# FCC TEST REPORT

For

Huizhou Jishunkang Industrial Co., Ltd

Extension Socket (with power adapter)

Test Model: GS-FT02WC

Additional Model No.: GS-FT02UW-2, GS-FT02UW-4

| | | |
|---|---|---|
| Prepared for | : | Huizhou Jishunkang Industrial Co., Ltd |
| Address | : | NO.5 FLOOR 7, BAFANGXINYUE PLAZA, NO.110 JIANGBEI OF HUIZHOU ROAD, HUIZHOU CITY, GUANGDONG, CHINA |
| Prepared by | : | Shenzhen LCS Compliance Testing Laboratory Ltd. |
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| Fax | : | (+86)755-82591332 |
| Web | : | www.LCS-cert.com |
| Mail | : | webmaster@LCS-cert.com |
| Date of receipt of test sample | : | October 27, 2022 |
| Number of tested samples | : | 2 |
| Serial number | : | A102522103-1(Engineer sample), A102522103-2(Normal sample) |
| Date of Test | : | October 27, 2022 ~ November 02, 2022 |
| Date of Report | : | November 03, 2022 |

# FCC TEST REPORT
# FCC CFR 47 PART 15C

| | | |
|---|---|---|
| **Report Reference No. .....** | **:** | **LCSA102522103EA** |
| Date Of Issue..... | : | November 03, 2022 |
| **Testing Laboratory Name.....** | **:** | **Shenzhen LCS Compliance Testing Laboratory Ltd.** |
| Address..... | : | 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Shajing Street, Baoan District, Shenzhen, China |
| Testing Location/ Procedure..... | : | Full application of Harmonised standards ■<br>Partial application of Harmonised standards □<br>Other standard testing method □ |
| **Applicant's Name.....** | **:** | **Huizhou Jishunkang Industrial Co., Ltd** |
| Address..... | : | NO.5 FLOOR 7, BAFANGXINYUE PLAZA, NO.110 JIANGBEI OF HUIZHOU ROAD, HUIZHOU CITY, GUANGDONG, CHINA |
| **Test Specification** | | |
| Standard..... | : | FCC CFR 47 PART 15C |
| Test Report Form No..... | : | LCSEMC-1.0 |
| TRF Originator..... | : | Shenzhen LCS Compliance Testing Laboratory Ltd. |
| Master TRF..... | : | Dated 2011-03 |

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| | | |
|---|---|---|
| **Test Item Description.....** | **:** | **Extension Socket (with power adapter)** |
| Trade Mark..... | : | JEOSTORM, Geos吉顺 |
| Test Model..... | : | GS-FT02WC |
| Power Supply..... | : | Please Refer to Page 6 |
| **Result .....** | **:** | **Positive** |

| Compiled by: | Supervised by: | Approved by: |
|---|---|---|
| Rory Huang | Cary Luo | Gavin Liang |
| Rory Huang/ Administrator | Cary Luo/ Technique principal | Gavin Liang/ Manager |

# FCC TEST REPORT

| | |
|---|---|
| **Test Report No. :** **LCSA102522103EA** | November 03, 2022<br>Date of issue |

| | |
|---|---|
| Test Model..... | : GS-FT02WC |
| EUT..... | : Extension Socket (with power adapter) |
| **Applicant.....** | : **Huizhou Jishunkang Industrial Co., Ltd** |
| Address..... | : NO.5 FLOOR 7, BAFANGXINYUE PLAZA, NO.110 JIANGBEI OF HUIZHOU ROAD, HUIZHOU CITY, GUANGDONG, CHINA |
| Telephone..... | : / |
| Fax..... | : / |
| **Manufacturer.....** | : **Huizhou Jishunkang Industrial Co., Ltd** |
| Address..... | : NO.5 FLOOR 7, BAFANGXINYUE PLAZA, NO.110 JIANGBEI OF HUIZHOU ROAD, HUIZHOU CITY, GUANGDONG, CHINA |
| Telephone..... | : / |
| Fax..... | : / |
| **Factory.....** | : **Guangdong Jishun Electrical Co.,Ltd** |
| Address..... | : No.6, South District, Fuyu Village Industrial Zone, Zhanlong Town, Puning City, Guangdong Province 515300, China |
| Telephone..... | : / |
| Fax..... | : / |

| | |
|---|---|
| **Test Result** | **Positive** |

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

# Revision History

| Report Version | Issue Date | Revision Content | Revised By |
|---|---|---|---|
| 000 | November 03, 2022 | Initial Issue | -- |
| | | | |
| | | | |

# TABLE OF CONTENTS


**1. GENERAL INFORMATION ..... 6**
1.1 Description of Device (EUT) ..... 6
1.2 Support equipment List ..... 6
1.3 External I/O Cable ..... 6
1.4 Description of Test Facility ..... 7
1.5 Statement of the Measurement Uncertainty ..... 7
1.6 Measurement Uncertainty ..... 7
1.7 Description of Test Modes ..... 7
**2. TEST METHODOLOGY ..... 8**
2.1 EUT Configuration ..... 8
2.2 EUT Exercise ..... 8
2.3 General Test Procedures ..... 8
2.3.1 Conducted Emissions ..... 8
2.3.2 Radiated Emissions ..... 8
2.4. Test Sample ..... 8
**3. SYSTEM TEST CONFIGURATION ..... 9**
3.1 Justification ..... 9
3.2 EUT Exercise Software ..... 9
3.3 Special Accessories ..... 9
3.4 Block Diagram/Schematics ..... 9
3.5 Equipment Modifications ..... 9
3.6 Test Setup ..... 9
**4. SUMMARY OF TEST EQUIPMENT ..... 10**
**5. SUMMARY OF TEST RESULT ..... 11**
**6. POWER LINE CONDUCTED MEASUREMENT ..... 12**
**7. RADIATED EMISSION MEASUREMENT ..... 19**
7.1. Block Diagram of Test Setup ..... 19
7.2. Radiated Emission Limit ..... 20
7.3. EUT Configuration on Measurement ..... 20
7.4. Operating Condition of EUT ..... 20
7.5. Measuring Setting ..... 21
7.6. Test Procedure ..... 21
7.7. Test Results ..... 22
**8. 20 DB BANDWIDTH MEASUREMENT ..... 30**
8.1. Block Diagram of Test Setup ..... 30
8.2. Test Procedure ..... 30
8.3. Test Results ..... 31
**9. PHOTOGRAPHS OF TEST SETUP ..... 32**
**10. EXTERNAL PHOTOGRAPHS OF THE EUT ..... 32**
**11. INTERNAL PHOTOGRAPHS OF THE EUT ..... 32**

# 1. GENERAL INFORMATION

## 1.1 Description of Device (EUT)

| | | |
|---|---|---|
| EUT | : | Extension Socket (with power adapter) |
| Test Model | : | GS-FT02WC |
| Additional Model No. | : | GS-FT02UW-2, GS-FT02UW-4 |
| Model Declaration | : | Only the power part of the circuit is different, everything else is the same. |
| Power Supply | : | Power rating: 15A 125Vac 1875W 60Hz<br>GS-FT02WC:<br>Single Type C port output: DC5V, 3A; DC9V, 2.2A; DC12V, 1.67A, 20W Max<br>Single USB-A1 port output: DC5V, 3A; DC9V, 2A; DC12V, 1.5A, 18W Max<br>Single USB-A2 port output: DC5V, 2.4A<br>Three port simultaneously total output DC5V, 3.4A (without wireless charging)<br>Three port simultaneously total output DC5V, 1.5A (while wireless charging)<br>Wireless Charging: DC 9V, 1.12A / (10W)<br>GS-FT02UW-2:<br>USB output: DC5V, 3A MAX<br>Single USB port output: DC5V, 1A MAX<br>Wireless Charging: DC 9V, 1.12A / (10W)<br>GS-FT02UW-4:<br>USB output: DC5V, 4.8A MAX<br>Single USB port output: DC5V, 2A MAX<br>Wireless Charging: DC 9V, 1.12A / (10W) |
| Hardware Version | : | / |
| Software Version | : | / |
| Wireless Charging | : | |
| Operating Frequency | : | 110.3~205.0KHz |
| Modulation Type | : | Continuous Wave |
| Antenna Type | : | Coil Antenna |

## 1.2 Support equipment List

| Manufacturer | Description | Model | Serial Number | Certificate |
|---|---|---|---|---|
| Huawei | Mobile phone | FRD-AL10 | FRD-AL10C00B373 | FCC |

Note: Auxiliary equipment is provided by the laboratory.

