



RADIO TEST REPORT

Report No.: SHATBL2202030W02

Applicant:
Wanbang Digital Energy Co., Ltd

Address:
No.39 Longhui Road, high and new technology industrial development
zones of Wujin, Changzhou, Jiangsu,China

Product Name : MiniArm
Brand Name : ZLG
Model Name : A6G2C-W128LI
Series Model : A6G2C-W256LI/A6G2C-W512LI
Test Standard : FCC Part15.247
RSS-247 Issue 2, February 2017
RSS-Gen Issue 5 ,March 2019
FCC ID : 2A4VDA6G2CW128LI

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TEST RESULT CERTIFICATION

Applicant's Name: Wanbang Digital Energy Co., Ltd
Address.....: No.39 Longhui Road, high and new technology industrial development zones of Wujin, Changzhou, Jiangsu,China
Manufacturer's Name.....: GUANGZHOU ZHIYUAN ELECTRONICS CO.,LTD
Address.....: ROOM 306, 3F, NO.43, SICHENG ROAD, SOFTWARE PARK,TIANHE DISTRICT, GUANGZHOU, GUANGDONG, CHINA

Product Description

Product Name.....: MiniArm
Brand Name.....: ZLG
Model Name: A6G2C-W128LI
Series Model.....: A6G2C-W256LI/A6G2C-W512LI
Test Standards: FCC Part15.247
RSS-247 Issue 2, February 2017
RSS-Gen Issue 5 ,March 2019
Test Procedure.....: ANSI C63.10-2013

This device described above has been tested by ATBL, the test results show that the equipment under test (EUT) is in compliance with the FCC/IC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test..... :
Date of receipt of test item: 23 Feb. 2022
Date (s) of performance of tests.....: 23 Feb. 2022 ~ 10 Mar. 2022
Date of Issue.....: 11 Mar. 2022
Test Result: **Pass**

Report Prepared by :



(Roean Wei)

Report Approved by :



(Ghost Li)

Authorized Signatory :



(Terry Yang)



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Revision History

| Rev. | Issue Date | Report No. | Effect Page | Contents |
|------|--------------|------------------|-------------|---------------|
| 00 | 11 Mar. 2022 | SHATBL2202030W02 | ALL | Initial Issue |
| | | | | |

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:
KDB 558074 D01 15.247 Meas Guidance v05r02.

| FCC Part 15.247,Subpart C | | | |
|-----------------------------|---|----------|--------|
| Standard Section | Test Item | Judgment | Remark |
| 15.207 | Conducted Emission | PASS | -- |
| 15.247 (a)(2) | 6dB&99% Bandwidth | PASS | -- |
| 15.247 (b)(3) | Output Power | PASS | -- |
| 15.247(d) & 15.209 & 15.205 | Radiated Spurious Emission | PASS | -- |
| §15.247(d) & 15.205 | Conducted Spurious & Band Edge Emission | PASS | -- |
| 15.247 (e) | Power Spectral Density | PASS | -- |
| 15.205 | Restricted bands of operation | PASS | -- |
| 15.203 | Antenna Requirement | PASS | -- |

NOTE:

- (1) 'N/A' denotes test is not applicable in this Test Report.
- (2) All tests are according to ANSI C63.10-2013.

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

| | | |
|-------------------------|--|--|
| Product Name | MiniArm | |
| Trade Name | ZLG | |
| Model Name | A6G2C-W128LI | |
| Series Model | A6G2C-W256LI/A6G2C-W512LI | |
| Model Difference | NAND flash and DDR have different capacities | |
| Product Description | The EUT is a MiniArm | |
| | Operation Frequency: | 802.11b/g/n 20: 2412~2462 MHz |
| | Modulation Type: | 802.11b(DSSS):CCK,DQPSK,DBPSK 802.11g(OFDM):BPSK,QPSK,16-QAM,64-QAM 802.11n(OFDM):BPSK,QPSK,16-QAM,64-QAM |
| | Bit Rate of Transmitter: | 802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6Mbps 802.11n(20MHz):MCS7/MCS6/MCS5/MCS4/MCS3/MCS2/MCS1/MCS0 |
| | Number of Channel: | 802.11b/g/n20: 11CH |
| | Antenna Designation: | Please refer to the Note 3. |
| | Antenna Gain (dBi): | 2 dBi |
| | Duty Cycle: | >95% |
| | Channel List | Please refer to the Note 2. |
| Power Rating | AC120V,50/60Hz | |
| Adapter | None | |
| Hardware version number | 1.01 | |
| Software version number | 1.01 | |
| Connecting I/O Port(s) | Please refer to the Note 1. | |

Note:

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

2.

| Operation Frequency of channel | |
|--------------------------------|-----------|
| 802.11b/g/n(20MHz) | |
| Channel | Frequency |
| 01 | 2412 |
| 02 | 2417 |
| 03 | 2422 |
| 04 | 2427 |
| 05 | 2432 |
| 06 | 2437 |
| 07 | 2442 |
| 08 | 2447 |
| 09 | 2452 |
| 10 | 2457 |
| 11 | 2462 |

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Carrier Frequency Channel

2.4GHz Test Frequency:

| For 802.11b/g/n (HT20) | |
|------------------------|------------|
| Channel | Freq.(MHz) |
| 01 | 2412 |
| 06 | 2437 |
| 11 | 2462 |

3.

| Ant. | Brand | Model Name | Antenna Type | Connector | Gain (dBi) | Note |
|------|-------|---------------|----------------|-----------|------------|----------|
| 1 | ZLG | A6G2C-W128L I | Sucker antenna | N/A | 2 dBi | WLAN ANT |

2.2 DESCRIPTION OF THE TEST MODES

Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

| Worst Mode | Description | Data Rate |
|------------|---------------------------|-----------|
| Mode 1 | TX IEEE 802.11b CH1 | 1 Mbps |
| Mode 2 | TX IEEE 802.11b CH6 | 1 Mbps |
| Mode 3 | TX IEEE 802.11 b CH11 | 1 Mbps |
| Mode 4 | TX IEEE 802.11g CH1 | 6 Mbps |
| Mode 5 | TX IEEE 802.11g CH6 | 6 Mbps |
| Mode 6 | TX IEEE 802.11g CH11 | 6 Mbps |
| Mode 7 | TX IEEE 802.11n HT20 CH1 | MCS 0 |
| Mode 8 | TX IEEE 802.11n HT20 CH6 | MCS 0 |
| Mode 9 | TX IEEE 802.11n HT20 CH11 | MCS 0 |

Note:

- (1) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported.
- (2) We have be tested for all avaiable U.S. voltage and frequencies(For 120V,50/60Hz and 240V, 50/60Hz) for which the device is capable of operation, and the worst case of 120V /60Hz is shown in the report.

Conducted Emission

| Test Case | |
|--------------------|-------------------------|
| Conducted Emission | Mode13: Keeping WIFI TX |

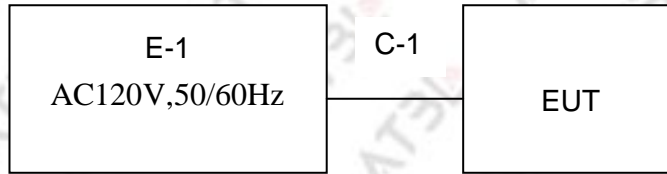
2.3 TEST SOFTWARE AND POWER LEVEL

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level.

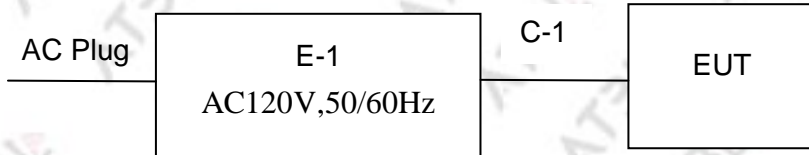
| RF Function | Type | Mode Or Modulation type | Ant Gain(dBi) | Power Class | Software For Testing |
|-------------|-----------|-------------------------|---------------|-------------|----------------------|
| WIFI(2.4G) | 2.4G WIFI | 802.11b | 2 | 0 | putty-tray |
| | | 802.11g | | 0 | |
| | | 802.11n(HT20) | | 0 | |

2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiation Test Set



Conduction Test Set



2.5 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Necessary accessories

| Item | Equipment | Mfr/Brand | Model/Type No. | Length | Note |
|------|-----------|-----------|----------------|--------|------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Support units

| Item | Equipment | Mfr/Brand | Model/Type No. | Type No. | Note |
|------|-----------|-----------|-----------------|-------------------------|------|
| E-2 | Notebook | Lenovo | DESKTOP-USDEO09 | 00326-10000-00000-AA636 | N/A |
| C-1 | USB Cable | N/A | 100cm | N/A | N/A |
| | | | | | |
| | | | | | |

Note:

(1) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

2.6 LABORATORY INFORMATION

| | |
|------------------------------------|--|
| Company Name: | Shanghai ATBL Technology Co., Ltd. |
| Address: | Building 8, No. 160, Basheng Road, Waigaoqiao Free Trade Zone, Pudong New Area, Shanghai |
| Telephone: | +86(0)21-51298625 |
| The FCC Registration Number (FRN): | 0031025281 |
| A2LA Number: | 6184.01 |
| CNAS Number: | CNAS L14531 |

2.7 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

| No. | Item | Uncertainty |
|-----|------------------------------------|----------------------|
| 1 | RF output power, conducted | $\pm 0.962\text{dB}$ |
| 2 | Conducted spurious emissions | $\pm 2.986\text{dB}$ |
| 3 | All emissions, radiated 30MHz-1GHz | $\pm 2.49\text{dB}$ |
| 4 | All emissions, radiated 1GHz-18GHz | $\pm 3.50\text{dB}$ |
| 5 | Occupied bandwidth | $\pm 2.336\text{dB}$ |
| 6 | Power spectral density | $\pm 0.866\text{dB}$ |

2.8 EQUIPMENTS LIST

2.8.1 Radiation Test equipment

| Kind of Equipment | Manufacturer | Type No. | Serial No. | Management number | Calibrated until |
|------------------------------|--------------|---------------------|----------------------|-------------------|------------------|
| Test Receiver | R&S | ESCI | 100469 | SHATBL-E003 | 2022.07.13 |
| Spectrum Analyzer | Agilent | N9020A | MY50200811 | SHATBL-E017 | 2022.07.13 |
| Bilog Antenna | SCHWARZBECK | VLUB 9168 | 01174 | SHATBL-E008 | 2023.09.27 |
| Horn Antenna | SCHWARZBECK | BBHA 9120D | 02014 | SHATBL-E009 | 2023.09.27 |
| Pre-Amplifier (0.1M-3GHz) | JPT | JPA-10M1G35 | 2101010003500 1 | SHATBL-E005 | 2022.10.07 |
| Pre-Amplifier (1G-18GHz) | JPT | JPA0118-55-30 3A | 1910001800055 000 | SHATBL-E006 | 2022.07.13 |
| Temperature & Humidity | DeLi | DeLi | N/A | SHATBL-E016 | 2022.10.08 |
| Antenna/Turntable Controller | Brilliant | N/A | N/A | SHATBL-E007 | N/A |
| Test SW | FALA | EMC-RI(Ver.4A2) | | SHATBL-E046 | N/A |

2.8.2 Conduction Test equipment

| Kind of Equipment | Manufacturer | Type No. | Serial No. | Management number | Calibration date |
|------------------------|--------------|--------------------------|------------|-------------------|------------------|
| Test Receiver | R&S | ESPI | 101679 | SHATBL-E012 | 2022.07.13 |
| LISN | R&S | ENV216 | 101300 | SHATBL-E013 | 2022.07.13 |
| LISN | R&S | ENV216 | 100333 | SHATBL-E041 | 2022.03.08 |
| Temperature & Humidity | DeLi | DeLi | N/A | SHATBL-E015 | 2022.10.07 |
| Test SW | FALA | EZ-EMC(Ver.EMC-CON3A1.1) | | SHATBL-E044 | N/A |

2.8.3 RF Connected Test

| Kind of Equipment | Manufacturer | Type No. | Serial No. | equipment number | Calibrated until |
|---------------------------------------|--------------------|------------------------|------------|------------------|------------------|
| Power meter (with pulse power sensor) | Anritsu | ML2496A | 1935001 | SHATBL-W030 | 2022.10.26 |
| Pulse power sensor (with power meter) | Anritsu | MA2411B | 1911006 | SHATBL-W031 | 2022.10.26 |
| Signal Analyzer | Agilent | N9020A | MY57300196 | SHATBL-W004 | 2022.10.07 |
| Signal Generator | Agilent | N5182B | MY46240556 | SHATBL-W005 | 2022.10.07 |
| Wireless Communications Test Set | R&S | CMW500 | 101331 | SHATBL-W007 | 2022.10.07 |
| Temperature & Humidity | Deli | deli | N/A | SHATBL-W011 | 2022.10.07 |
| Attenuator | Agilent | 8494B | DC-18G | SHATBL-W009 | 2022.10.07 |
| Attenuator | Agilent | 8496B | DC-18G | SHATBL-W010 | 2022.10.07 |
| power splitter | MNK | MPD-DC/6-2 S | 62315 G51 | SHATBL-W015 | 2022.10.07 |
| | | | 62315 G52 | SHATBL-W016 | 2022.10.07 |
| Filter | Chengdu kangmaiwei | ZBSF-C2400 -2483.5-T3 | N/A | SHATBL-W021 | N/A |
| Constant temperature and humidity box | KSON | THS-B6C-150 | 6159K | SHATBL-W019 | 2023.01.17 |
| Test SW | FALA | LZ-RF(Ver.LzRF-03A3.1) | | SHATBL-W020 | N/A |

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION LIMITS

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 the limits in the following table.

| FREQUENCY (MHz) | Conducted Emissionlimit (dBuV) | |
|-----------------|--------------------------------|-----------|
| | Quasi-peak | Average |
| 0.15 -0.5 | 66 - 56 * | 56 - 46 * |
| 0.50 -5.0 | 56.00 | 46.00 |
| 5.0 -30.0 | 60.00 | 50.00 |

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of “ * ” marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

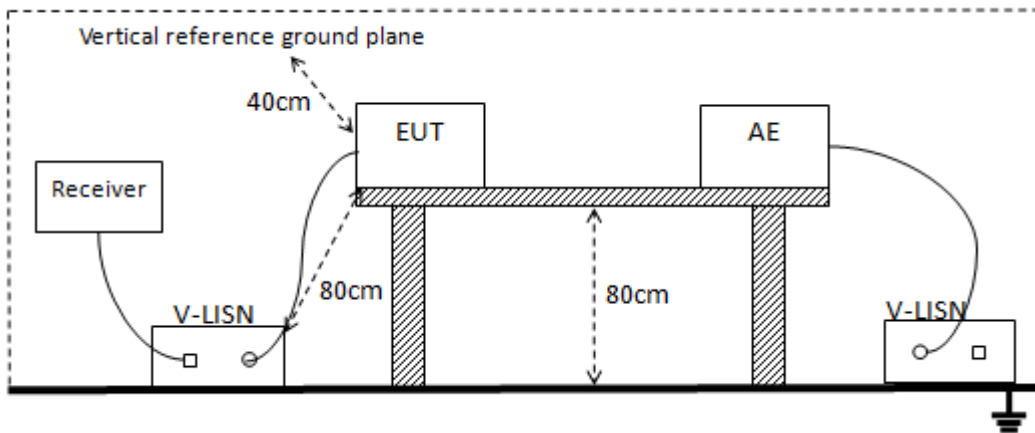
The following table is the setting of the receiver

| Receiver Parameters | Setting |
|---------------------|----------|
| Attenuation | 10 dB |
| Start Frequency | 0.15 MHz |
| Stop Frequency | 30 MHz |
| IF Bandwidth | 9 kHz |

3.1.2 TEST PROCEDURE

- a. The EUT is 0.8 m from the horizontal ground plane and 0.4 m from the vertical ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments are powered from additional LISN(s). The LISN provides 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN is at least 80 cm from the nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 TEST SETUP



3.1.4 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

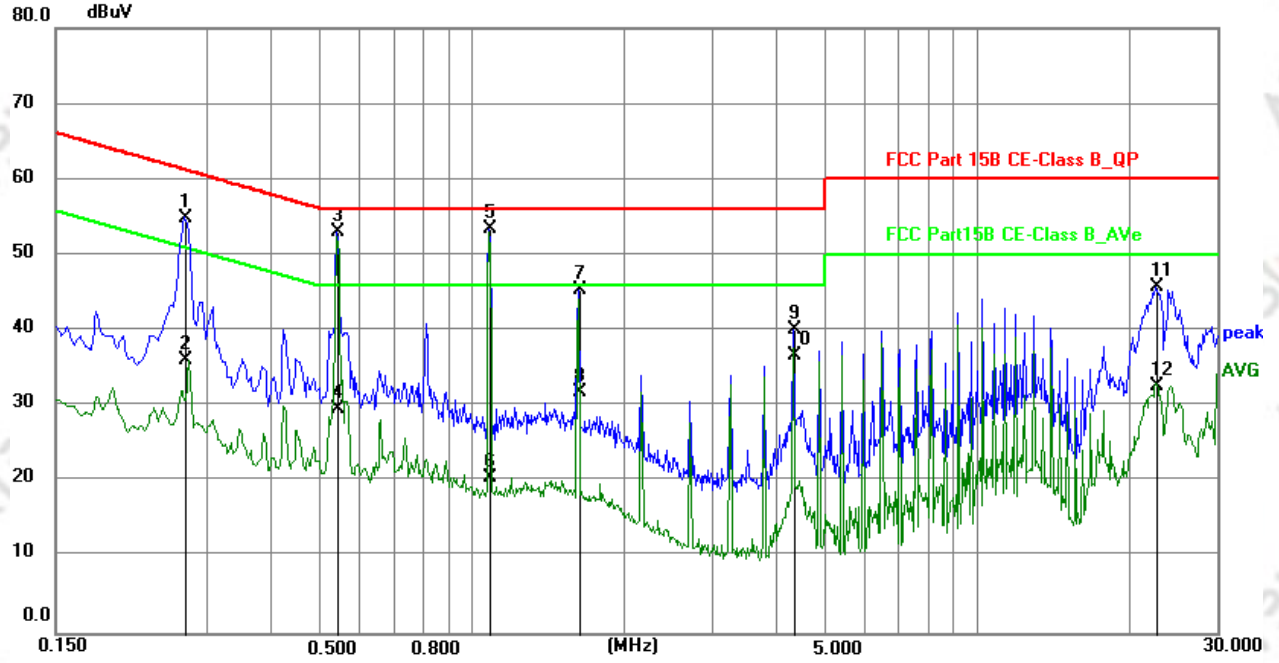
3.1.5 TEST RESULT

| | | | |
|---------------|--------------|--------------------|-------|
| Temperature: | 26.2°C | Relative Humidity: | 53%RH |
| Test Voltage: | AC 120V/60Hz | Phase: | L |
| Test Mode: | Mode 4 | | |

| No. | Frequency (MHz) | Reading (dBuV) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|----------------|----------------|-----------------|----------------|-------------|--------|
| 1 | 0.2714 | 44.93 | 10.08 | 55.01 | 61.07 | -6.06 | QP |
| 2 | 0.2714 | 26.02 | 10.08 | 36.10 | 51.07 | -14.97 | AVG |
| 3 | 0.5413 | 42.98 | 10.04 | 53.02 | 56.00 | -2.98 | QP |
| 4 | 0.5413 | 19.61 | 10.04 | 29.65 | 46.00 | -16.35 | AVG |
| 5 | 1.0859 | 43.62 | 9.94 | 53.56 | 56.00 | -2.44 | QP |
| 6 | 1.0859 | 10.66 | 9.94 | 20.60 | 46.00 | -25.40 | AVG |
| 7 | 1.6304 | 35.57 | 9.96 | 45.53 | 56.00 | -10.47 | QP |
| 8 | 1.6304 | 22.06 | 9.96 | 32.02 | 46.00 | -13.98 | AVG |
| 9 | 4.3482 | 30.10 | 10.06 | 40.16 | 56.00 | -15.84 | QP |
| 10 | 4.3482 | 26.62 | 10.06 | 36.68 | 46.00 | -9.32 | AVG |
| 11 | 22.6950 | 34.80 | 10.97 | 45.77 | 60.00 | -14.23 | QP |
| 12 | 22.6950 | 21.82 | 10.97 | 32.79 | 50.00 | -17.21 | AVG |

Remark:

1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result = Reading + Factor) – Limit.
3. Factor = LISN factor + Cable loss + Limiter (10dB)

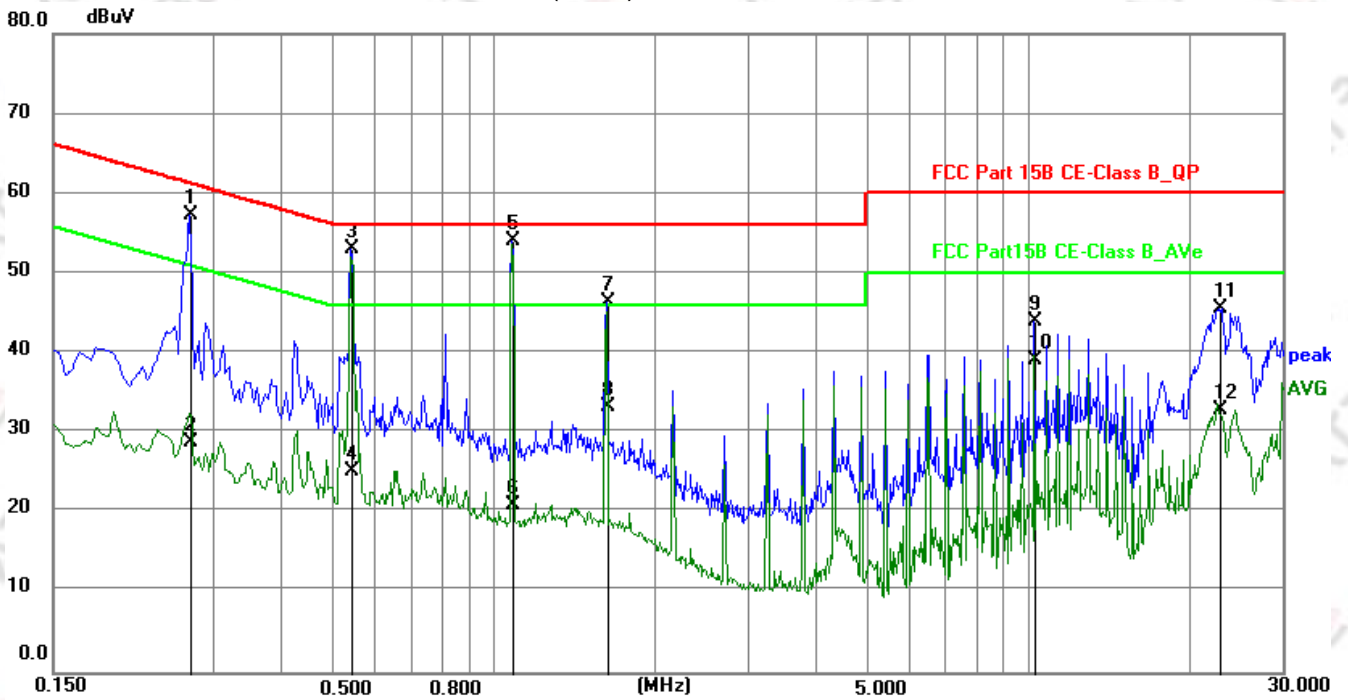


| | | | |
|---------------|--------------|--------------------|-------|
| Temperature: | 26.2°C | Relative Humidity: | 53%RH |
| Test Voltage: | AC 120V/60Hz | Phase: | N |
| Test Mode: | Mode 4 | | |

| No. | Frequency (MHz) | Reading (dBuV) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|----------------|----------------|-----------------|----------------|-------------|--------|
| 1 | 0.2714 | 47.05 | 10.34 | 57.39 | 61.07 | -3.68 | QP |
| 2 | 0.2714 | 18.58 | 10.34 | 28.92 | 51.07 | -22.15 | AVG |
| 3 | 0.5414 | 42.87 | 10.18 | 53.05 | 56.00 | -2.95 | QP |
| 4 | 0.5414 | 15.10 | 10.18 | 25.28 | 46.00 | -20.72 | AVG |
| 5 | 1.0859 | 43.99 | 10.15 | 54.14 | 56.00 | -1.86 | QP |
| 6 | 1.0859 | 10.95 | 10.15 | 21.10 | 46.00 | -24.90 | AVG |
| 7 | 1.6304 | 36.32 | 10.19 | 46.51 | 56.00 | -9.49 | QP |
| 8 | 1.6304 | 23.13 | 10.19 | 33.32 | 46.00 | -12.68 | AVG |
| 9 | 10.3245 | 33.94 | 10.15 | 44.09 | 60.00 | -15.91 | QP |
| 10 | 10.3245 | 29.12 | 10.15 | 39.27 | 50.00 | -10.73 | AVG |
| 11 | 22.8389 | 34.93 | 10.76 | 45.69 | 60.00 | -14.31 | QP |
| 12 | 22.8389 | 22.21 | 10.76 | 32.97 | 50.00 | -17.03 | AVG |

Remark:

1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result =Reading + Factor)–Limit.
3. Factor=LISN factor+Cable loss+Limiter (10dB)



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS

In any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the Restricted band specified on Part15.205(a)&209(a) limit in the table and according to ANSI C63.10-2013 below has to be followed.

