



## TEST REPORT

**Application No.:** GZCR2110021252AT  
**Applicant:** OTF Product Sourcing, LLC  
**Address of Applicant:** 6000 Broken Sound Parkway NW, Suite 201 Boca Raton, FL 33487, USA  
**Manufacturer:** OTF Product Sourcing, LLC  
**Address of Manufacturer:** 6000 Broken Sound Parkway NW, Suite 201 Boca Raton, FL 33487, USA  
**Factory:** Shenzhen Fenda Smart Technology Limited  
**Address of Factory:** 1st to 5th Floor of No. 2 Building in Phase II, 5th Floor of Office Building, 5th Floor of Factory A, Fenda Industrial Park, Baoyuan Community, Shiyan Street, Baoan District, Shenzhen

**Equipment Under Test (EUT):**

**EUT Name:** OTbeat BURN  
**Model No.:** OT-BURN-5.0  
**Trade Mark:** OTbeat  
**Standard(s) :** 47 CFR Part 15, Subpart C 15.249  
**Date of Receipt:** 2021-10-13  
**Date of Test:** 2021-10-13 to 2021-10-24  
**Date of Issue:** 2021-11-04



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

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

Kobe Jian  
EMC Laboratory Manager



| Revision Record |         |            |          |          |
|-----------------|---------|------------|----------|----------|
| Version         | Chapter | Date       | Modifier | Remark   |
| 01              |         | 2021-11-04 |          | Original |
|                 |         |            |          |          |
|                 |         |            |          |          |

|                         |  |   |  |  |
|-------------------------|--|---|--|--|
| Authorized for issue by |  |   |  |  |
|                         |  |  |  |  |
|                         |  | Curry Wu/Project Engineer   |  |  |
|                         |  |  |  |  |
|                         |  | Ricky Liu/Reviewer  |  |  |

## 2 Test Summary

| Radio Spectrum Technical Requirement |                                  |        |                                  |        |
|--------------------------------------|----------------------------------|--------|----------------------------------|--------|
| Item                                 | Standard                         | Method | Requirement                      | Result |
| Antenna Requirement                  | 47 CFR Part 15, Subpart C 15.249 | 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 15.249 | ANSI C63.10 (2013) Section 6.9         | 47 CFR Part 15, Subpart C 15.215                      | Pass   |
| Field Strength of the Fundamental Signal (15.249(a)) |                                  | ANSI C63.10 (2013) Section 6.5&6.6     | 47 CFR Part 15, Subpart C 15.249(a)                   | Pass   |
| Restricted Band Around Fundamental Frequency         |                                  | ANSI C63.10 (2013) Section 6.10.5      | 47 CFR Part 15, Subpart C 15.205 & 15.249(d) & 15.209 | Pass   |
| Radiated Emissions                                   |                                  | ANSI C63.10 (2013) Section 6.4&6.5&6.6 | 47 CFR Part 15, Subpart C 15.209 & 15.249 (a)(d)      | Pass   |

### Note:

E.U.T./EUT means Equipment Under Test.

Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.

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|   |   |    |
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## 4 General Information

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

|                      |  |
|----------------------|--|
| Power supply:        | Lithium Ion Battery: 3.8V 70mAh rechargeable battery which charged by USB port |
| Cable(s):            | USB cable: 55cm unshielded   |
| Operation Frequency: | 2457MHz  |
| Modulation Type:     | GFSK   |
| Number of Channels   | 1  |
| Antenna Type         | FPC Antenna  |
| Antenna Gain:        | -2dBi  |

### 4.2 Description of Support Units

| Description                                     | Manufacturer | Model No. | Serial No. |
|---|--------------|-----------|------------|
| --  | --           | --        | --         |
| The EUT has been tested as an independent unit. |              |           |            |

### 4.3 Measurement Uncertainty

| Test Item  | Measurement Uncertainty   |
|--|---|
| 20dB Bandwidth                                       | $\pm 3\%$   |
| Field Strength of the Fundamental Signal (15.249(a)) | $\pm 4.5\text{dB}$ (Below 1GHz); $\pm 4.8\text{dB}$ (Above 1GHz)  |
| Restricted Band Around Fundamental Frequency         | $\pm 4.5\text{dB}$ (Below 1GHz); $\pm 4.8\text{dB}$ (Above 1GHz)  |
| Radiated Emissions (below 1GHz)                      | $\pm 5.06\text{dB}$ (30MHz-1GHz ; 3m)                             |
| Radiated Emissions (above 1GHz)                      | $\pm 5.08\text{dB}$ (1GHz-6GHz); $\pm 5.14\text{dB}$ (above 6GHz) |

**Remark:**

The  $U_{\text{lab}}$  (lab Uncertainty) is less than  $U_{\text{CISPR}}$  (CISPR Uncertainty), so the test results

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

#### 4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,  
198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District,  
Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.

#### 4.5 Test Facility

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

- **NVLAP (Lab Code: 200611-0)**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

- **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian/New Zealand Regulatory Compliance Mark (RCM).

- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

- **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2018 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2017 General Requirements) for the Competence of Testing Laboratories.

- **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818.

- **ISED (Registration No.: 4620B, CAB identifier: CN0052)**

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

- **VCCI (Registration No.: R-12460, C-12584, G-20107 and T-11179)**

The 10m Semi-anechoic chamber, 966 Anechoic Chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-20107 and T-11179 respectively.

- **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2017, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.



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**4.6 Deviation from Standards**

None

**4.7 Abnormalities from Standard Conditions**

None



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## 5 Equipment List

| 20dB Bandwidth                  |                      |          |              |            |              |
|---------------------------------|----------------------|----------|--------------|------------|--------------|
| Equipment                       | Manufacturer         | Model No | Inventory No | Cal Date   | Cal Due Date |
| EXA Signal Analyzer(10Hz-44GHz) | Agilent Technologies | N9010A   | EMC2138      | 2021-09-16 | 2022-09-15   |
| 6dB Attenuator                  | HP                   | 8491A    | EMC2062      | 2020-04-15 | 2022-04-14   |
| MI CABLE                        | SGS-EMC              | 0.8M     | EMC2136      | 2019-11-02 | 2021-11-01   |
| Test Software                   | TST                  | V2.0     | GZE100-78    | N/A        | N/A          |

| Field Strength of the Fundamental Signal (15.249(a)) |                             |               |              |            |              |
|--|-----------------------------|---------------|--------------|------------|--------------|
| Equipment  | Manufacturer                | Model No      | Inventory No | Cal Date   | Cal Due Date |
| EMI Test Receiver(20Hz-26.5GHz)                      | Rohde & Schwarz             | ESIB26        | EMC0522      | 2021-01-08 | 2022-01-07   |
| Chamber cable(Above 1GHz)                            | Scoflex                     | KMKM-8.0m     | EMC0545      | 2020-09-09 | 2022-09-08   |
| Horn Antenna(1GHz-18GHz)                             | SCHWARZBECK MESS-ELEKTRONIK | BBHA 9120D    | EMC2026      | 2019-09-25 | 2022-09-24   |
| 1GHz-26.5 GHz Pre-Amplifier                          | Agilent                     | 8449B         | EMC0521      | 2021-01-08 | 2022-01-07   |
| 2.4GHz Filter  | Micro-Tronics               | BRM 50702     | EMC2069      | 2021-01-08 | 2022-01-07   |
| 966 Anechoic Chamber                                 | C.R.T                       | 9m x 6m x 6m  | EMC2142      | 2020-12-20 | 2023-12-19   |
| MXE EMI Receiver(10Hz-8.4GHz)                        | Keysight                    | N9038A        | EMC2139      | 2020-11-13 | 2021-11-12   |
| EXA Signal Analyzer(10Hz-44GHz)                      | Keysight                    | N9010A        | EMC2138      | 2021-09-16 | 2022-09-15   |
| Test Software E3                                     | Audix                       | Ver.6.120110a | GZE100-61    | N/A        | N/A          |
| Notch Filter (5150-5880)                             | Mico-Tronics                | BRM50716      | EMC2168      | 2021-07-29 | 2022-07-28   |
| Horn Antenna(14-40GHz)                               | SCHWARZBECK                 | BBHA 9170     | EMC2041      | 2020-06-28 | 2023-06-27   |
| Microwave Broadband Preamplifier (18-40GHz)          | SCHWARZBECK                 | BBV 9721      | EMC2172      | 2021-09-08 | 2022-09-07   |