## 1.3 External I/O Cable

| I/O Port Description | Quantity | Cable |
|---|---|---|
| USB Port | 2 | N/A |
| Type-C USB Port | 1 | N/A |

## 1.4 Description of Test Facility

NVLAP Accreditation Code is 600167-0.

FCC Designation Number is CN5024

CAB identifier is CN0071.

CNAS Registration Number is L4595.

Test Firm Registration Number: 254912.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.4:2014 and CISPR 16-1-4:2010 SVSWR requirement for radiated emission above 1GHz.

## 1.5 Statement of the Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

## 1.6 Measurement Uncertainty

| Test Item | | Frequency Range | Uncertainty | Note |
|---|---|---|---|---|
| Radiation Uncertainty | : | 9KHz~30MHz | 3.10dB | (1) |
| | | 30MHz~200MHz | 2.96dB | (1) |
| | | 200MHz~1000MHz | 3.10dB | (1) |
| | | 1GHz~26.5GHz | 3.80dB | (1) |
| | | 26.5GHz~40GHz | 3.90dB | (1) |
| Conduction Uncertainty | : | 150kHz~30MHz | 1.63dB | (1) |
| Power disturbance | : | 30MHz~300MHz | 1.60dB | (1) |

(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 1.7 Description of Test Modes

Equipment under test was operated during the measurement under the following conditions:

☒ Charging and communication mode

Modulation Type: CW (Continuous Wave)

| **Test Modes** | | |
|---|---|---|
| Mode 1 | EUT + Mobile phone (Battery Status: <1%) | Record |
| Mode 2 | EUT + Mobile phone (Battery Status: <50%) | Pre-tested |
| Mode 3 | EUT + Mobile phone (Battery Status: 100%) | Pre-tested |
| Note: All test modes were pre-tested, but we only recorded the worst case in this report. | | |

# 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, FCC CFR PART 15C 15.207.

## 2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

## 2.2 EUT Exercise

The EUT was operated in the normal operating mode for Hopping Numbers and Dwell Time test and a continuous transmits mode for other tests.

According to its specifications, the EUT must comply with the requirements of the Section 15.207 under the FCC Rules Part 15 Subpart C.

## 2.3 General Test Procedures

### 2.3.1 Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2.1 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using Quasi-peak and average detector modes.

### 2.3.2 Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane below 1GHz and 1.5 m above ground plane above 1GHz. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 6.3 of ANSI C63.10-2013

## 2.4. Test Sample

The application provides 2 samples to meet requirement;

| Sample Number | Description |
|---|---|
| Sample 1(A102522103-1) | Engineer sample – continuous transmit |
| Sample 2(A102522103-2) | Normal sample – Intermittent transmit |

# 3. SYSTEM TEST CONFIGURATION

## 3.1 Justification

The system was configured for testing in a normal condition.

## 3.2 EUT Exercise Software

N/A.

## 3.3 Special Accessories

| No. | Equipment | Manufacturer | Model No. | Serial No. | Length | shielded/ unshielded | Notes |
|---|---|---|---|---|---|---|---|
| / | / | / | / | / | / | / | / |

## 3.4 Block Diagram/Schematics

Please refer to the related document.

## 3.5 Equipment Modifications

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

## 3.6 Test Setup

Please refer to the test setup photo.

# 4. SUMMARY OF TEST EQUIPMENT

| Item | Equipment | Manufacturer | Model No. | Serial No. | Cal Date | Due Date |
|---|---|---|---|---|---|---|
| 1 | MXA Signal Analyzer | Agilent | N9020A | MY49100040 | 2022-06-16 | 2023-06-15 |
| 2 | RS SPECTRUM ANALYZER | R&S | FSP40 | 100503 | 2021-11-16 | 2022-11-15 |
| 3 | 3m Semi Anechoic Chamber | SIDT FRANKONIA | SAC-3M | 03CH03-HY | 2022-06-16 | 2023-06-15 |
| 4 | Positioning Controller | Max-Full | MF7802BS | MF780208586 | N/A | N/A |
| 5 | EMI Test Software | AUDIX | E3 | / | N/A | N/A |
| 6 | EMI Test Receiver | R&S | ESR 7 | 101181 | 2022-06-16 | 2023-06-15 |
| 7 | Active Loop Antenna | SCHWARZBECK | FMZB 1519B | 00005 | 2021-08-29 | 2024-08-28 |
| 8 | By-log Antenna | SCHWARZBECK | VULB9163 | 9163-470 | 2021-09-12 | 2024-09-11 |
| 9 | EMI Test Receiver | R&S | ESPI | 101940 | 2022-08-17 | 2023-08-16 |
| 10 | Artificial Mains | R&S | ENV216 | 101288 | 2022-06-16 | 2023-06-15 |
| 11 | 10dB Attenuator | SCHWARZBECK | MTS-IMP-136 | 261115-001-0032 | 2022-06-16 | 2023-06-15 |
| 12 | EMI Test Software | Farad | EZ | / | N/A | N/A |
| 13 | Broadband Preamplifier | SCHWARZBECK | BBV9745 | 9719-025 | 2022-06-16 | 2023-06-15 |

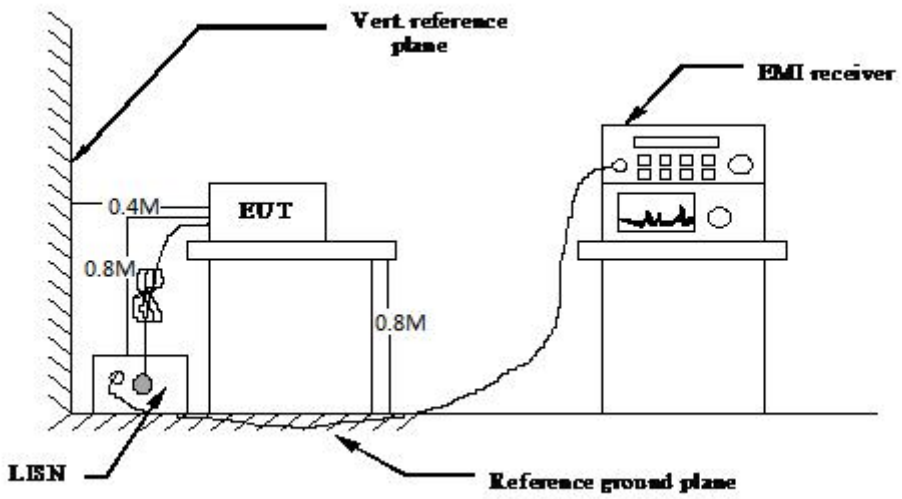
# 5. SUMMARY OF TEST RESULT

| FCC Rules | Description of Test | Test Sample | Result |
|---|---|---|---|
| §15.207(a) | AC Conducted Emissions | Sample 1 | Compliant |
| §15.209 | Radiated Spurious Emissions | Sample 1 | Compliant |
| §15.215 | 20 dB Bandwidth | Sample 1 | Compliant |

*Remark: The measurement uncertainty is not included in the test result.*
*N/A – Not Applicable!!!*

# 6. POWER LINE CONDUCTED MEASUREMENT

## 6.1. Block Diagram of Test Setup




## 6.2. Standard Applicable

According to §15.207: For all the consumer devices which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range are listed as follows:

| Frequency Range (MHz) | Limits (dBμV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15 to 0.50 | 66 to 56 | 56 to 46 |
| 0.50 to 5 | 56 | 46 |
| 5 to 30 | 60 | 50 |

* Decreasing linearly with the logarithm of the frequency

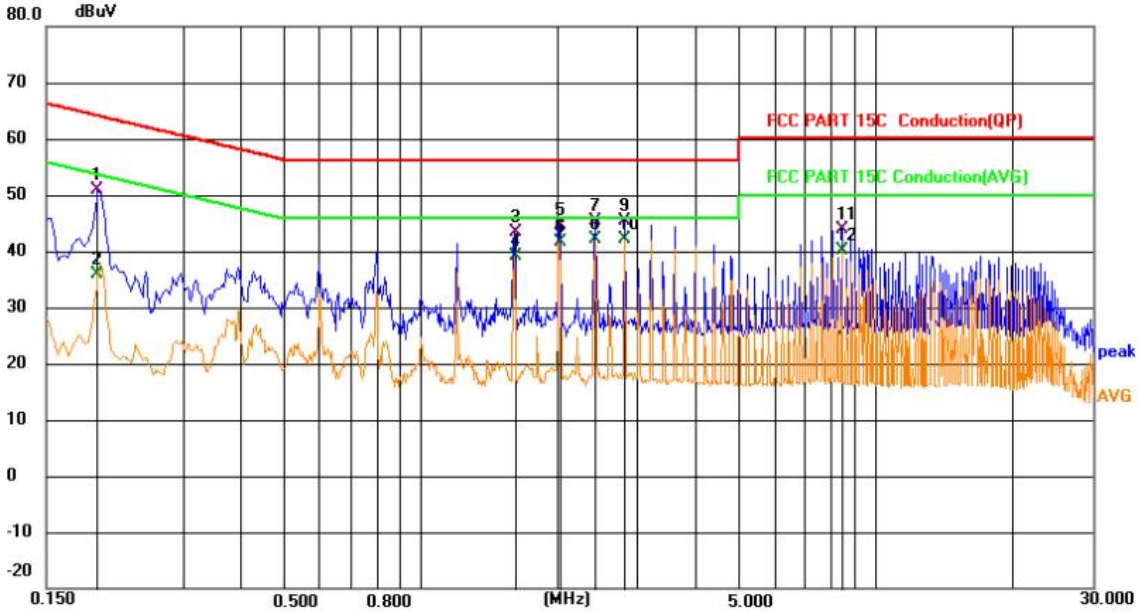
## 6.3 Test Results

**PASS**

The test data please refer to following page.

