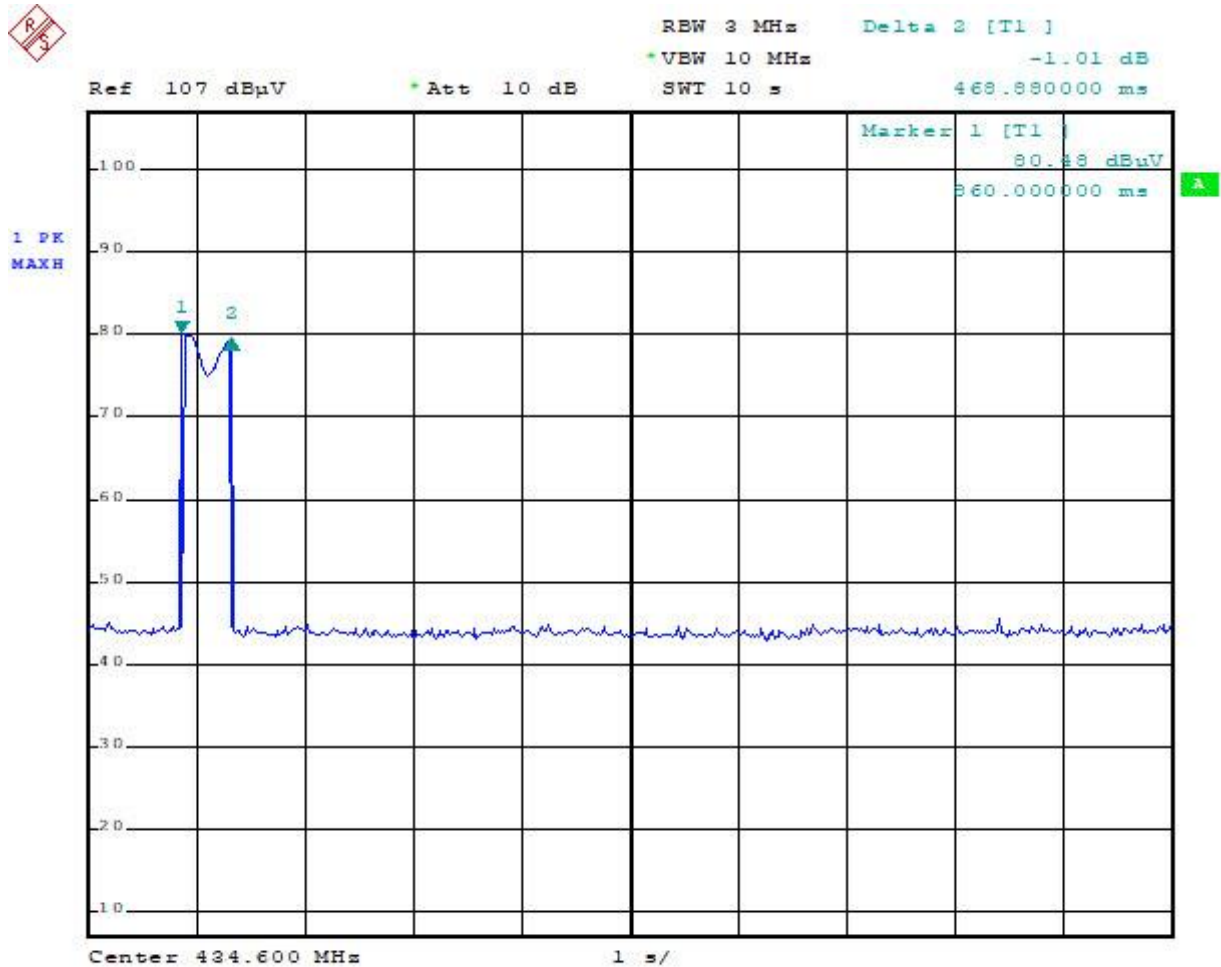
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### 2. Dwell Time

| Test item             | Limit (s) | Results |
|-----------------------|-----------|---------|
| Transmission Duration | ≤5s       | Pass    |

Test plot as follows:



Date: 27 JUL 2022 13:52:17



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3. Field Strength of the Fundamental

| Test channel | Freq. (MHz) | Result Level (dBμV/m) | Limit Line (dBμV/m) | Over Limit (dB) | Detector | Polarization |
|--------------|-------------|-----------------------|---------------------|-----------------|----------|--------------|
| Channel 1    | 434.6       | 70.81                 | 80.83               | -5.17           | Peak     | Vertical     |
|              |             | 73.77                 | 80.83               | -8.93           | Peak     | Horizontal   |

Remark: If the Peak value below the AV Limit, the AV test doesn't perform for this submission.