| Restricted Band Around Fundamental Frequency |                                |               |              |            |              |
|--|--------------------------------|---------------|--------------|------------|--------------|
| Equipment                                    | Manufacturer                   | Model No      | Inventory No | Cal Date   | Cal Due Date |
| EMI Test Receiver(20Hz-26.5GHz)              | Rohde & Schwarz                | ESIB26        | EMC0522      | 2021-01-08 | 2022-01-07   |
| Chamber cable(Above 1GHz)                    | Scoflex                        | KMKM-8.0m     | EMC0545      | 2020-09-09 | 2022-09-08   |
| Horn Antenna(1GHz-18GHz)                     | SCHWARZBECK<br>MESS-ELEKTRONIK | BBHA 9120D    | EMC2026      | 2019-09-25 | 2022-09-24   |
| 1GHz-26.5 GHz Pre-Amplifier                  | Agilent                        | 8449B         | EMC0521      | 2021-01-08 | 2022-01-07   |
| 2.4GHz Filter                                | Micro-Tronics                  | BRM 50702     | EMC2069      | 2021-01-08 | 2022-01-07   |
| 966 Anechoic Chamber                         | C.R.T                          | 9m x 6m x 6m  | EMC2142      | 2020-12-20 | 2023-12-19   |
| MXE EMI Receiver(10Hz-8.4GHz)                | Keysight                       | N9038A        | EMC2139      | 2020-11-13 | 2021-11-12   |
| EXA Signal Analyzer(10Hz-44GHz)              | Keysight                       | N9010A        | EMC2138      | 2021-09-16 | 2022-09-15   |
| Test Software E3                             | Audix                          | Ver.6.120110a | GZE100-61    | N/A        | N/A          |
| Notch Filter (5150-5880)                     | Mico-Tronics                   | BRM50716      | EMC2168      | 2021-07-29 | 2022-07-28   |
| Horn Antenna(14-40GHz)                       | SCHWARZBECK                    | BBHA 9170     | EMC2041      | 2020-06-28 | 2023-06-27   |
| Microwave Broadband Preamplifier (18-40GHz)  | SCHWARZBECK                    | BBV 9721      | EMC2172      | 2021-09-08 | 2022-09-07   |

| Radiated Spurious Emissions (Below 1GHz) |                                |               |              |            |              |
|--|--------------------------------|---------------|--------------|------------|--------------|
| Equipment                                | Manufacturer                   | Model No      | Inventory No | Cal Date   | Cal Due Date |
| Chamber cable                            | HangTianXing                   | N/A           | EMC0542      | 2020-09-09 | 2022-09-08   |
| Trilog Broadband Antenna(25MHz-1GHz)-Lab | SCHWARZBECK<br>MESS-ELEKTRONIK | VULB 9168     | SEM003-18    | 2019-02-22 | 2022-02-22   |
| Amplifier(9kHz-1.3GHz)                   | HP                             | 8447F         | EMC2065      | 2021-05-19 | 2022-05-18   |
| Active Loop Antenna-RED                  | ETS-Lindgren                   | 6502          | EMC2190      | 2019-12-27 | 2021-12-26   |
| 10m Semi-Anechoic Chamber                | ETS                            | N/A           | EMC0530      | 2019-10-20 | 2022-10-19   |
| Test Software E3                         | Audix                          | Ver.6.120110a | GZE100-61    | N/A        | N/A          |
| EMI Test Receiver(1Hz-8GHz)              | Rohde & Schwarz                | ESW8          | EMC2220      | 2021-05-26 | 2022-05-25   |



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中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075058 sgs.china@sgs.com

| Radiated Spurious Emissions (Above 1GHz)    |                                |               |              |            |              |
|---|--------------------------------|---------------|--------------|------------|--------------|
| Equipment                                   | Manufacturer                   | Model No      | Inventory No | Cal Date   | Cal Due Date |
| EMI Test Receiver(20Hz-26.5GHz)             | Rohde & Schwarz                | ESIB26        | EMC0522      | 2021-01-08 | 2022-01-07   |
| Chamber cable(Above 1GHz)                   | Scoflex                        | KMKM-8.0m     | EMC0545      | 2020-09-09 | 2022-09-08   |
| Horn Antenna(1GHz-18GHz)                    | SCHWARZBECK<br>MESS-ELEKTRONIK | BBHA 9120D    | EMC2026      | 2019-09-25 | 2022-09-24   |
| 1GHz-26.5 GHz Pre-Amplifier                 | Agilent                        | 8449B         | EMC0521      | 2021-01-08 | 2022-01-07   |
| 2.4GHz Filter                               | Micro-Tronics                  | BRM 50702     | EMC2069      | 2021-01-08 | 2022-01-07   |
| 966 Anechoic Chamber                        | C.R.T                          | 9m x 6m x 6m  | EMC2142      | 2020-12-20 | 2023-12-19   |
| MXE EMI Receiver(10Hz-8.4GHz)               | Keysight                       | N9038A        | EMC2139      | 2020-11-13 | 2021-11-12   |
| EXA Signal Analyzer(10Hz-44GHz)             | Keysight                       | N9010A        | EMC2138      | 2021-09-16 | 2022-09-15   |
| Test Software E3                            | Audix                          | Ver.6.120110a | GZE100-61    | N/A        | N/A          |
| Notch Filter (5150-5880)                    | Mico-Tronics                   | BRM50716      | EMC2168      | 2021-07-29 | 2022-07-28   |
| Horn Antenna(14-40GHz)                      | SCHWARZBECK                    | BBHA 9170     | EMC2041      | 2020-06-28 | 2023-06-27   |
| Microwave Broadband Preamplifier (18-40GHz) | SCHWARZBECK                    | BBV 9721      | EMC2172      | 2021-09-08 | 2022-09-07   |

| General used equipment |              |          |              |            |              |
|------------------------|--------------|----------|--------------|------------|--------------|
| Equipment              | Manufacturer | Model No | Inventory No | Cal Date   | Cal Due Date |
| DMM                    | Fluke        | 73       | EMC0006      | 2021-07-05 | 2022-07-05   |
| DMM                    | Fluke        | 73       | EMC0007      | 2021-07-05 | 2022-07-05   |

## 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 integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is -2dBi.

Antenna location: Refer to Internal photos



## 7 Radio Spectrum Matter Test Results

### 7.1 20dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.215  
Test Method: ANSI C63.10 (2013) Section 6.9  
Limit: N/A

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

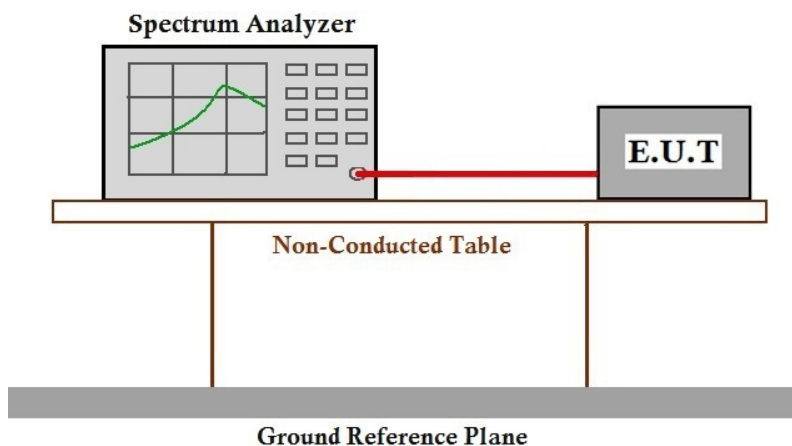
Operating Environment:

Temperature: 23.7 °C Humidity: 55.8 % RH Atmospheric Pressure: 1003 mbar

#### 7.1.2 Test Mode Description

| Pre-scan / Mode | Description  |
|-----------------|--|
| Final test Code |  |
| Final test 01   | TX mode_Keep the EUT in transmitting with modulation mode. |

