

RADIO TEST REPORT

FCC ID: 2AKQT-TVBOX

Product: TV Box

Trade Name: N/A

Model Name: Sunday

Serial Model: N/A

Report No.: UNIA2018110218-FR-01

Prepared for

Shenzhen B2go Technology Company Limited

Room2201-2203, 22th Floor, China South Development Center, China South City

Pinghu, LongGang District, Shenzhen, Guangdong, China

Prepared by

Shenzhen United Testing Technology Co., Ltd.

2F, Annex Bldg, Jiahuangyuan Tech Park, #365 Baotian 1 Rd, Tiegang

Community, XixiangStr, Bao'an District, Shenzhen, China

TEST RESULT CERTIFICATION

Applicant's name : Shenzhen B2go Technology Company Limited

Address : Room2201-2203, 22th Floor, China South Development Center, China South City, Pinghu, LongGang District, Shenzhen, Guangdong, China

Manufacture's Name : Shenzhen B2go Technology Company Limited

Address : Room2201-2203, 22th Floor, China South Development Center, China South City, Pinghu, LongGang District, Shenzhen, Guangdong, China

Product description

Product name : TV Box

Trade Mark : N/A

Model and/or type reference : Sunday

Standards : FCC Rules and Regulations Part 15 Subpart C Section 15.247
ANSI C63.10: 2013
KDB558074 D01 V05: Guidance for Performing Compliance

This device described above has been tested by Shenzhen United Testing Technology Co., Ltd., and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of UNI, this document may be altered or revised by Shenzhen United Testing Technology Co., Ltd., personnel only, and shall be noted in the revision of the document.

Date of Test : Oct. 30, 2018

Date (s) of performance of tests : Oct. 30, 2018 - Nov. 30, 2018

Date of Issue : Nov. 30, 2018

Test Result : Pass

Prepared by:

Reviewer:

Approved & Authorized Signer:



Liuze/Manager

Table of Contents

| | | |
|----------|---|-----------|
| 1 | TEST SUMMARY | 4 |
| 1.1 | <i>Environment conditions.....</i> | 4 |
| 1.2 | <i>SUMMARY of TEST RESULTS.....</i> | 4 |
| 1.3 | <i>TEST FACILITY.....</i> | 4 |
| 1.4 | <i>MEASUREMENT UNCERTAINTY.....</i> | 5 |
| 2 | GENERAL INFORMATION | 6 |
| 2.1 | <i>GENERAL DESCRIPTION OF EUT.....</i> | 6 |
| 2.2 | <i>CARRIER FREQUENCY OF CHANNELS.....</i> | 6 |
| 2.3 | <i>OPARATION OF EUT DURING TESTING.....</i> | 7 |
| 2.4 | <i>DESCRIPTION OF TEST SETUP.....</i> | 7 |
| 2.5 | <i>MEASUREMENT INSTRUMENTS LIST.....</i> | 7 |
| 2.6 | <i>Special Accessories.....</i> | 8 |
| 3 | TEST CONDITIONS AND RESULTS | 9 |
| 3.1 | <i>CONDUCTED EMISSIONS TEST.....</i> | 9 |
| 3.2 | <i>RADIATED EMISSION TEST.....</i> | 12 |
| 3.3 | <i>CONDUCTED OUTPUT POWER.....</i> | 21 |
| 3.4 | <i>POWER SPECTRAL DENSITY.....</i> | 22 |
| 3.5 | <i>OCCUPIED BANDWIDTH MEASUREMENT.....</i> | 25 |
| 3.6 | <i>OUT-OF BAND EMISSIONS.....</i> | 28 |
| 3.7 | <i>ANTENNA REQUIREMENT.....</i> | 34 |
| 4 | PHOTOGRAPH OF TEST | 35 |
| 5 | PHOTOGRAPH OF EUT | 36 |

1 TEST SUMMARY

1.1 Environment conditions

During the measurement the environment condition were within the listed ranges:

| | |
|--------------------|--------|
| Normal temperature | 25°C |
| Relative humidity | 55% |
| Air pressure | 101KPa |

1.2 SUMMARY of TEST RESULTS

| FCC PART 15.247 | | |
|---------------------------------|--------------------------------|------|
| FCC Part 15.207 | AC Power Conducted Emission | PASS |
| FCC Part 15.247(a)(2) | 6dB Bandwidth | PASS |
| FCC Part 15.247(d) | Spurious RF Conducted Emission | PASS |
| FCC Part 15.247(b) | Maximum Conducted Output Power | PASS |
| FCC Part 15.247(e) | Power Spectral Density | PASS |
| FCC Part 15.109/ 15.205/ 15.209 | Radiated Emissions | PASS |
| FCC Part 15.247(d) | Band Edge | PASS |
| FCC Part 15.203/15.247 (b) | Antenna Requirement | PASS |

1.3 TEST FACILITY

Test Firm :Shenzhen United Testing Technology Co.,Ltd.

Address :2F, Annex Bldg, JiahuangyuanTech Park, #365 Baotian 1 Rd,Tiegang Community, Xixiang Str, Bao'an District, Shenzhen,China

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.The testing quality system of our laboratory meets with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

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

CNAS-LAB Code: L6494

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2017 General Requirements) for the Competence of testing Laboratories.

Designation Number: CN1227

Test Firm Registration Number: 674885

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files.

1.4 MEASUREMENT UNCERTAINTY

Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2

Radiated emission expanded uncertainty(9kHz-30MHz) = 3.08dB, k=2

Radiated emission expanded uncertainty(30MHz-1000MHz) = 4.42dB, k=2

Radiated emission expanded uncertainty(Above 1GHz) = 4.06dB, k=2

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

| | |
|--------------------|--|
| Equipment | TV Box |
| Trade Mark | N/A |
| Model Name | Sunday |
| Serial No. | N/A |
| Model Difference | N/A |
| FCC ID | 2AKQT-TVBOX |
| Antenna Type | FPC Antenna |
| Antenna Gain | 2.0 dBi |
| Frequency Range | 802.11b/g/n20:2412~2462MHz |
| Number of Channels | 802.11b/g/n20: 11 |
| Modulation Type | CCK/DSSS, OFDM |
| Battery | N/A |
| Power Source | DC 5.0V from adapter |
| Adapter Model | MODEL:SR-C60502000E2 INPUT: 100-240VAC 50/60Hz 0.35A Max OUTPUT: 5V —=2000mA |

2.2 CARRIER FREQUENCY OF CHANNELS

802.11b/g/n(20MHz)

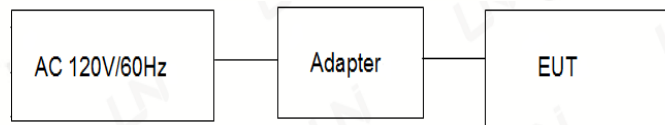
| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---------|-----------------|---------|-----------------|
| 1 | 2412 | 7 | 2442 |
| 2 | 2417 | 8 | 2447 |
| 3 | 2422 | 9 | 2452 |
| 4 | 2427 | 10 | 2457 |
| 5 | 2432 | 11 | 2462 |
| 6 | 2437 | | |

2.3 OPERATION OF EUT DURING TESTING

Operating Mode: 802.11b/g/n(20MHz)

| | |
|----------------|---------|
| Low Channel: | 2412MHz |
| Middle Channel | 2437MHz |
| High Channel | 2462MHz |

2.4 DESCRIPTION OF TEST SETUP



2.5 MEASUREMENT INSTRUMENTS LIST

| Item | Equipment | Manufacturer | Model No. | Serial No. | Calibrated until |
|--------------------------|---------------------------------|---------------|-------------|------------|------------------|
| CONDUCTED EMISSIONS TEST | | | | | |
| 1 | AMN | Schwarzbeck | NNLK8121 | 8121370 | 2019.09.09 |
| 2 | AMN | ETS | 3810/2 | 00020199 | 2019.09.09 |
| 3 | EMI TEST RECEIVER | Rohde&Schwarz | ESCI | 101210 | 2019.09.09 |
| 4 | AAN | TESEQ | T8-Cat6 | 38888 | 2019.09.09 |
| RADIATED EMISSION TEST | | | | | |
| 1 | Horn Antenna | Sunol | DRH-118 | A101415 | 2019.09.29 |
| 2 | BicoNILog Antenna | Sunol | JB1 Antenna | A090215 | 2019.09.29 |
| 3 | PREAMP | HP | 8449B | 3008A00160 | 2019.09.09 |
| 4 | PREAMP | HP | 8447D | 2944A07999 | 2019.09.09 |
| 5 | EMI TEST RECEIVER | Rohde&Schwarz | ESR3 | 101891 | 2019.09.09 |
| 6 | VECTOR Signal Generator | Rohde&Schwarz | SMU200A | 101521 | 2019.09.28 |
| 7 | Signal Generator | Agilent | E4421B | MY4335105 | 2019.09.28 |
| 8 | MXA Signal Analyzer | Agilent | N9020A | MY50510140 | 2019.09.28 |
| 9 | MXA Signal Analyzer | Agilent | N9020A | MY51110104 | 2019.09.09 |
| 10 | ANT Tower&Turn table Controller | Champro | EM 1000 | 60764 | 2019.09.28 |

| | | | | | |
|----|-------------------------------------|---------------|------------|---------------|------------|
| 11 | Anechoic Chamber | Taihe Maorui | 9m*6m*6m | 966A0001 | 2019.09.09 |
| 12 | Shielding Room | Taihe Maorui | 6.4m*4m*3m | 643A0001 | 2019.09.09 |
| 13 | RF Power sensor | DARE | RPR3006W | 15I00041SNO88 | 2019.03.14 |
| 14 | RF Power sensor | DARE | RPR3006W | 15I00041SNO89 | 2019.03.14 |
| 15 | RF power divider | Anritsu | K241B | 992289 | 2019.09.28 |
| 16 | Wideband radio communication tester | Rohde&Schwarz | CMW500 | 154987 | 2019.09.28 |
| 17 | Biconical antenna | Schwarzbeck | VHA 9103 | 91032360 | 2019.09.08 |
| 18 | Biconical antenna | Schwarzbeck | VHA 9103 | 91032361 | 2019.09.08 |
| 19 | Broadband Hybrid Antennas | Schwarzbeck | VULB9163 | VULB9163#958 | 2019.09.08 |
| 20 | Horn Antenna | Schwarzbeck | BBHA9120D | 9120D-1680 | 2019.01.12 |
| 21 | Active Receive Loop Antenna | Schwarzbeck | FMZB 1919B | 00023 | 2019.11.02 |
| 22 | Horn Antenna | Schwarzbeck | BBHA 9170 | BBHA9170651 | 2019.03.14 |
| 23 | Microwave Broadband Preamplifier | Schwarzbeck | BBV 9721 | 100472 | 2019.10.24 |
| 24 | Active Loop Antenna | Com-Power | AL-130R | 10160009 | 2019.05.10 |
| 25 | Power Meter | KEYSIGHT | N1911A | MY50520168 | 2019.05.10 |

Note: The calibration interval was one year

2.6 Special Accessories

| Manufacturer | Description | Model | Serial Number | Certificate |
|--------------|-------------|-------|---------------|-------------|
| --- | --- | --- | --- | --- |
| --- | --- | --- | --- | --- |

3 TEST CONDITIONS AND RESULTS

3.1 CONDUCTED EMISSIONS TEST

Limit

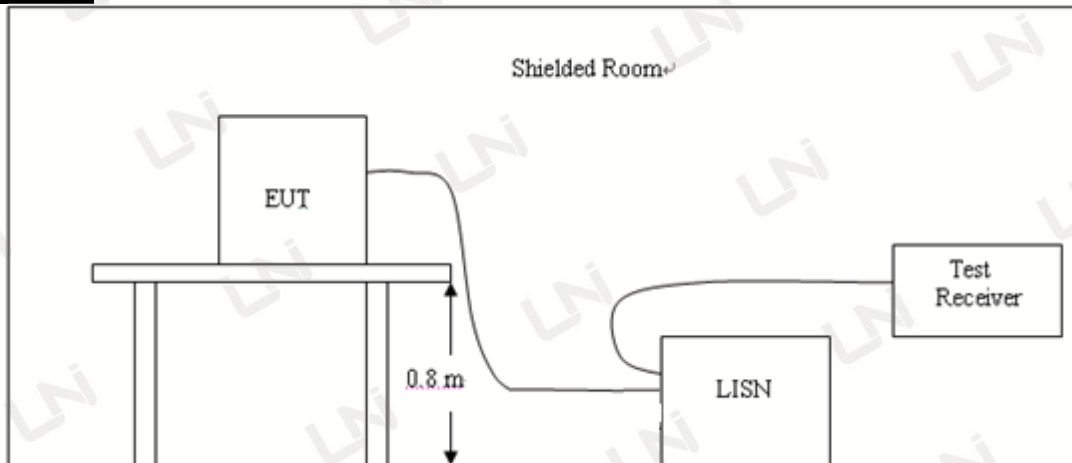
According to FCC CFR Title 47 Part 15 Subpart C Section 15.207 and RSS Gen 8.8, AC Power Line Conducted Emissions Limits for Licence-Exempt Radio Apparatus as below:

| Frequency range (MHz) | Limit (dBuV) | |
|-----------------------|--------------|-----------|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56* | 56 to 46* |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

* Decreasing linearly with the logarithm of the frequency

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

Test Setup



Test Procedure

- 1, The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. A wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10.
- 2, Support equipment, if needed, was placed as per ANSI C63.10.
- 3, All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4, If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received AC power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5, All support equipments received AC power from a second LISN, if any.
- 6, The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7, Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.

