

# TEST REPORT

**Application No.:** GZEM2101000198CR  
**Applicant:** Zhong Shan City Richsound Electronic Industrial Ltd.  
**Address of Applicant:** No.16, East Shagang Road, Gangkou, Zhongshan, Guangdong, China.  
**Manufacturer:** The same as applicant  
**Address of Manufacturer:** The same as applicant  
**Factory:** The same as applicant  
**Address of Factory:** The same as applicant

**Equipment Under Test (EUT):**

**FCC ID:** Z8M-SB170

**EUT Name:** 2.1CH Soundbar with Wireless Subwoofer

**Model No.:** CINEMA SB160, CINEMA SB260, MOVIEBAR 100, CINEMA SB261, CINEMA SB265, CINEMA SB268, CINEMA SB360, CINEMA SB361, CINEMA SB365, CINEMA SB368, CINEMA SB170 □

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

**Trade Mark:** JBL

**Standard(s):** 47 CFR Part 15, Subpart C 15.249

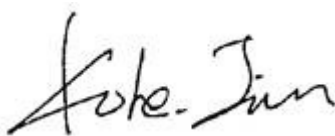
**Date of Receipt:** 2021-01-11

**Date of Test:** 2021-01-22 to 2021-02-05

**Date of Issue:** 2021-03-01

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

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



Kobe Jian  
 EMC Laboratory Manager



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| Revision Record |         |            |          |          |
|-----------------|---------|------------|----------|----------|
| Version         | Chapter | Date       | Modifier | Remark   |
| 01              |         | 2021-03-01 |          | Original |
|                 |         |            |          |          |
|                 |         |            |          |          |
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|                                 |   |  |  |
|---------------------------------|---|--|--|
| <b>Authorized for issue by:</b> |   |  |  |
| <b>Tested By</b>                |  |  |  |
|                                 | <hr/>   |  |  |
|                                 | Curry_Wu /Project Engineer  |  |  |
| <b>Reviewed By</b>              |  |  |  |
|                                 | <hr/>   |  |  |
|                                 | Ricky_Liu /Reviewer   |  |  |



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## 2 Test Summary

| Radio Spectrum Technical Requirement |                                  |        |                                  |        |
|--------------------------------------|----------------------------------|--------|----------------------------------|--------|
| Item                                 | Standard                         | Method | Requirement                      | Result |
| Antenna Requirement                  | 47 CFR Part 15, Subpart C 15.249 | N/A    | 47 CFR Part 15, Subpart C 15.203 | Pass   |

N/A: Not applicable

| Radio Spectrum Matter Part                           |                                  |  |   |        |
|--|----------------------------------|--|---|--------|
| Item   | Standard                         | Method                                 | Requirement   | Result |
| Conducted Emissions at AC Power Line (150kHz-30MHz)  | 47 CFR Part 15, Subpart C 15.249 | ANSI C63.10 (2013) Section 6.2         | 47 CFR Part 15, Subpart C 15.207                      | Pass   |
| 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)) | 47 CFR Part 15, Subpart C 15.249 | ANSI C63.10 (2013) Section 6.5&6.6     | 47 CFR Part 15, Subpart C 15.249(a)                   | Pass   |
| Restricted Band Around Fundamental Frequency         | 47 CFR Part 15, Subpart C 15.249 | ANSI C63.10 (2013) Section 6.4&6.5&6.6 | 47 CFR Part 15, Subpart C 15.205 & 15.249(d) & 15.209 | Pass   |
| Radiated Emissions                                   | 47 CFR Part 15, Subpart C 15.249 | ANSI C63.10 (2013) Section 6.4&6.5&6.6 | 47 CFR Part 15, Subpart C 15.209 & 15.249 (a),(d)     | Pass   |

### ☒ Declaration of EUT Family Grouping:

Model No.:

CINEMA SB160, CINEMA SB260, MOVIEBAR 100, CINEMA SB261, CINEMA SB265, CINEMA SB268, CINEMA SB360, CINEMA SB361, CINEMA SB365, CINEMA SB368, CINEMA SB170

According to the declaration from the applicant, the electrical circuit design, layout, components used and internal wiring were identical for all models, with only difference on model name.

Therefore only one model CINEMA SB170 was tested in this report.



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## 4 General Information

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

|                      |   |
|----------------------|---|
| Power Supply:        | AC 100-240V 50/60Hz for sound bar (BT TRx & 2.4G Tx)<br>AC 100-240V 50/60Hz for subwoofer (2.4G Rx only)<br>DC 3V (1.5V X 2 with size 'AAA' battery) for IR remote controller |
| Test Voltage:        | AC 120V, 60Hz   |
| Cable:               | about 1.5m 2 wires unscreened AC mains cable<br>about 2m HDMI cable   |
| Function:            | Sound bar with BT function and communication with subwoofer by 2.4GHz self-define*  |
| Antenna Gain:        | 0dBi  |
| Antenna Type:        | Integral antenna  |
| Channel Spacing:     | 5MHz  |
| Modulation Type:     | GFSK  |
| Number of Channels:  | 16  |
| Operation Frequency: | 2404.5MHz to 2479.5MHz  |
| Testing software:    | N/A   |
| Hardware version:    | V08   |
| Software version:    | V038  |
| Sample NO.:          | A1  |
| Power Setting        | Default can not be changed by user  |
| *Remark:             | The BT function was evaluated in test report GZEM210100019802   |

### 4.2 Description of Support Units

The EUT has been tested as an independent unit.



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### 4.3 Measurement Uncertainty

| No. | Item                            | Measurement Uncertainty   |
|-----|---------------------------------|---------------------------|
| 1   | Radio Frequency                 | $\pm 5.5 \times 10^{-8}$  |
| 2   | Duty cycle                      | $\pm 0.57\%$              |
| 3   | Occupied Bandwidth              | $\pm 3\%$                 |
| 4   | RF Conducted power              | 0.68dB                    |
| 5   | RF Power Density                | 1.50dB                    |
| 6   | Conducted Spurious Emissions    | 1.04dB                    |
| 7   | RF Radiated Power               | 4.5dB (below 1GHz)        |
|     |                                 | 4.8dB (above 1GHz)        |
| 8   | Radiated Spurious Emission Test | 4.5dB (30MHz-1GHz)        |
|     |                                 | 4.8dB (1GHz-18GHz)        |
| 9   | Temperature                     | $\pm 0.4^{\circ}\text{C}$ |
| 10  | Humidity                        | $\pm 1.3\%$               |
| 11  | Supply Voltages                 | $\pm 1.5\%$               |
| 12  | Time                            | $\pm 3\%$                 |

### 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.



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#### 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 C-Tick mark as a result of our NVLAP accreditation.

● **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 2.948 Listed Test Firm(Registration No.: 282399)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 282399, May 31, 2002.

● **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, Jul 13, 2017.

● **Industry Canada (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-10449 and T-11179)**

The 10m Semi-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-10449 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 17025:2005, 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

| Conducted Emissions at AC Power Line (150kHz-30MHz) |                   |                |              |            |              |
|---|-------------------|----------------|--------------|------------|--------------|
| Equipment   | Manufacturer      | Model No       | Inventory No | Cal Date   | Cal Due Date |
| Shielding Room                                      | ChangZhou ZhongYu | 8m x 3m x 3.8m | EMC0306      | N/A        | N/A          |
| Two-Line V-Network                                  | Rohde & Schwarz   | ENV216         | EMC0118      | 2021-01-08 | 2022-01-07   |
| LISN  | Rohde & Schwarz   | ENV216         | EMC2135      | 2020-09-25 | 2021-09-24   |
| EMI Test Receiver                                   | Rohde & Schwarz   | ESCS30         | EMC0506      | 2020-11-13 | 2021-11-12   |
| Coaxial Cable                                       | HangTianXing      | 2m             | EMC0107      | 2020-09-09 | 2022-09-08   |
| Voltage Probe                                       | SGS-EMC           | N/A            | EMC0106      | 2019-05-10 | 2021-05-09   |
| Conical Metal Housing                               | SGS-EMC           | N/A            | EMC0167      | 2020-04-19 | 2022-04-18   |
| Test Software E3c                                   | Audix             | Ver. 5.4.1221b | GZE100-62    | N/A        | N/A          |

| 20 dB Bandwidth        |                     |          |              |            |              |
|------------------------|---------------------|----------|--------------|------------|--------------|
| Equipment              | Manufacturer        | Model No | Inventory No | Cal Date   | Cal Due Date |
| EXA Signal Analyzer    | AgilentTechnologies | N9010A   | EMC2138      | 2020-09-17 | 2021-09-16   |
| 6dB Attenuator         | HP                  | 8491A    | EMC2062      | 2020-04-15 | 2022-04-14   |
| Test Software JS1120-3 | HangTianXing        | V2.6     | GZE100-69    | N/A        | N/A          |
| MI CABLE               | SGS-EMC             | 0.8M     | EMC2136      | 2019-11-02 | 2021-11-01   |
| MI CABLE               | SGS-EMC             | 0.8M     | EMC2137      | 2019-11-02 | 2021-11-01   |

| Restricted Band Around Fundamental Frequency |                             |            |              |            |              |
|--|-----------------------------|------------|--------------|------------|--------------|
| Equipment                                    | Manufacturer                | Model No   | Inventory No | Cal Date   | Cal Due Date |
| EMI Test Receiver                            | Rohde & Schwarz             | ESIB26     | EMC0522      | 2021-01-08 | 2022-01-07   |
| EMI Test Receiver                            | Rohde & Schwarz             | ESCI       | EMC0056      | 2021-01-03 | 2022-01-02   |
| Chamber cable                                | HangTianXing                | N/A        | EMC0542      | 2019-06-28 | 2021-06-27   |
| Trilog Broadband Antenna 25MHz-1GHz          | SCHWARZBECKME SS-ELEKTRONIK | VULB 9168  | EMC2174      | 2018-09-06 | 2021-09-05   |
| Bi-log Type Antenna                          | Schaffner Chase             | CBL6143    | EMC0519      | 2020-06-08 | 2023-06-07   |
| Horn Antenna                                 | SCHWARZBECKME SS-ELEKTRONIK | BBHA 9120D | EMC2016      | 2019-09-25 | 2022-09-24   |
| Horn Antenna 1GHz-18GHz                      | Rohde & Schwarz             | HF906      | EMC0518      | 2018-09-02 | 2021-09-01   |
| 1GHz-26.5 GHz Pre-Amplifier                  | Agilent                     | 8449B      | EMC0521      | 2021-01-08 | 2022-01-07   |
| Amplifier                                    | HP                          | 8447F      | EMC2065      | 2020-05-26 | 2021-05-25   |
| Pre-Amplifier MH648A                         | ANRITSU CORP                | MH648A     | EMC2086      | 2020-11-13 | 2021-11-12   |
| Active Loop Antenna                          | EMCO                        | 6502       | EMC0523      | 2018-03-05 | 2021-03-04   |
| High Pass Filter(915MHz)                     | FSY MICROWAVE               | HM1465-9SS | EMC2079      | 2021-01-08 | 2022-01-07   |
| 2.4GHz Filter                                | Micro-Tronics               | BRM 50702  | EMC2069      | 2021-01-08 | 2022-01-07   |



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|-------------------------------------|-----------------------------|---------------|-----------|------------|------------|
| 10m Semi-Anechoic Chamber           | ETS                         | N/A           | EMC0530   | 2019-10-20 | 2022-10-19 |
| 966 Anechoic Chamber                | C.R.T                       | 9m x 6m x 6m  | EMC2142   | 2020-12-19 | 2023-12-18 |
| MXE EMI Receiver                    | Keysight                    | N9038A        | EMC2139   | 2020-11-13 | 2021-11-12 |
| EXA Signal Analyzer                 | Keysight                    | N9010A        | EMC2138   | 2020-09-17 | 2021-09-16 |
| Trilog Broadband Antenna 30MHz-1GHz | SCHWARZBECKME SS-ELEKTRONIK | VULB 9168     | SEM003-18 | 2019-02-22 | 2022-02-22 |
| Test Software E3                    | Audix                       | Ver.6.120110a | GZE100-61 | N/A        | N/A        |

| Radiated Emissions                  |                             |               |              |            |              |
|-------------------------------------|-----------------------------|---------------|--------------|------------|--------------|
| Equipment                           | Manufacturer                | Model No      | Inventory No | Cal Date   | Cal Due Date |
| EMI Test Receiver                   | Rohde & Schwarz             | ESIB26        | EMC0522      | 2021-01-08 | 2022-01-07   |
| EMI Test Receiver                   | Rohde & Schwarz             | ESCI          | EMC0056      | 2021-01-03 | 2022-01-02   |
| Chamber cable                       | HangTianXing                | N/A           | EMC0542      | 2019-06-28 | 2021-06-27   |
| Trilog Broadband Antenna 25MHz-1GHz | SCHWARZBECKME SS-ELEKTRONIK | VULB 9168     | EMC2174      | 2018-09-06 | 2021-09-05   |
| Bi-log Type Antenna                 | Schaffner Chase             | CBL6143       | EMC0519      | 2020-06-08 | 2023-06-07   |
| Horn Antenna                        | SCHWARZBECKME SS-ELEKTRONIK | BBHA 9120D    | EMC2016      | 2019-09-25 | 2022-09-24   |
| Horn Antenna 1GHz-18GHz             | Rohde & Schwarz             | HF906         | EMC0518      | 2018-09-02 | 2021-09-01   |
| 1GHz-26.5 GHz Pre-Amplifier         | Agilent                     | 8449B         | EMC0521      | 2021-01-08 | 2022-01-07   |
| Amplifier                           | HP                          | 8447F         | EMC2065      | 2020-05-26 | 2021-05-25   |
| Pre-Amplifier MH648A                | ANRITSU CORP                | MH648A        | EMC2086      | 2020-11-13 | 2021-11-12   |
| Active Loop Antenna                 | EMCO                        | 6502          | EMC0523      | 2018-03-05 | 2021-03-04   |
| High Pass Filter(915MHz)            | FSY MICROWAVE               | HM1465-9SS    | EMC2079      | 2021-01-08 | 2022-01-07   |
| 2.4GHz Filter                       | Micro-Tronics               | BRM 50702     | EMC2069      | 2021-01-08 | 2022-01-07   |
| 10m Semi-Anechoic Chamber           | ETS                         | N/A           | EMC0530      | 2019-10-20 | 2022-10-19   |
| 966 Anechoic Chamber                | C.R.T                       | 9m x 6m x 6m  | EMC2142      | 2020-12-19 | 2023-12-18   |
| MXE EMI Receiver                    | Keysight                    | N9038A        | EMC2139      | 2020-11-13 | 2021-11-12   |
| EXA Signal Analyzer                 | Keysight                    | N9010A        | EMC2138      | 2020-09-17 | 2021-09-16   |
| Trilog Broadband Antenna 30MHz-1GHz | SCHWARZBECKME SS-ELEKTRONIK | VULB 9168     | SEM003-18    | 2019-02-22 | 2022-02-22   |
| Test Software E3                    | Audix                       | Ver.6.120110a | GZE100-61    | N/A        | N/A          |

| General used equipment |              |          |              |            |              |
|------------------------|--------------|----------|--------------|------------|--------------|
| Equipment              | Manufacturer | Model No | Inventory No | Cal Date   | Cal Due Date |
| DMM                    | Fluke        | 73       | EMC0006      | 2020-07-09 | 2021-07-08   |
| DMM                    | Fluke        | 73       | EMC0007      | 2020-07-09 | 2021-07-08   |



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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

Limit:

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.