LIMITS OF RADIATED EMISSION MEASUREMENT (Frequency Range 9kHz-1000MHz)

| Frequencies (MHz) | Field Strength (micovolts/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 |

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

| FREQUENCY (MHz) | (dBuV/m) (at 3M) | |
|-----------------|------------------|---------|
| | PEAK | AVERAGE |
| Above 1000 | 74 | 54 |

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

LIMITS OF RESTRICTED FREQUENCY BANDS

FCC:

| FREQUENCY (MHz) | FREQUENCY (MHz) | FREQUENCY (MHz) | FREQUENCY (GHz) |
|-------------------|---------------------|-----------------|-----------------|
| 0.090-0.110 | 16.42-16.423 | 399.9-410 | 4.5-5.15 |
| 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 | 1435-1626.5 | 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 | Above 38.6 |
| 13.36-13.41 | | | |

For Radiated Emission

| Spectrum Parameter | Setting |
|---------------------------------------|---|
| Attenuation | Auto |
| Detector | Peak/QP/AV |
| Start Frequency | 9 KHz/150KHz(Peak/QP/AV) |
| Stop Frequency | 150KHz/30MHz(Peak/QP/AV) |
| RB / VB (emission in restricted band) | 200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz); 200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz) |

| Spectrum Parameter | Setting |
|---------------------------------------|--------------------|
| Attenuation | Auto |
| Detector | Peak/QP |
| Start Frequency | 30 MHz(Peak/QP) |
| Stop Frequency | 1000 MHz (Peak/QP) |
| RB / VB (emission in restricted band) | 120 KHz / 300 KHz |

| Spectrum Parameter | Setting |
|---------------------------------------|---|
| Attenuation | Auto |
| Detector | Peak/AV |
| Start Frequency | 1000 MHz(Peak/AV) |
| Stop Frequency | 10th carrier hamonic(Peak/AV) |
| RB / VB (emission in restricted band) | 1 MHz / 3 MHz(Peak) 1 MHz/1/T MHz(AVG) |

For Restricted band

| Spectrum Parameter | Setting |
|----------------------|--|
| Detector | Peak/AV |
| Start/Stop Frequency | Lower Band Edge: 2310 to 2430 MHz Upper Band Edge: 2445 to 2500 MHz |
| RB / VB | 1 MHz / 3 MHz(Peak) 1 MHz/1/T MHz(AVG) |

| Receiver Parameter | Setting |
|------------------------|--------------------------------------|
| Start ~ Stop Frequency | 9kHz~90kHz / RB 200Hz for PK & AV |
| Start ~ Stop Frequency | 90kHz~110kHz / RB 200Hz for QP |
| Start ~ Stop Frequency | 110kHz~490kHz / RB 200Hz for PK & AV |
| Start ~ Stop Frequency | 490kHz~30MHz / RB 9kHz for QP |
| Start ~ Stop Frequency | 30MHz~1000MHz / RB 120kHz for QP |

3.2.2 TEST PROCEDURE

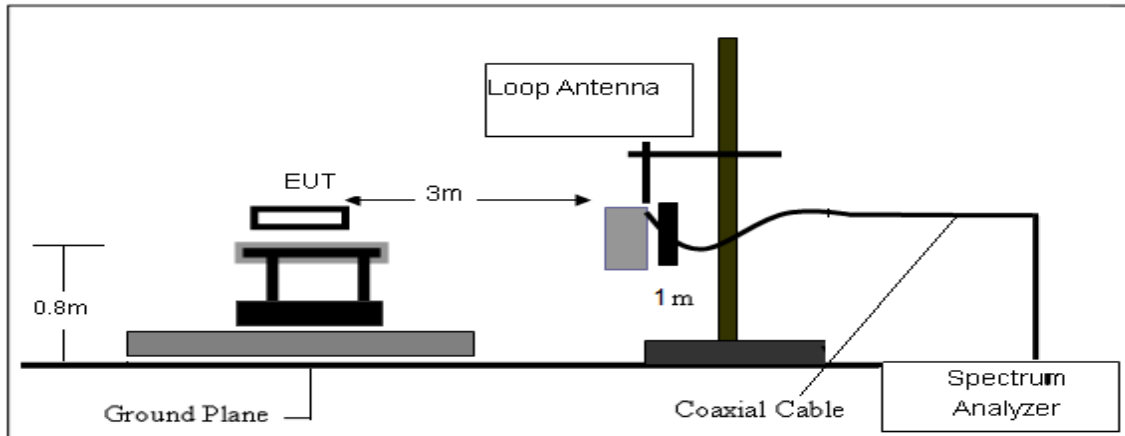
- a. The measuring distance at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz, and above 1GHz.
- b. The EUT was placed on the top of a rotating table 0.8 m (above 1GHz is 1.5 m) above the ground at a 3 m anechoic chamber test site. The table was rotated 360 degree to determine the position of the highest radiation.
- c. The height of the equipment shall be 0.8 m (above 1GHz is 1.5 m); the height of the test antenna shall vary between 1 m to 4 m. Horizontal and vertical polarization of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and QuasiPeak detector mode will be re-measured.
- e. If the Peak Mode measured value is compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and no additional QP Mode measurement was performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

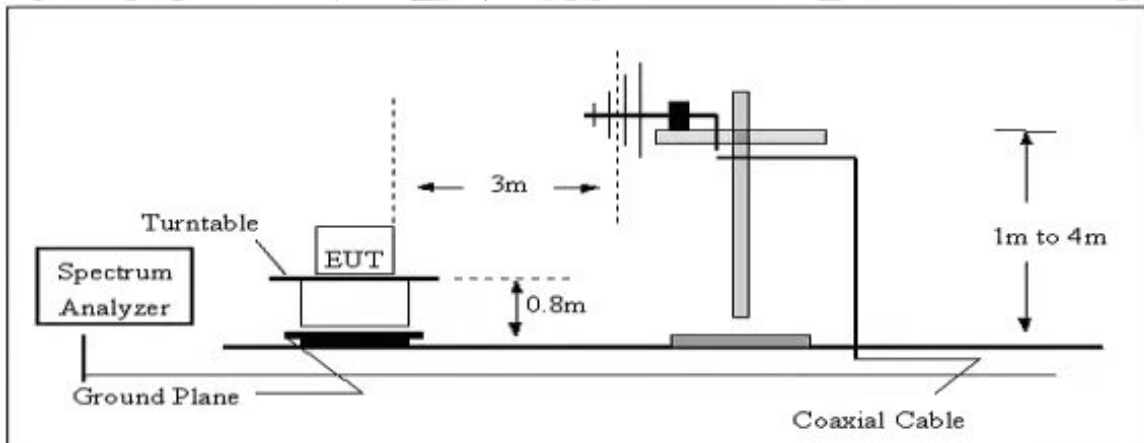
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

3.2.3 TEST SETUP

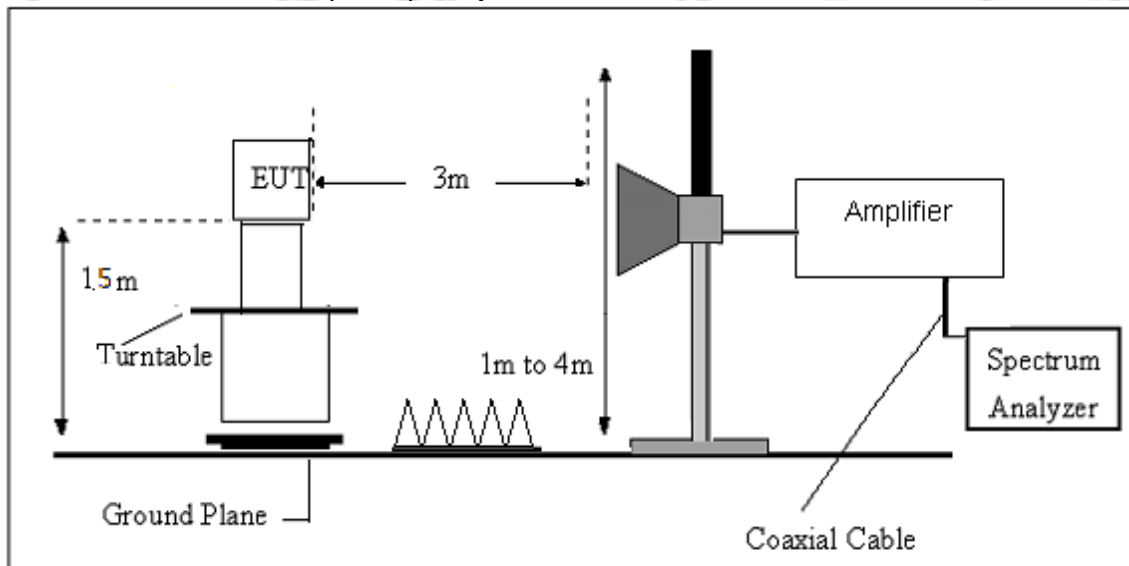
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz



3.2.4 EUT OPERATING CONDITIONS

Please refer to section 3.1.4 of this report.

3.2.5 FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where

FS = Field Strength

CL = Cable Attenuation Factor (Cable Loss)

RA = Reading Amplitude

AG = Amplifier Gain

AF = Antenna Factor

For example

| Frequency (MHz) | FS (dB μ V/m) | RA (dB μ V/m) | AF (dB) | CL (dB) | AG (dB) | Factor (dB) |
|--------------------|----------------------|----------------------|------------|------------|------------|----------------|
| 300 | 40 | 58.1 | 12.2 | 1.6 | 31.9 | -18.1 |

$$\text{Factor} = \text{AF} + \text{CL} - \text{AG}$$

3.2.6 TEST RESULTS(RADIATED SPURIOUS EMISSIONS)

| | | | |
|---------------|---------|--------------------|-------|
| Temperature: | 23.0℃ | Relative Humidity: | 59%RH |
| Test Voltage: | AC120V | Polarization: | -- |
| Test Mode: | TX Mode | | |

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =40 log (specific distance/test distance)(dB);

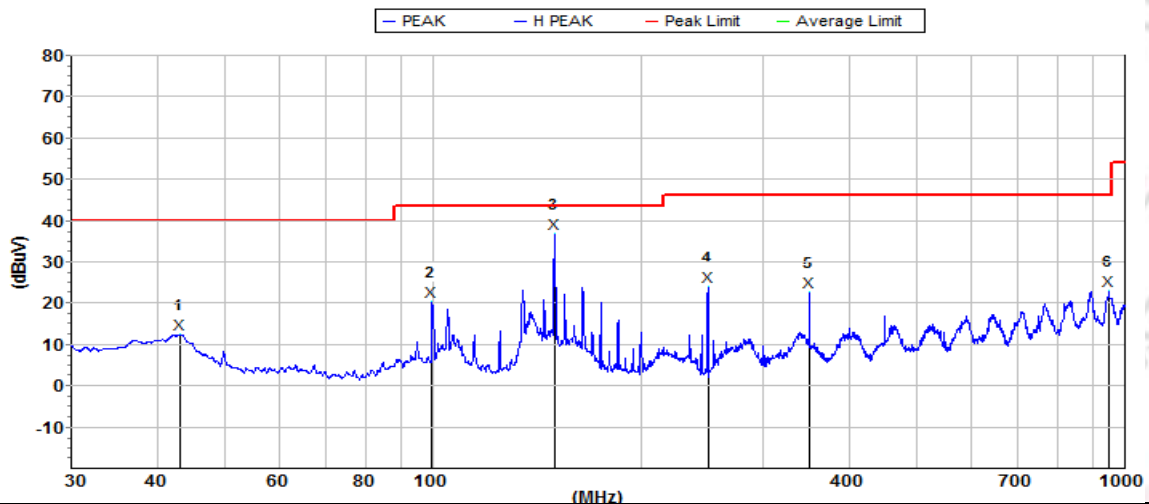
Limit line = specific limits(dBuv) + distance extrapolation factor.

30MHz - 18000MHz

| | | | |
|---------------|--|--------------------|------------|
| Temperature: | 23.0℃ | Relative Humidity: | 59%RH |
| Test Voltage: | AC120V | Phase: | Horizontal |
| Test Mode: | Mode 1/3/4/6/7/9 (Mode 4/6 worst mode) | | |

30MHz~1GHz

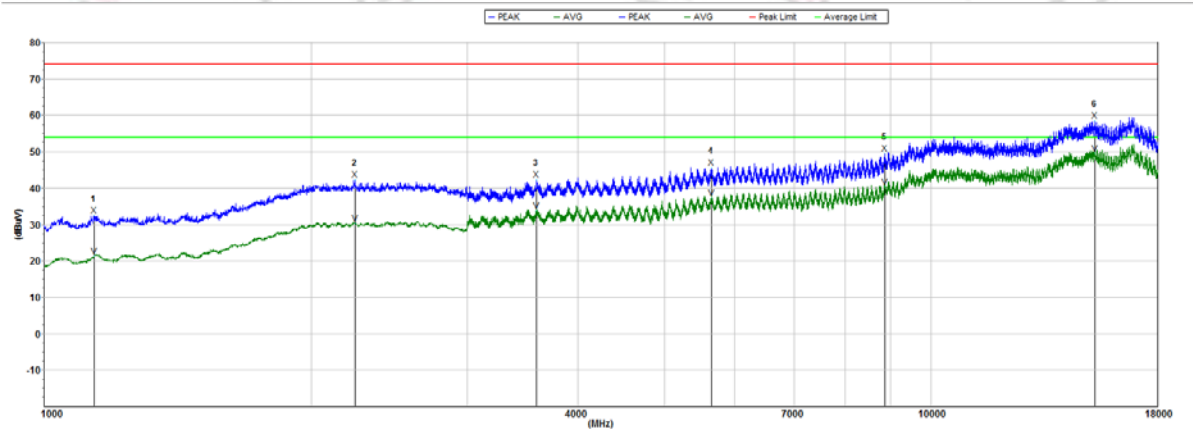
Mode 4 Horizontal



| Mk. | Freq.(MHz) | Level(dBuV/m) | Limit(dBuV/m) | Margin(dB) | Ant.F/G.(dB/m) | Amp.G.(dB) | Pol. |
|-------|------------|---------------|---------------|------------|----------------|------------|------|
| Peak: | | | | | | | |
| 1 | 43.050457 | 12.5 | 40.0 | 27.5 | 13.9 | 32.5 | H |
| 2 | 99.702770 | 20.5 | 43.5 | 23.0 | 10.1 | 32.9 | H |
| 3 | 149.748044 | 36.9 | 43.5 | 6.6 | 14.1 | 32.9 | H |
| 4 | 249.862716 | 24.0 | 46.0 | 22.0 | 11.6 | 32.8 | H |
| 5 | 349.862839 | 22.8 | 46.0 | 23.2 | 13.4 | 32.5 | H |
| 6 | 948.760988 | 23.1 | 46.0 | 22.9 | 20.3 | 31.3 | H |

1GHz~18GHz

Mode 4 Horizontal

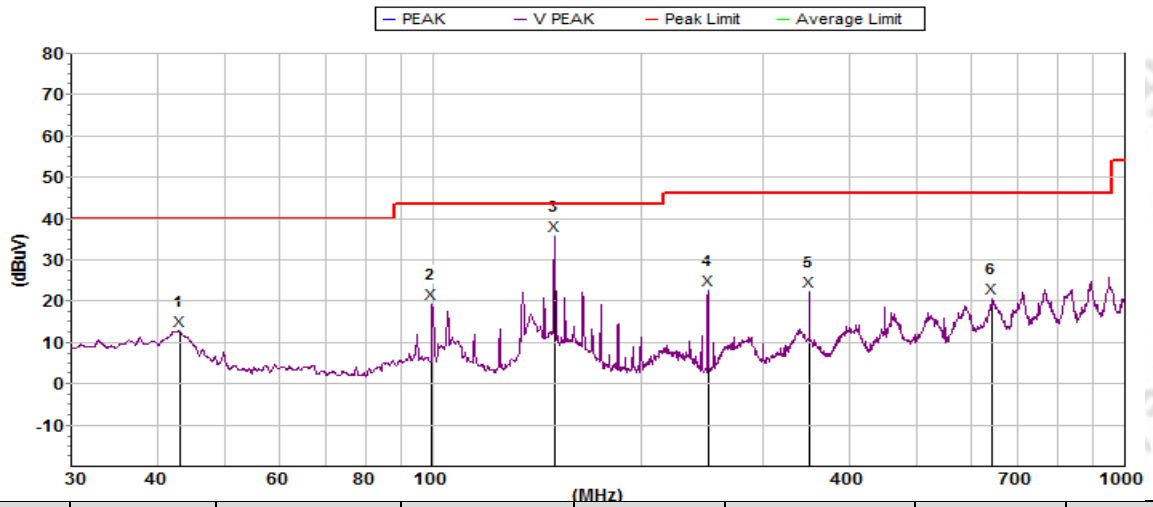


| Mk. | Freq.(MHz) | Level(dBuV/m) | Limit(dBuV/m) | Margin(dB) | Ant.F/G.(dB/m) | Amp.G.(dB) | Pol. |
|-------|--------------|---------------|---------------|------------|----------------|------------|------|
| Peak: | | | | | | | |
| 1 | 1138.000000 | 32.5 | 74.0 | 41.5 | 20.7 | 57.3 | H |
| 2 | 2243.000000 | 42.3 | 74.0 | 31.7 | 22.5 | 50.1 | H |
| 3 | 3591.000000 | 42.4 | 74.0 | 31.6 | 24.2 | 50.4 | H |
| 4 | 5649.750000 | 45.7 | 74.0 | 28.3 | 25.0 | 49.0 | H |
| 5 | 8861.250000 | 49.6 | 74.0 | 24.4 | 26.8 | 48.6 | H |
| 6 | 15281.250000 | 58.5 | 74.0 | 15.5 | 30.5 | 47.3 | H |
| Avg | | | | | | | |
| 1 | 1138.000000 | 21.3 | 54.0 | 32.7 | 20.7 | 57.3 | H |
| 2 | 2243.000000 | 30.3 | 54.0 | 23.7 | 22.5 | 50.1 | H |
| 3 | 3591.000000 | 33.9 | 54.0 | 20.1 | 24.2 | 50.4 | H |
| 4 | 5649.750000 | 37.4 | 54.0 | 16.6 | 25.0 | 49.0 | H |
| 5 | 8861.250000 | 40.3 | 54.0 | 13.7 | 26.8 | 48.6 | H |
| 6 | 15281.250000 | 49.5 | 54.0 | 4.5 | 30.5 | 47.3 | H |

| | | | |
|---------------|--|--------------------|----------|
| Temperature: | 23.0°C | Relative Humidity: | 59%RH |
| Test Voltage: | AC120V | Phase: | Vertical |
| Test Mode: | Mode 1/3/4/6/7/9 (Mode 4/6 worst mode) | | |

30MHz~1GHz

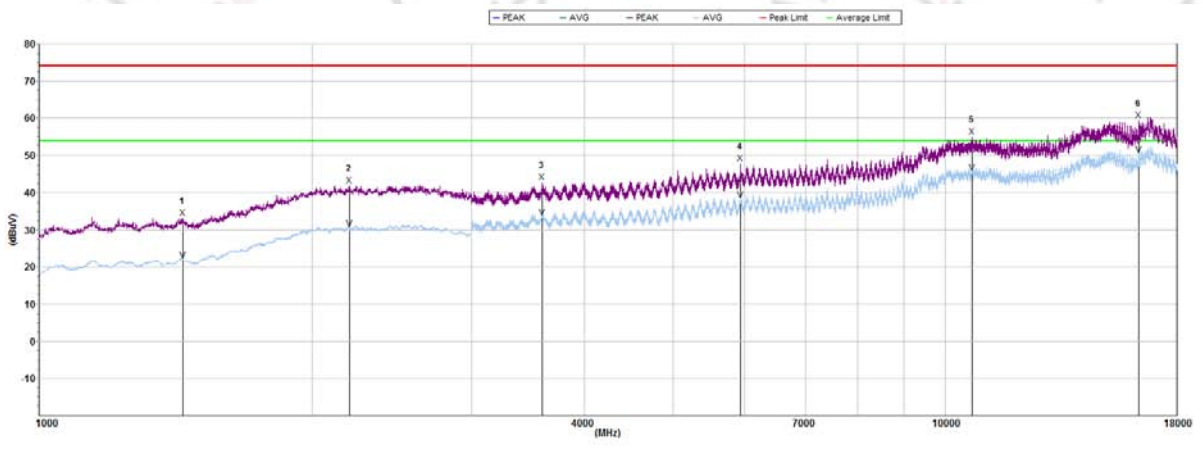
Mode 4 Vertical



| Mk. | Freq.(MHz) | Level(dBuV/m) | Limit(dBuV/m) | Margin(dB) | Ant.F/G.(dB/m) | Amp.G.(dB) | Pol. |
|-------|------------|---------------|---------------|------------|----------------|------------|------|
| Peak: | | | | | | | |
| 1 | 43.050457 | 12.9 | 40.0 | 27.1 | 13.9 | 32.5 | V |
| 2 | 99.702770 | 19.4 | 43.5 | 24.1 | 10.1 | 32.9 | V |
| 3 | 149.748044 | 35.9 | 43.5 | 7.6 | 14.1 | 32.9 | V |
| 4 | 249.862716 | 22.9 | 46.0 | 23.1 | 11.6 | 32.8 | V |
| 5 | 349.862839 | 22.3 | 46.0 | 23.7 | 13.8 | 32.5 | V |
| 6 | 643.989398 | 20.9 | 46.0 | 25.1 | 19.3 | 32.3 | V |