Test Result

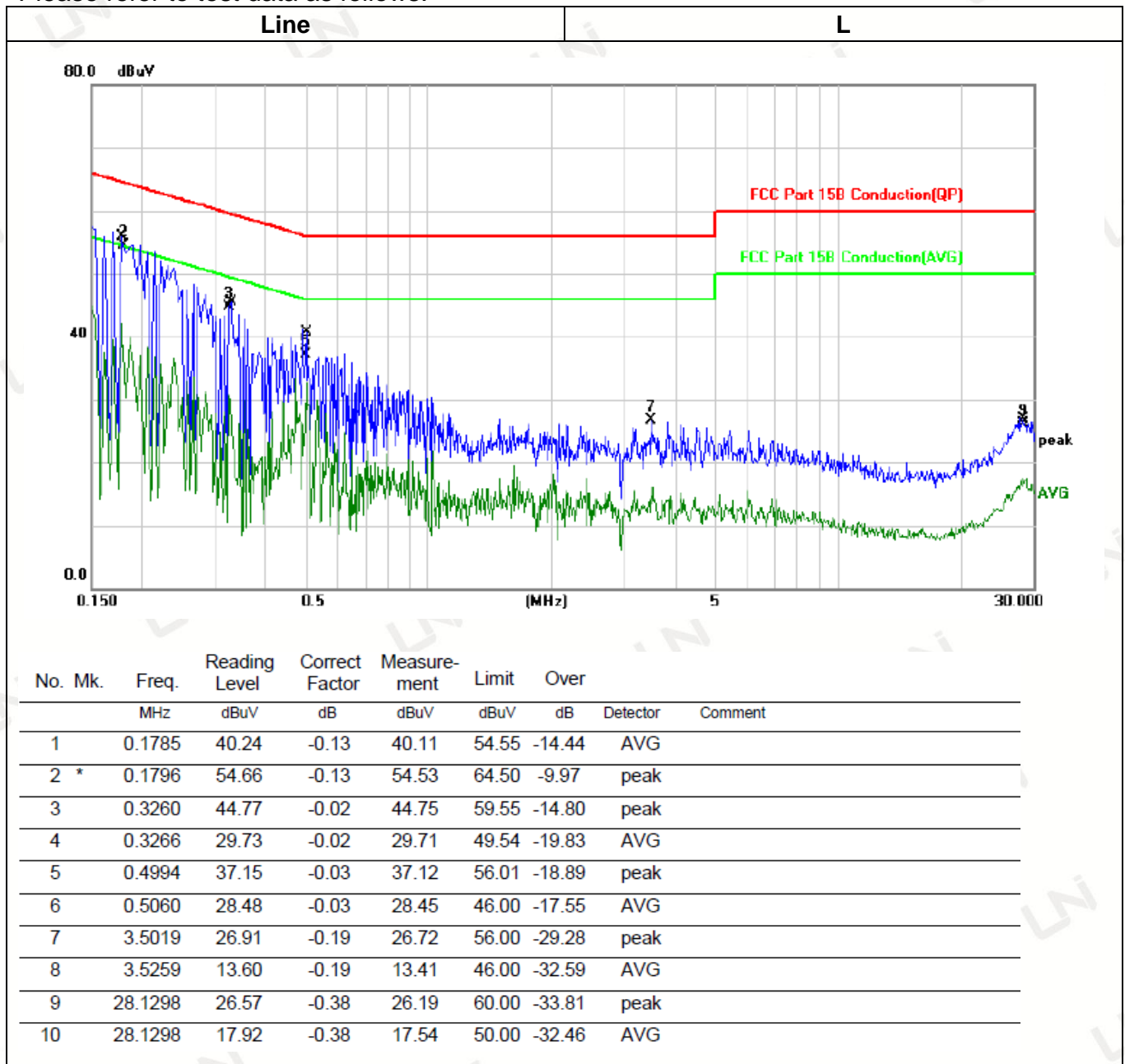
---PASS---

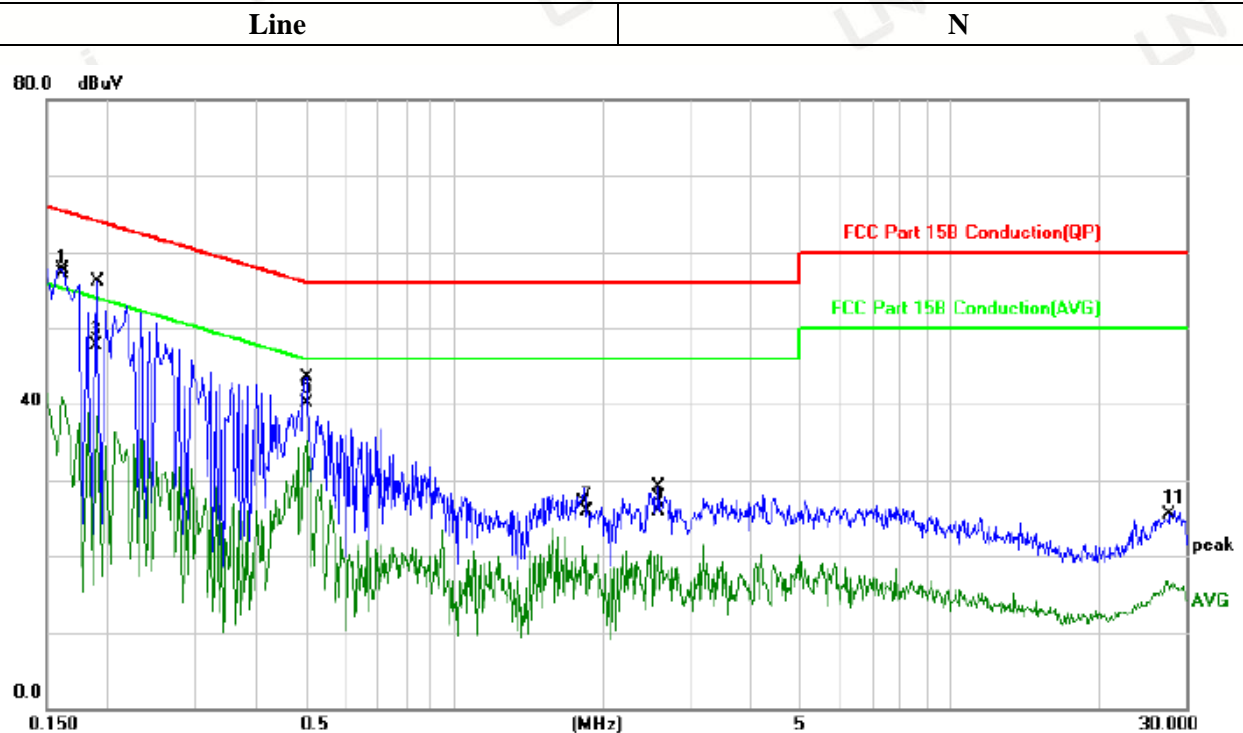
Remark:

1. All modes of 802.11b/g/n were tested at Low, Middle, and High channel; only the worst result of 802.11b CH11 was reported as below:
2. Both 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz power supply have been tested, only the worst result of 120 VAC, 60 Hz was reported as below:

| | | | |
|---------------|---------------|--------------------|---------|
| Temperature: | 25°C | Relative Humidity: | 48% |
| Test Date: | Nov. 12, 2018 | Pressure: | 1030hPa |
| Test Voltage: | AC 120V 60Hz | Polarization: | |

Please refer to test data as follows:





| No. | Mk. | Freq. | Reading Level | Correct Factor | Measurement | Limit | Over | |
|-----|-----|---------|---------------|----------------|-------------|-------|--------|------------------|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector Comment |
| 1 | * | 0.1621 | 57.25 | -0.13 | 57.12 | 65.35 | -8.23 | peak |
| 2 | | 0.1621 | 40.57 | -0.13 | 40.44 | 55.35 | -14.91 | AVG |
| 3 | | 0.1884 | 47.88 | -0.13 | 47.75 | 64.10 | -16.35 | peak |
| 4 | | 0.1912 | 31.24 | -0.13 | 31.11 | 53.98 | -22.87 | AVG |
| 5 | | 0.5060 | 40.12 | -0.03 | 40.09 | 56.00 | -15.91 | peak |
| 6 | | 0.5100 | 33.14 | -0.03 | 33.11 | 46.00 | -12.89 | AVG |
| 7 | | 1.8540 | 26.09 | -0.22 | 25.87 | 56.00 | -30.13 | peak |
| 8 | | 1.8540 | 15.12 | -0.22 | 14.90 | 46.00 | -31.10 | AVG |
| 9 | | 2.6018 | 26.00 | -0.16 | 25.84 | 56.00 | -30.16 | peak |
| 10 | | 2.6018 | 15.86 | -0.16 | 15.70 | 46.00 | -30.30 | AVG |
| 11 | | 27.7979 | 25.80 | -0.38 | 25.42 | 60.00 | -34.58 | peak |
| 12 | | 27.7979 | 16.09 | -0.38 | 15.71 | 50.00 | -34.29 | AVG |

3.2 RADIATED EMISSION TEST

Limit

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission out of authorized band shall not exceed the following table at a 3 meters measurement distance.

In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a)

Except when the requirements applicable to a given device state otherwise, emissions from licence-exempt transmitters shall comply with the field strength limits shown in table below. Additionally, the level of any transmitter emission shall not exceed the level of the transmitter's fundamental emission

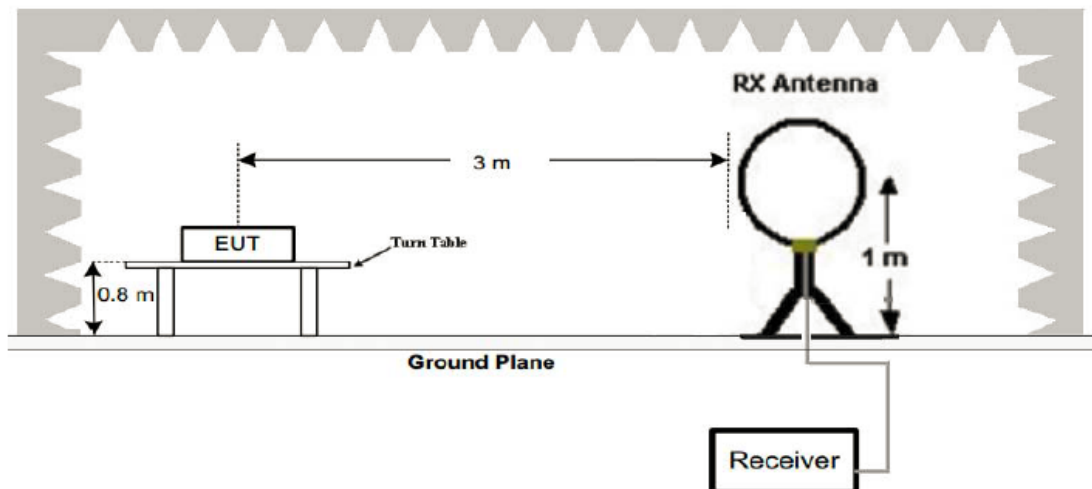
Unwanted emissions that fall into restricted bands shall comply with the limits specified in RSS-Gen; and Unwanted emissions that do not fall within the restricted frequency bands shall comply either with the limits specified in the applicable RSS or with those specified in this RSS-Gen.