#### 6.1.2 Conclusion

EUT Antenna:

The antenna is integrated and no consideration of replacement. The best case gain of the antenna is 0 dBi.

Antenna photo please refer to internal photo.



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## 7 Radio Spectrum Matter Test Results

### 7.1 Conducted Emissions at AC Power Line (150kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.207

Test Method: ANSI C63.10 (2013) Section 6.2

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.

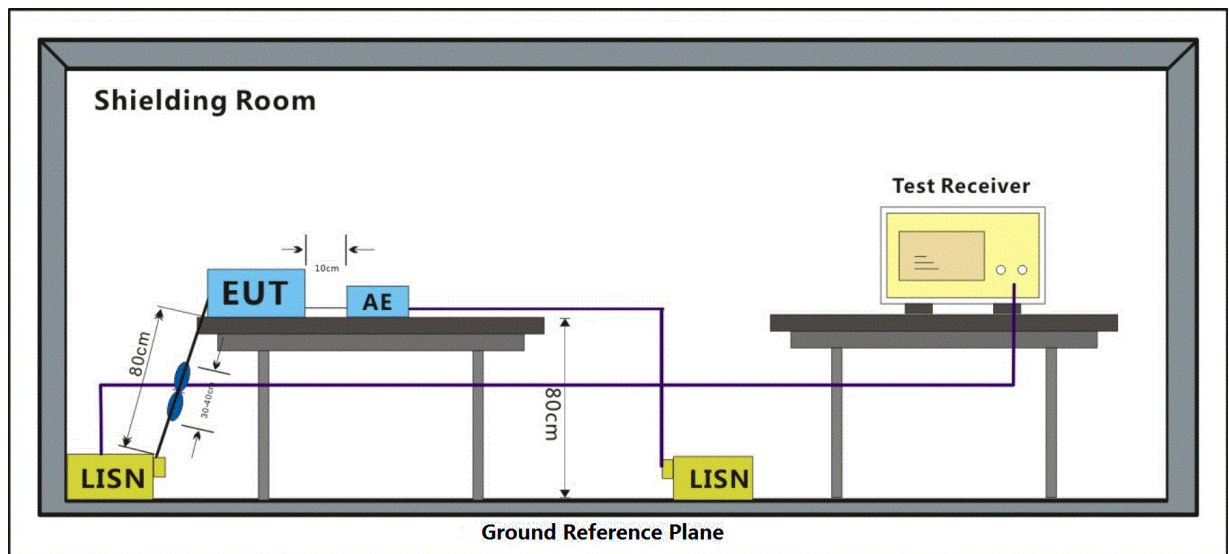
#### 7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 24.2 °C Humidity: 58.6 % RH Atmospheric Pressure: 1020 mbar

Test Mode: f :TX mode\_Keep the EUT in continuously transmitting mode with GFSK modulation.

#### 7.1.2 Test Setup Diagram



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**7.1.3 Measurement Procedure and Data**

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50μH + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) 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 on conducted measurement.

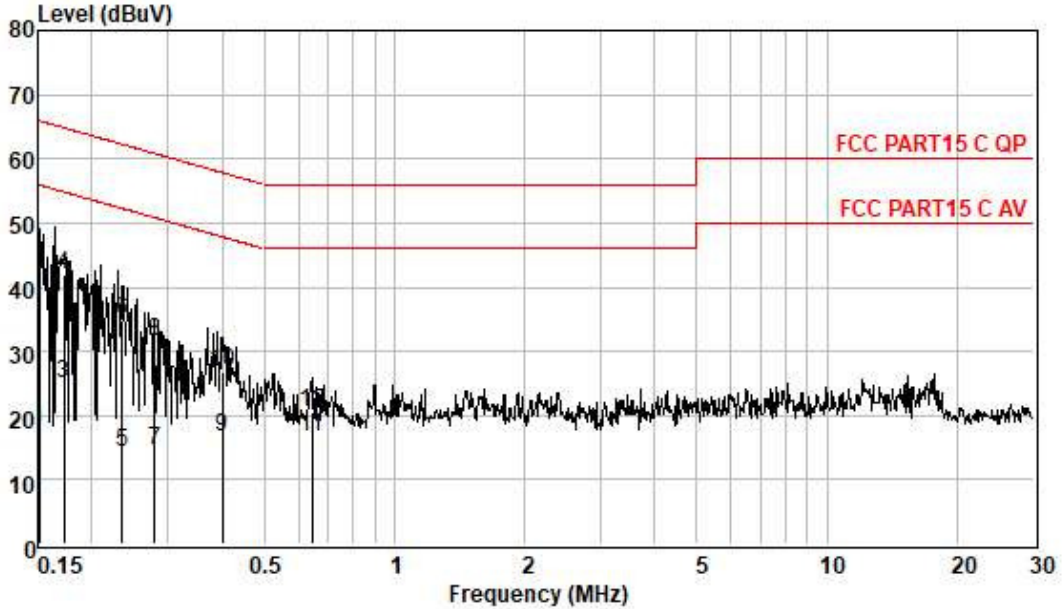
Remark: LISN=Read Level+ Cable Loss+ LISN Factor

Measurement data please refer to GZEM 210100019802 clause 7.1



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Mode:f; Line:Live Line



Pol :LINE  
Mode :BT(SUBWOOFER)  
Model :

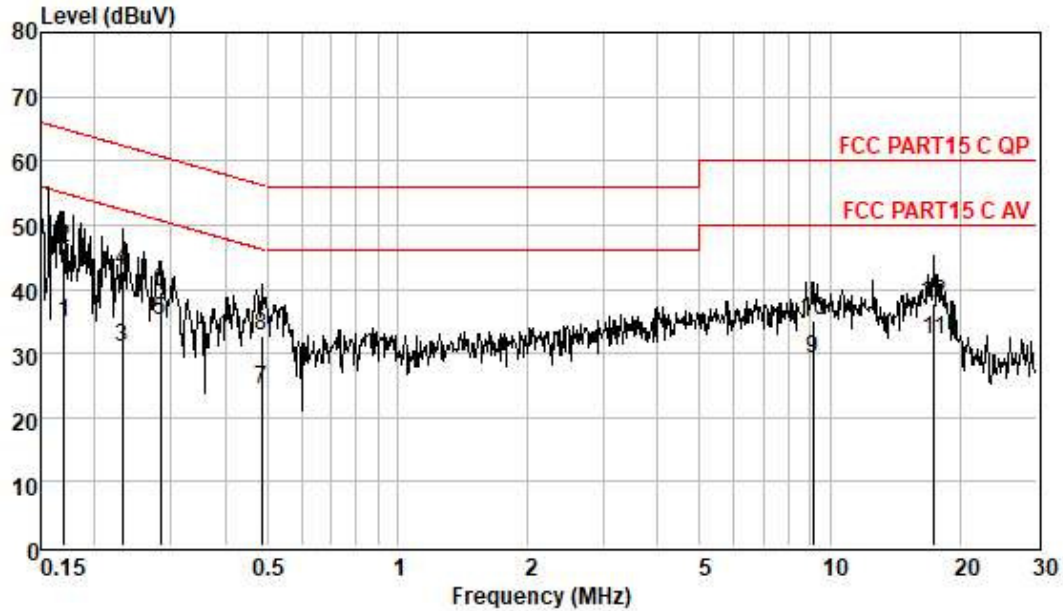
| Frequenc<br>MHz | Read<br>Level<br>dBuV | Cable<br>Loss<br>dB | LISN<br>Factor<br>dB | Measured<br>Level<br>dBuV | Limit<br>Line<br>dBuV | Over<br>Limit<br>dB | Remark  |
|-----------------|-----------------------|---------------------|----------------------|---------------------------|-----------------------|---------------------|---------|
| 0.15            | 8.10                  | 0.06                | 9.62                 | 17.78                     | 55.96                 | -38.18              | Average |
| 0.15            | 32.80                 | 0.06                | 9.62                 | 42.48                     | 65.96                 | -23.48              | QP      |
| 0.17            | 15.45                 | 0.06                | 9.62                 | 25.13                     | 54.86                 | -29.73              | Average |
| 0.17            | 32.14                 | 0.06                | 9.62                 | 41.82                     | 64.86                 | -23.04              | QP      |
| 0.24            | 4.52                  | 0.06                | 9.62                 | 14.20                     | 52.26                 | -38.06              | Average |
| 0.24            | 25.08                 | 0.06                | 9.62                 | 34.76                     | 62.26                 | -27.50              | QP      |
| 0.28            | 5.01                  | 0.06                | 9.62                 | 14.69                     | 50.85                 | -36.16              | Average |
| 0.28            | 21.80                 | 0.06                | 9.62                 | 31.48                     | 60.85                 | -29.37              | QP      |
| 0.40            | 6.98                  | 0.06                | 9.62                 | 16.66                     | 47.86                 | -31.20              | Average |
| 0.40            | 16.94                 | 0.06                | 9.62                 | 26.62                     | 57.86                 | -31.24              | QP      |
| 0.64            | 7.10                  | 0.07                | 9.63                 | 16.80                     | 46.00                 | -29.20              | Average |
| 0.64            | 10.70                 | 0.07                | 9.63                 | 20.40                     | 56.00                 | -35.60              | QP      |



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Mode:f; Line:Live Line



Pol :LINE  
Mode :BT(SOUNDBER)  
Model :

| Frequec<br>MHz | Read<br>Level<br>dBuV | Cable<br>Loss<br>dB | LISN<br>Factor<br>dB | Measured<br>Level<br>dBuV | Limit<br>Line<br>dBuV | Over<br>Limit<br>dB | Remark  |
|----------------|-----------------------|---------------------|----------------------|---------------------------|-----------------------|---------------------|---------|
| 0.17           | 25.04                 | 0.06                | 9.62                 | 34.72                     | 54.99                 | -20.27              | Average |
| 0.17           | 36.58                 | 0.06                | 9.62                 | 46.26                     | 64.99                 | -18.73              | QP      |
| 0.23           | 21.18                 | 0.06                | 9.62                 | 30.86                     | 52.39                 | -21.53              | Average |
| 0.23           | 33.26                 | 0.06                | 9.62                 | 42.94                     | 62.39                 | -19.45              | QP      |
| 0.28           | 25.53                 | 0.06                | 9.62                 | 35.21                     | 50.72                 | -15.51              | Average |
| 0.28           | 29.90                 | 0.06                | 9.62                 | 39.58                     | 60.72                 | -21.14              | QP      |
| 0.49           | 14.54                 | 0.07                | 9.63                 | 24.24                     | 46.23                 | -21.99              | Average |
| 0.49           | 23.09                 | 0.07                | 9.63                 | 32.79                     | 56.23                 | -23.44              | QP      |
| 9.11           | 19.15                 | 0.22                | 9.68                 | 29.05                     | 50.00                 | -20.95              | Average |
| 9.11           | 25.15                 | 0.22                | 9.68                 | 35.05                     | 60.00                 | -24.95              | QP      |
| 17.38          | 22.11                 | 0.34                | 9.75                 | 32.20                     | 50.00                 | -17.80              | Average |
| 17.38          | 27.74                 | 0.34                | 9.75                 | 37.83                     | 60.00                 | -22.17              | QP      |

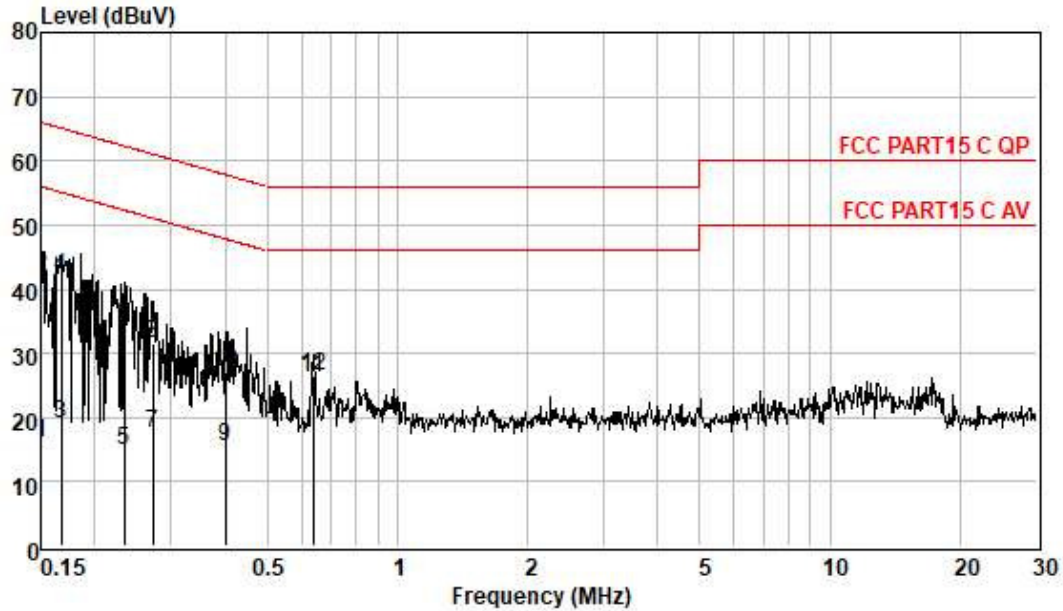


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Mode:f; Line:Neutral Line



Pol :NEUTRAL  
Mode :BT(SUBWOOFER)  
Model :

| Freque <sub>nc</sub><br>MHz | Read<br>Level<br>dBuV | Cable<br>Loss<br>dB | LISN<br>Factor<br>dB | Measured<br>Level<br>dBuV | Limit<br>Line<br>dBuV | Over<br>Limit<br>dB | Remark  |
|-----------------------------|-----------------------|---------------------|----------------------|---------------------------|-----------------------|---------------------|---------|
| 0.15                        | 6.32                  | 0.06                | 9.55                 | 15.93                     | 56.00                 | -40.07              | Average |
| 0.15                        | 32.44                 | 0.06                | 9.55                 | 42.05                     | 66.00                 | -23.95              | QP      |
| 0.17                        | 9.38                  | 0.06                | 9.55                 | 18.99                     | 55.08                 | -36.09              | Average |
| 0.17                        | 32.30                 | 0.06                | 9.55                 | 41.91                     | 65.08                 | -23.17              | QP      |
| 0.23                        | 5.39                  | 0.06                | 9.55                 | 15.00                     | 52.30                 | -37.30              | Average |
| 0.23                        | 25.00                 | 0.06                | 9.55                 | 34.61                     | 62.30                 | -27.69              | QP      |
| 0.27                        | 7.82                  | 0.06                | 9.55                 | 17.43                     | 51.03                 | -33.60              | Average |
| 0.27                        | 21.78                 | 0.06                | 9.55                 | 31.39                     | 61.03                 | -29.64              | QP      |
| 0.40                        | 5.98                  | 0.06                | 9.56                 | 15.60                     | 47.86                 | -32.26              | Average |
| 0.40                        | 17.58                 | 0.06                | 9.56                 | 27.20                     | 57.86                 | -30.66              | QP      |
| 0.64                        | 16.48                 | 0.07                | 9.54                 | 26.09                     | 46.00                 | -19.91              | Average |
| 0.64                        | 16.98                 | 0.07                | 9.54                 | 26.59                     | 56.00                 | -29.41              | QP      |