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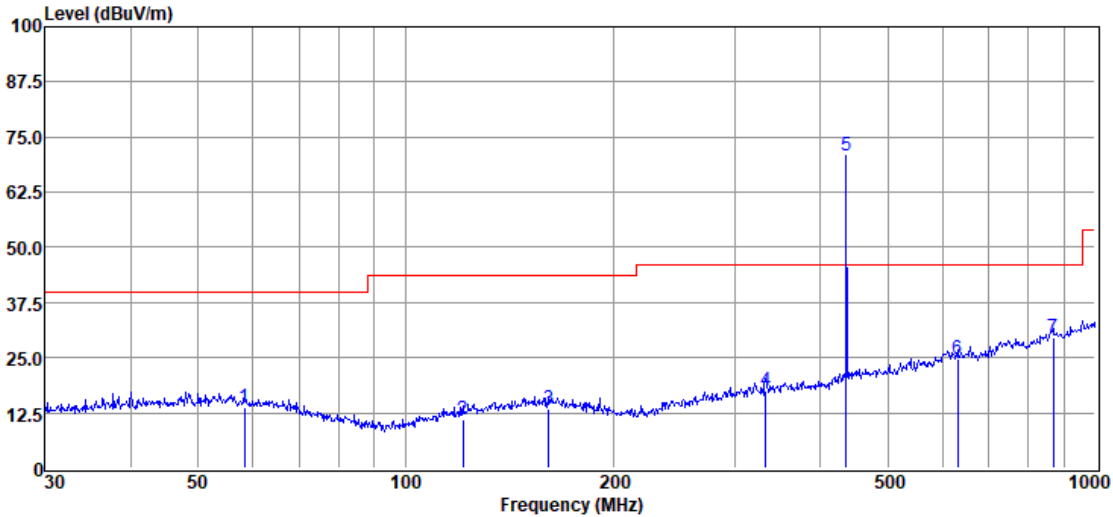
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### 4. Spurious Emissions

Vertical:



| Item   | Freq.   | Read Level | Antenna Factor | Preamp Factor | Cable Loss | Result Level | Limit Line         | Over Limit | Detector |
|--------|---------|------------|----------------|---------------|------------|--------------|--------------------|------------|----------|
| (Mark) | (MHz)   | (dBμV)     | (dBμA/μVm)     | (dB)          | (dB)       | (dBμA/m)     | (dBμA/m)           | (dB)       |          |
| 1      | 58.407  | 25.30      | 13.39          | 26.20         | 1.26       | 13.75        | 40.00              | -26.25     | QP       |
| 2      | 121.123 | 25.00      | 11.30          | 27.10         | 1.91       | 11.11        | 43.50              | -32.39     | QP       |
| 3      | 161.474 | 24.82      | 13.22          | 27.03         | 2.23       | 13.24        | 43.50              | -30.26     | QP       |
| 4      | 332.519 | 26.51      | 14.36          | 26.60         | 3.17       | 17.44        | 46.00              | -28.56     | QP       |
| 5      | 434.600 | 77.02      | 16.81          | 26.68         | 3.66       | 70.81        | Fundamental Signal |            |          |
| 6      | 631.688 | 26.84      | 20.68          | 27.20         | 4.38       | 24.70        | 46.00              | -21.30     | QP       |
| 7      | 869.130 | 28.23      | 23.48          | 27.17         | 5.17       | 29.71        | 46.00              | -16.29     | QP       |