1GHz~18GHz

Mode 4 Vertical



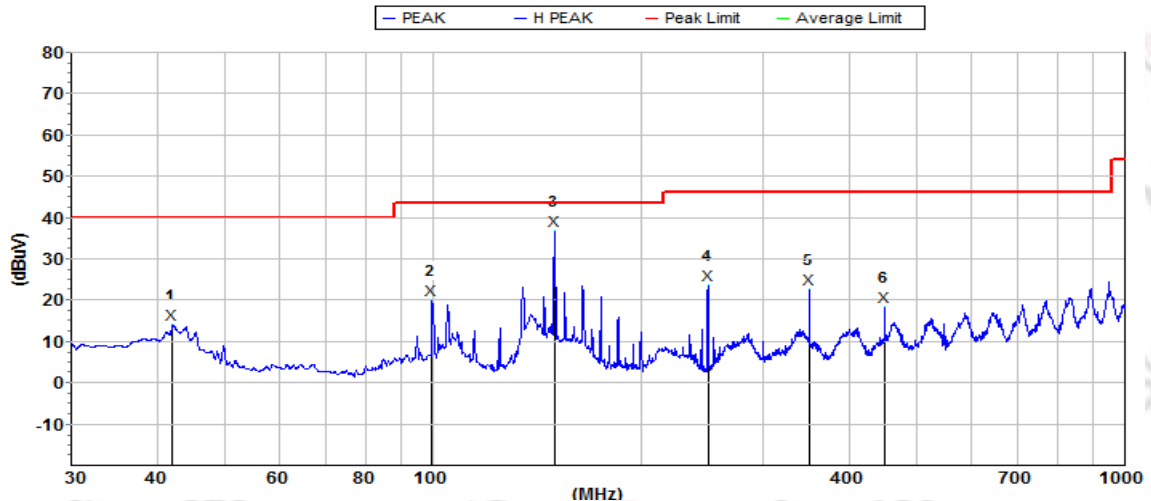
| Mk. | Freq.(MHz) | Level(dBuV/m) | Limit(dBuV/m) | Margin(dB) | Ant.F/G.(dB/m) | Amp.G.(dB) | Pol. |
|-------|--------------|---------------|---------------|------------|----------------|------------|------|
| Peak: | | | | | | | |
| 1 | 1441.000000 | 33.2 | 74.0 | 40.8 | 1441.000000 | 33.2 | V |
| 2 | 2199.000000 | 41.9 | 74.0 | 32.1 | 2199.000000 | 41.9 | V |
| 3 | 3592.500000 | 42.7 | 74.0 | 31.3 | 3592.500000 | 42.7 | V |
| 4 | 5940.000000 | 47.9 | 74.0 | 26.1 | 5940.000000 | 47.9 | V |
| 5 | 10703.250000 | 55.0 | 74.0 | 19.0 | 10703.250000 | 55.0 | V |
| 6 | 16352.250000 | 59.5 | 74.0 | 14.5 | 16352.250000 | 59.5 | V |
| Avg | | | | | | | |
| 1 | 1441.000000 | 21.9 | 54.0 | 32.1 | 1441.000000 | 21.9 | V |
| 2 | 2199.000000 | 30.3 | 54.0 | 23.7 | 2199.000000 | 30.3 | V |
| 3 | 3592.500000 | 33.3 | 54.0 | 20.7 | 3592.500000 | 33.3 | V |
| 4 | 5940.000000 | 38.0 | 54.0 | 16.0 | 5940.000000 | 38.0 | V |
| 5 | 10703.250000 | 45.4 | 54.0 | 8.6 | 10703.250000 | 45.4 | V |
| 6 | 16352.250000 | 50.2 | 54.0 | 3.8 | 16352.250000 | 50.2 | V |

30MHz - 18000MHz

| | | | |
|---------------|--|--------------------|------------|
| Temperature: | 23.0°C | Relative Humidity: | 59%RH |
| Test Voltage: | AC120V | Phase: | Horizontal |
| Test Mode: | Mode 1/3/4/6/7/9 (Mode 4/6 worst mode) | | |

30MHz~1GHz

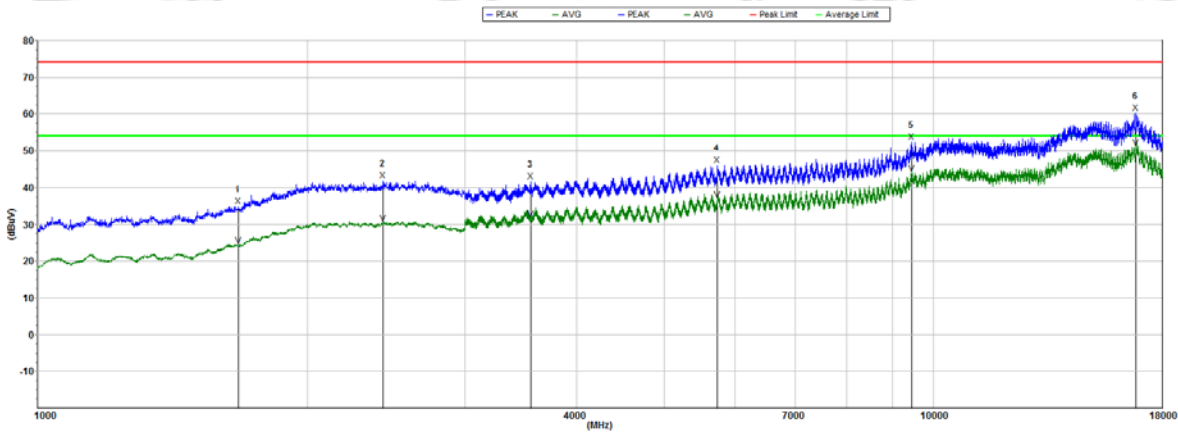
Mode 6 Horizontal



| Mk. | Freq.(MHz) | Level(dBuV/m) | Limit(dBuV/m) | Margin(dB) | Ant.F/G.(dB/m) | Amp.G.(dB) | Pol. |
|-------|------------|---------------|---------------|------------|----------------|------------|------|
| Peak: | | | | | | | |
| 1 | 42.080322 | 14.1 | 40.0 | 25.9 | 14.0 | 32.4 | H |
| 2 | 99.702770 | 20.2 | 43.5 | 23.3 | 10.1 | 32.9 | H |
| 3 | 149.748044 | 36.8 | 43.5 | 6.7 | 14.1 | 32.9 | H |
| 4 | 249.862716 | 23.8 | 46.0 | 22.2 | 11.6 | 32.8 | H |
| 5 | 349.862839 | 22.9 | 46.0 | 23.1 | 13.4 | 32.5 | H |
| 6 | 449.555842 | 18.4 | 46.0 | 27.6 | 14.3 | 32.4 | H |

1GHz~18GHz

Mode 6 Horizontal

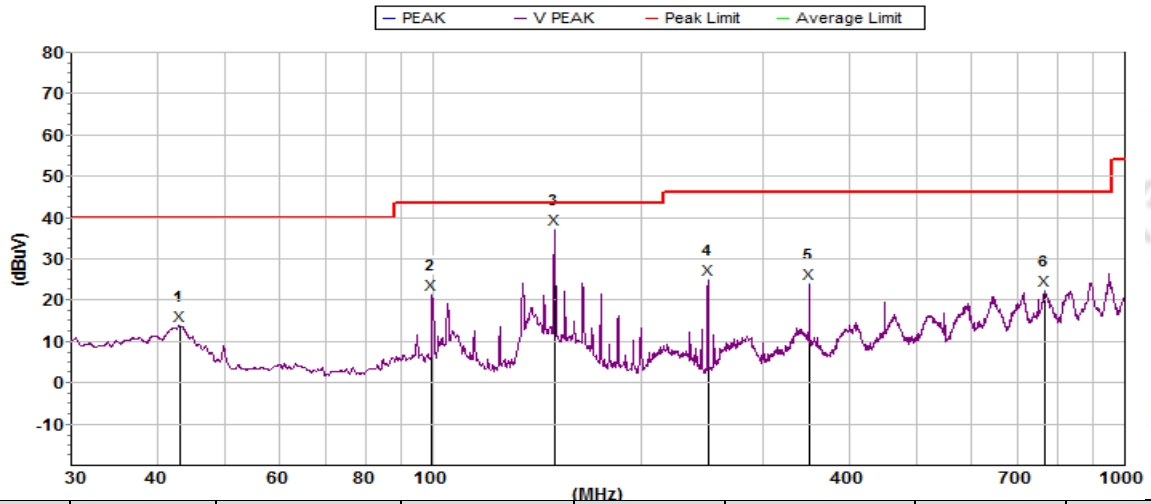


| Mk. | Freq.(MHz) | Level(dBuV/m) | Limit(dBuV/m) | Margin(dB) | Ant.F/G.(dB/m) | Amp.G.(dB) | Pol. |
|-------|--------------|---------------|---------------|------------|----------------|------------|------|
| Peak: | | | | | | | |
| 1 | 1675.000000 | 35.0 | 74.0 | 39.0 | 21.4 | 54.8 | H |
| 2 | 2432.000000 | 41.9 | 74.0 | 32.1 | 22.8 | 50.2 | H |
| 3 | 3555.750000 | 41.6 | 74.0 | 32.4 | 24.2 | 50.5 | H |
| 4 | 5736.000000 | 46.0 | 74.0 | 28.0 | 25.0 | 49.0 | H |
| 5 | 9447.000000 | 52.4 | 74.0 | 21.6 | 27.2 | 48.6 | H |
| 6 | 16830.750000 | 60.3 | 74.0 | 13.7 | 30.9 | 47.4 | H |
| Avg | | | | | | | |
| 1 | 1675.000000 | 24.2 | 54.0 | 29.8 | 21.4 | 54.8 | H |
| 2 | 2432.000000 | 30.4 | 54.0 | 23.6 | 22.8 | 50.2 | H |
| 3 | 3555.750000 | 31.5 | 54.0 | 22.5 | 24.2 | 50.5 | H |
| 4 | 5736.000000 | 36.6 | 54.0 | 17.4 | 25.0 | 49.0 | H |
| 5 | 9447.000000 | 44.0 | 54.0 | 10.0 | 27.2 | 48.6 | H |
| 6 | 16830.750000 | 50.8 | 54.0 | 3.2 | 30.9 | 47.4 | H |

| | | | |
|---------------|--|--------------------|----------|
| Temperature: | 23.0°C | Relative Humidity: | 59%RH |
| Test Voltage: | AC120V | Phase: | Vertical |
| Test Mode: | Mode 1/3/4/6/7/9 (Mode 4/6 worst mode) | | |

30MHz~1GHz

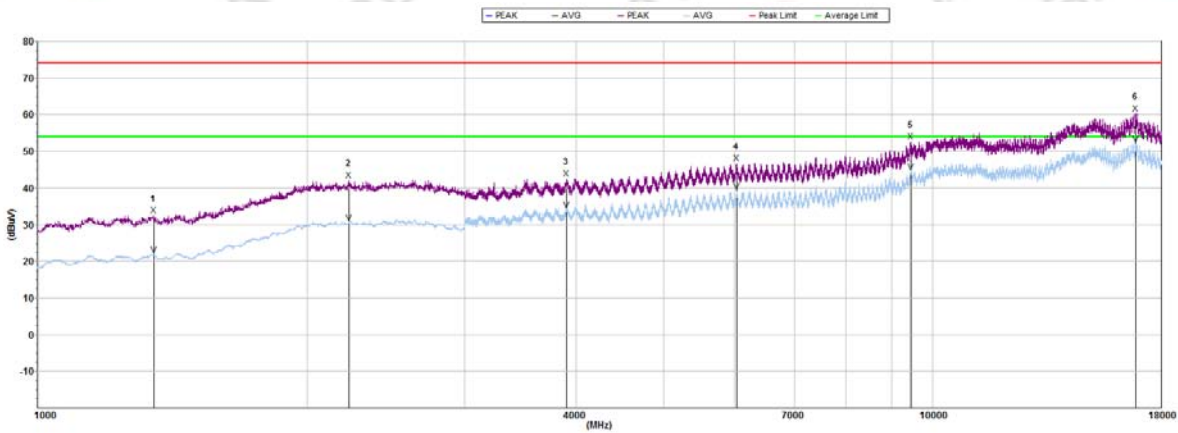
Mode 6 Vertical



| Mk. | Freq.(MHz) | Level(dBuV/m) | Limit(dBuV/m) | Margin(dB) | Ant.F/G.(dB/m) | Amp.G.(dB) | Pol. |
|-------|------------|---------------|---------------|------------|----------------|------------|------|
| Peak: | | | | | | | |
| 1 | 43.050457 | 13.9 | 40.0 | 26.1 | 13.9 | 32.5 | V |
| 2 | 99.702770 | 21.3 | 43.5 | 22.2 | 10.1 | 32.9 | V |
| 3 | 149.748044 | 37.3 | 43.5 | 6.2 | 14.1 | 32.9 | V |
| 4 | 249.862716 | 25.0 | 46.0 | 21.0 | 11.6 | 32.8 | V |
| 5 | 349.862839 | 24.1 | 46.0 | 21.9 | 13.8 | 32.5 | V |
| 6 | 764.715294 | 22.4 | 46.0 | 23.6 | 20.4 | 32.2 | V |

1GHz~18GHz

Mode 6 Vertical



| Mk. | Freq.(MHz) | Level(dBuV/m) | Limit(dBuV/m) | Margin(dB) | Ant.F/G.(dB/m) | Amp.G.(dB) | Pol. |
|-------|--------------|---------------|---------------|------------|----------------|------------|------|
| Peak: | | | | | | | |
| 1 | 1349.000000 | 32.5 | 74.0 | 41.5 | 20.8 | 57.3 | V |
| 2 | 2226.000000 | 42.2 | 74.0 | 31.8 | 22.8 | 50.1 | V |
| 3 | 3897.750000 | 42.5 | 74.0 | 31.5 | 24.7 | 50.2 | V |
| 4 | 6042.000000 | 46.7 | 74.0 | 27.3 | 25.6 | 48.9 | V |
| 5 | 9444.750000 | 52.7 | 74.0 | 21.3 | 27.8 | 48.6 | V |
| 6 | 16842.750000 | 60.4 | 74.0 | 13.6 | 31.4 | 47.4 | V |
| Avg | | | | | | | |
| 1 | 1349.000000 | 21.7 | 54.0 | 32.3 | 20.8 | 57.3 | V |
| 2 | 2226.000000 | 30.6 | 54.0 | 23.4 | 22.8 | 50.1 | V |
| 3 | 3897.750000 | 34.0 | 54.0 | 20.0 | 24.7 | 50.2 | V |
| 4 | 6042.000000 | 39.1 | 54.0 | 14.9 | 25.6 | 48.9 | V |
| 5 | 9444.750000 | 44.3 | 54.0 | 9.7 | 27.8 | 48.6 | V |
| 6 | 16842.750000 | 51.9 | 54.0 | 2.1 | 31.4 | 47.4 | V |

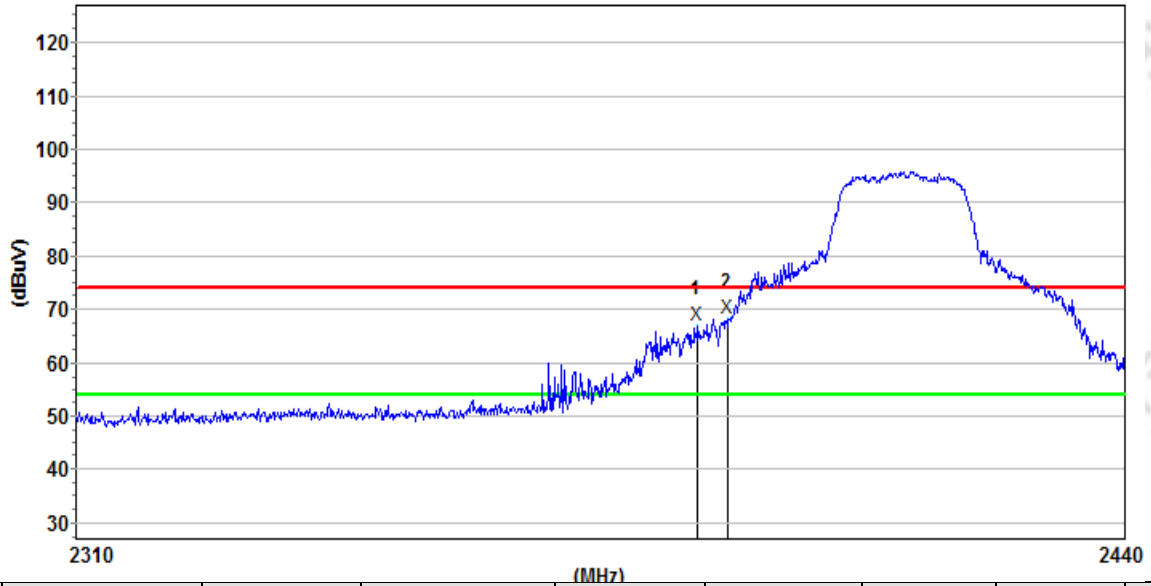
Note:

1. Factor=Ant.Factor+cable loss-Amp.Gain .
2. Level contains the factor; Margin=Limit-Level.
3. 802.11b, 802.11g, 802.11n (HT-20), mode all have been tested, the worst case is 802.11g, only show the worst case.

3.2.6 TEST RESULTS (BAND EDGE REQUIREMENTS)

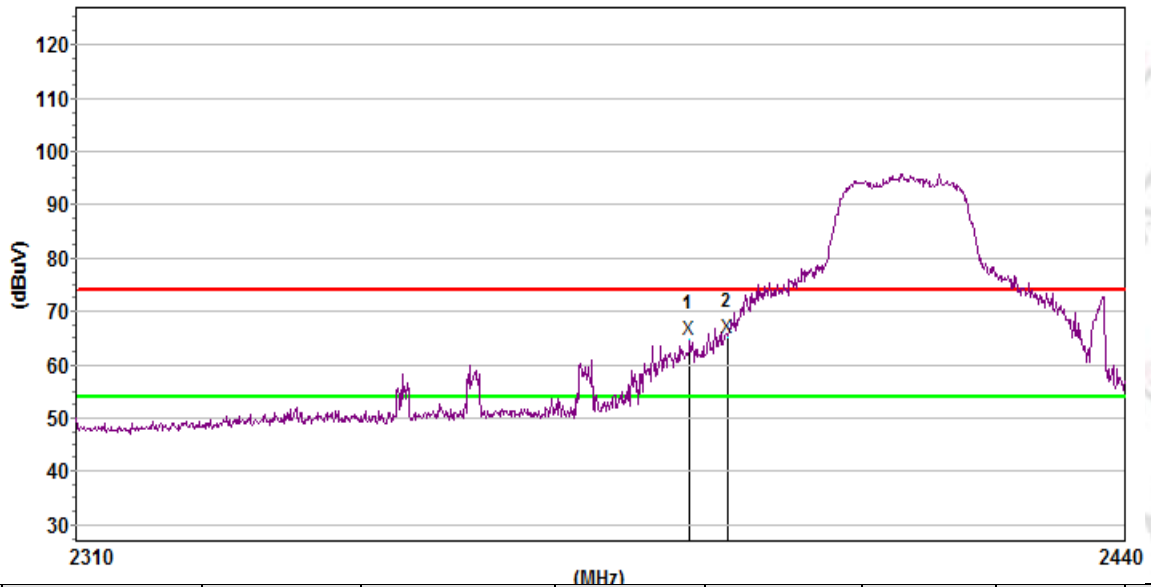
802.11g-Low

Horizontal



| Mk. | Frequency (MHz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Ant.F/G. (dB/m) | Amp.G. (dB) | Cbl.L. (dB) | Pol. |
|-----|-----------------|----------------|----------------|-------------|-----------------|-------------|-------------|------|
| PK | | | | | | | | |
| 1 | 2386.229678 | 67.1 | 74.0 | 6.9 | 22.8 | 50.2 | 2.8 | H |
| 2 | 2390.000000 | 68.5 | 74.0 | 5.5 | 22.8 | 50.2 | 2.8 | H |

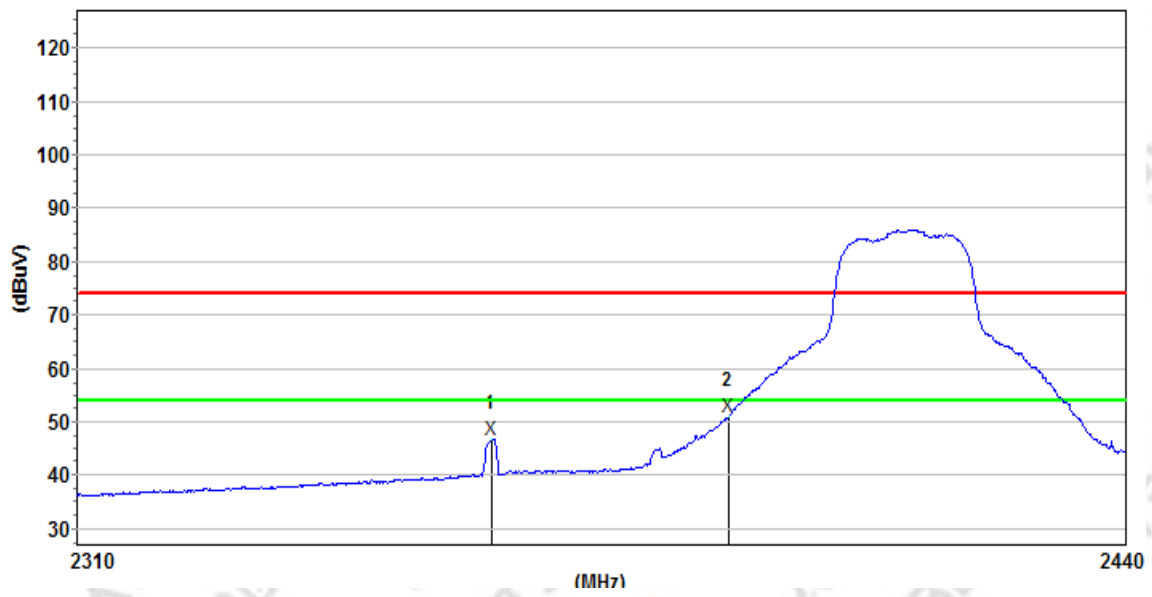
Vertical



| Mk. | Frequency (MHz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Ant.F/G. (dB/m) | Amp.G. (dB) | Cbl.L. (dB) | Pol. |
|-----|-----------------|----------------|----------------|-------------|-----------------|-------------|-------------|------|
| PK | | | | | | | | |
| 1 | 2385.184729 | 64.9 | 74.0 | 9.1 | 23.1 | 50.2 | 2.8 | V |
| 2 | 2390.000000 | 65.3 | 74.0 | 8.7 | 23.1 | 50.2 | 2.8 | V |

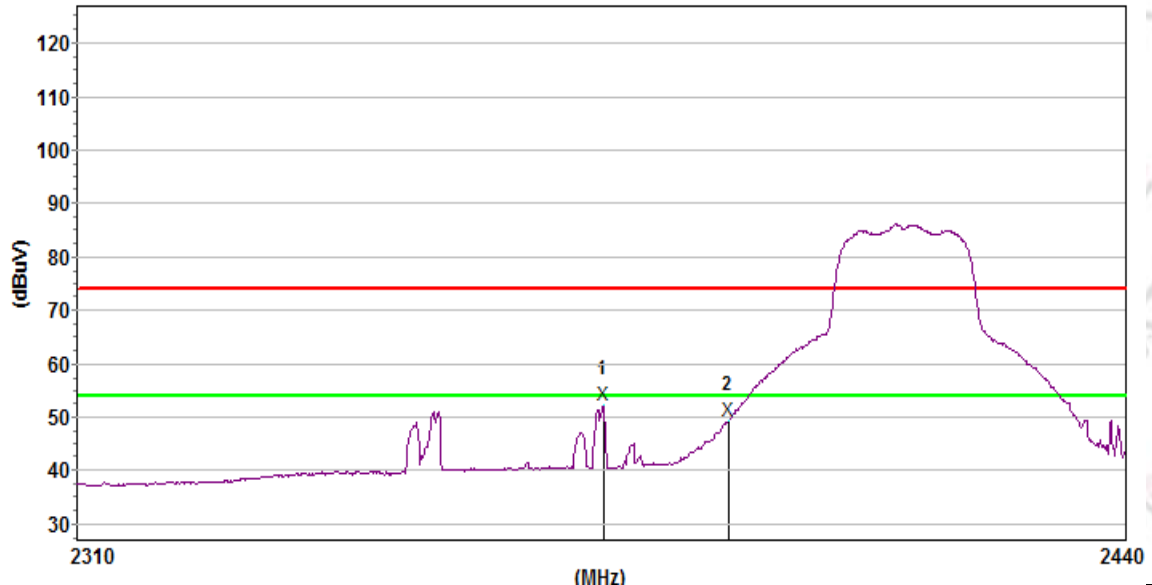
802.11g-Low

Horizontal



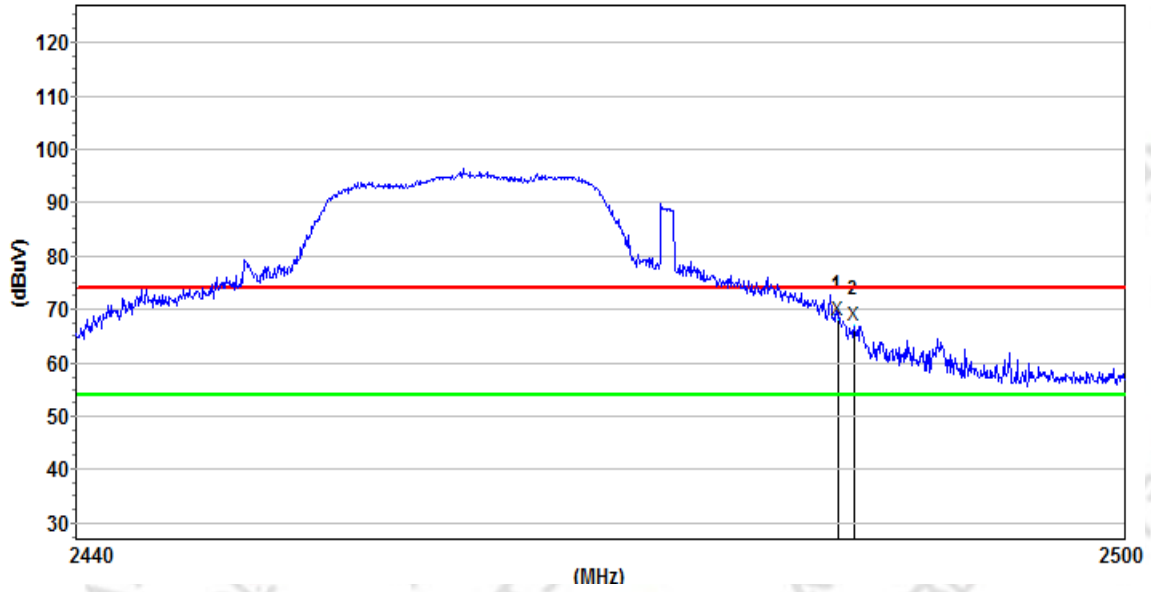
| Mk. | Frequency (MHz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Ant.F/G. (dB/m) | Amp.G. (dB) | Cbl.L. (dB) | Pol. |
|-----|-----------------|----------------|----------------|-------------|-----------------|-------------|-------------|------|
| AVG | | | | | | | | |
| 1 | 2360.501220 | 46.7 | 54.0 | 7.3 | 22.7 | 50.2 | 2.8 | H |
| 2 | 2390.000000 | 51.1 | 54.0 | 2.9 | 22.8 | 50.2 | 2.8 | H |