Radiated emission limits

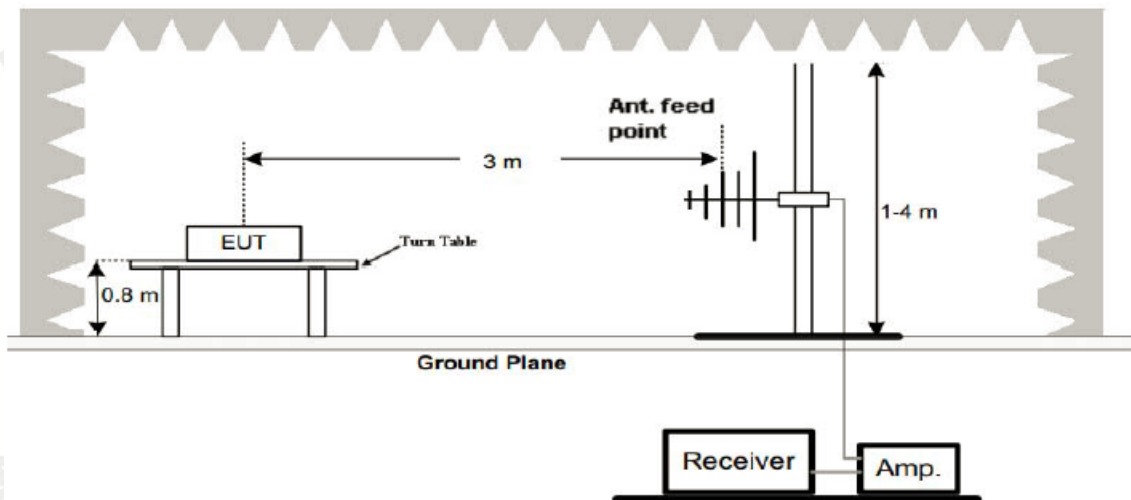
| Frequency (MHz) | Distance (Meters) | Radiated (dBμV/m) | Radiated (μV/m) |
|-----------------|-------------------|--|-----------------------|
| 0.009-0.49 | 3 | $20\log(2400/F(\text{KHz}))+40\log(300/3)$ | $2400/F(\text{KHz})$ |
| 0.49-1.705 | 3 | $20\log(24000/F(\text{KHz}))+40\log(30/3)$ | $24000/F(\text{KHz})$ |
| 1.705-30 | 3 | $20\log(30)+40\log(30/3)$ | 30 |
| 30-88 | 3 | 40.0 | 100 |
| 88-216 | 3 | 43.5 | 150 |
| 216-960 | 3 | 46.0 | 200 |
| Above 960 | 3 | 54.0 | 500 |

Test Setup

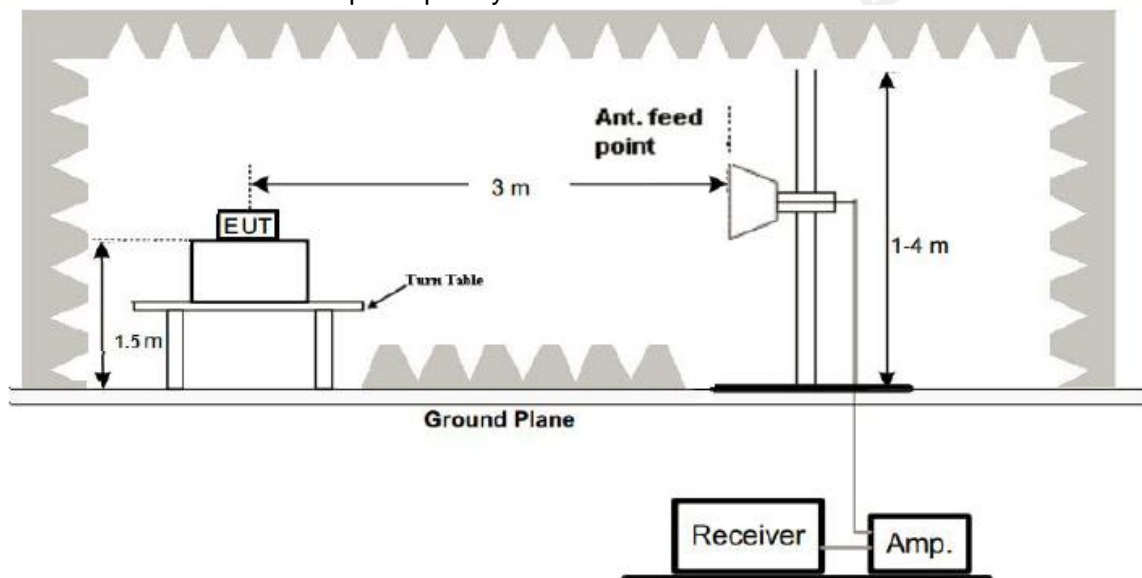
1. Radiated Emission Test-Up Frequency Below 30MHz



2. Radiated Emission Test-Up Frequency 30MHz~1GHz



3. Radiated Emission Test-Up Frequency Above 1GHz



Test Procedure

- Below 1GHz measurement the EUT is placed on a turntable which is 0.8m above ground plane, and above 1GHz measurement EUT was placed on a low permittivity and low loss tangent turn table which is 1.5m above ground plane.
- Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0°C to 360°C to acquire the highest emissions from EUT
- And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- Repeat above procedures until all frequency measurements have been completed.
- Radiated emission test frequency band from 9KHz to 25GHz.
- The distance between test antenna and EUT as following table states:

| Test Frequency range | Test Antenna Type | Test Distance |
|----------------------|---------------------|---------------|
| 9KHz-30MHz | Active Loop Antenna | 3 |
| 30MHz-1GHz | Bilog Antenna | 3 |
| 1GHz-18GHz | Horn Antenna | 3 |
| 18GHz-25GHz | Horn Antenna | 1 |

7. Setting test receiver/spectrum as following table states:

| Test Frequency range | Test Receiver/Spectrum Setting | Detector |
|----------------------|---|----------|
| 9KHz-150KHz | RBW=200Hz/VBW=3KHz,Sweep time=Auto | QP |
| 150KHz-30MHz | RBW=9KHz/VBW=100KHz,Sweep time=Auto | QP |
| 30MHz-1GHz | RBW=120KHz/VBW=1000KHz,Sweep time=Auto | QP |
| 1GHz-40GHz | Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto Average Value: RBW=1MHz/VBW=10Hz, Sweep time=Auto | Peak |

TEST RESULTS

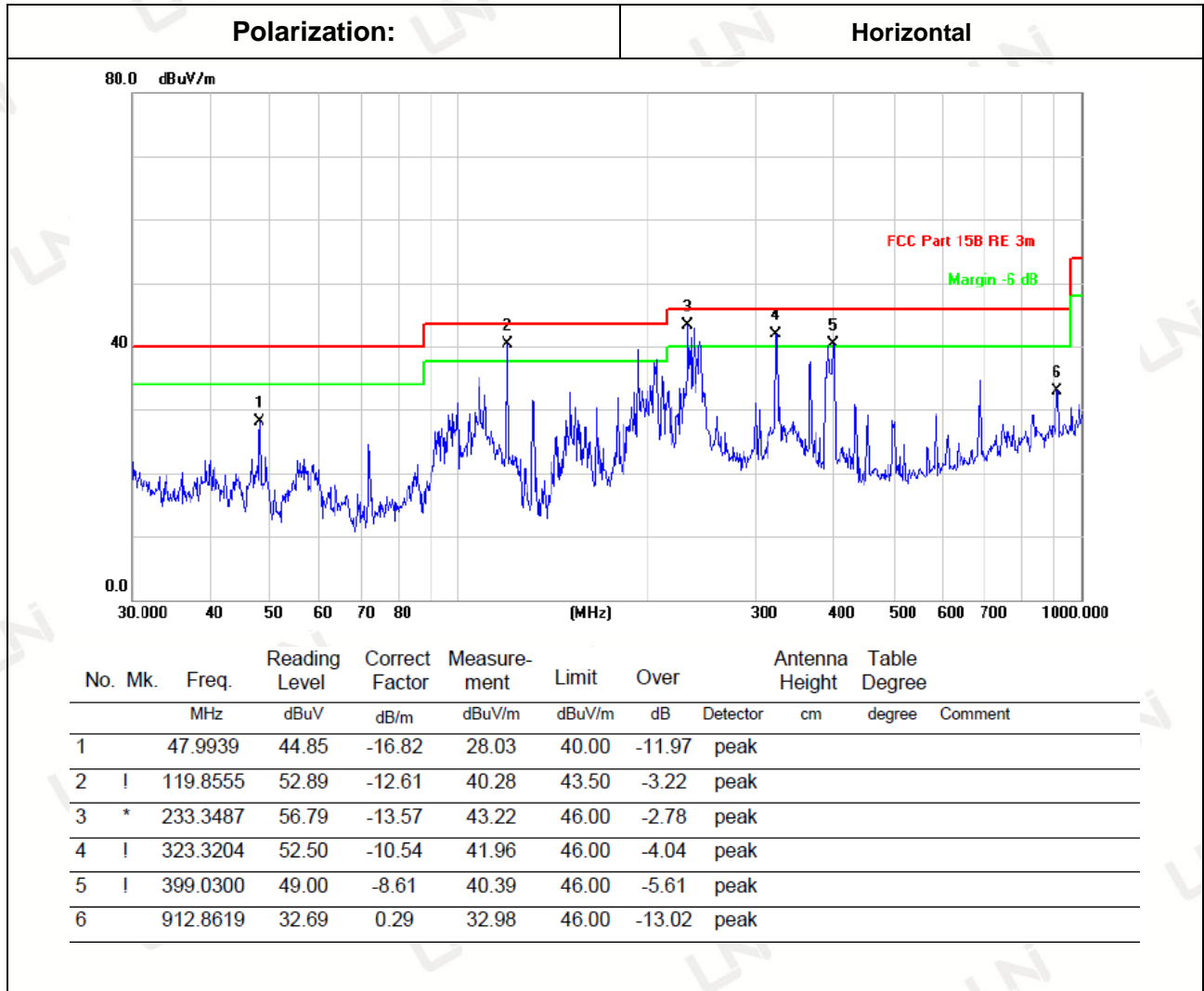
---PASS---

Remark:

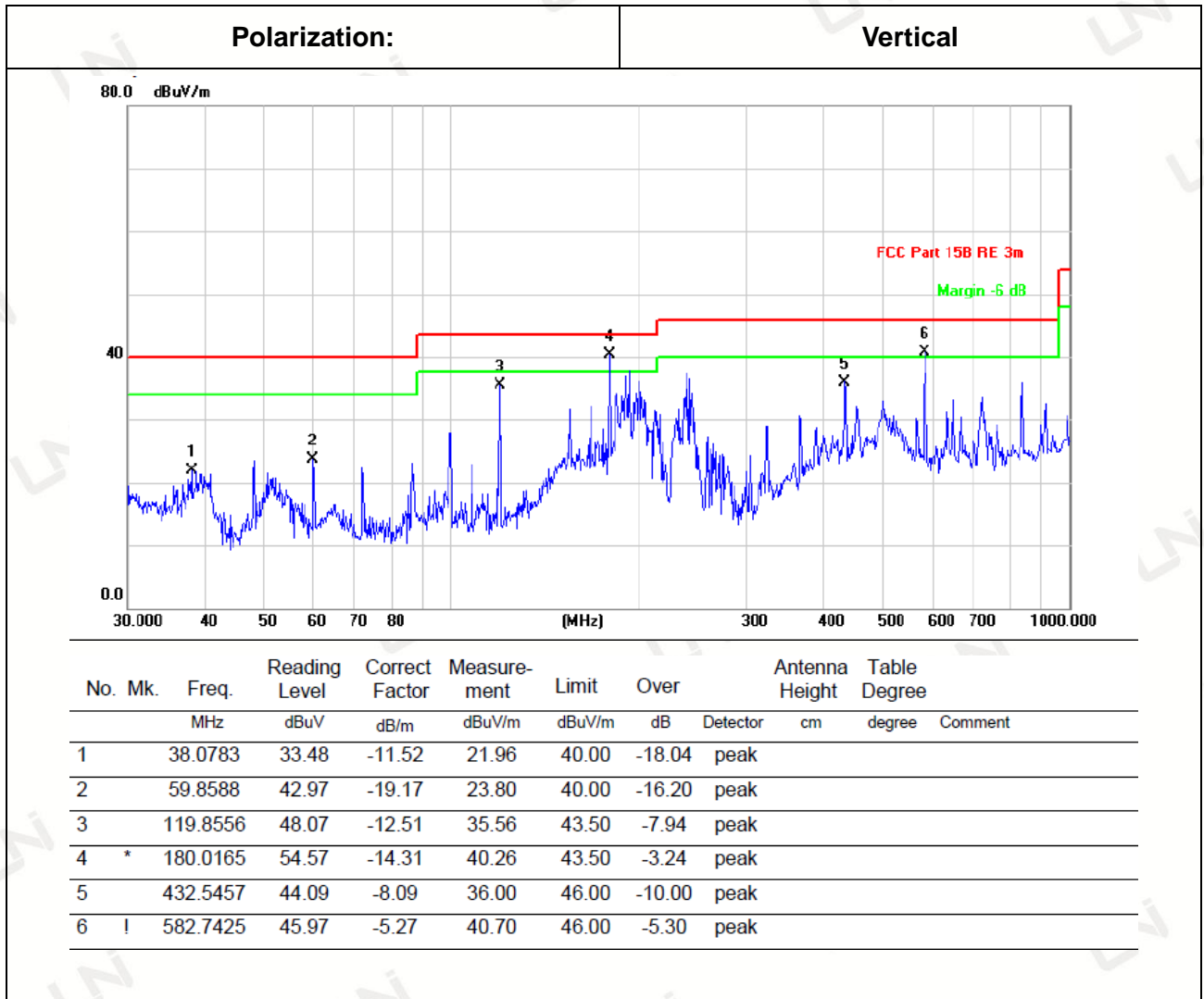
1. All three channels (lowest/middle/highest) of each mode were measured below 1GHz and recorded worst case at 802.11b low channel.
2. All three channels (lowest/middle/highest) of each mode were measured above 1GHz and recorded worst case at 802.11b mode.
3. Radiated emission test from 9 KHz to 10th harmonic of fundamental was verified, and no emission found except system noise floor in 9 KHz to 30MHz and not recorded in this report.