Remark: Result Level= Read Level + Antenna Factor + Cable Loss- Preamp Factor

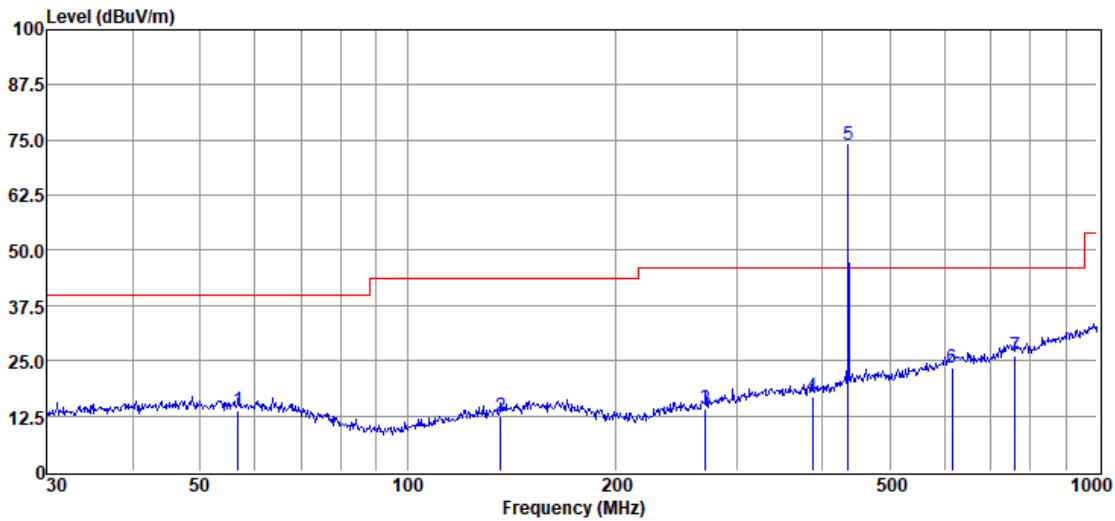


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**Horizontal:**



| Item   | Freq.   | Read Level | Antenna Factor | Preamp Factor | Cable Loss | Result Level | Limit Line         | Over Limit | Detector |
|--------|---------|------------|----------------|---------------|------------|--------------|--------------------|------------|----------|
| (Mark) | (MHz)   | (dBμV)     | (dBμA/μV/m)    | (dB)          | (dB)       | (dBμA/m)     | (dBμA/m)           | (dB)       |          |
| 1      | 56.792  | 25.03      | 13.54          | 26.20         | 1.24       | 13.61        | 40.00              | -26.39     | QP       |
| 2      | 136.460 | 24.97      | 12.45          | 27.10         | 2.03       | 12.35        | 43.50              | -31.15     | QP       |
| 3      | 270.375 | 25.35      | 12.62          | 26.79         | 2.87       | 14.05        | 46.00              | -31.95     | QP       |
| 4      | 386.634 | 25.24      | 15.43          | 27.16         | 3.38       | 16.89        | 46.00              | -29.11     | QP       |
| 5      | 434.600 | 79.98      | 16.81          | 26.68         | 3.66       | 73.77        | Fundamental Signal |            |          |
| 6      | 616.372 | 25.41      | 20.60          | 27.20         | 4.41       | 23.22        | 46.00              | -22.78     | QP       |
| 7      | 760.704 | 26.35      | 22.34          | 27.33         | 4.84       | 26.20        | 46.00              | -19.80     | QP       |

Remark: Result Level= Read Level + Antenna Factor + Cable Loss- Preamp Factor



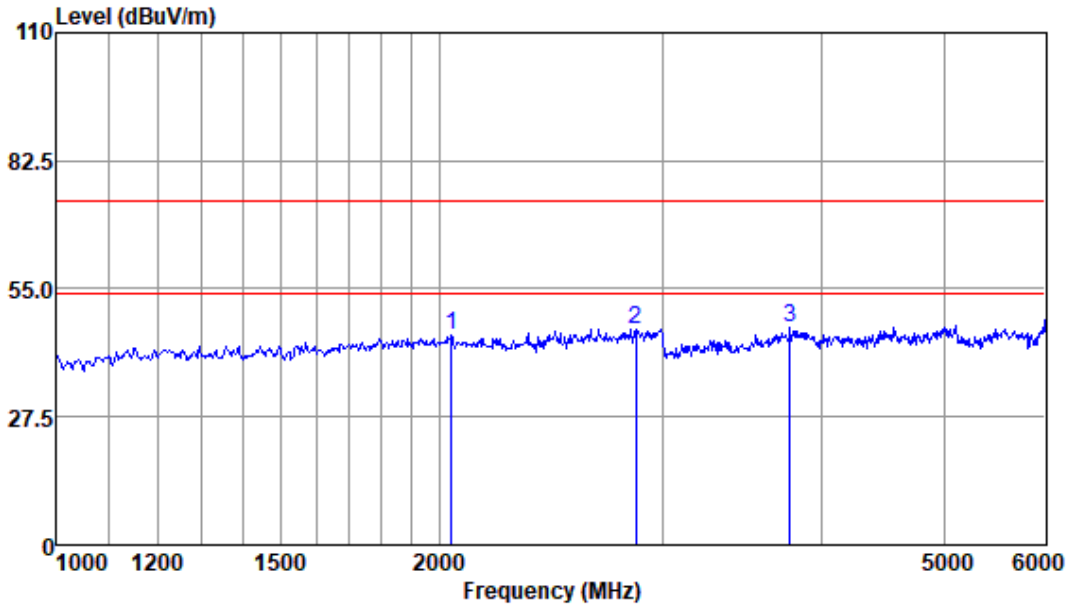
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Above 1GHz