Vertical



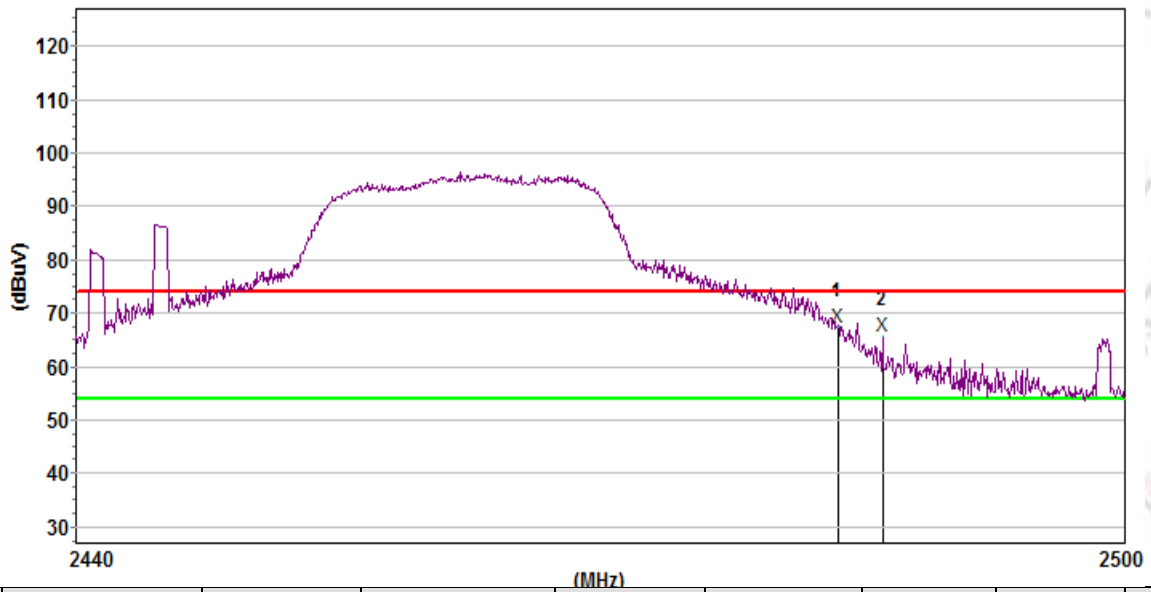
| Mk. | Frequency (MHz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Ant.F/G. (dB/m) | Amp.G. (dB) | Cbl.L. (dB) | Pol. |
|-----|-----------------|----------------|----------------|-------------|-----------------|-------------|-------------|------|
| AVG | | | | | | | | |
| 1 | 2374.370341 | 52.3 | 54.0 | 1.7 | 23.1 | 50.2 | 2.8 | V |
| 2 | 2390.000000 | 49.5 | 54.0 | 4.5 | 23.1 | 50.2 | 2.8 | V |

802.11g-High
Horizontal



| Mk. | Frequency (MHz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Ant.F/G. (dB/m) | Amp.G. (dB) | Cbl.L. (dB) | Pol. |
|-----|-----------------|----------------|----------------|-------------|-----------------|-------------|-------------|------|
| PK | | | | | | | | |
| 1 | 2483.500000 | 68.0 | 74.0 | 6.0 | 22.9 | 50.2 | 2.8 | H |
| 2 | 2484.380213 | 67.1 | 74.0 | 6.9 | 22.9 | 50.2 | 2.8 | H |

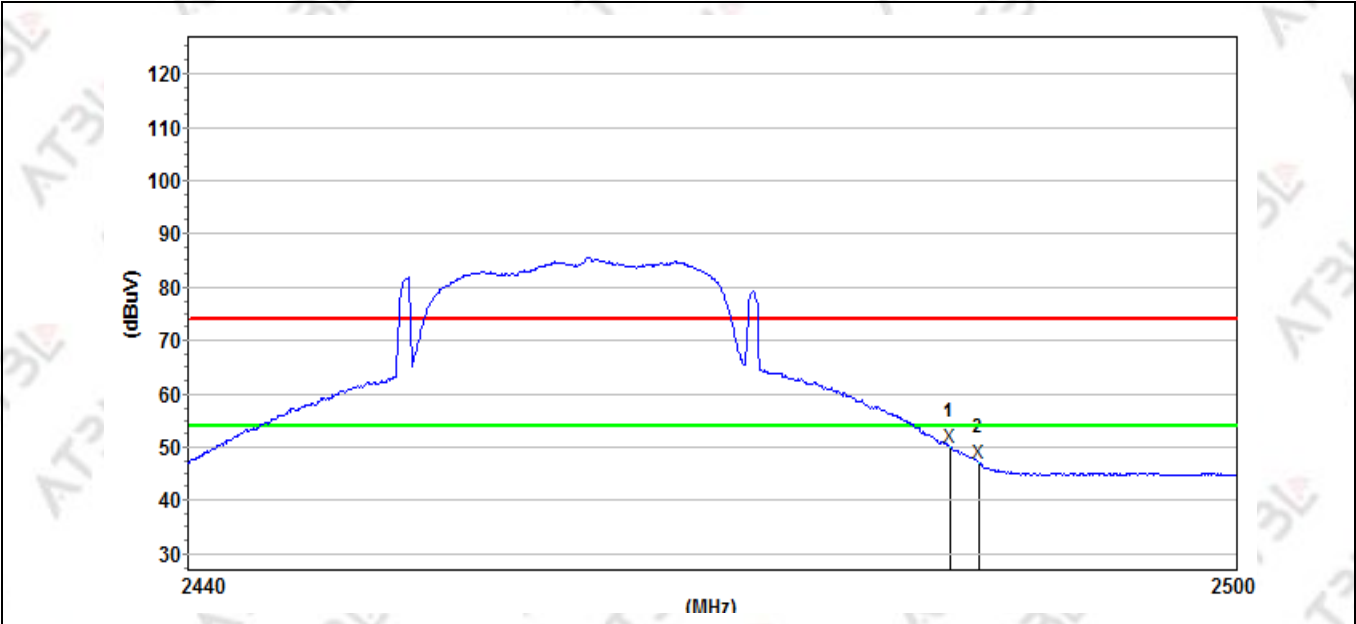
Vertical



| Mk. | Frequency (MHz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Ant.F/G. (dB/m) | Amp.G. (dB) | Cbl.L. (dB) | Pol. |
|-----|-----------------|----------------|----------------|-------------|-----------------|-------------|-------------|------|
| PK | | | | | | | | |
| 1 | 2483.500000 | 67.3 | 74.0 | 6.7 | 23.3 | 50.2 | 2.8 | V |
| 2 | 2486.010259 | 65.8 | 74.0 | 8.2 | 23.3 | 50.2 | 2.8 | V |

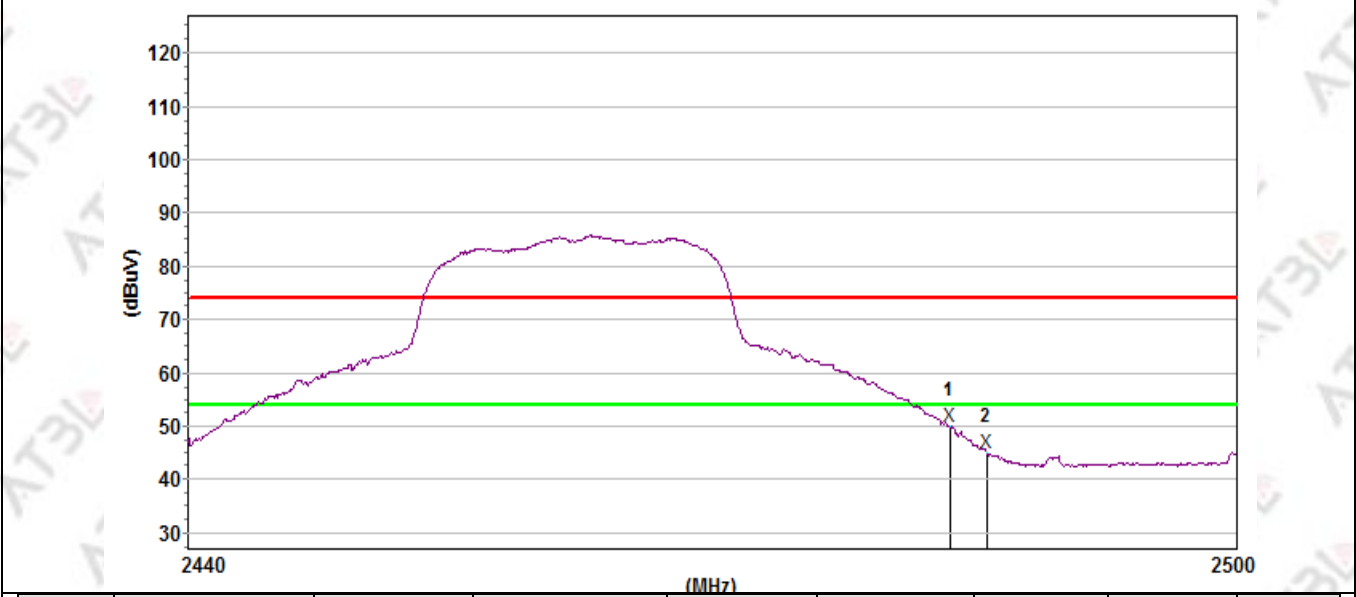
802.11g-High

Horizontal



| Mk. | Frequency (MHz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Ant.F/G. (dB/m) | Amp.G. (dB) | Cbl.L. (dB) | Pol. |
|-----|-----------------|----------------|----------------|-------------|-----------------|-------------|-------------|------|
| AVG | | | | | | | | |
| 1 | 2483.500000 | 50.0 | 54.0 | 4.0 | 22.9 | 50.2 | 2.8 | H |
| 2 | 2485.104546 | 47.1 | 54.0 | 6.9 | 22.9 | 50.2 | 2.8 | H |

Vertical



| Mk. | Frequency (MHz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Ant.F/G. (dB/m) | Amp.G. (dB) | Cbl.L. (dB) | Pol. |
|-----|-----------------|----------------|----------------|-------------|-----------------|-------------|-------------|------|
| AVG | | | | | | | | |
| 1 | 2483.500000 | 49.9 | 54.0 | 4.1 | 23.3 | 50.2 | 2.8 | V |
| 2 | 2485.587552 | 45.1 | 54.0 | 8.9 | 23.3 | 50.2 | 2.8 | V |

Note: 802.11b, 802.11g, 802.11n (HT-20), 802.11n (HT-40) mode all have been tested, the worst case is 802.11g, only show the worst case.

4. CONDUCTED SPURIOUS & BAND EDGE EMISSION

4.1 LIMIT

According to FCC section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

4.2 TEST PROCEDURE

| Spectrum Parameter | Setting |
|---------------------------------------|---------------------------------|
| Detector | Peak |
| Start/Stop Frequency | 30 MHz to 10th carrier harmonic |
| RB / VB (emission in restricted band) | 100 KHz/300 KHz |
| Trace-Mode: | Max hold |

For Band edge

| Spectrum Parameter | Setting |
|---------------------------------------|--|
| Detector | Peak |
| Start/Stop Frequency | Lower Band Edge: 2300 to 2432 MHz Upper Band Edge: 2442 to 2500 MHz |
| RB / VB (emission in restricted band) | 100 KHz/300 KHz |
| Trace-Mode: | Max hold |

4.3 DEVIATION FROM STANDARD

No deviation.

4.4 TEST SETUP



The EUT which is powered by the Battery, is connected to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

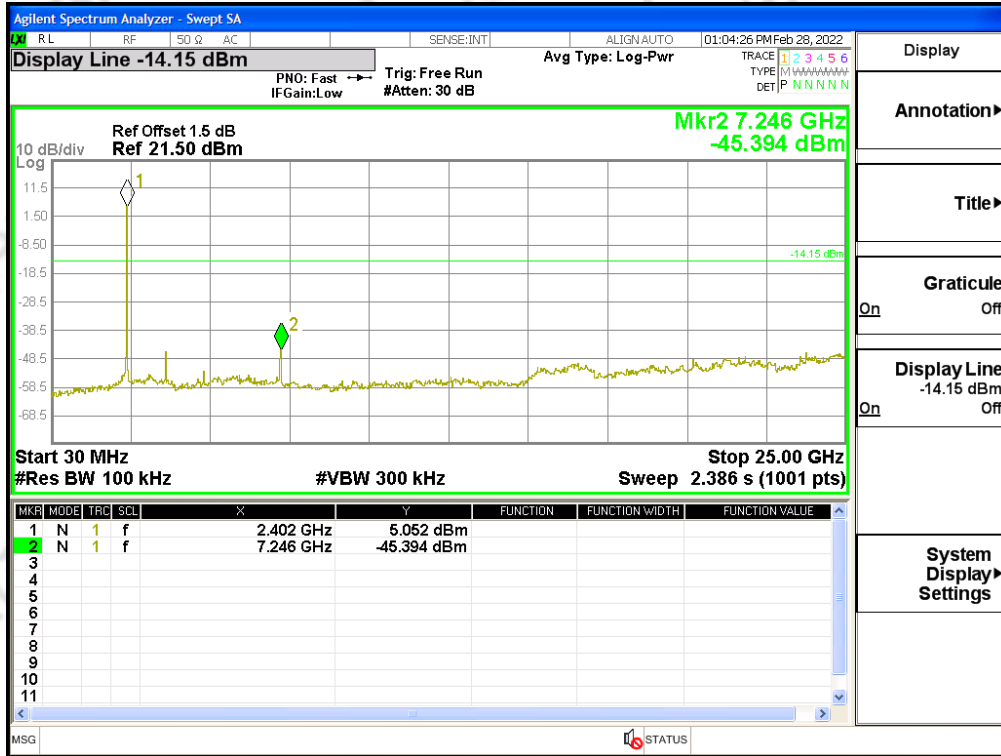
4.5 EUT OPERATION CONDITIONS

Please refer to section 3.1.4 of this report.

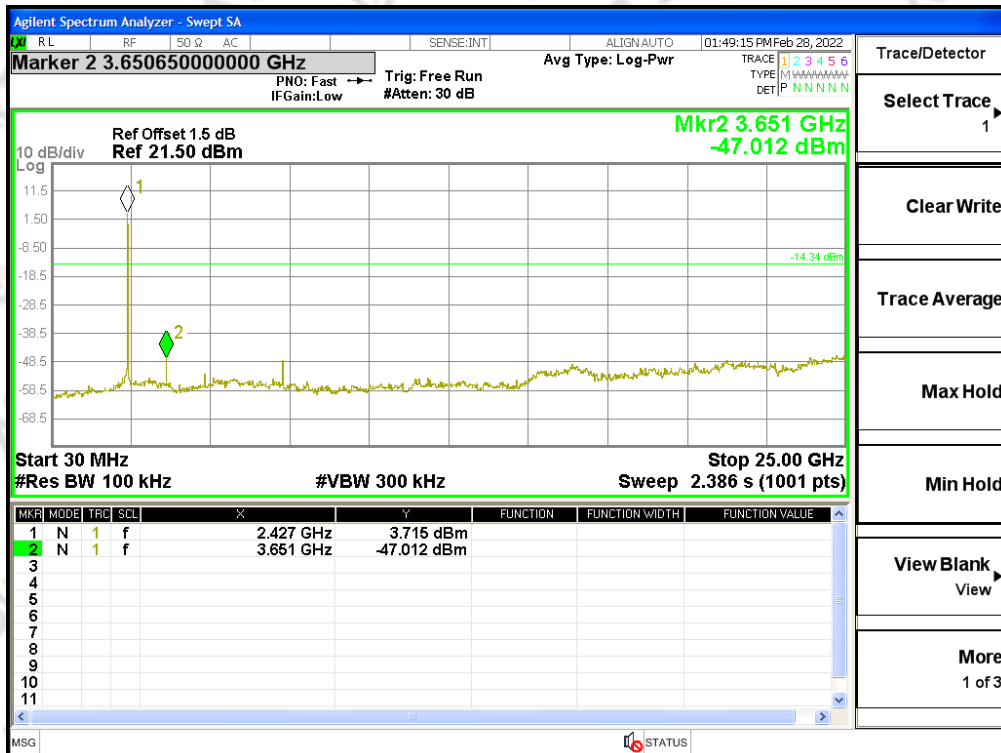
4.6 TEST RESULTS

| | | | |
|---------------|---------|--------------------|--------------------------|
| Temperature: | 25 °C | Relative Humidity: | 60%RH |
| Test Voltage: | AC 120V | Test Mode: | TX Mode1/2/3/4/5/6/7/8/9 |