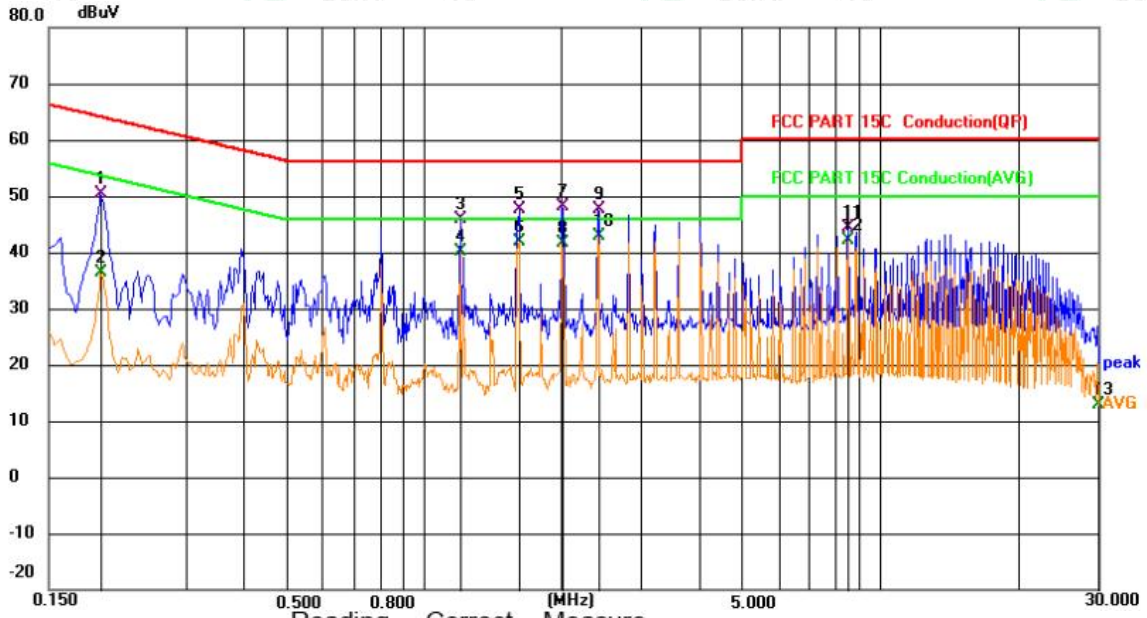
| | | | |
|---|---|---|---|
| Temperature | 23.9℃ | Humidity | 53.0% |
| Test Engineer | Nick Peng | Configurations | Transmit |

***AC Power Line Conducted Emission (Power input to adapter @ AC 120V/60Hz (Worst Case))***
*Model: GS-FT02WC*
*Line*



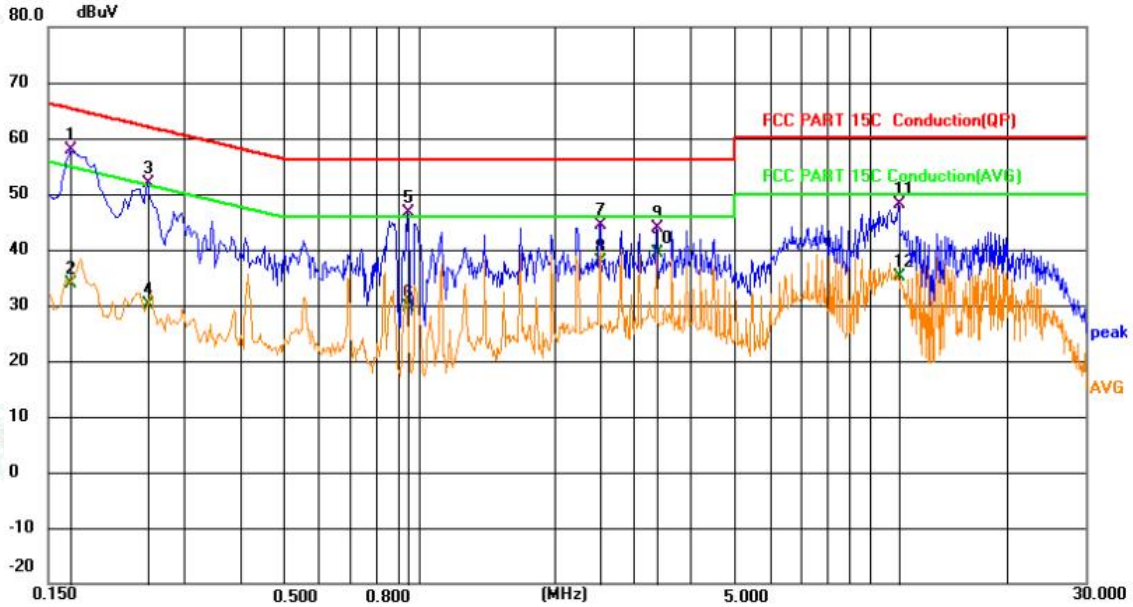

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Margin | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.1951 | 31.25 | 19.63 | 50.88 | 63.82 | -12.94 | QP | |
| 2 | | 0.1951 | 16.35 | 19.63 | 35.98 | 53.82 | -17.84 | AVG | |
| 3 | | 1.6036 | 23.73 | 19.67 | 43.40 | 56.00 | -12.60 | QP | |
| 4 | | 1.6036 | 19.37 | 19.67 | 39.04 | 46.00 | -6.96 | AVG | |
| 5 | | 2.0221 | 24.92 | 19.68 | 44.60 | 56.00 | -11.40 | QP | |
| 6 | | 2.0221 | 22.01 | 19.68 | 41.69 | 46.00 | -4.31 | AVG | |
| 7 | | 2.4091 | 25.81 | 19.68 | 45.49 | 56.00 | -10.51 | QP | |
| 8 | * | 2.4091 | 22.54 | 19.68 | 42.22 | 46.00 | -3.78 | AVG | |
| 9 | | 2.8096 | 25.71 | 19.68 | 45.39 | 56.00 | -10.61 | QP | |
| 10 | | 2.8096 | 22.41 | 19.68 | 42.09 | 46.00 | -3.91 | AVG | |
| 11 | | 8.4436 | 24.05 | 19.79 | 43.84 | 60.00 | -16.16 | QP | |
| 12 | | 8.4436 | 20.24 | 19.79 | 40.03 | 50.00 | -9.97 | AVG | |