Horizontal



Antenna Polarity :HORIZONTAL

| Read Freq | Antenna Level | Cable Factor | Preamp Loss | Emission Factor | Limit Level | Over Line | Remark |
|-----------|---------------|--------------|-------------|-----------------|-------------|-----------|--------|
| MHz       | dBuv          | dB/m         | dB          | dB              | dBuv/m      | dB        |        |
| 2044.01   | 46.90         | 28.24        | 4.91        | 34.87           | 45.18       | 74.00     | Peak   |
| 2857.57   | 46.96         | 29.92        | 5.15        | 35.68           | 46.35       | 74.00     | Peak   |
| 3772.33   | 43.14         | 32.92        | 6.73        | 36.20           | 46.59       | 74.00     | Peak   |

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

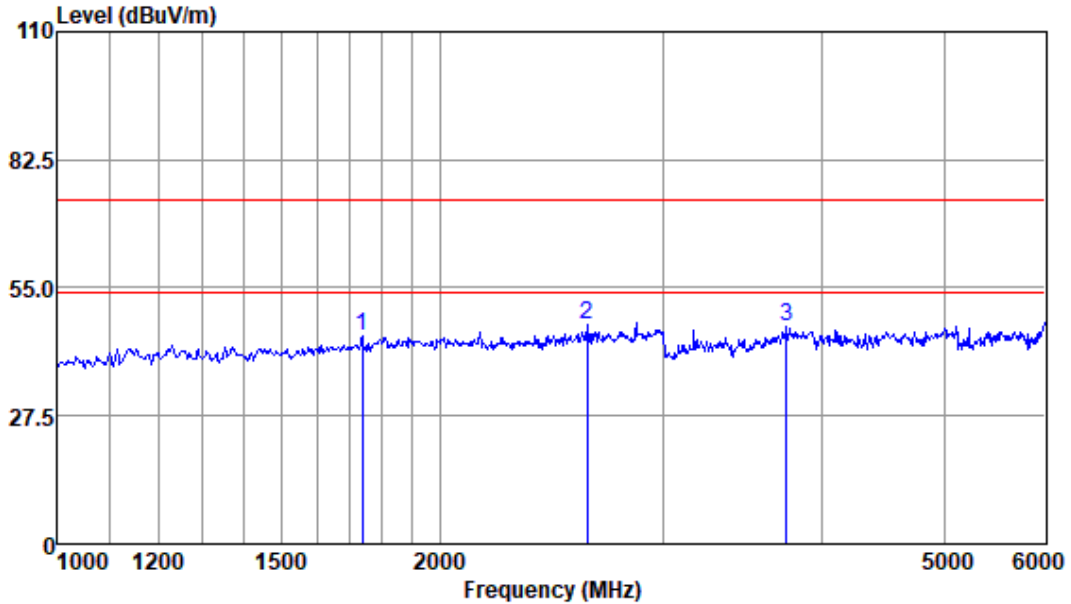


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Vertical



Antenna Polarity :VERTICAL

| Read Freq | Antenna Factor | Cable Loss | Preamp Factor | Emission Level | Limit Line | Over Limit | Remark |
|-----------|----------------|------------|---------------|----------------|------------|------------|--------|
| MHz       | dB/m           | dB         | dB            | dBuV/m         | dBuV/m     | dB         |        |
| 1736.48   | 27.25          | 5.03       | 34.77         | 44.82          | 74.00      | -29.18     | Peak   |
| 2612.70   | 29.58          | 4.97       | 35.40         | 46.95          | 74.00      | -27.05     | Peak   |
| 3752.11   | 32.89          | 6.71       | 36.19         | 46.69          | 74.00      | -27.31     | Peak   |