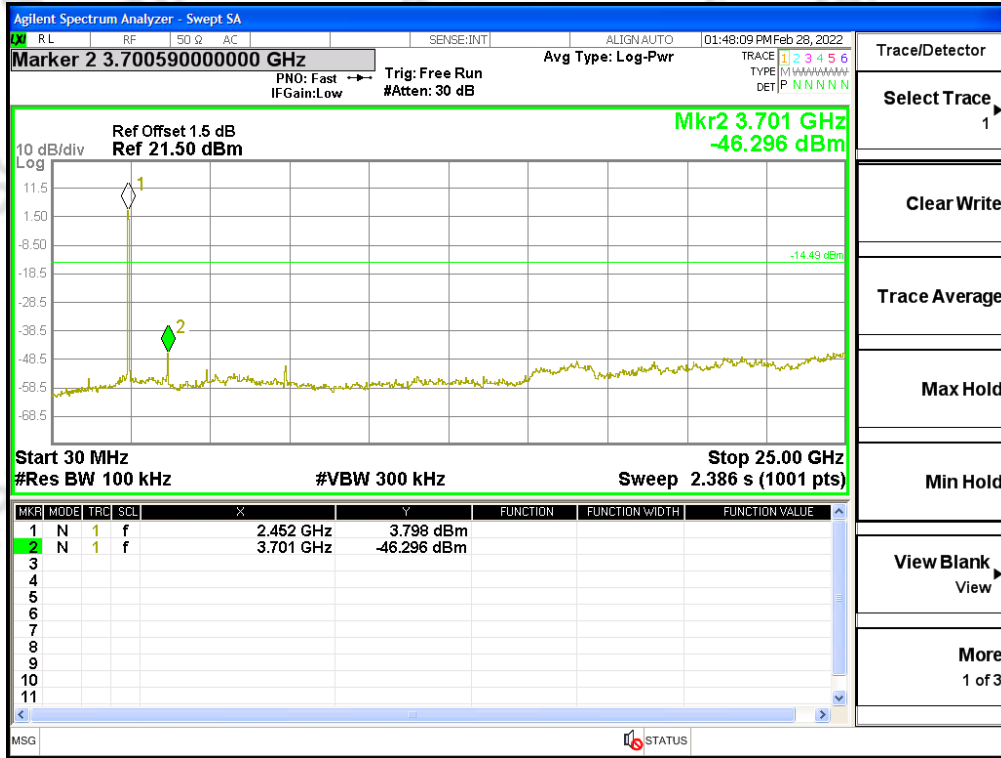
TX Mode1 channel 1



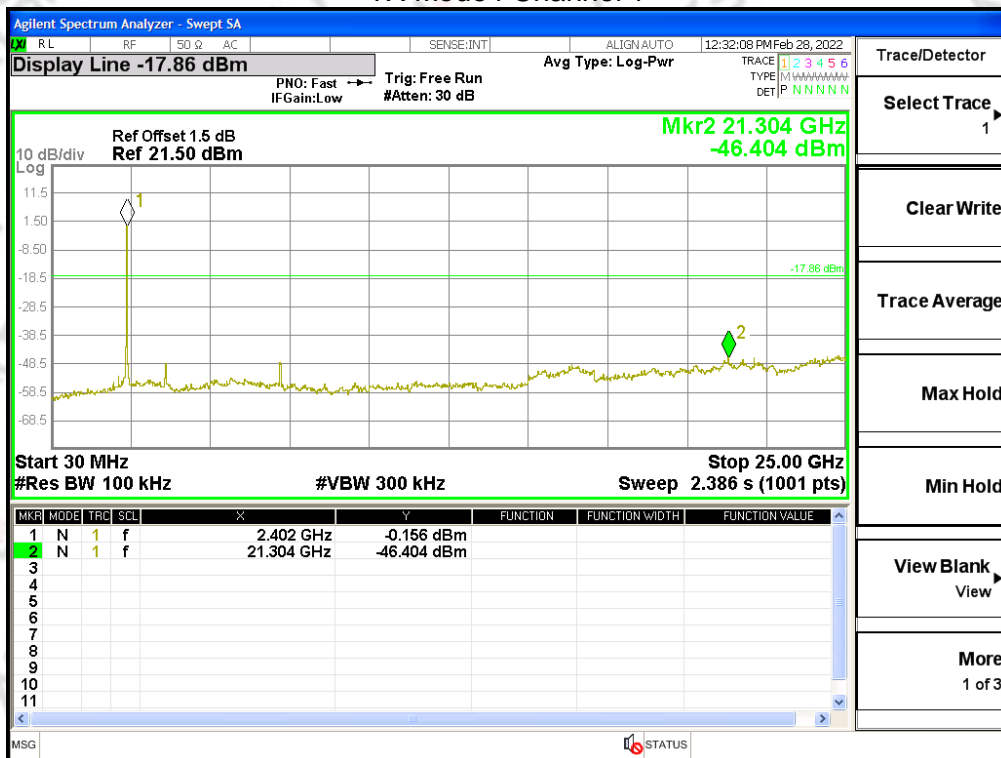
TX Mode2 channel 6



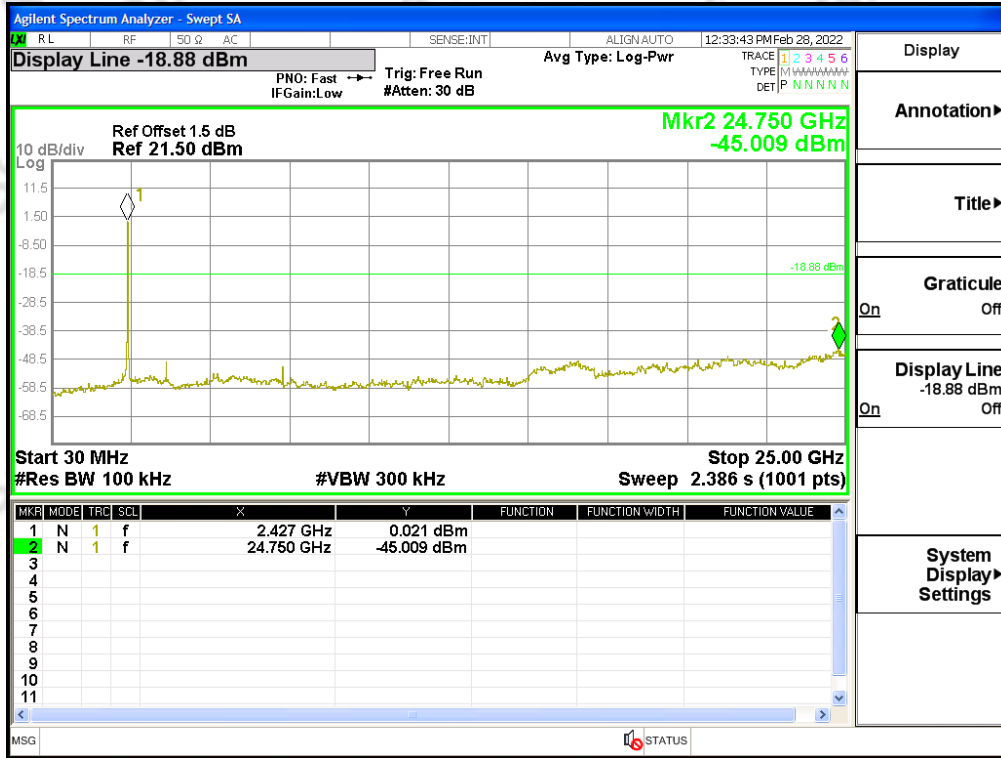
TX Mode3 channel 11



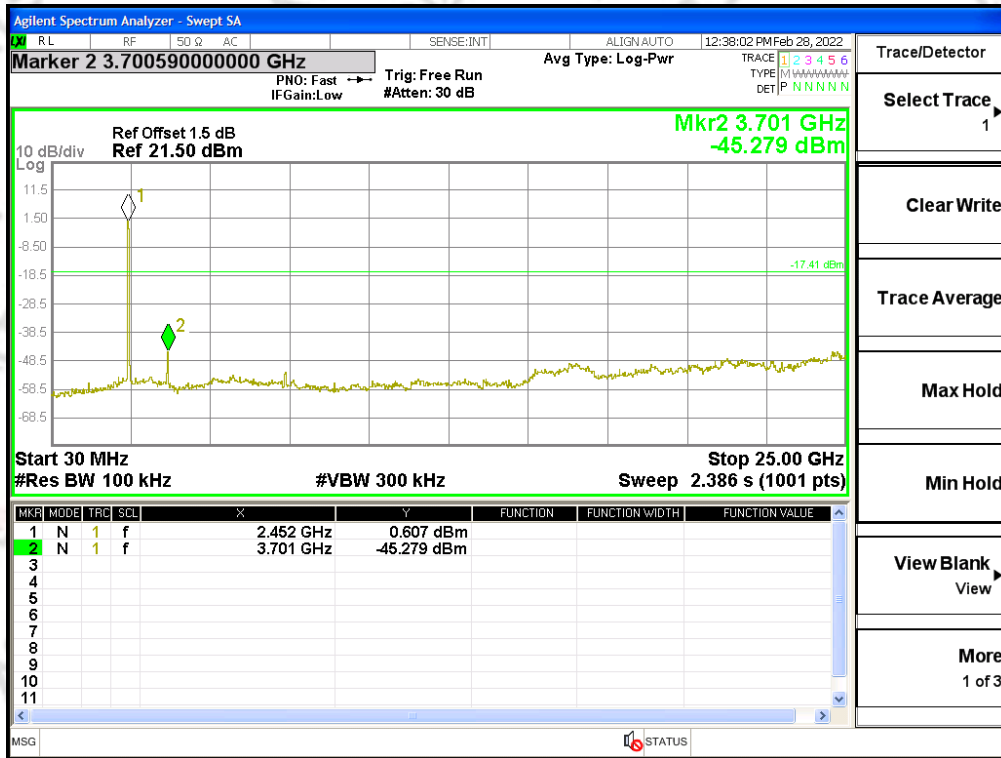
TX Mode4 Channel 1



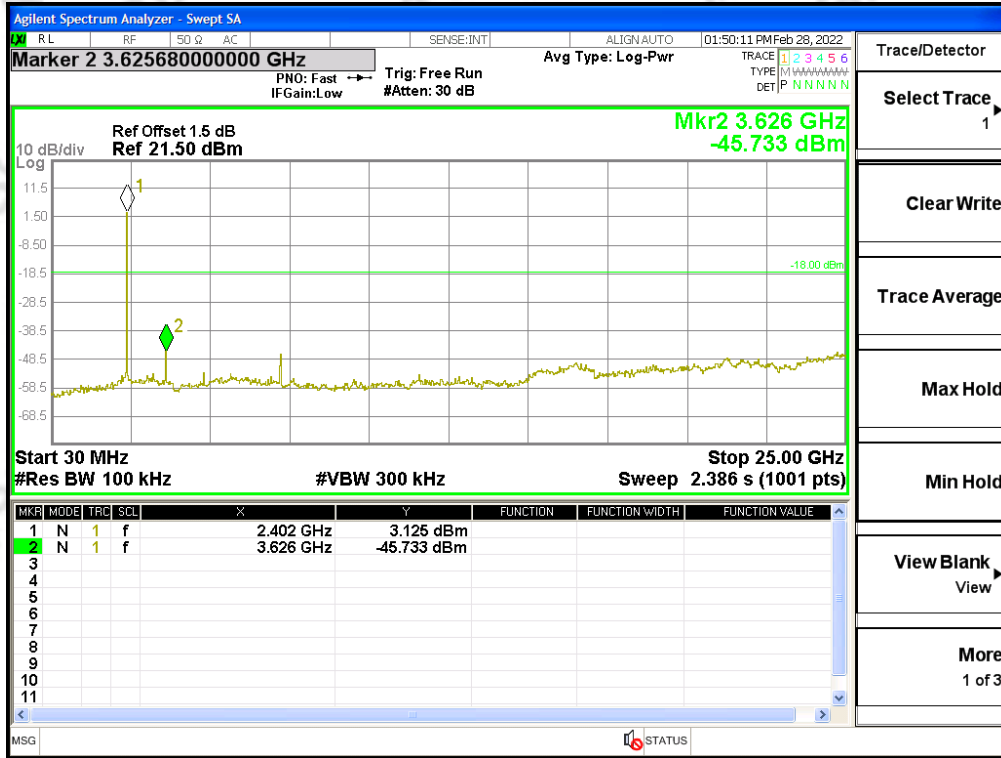
TX Mode5 channel 6



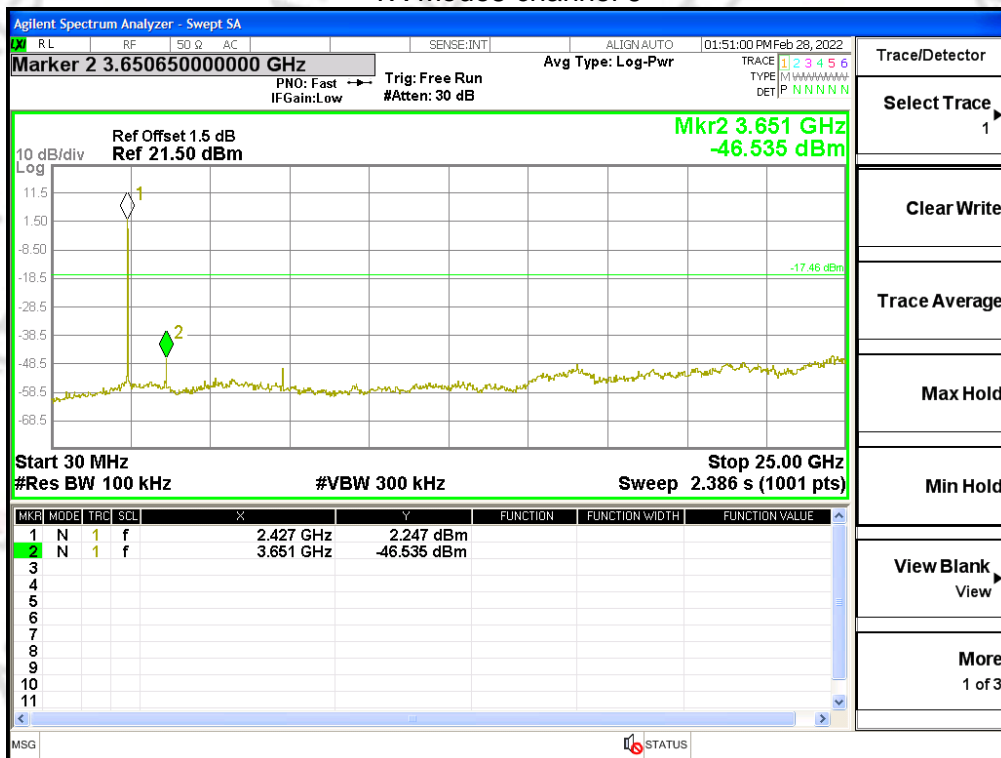
TX Mode6 Channel 11



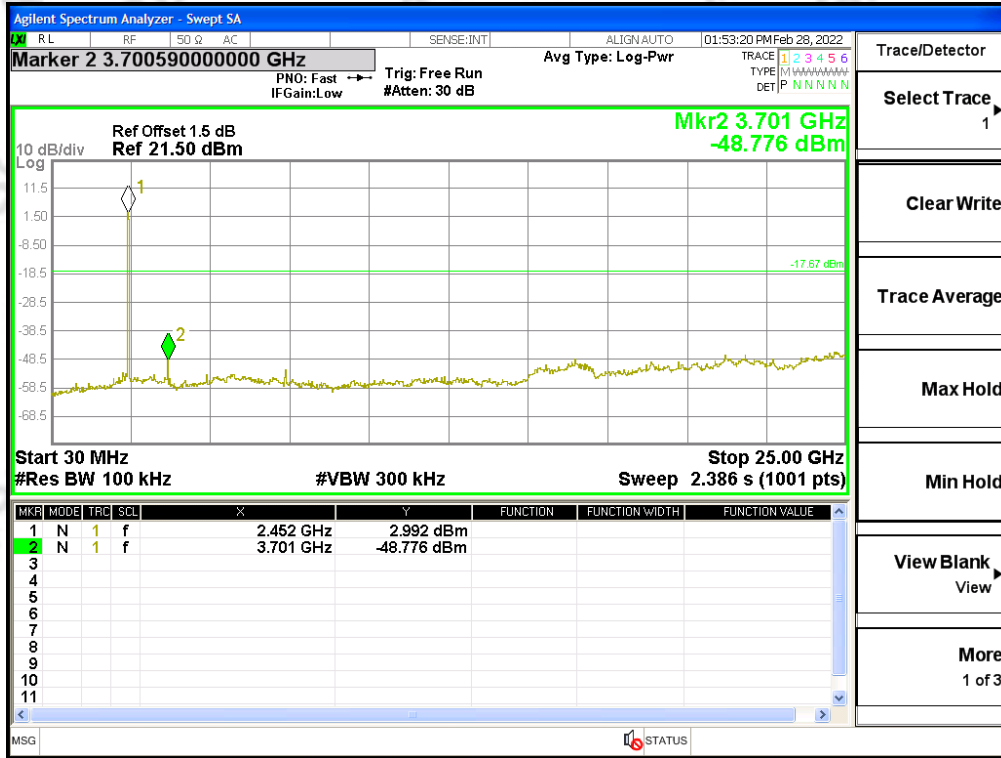
TX Mode7 Channel 1



TX Mode8 channel 6



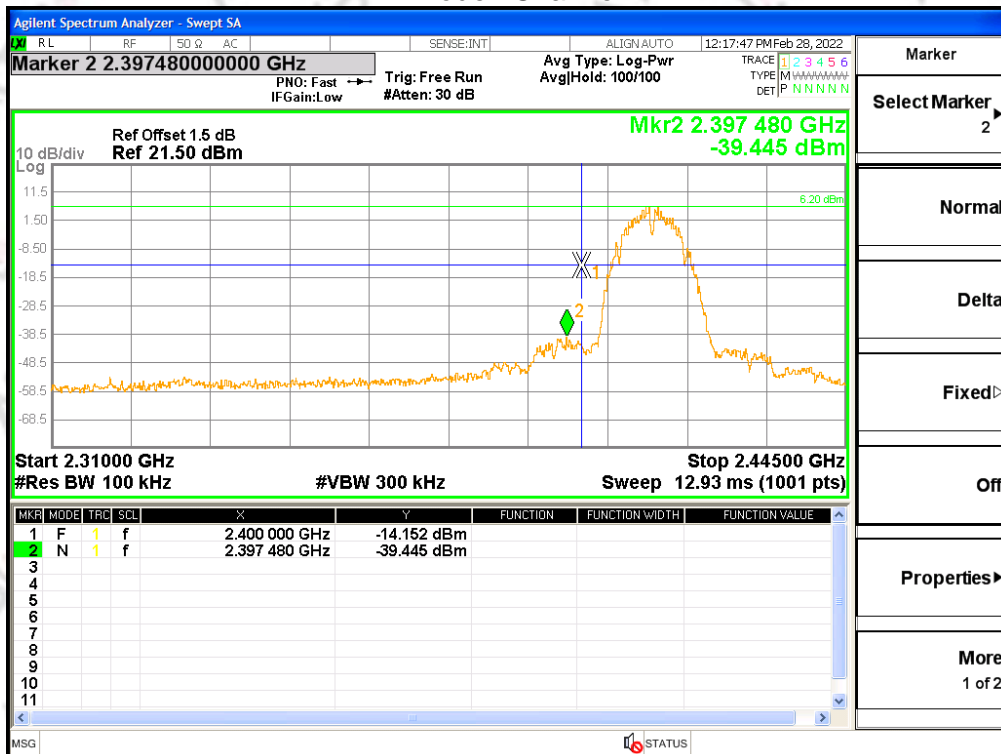
TX Mode9 Channel 11



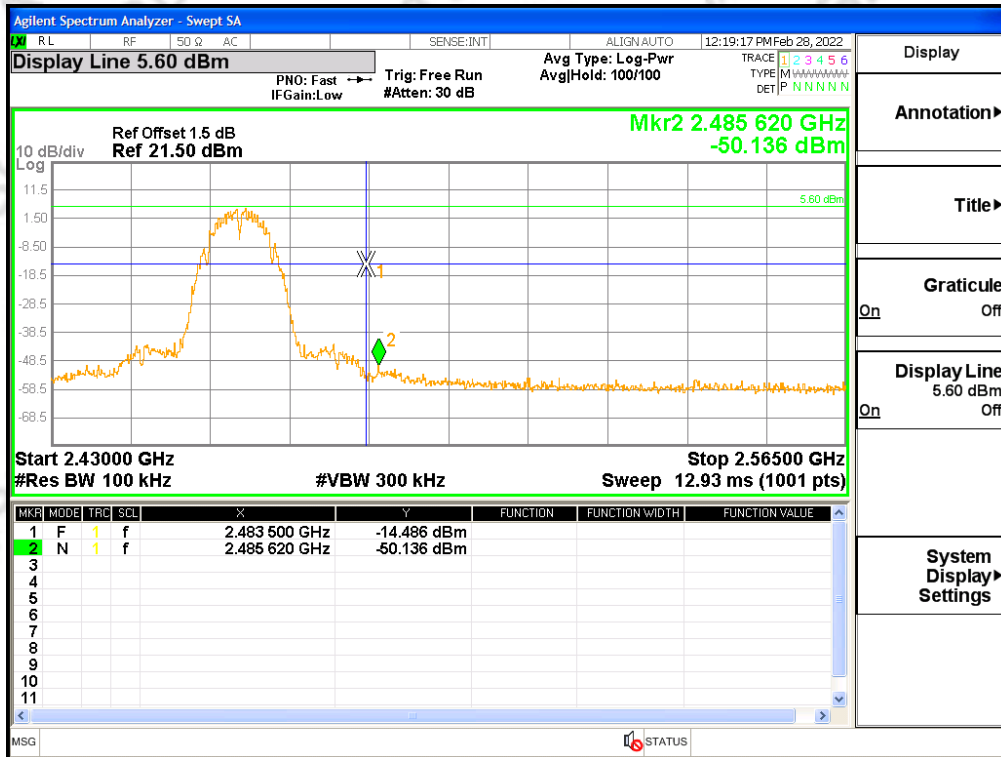
For Band edge(it's also the reference level for conducted spurious emission)

| | | | |
|---------------|---------|--------------------|--------------------|
| Temperature: | 25°C | Relative Humidity: | 60%RH |
| Test Voltage: | AC 120V | Test Mode: | TX Mode1/3/4/6/7/9 |