*Neutral*



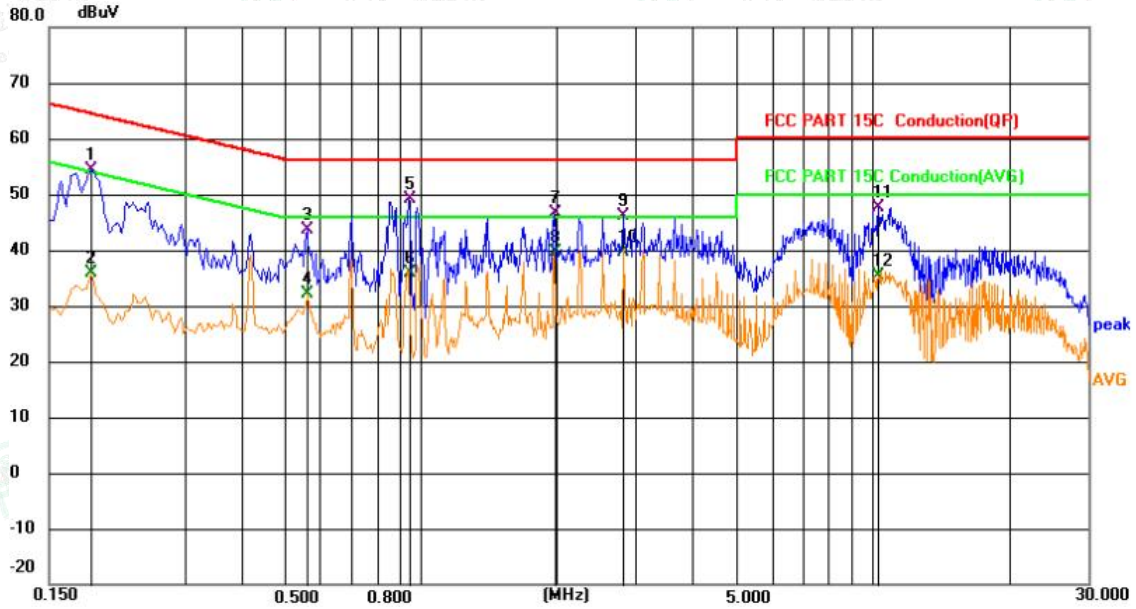

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Margin | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.1951 | 30.86 | 19.63 | 50.49 | 63.82 | -13.33 | QP | |
| 2 | | 0.1951 | 16.87 | 19.63 | 36.50 | 53.82 | -17.32 | AVG | |
| 3 | | 1.1985 | 26.33 | 19.66 | 45.99 | 56.00 | -10.01 | QP | |
| 4 | | 1.1985 | 20.54 | 19.66 | 40.20 | 46.00 | -5.80 | AVG | |
| 5 | | 1.6171 | 27.91 | 19.67 | 47.58 | 56.00 | -8.42 | QP | |
| 6 | | 1.6171 | 22.16 | 19.67 | 41.83 | 46.00 | -4.17 | AVG | |
| 7 | | 2.0041 | 28.55 | 19.68 | 48.23 | 56.00 | -7.77 | QP | |
| 8 | | 2.0041 | 21.94 | 19.68 | 41.62 | 46.00 | -4.38 | AVG | |
| 9 | | 2.4046 | 27.98 | 19.70 | 47.68 | 56.00 | -8.32 | QP | |
| 10 | * | 2.4046 | 23.07 | 19.70 | 42.77 | 46.00 | -3.23 | AVG | |
| 11 | | 8.5021 | 24.58 | 19.84 | 44.42 | 60.00 | -15.58 | QP | |
| 12 | | 8.5021 | 22.33 | 19.84 | 42.17 | 50.00 | -7.83 | AVG | |
| 13 | | 30.0000 | -7.27 | 20.11 | 12.84 | 50.00 | -37.16 | AVG | |

*Model: GS-FT02UW-4*
*Line*



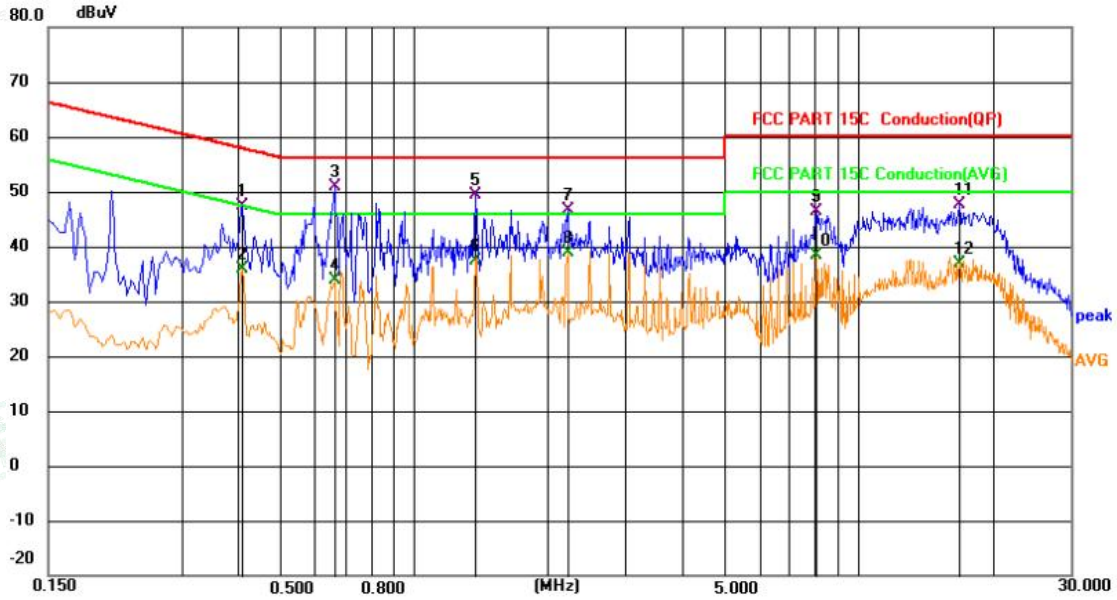

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Margin | |
|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector |
| 1 | | 0.1681 | 38.13 | 19.63 | 57.76 | 65.05 | -7.29 | QP |
| 2 | | 0.1681 | 14.32 | 19.63 | 33.95 | 55.05 | -21.10 | AVG |
| 3 | | 0.2491 | 32.17 | 19.63 | 51.80 | 61.79 | -9.99 | QP |
| 4 | | 0.2491 | 10.41 | 19.63 | 30.04 | 51.79 | -21.75 | AVG |
| 5 | | 0.9421 | 26.97 | 19.65 | 46.62 | 56.00 | -9.38 | QP |
| 6 | | 0.9421 | 10.00 | 19.65 | 29.65 | 46.00 | -16.35 | AVG |
| 7 | | 2.5126 | 24.65 | 19.68 | 44.33 | 56.00 | -11.67 | QP |
| 8 | | 2.5126 | 18.16 | 19.68 | 37.84 | 46.00 | -8.16 | AVG |
| 9 | | 3.3541 | 24.15 | 19.70 | 43.85 | 56.00 | -12.15 | QP |
| 10 | * | 3.3541 | 19.61 | 19.70 | 39.31 | 46.00 | -6.69 | AVG |
| 11 | | 11.5261 | 28.20 | 19.84 | 48.04 | 60.00 | -11.96 | QP |
| 12 | | 11.5261 | 15.41 | 19.84 | 35.25 | 50.00 | -14.75 | AVG |