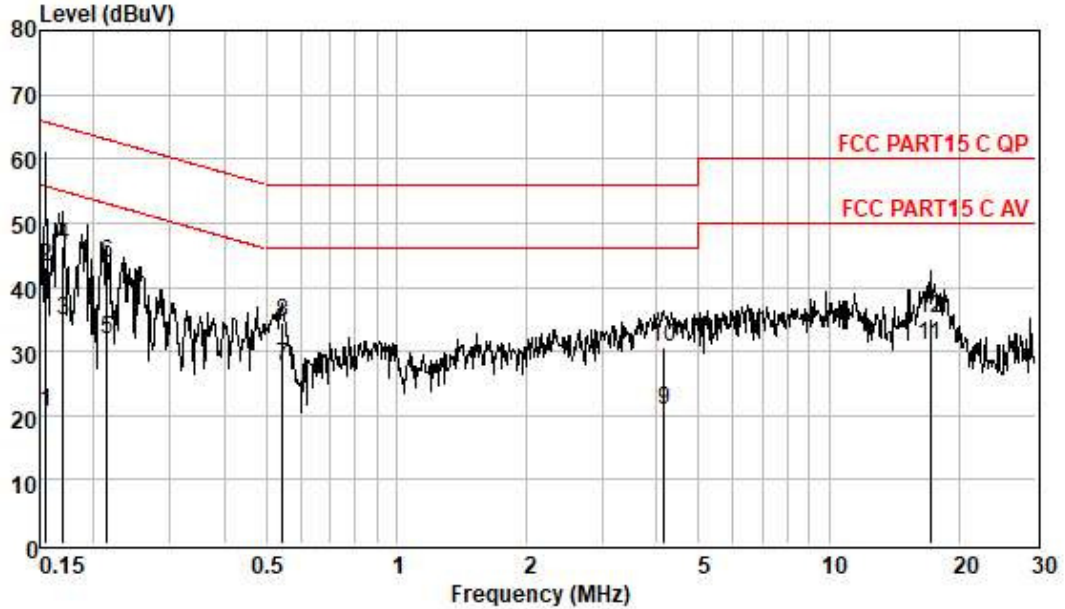


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Mode:f; Line:Neutral Line



Pol :NEUTRAL  
 Mode :BT(SOUNDBER)  
 Model :

| Frequec<br>MHz | Read<br>Level<br>dBuV | Cable<br>Loss<br>dB | LISN<br>Factor<br>dB | Measured<br>Level<br>dBuV | Limit<br>Line<br>dBuV | Over<br>Limit<br>dB | Remark  |
|----------------|-----------------------|---------------------|----------------------|---------------------------|-----------------------|---------------------|---------|
| 0.15           | 10.95                 | 0.06                | 9.55                 | 20.56                     | 55.74                 | -35.18              | Average |
| 0.15           | 33.54                 | 0.06                | 9.55                 | 43.15                     | 65.74                 | -22.59              | QP      |
| 0.17           | 25.16                 | 0.06                | 9.55                 | 34.77                     | 54.99                 | -20.22              | Average |
| 0.17           | 36.74                 | 0.06                | 9.55                 | 46.35                     | 64.99                 | -18.64              | QP      |
| 0.22           | 22.33                 | 0.06                | 9.54                 | 31.93                     | 53.01                 | -21.08              | Average |
| 0.22           | 33.98                 | 0.06                | 9.54                 | 43.58                     | 63.01                 | -19.43              | QP      |
| 0.55           | 18.15                 | 0.07                | 9.55                 | 27.77                     | 46.00                 | -18.23              | Average |
| 0.55           | 24.97                 | 0.07                | 9.55                 | 34.59                     | 56.00                 | -21.41              | QP      |
| 4.16           | 10.95                 | 0.17                | 9.56                 | 20.68                     | 46.00                 | -25.32              | Average |
| 4.16           | 20.96                 | 0.17                | 9.56                 | 30.69                     | 56.00                 | -25.31              | QP      |
| 17.11          | 20.84                 | 0.33                | 9.65                 | 30.82                     | 50.00                 | -19.18              | Average |
| 17.11          | 25.11                 | 0.33                | 9.65                 | 35.09                     | 60.00                 | -24.91              | QP      |



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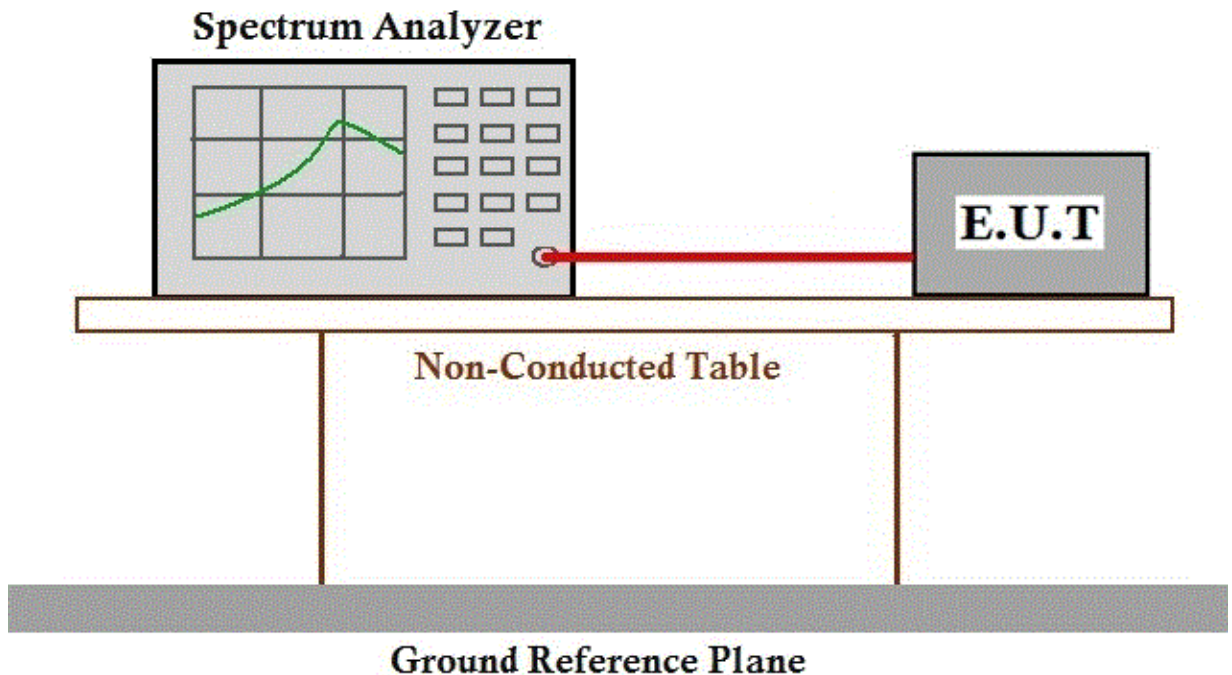
**7.2 20dB Bandwidth**

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

**7.2.1 E.U.T. Operation**

Operating Environment:  
 Temperature: 22 °C Humidity: 55 % RH Atmospheric Pressure: 1020 mbar  
 Test Mode: f: TX mode\_Keep the EUT in continuously transmitting mode with GFSK modulation.

**7.2.2 Test Setup Diagram**



**7.2.3 Measurement Procedure and Data**

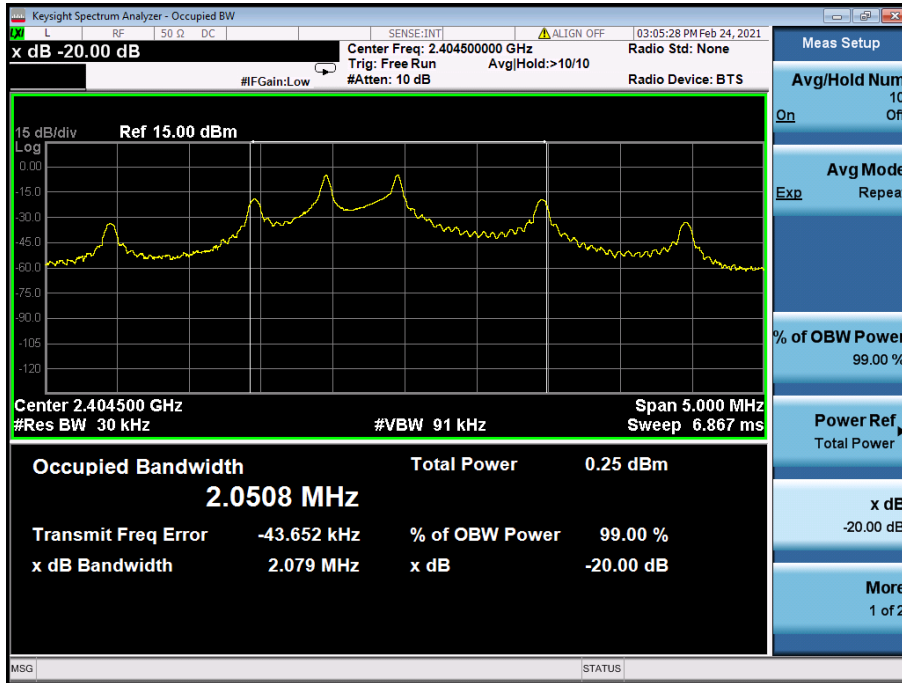
| Channel:  | 20dB bandwidth |
|-----------|----------------|
| 2404.5MHz | 2.079MHz       |
| 2444.5MHz | 2.077MHz       |
| 2479.5MHz | 2.078MHz       |



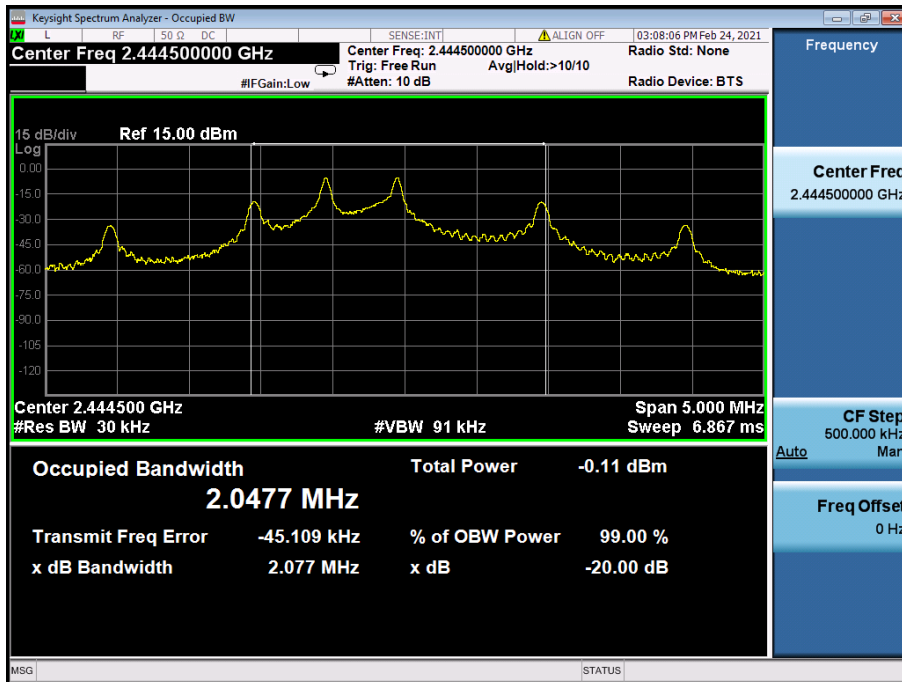
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Low channel



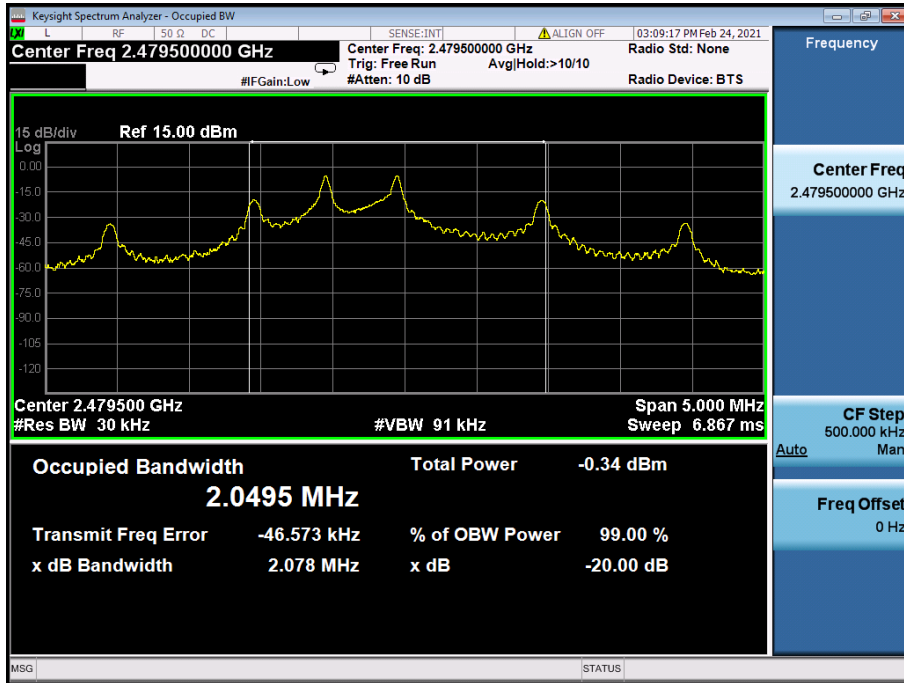
Middle channel



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High channel



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**7.3 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&6.6  
 Measurement Distance: 3m  
 Limit:

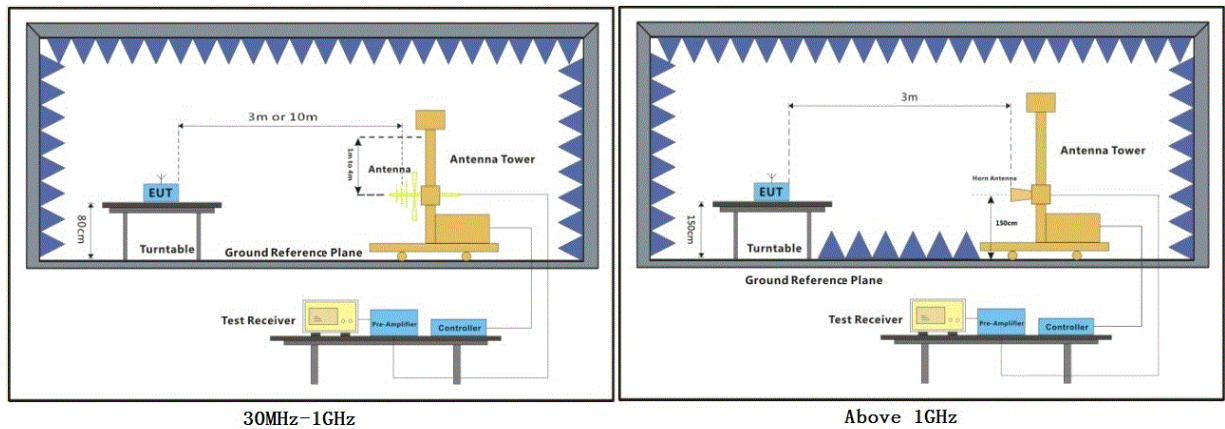
| Fundamental frequency(MHz) | Field strength of fundamental (millivolts/meter) | Field strength of harmonics (microvolts/meter) |
|----------------------------|--|--|
| 902-928                    | 50   | 500  |
| 2400-2483.5                | 50   | 500  |
| 5725-5875                  | 50   | 500 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

**7.3.1 E.U.T. Operation**

Operating Environment:  
 Temperature: 22 °C Humidity: 55 % RH Atmospheric Pressure: 1020 mbar  
 Test Mode: f: TX mode\_Keep the EUT in continuously transmitting mode with GFSK modulation.