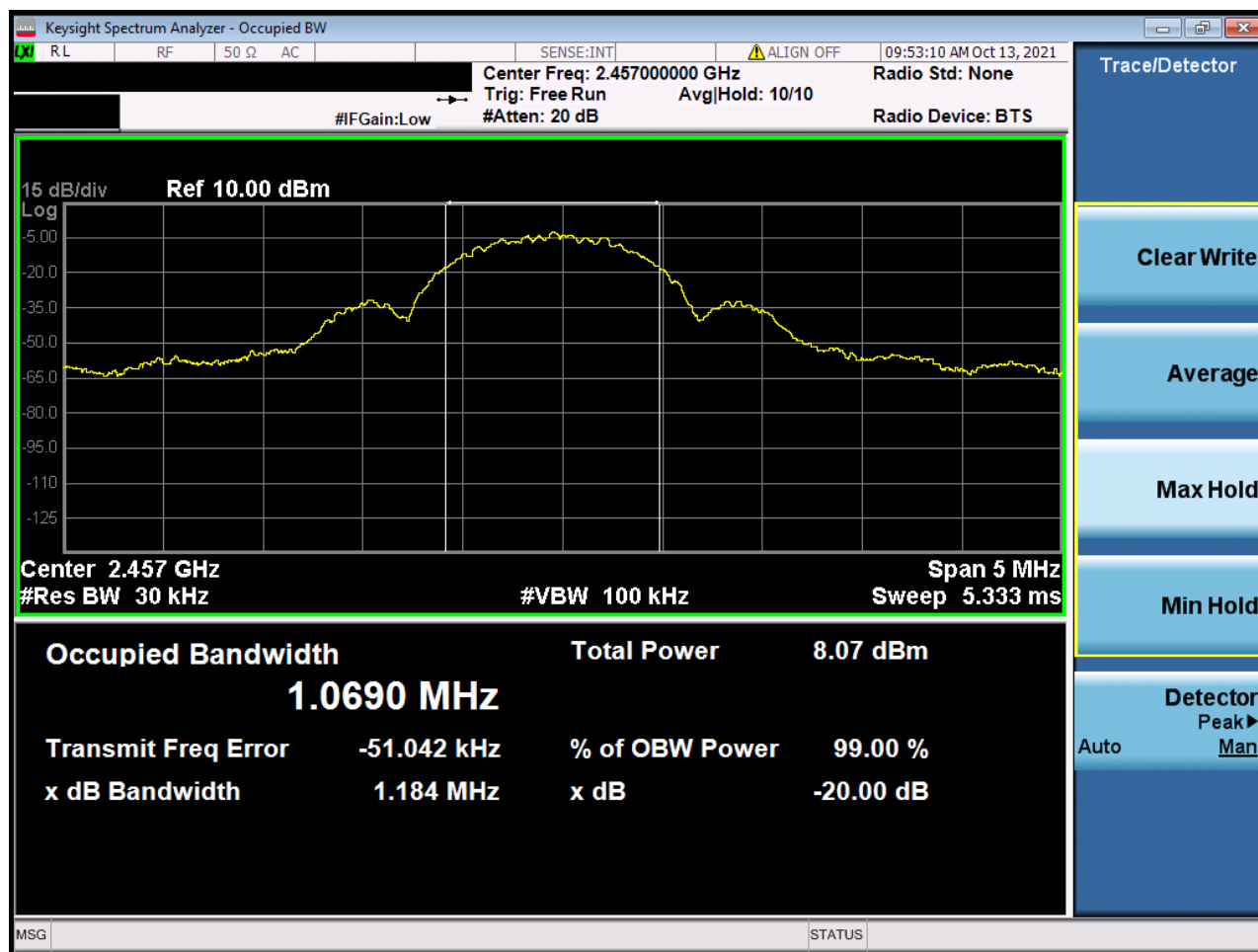
#### 7.1.3 Test Setup Diagram





### 7.1.4 Measurement Procedure and Data

| Test channel | 20dB bandwidth (MHz) | Results |
|--------------|----------------------|---------|
| 2457MHz      | 1.184                | Pass    |



**7.2 Field Strength of the Fundamental Signal (15.249(a))**

Test Requirement 47 CFR Part 15, Subpart C 15.249(a)

Test Method: ANSI C63.10 (2013) Section 6.5&amp;6.6

Limit:

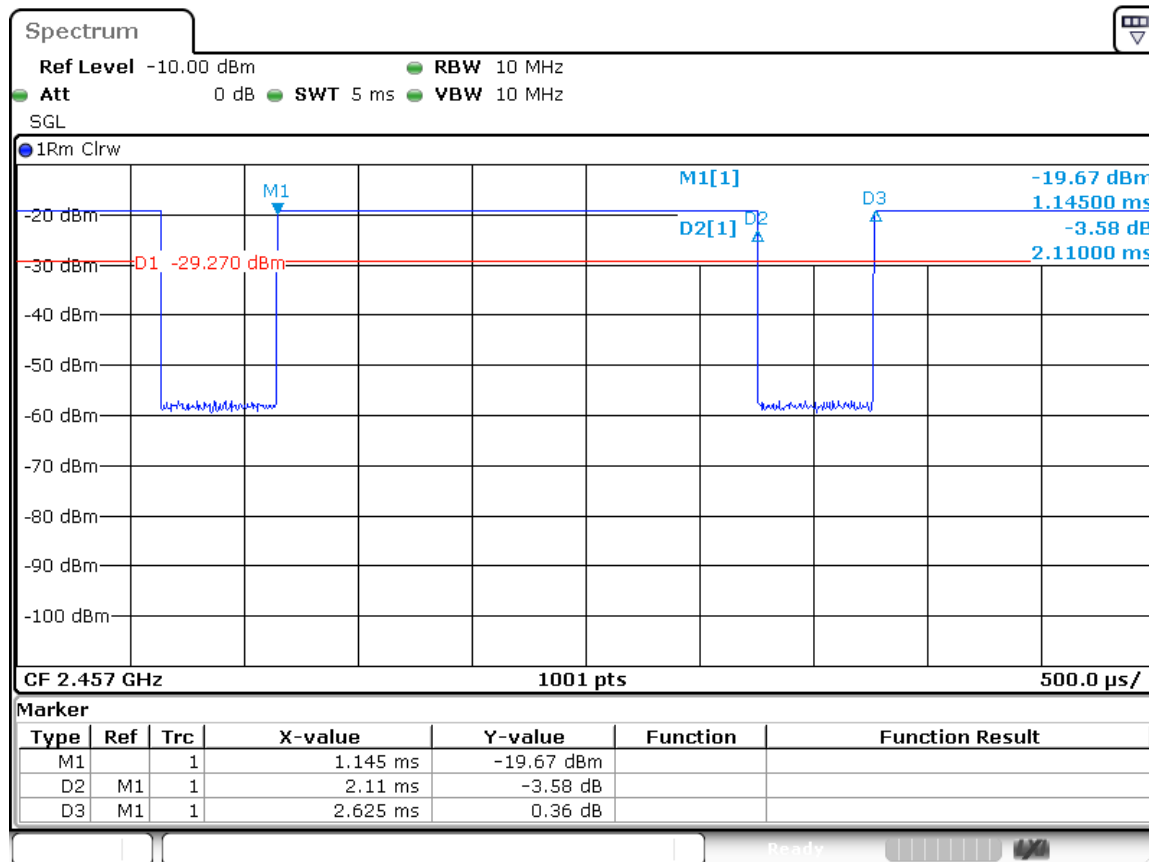
| Fundamental frequency(MHz) | Field strength of fundamental(millivolts/meter) | Field strength of harmonics(microvolts/meter) |
|----------------------------|---|---|
| 902-928                    | 50  | 500   |
| 2400-2483.5                | 50  | 500   |
| 5725-5875                  | 50  | 500   |
| 24000-24250                | 250   | 2500  |

Remark: 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.

For fundamental frequency in "902-928MHz", the field strength of fundamental is based on Quasi-Peak.