*Neutral*



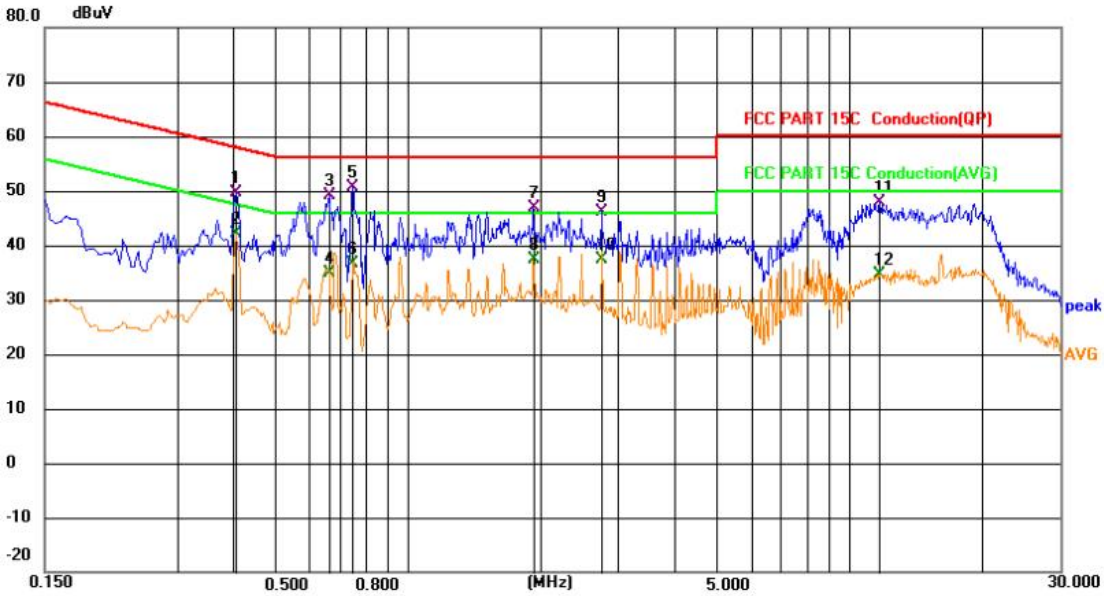

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Margin | |
|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector |
| 1 | | 0.1861 | 34.81 | 19.63 | 54.44 | 64.21 | -9.77 | QP |
| 2 | | 0.1861 | 16.31 | 19.63 | 35.94 | 54.21 | -18.27 | AVG |
| 3 | | 0.5596 | 24.04 | 19.65 | 43.69 | 56.00 | -12.31 | QP |
| 4 | | 0.5596 | 12.45 | 19.65 | 32.10 | 46.00 | -13.90 | AVG |
| 5 | | 0.9421 | 29.49 | 19.65 | 49.14 | 56.00 | -6.86 | QP |
| 6 | | 0.9421 | 16.12 | 19.65 | 35.77 | 46.00 | -10.23 | AVG |
| 7 | | 1.9726 | 26.85 | 19.68 | 46.53 | 56.00 | -9.47 | QP |
| 8 | | 1.9726 | 19.83 | 19.68 | 39.51 | 46.00 | -6.49 | AVG |
| 9 | | 2.8051 | 26.31 | 19.72 | 46.03 | 56.00 | -9.97 | QP |
| 10 | * | 2.8051 | 19.99 | 19.72 | 39.71 | 46.00 | -6.29 | AVG |
| 11 | | 10.3201 | 27.74 | 19.85 | 47.59 | 60.00 | -12.41 | QP |
| 12 | | 10.3201 | 15.58 | 19.85 | 35.43 | 50.00 | -14.57 | AVG |

*Model: GS-FT02UW-2*
*Line*




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Margin | |
|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector |
| 1 | | 0.4111 | 27.63 | 19.63 | 47.26 | 57.63 | -10.37 | QP |
| 2 | | 0.4111 | 16.17 | 19.63 | 35.80 | 47.63 | -11.83 | AVG |
| 3 | * | 0.6630 | 31.12 | 19.65 | 50.77 | 56.00 | -5.23 | QP |
| 4 | | 0.6630 | 14.24 | 19.65 | 33.89 | 46.00 | -12.11 | AVG |
| 5 | | 1.3740 | 29.71 | 19.66 | 49.37 | 56.00 | -6.63 | QP |
| 6 | | 1.3740 | 17.72 | 19.66 | 37.38 | 46.00 | -8.62 | AVG |
| 7 | | 2.2155 | 27.06 | 19.68 | 46.74 | 56.00 | -9.26 | QP |
| 8 | | 2.2155 | 19.30 | 19.68 | 38.98 | 46.00 | -7.02 | AVG |
| 9 | | 8.0431 | 26.50 | 19.77 | 46.27 | 60.00 | -13.73 | QP |
| 10 | | 8.0431 | 18.73 | 19.77 | 38.50 | 50.00 | -11.50 | AVG |
| 11 | | 16.9126 | 27.59 | 20.02 | 47.61 | 60.00 | -12.39 | QP |
| 12 | | 16.9126 | 16.82 | 20.02 | 36.84 | 50.00 | -13.16 | AVG |

*Neutral*

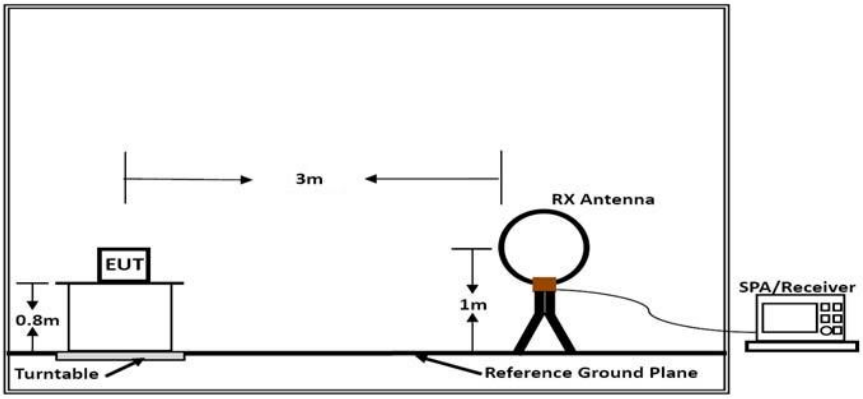



| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Margin | |
|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector |
| 1 | | 0.4066 | 30.11 | 19.63 | 49.74 | 57.72 | -7.98 | QP |
| 2 | | 0.4066 | 22.40 | 19.63 | 42.03 | 47.72 | -5.69 | AVG |
| 3 | | 0.6630 | 29.58 | 19.65 | 49.23 | 56.00 | -6.77 | QP |
| 4 | | 0.6630 | 15.28 | 19.65 | 34.93 | 46.00 | -11.07 | AVG |
| 5 | * | 0.7485 | 31.09 | 19.65 | 50.74 | 56.00 | -5.26 | QP |
| 6 | | 0.7485 | 16.99 | 19.65 | 36.64 | 46.00 | -9.36 | AVG |
| 7 | | 1.9275 | 27.14 | 19.68 | 46.82 | 56.00 | -9.18 | QP |
| 8 | | 1.9275 | 17.69 | 19.68 | 37.37 | 46.00 | -8.63 | AVG |
| 9 | | 2.7466 | 26.36 | 19.72 | 46.08 | 56.00 | -9.92 | QP |
| 10 | | 2.7466 | 17.58 | 19.72 | 37.30 | 46.00 | -8.70 | AVG |
| 11 | | 11.6926 | 27.96 | 19.84 | 47.80 | 60.00 | -12.20 | QP |
| 12 | | 11.6926 | 14.89 | 19.84 | 34.73 | 50.00 | -15.27 | AVG |

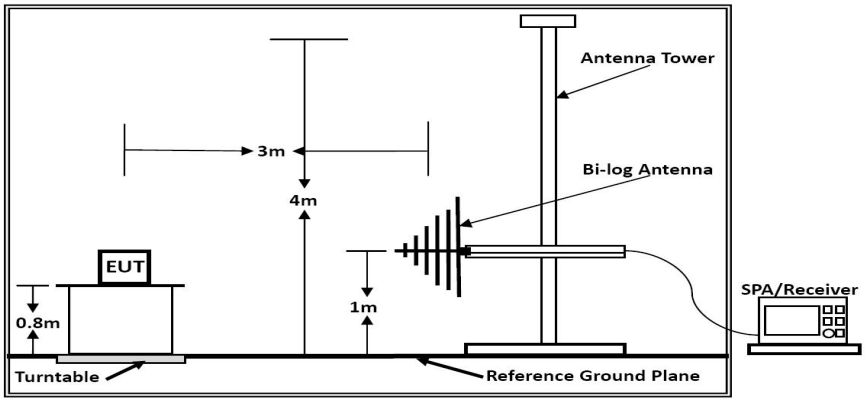
****Note: Pre-scan all modes and recorded the worst case results in this report.*
*Margin=Reading level + Correct - Limit*

# 7. RADIATED EMISSION MEASUREMENT

## 7.1. Block Diagram of Test Setup




Below 30MHz




Below 1GHz

## 7.2. Radiated Emission Limit

15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz | MHz | MHz | GHz |
|---|---|---|---|
| 0.090-0.110 | 16.42-16.423 | 399.9-410 | 4.5-5.15 |
| \1\ 0.495-0.505 | 16.69475-16.69525 | 608-614 | 5.35-5.46 |
| 2.1735-2.1905 | 16.80425-16.80475 | 960-1240 | 7.25-7.75 |
| 4.125-4.128 | 25.5-25.67 | 1300-1427 | 8.025-8.5 |
| 4.17725-4.17775 | 37.5-38.25 | 1435-1626 | 9.0-9.2 |
| 4.20725-4.20775 | 73-74.6 | 1645.5-1646.5 | 9.3-9.5 |
| 6.215-6.218 | 74.8-75.2 | 1660-1710 | 10.6-12.7 |
| 6.26775-6.26825 | 108-121.94 | 1718.8-1722.2 | 13.25-13.4 |
| 6.31175-6.31225 | 123-138 | 2200-2300 | 14.47-14.5 |
| 8.291-8.294 | 149.9-150.05 | 2310-2390 | 15.35-16.2 |
| 8.362-8.366 | 156.52475-156.52525 | 2483.5-2500 | 17.7-21.4 |
| 8.37625-8.38675 | 156.7-156.9 | 2690-2900 | 22.01-23.12 |
| 8.41425-8.41475 | 162.0125-167.17 | 3260-3267 | 23.6-24.0 |
| 12.29-12.293. | 167.72-173.2 | 3332-3339 | 31.2-31.8 |
| 12.51975-12.52025 | 240-285 | 3345.8-3358 | 36.43-36.5 |
| 12.57675-12.57725 | 322-335.4 | 3600-4400 | (\2\) |
| 13.36-13.41 | | | |

\1\ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

\2\ Above 38.6

According to §15.247 (d): 20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

| Frequencies (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 |

## 7.3. EUT Configuration on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

## 7.4. Operating Condition of EUT

(1) Setup the EUT as shown in Section 7.1.