Below 1GHz Test Results:

| | | | |
|---------------|---------------|--------------------|-------------------------|
| Temperature: | 25°C | Relative Humidity: | 48% |
| Test Date: | Nov. 12, 2018 | Pressure: | 1030hPa |
| Test Voltage: | AC 120V 60Hz | Polarization: | Horizontal and Vertical |



Remark: Absolute Level= Reading Level+ Factor, Margin= Absolute Level – Limit
Factor=Ant. Factor + Cable Loss – Pre-amplifier



Remark: Absolute Level= Reading Level+ Factor, Margin= Absolute Level – Limit
Factor=Ant. Factor + Cable Loss – Pre-amplifier

Remark:

- (1) Measuring frequencies from 9 kHz to the 1 GHz, Radiated emission test from 9kHz to 30MHz was verified, and no any emission was found except system noise floor.
- (2) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (3) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.

Above 1 GHz Test Results:

Note: 802.11b/802.11g/802.11n(H20) all have been tested, only worse case 802.11b is reported.

802.11b Mode (2412MHz)

Horizontal:

| Frequency | Reading Result | Factor | Emission Level | Limits | Margin | Detector |
|-----------|----------------|--------|----------------|----------|--------|----------|
| (MHz) | (dBμV) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | Type |
| 4824.00 | 60.89 | -3.64 | 57.25 | 74 | 16.75 | PK |
| 4824.00 | 51.89 | -3.64 | 48.25 | 54 | 5.75 | AV |
| 7236.00 | 55.06 | -0.95 | 54.11 | 74 | 19.89 | PK |
| 7236.00 | 46.57 | -0.95 | 45.62 | 54 | 8.38 | AV |
| -- | -- | -- | -- | -- | -- | -- |

Vertical:

| Frequency | Reading Result | Factor | Emission Level | Limits | Margin | Detector |
|-----------|----------------|--------|----------------|----------|--------|----------|
| (MHz) | (dBμV) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | Type |
| 4824.00 | 61.88 | -3.64 | 58.24 | 74 | 15.76 | PK |
| 4824.00 | 52.87 | -3.64 | 49.23 | 54 | 4.77 | AV |
| 7236.00 | 56.49 | -0.95 | 55.54 | 74 | 18.46 | PK |
| 7236.00 | 47.07 | -0.95 | 46.12 | 54 | 7.88 | AV |
| -- | -- | -- | -- | -- | -- | -- |

802.11b Mode (2437MHz)

Horizontal:

| Frequency | Reading Result | Factor | Emission Level | Limits | Margin | Detector |
|-----------|----------------|--------|----------------|----------|--------|----------|
| (MHz) | (dBμV) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | Type |
| 4874.00 | 59.83 | -3.51 | 56.32 | 74 | 17.68 | PK |
| 4874.00 | 50.96 | -3.51 | 47.45 | 54 | 6.55 | AV |
| 7311.00 | 54.84 | -0.82 | 54.02 | 74 | 19.98 | PK |
| 7311.00 | 45.96 | -0.82 | 45.14 | 54 | 8.86 | AV |
| -- | -- | -- | -- | -- | -- | -- |

Vertical:

| Frequency | Reading Result | Factor | Emission Level | Limits | Margin | Detector |
|-----------|----------------|--------|----------------|----------|--------|----------|
| (MHz) | (dBμV) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | Type |
| 4874.00 | 62.38 | -3.51 | 58.87 | 74 | 15.13 | PK |
| 4874.00 | 53.16 | -3.51 | 49.65 | 54 | 4.35 | AV |
| 7311.00 | 57.03 | -0.82 | 56.21 | 74 | 17.79 | PK |
| 7311.00 | 47.93 | -0.82 | 47.11 | 54 | 6.89 | AV |
| -- | -- | -- | -- | -- | -- | -- |

802.11b Mode (2462MHz)
Horizontal:

| Frequency | Reading Result | Factor | Emission Level | Limits | Margin | Detector |
|-----------|----------------|--------|----------------|----------|--------|----------|
| (MHz) | (dBμV) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | Type |
| 4924 | 60.64 | -3.43 | 57.21 | 74 | 16.79 | PK |
| 4924 | 51.66 | -3.43 | 48.23 | 54 | 5.77 | AV |
| 7386 | 56.85 | -0.75 | 56.10 | 74 | 17.90 | PK |
| 7386 | 48.33 | -0.75 | 47.58 | 54 | 6.42 | AV |
| -- | -- | -- | -- | -- | -- | -- |

Vertical:

| Frequency | Reading Result | Factor | Emission Level | Limits | Margin | Detector |
|-----------|----------------|--------|----------------|----------|--------|----------|
| (MHz) | (dBμV) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | Type |
| 4924 | 62.68 | -3.43 | 59.25 | 74 | 14.75 | PK |
| 4924 | 53.64 | -3.43 | 50.21 | 54 | 3.79 | AV |
| 7386 | 58.11 | -0.75 | 57.36 | 74 | 16.64 | PK |
| 7386 | 49.49 | -0.75 | 48.74 | 54 | 5.26 | AV |
| -- | -- | -- | -- | -- | -- | -- |

Remark:

- (1) Measuring frequencies from 1 GHz to the 25 GHz.
- (2) Factor = Antenna Factor + Cable Loss – Pre-amplifier.
- (3) Margin= Limits –Emission Level
- (4) Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.
- (6) All modes of operation were investigated and the worst-case emissions are reported.

Radiated Band Edge Test:

Note: 802.11b/802.11g/802.11n (H20)/802.11n (H40) all have been tested, only worse case 802.11bis reported

802.11b Mode (2412MHz)

Horizontal:

| Frequency | Reading Result | Factor | Emission Level | Limits | Margin | Detector Type |
|-----------|----------------|--------|----------------|----------|--------|---------------|
| (MHz) | (dBμV) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | |
| 2378.75 | 51.04 | -5.78 | 45.26 | 74 | 28.74 | PK |
| 2378.75 | -- | -- | -- | 54 | -- | AV |
| 2390.00 | 58.07 | -5.84 | 52.23 | 74 | 21.77 | PK |
| 2390.00 | -- | -- | -- | 54 | -- | -- |
| 2400.00 | 61.10 | -5.84 | 55.26 | 74 | 18.74 | PK |
| 2400.00 | 53.05 | -5.84 | 47.21 | 54 | 6.79 | AV |

Vertical:

| Frequency | Reading Result | Factor | Emission Level | Limits | Margin | Detector Type |
|-----------|----------------|--------|----------------|----------|--------|---------------|
| (MHz) | (dBμV) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | |
| 2378.75 | 52.03 | -5.78 | 46.25 | 74 | 27.75 | PK |
| 2378.75 | -- | -- | -- | 54 | -- | -- |
| 2390.00 | 60.37 | -5.84 | 54.53 | 74 | 19.47 | PK |
| 2390.00 | 52.09 | -5.84 | 46.25 | 54 | 7.75 | AV |
| 2400.00 | 63.31 | -5.84 | 57.47 | 74 | 16.53 | PK |
| 2400.00 | 54.83 | -5.84 | 48.99 | 54 | 5.01 | AV |

802.11b Mode (2462MHz)

Horizontal (Worst case):

| Frequency | Reading Result | Factor | Emission Level | Limits | Margin | Detector Type |
|-----------|----------------|--------|----------------|----------|--------|---------------|
| (MHz) | (dBμV) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | |
| 2483.50 | 59.91 | -5.65 | 54.26 | 74 | 19.74 | PK |
| 2483.50 | 51.90 | -5.65 | 46.25 | 54 | 7.75 | AV |
| 2485.50 | 54.86 | -5.65 | 49.21 | 74 | 24.79 | PK |
| 2485.50 | -- | -- | -- | 54 | -- | -- |
| 2500.00 | 49.08 | -5.72 | 43.36 | 74 | 30.64 | PK |
| 2500.00 | -- | -- | -- | 54 | -- | -- |

Vertical:

| Frequency | Reading Result | Factor | Emission Level | Limits | Margin | Detector |
|-----------|----------------|--------|----------------|----------|--------|----------|
| (MHz) | (dBμV) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | Type |
| 2483.50 | 61.34 | -5.65 | 55.69 | 74 | 18.31 | PK |
| 2483.50 | 53.23 | -5.65 | 47.58 | 54 | 6.42 | AV |
| 2485.50 | 56.28 | -5.65 | 50.63 | 74 | 23.37 | PK |
| 2485.50 | -- | -- | -- | 54 | -- | -- |
| 2500.00 | 49.93 | -5.72 | 44.21 | 74 | 29.79 | PK |
| 2500.00 | -- | -- | -- | 54 | -- | -- |

Remark:

- (1) Factor = Antenna Factor + Cable Loss – Pre-amplifier.
- (2) Margin= Limits –Emission Level
- (3) -- Mean the PK detector measured value is below average limit.

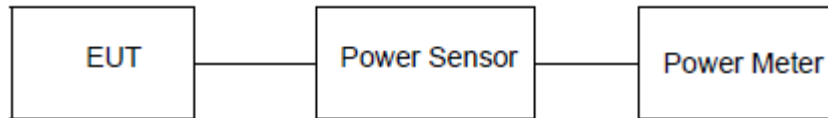
3.3 CONDUCTED OUTPUT POWER

Limit

The Maximum Peak Output Power Measurement is 30dBm.

Test Procedure

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power sensor.



Test Result

---PASS---

| Type | Channel | Output power (dBm) | Limit (dBm) | Result |
|---------------|---------|--------------------|-------------|--------|
| 802.11b | 01 | 17.95 | 30.00 | Pass |
| | 06 | 17.83 | | |
| | 11 | 16.91 | | |
| 802.11g | 01 | 16.72 | | |
| | 06 | 16.37 | | |
| | 11 | 16.19 | | |
| 802.11n(HT20) | 01 | 14.64 | | |
| | 06 | 14.32 | | |
| | 11 | 13.51 | | |

Note: 1.The test results including the cable lose.

3.4 POWER SPECTRAL DENSITY

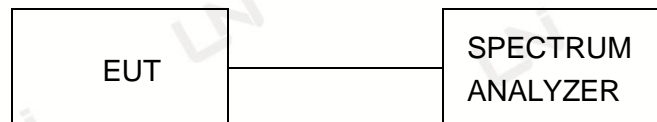
Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

Test Procedure

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW ≥ 3 kHz.
3. Set the VBW $\geq 3 \times$ RBW.
4. Set the span to 1.5 times the DTS channel bandwidth.
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 power level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
11. The resulting peak PSD level must be 8dBm.