Average value:

|                    |                                  |
|--------------------|----------------------------------|
| Calculate Formula: | Average value=Peak value + PDCF  |
|                    | PDCF=20 log(Duty cycle)          |
|                    | Duty cycle= T on time / T period |
| Test data:         | Ton time =2.11ms                 |
|                    | T period =2.625ms                |
|                    | Duty cycle=80.0%                 |
|                    | PDCF value= -1.90dB              |



### 7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 23.3 °C

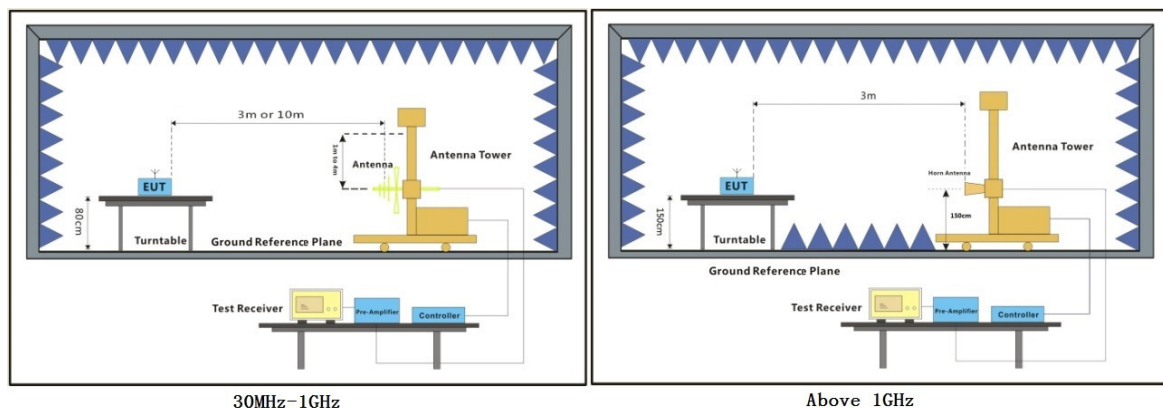
Humidity: 56.4 % RH

Atmospheric Pressure: 1003 mbar

### 7.2.2 Test Mode Description

| Pre-scan / Mode | Description  |
|-----------------|--|
| Final test Code |  |
| Final test 01   | TX mode_Keep the EUT in transmitting with modulation mode. |

### 7.2.3 Test Setup Diagram



#### 7.2.4 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. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j. Repeat above procedures until all frequencies measured was complete.

Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

Remark 2: Antenna: 3 denotes the type of antenna for above 1000MHz.

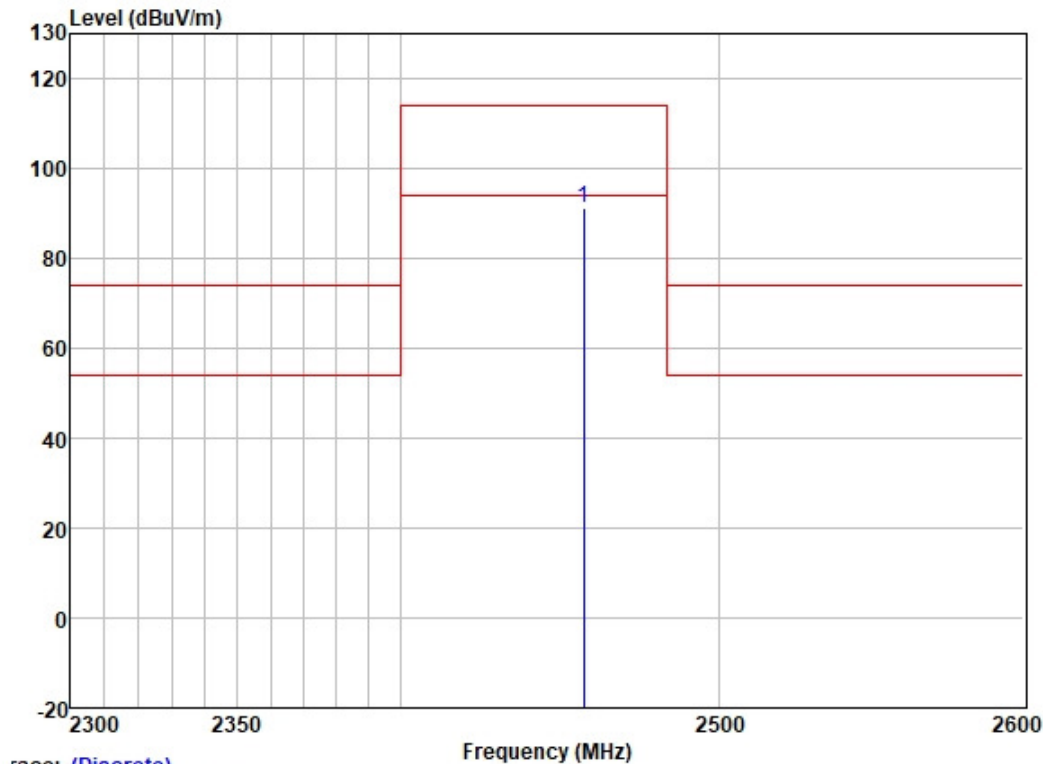


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Test Mode: 01; Polarity: Horizontal



Trace: (Discrete)

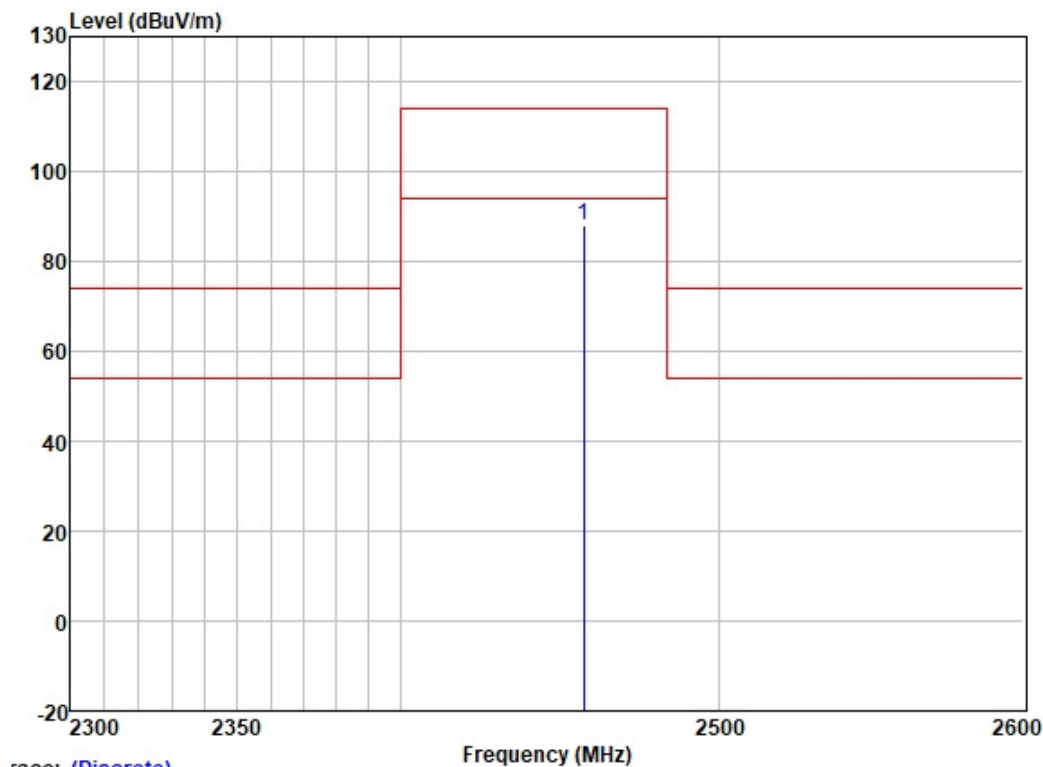
|   | Freq     | ReadAntenna | Cable  | Preamp | Level  | Limit  | Over   |           |                 |
|---|----------|-------------|--------|--------|--------|--------|--------|-----------|-----------------|
|   | MHz      | Level       | Factor | Loss   | Factor | Line   | Limit  | Pol/Phase | Remark          |
|   | MHz      | dBuV        | dB/m   | dB     | dB     | dBuV/m | dBuV/m | dB        |                 |
| 1 | 2457.000 | 97.79       | 27.44  | 3.45   | 37.58  | 91.10  | 114.00 | -22.90    | HORIZONTAL Peak |



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Test Mode: 01; Polarity: Vertical



Trace: (Discrete)

|   | Freq     | ReadAntenna | Cable | Preamp | Level | Limit  | Over   |           |               |
|---|----------|-------------|-------|--------|-------|--------|--------|-----------|---------------|
|   |          | Level       | Loss  | Factor | Level | Line   | Limit  | Pol/Phase | Remark        |
|   | MHz      | dBuV        | dB/m  | dB     | dB    | dBuV/m | dBuV/m | dB        |               |
| 1 | 2457.000 | 94.61       | 27.44 | 3.45   | 37.58 | 87.92  | 114.00 | -26.08    | VERTICAL Peak |

### 7.3 Restricted Band Around Fundamental Frequency

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.249(d) & 15.209

Test Method: ANSI C63.10 (2013) Section 6.10.5

Limit:

| Frequency     | Limit (dBuV/m @3m) | Remark           |
|---------------|--------------------|------------------|
| 30MHz-88MHz   | 40.0               | Quasi-peak Value |
| 88MHz-216MHz  | 43.5               | Quasi-peak Value |
| 216MHz-960MHz | 46.0               | Quasi-peak Value |
| 960MHz-1GHz   | 54.0               | Quasi-peak Value |
| Above 1GHz    | 54.0               | Average Value    |
| Above 1GHz    | 74.0               | Peak Value       |

Emission 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.