## 7.5. Measuring Setting

The following table is the setting of spectrum analyzer and receiver.

| Receiver Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start ~ Stop Frequency | 9kHz~150kHz / RB 200Hz for QP/Average |
| Start ~ Stop Frequency | 150kHz~30MHz / RB 9kHz for QP/Average |
| Start ~ Stop Frequency | 30MHz~1000MHz / RB 100kHz for QP |

## 7.6. Test Procedure

**1) Sequence of testing 9 kHz to 30 MHz**

**Setup:**

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions.

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

**Premeasurement:**

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna height is 1.0 meter.

--- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

**Final measurement:**

--- Identified emissions during the premeasurement the software maximizes by rotating the turntable position (0° to 360°) and by rotating the elevation axes (0° to 360°).

--- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QPK detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

**2) Sequence of testing 30 MHz to 1 GHz**

**Setup:**

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

**Premeasurement:**

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna is polarized vertical and horizontal.

--- The antenna height changes from 1 to 3 meter.

--- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

**Final measurement:**

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position (± 45°) and antenna movement between 1 and 4 meter.

--- The final measurement will be done with QP detector with an EMI receiver.

--- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

## 7.7. Test Results

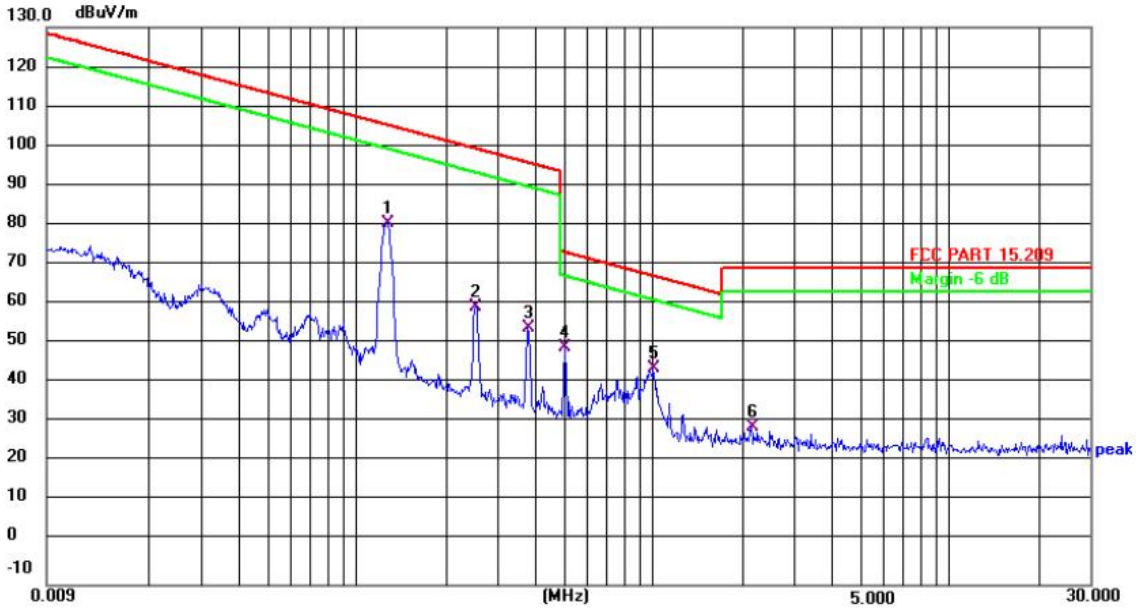
PASS.

*Only report the worst test data (Mode 1) in test report;*

*The test data please refer to following page:*

| | | | |
|---|---|---|---|
| Temperature | 23.8℃ | Humidity | 52.5% |
| Test Engineer | Nick Peng | Configurations | Transmit |

*0.009 MHz – 30 MHz*
*0 degree*




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 0.1266 | 90.22 | -9.48 | 80.74 | 105.49 | -24.75 | QP |
| 2 | 0.2524 | 68.99 | -9.00 | 59.99 | 99.53 | -39.54 | QP |
| 3 | 0.3786 | 63.37 | -8.76 | 54.61 | 96.03 | -41.42 | QP |
| 4 | 0.5070 | 58.25 | -8.51 | 49.74 | 73.50 | -23.76 | QP |
| 5 | 1.0023 | 51.66 | -7.25 | 44.41 | 67.58 | -23.17 | QP |
| 6 | 2.1487 | 34.90 | -5.07 | 29.83 | 69.54 | -39.71 | QP |

*Remark: 1). Measured at antenna position 0 degree and 90 degree, recorded worst case at 0 degree.*

*2). Margin=Reading level + Factor- Limit*

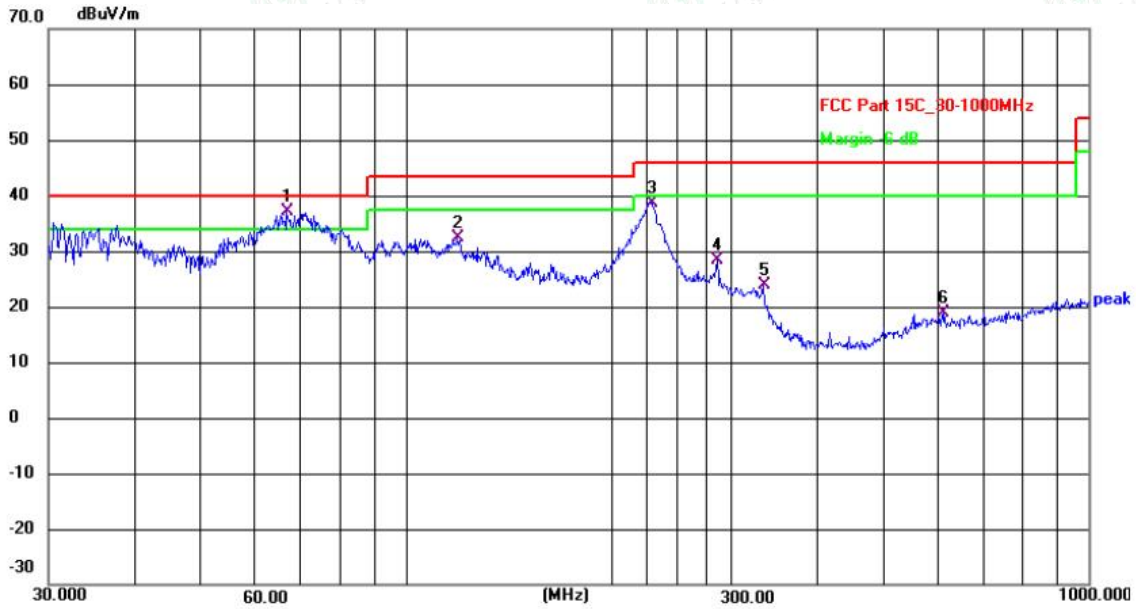
| Temperature | 23.8℃ | Humidity | 52.1% |
|---|---|---|---|
| Test Engineer | Nick Peng | Configurations | Transmit |