**7.3.2 Test Setup Diagram**



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**7.3.3 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: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

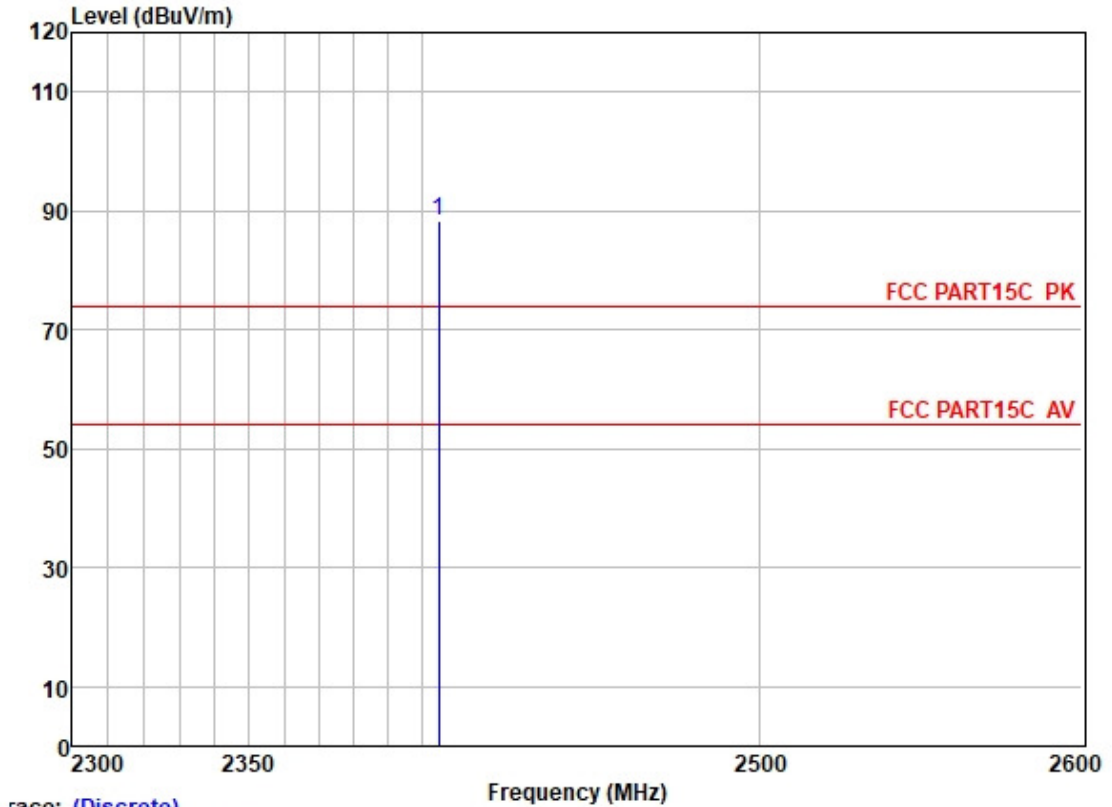
| Channel | Level (dBUV/m) | Limit(dBUV/m) | Over limit (dB) | Remark | Result |
|---------|----------------|---------------|-----------------|--------|--------|
| 2404.5  | 88.20          | 114           | -25.80          | Peak   | Pass   |
| 2444.5  | 88.03          | 114           | -25.97          | Peak   | Pass   |
| 2479.5  | 87.17          | 114           | -26.83          | Peak   | Pass   |



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Low channel



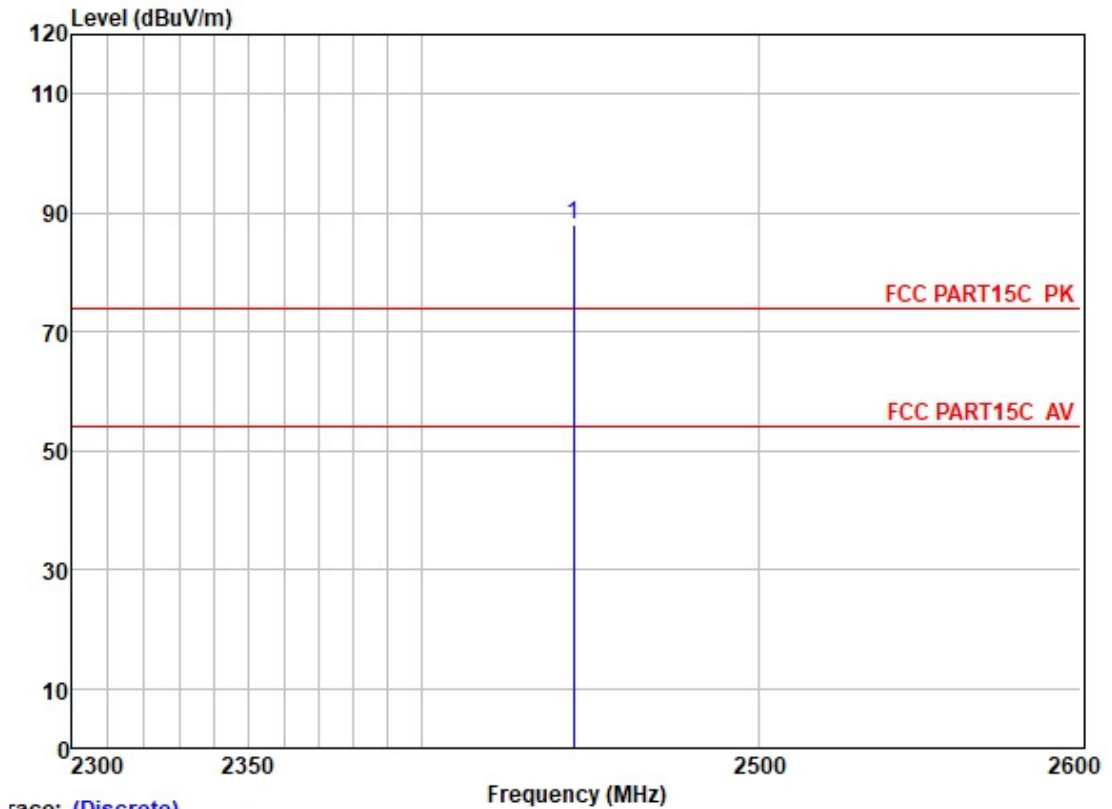
Trace: (Discrete)

| Trace | Freq     | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Level  | Limit Line | Over Limit | Pol/Phase | Remark          |
|-------|----------|------------|----------------|------------|---------------|--------|------------|------------|-----------|-----------------|
|       | MHz      | dBuV       | dB/m           | dB         | dB            | dBuV/m | dBuV/m     | dB         |           |                 |
| 1 *   | 2404.494 | 94.78      | 27.36          | 3.48       | 37.42         | 88.20  | 74.00      | 14.20      |           | HORIZONTAL Peak |



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Middle channel



Trace: (Discrete)

| Trace | Freq     | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Level  | Limit Line | Over Limit | Pol/Phase | Remark          |
|-------|----------|------------|----------------|------------|---------------|--------|------------|------------|-----------|-----------------|
|       | MHz      | dBuV       | dB/m           | dB         | dB            | dBuV/m | dBuV/m     | dB         |           |                 |
| 1 *   | 2444.505 | 94.62      | 27.42          | 3.40       | 37.41         | 88.03  | 74.00      | 14.03      |           | HORIZONTAL Peak |

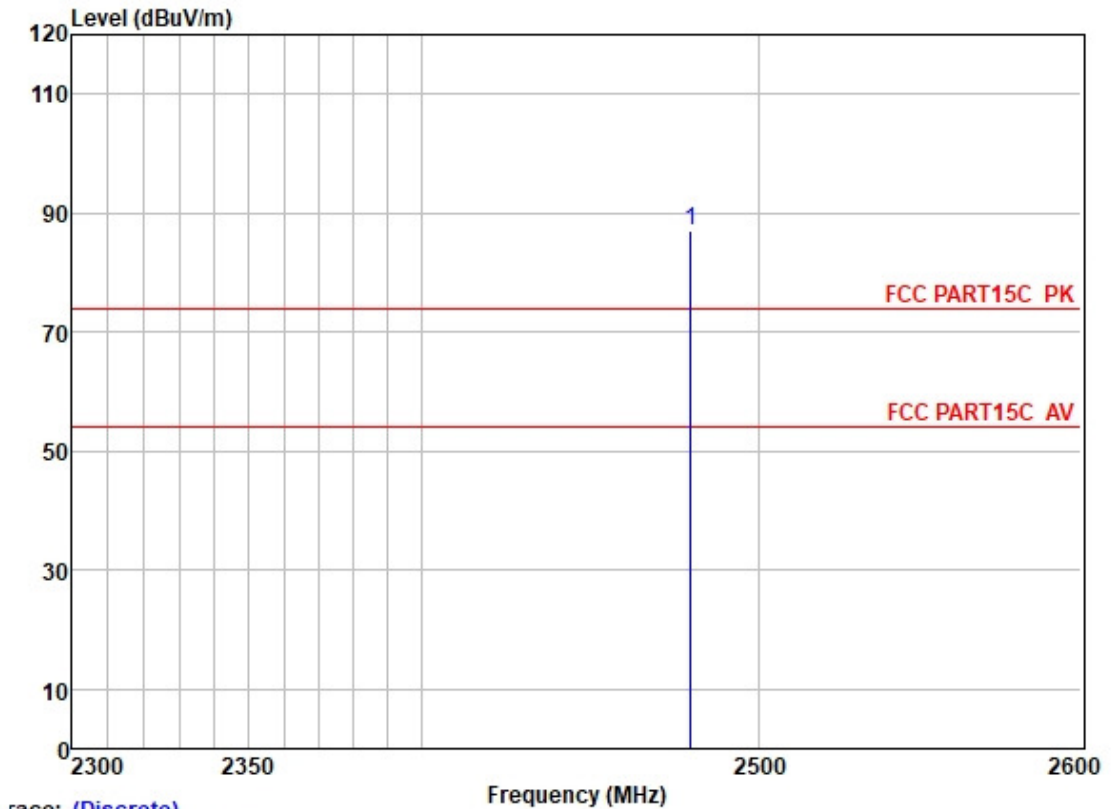


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High channel



Trace: (Discrete)

| Trace | Freq     | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Level  | Limit Line | Over Limit | Pol/Phase | Remark          |
|-------|----------|------------|----------------|------------|---------------|--------|------------|------------|-----------|-----------------|
|       | MHz      | dBuV       | dB/m           | dB         | dB            | dBuV/m | dBuV/m     | dB         |           |                 |
| 1 *   | 2479.514 | 93.50      | 27.47          | 3.60       | 37.40         | 87.17  | 74.00      | 13.17      |           | HORIZONTAL Peak |



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**7.4 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 6.4&6.5&6.6  
 Measurement Distance: 3m  
 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.

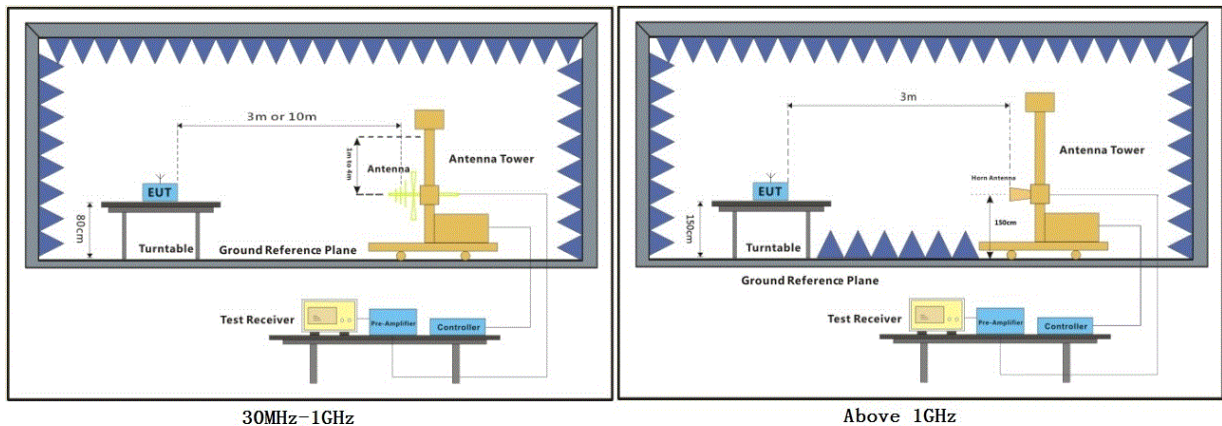
**7.4.1 E.U.T. Operation**

Operating Environment:

Temperature: 22 °C Humidity: 55 % RH Atmospheric Pressure: 1020 mbar

Test Mode: f: TX mode\_Keep the EUT in continuously transmitting mode with GFSK modulation.