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

Operating Environment:

Temperature: 23.3 °C

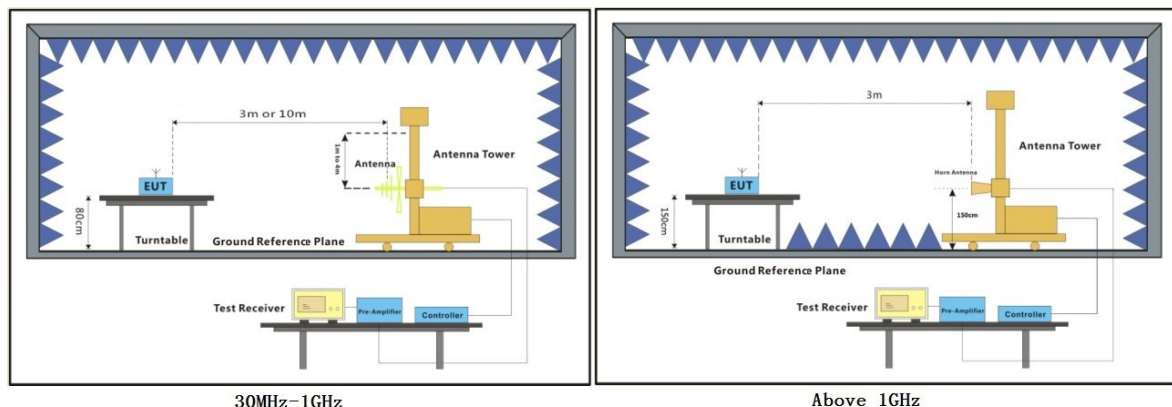
Humidity: 56.2 % RH

Atmospheric Pressure: 1003 mbar

#### 7.3.2 Test Mode Description

| Pre-scan / Mode | Description  |
|-----------------|--|
| Final test Code |  |
| Final test 01   | TX mode_Keep the EUT in transmitting with modulation mode. |

#### 7.3.3 Test Setup Diagram



#### 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. Test the EUT in the lowest channel, the Highest channel.
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j. Repeat above procedures until all frequencies measured was complete.

Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

Remark 2: Antenna: 3 denotes the type of antenna for above 1000MHz.

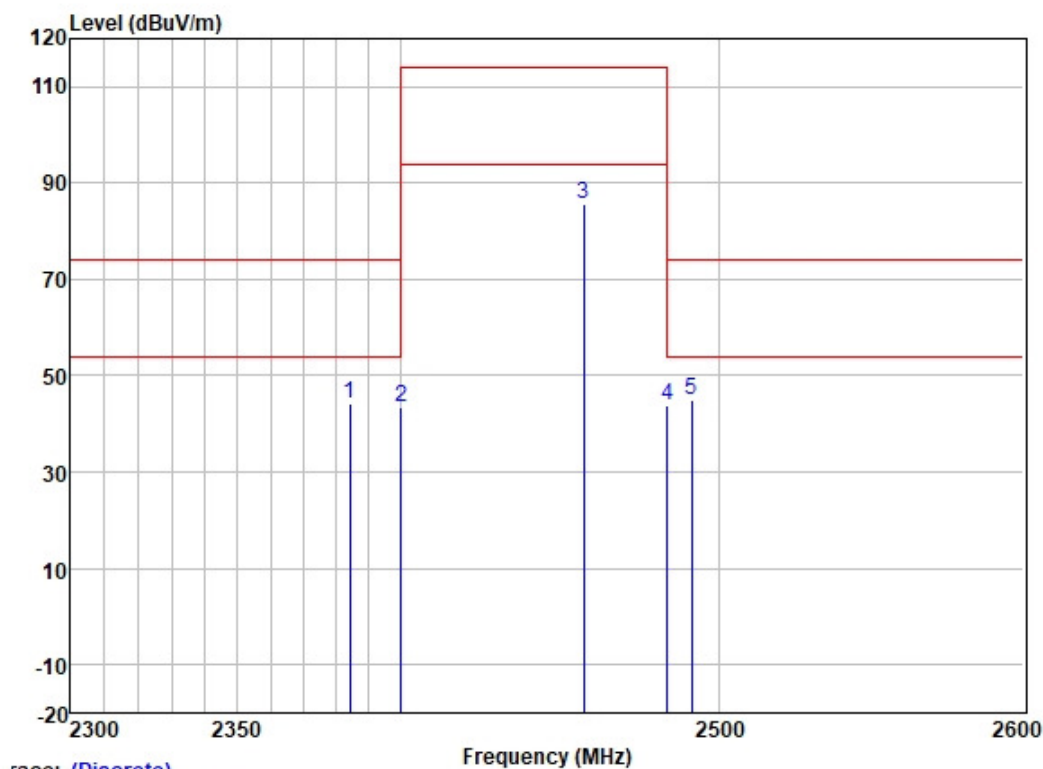


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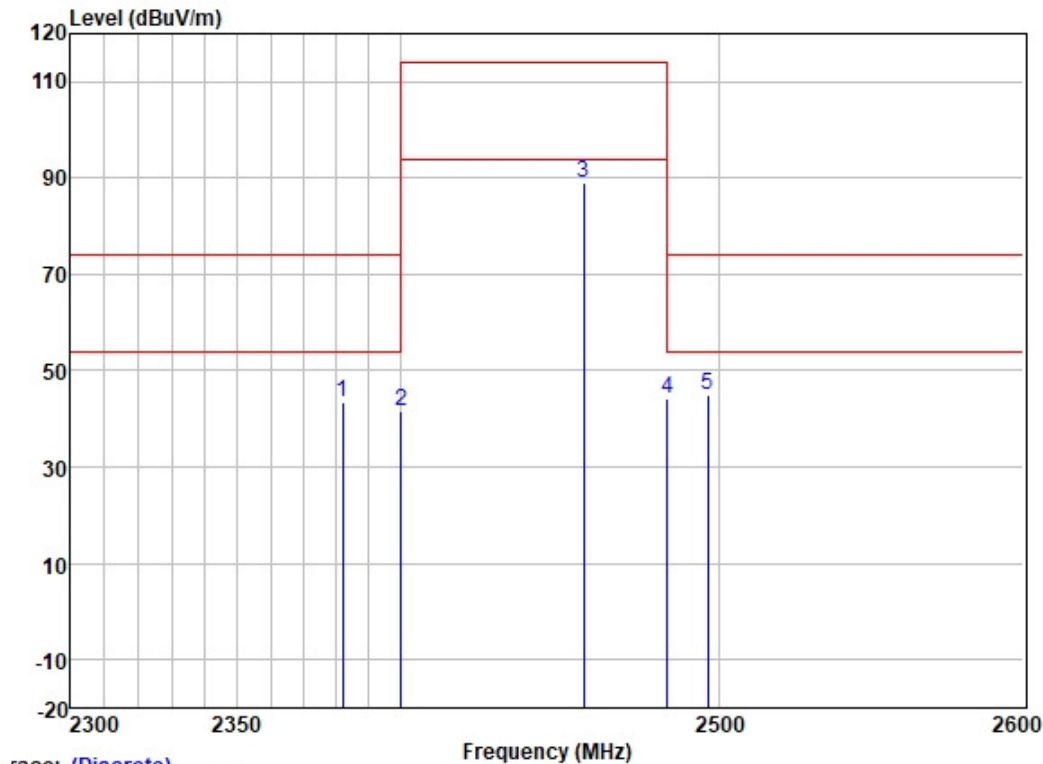
Test Mode: 01; Polarity: Horizontal