***Below 1GHz***

*Model: GS-FT02WC*
*Horizontal*

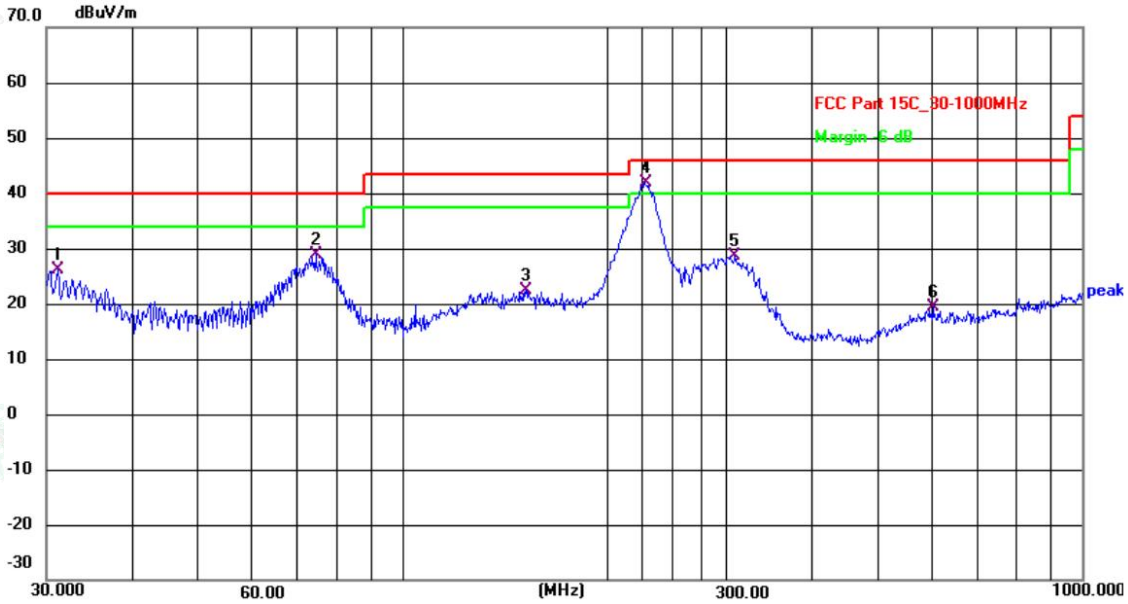
| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 40.9879 | 49.21 | -17.41 | 31.80 | 40.00 | -8.20 | QP |
| 2 | 67.9128 | 55.62 | -19.33 | 36.29 | 40.00 | -3.71 | QP |
| 3 | 117.3602 | 53.45 | -19.71 | 33.74 | 43.50 | -9.76 | QP |
| 4 | 227.6905 | 57.40 | -16.62 | 40.78 | 46.00 | -5.22 | QP |
| 5 | 271.3245 | 43.47 | -15.40 | 28.07 | 46.00 | -17.93 | QP |
| 6 | 601.4265 | 29.43 | -10.47 | 18.96 | 46.00 | -27.04 | QP |

*Vertical*



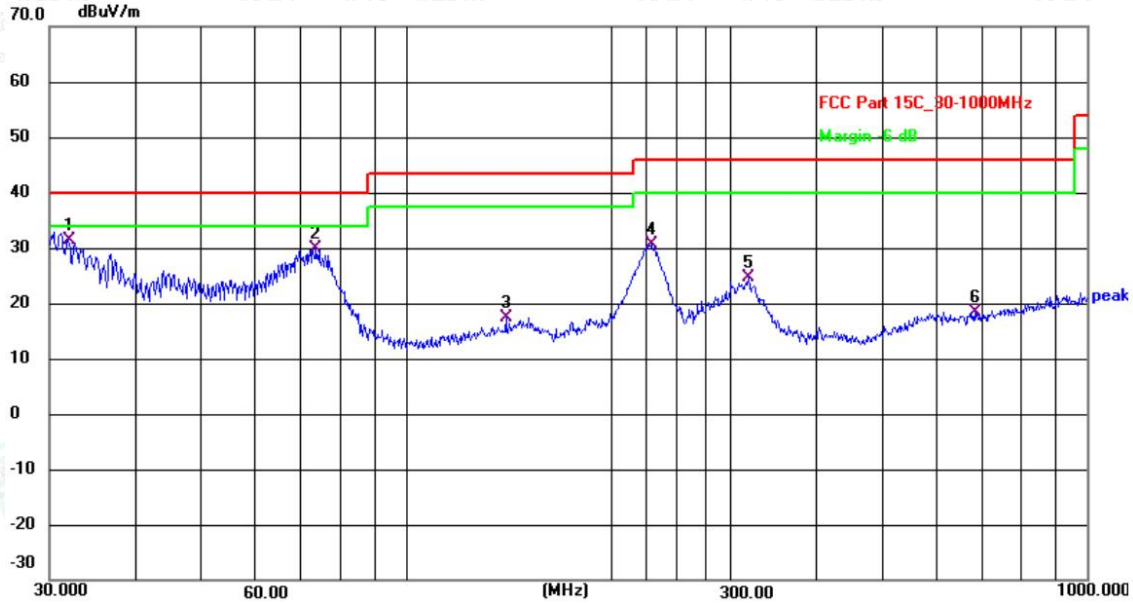

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 66.9669 | 56.42 | -19.29 | 37.13 | 40.00 | -2.87 | QP |
| 2 | 119.0179 | 52.18 | -19.85 | 32.33 | 43.50 | -11.17 | QP |
| 3 | 228.4904 | 55.34 | -16.59 | 38.75 | 46.00 | -7.25 | QP |
| 4 | 285.9777 | 43.97 | -15.48 | 28.49 | 46.00 | -17.51 | QP |
| 5 | 333.6867 | 38.31 | -14.43 | 23.88 | 46.00 | -22.12 | QP |
| 6 | 614.2142 | 29.63 | -10.80 | 18.83 | 46.00 | -27.17 | QP |

*Model: GS-FT02UW-4*
*Horizontal*



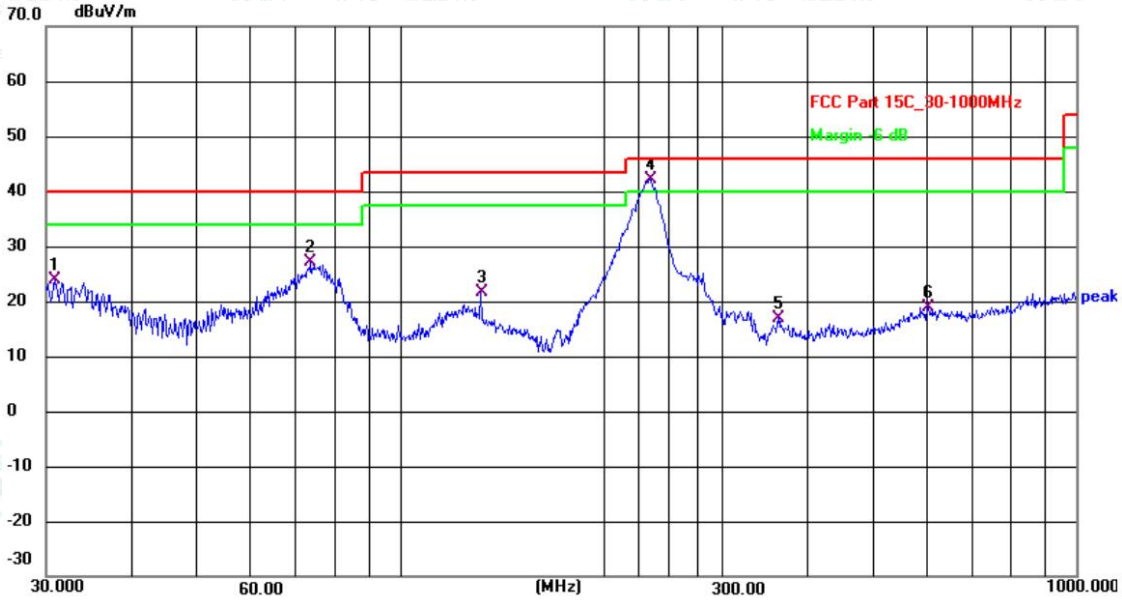

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 31.1797 | 44.33 | -18.30 | 26.03 | 40.00 | -13.97 | QP |
| 2 | 74.6568 | 48.65 | -19.66 | 28.99 | 40.00 | -11.01 | QP |
| 3 | 152.1297 | 42.26 | -19.80 | 22.46 | 43.50 | -21.04 | QP |
| 4 | 227.6906 | 58.54 | -16.62 | 41.92 | 46.00 | -4.08 | QP |
| 5 | 308.9125 | 43.69 | -15.12 | 28.57 | 46.00 | -17.43 | QP |
| 6 | 603.5391 | 29.90 | -10.52 | 19.38 | 46.00 | -26.62 | QP |