**7.4.2 Test Setup Diagram**



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**7.4.3 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: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

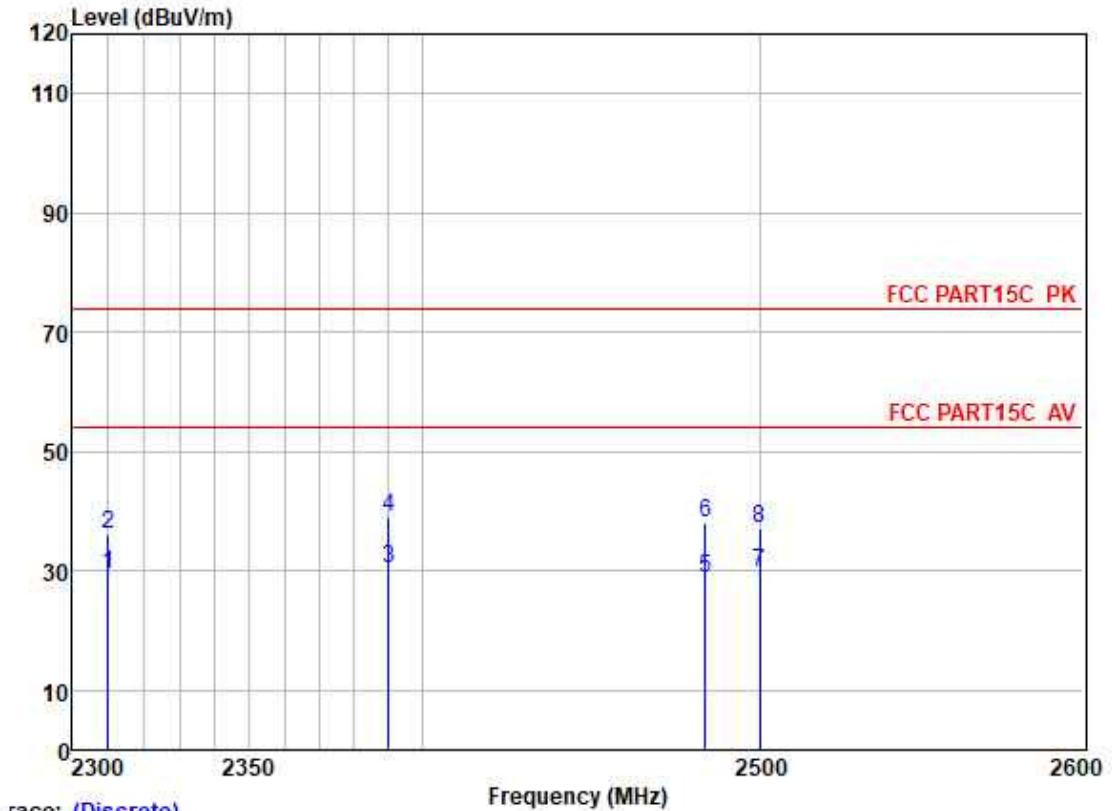


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Mode:f; Polarization:Horizontal; Modulation:GFSK; ; Channel:Low



Trace: (Discrete)

|      | Read     | Antenna | Cable | Preamp | Limit  | Over   |           |        |                    |
|------|----------|---------|-------|--------|--------|--------|-----------|--------|--------------------|
| Freq | Level    | Factor  | Loss  | Factor | Line   | Limit  | Pol/Phase | Remark |                    |
| MHz  | dBuV     | dB/m    | dB    | dB     | dBuV/m | dBuV/m | dB        |        |                    |
| 1    | 2310.000 | 36.37   | 27.15 | 3.32   | 37.44  | 29.40  | 54.00     | -24.60 | HORIZONTAL Average |
| 2    | 2310.000 | 43.18   | 27.15 | 3.32   | 37.44  | 36.21  | 74.00     | -37.79 | HORIZONTAL Peak    |
| 3    | 2390.000 | 37.02   | 27.33 | 3.48   | 37.42  | 30.41  | 54.00     | -23.59 | HORIZONTAL Average |
| 4    | 2390.000 | 45.78   | 27.33 | 3.48   | 37.42  | 39.17  | 74.00     | -34.83 | HORIZONTAL Peak    |
| 5    | 2483.500 | 35.14   | 27.48 | 3.53   | 37.40  | 28.75  | 54.00     | -25.25 | HORIZONTAL Average |
| 6    | 2483.500 | 44.43   | 27.48 | 3.53   | 37.40  | 38.04  | 74.00     | -35.96 | HORIZONTAL Peak    |
| 7    | 2500.000 | 36.30   | 27.50 | 3.40   | 37.39  | 29.81  | 54.00     | -24.19 | HORIZONTAL Average |
| 8    | 2500.000 | 43.51   | 27.50 | 3.40   | 37.39  | 37.02  | 74.00     | -36.98 | HORIZONTAL Peak    |

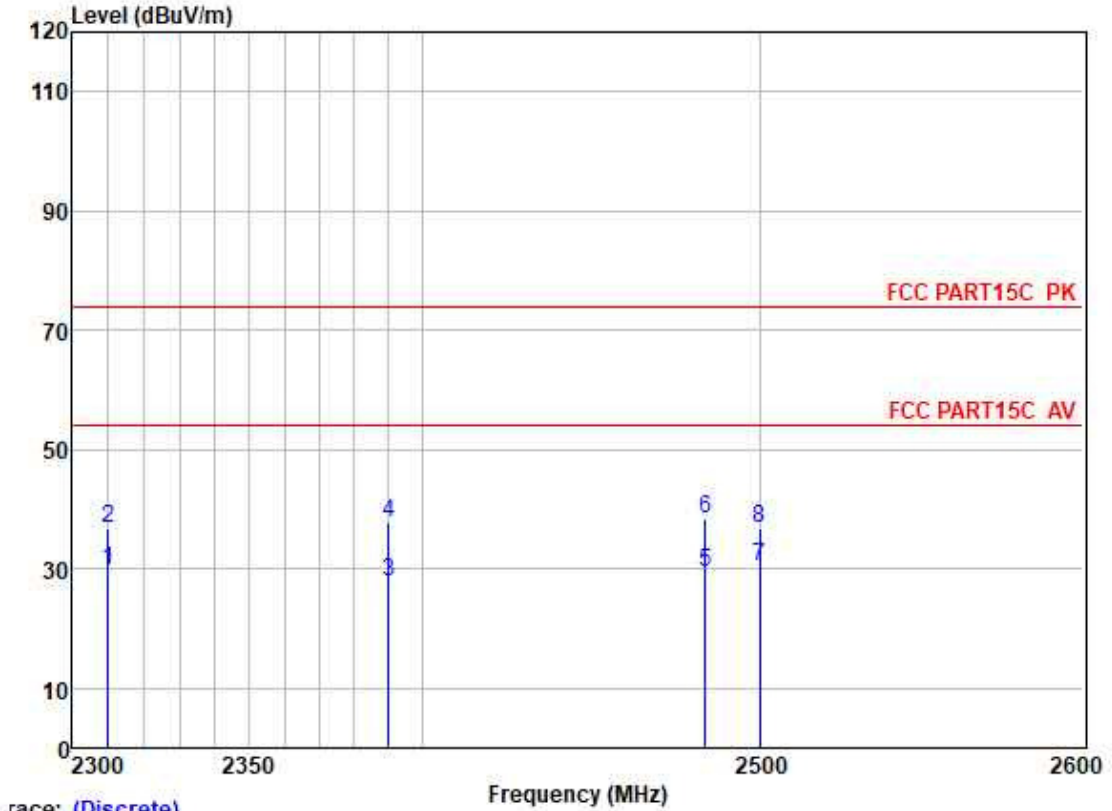


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Mode:f; Polarization:Vertical; Modulation:GFSK; ; Channel:Low



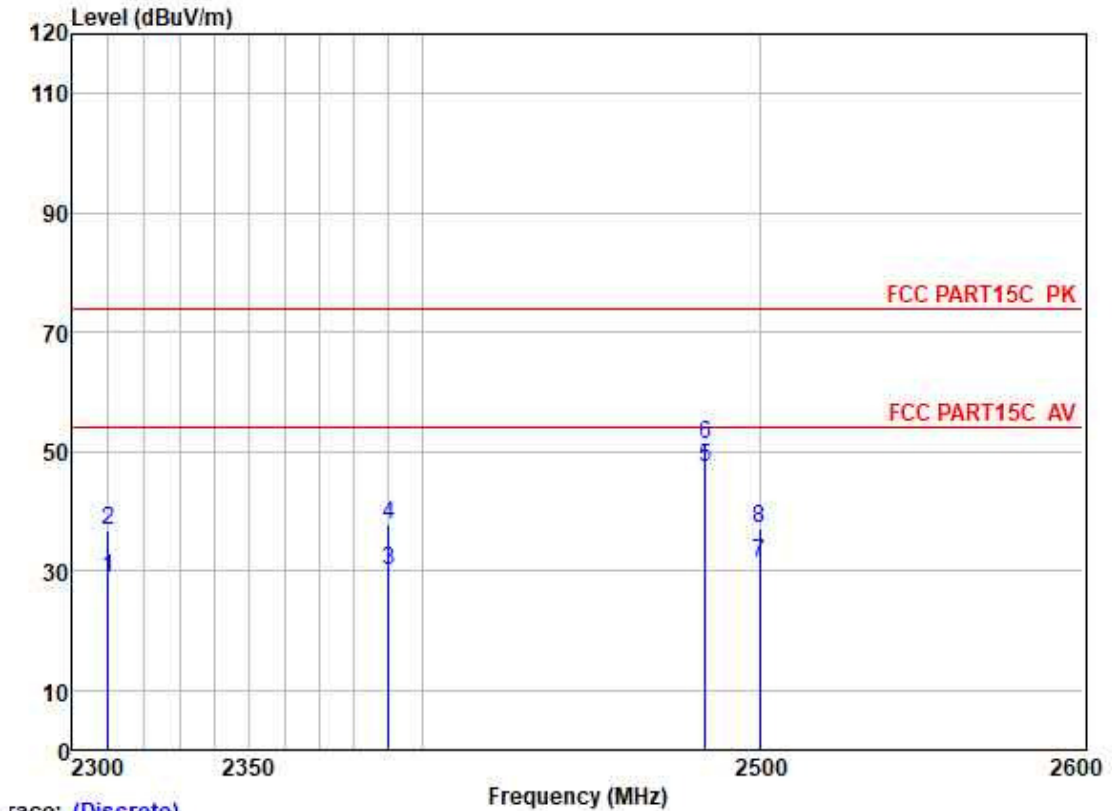
Trace: (Discrete)

|   | Read Freq | Antenna Level | Cable Loss | Preamp Factor | Limit Level | Over Limit | Pol/Phase | Remark                  |
|---|-----------|---------------|------------|---------------|-------------|------------|-----------|-------------------------|
|   | MHz       | dBuV          | dB/m       | dB            | dB          | dBuV/m     | dB        |                         |
| 1 | 2310.000  | 36.76         | 27.15      | 3.32          | 37.44       | 29.79      | 54.00     | -24.21 VERTICAL Average |
| 2 | 2310.000  | 43.74         | 27.15      | 3.32          | 37.44       | 36.77      | 74.00     | -37.23 VERTICAL Peak    |
| 3 | 2390.000  | 34.46         | 27.33      | 3.48          | 37.42       | 27.85      | 54.00     | -26.15 VERTICAL Average |
| 4 | 2390.000  | 44.29         | 27.33      | 3.48          | 37.42       | 37.68      | 74.00     | -36.32 VERTICAL Peak    |
| 5 | 2483.500  | 35.93         | 27.48      | 3.53          | 37.40       | 29.54      | 54.00     | -24.46 VERTICAL Average |
| 6 | 2483.500  | 44.64         | 27.48      | 3.53          | 37.40       | 38.25      | 74.00     | -35.75 VERTICAL Peak    |
| 7 | 2500.000  | 36.93         | 27.50      | 3.40          | 37.39       | 30.44      | 54.00     | -23.56 VERTICAL Average |
| 8 | 2500.000  | 43.18         | 27.50      | 3.40          | 37.39       | 36.69      | 74.00     | -37.31 VERTICAL Peak    |



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Mode:f; Polarization:Horizontal; Modulation:GFSK; ; Channel:High



Trace: (Discrete)

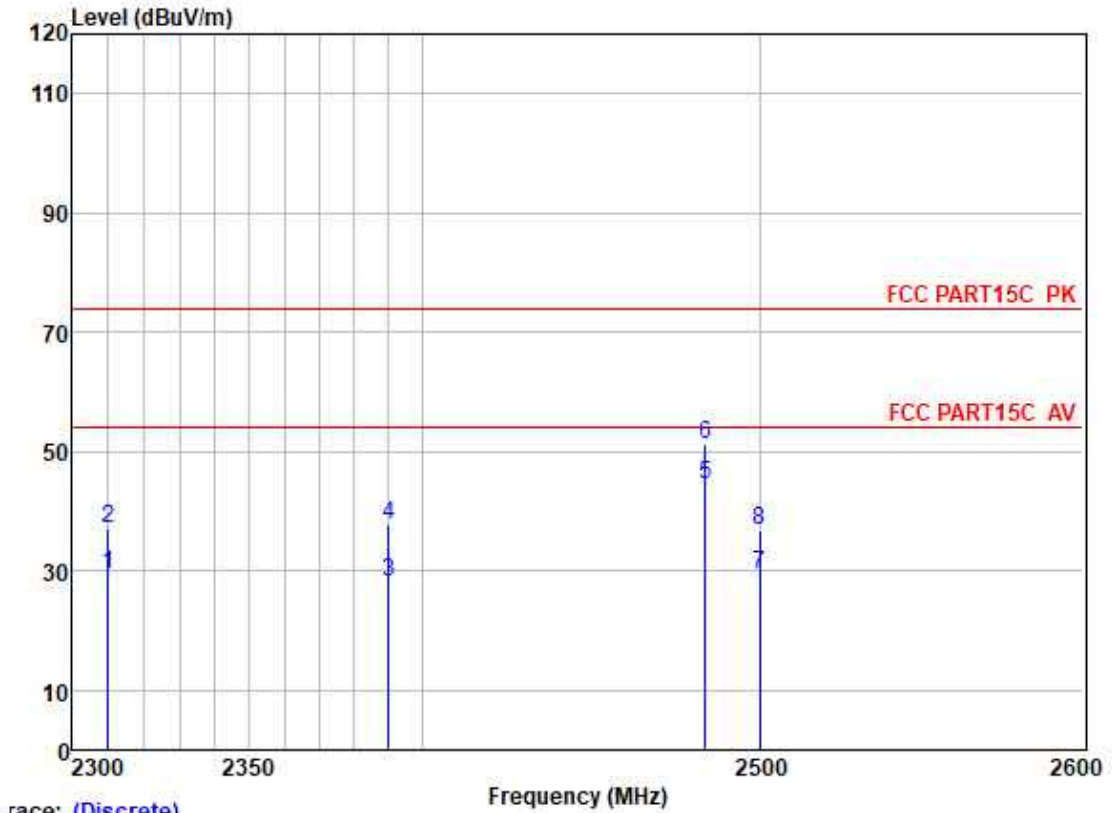
|      | Read     | Antenna | Cable | Preamp | Limit  | Over   |           |        |                    |
|------|----------|---------|-------|--------|--------|--------|-----------|--------|--------------------|
| Freq | Level    | Factor  | Loss  | Factor | Line   | Limit  | Pol/Phase | Remark |                    |
| MHz  | dBuV     | dB/m    | dB    | dB     | dBuV/m | dBuV/m | dB        |        |                    |
| 1    | 2310.000 | 35.67   | 27.15 | 3.32   | 37.44  | 28.70  | 54.00     | -25.30 | HORIZONTAL Average |
| 2    | 2310.000 | 43.82   | 27.15 | 3.32   | 37.44  | 36.85  | 74.00     | -37.15 | HORIZONTAL Peak    |
| 3    | 2390.000 | 36.80   | 27.33 | 3.48   | 37.42  | 30.19  | 54.00     | -23.81 | HORIZONTAL Average |
| 4    | 2390.000 | 44.40   | 27.33 | 3.48   | 37.42  | 37.79  | 74.00     | -36.21 | HORIZONTAL Peak    |
| 5    | 2483.500 | 53.63   | 27.48 | 3.53   | 37.40  | 47.24  | 54.00     | -6.76  | HORIZONTAL Average |
| 6    | 2483.500 | 57.63   | 27.48 | 3.53   | 37.40  | 51.24  | 74.00     | -22.76 | HORIZONTAL Peak    |
| 7    | 2500.000 | 37.88   | 27.50 | 3.40   | 37.39  | 31.39  | 54.00     | -22.61 | HORIZONTAL Average |
| 8    | 2500.000 | 43.77   | 27.50 | 3.40   | 37.39  | 37.28  | 74.00     | -36.72 | HORIZONTAL Peak    |



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Mode:f; Polarization:Vertical; Modulation:GFSK; ; Channel:High