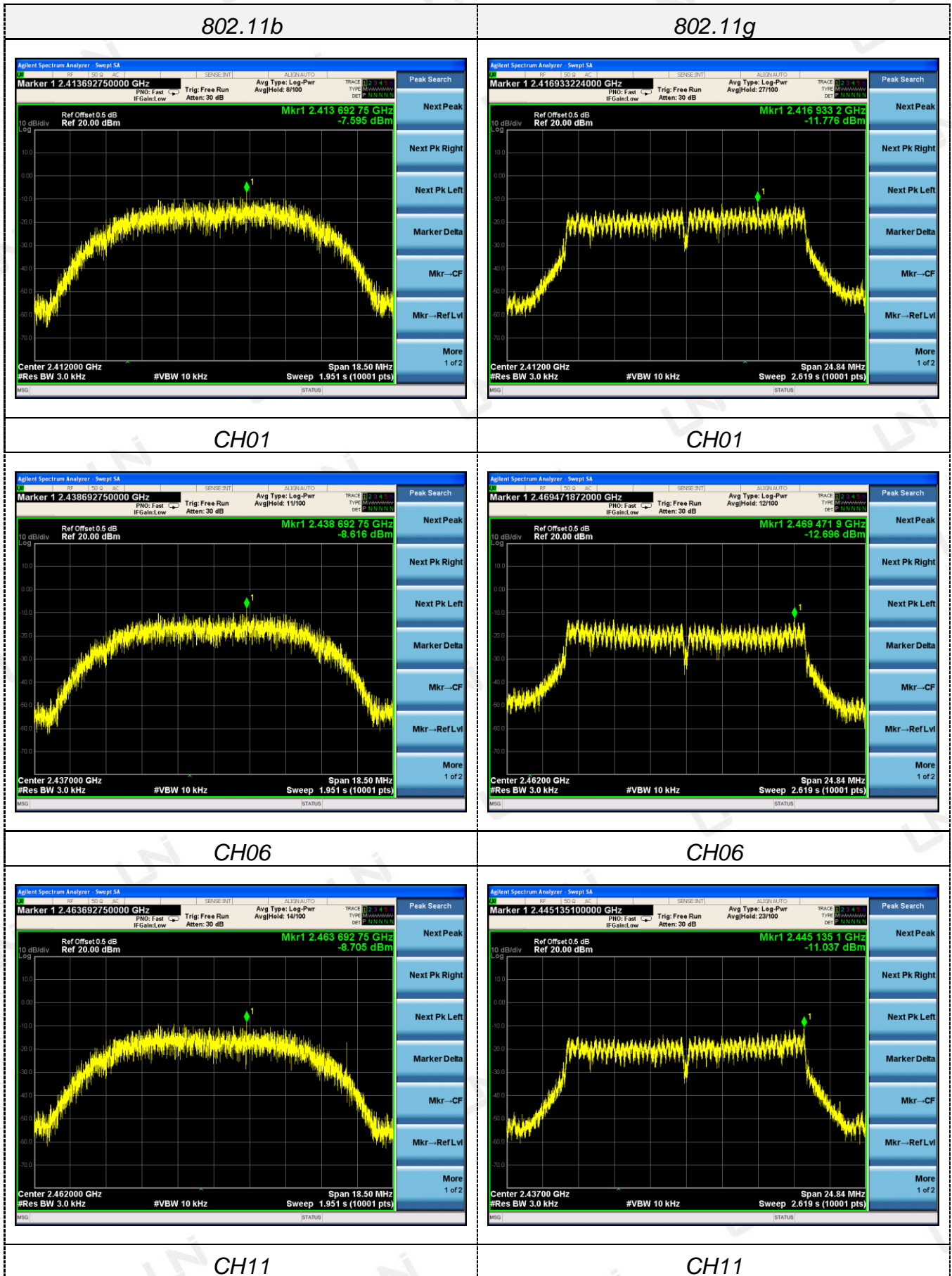
Test Configuration



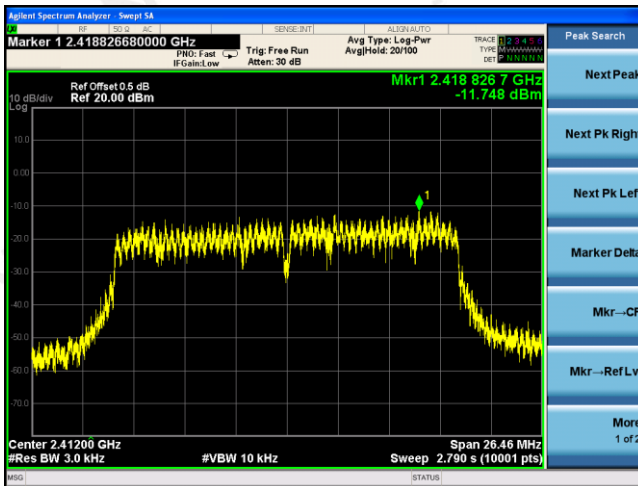
Test Results

| Type | Channel | Power Spectral Density (dBm/3KHz) | Limit (dBm/3KHz) | Result |
|---------------|---------|-----------------------------------|------------------|--------|
| 802.11b | 01 | -7.595 | 8.00 | Pass |
| | 06 | -8.616 | | |
| | 11 | -8.705 | | |
| 802.11g | 01 | -11.776 | | |
| | 06 | -12.696 | | |
| | 11 | -11.037 | | |
| 802.11n(HT20) | 01 | -11.748 | | |
| | 06 | -12.755 | | |
| | 11 | -12.504 | | |

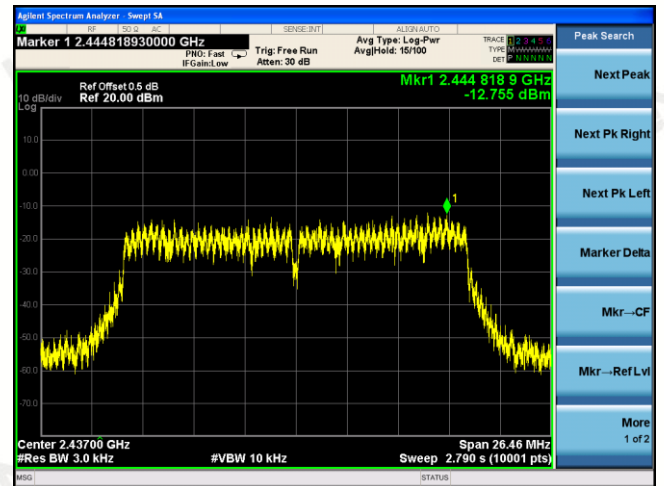
Test plot as follows:



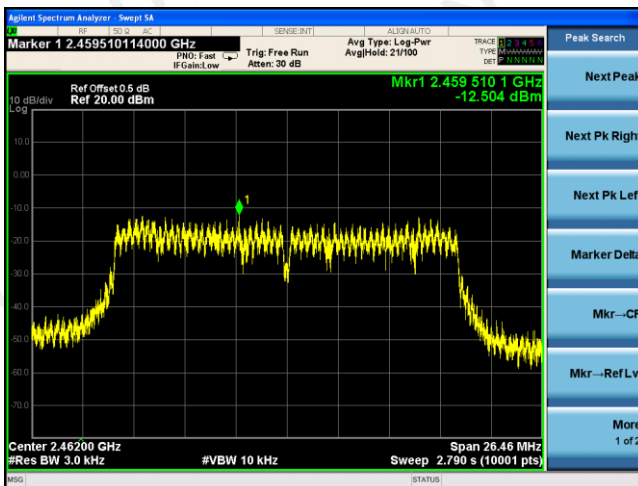
802.11n(HT20)



CH01



CH03



CH11

3.5 OCCUPIED BANDWIDTH MEASUREMENT

Test Limit

| FCC Part15(15.247), Subpart C | | | | |
|-------------------------------|-----------|---|-----------------------|--------|
| Section | Test Item | Limit | Frequency Range (MHz) | Result |
| 15.247(a)(2) | Bandwidth | $\geq 500\text{KHz}$ (6dB bandwidth) | 2400-2483.5 | PASS |

Test Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as normal operation.
3. Based on ANSI C63.10 section 6.9.2: RBW=30KHz, VBW=100KHz, Span=3MHz.
4. The useful radiated emission from the EUT was detected by the spectrum analyzer with peak detector.

Measurement Equipment Used

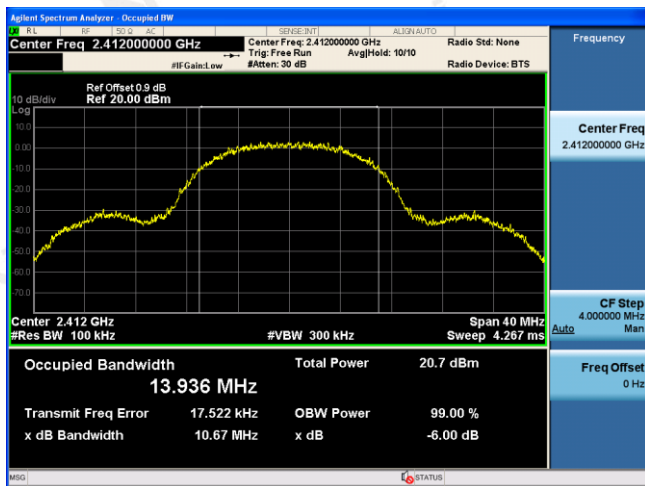
Same as Radiated Emission Measurement

Test Result

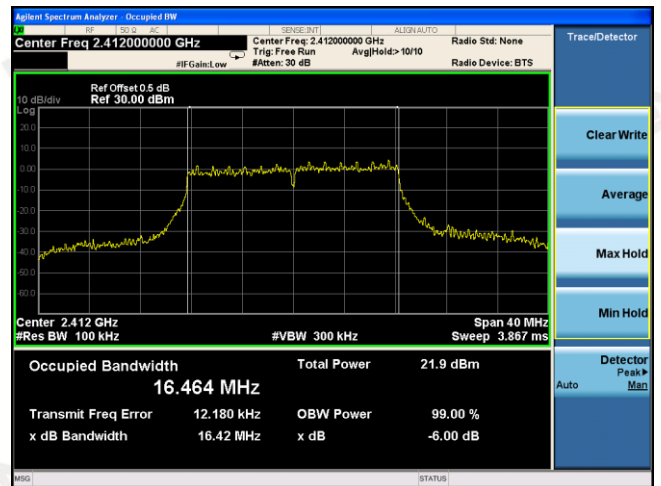
---PASS---

| Type | Channel | 99% OBW (MHz) | -6dB Bandwidth (MHz) | Limit (KHz) | Result |
|---------------|---------|---------------|----------------------|-------------|--------|
| 802.11b | 01 | 13.936 | 10.67 | ≥ 500 | Pass |
| | 06 | 13.857 | 10.09 | | |
| | 11 | 13.920 | 10.59 | | |
| 802.11g | 01 | 16.464 | 16.42 | | |
| | 06 | 16.533 | 16.50 | | |
| | 11 | 16.555 | 16.48 | | |
| 802.11n(HT20) | 01 | 17.536 | 16.96 | | |
| | 06 | 17.618 | 17.32 | | |
| | 11 | 17.635 | 17.52 | | |