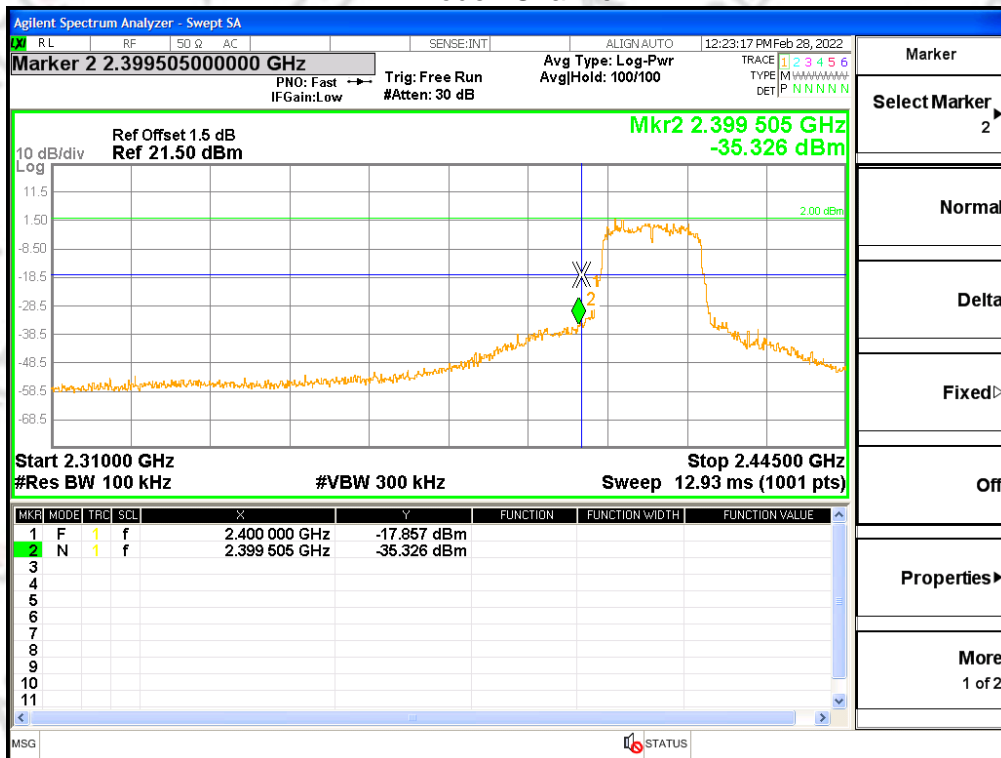
TX Mode1 Channel 1



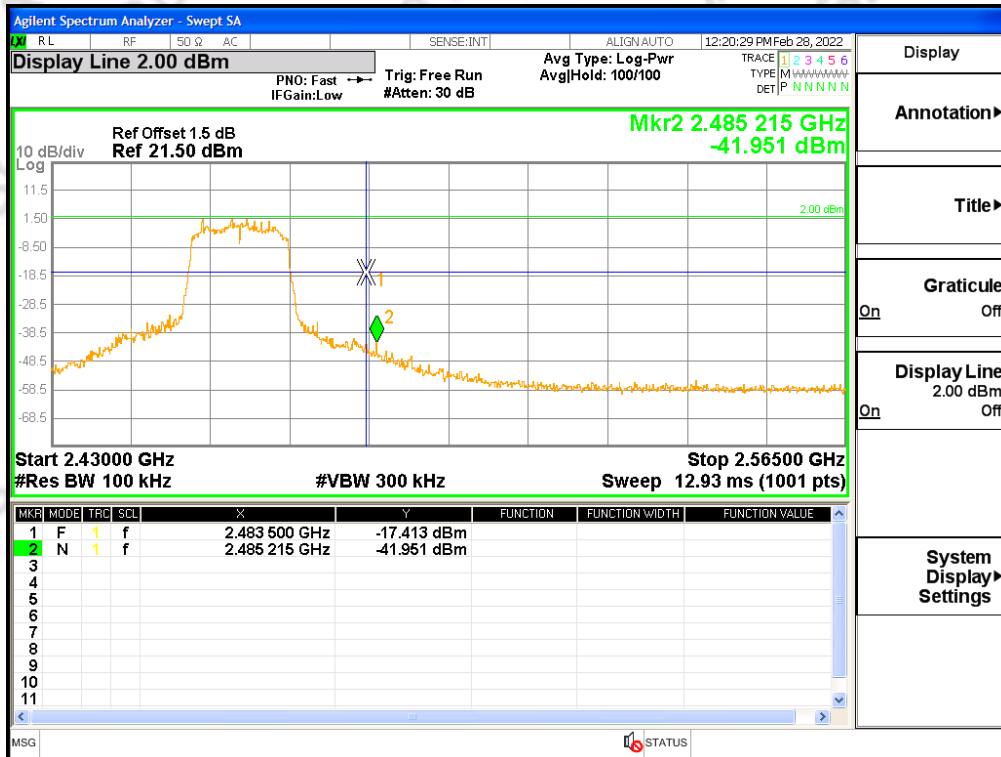
TX Mode3 Channel 11



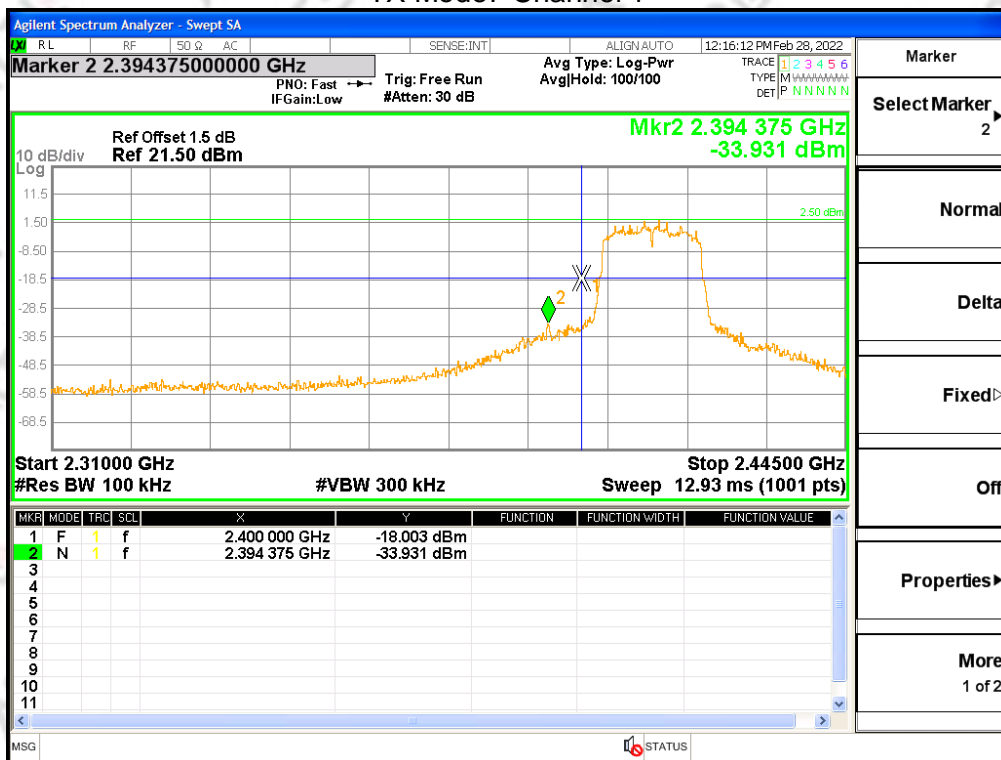
TX Mode4 Channel 1



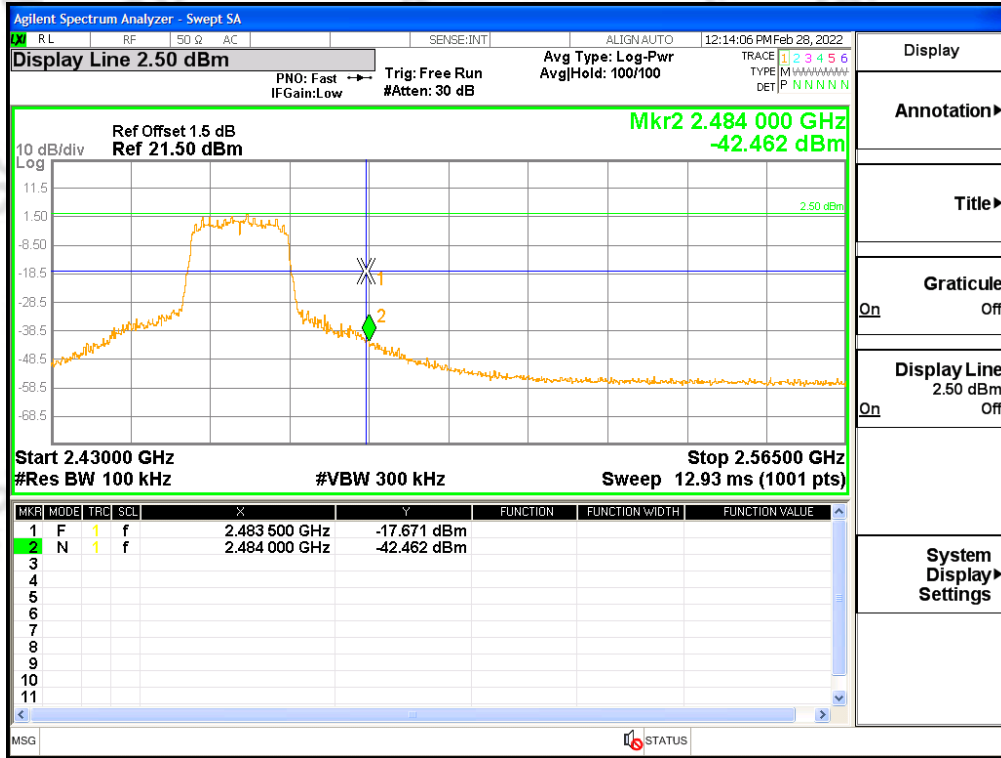
TX Mode6 Channel 11



TX Mode7 Channel 1



TX Mode9 Channel 11



5. POWER SPECTRAL DENSITY TEST

5.1 LIMIT

| FCC Part15.247 , Subpart C | | | | |
|----------------------------|------------------------|--------------------|-----------------------|--------|
| Section | Test Item | Limit | Frequency Range (MHz) | Result |
| 15.247(e) | Power Spectral Density | ≤8 dBm (RBW ≥3KHz) | 2400-2483.5 | PASS |

5.2 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the 100 kHz ≥ RBW ≥3 kHz.
4. Set the VBW ≥ 3 x RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

5.3 DEVIATION FROM STANDARD

No deviation.

5.4 TEST SETUP



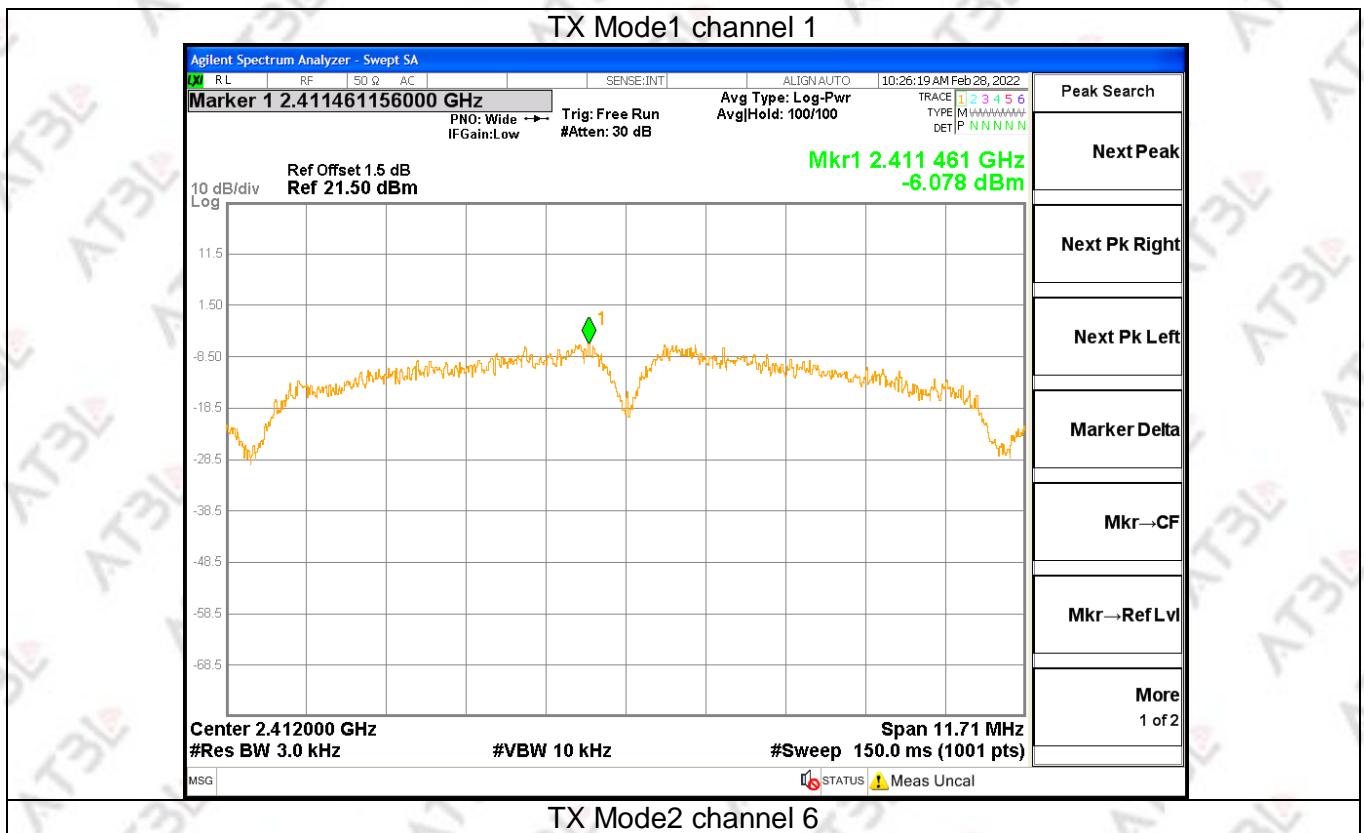
5.5 EUT OPERATION CONDITIONS

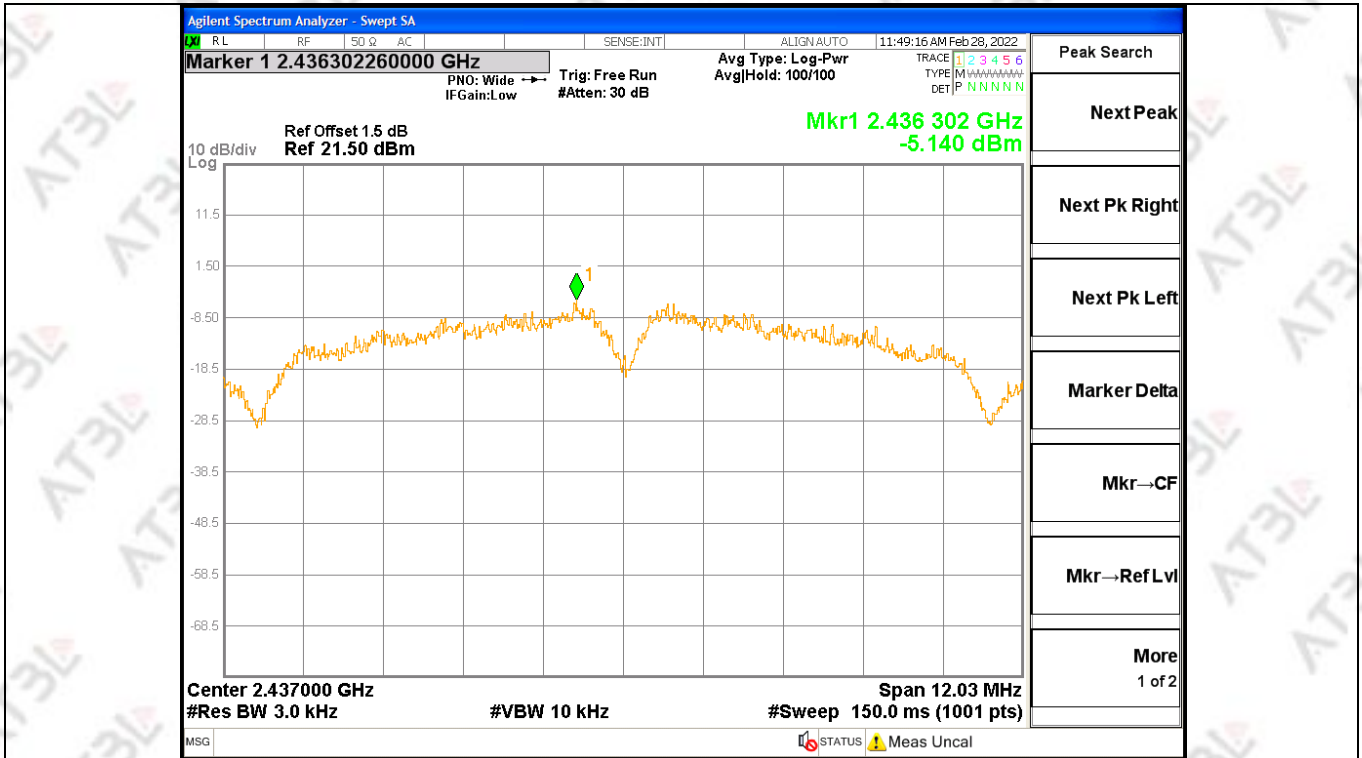
Please refer to section 3.1.4 of this report.

5.6 TEST RESULTS

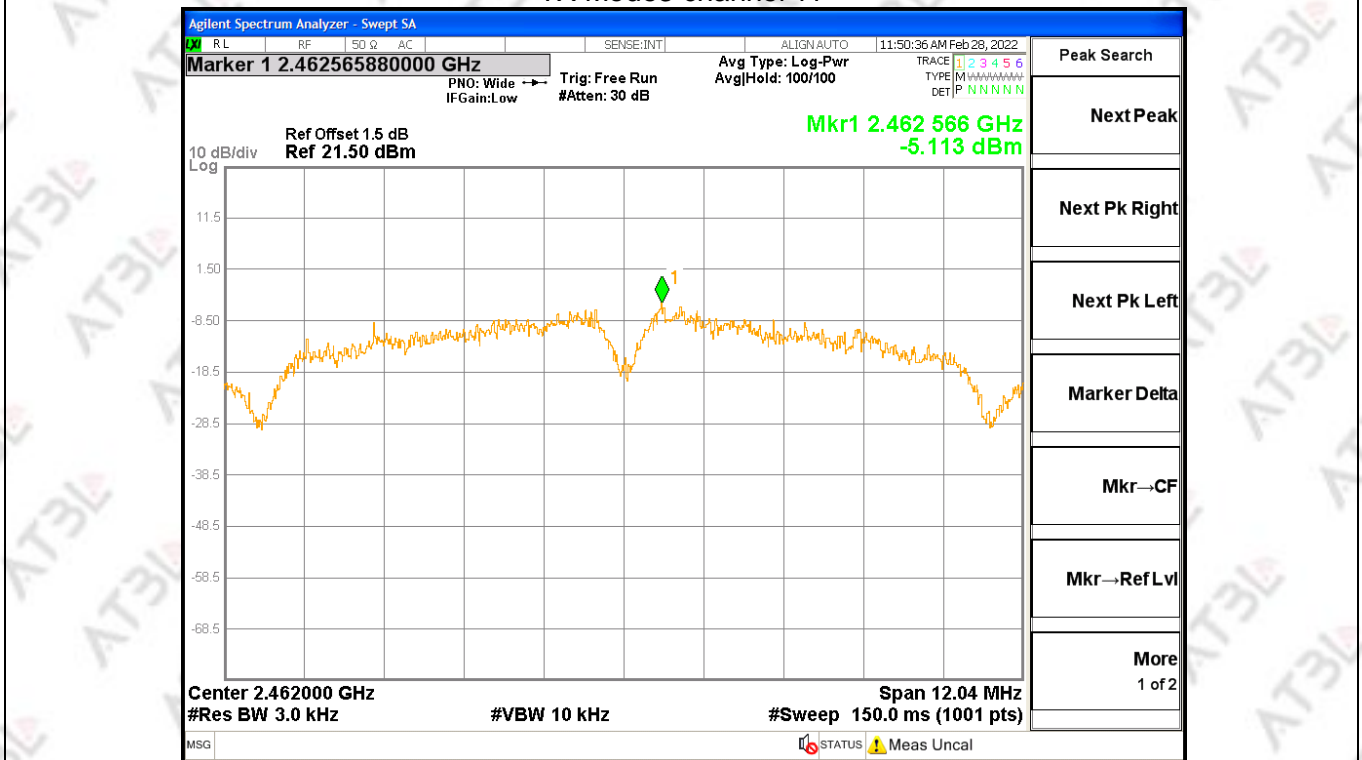
| | | | |
|---------------|--------|--------------------|--------------------------|
| Temperature: | 25°C | Relative Humidity: | 60%RH |
| Test Voltage: | AC120V | Test Mode: | TX Mode1/2/3/4/5/6/7/8/9 |

| Test mode | Frequency | Power Density | Limit (3KHz/dBm) | Result |
|-----------|-----------|---------------|------------------|--------|
| | | (dBm/3kHz) | | |
| Mode1 | 2412 MHz | -6.078 | ≤8 | PASS |
| Mode2 | 2437 MHz | -5.140 | ≤8 | PASS |
| Mode3 | 2462 MHz | -5.113 | ≤8 | PASS |
| Mode4 | 2412 MHz | -9.668 | ≤8 | PASS |
| Mode5 | 2437 MHz | -9.280 | ≤8 | PASS |
| Mode6 | 2462 MHz | -10.003 | ≤8 | PASS |
| Mode7 | 2412 MHz | -8.373 | ≤8 | PASS |
| Mode8 | 2437 MHz | -9.300 | ≤8 | PASS |
| Mode9 | 2462 MHz | -8.876 | ≤8 | PASS |