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    | 2310.000    | 36.51  | 27.15  | 3.32   | 37.44  | 29.54  | 54.00 | -24.46    | VERTICAL Average |
| 2    | 2310.000    | 44.02  | 27.15  | 3.32   | 37.44  | 37.05  | 74.00 | -36.95    | VERTICAL Peak    |
| 3    | 2390.000    | 34.87  | 27.33  | 3.48   | 37.42  | 28.26  | 54.00 | -25.74    | VERTICAL Average |
| 4    | 2390.000    | 44.24  | 27.33  | 3.48   | 37.42  | 37.63  | 74.00 | -36.37    | VERTICAL Peak    |
| 5    | 2483.500    | 50.84  | 27.48  | 3.53   | 37.40  | 44.45  | 54.00 | -9.55     | VERTICAL Average |
| 6    | 2483.500    | 57.44  | 27.48  | 3.53   | 37.40  | 51.05  | 74.00 | -22.95    | VERTICAL Peak    |
| 7    | 2500.000    | 35.92  | 27.50  | 3.40   | 37.39  | 29.43  | 54.00 | -24.57    | VERTICAL Average |
| 8    | 2500.000    | 43.29  | 27.50  | 3.40   | 37.39  | 36.80  | 74.00 | -37.20    | VERTICAL Peak    |



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### 7.5 Radiated Emissions

Test Requirement 47 CFR Part 15, Subpart C 15.209 & 15.249 (a),(d)  
 Test Method: ANSI C63.10 (2013) Section 6.4&6.5&6.6  
 Measurement Distance: 3m  
 Limit:

| Frequency(MHz) | Field strength (microvolts/meter) | Limit (dBuV/m) | Detector | Measurement Distance (meters) |
|----------------|-----------------------------------|----------------|----------|-------------------------------|
| 0.009-0.490    | 2400/F(kHz)                       | -              | -        | 300                           |
| 0.490-1.705    | 24000/F(kHz)                      | -              | -        | 30                            |
| 1.705-30       | 30                                | -              | -        | 30                            |
| 30-88          | 100                               | 40.0           | QP       | 3                             |
| 88-216         | 150                               | 43.5           | QP       | 3                             |
| 216-960        | 200                               | 46.0           | QP       | 3                             |
| 960-1000       | 500                               | 54.0           | QP       | 3                             |
| Above 1000     | 500                               | 54.0           | AV       | 3                             |

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

Operating Environment:

Temperature: 22 °C Humidity: 55 % RH Atmospheric Pressure: 1020 mbar

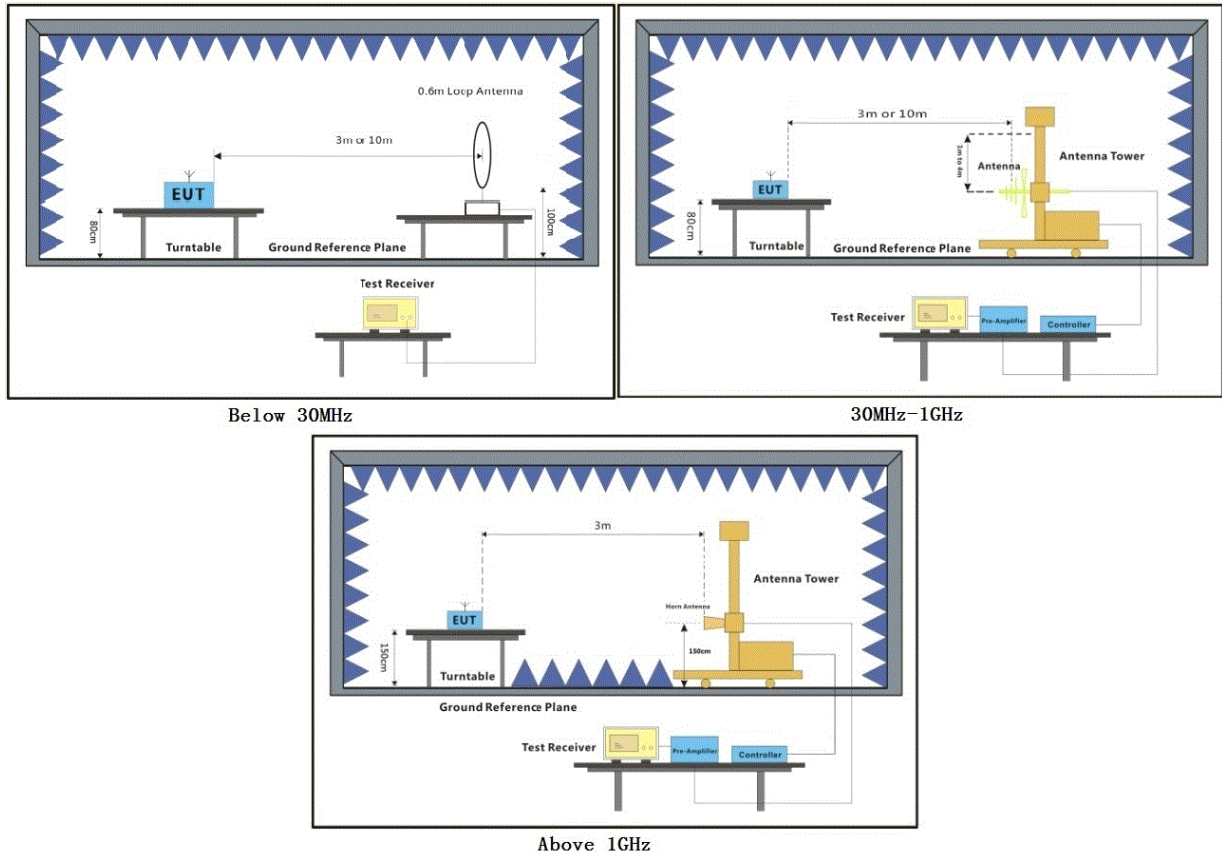
Test Mode: f: TX mode\_Keep the EUT in continuously transmitting mode with GFSK modulation.



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**7.5.2 Test Setup Diagram**



**7.5.3 Measurement Procedure and Data**

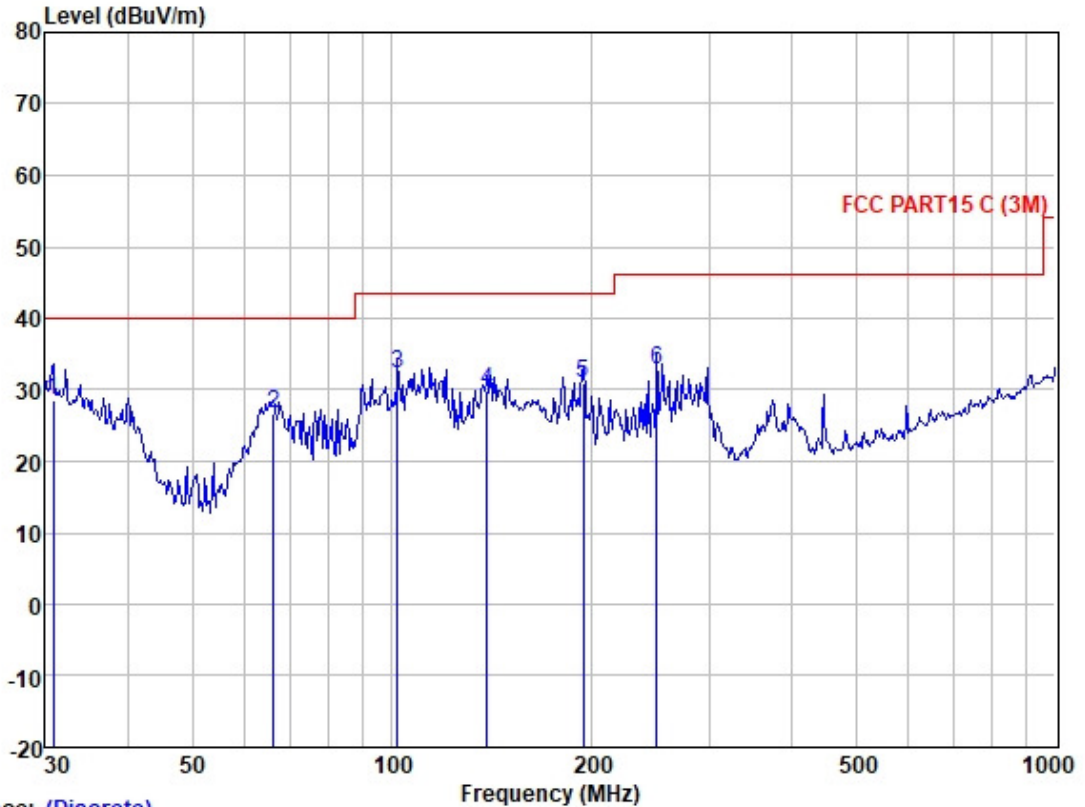
For testing performed with the loop antenna, the center of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT. During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane. Only the worst position of vertical was shown in the report.

Measured Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor



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Mode:f; Polarization:Horizontal; Modulation:GFSK; ; Channel:Low



Trace: (Discrete)

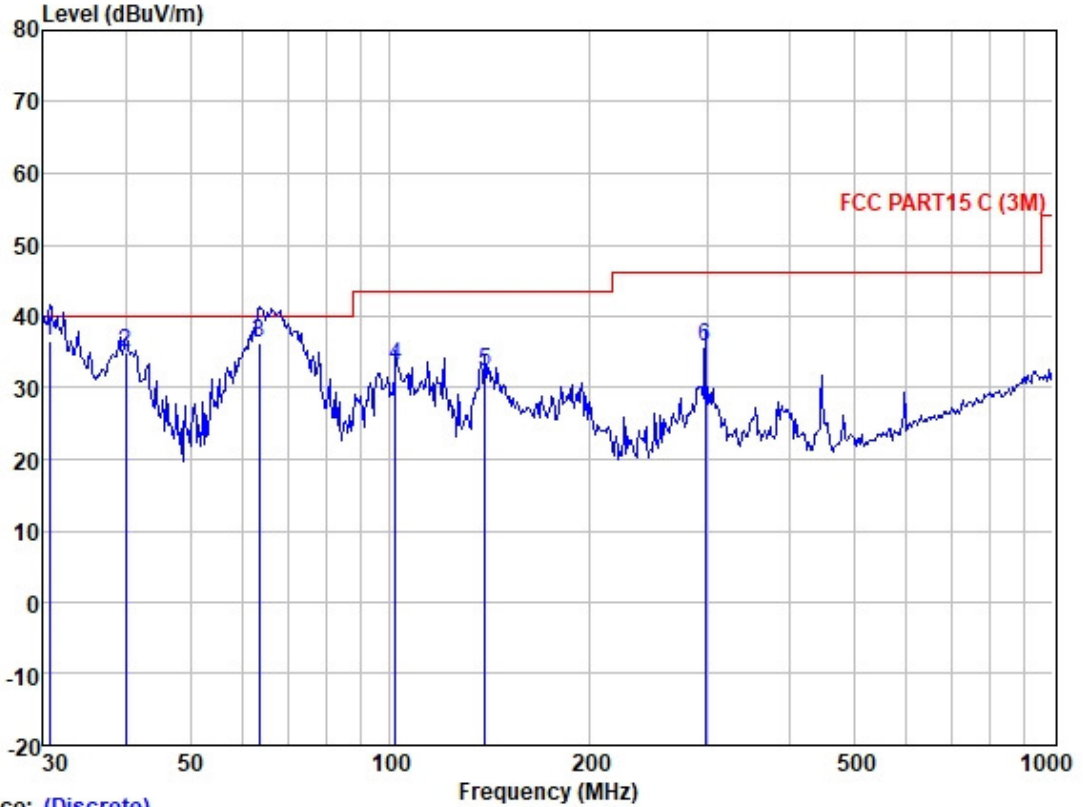
Site : SGS  
 Condition: FCC PART15 C (3M) 3m HORIZONTAL  
 Job :  
 Model :  
 Power :  
 Test Mode: BT

|      | 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    | 30.853      | 42.15  | 12.53  | 1.03   | 27.20  | 28.51  | 40.00 | -11.49    | HORIZONTAL QP |
| 2    | 66.266      | 39.85  | 12.56  | 1.36   | 27.14  | 26.63  | 40.00 | -13.37    | HORIZONTAL QP |
| 3    | 102.001     | 48.16  | 9.40   | 1.74   | 27.08  | 32.22  | 43.50 | -11.28    | HORIZONTAL QP |
| 4    | 138.874     | 41.70  | 13.15  | 2.07   | 26.94  | 29.98  | 43.50 | -13.52    | HORIZONTAL QP |
| 5    | 194.453     | 44.47  | 10.73  | 2.50   | 26.74  | 30.96  | 43.50 | -12.54    | HORIZONTAL QP |
| 6    | 250.301     | 44.45  | 12.10  | 2.92   | 26.62  | 32.85  | 46.00 | -13.15    | HORIZONTAL QP |



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Mode:f; Polarization:Vertical; Modulation:GFSK; ; Channel:Low



Trace: (Discrete)

Site : SGS  
 Condition: FCC PART15 C (3M) 3m VERTICAL  
 Job : F  
 Model :  
 Power :  
 Test Mode: BT