|   | Freq     | ReadAntenna | Cable  | Preamp | Level  | Limit  | Over   | Pol/Phase | Remark          |
|---|----------|-------------|--------|--------|--------|--------|--------|-----------|-----------------|
|   | MHz      | Level       | Factor | Loss   | Factor | Line   | Limit  |           |                 |
|   | MHz      | dBuV        | dB/m   | dB     | dB     | dBuV/m | dBuV/m | dB        |                 |
| 1 | 2384.092 | 51.07       | 27.33  | 3.48   | 37.60  | 44.28  | 74.00  | -29.72    | HORIZONTAL Peak |
| 2 | 2400.000 | 50.17       | 27.35  | 3.50   | 37.59  | 43.43  | 74.00  | -30.57    | HORIZONTAL Peak |
| 3 | 2457.000 | 92.45       | 27.44  | 3.45   | 37.58  | 85.76  | 114.00 | -28.24    | HORIZONTAL Peak |
| 4 | 2483.500 | 50.40       | 27.48  | 3.53   | 37.57  | 43.84  | 74.00  | -30.16    | HORIZONTAL Peak |
| 5 | 2491.178 | 51.64       | 27.49  | 3.47   | 37.56  | 45.04  | 74.00  | -28.96    | HORIZONTAL Peak |



Test Mode: 01; Polarity: Vertical



|   | Freq     | ReadAntenna | Cable  | Preamp | Level  | Limit  | Over   | Pol/Phase | Remark        |
|---|----------|-------------|--------|--------|--------|--------|--------|-----------|---------------|
|   | MHz      | Level       | Factor | Loss   | Factor | Line   | Limit  |           |               |
|   | MHz      | dBuV        | dB/m   | dB     | dB     | dBuV/m | dBuV/m | dB        |               |
| 1 | 2381.898 | 50.48       | 27.31  | 3.46   | 37.60  | 43.65  | 74.00  | -30.35    | VERTICAL Peak |
| 2 | 2400.000 | 48.42       | 27.35  | 3.50   | 37.59  | 41.68  | 74.00  | -32.32    | VERTICAL Peak |
| 3 | 2457.000 | 95.73       | 27.44  | 3.45   | 37.58  | 89.04  | 114.00 | -24.96    | VERTICAL Peak |
| 4 | 2483.500 | 50.66       | 27.48  | 3.53   | 37.57  | 44.10  | 74.00  | -29.90    | VERTICAL Peak |
| 5 | 2496.313 | 51.69       | 27.50  | 3.40   | 37.56  | 45.03  | 74.00  | -28.97    | VERTICAL Peak |

### 7.4 Radiated Spurious Emissions (Below 1GHz)

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2013) Section 6.4,6.5,6.6

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: 23.3 °C

Humidity: 56.9 % RH

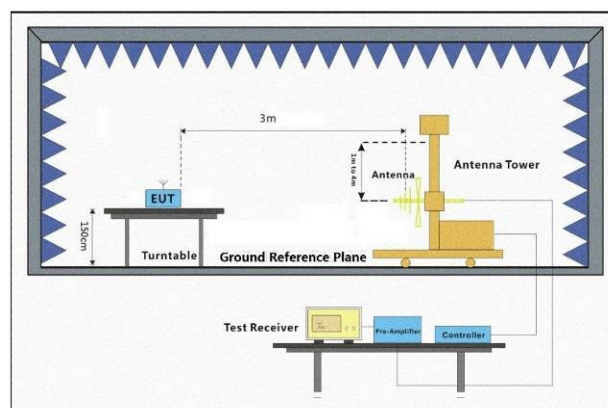
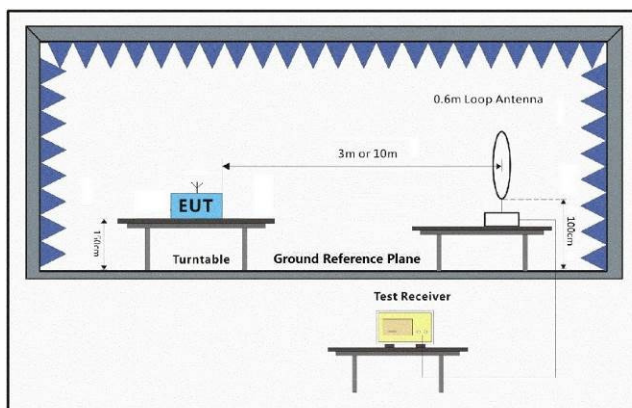
Atmospheric Pressure: 1003 mbar

#### 7.4.2 Test Mode Description

Pre-scan / Mode  
Final test Code Description

Final test 01 TX mode\_Keep the EUT in transmitting with modulation mode.

#### 7.4.3 Test Setup Diagram



#### 7.4.4 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. 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.
- 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 (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.
- 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. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- i. Repeat above procedures until all frequencies measured was complete.

#### Remark:

1) Through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.

2) 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

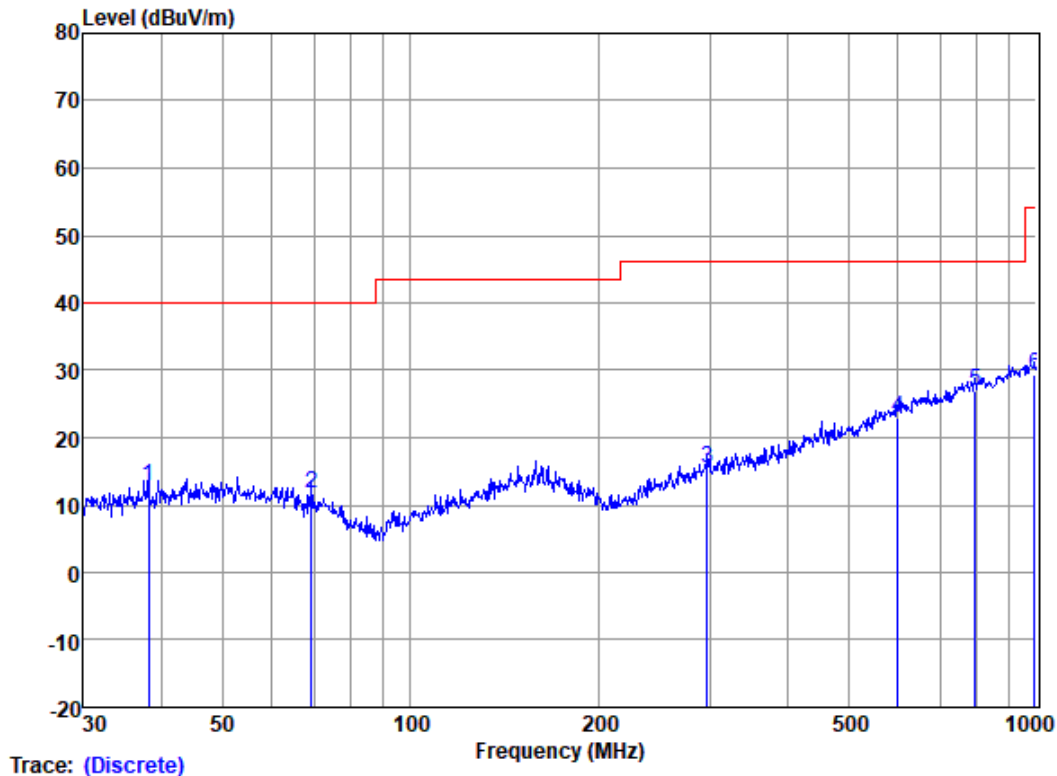
3) Scan from 9kHz to 1 GHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.