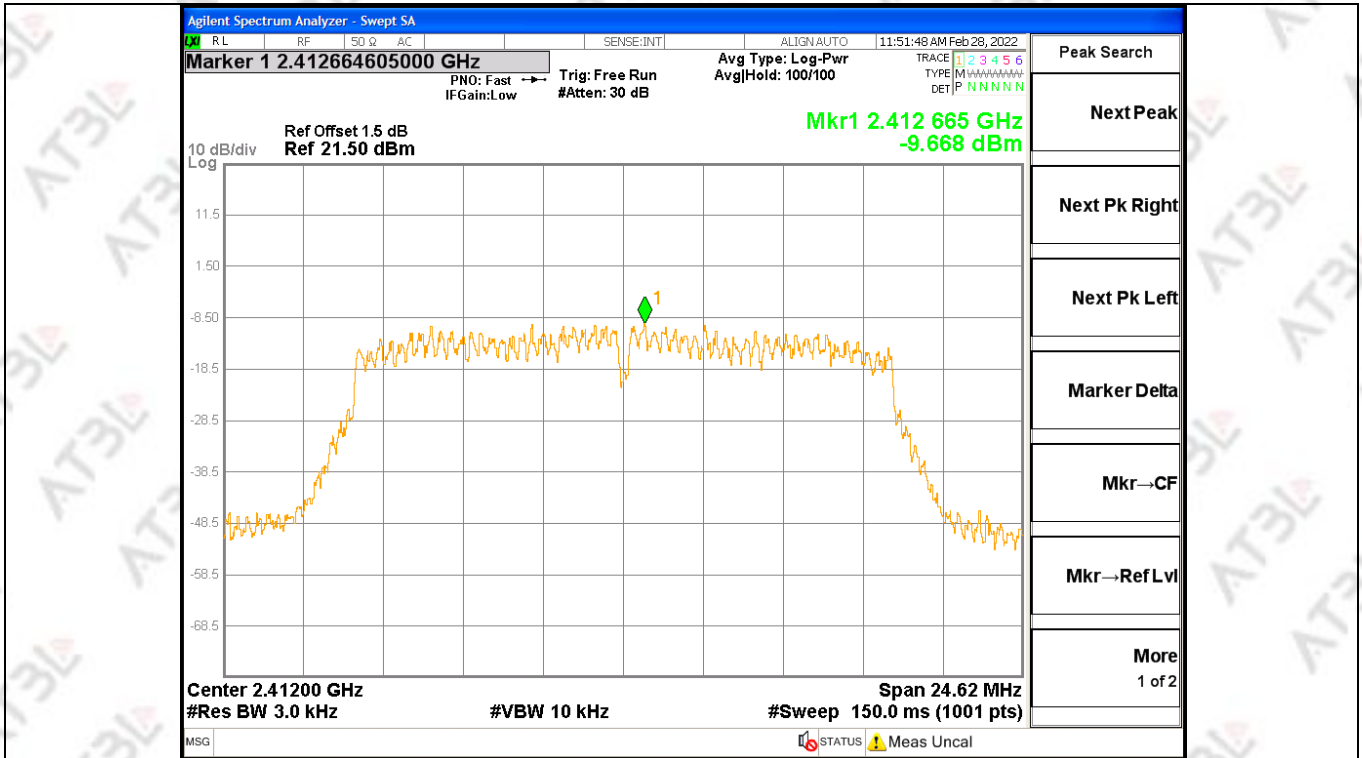




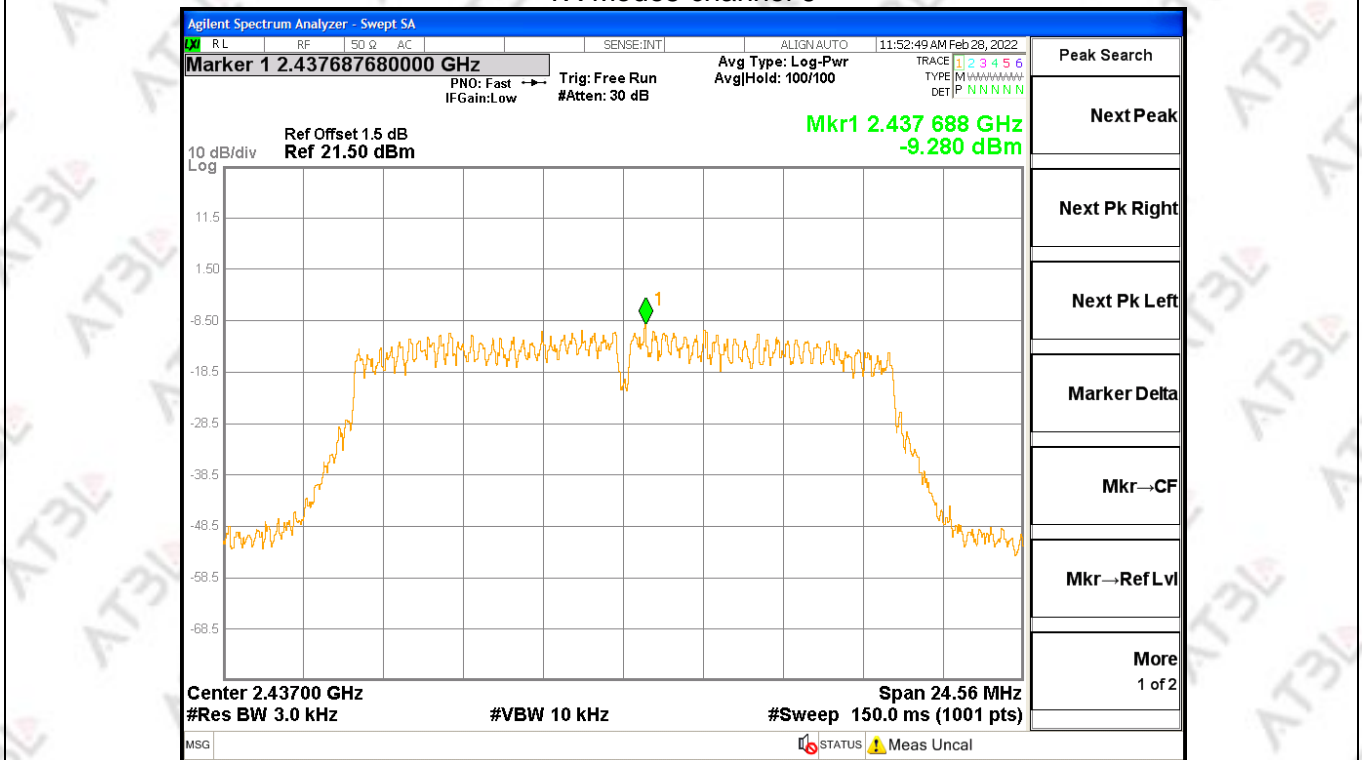
TX Mode3 channel 11



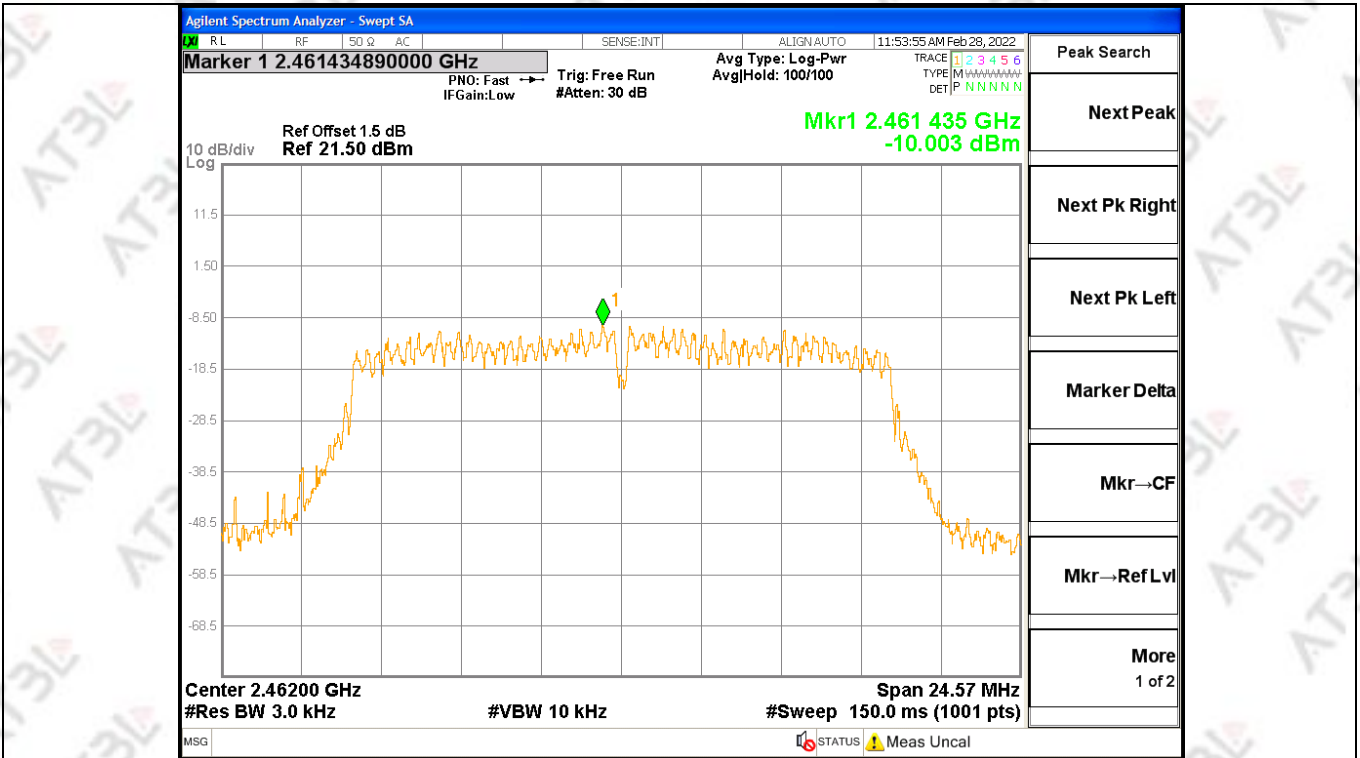
TX Mode4 channel 1



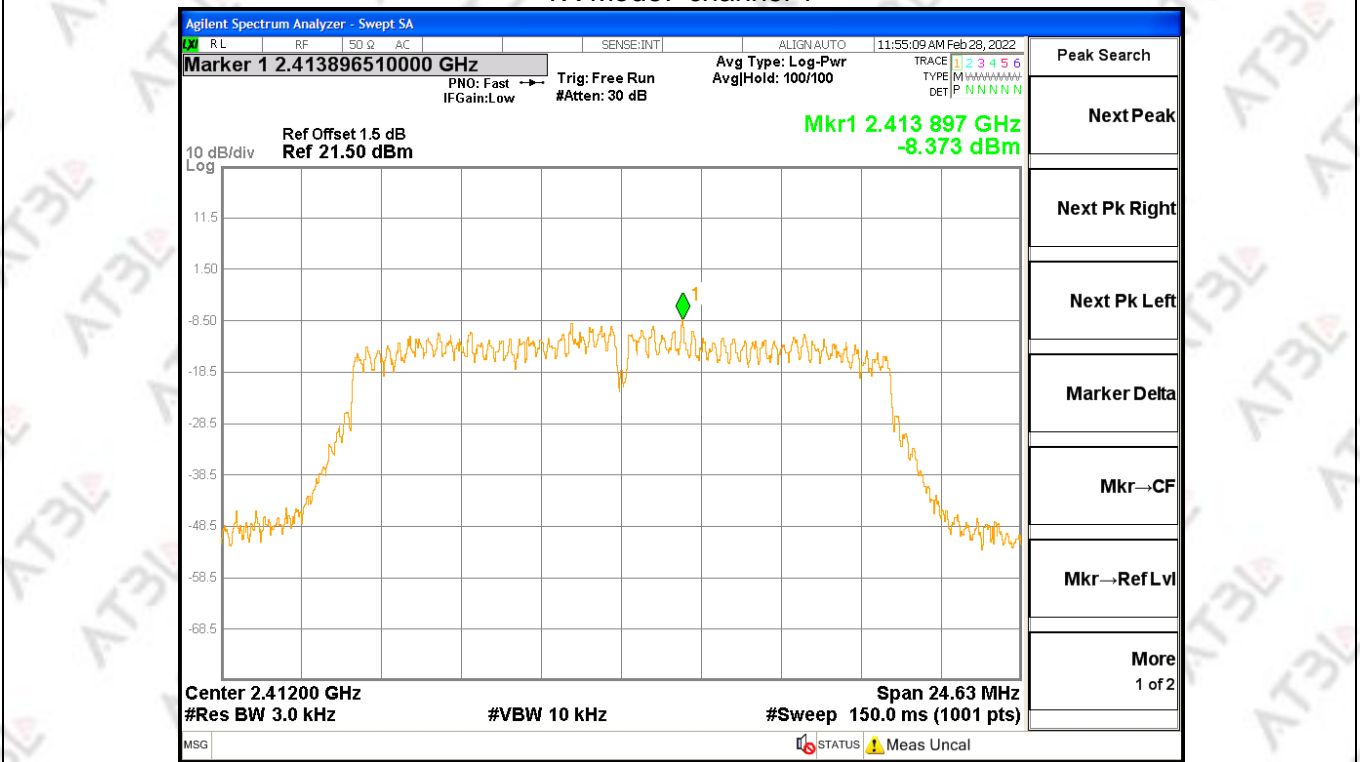
TX Mode5 channel 6



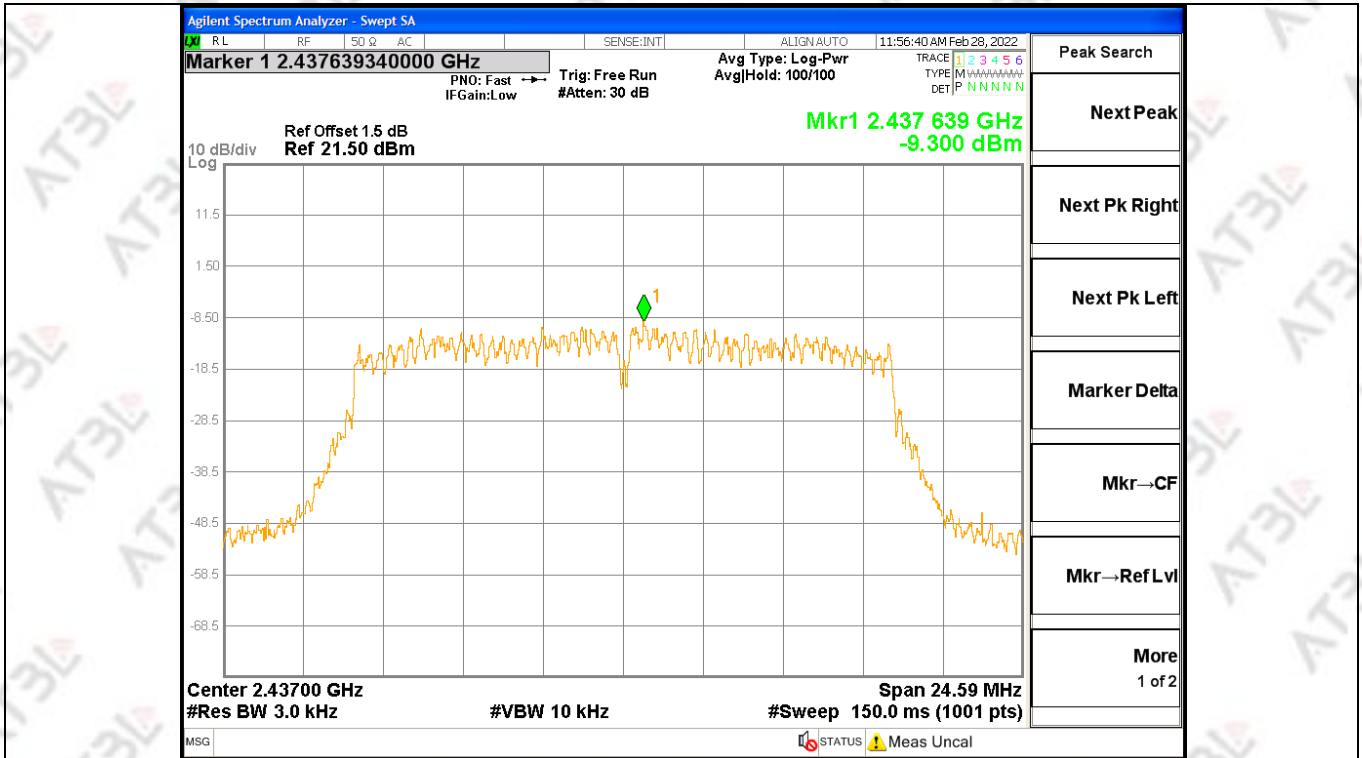
TX Mode6 channel 11



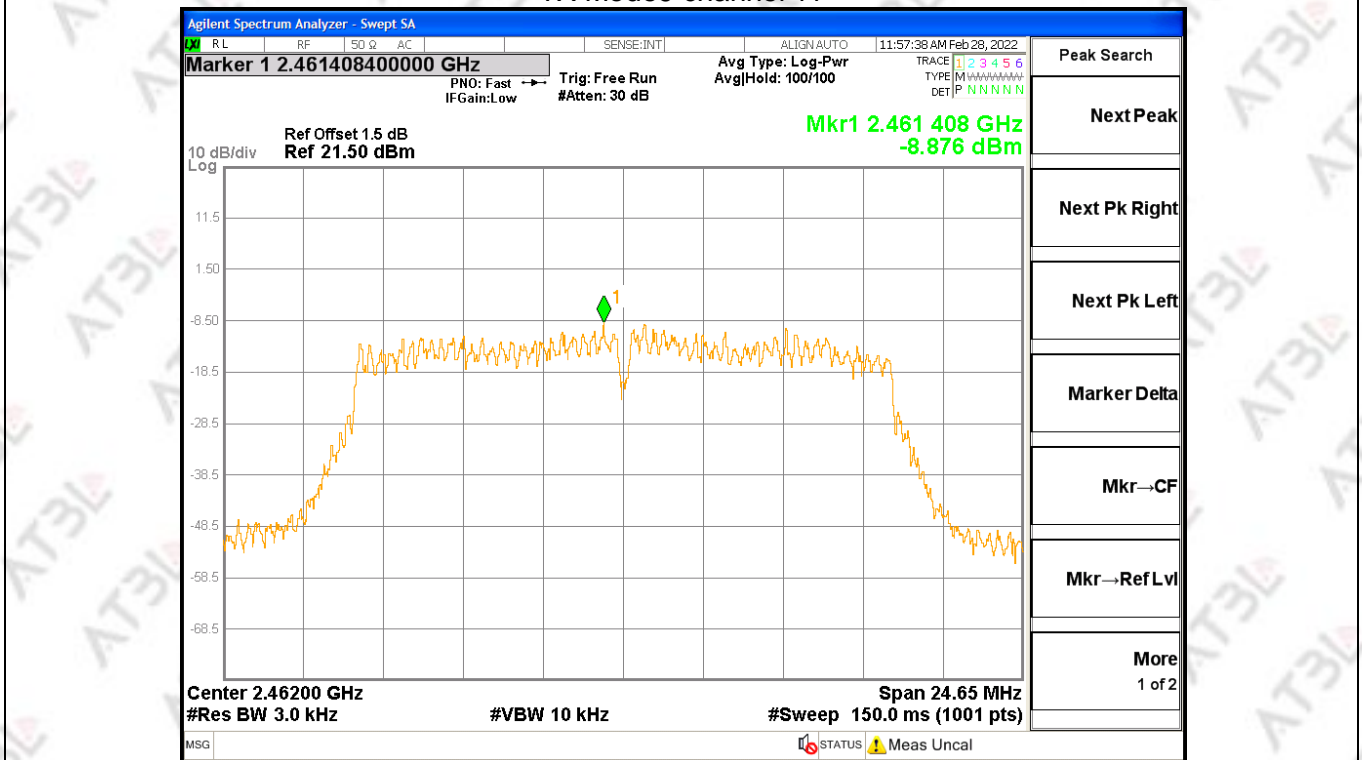
TX Mode7 channel 1



TX Mode8 channel 6



TX Mode9 channel 11



6. BANDWIDTH TEST

6.1 LIMIT

| FCC Part15.247,Subpart C | | | | |
|--------------------------|-----------|----------------------------|-----------------------|--------|
| Section | Test Item | Limit | Frequency Range (MHz) | Result |
| 15.247(a)(2) | Bandwidth | ≥500KHz (6dB bandwidth) | 2400-2483.5 | PASS |

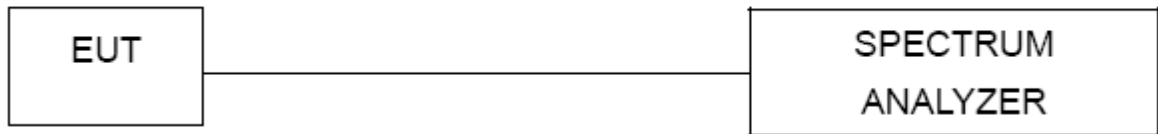
6.2 TEST PROCEDURE

The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described above (i.e., RBW = 100 kHz, VBW≥3RBW, peak detector with maximum hold) is implemented by the instrumentation function. When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥6 dB.

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP



6.5 EUT OPERATION CONDITIONS

Please refer to section 3.1.4 of this report.

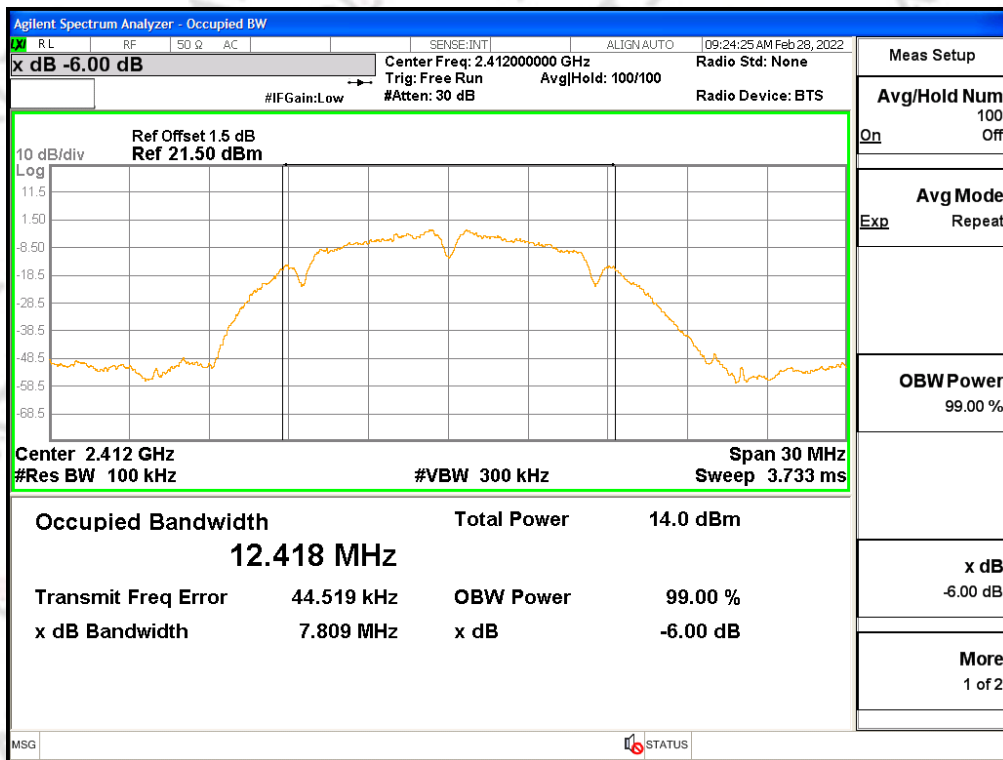
6.6 TEST RESULTS

| | | | |
|---------------|--------|--------------------|--------------------------|
| Temperature: | 25°C | Relative Humidity: | 60%RH |
| Test Voltage: | AC120V | Test Mode: | TX Mode1/2/3/4/5/6/7/8/9 |

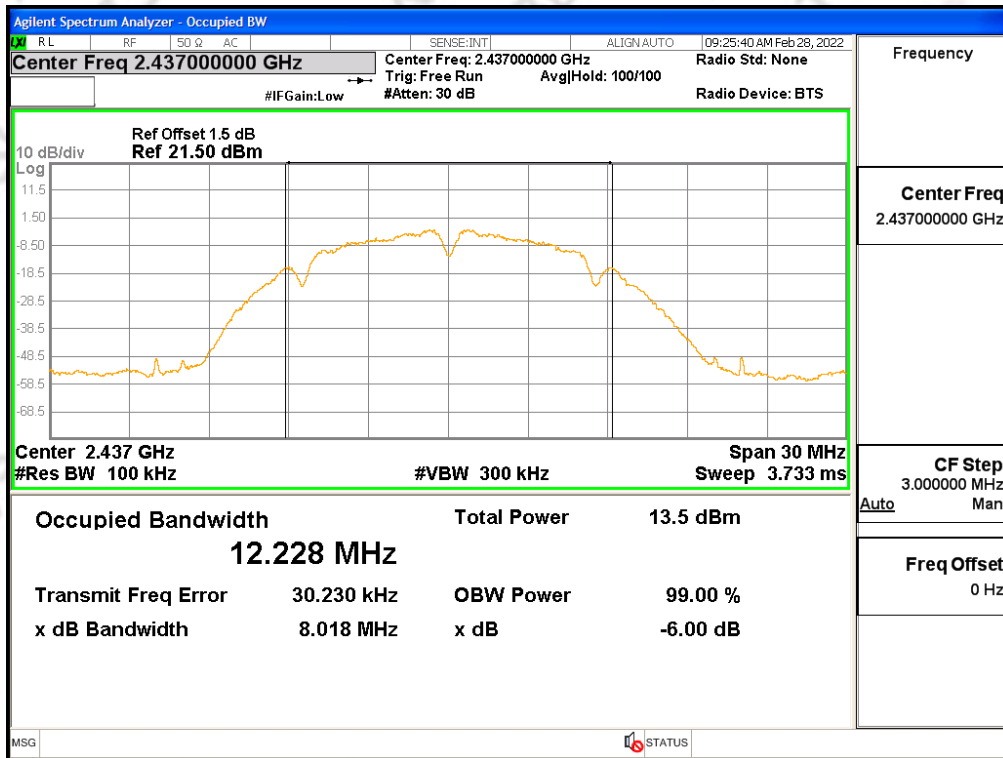
| Test mode | Frequency | 6dB Bandwidth (MHz) | 99% Bandwidth (MHz) | 6dB Bandwidth Limit(KHz) | Result |
|-----------|-----------|---------------------|---------------------|--------------------------|--------|
| Mode1 | 2412 MHz | 7.809 | 12.418 | ≥500KHz | PASS |
| Mode2 | 2437 MHz | 8.018 | 12.228 | ≥500KHz | PASS |
| Mode3 | 2462 MHz | 8.025 | 12.218 | ≥500KHz | PASS |
| Mode4 | 2412 MHz | 16.41 | 16.316 | ≥500KHz | PASS |
| Mode5 | 2437 MHz | 16.37 | 16.311 | ≥500KHz | PASS |
| Mode6 | 2462 MHz | 16.38 | 16.311 | ≥500KHz | PASS |
| Mode7 | 2412 MHz | 16.42 | 16.316 | ≥500KHz | PASS |
| Mode8 | 2437 MHz | 16.39 | 16.310 | ≥500KHz | PASS |
| Mode9 | 2462 MHz | 16.43 | 16.313 | ≥500KHz | PASS |