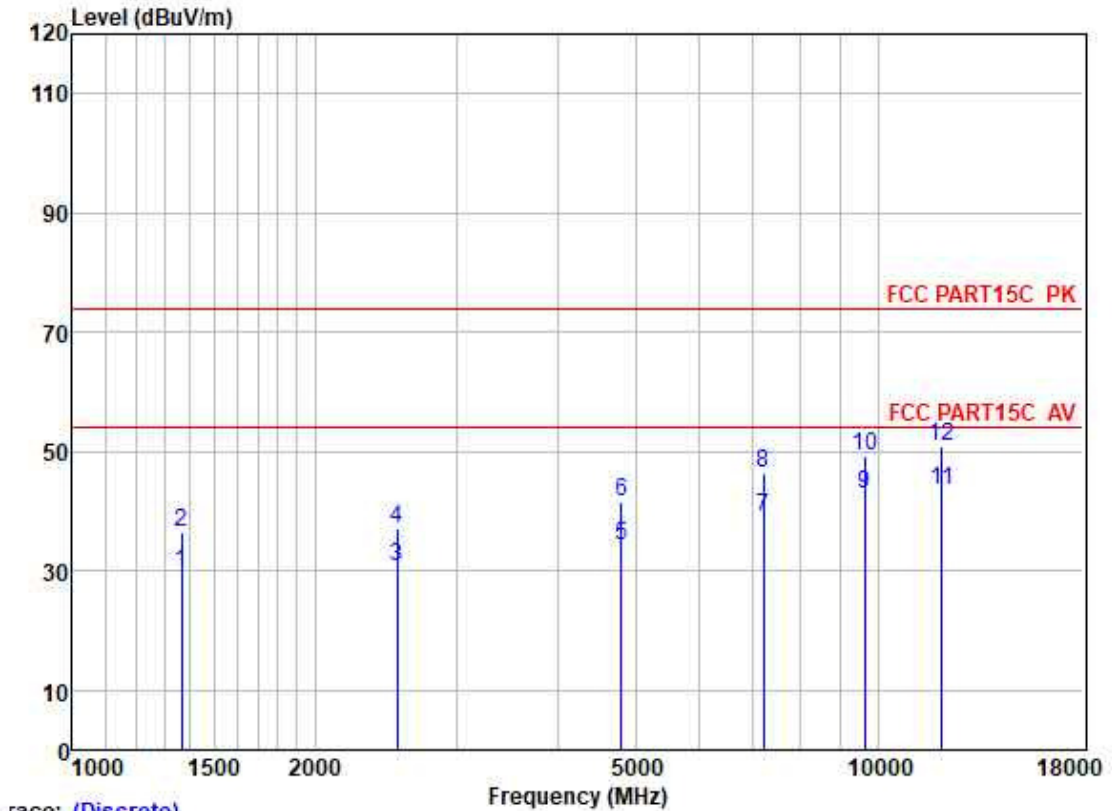
|   | Read    | Antenna | Cable  | Preamp | Limit  | Over   |        |        |           |        |
|---|---------|---------|--------|--------|--------|--------|--------|--------|-----------|--------|
|   | Freq    | Level   | Factor | Loss   | Factor | Level  | Line   | Limit  | Pol/Phase | Remark |
|   | MHz     | dBuV    | dB/m   | dB     | dB     | dBuV/m | dBuV/m | dB     |           |        |
| 1 | 30.638  | 50.30   | 12.49  | 1.03   | 27.20  | 36.62  | 40.00  | -3.38  | VERTICAL  | QP     |
| 2 | 39.994  | 47.65   | 13.50  | 1.10   | 27.18  | 35.07  | 40.00  | -4.93  | VERTICAL  | QP     |
| 3 | 63.536  | 49.18   | 12.95  | 1.32   | 27.15  | 36.30  | 40.00  | -3.70  | VERTICAL  | QP     |
| 4 | 102.001 | 49.07   | 9.40   | 1.74   | 27.08  | 33.13  | 43.50  | -10.37 | VERTICAL  | QP     |
| 5 | 138.874 | 43.99   | 13.15  | 2.07   | 26.94  | 32.27  | 43.50  | -11.23 | VERTICAL  | QP     |
| 6 | 298.268 | 45.58   | 13.57  | 3.16   | 26.55  | 35.76  | 46.00  | -10.24 | VERTICAL  | QP     |



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Mode:f; Polarization:Horizontal; Modulation:GFSK; ; Channel:Low



Trace: (Discrete)

|       | Read      | Antenna | Cable  | Preamp | Limit  | Over   |        |        |            |         |
|-------|-----------|---------|--------|--------|--------|--------|--------|--------|------------|---------|
| Trace | Freq      | Level   | Factor | Loss   | Factor | Level  | Line   | Limit  | Pol/Phase  | Remark  |
|       | MHz       | dBuV    | dB/m   | dB     | dB     | dBuV/m | dBuV/m | dB     |            |         |
| 1     | 1366.374  | 39.85   | 25.34  | 2.60   | 38.01  | 29.78  | 54.00  | -24.22 | HORIZONTAL | Average |
| 2     | 1366.374  | 46.63   | 25.34  | 2.60   | 38.01  | 36.56  | 74.00  | -37.44 | HORIZONTAL | Peak    |
| 3     | 2528.963  | 37.07   | 27.53  | 3.43   | 37.38  | 30.65  | 54.00  | -23.35 | HORIZONTAL | Average |
| 4     | 2528.963  | 43.46   | 27.53  | 3.43   | 37.38  | 37.04  | 74.00  | -36.96 | HORIZONTAL | Peak    |
| 5     | 4809.641  | 34.46   | 31.42  | 5.40   | 36.94  | 34.34  | 54.00  | -19.66 | HORIZONTAL | Average |
| 6     | 4809.641  | 41.69   | 31.42  | 5.40   | 36.94  | 41.57  | 74.00  | -32.43 | HORIZONTAL | Peak    |
| 7     | 7213.033  | 34.46   | 35.62  | 6.01   | 36.93  | 39.16  | 54.00  | -14.84 | HORIZONTAL | Average |
| 8     | 7213.033  | 41.74   | 35.62  | 6.01   | 36.93  | 46.44  | 74.00  | -27.56 | HORIZONTAL | Peak    |
| 9     | 9618.020  | 34.39   | 38.37  | 7.07   | 37.08  | 42.75  | 54.00  | -11.25 | HORIZONTAL | Average |
| 10    | 9618.020  | 41.01   | 38.37  | 7.07   | 37.08  | 49.37  | 74.00  | -24.63 | HORIZONTAL | Peak    |
| 11    | 12022.510 | 33.74   | 38.90  | 8.19   | 37.20  | 43.63  | 54.00  | -10.37 | HORIZONTAL | Average |
| 12    | 12022.510 | 41.05   | 38.90  | 8.19   | 37.20  | 50.94  | 74.00  | -23.06 | HORIZONTAL | Peak    |

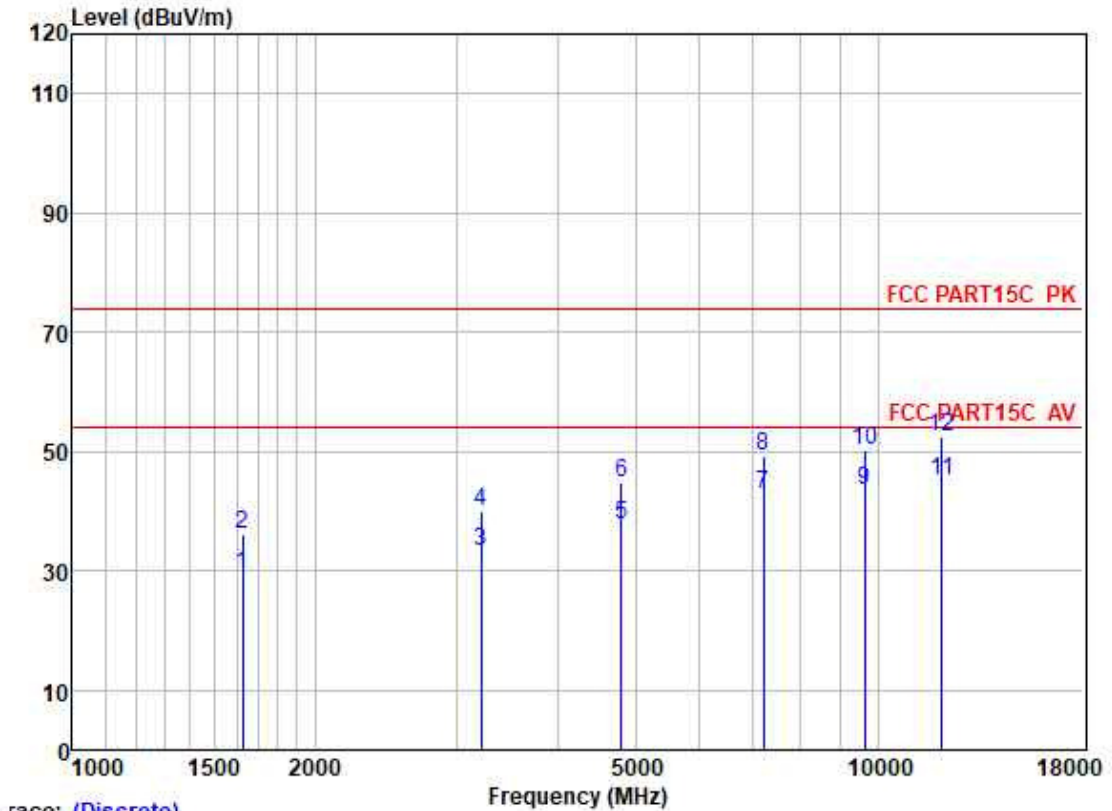


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Mode:f; Polarization:Vertical; Modulation:GFSK; ; Channel:Low



Trace: (Discrete)

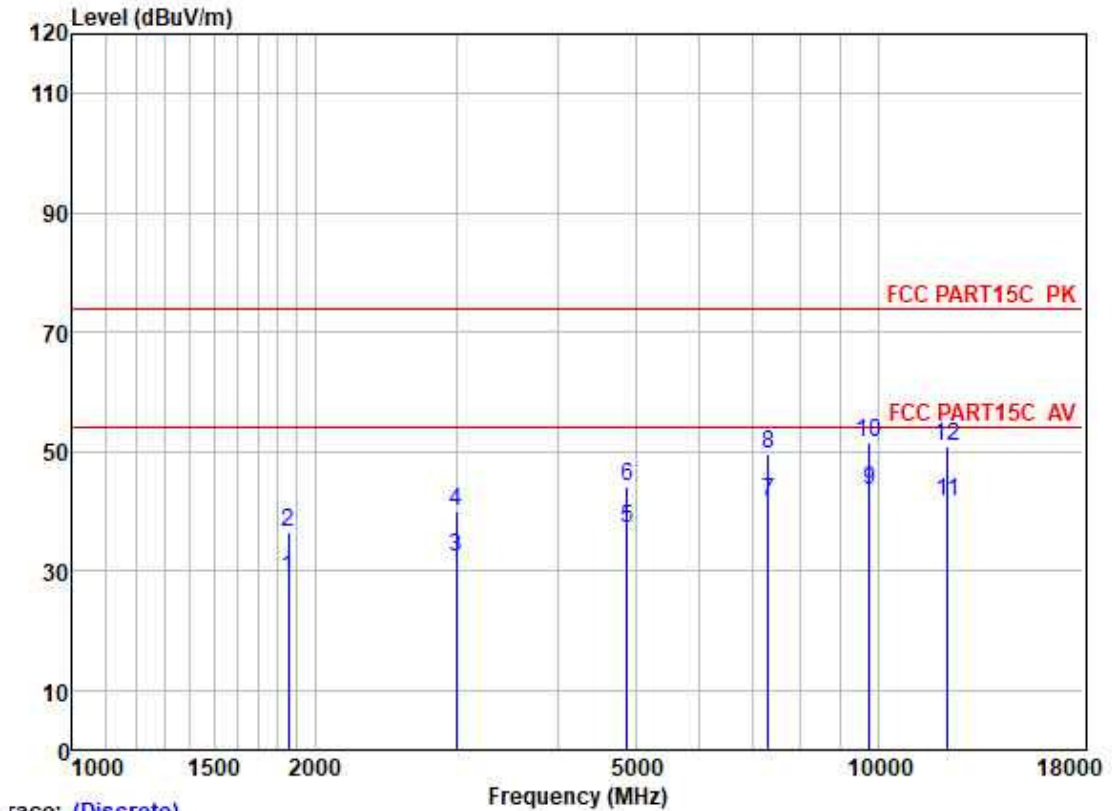
|    | Read      | Antenna | Cable  | Preamp | Limit  | Over   |        |        |           |         |
|----|-----------|---------|--------|--------|--------|--------|--------|--------|-----------|---------|
|    | Freq      | Level   | Factor | Loss   | Factor | Level  | Line   | Limit  | Pol/Phase | Remark  |
|    | MHz       | dBuV    | dB/m   | dB     | dB     | dBuV/m | dBuV/m | dB     |           |         |
| 1  | 1625.121  | 38.72   | 25.61  | 2.80   | 37.63  | 29.50  | 54.00  | -24.50 | VERTICAL  | Average |
| 2  | 1625.121  | 45.35   | 25.61  | 2.80   | 37.63  | 36.13  | 74.00  | -37.87 | VERTICAL  | Peak    |
| 3  | 3214.623  | 37.65   | 28.61  | 4.01   | 37.01  | 33.26  | 54.00  | -20.74 | VERTICAL  | Average |
| 4  | 3214.623  | 44.41   | 28.61  | 4.01   | 37.01  | 40.02  | 74.00  | -33.98 | VERTICAL  | Peak    |
| 5  | 4809.153  | 37.81   | 31.42  | 5.40   | 36.94  | 37.69  | 54.00  | -16.31 | VERTICAL  | Average |
| 6  | 4809.153  | 44.78   | 31.42  | 5.40   | 36.94  | 44.66  | 74.00  | -29.34 | VERTICAL  | Peak    |
| 7  | 7213.838  | 38.18   | 35.62  | 6.01   | 36.93  | 42.88  | 54.00  | -11.12 | VERTICAL  | Average |
| 8  | 7213.838  | 44.46   | 35.62  | 6.01   | 36.93  | 49.16  | 74.00  | -24.84 | VERTICAL  | Peak    |
| 9  | 9618.480  | 35.06   | 38.37  | 7.07   | 37.08  | 43.42  | 54.00  | -10.58 | VERTICAL  | Average |
| 10 | 9618.480  | 41.84   | 38.37  | 7.07   | 37.08  | 50.20  | 74.00  | -23.80 | VERTICAL  | Peak    |
| 11 | 12022.130 | 35.14   | 38.90  | 8.19   | 37.20  | 45.03  | 54.00  | -8.97  | VERTICAL  | Average |
| 12 | 12022.130 | 42.56   | 38.90  | 8.19   | 37.20  | 52.45  | 74.00  | -21.55 | VERTICAL  | Peak    |



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Mode:f; Polarization:Horizontal; Modulation:GFSK; ; Channel:middle



Trace: (Discrete)

|    | Read      | Antenna | 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  | 1856.215  | 37.52   | 26.00  | 2.94   | 37.54  | 28.92  | 54.00  | -25.08 | HORIZONTAL | Average |
| 2  | 1856.215  | 45.15   | 26.00  | 2.94   | 37.54  | 36.55  | 74.00  | -37.45 | HORIZONTAL | Peak    |
| 3  | 2999.187  | 37.31   | 28.40  | 3.80   | 37.07  | 32.44  | 54.00  | -21.56 | HORIZONTAL | Average |
| 4  | 2999.187  | 44.85   | 28.40  | 3.80   | 37.07  | 39.98  | 74.00  | -34.02 | HORIZONTAL | Peak    |
| 5  | 4879.047  | 36.96   | 31.54  | 5.50   | 36.95  | 37.05  | 54.00  | -16.95 | HORIZONTAL | Average |
| 6  | 4879.047  | 43.96   | 31.54  | 5.50   | 36.95  | 44.05  | 74.00  | -29.95 | HORIZONTAL | Peak    |
| 7  | 7318.911  | 36.54   | 36.00  | 6.13   | 36.92  | 41.75  | 54.00  | -12.25 | HORIZONTAL | Average |
| 8  | 7318.911  | 44.31   | 36.00  | 6.13   | 36.92  | 49.52  | 74.00  | -24.48 | HORIZONTAL | Peak    |
| 9  | 9758.140  | 35.15   | 38.50  | 7.02   | 37.09  | 43.58  | 54.00  | -10.42 | HORIZONTAL | Average |
| 10 | 9758.140  | 42.97   | 38.50  | 7.02   | 37.09  | 51.40  | 74.00  | -22.60 | HORIZONTAL | Peak    |
| 11 | 12197.220 | 31.93   | 38.77  | 8.10   | 37.06  | 41.74  | 54.00  | -12.26 | HORIZONTAL | Average |
| 12 | 12197.220 | 40.99   | 38.77  | 8.10   | 37.06  | 50.80  | 74.00  | -23.20 | HORIZONTAL | Peak    |