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Test Mode: 01; Polarity: Horizontal

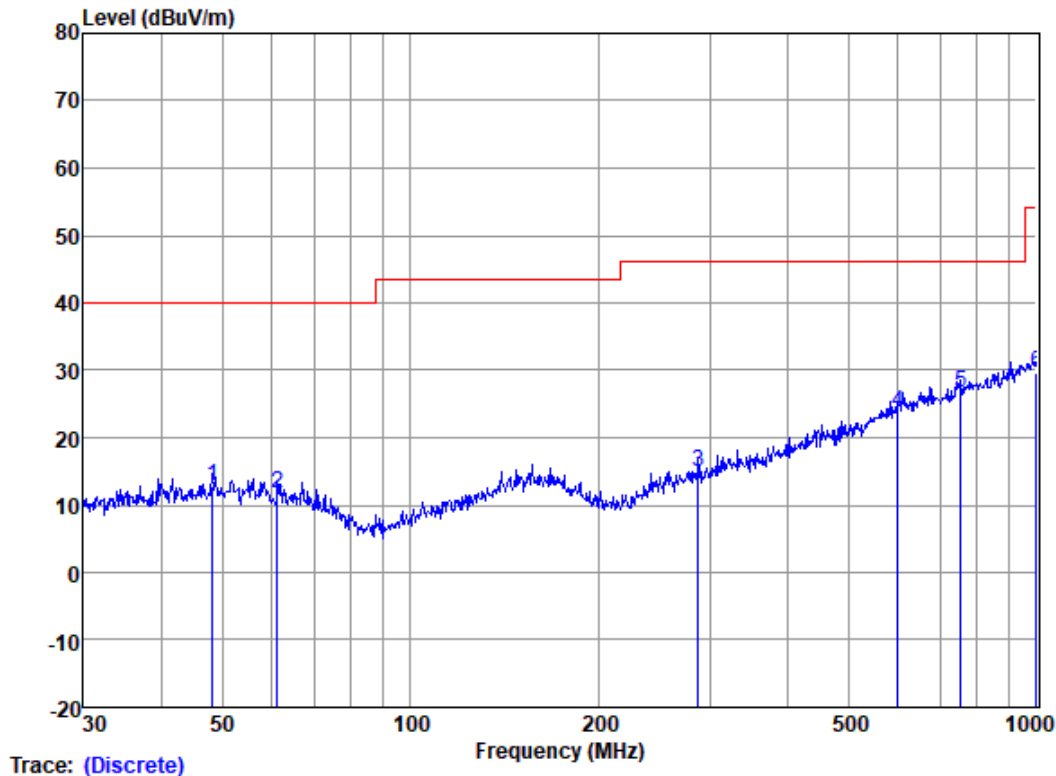


Site : SGS  
Job :  
Model :  
Power :  
Test Mode :

|   | Freq   | Read Level | Antenna Factor | Cable Loss | Preamplifier Factor | Measured Level | Limit Line | Over Limit | Pol/Phase  | Remark |
|---|--------|------------|----------------|------------|---------------------|----------------|------------|------------|------------|--------|
|   | MHz    | dBuV       | dB/m           | dB         | dB                  | dBuV/m         | dBuV/m     | dBuV       |            |        |
| 1 | 38.08  | 25.54      | 13.31          | 1.09       | 27.18               | 12.76          | 40.00      | -27.24     | HORIZONTAL | QP     |
| 2 | 69.36  | 25.57      | 12.01          | 1.40       | 27.13               | 11.85          | 40.00      | -28.15     | HORIZONTAL | QP     |
| 3 | 297.22 | 25.28      | 13.55          | 3.16       | 26.55               | 15.44          | 46.00      | -30.56     | HORIZONTAL | QP     |
| 4 | 599.32 | 26.23      | 19.90          | 5.14       | 28.21               | 23.06          | 46.00      | -22.94     | HORIZONTAL | QP     |
| 5 | 796.18 | 26.17      | 22.57          | 6.14       | 28.03               | 26.85          | 46.00      | -19.15     | HORIZONTAL | QP     |
| 6 | 993.01 | 25.37      | 24.23          | 7.37       | 27.67               | 29.30          | 54.00      | -24.70     | HORIZONTAL | QP     |



Test Mode: 01; Polarity: Vertical



Site : SGS  
Job :  
Model :  
Power :  
Test Mode :

|   | Freq      | Read Level | Antenna Factor | Cable Loss | Preamplifier Factor | Measured Level | Limit Line | Over Limit | Pol/Phase | Remark |
|---|-----------|------------|----------------|------------|---------------------|----------------|------------|------------|-----------|--------|
|   | MHz       | dBuV       | dB/m           | dB         | dB                  | dBuV/m         | dBuV/m     | dBuV       |           |        |
| 1 | 48.16     | 24.85      | 13.99          | 1.13       | 27.17               | 12.80          | 40.00      | -27.20     | VERTICAL  | QP     |
| 2 | 61.13     | 24.51      | 13.21          | 1.27       | 27.16               | 11.83          | 40.00      | -28.17     | VERTICAL  | QP     |
| 3 | 287.99    | 25.05      | 13.37          | 3.12       | 26.56               | 14.98          | 46.00      | -31.02     | VERTICAL  | QP     |
| 4 | 599.32    | 26.78      | 19.90          | 5.14       | 28.21               | 23.61          | 46.00      | -22.39     | VERTICAL  | QP     |
| 5 | 755.39    | 26.61      | 22.20          | 6.01       | 28.08               | 26.74          | 46.00      | -19.26     | VERTICAL  | QP     |
| 6 | SY1000.00 | 25.57      | 24.30          | 7.43       | 27.66               | 29.64          | 54.00      | -24.36     | VERTICAL  | QP     |



## 7.5 Radiated Spurious Emissions (Above 1GHz)

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2013) Section 6.4,6.5,6.6

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.

### 7.5.1 E.U.T. Operation

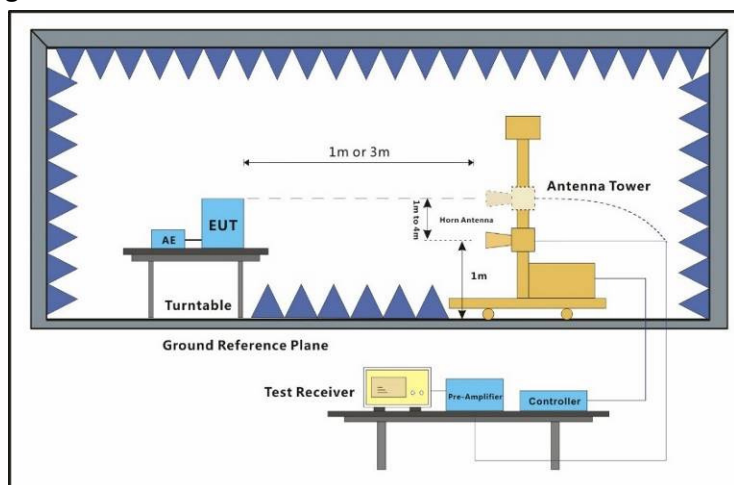
Operating Environment:

Temperature: 23.8 °C Humidity: 56.2 % RH Atmospheric Pressure: 1003 mbar

### 7.5.2 Test Mode Description

| Pre-scan / Mode | Description  |
|-----------------|--|
| Final test Code |  |
| Final test 01   | TX mode_Keep the EUT in transmitting with modulation mode. |

### 7.5.3 Test Setup Diagram



#### 7.5.4 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. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- i. Repeat above procedures until all frequencies measured was complete.

#### 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) Scan from 1GHz to 25GHz, the disturbance above 18GHz 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.

3) 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.