Note: Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor



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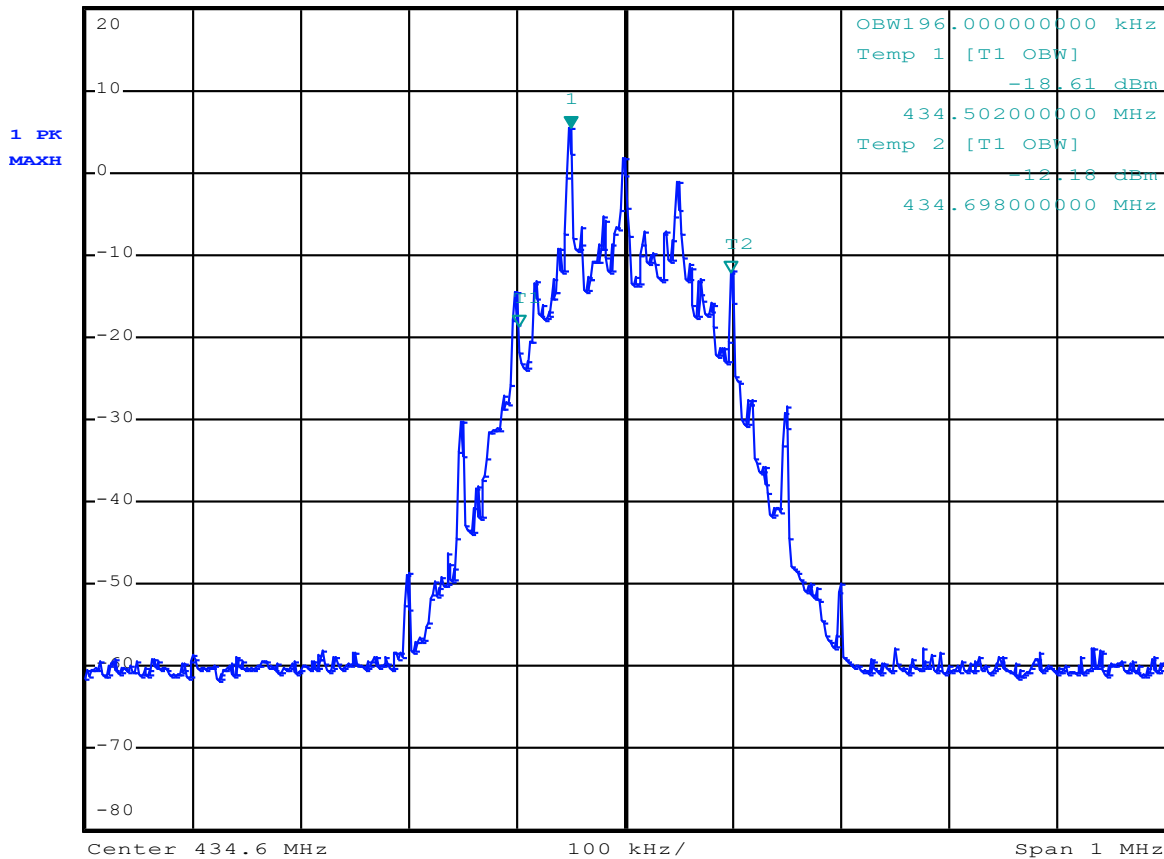
### 5. 99% Bandwidth

| Frequency (MHz) | 99% Bandwidth (MHz) | Limit(MHz) | Result |
|-----------------|---------------------|------------|--------|
| 434.6           | 0.196               | --         | PASS   |

Test plot as follows:



\*RBW 3 kHz      Marker 1 [T1 ]  
 VBW 10 kHz      5.37 dBm  
 Ref 20 dBm      Att 50 dB      SWT 115 ms      434.550000000 MHz



Date: 27.JUL.2022 13:42:56

- End of the Report -



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