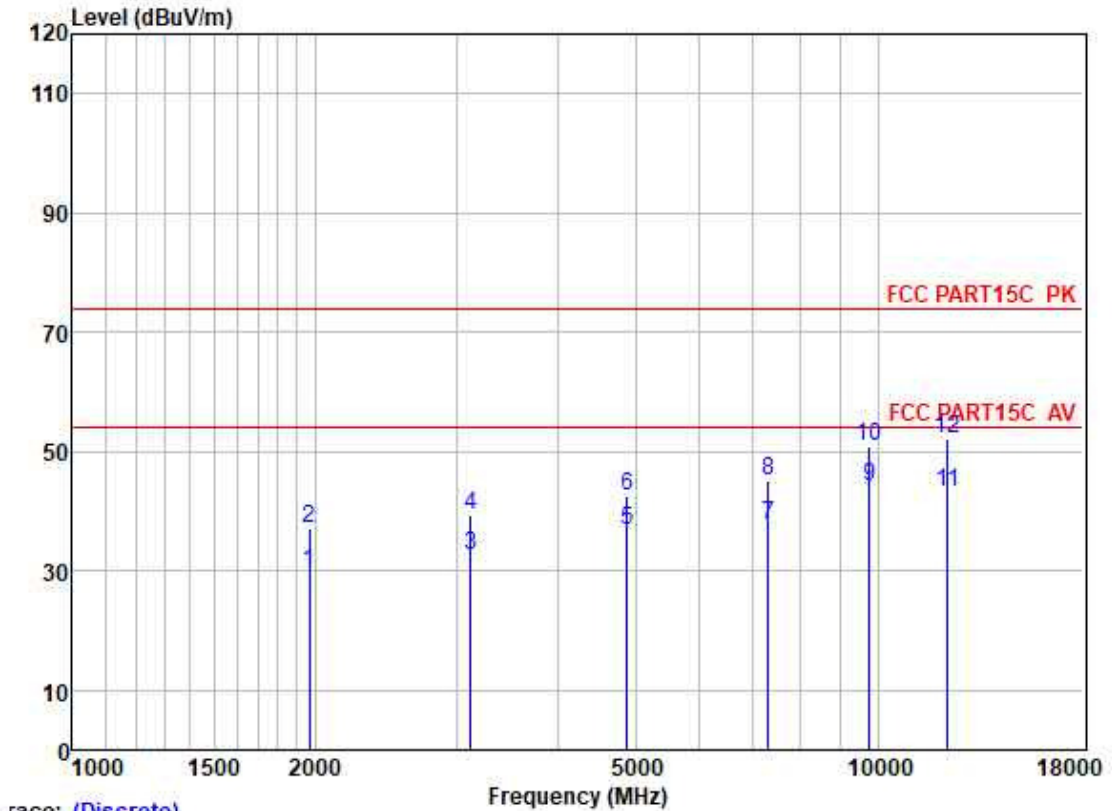


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Mode:f; Polarization:Vertical; Modulation:GFSK; ; Channel:middle



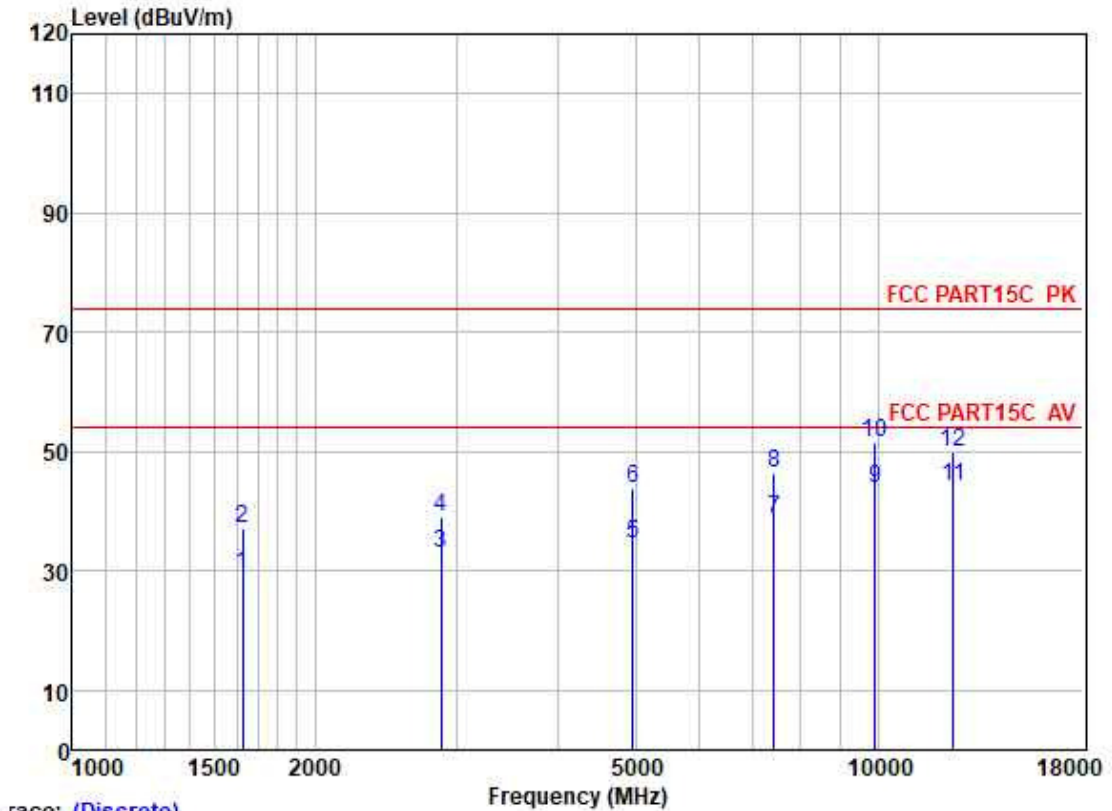
Trace: (Discrete)

|    | Read      | Antenna | 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  | 1966.680  | 38.08   | 26.08  | 3.04   | 37.51  | 29.69  | 54.00  | -24.31 | VERTICAL  | Average |
| 2  | 1966.680  | 45.43   | 26.08  | 3.04   | 37.51  | 37.04  | 74.00  | -36.96 | VERTICAL  | Peak    |
| 3  | 3123.039  | 37.18   | 28.50  | 3.94   | 37.03  | 32.59  | 54.00  | -21.41 | VERTICAL  | Average |
| 4  | 3123.039  | 43.90   | 28.50  | 3.94   | 37.03  | 39.31  | 74.00  | -34.69 | VERTICAL  | Peak    |
| 5  | 4879.136  | 36.64   | 31.54  | 5.50   | 36.95  | 36.73  | 54.00  | -17.27 | VERTICAL  | Average |
| 6  | 4879.136  | 42.61   | 31.54  | 5.50   | 36.95  | 42.70  | 74.00  | -31.30 | VERTICAL  | Peak    |
| 7  | 7318.797  | 32.58   | 36.00  | 6.13   | 36.92  | 37.79  | 54.00  | -16.21 | VERTICAL  | Average |
| 8  | 7318.797  | 39.75   | 36.00  | 6.13   | 36.92  | 44.96  | 74.00  | -29.04 | VERTICAL  | Peak    |
| 9  | 9758.244  | 35.69   | 38.50  | 7.02   | 37.09  | 44.12  | 54.00  | -9.88  | VERTICAL  | Average |
| 10 | 9758.244  | 42.43   | 38.50  | 7.02   | 37.09  | 50.86  | 74.00  | -23.14 | VERTICAL  | Peak    |
| 11 | 12197.180 | 33.25   | 38.77  | 8.10   | 37.06  | 43.06  | 54.00  | -10.94 | VERTICAL  | Average |
| 12 | 12197.180 | 42.32   | 38.77  | 8.10   | 37.06  | 52.13  | 74.00  | -21.87 | VERTICAL  | Peak    |



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Mode:f; Polarization:Horizontal; Modulation:GFSK; ; Channel:High



Trace: (Discrete)

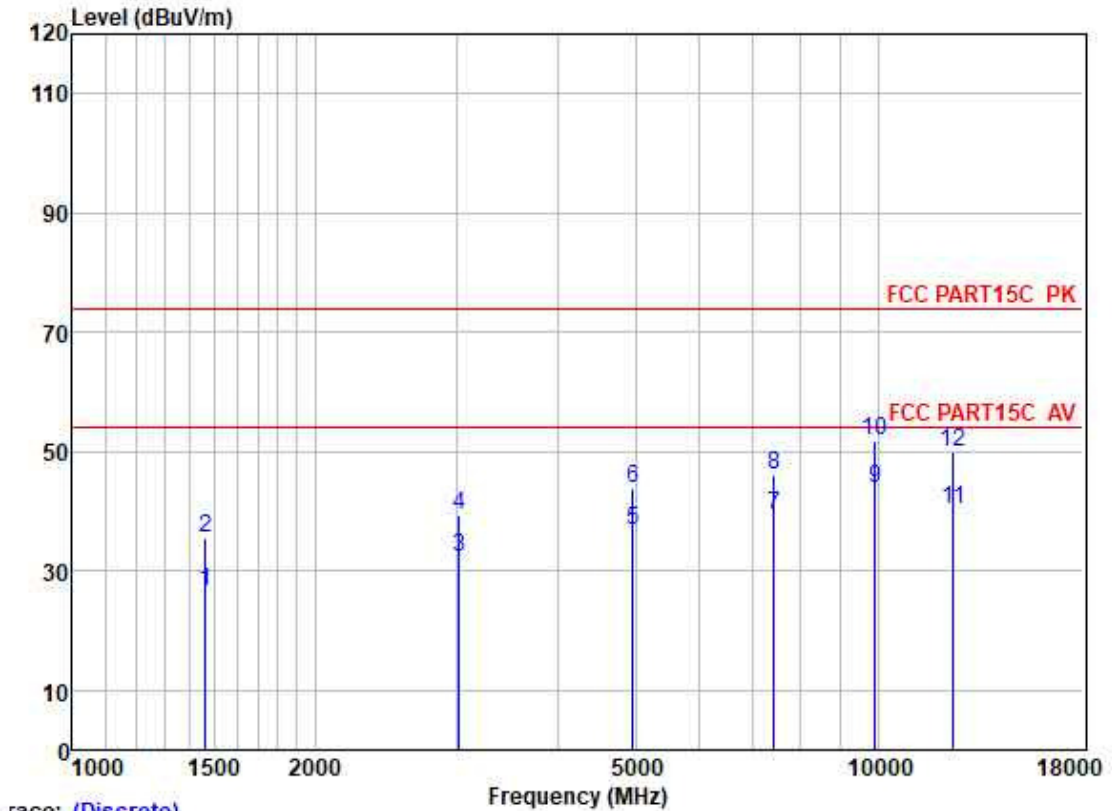
|    | Read Freq | Antenna Level | Cable Factor | Preamp Loss | Preamp Factor | Limit Level | Over Limit | Pol/Phase | Remark             |
|----|-----------|---------------|--------------|-------------|---------------|-------------|------------|-----------|--------------------|
|    | MHz       | dBuV          | dB/m         | dB          | dB            | dBuV/m      | dB         |           |                    |
| 1  | 1625.121  | 38.72         | 25.61        | 2.80        | 37.63         | 29.50       | 54.00      | -24.50    | HORIZONTAL Average |
| 2  | 1625.121  | 46.30         | 25.61        | 2.80        | 37.63         | 37.08       | 74.00      | -36.92    | HORIZONTAL Peak    |
| 3  | 2871.934  | 38.20         | 28.26        | 3.70        | 37.15         | 33.01       | 54.00      | -20.99    | HORIZONTAL Average |
| 4  | 2871.934  | 44.21         | 28.26        | 3.70        | 37.15         | 39.02       | 74.00      | -34.98    | HORIZONTAL Peak    |
| 5  | 4959.975  | 34.28         | 31.65        | 5.65        | 36.96         | 34.62       | 54.00      | -19.38    | HORIZONTAL Average |
| 6  | 4959.975  | 43.41         | 31.65        | 5.65        | 36.96         | 43.75       | 74.00      | -30.25    | HORIZONTAL Peak    |
| 7  | 7438.265  | 33.22         | 36.27        | 6.22        | 36.92         | 38.79       | 54.00      | -15.21    | HORIZONTAL Average |
| 8  | 7438.265  | 40.85         | 36.27        | 6.22        | 36.92         | 46.42       | 74.00      | -27.58    | HORIZONTAL Peak    |
| 9  | 9918.164  | 35.27         | 38.65        | 6.96        | 37.10         | 43.78       | 54.00      | -10.22    | HORIZONTAL Average |
| 10 | 9918.164  | 42.98         | 38.65        | 6.96        | 37.10         | 51.49       | 74.00      | -22.51    | HORIZONTAL Peak    |
| 11 | 12397.220 | 34.57         | 38.57        | 7.97        | 36.90         | 44.21       | 54.00      | -9.79     | HORIZONTAL Average |
| 12 | 12397.220 | 40.29         | 38.57        | 7.97        | 36.90         | 49.93       | 74.00      | -24.07    | HORIZONTAL Peak    |



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Mode:f; Polarization:Vertical; Modulation:GFSK; ; Channel:High



Trace: (Discrete)

|    | Read Freq | Antenna Level | Cable Factor | Preamp Loss | Preamp Factor | Limit Level | Over Limit | Pol/Phase | Remark           |
|----|-----------|---------------|--------------|-------------|---------------|-------------|------------|-----------|------------------|
|    | MHz       | dBuV          | dB/m         | dB          | dB            | dBuV/m      | dBuV/m     | dB        |                  |
| 1  | 1464.522  | 36.29         | 25.47        | 2.74        | 37.78         | 26.72       | 54.00      | -27.28    | VERTICAL Average |
| 2  | 1464.522  | 44.97         | 25.47        | 2.74        | 37.78         | 35.40       | 74.00      | -38.60    | VERTICAL Peak    |
| 3  | 3025.306  | 37.00         | 28.42        | 3.82        | 37.06         | 32.18       | 54.00      | -21.82    | VERTICAL Average |
| 4  | 3025.306  | 44.18         | 28.42        | 3.82        | 37.06         | 39.36       | 74.00      | -34.64    | VERTICAL Peak    |
| 5  | 4959.307  | 36.37         | 31.65        | 5.65        | 36.96         | 36.71       | 54.00      | -17.29    | VERTICAL Average |
| 6  | 4959.307  | 43.45         | 31.65        | 5.65        | 36.96         | 43.79       | 74.00      | -30.21    | VERTICAL Peak    |
| 7  | 7438.708  | 33.88         | 36.27        | 6.22        | 36.92         | 39.45       | 54.00      | -14.55    | VERTICAL Average |
| 8  | 7438.708  | 40.45         | 36.27        | 6.22        | 36.92         | 46.02       | 74.00      | -27.98    | VERTICAL Peak    |
| 9  | 9918.588  | 35.28         | 38.65        | 6.96        | 37.10         | 43.79       | 54.00      | -10.21    | VERTICAL Average |
| 10 | 9918.588  | 43.42         | 38.65        | 6.96        | 37.10         | 51.93       | 74.00      | -22.07    | VERTICAL Peak    |
| 11 | 12397.220 | 30.81         | 38.57        | 7.97        | 36.90         | 40.45       | 54.00      | -13.55    | VERTICAL Average |
| 12 | 12397.220 | 40.31         | 38.57        | 7.97        | 36.90         | 49.95       | 74.00      | -24.05    | VERTICAL Peak    |

--End of Report--



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