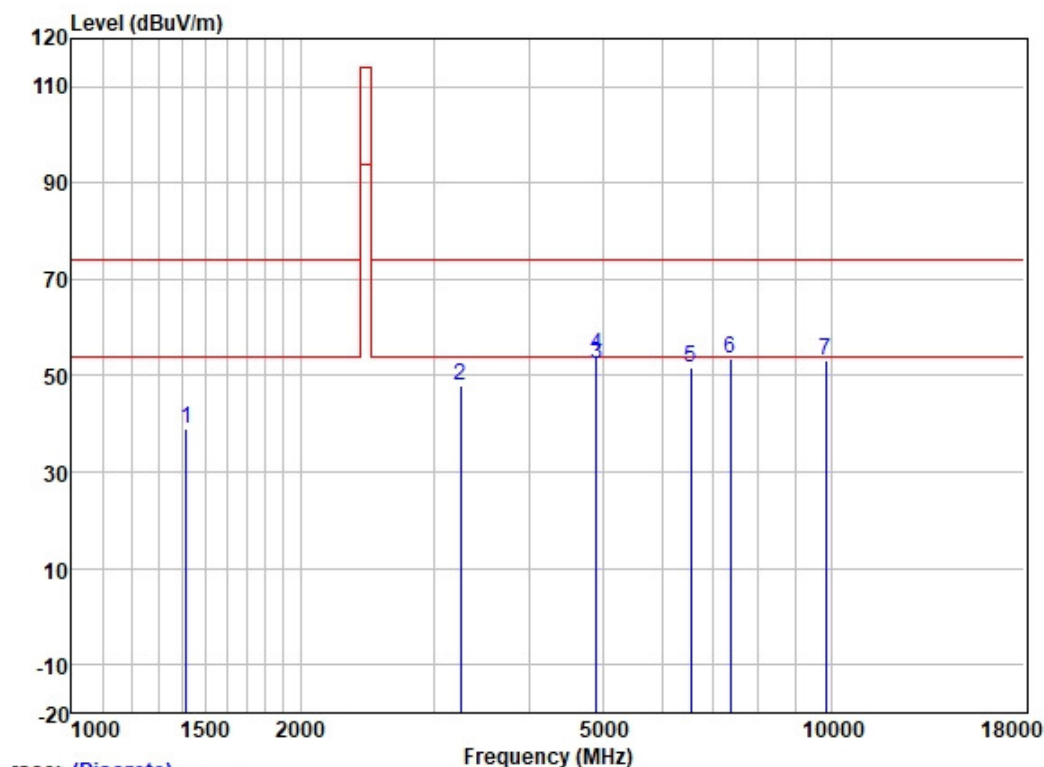
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SGS-CSTC Standards Technical Services Co., Ltd.  
Guangzhou Branch Testing Laboratory

No.198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075058 www.sgsgroup.com.cn  
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075058 sgs.china@sgs.com

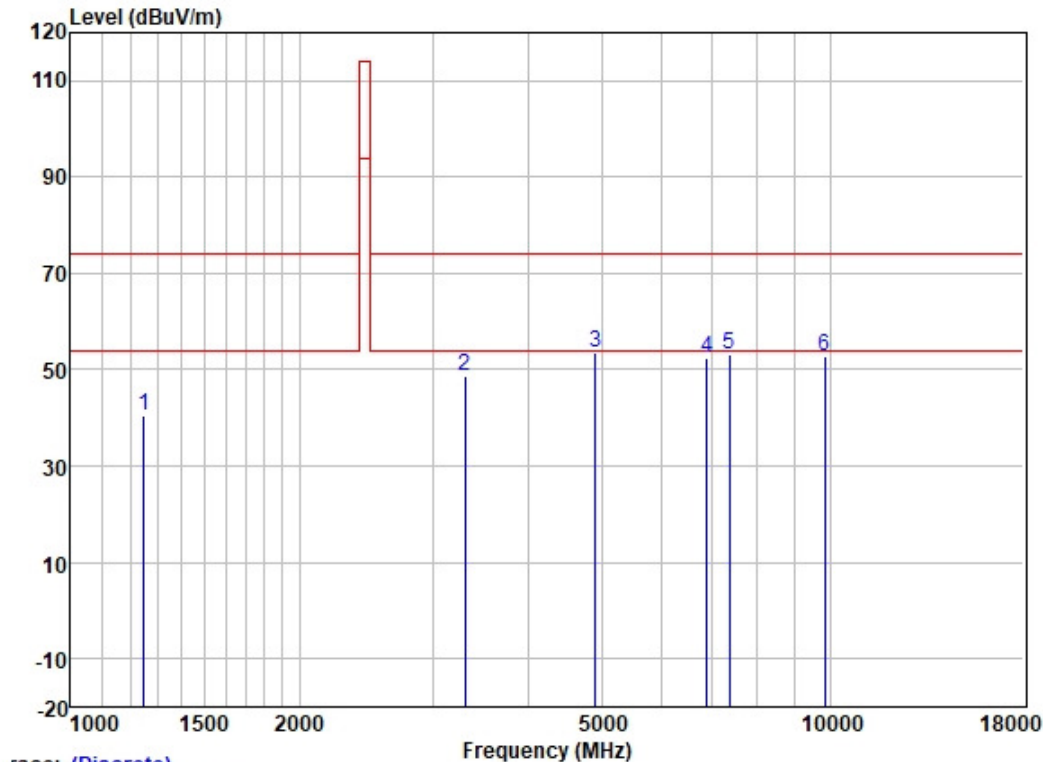
Test Mode: 01; Polarity: Horizontal; Modulation:GFSK;



Trace: (Discrete)

|   | Freq     | ReadAntenna | Cable  | Preamp |        | Limit  | Over   |        |                    |
|---|----------|-------------|--------|--------|--------|--------|--------|--------|--------------------|
|   | MHz      | Level       | Factor | Loss   | Factor | Level  | Line   | Limit  | Pol/Phase          |
|   | MHz      | dBuV        | dB/m   | dB     | dB     | dBuV/m | dBuV/m | dB     |                    |
| 1 | 1415.720 | 49.26       | 25.41  | 2.63   | 38.20  | 39.10  | 74.00  | -34.90 | HORIZONTAL Peak    |
| 2 | 3250.371 | 52.41       | 28.68  | 4.03   | 37.06  | 48.06  | 74.00  | -25.94 | HORIZONTAL Peak    |
| 3 | 4914.000 | 52.23       | 31.60  | 5.58   | 36.84  | 52.57  | 54.00  | -1.43  | HORIZONTAL Average |
| 4 | 4914.000 | 54.13       | 31.60  | 5.58   | 36.84  | 54.47  | 74.00  | -19.53 | HORIZONTAL Peak    |
| 5 | 6539.481 | 48.76       | 34.06  | 5.84   | 37.03  | 51.63  | 74.00  | -22.37 | HORIZONTAL Peak    |
| 6 | 7371.000 | 48.75       | 36.12  | 6.17   | 37.45  | 53.59  | 74.00  | -20.41 | HORIZONTAL Peak    |
| 7 | 9828.000 | 44.93       | 38.58  | 6.99   | 37.41  | 53.09  | 74.00  | -20.91 | HORIZONTAL Peak    |

Test Mode: 01; Polarity: Vertical; Modulation: GFSK;



Trace: (Discrete)

|   |          | ReadAntenna |        | Cable | Preamp |        | Limit  | Over   |           |        |
|---|----------|-------------|--------|-------|--------|--------|--------|--------|-----------|--------|
|   | Freq     | Level       | Factor | Loss  | Factor | Level  | Line   | Limit  | Pol/Phase | Remark |
|   | MHz      | dBuV        | dB/m   | dB    | dB     | dBuV/m | dBuV/m | dB     |           |        |
| 1 | 1249.362 | 51.64       | 25.02  | 2.34  | 38.35  | 40.65  | 74.00  | -33.35 | VERTICAL  | Peak   |
| 2 | 3306.596 | 52.82       | 28.76  | 4.06  | 37.03  | 48.61  | 74.00  | -25.39 | VERTICAL  | Peak   |
| 3 | 4914.000 | 53.37       | 31.60  | 5.58  | 36.84  | 53.71  | 74.00  | -20.29 | VERTICAL  | Peak   |
| 4 | 6887.241 | 48.89       | 34.85  | 5.81  | 37.16  | 52.39  | 74.00  | -21.61 | VERTICAL  | Peak   |
| 5 | 7371.000 | 48.37       | 36.12  | 6.17  | 37.45  | 53.21  | 74.00  | -20.79 | VERTICAL  | Peak   |
| 6 | 9828.000 | 44.47       | 38.58  | 6.99  | 37.41  | 52.63  | 74.00  | -21.37 | VERTICAL  | Peak   |



## 8 Test Setup Photo

### Field Strength of the Fundamental Signal (15.249(a))



### Restricted Band Around Fundamental Frequency



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### Radiated Spurious Emissions (Below 1GHz)



### Radiated Spurious Emissions (Above 1GHz)



## 9 EUT Constructional Details (EUT Photos)

Refer to Appendix – External and Internal Photos for GZCR2110021252AT

- End of the Report -