6dB Bandwidth & 99% Bandwidth

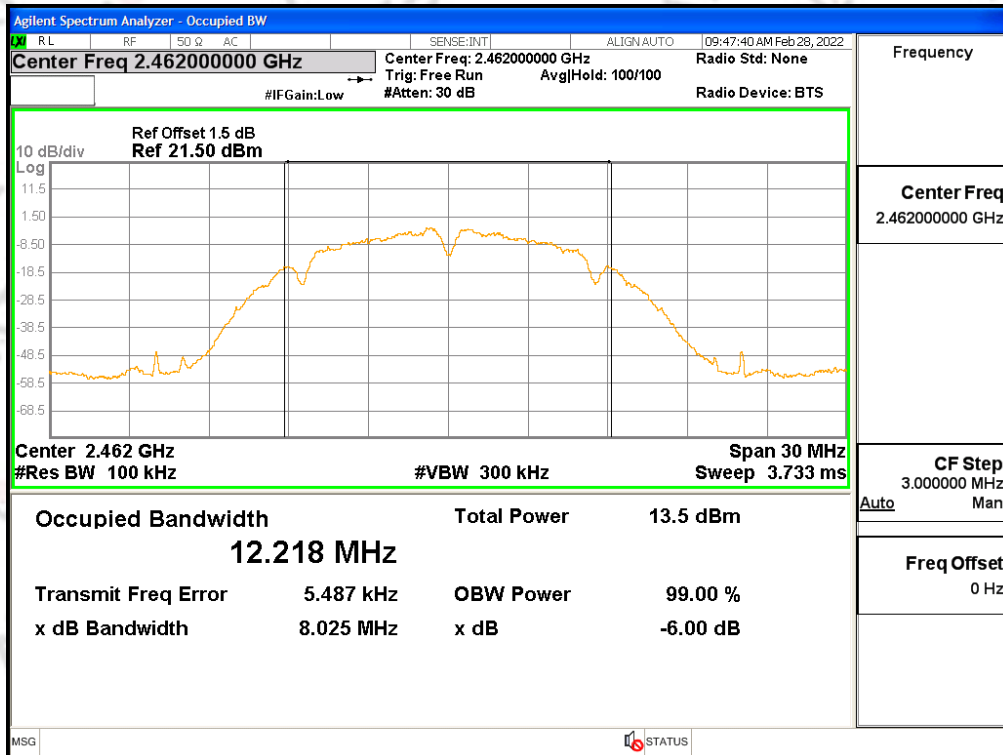
Mode1 CH 01



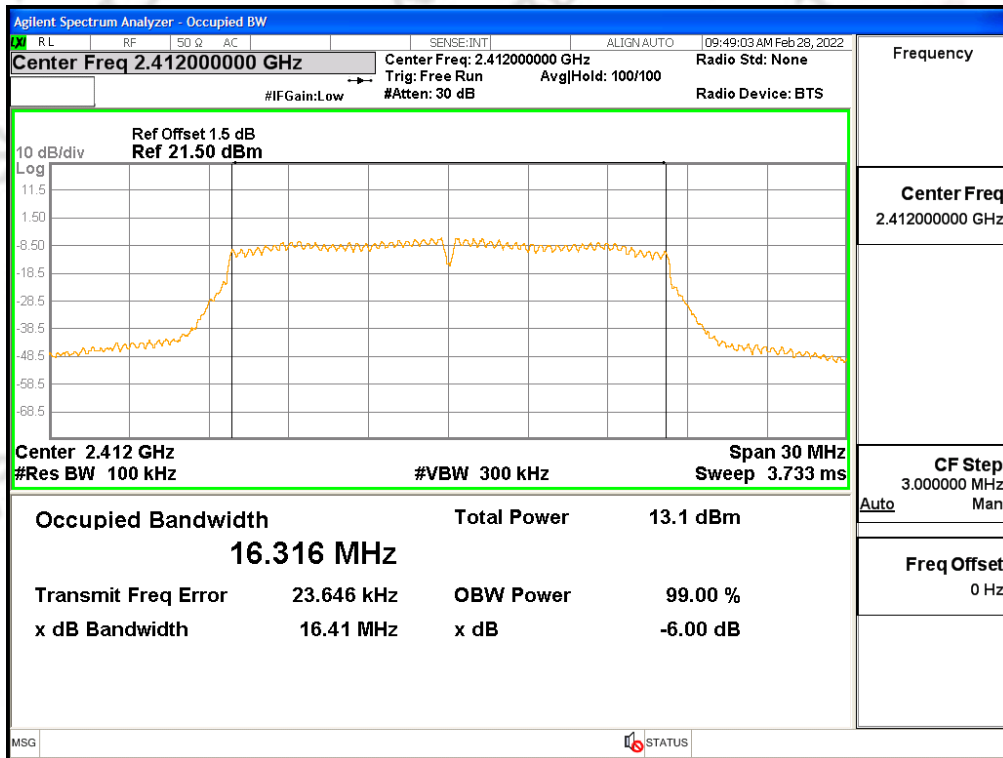
Mode2 CH 06



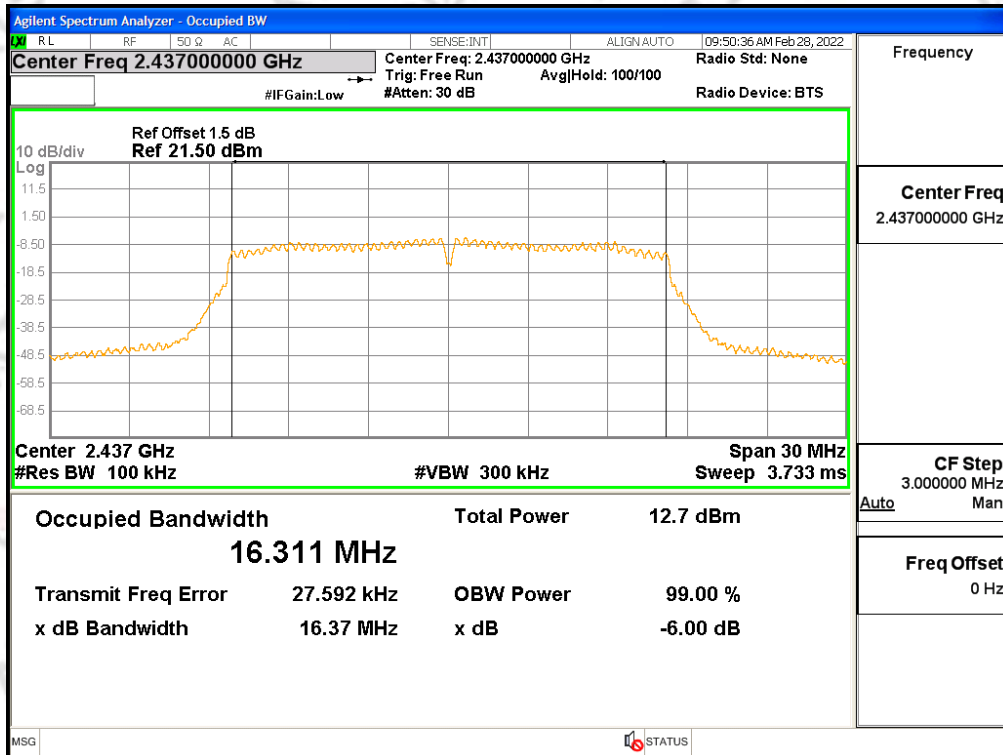
Mode3 CH 11



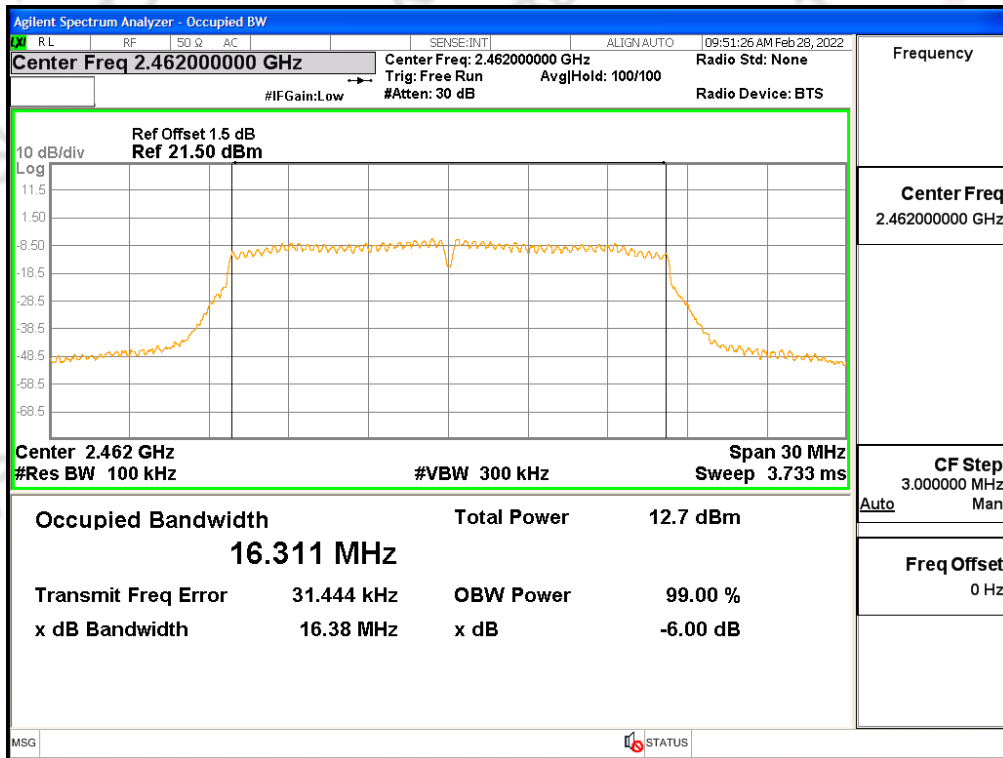
Mode4 CH 01



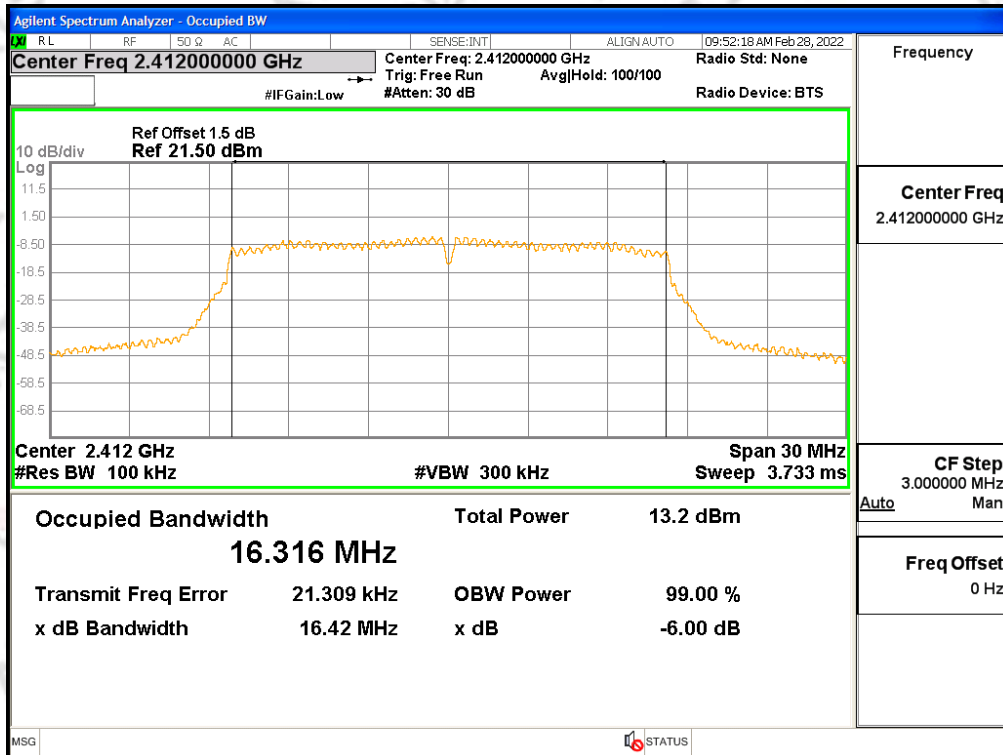
Mode5 CH 06



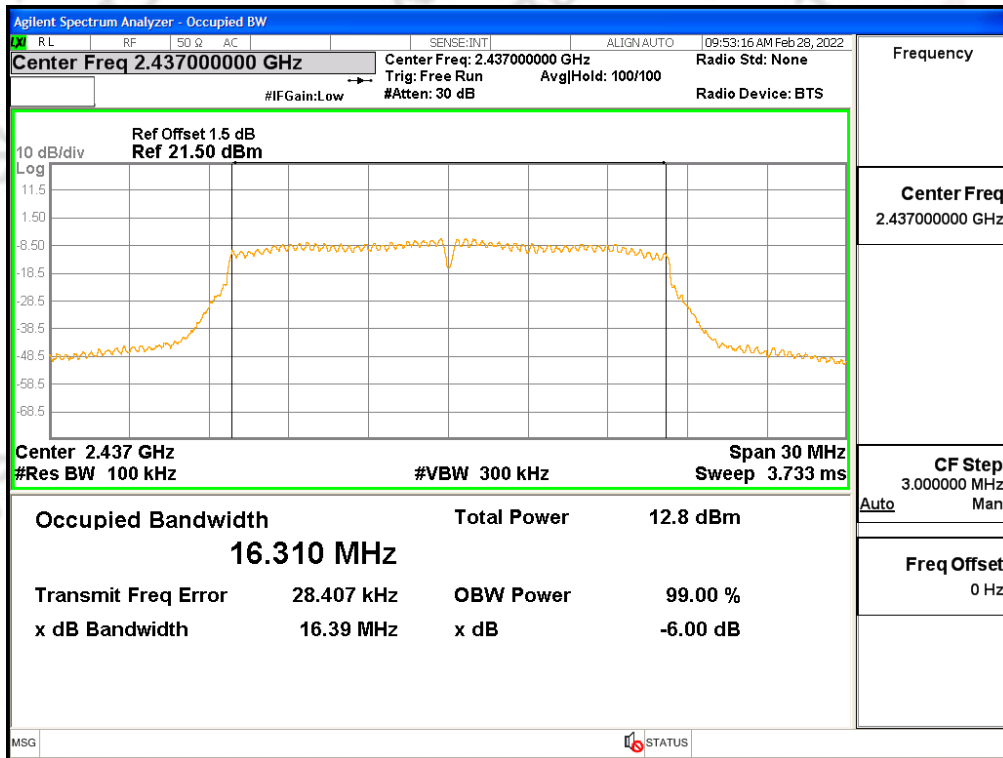
Mode6 CH 11



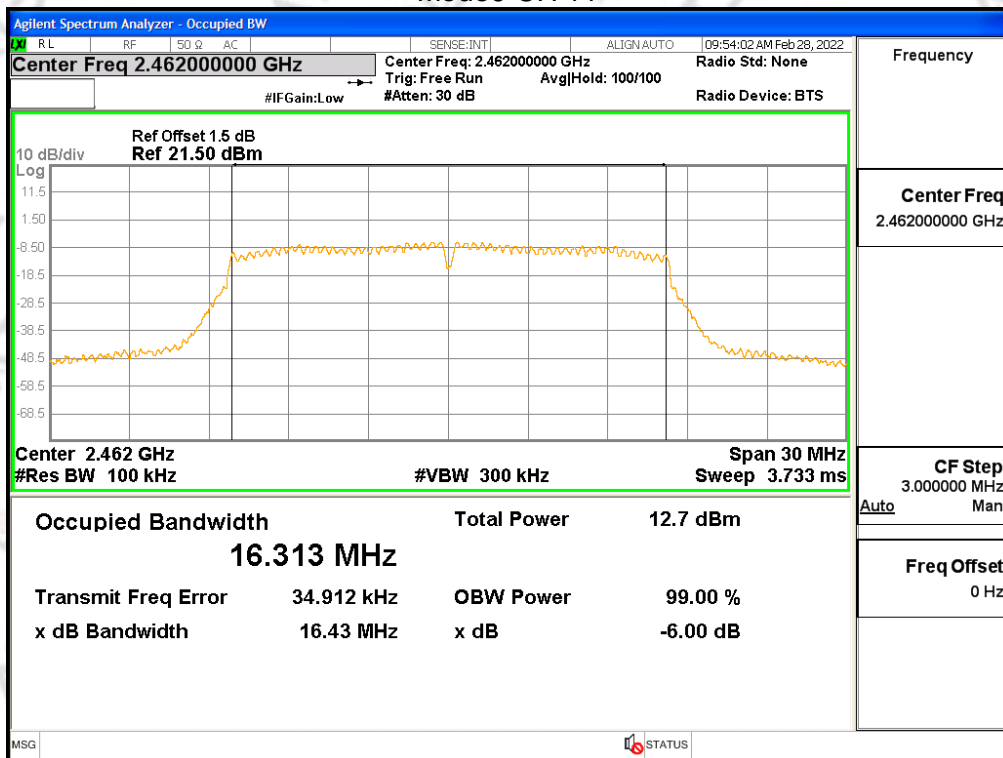
Mode7 CH 01



Mode8 CH 06



Mode9 CH 11



7. PEAK OUTPUT POWER TEST

7.1 LIMIT

| FCC Part15.247,Subpart C | | | | |
|--------------------------|--------------|-----------------|-----------------------|--------|
| Section | Test Item | Limit | Frequency Range (MHz) | Result |
| 15.247(b)(3) | Output Power | 1 watt or 30dBm | 2400-2483.5 | PASS |

7.2 TEST PROCEDURE

PKPM1 Peak power meter method:

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall use a fast-responding diode detector.

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

Please refer to section 3.1.4 of this report.

7.6 TEST RESULTS

| | | | |
|---------------|--------|--------------------|--------------------------|
| Temperature: | 25°C | Relative Humidity: | 60%RH |
| Test Voltage: | AC120V | Test Mode: | TX Mode1/2/3/4/5/6/7/8/9 |

| Test mode | Test Channel | Frequency | Peak Conducted Output Power | Average Conducted Output Power | LIMIT |
|-----------|--------------|-----------|-----------------------------|--------------------------------|-------|
| | | (MHz) | (dBm) | (dBm) | dBm |
| Mode1 | CH01 | 2412 | 16.98 | 13.88 | 30 |
| Mode2 | CH06 | 2437 | 16.43 | 13.44 | 30 |
| Mode3 | CH11 | 2462 | 16.13 | 13.11 | 30 |
| Mode4 | CH01 | 2412 | 22.37 | 13.05 | 30 |
| Mode5 | CH06 | 2437 | 22.07 | 12.61 | 30 |
| Mode6 | CH11 | 2462 | 21.19 | 12.22 | 30 |
| Mode7 | CH01 | 2412 | 22.43 | 12.06 | 30 |
| Mode8 | CH06 | 2437 | 21.87 | 12.56 | 30 |
| Mode9 | CH11 | 2462 | 21.35 | 12.29 | 30 |

| Test Mode | Frequency | Peak Conducted Output Power | Antenna Gain | EIRP Power | LIMIT |
|-----------|-----------|-----------------------------|--------------|------------|-------|
| | (MHz) | (dBm) | (dBi) | (dBm) | dBm |
| Mode1 | 2412 | 16.98 | 2 | 18.98 | 36 |
| Mode2 | 2437 | 16.43 | 2 | 18.43 | 36 |
| Mode3 | 2462 | 16.13 | 2 | 18.13 | 36 |
| Mode4 | 2412 | 22.37 | 2 | 24.37 | 36 |
| Mode5 | 2437 | 22.07 | 2 | 24.07 | 36 |
| Mode6 | 2462 | 21.19 | 2 | 23.19 | 36 |
| Mode7 | 2412 | 22.43 | 2 | 24.43 | 36 |
| Mode8 | 2437 | 21.87 | 2 | 23.87 | 36 |
| Mode9 | 2462 | 21.35 | 2 | 23.35 | 36 |

Note: Our power sensor test AVG power has no duty cycle display. The power sensor measures AVG power is Burst power. The software has considered the factor of the duty cycle factor, so it is unnecessary to add it again.

8. ANTENNA REQUIREMENT

8.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: 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.

8.2 EUT ANTENNA

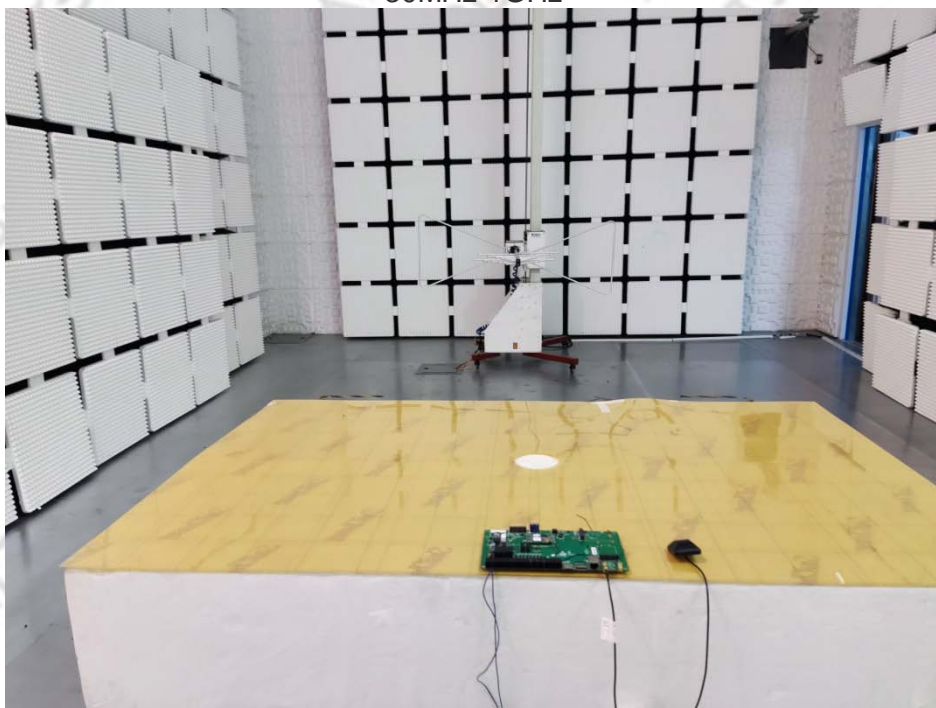
The EUT antenna is Sucker Antenna. It comply with the standard requirement.

APPENDIX-PHOTOS OF TEST SETUP

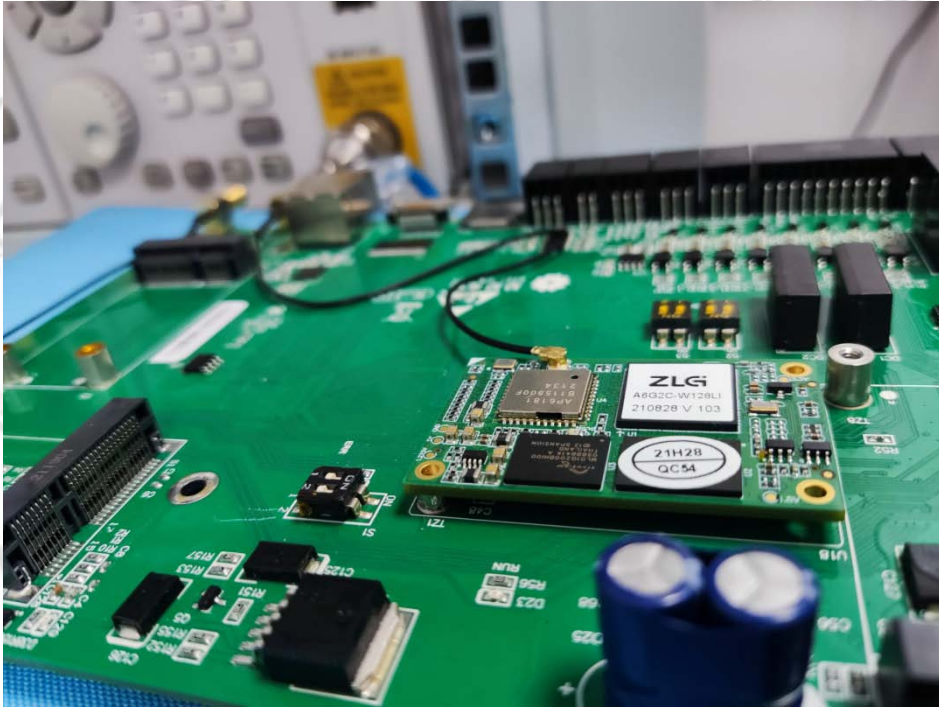
Conduction



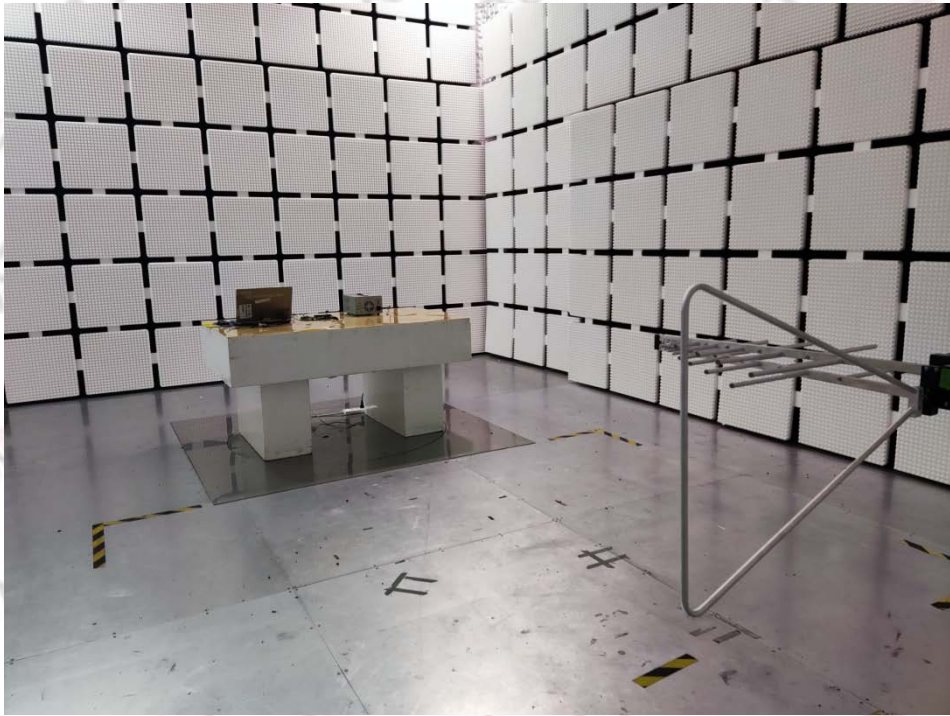
Radiation emission
30MHz-1GHz



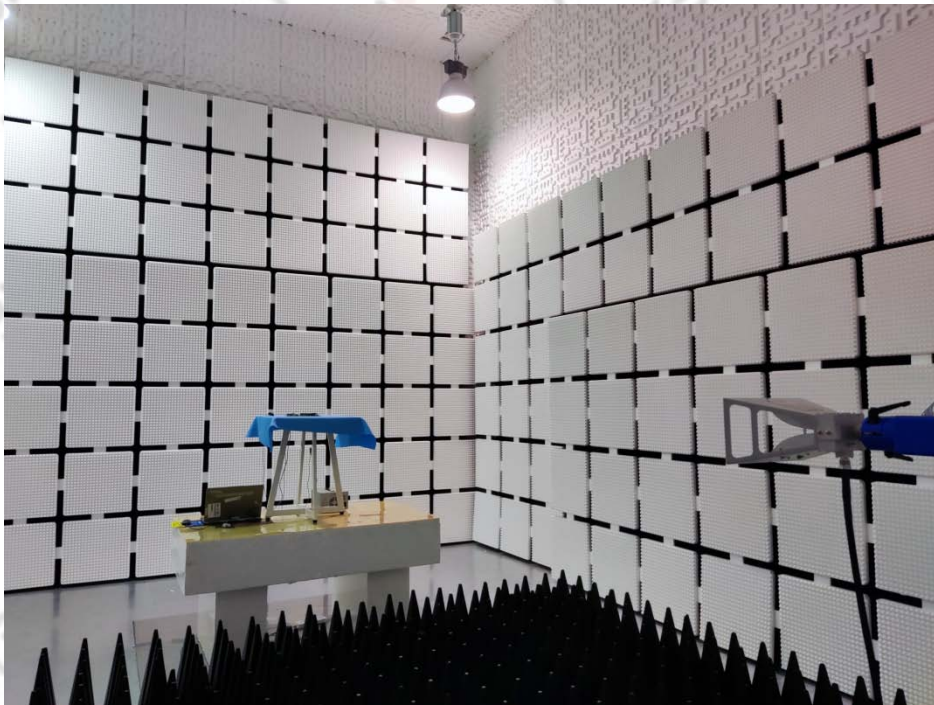
Conducted



RSE 30MHz-1000MHz



RSE 1GHz-18GHz



※※※※※END OF THE REPORT※※※※※