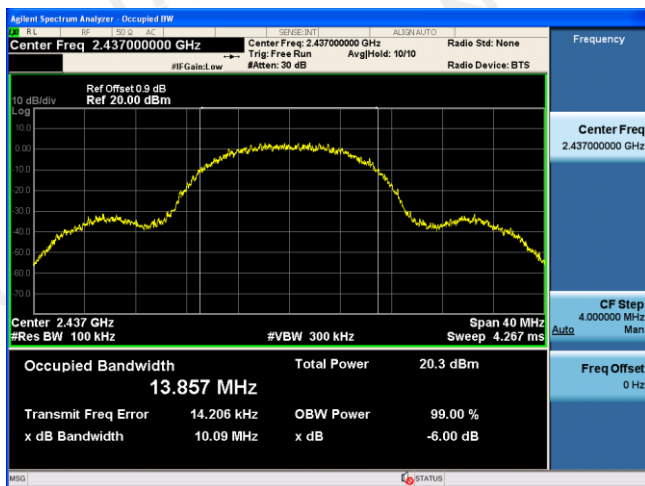
802.11b



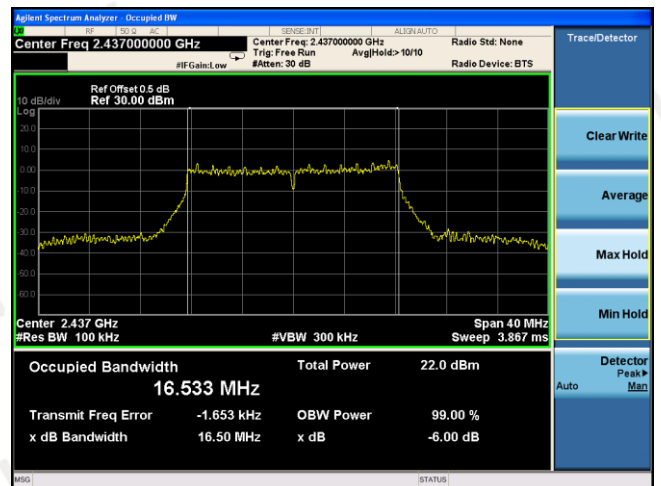
802.11g



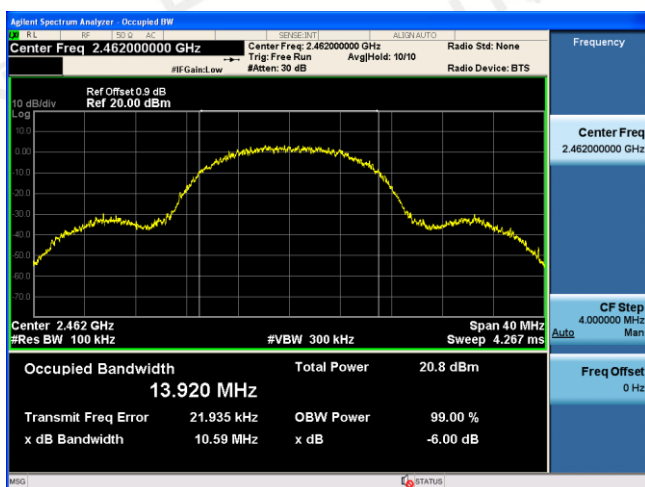
CH01



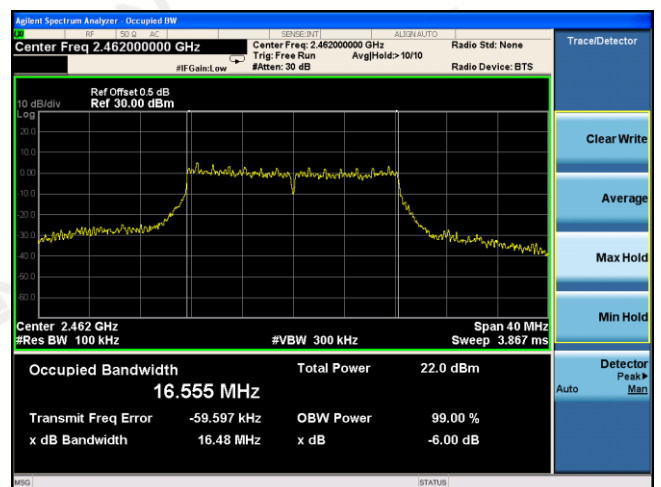
CH01



CH06



CH06



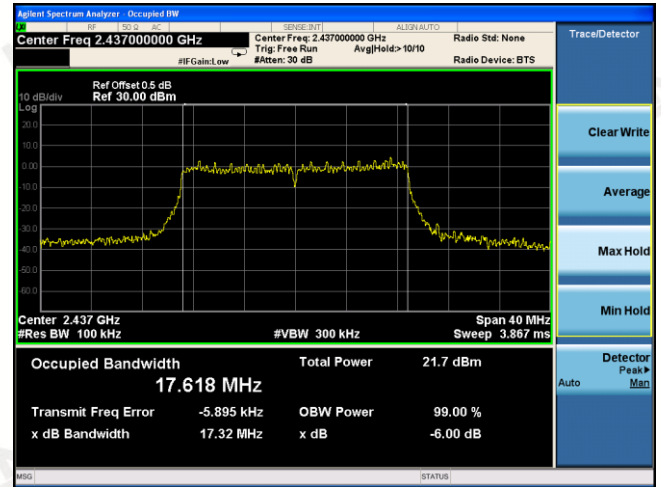
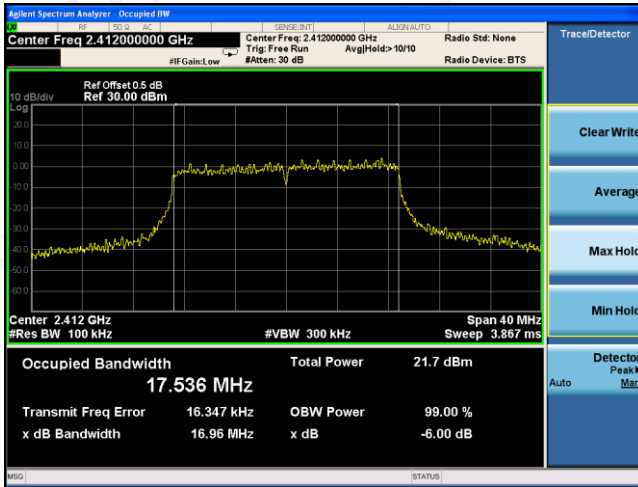
CH11



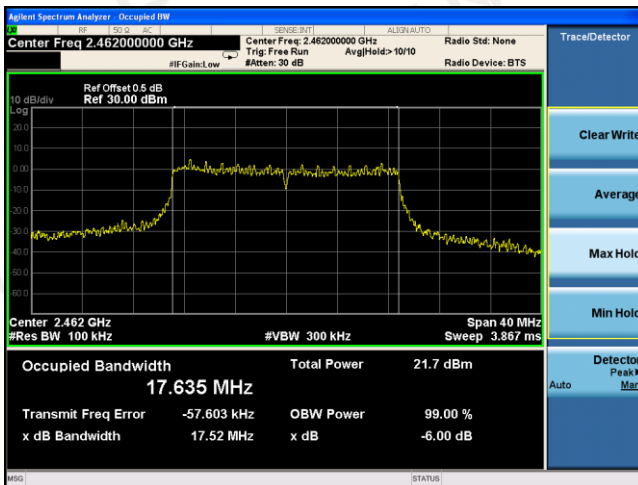
CH11



802.11n(HT20)



CH01



CH06

CH11

3.6 OUT-OF BAND EMISSIONS

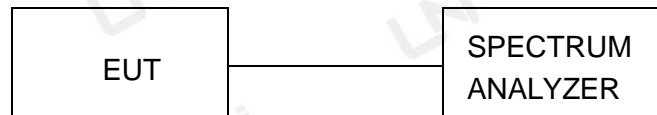
Limit

In any 100 kHz 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 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

Test Procedure

Connect the transmitter output to spectrum analyzer using a low loss RF cable, and set the spectrum analyzer to RBW=100 kHz, VBW= 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, band edge and out-of-band emissions.

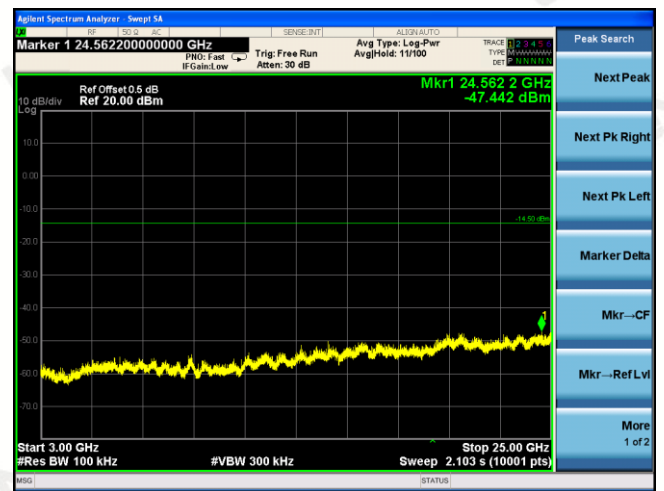
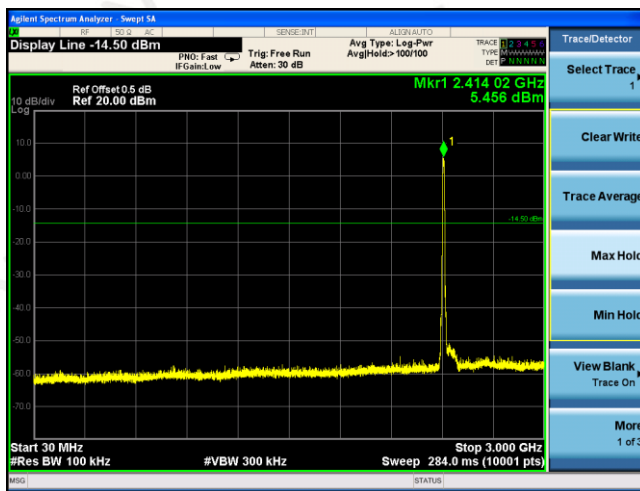
Test Configuration



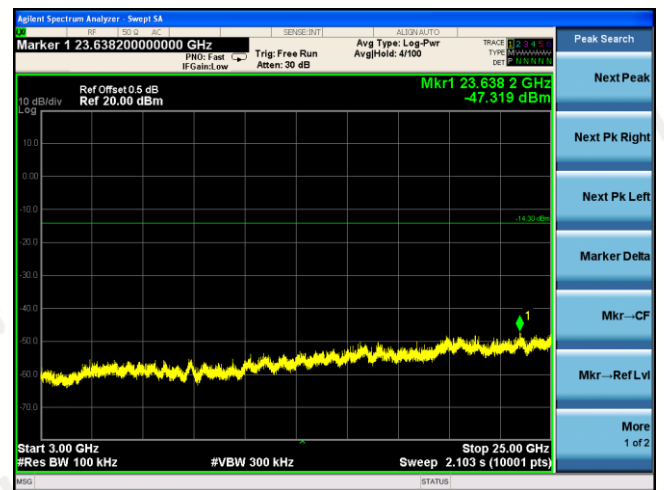
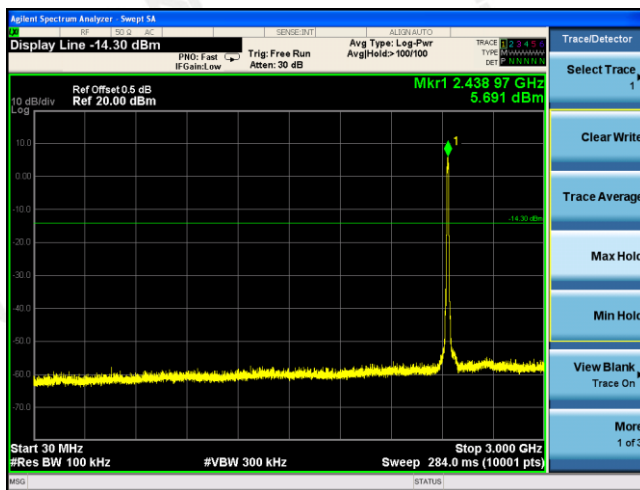
Test Results

Remark: The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and band edge measurement data.

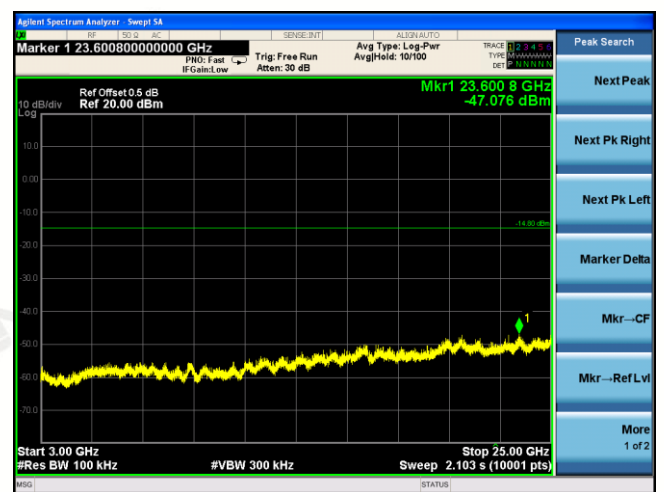
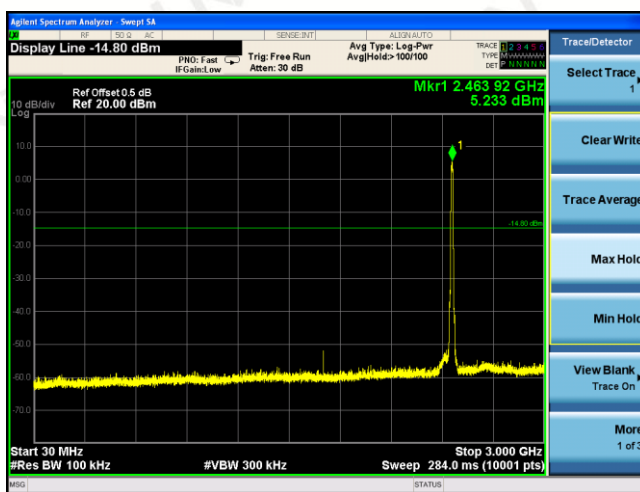
802.11b



CH01

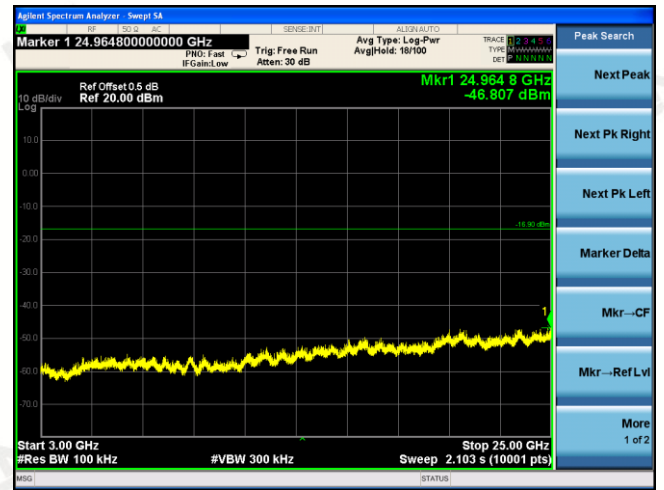
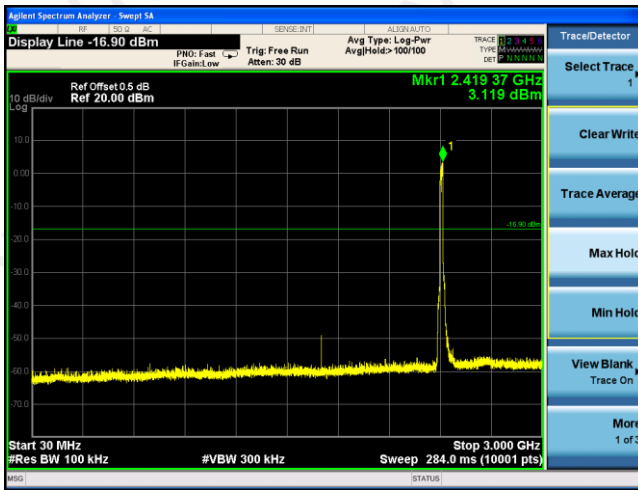