*Vertical*



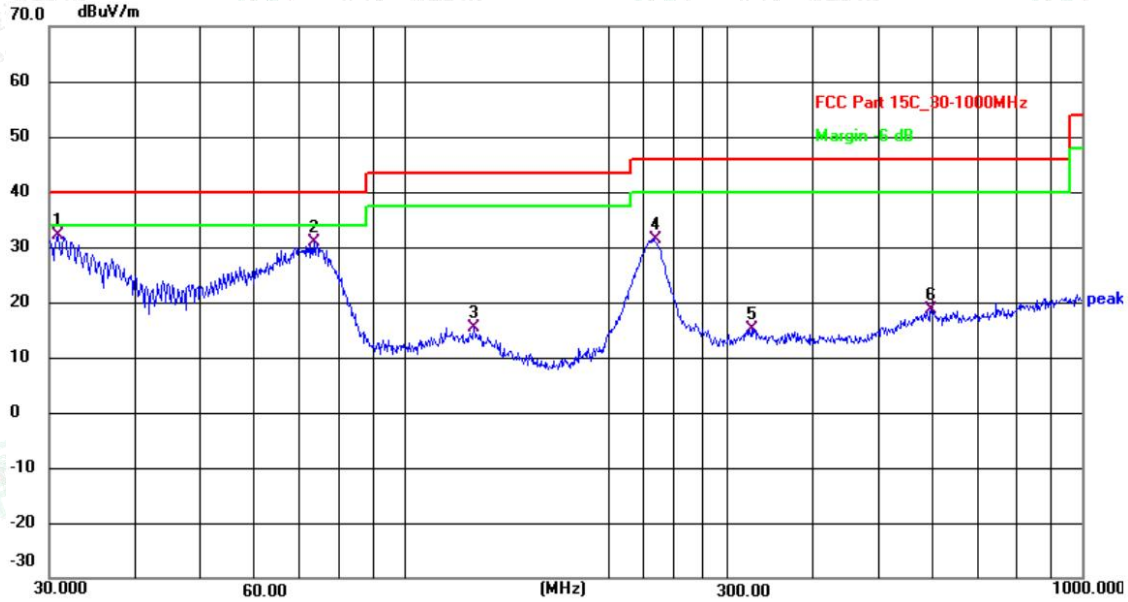

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 31.9545 | 49.51 | -18.20 | 31.31 | 40.00 | -8.69 | QP |
| 2 | 73.8756 | 49.54 | -19.63 | 29.91 | 40.00 | -10.09 | QP |
| 3 | 140.3420 | 38.32 | -20.86 | 17.46 | 43.50 | -26.04 | QP |
| 4 | 230.0985 | 47.16 | -16.52 | 30.64 | 46.00 | -15.36 | QP |
| 5 | 318.8170 | 39.21 | -14.54 | 24.67 | 46.00 | -21.33 | QP |
| 6 | 684.7453 | 29.41 | -11.01 | 18.40 | 46.00 | -27.60 | QP |

*Model: GS-FT02UW-2*
*Horizontal*




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 30.8534 | 42.34 | -18.34 | 24.00 | 40.00 | -16.00 | QP |
| 2 | 73.8756 | 46.80 | -19.63 | 27.17 | 40.00 | -12.83 | QP |
| 3 | 131.7576 | 42.18 | -20.63 | 21.55 | 43.50 | -21.95 | QP |
| 4 | 234.9909 | 58.42 | -16.29 | 42.13 | 46.00 | -3.87 | QP |
| 5 | 362.9843 | 31.69 | -14.80 | 16.89 | 46.00 | -29.11 | QP |
| 6 | 605.6592 | 29.49 | -10.59 | 18.90 | 46.00 | -27.10 | QP |

*Vertical*



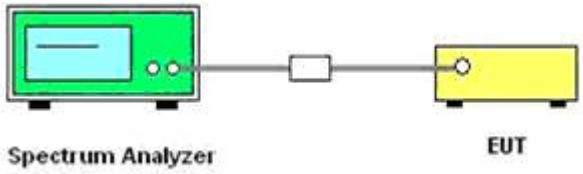

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 30.8535 | 50.47 | -18.34 | 32.13 | 40.00 | -7.87 | QP |
| 2 | 73.6170 | 50.48 | -19.61 | 30.87 | 40.00 | -9.13 | QP |
| 3 | 126.7723 | 35.72 | -20.37 | 15.35 | 43.50 | -28.15 | QP |
| 4 | 234.1684 | 47.82 | -16.33 | 31.49 | 46.00 | -14.51 | QP |
| 5 | 325.5958 | 29.42 | -14.21 | 15.21 | 46.00 | -30.79 | QP |
| 6 | 599.3212 | 29.04 | -10.44 | 18.60 | 46.00 | -27.40 | QP |

*1). Emission level (dBuV/m) = 20 log Emission level (uV/m).*

*2). Margin=Reading level + Factor- Limit.*

# 8. 20 DB BANDWIDTH MEASUREMENT

## 8.1. Block Diagram of Test Setup




## 8.2. Test Procedure

Use the following spectrum analyzer settings:

Span = 500Hz

RBW = 100Hz

VBW = 300Hz

Sweep = auto

Detector function = peak

Trace = max hold

The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s).

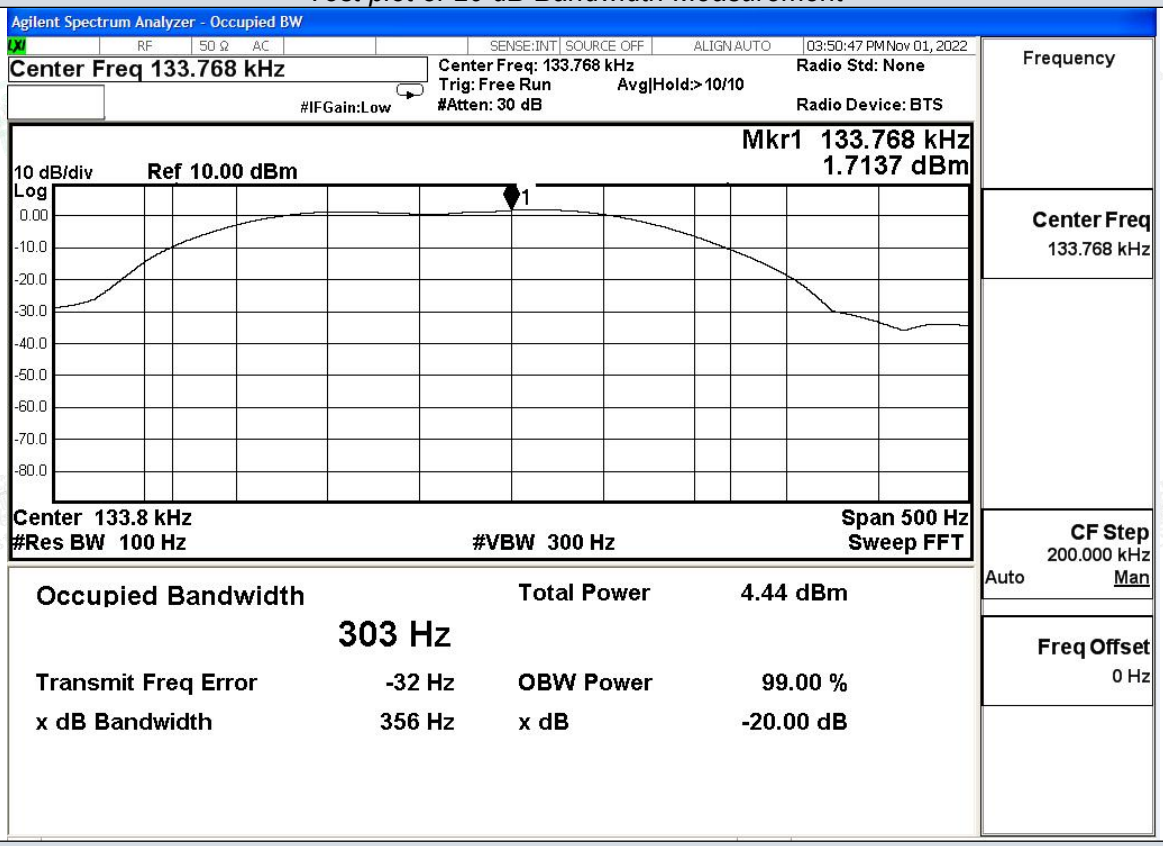
## 8.3. Test Results

| Test Result Of 20dB Bandwidth Measurement | | |
|---|---|---|
| Test Frequency (MHz) | 20dB Bandwidth (kHz) | Limit (kHz) |
| 0.134 | 0.356 | Non-Specified |

Result: Pass

Please refer to the following page for test plot.

*Test plot of 20 dB Bandwidth Measurement*




*0.134MHz*

# 9. PHOTOGRAPHS OF TEST SETUP

Please refer to separated files for Test Setup Photos of the EUT.

# 10. EXTERNAL PHOTOGRAPHS OF THE EUT

Please refer to separated files for External Photos of the EUT.

# 11. INTERNAL PHOTOGRAPHS OF THE EUT

Please refer to separated files for Internal Photos of the EUT.

----------THE END OF REPORT----------