CH06

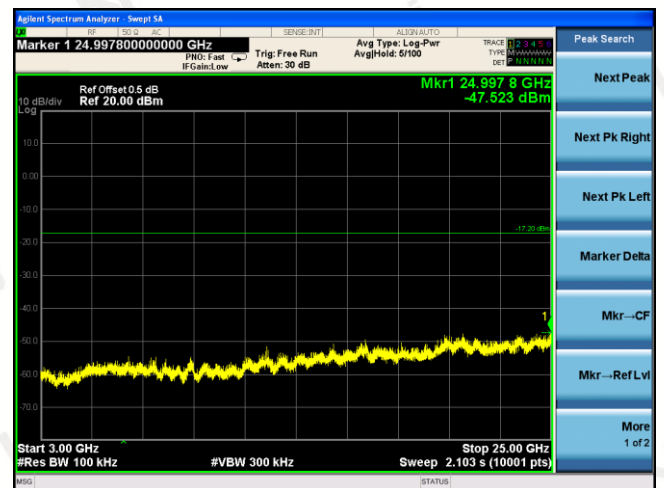
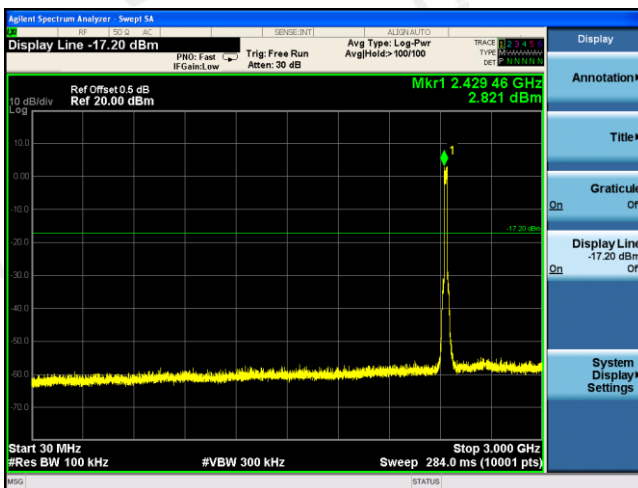


CH11

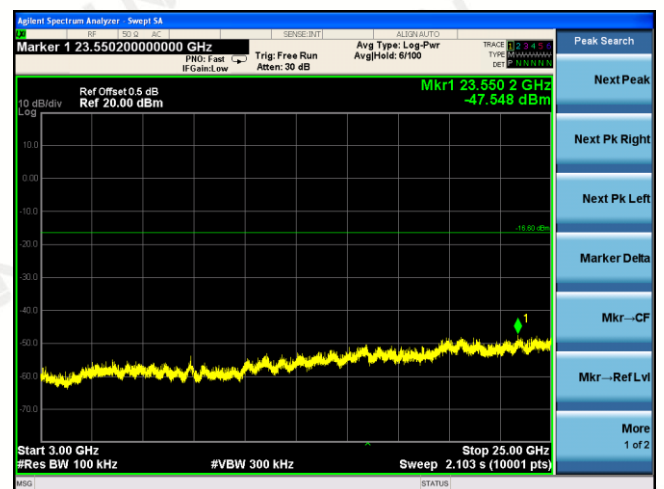
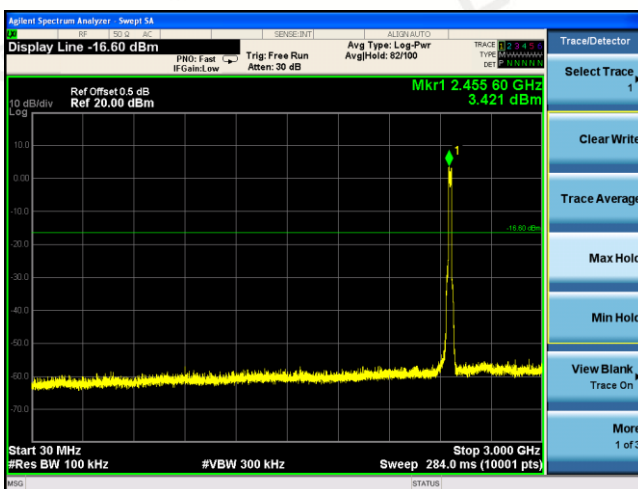
802.11g



CH01

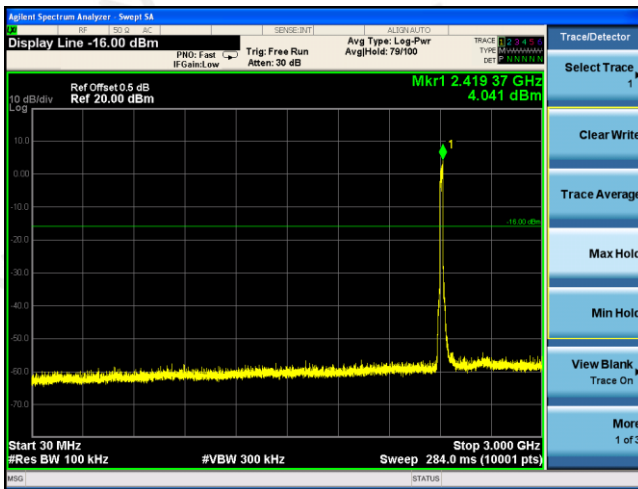


CH06



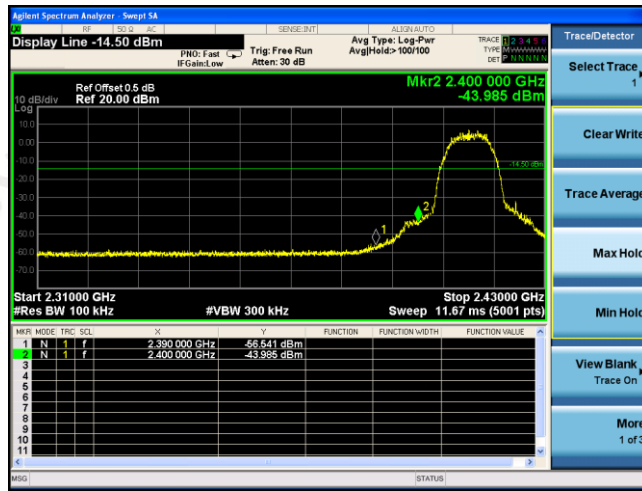
CH11

802.11n(HT20)

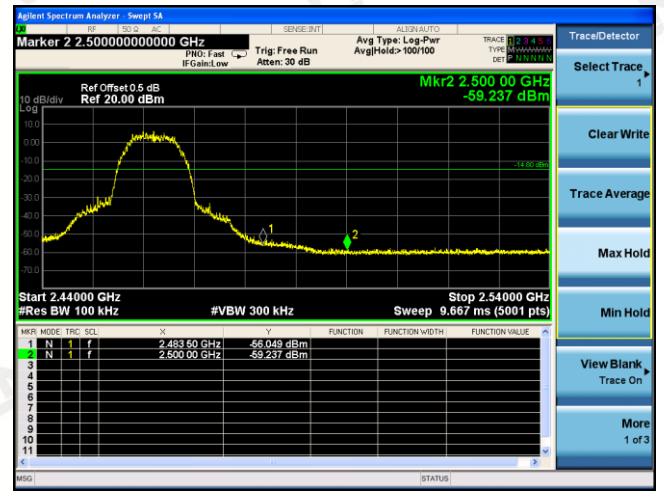


Band-edge Measurements for RF Conducted Emissions:

802.11b

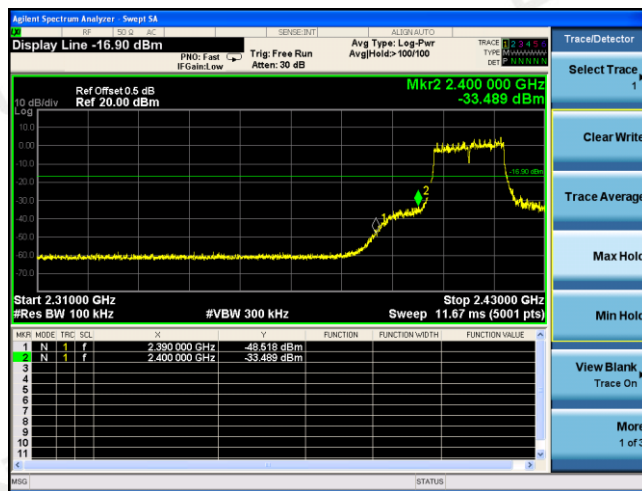


Left bandedge

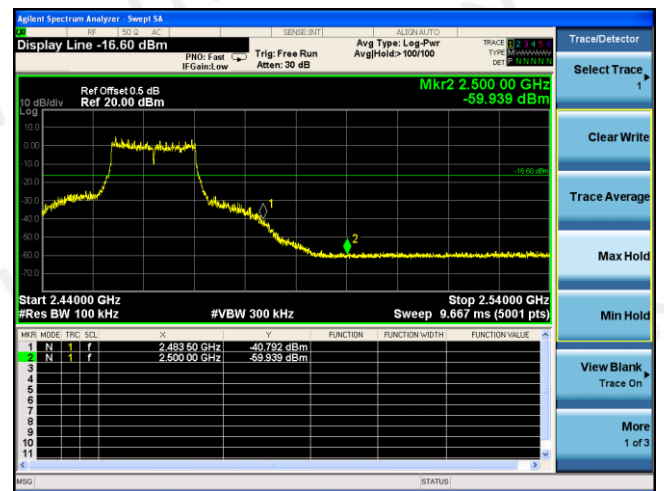


Right bandedge

802.11g

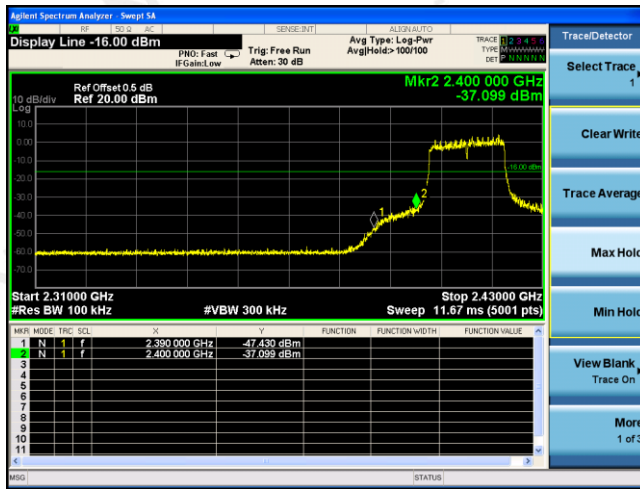


Left bandedge

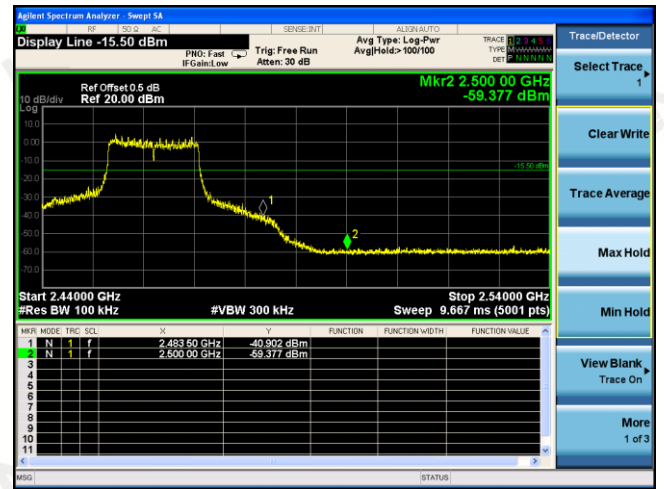


Right bandedge

802.11n(HT20)



Left bandedge



Right bandedge

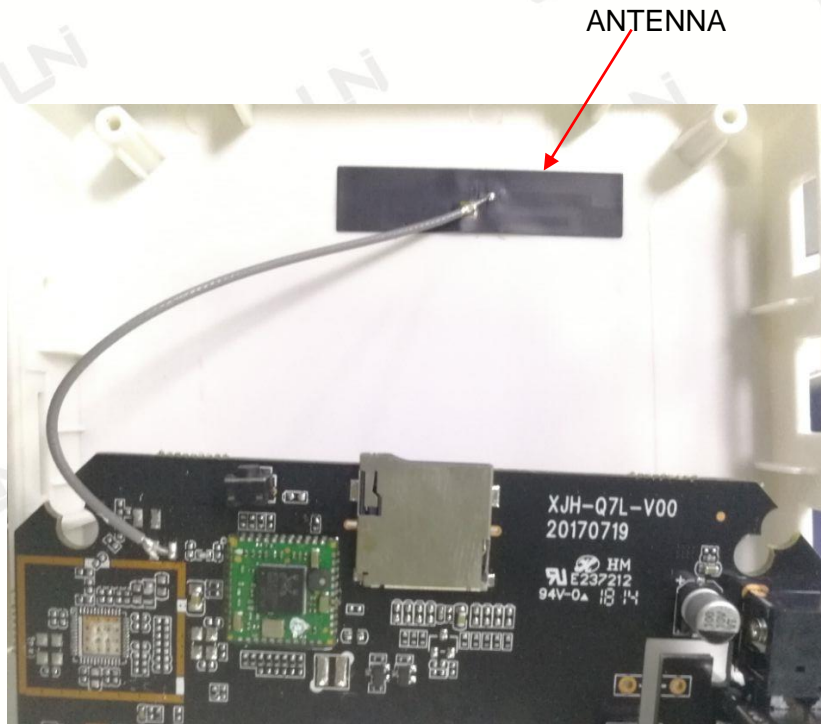
3.7 ANTENNA REQUIREMENT

Standard Applicable:

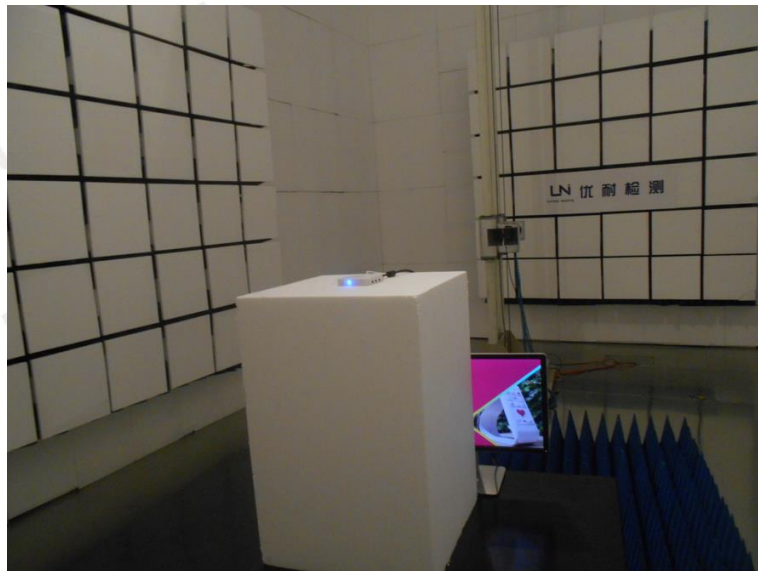
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Antenna Connected Construction

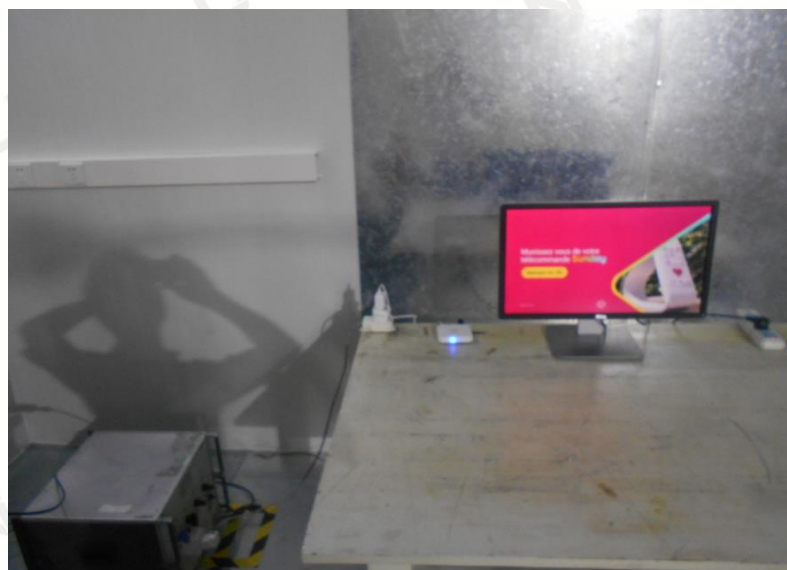
The antenna used in this product is a FPC antenna, the directional gains of antenna used for transmitting is 2.0dBi.



4 PHOTOGRAPH OF TEST



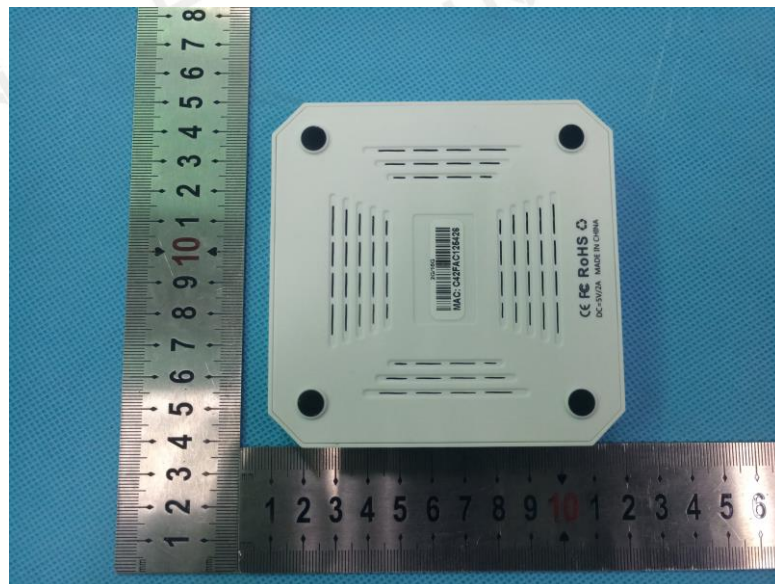
Radiated emission

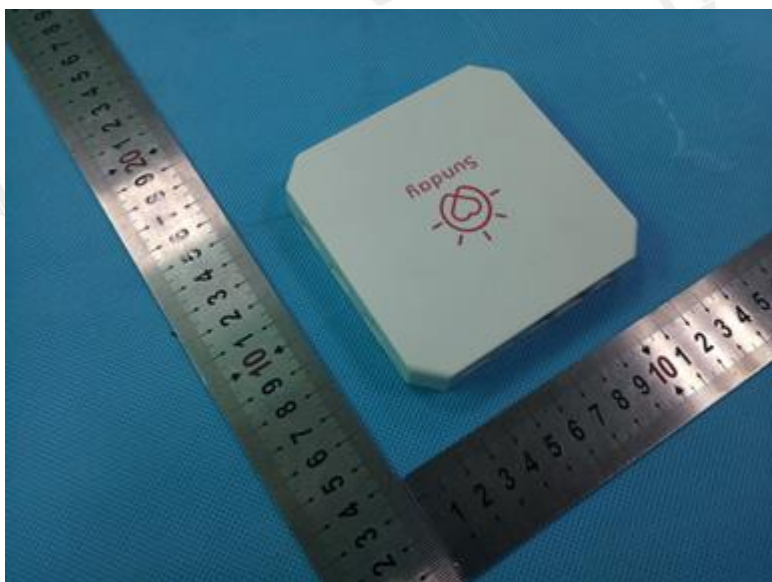


Conducted emission

5 PHOTOGRAPH OF EUT

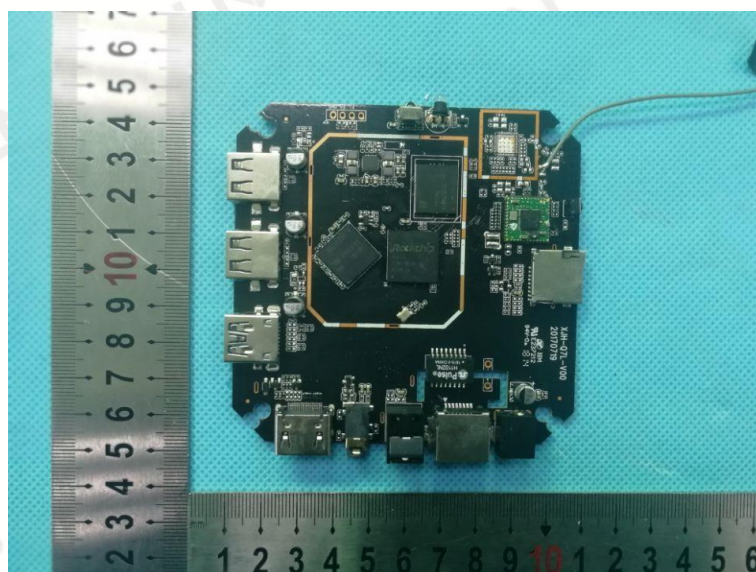
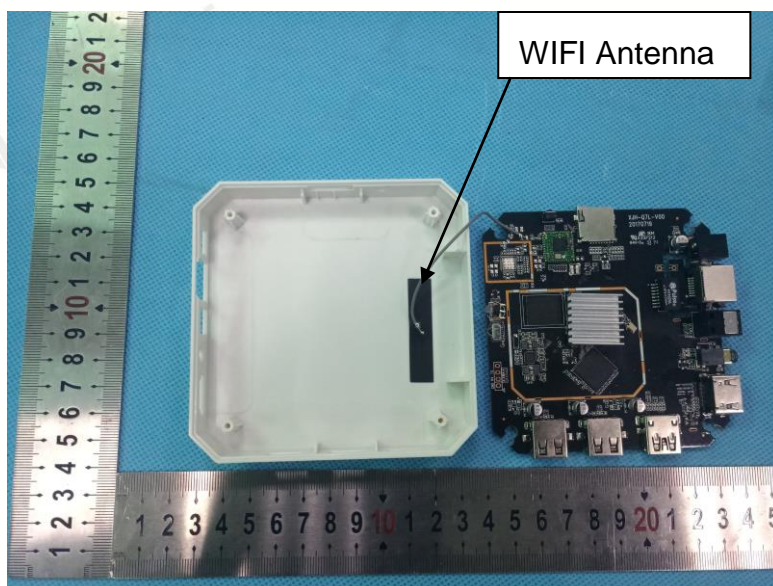
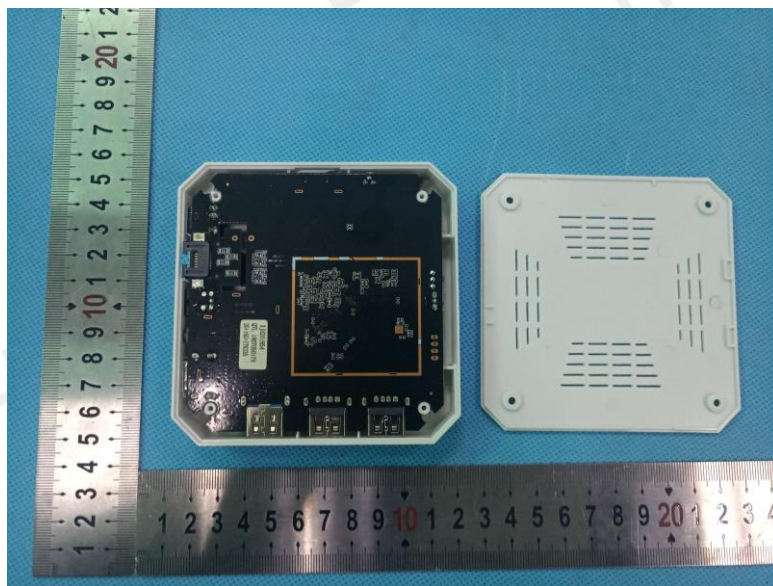
External photos

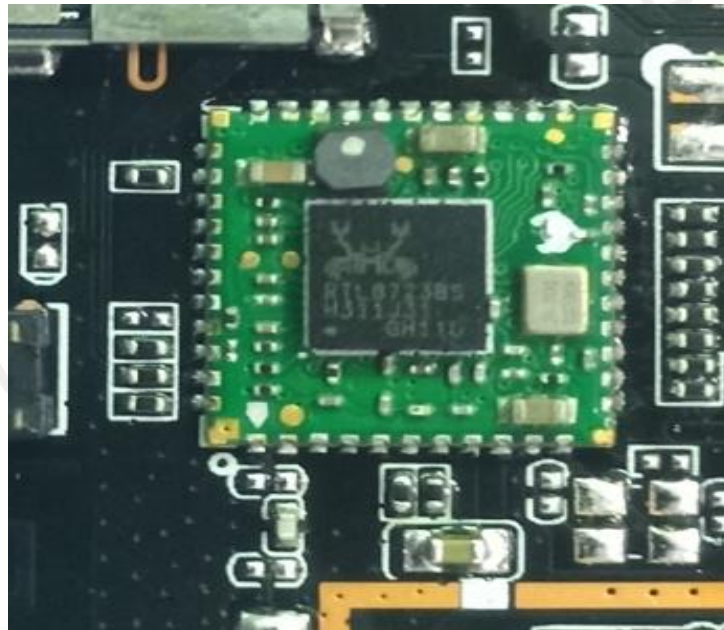
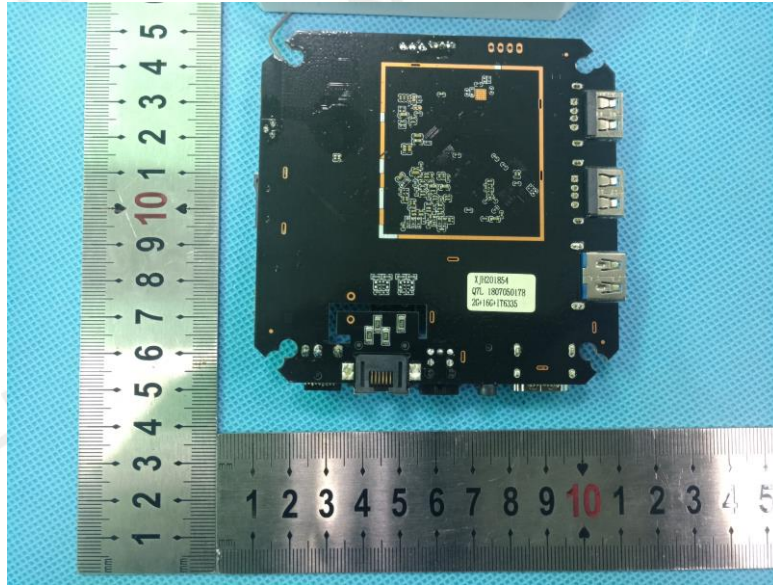






Internal photos





*****End of Report*****