

## TEST REPORT

**Product** : VR  
**Trade mark** : N/A  
**Model/Type reference** : CP-V8  
**Serial Number** : N/A  
**Report Number** : EED32I00229502  
**FCC ID** : 2AJK9-CP-V8  
**Date of Issue** : Sep. 02, 2016  
**Test Standards** : 47 CFR Part 15 Subpart C (2015)  
**Test result** : PASS

Prepared for:

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Prepared by:

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Check No.: 2392110426

**2 Version**

| Version No. | Date          | Description |
|-------------|---------------|-------------|
| 00          | Sep. 02, 2016 | Original    |
|             |               |             |
|             |               |             |

### 3 Test Summary

| Test Item  | Test Requirement                                   | Test method                               | Result |
|--|--|---|--------|
| <b>Antenna Requirement</b>   | 47 CFR Part 15 Subpart C Section 15.203/15.247 (c) | ANSI C63.10-2013                          | PASS   |
| <b>AC Power Line Conducted Emission</b>                                  | 47 CFR Part 15 Subpart C Section 15.207            | ANSI C63.10-2013                          | PASS   |
| <b>Conducted Peak Output Power</b>                                       | 47 CFR Part 15 Subpart C Section 15.247 (b)(3)     | ANSI C63.10-2013/<br>KDB 558074 D01v03r05 | PASS   |
| <b>6dB Occupied Bandwidth</b>  | 47 CFR Part 15 Subpart C Section 15.247 (a)(2)     | ANSI C63.10-2013/<br>KDB 558074 D01v03r05 | PASS   |
| <b>Power Spectral Density</b>  | 47 CFR Part 15 Subpart C Section 15.247 (e)        | ANSI C63.10-2013/<br>KDB 558074 D01v03r05 | PASS   |
| <b>Band-edge for RF Conducted Emissions</b>                              | 47 CFR Part 15 Subpart C Section 15.247(d)         | ANSI C63.10-2013/<br>KDB 558074 D01v03r05 | PASS   |
| <b>RF Conducted Spurious Emissions</b>                                   | 47 CFR Part 15 Subpart C Section 15.247(d)         | ANSI C63.10-2013/<br>KDB 558074 D01v03r05 | PASS   |
| <b>Radiated Spurious Emissions</b>                                       | 47 CFR Part 15 Subpart C Section 15.205/15.209     | ANSI C63.10-2013                          | PASS   |
| <b>Restricted bands around fundamental frequency (Radiated Emission)</b> | 47 CFR Part 15 Subpart C Section 15.205/15.209     | ANSI C63.10-2013                          | PASS   |

Remark:

Test according to ANSI C63.4-2014 & ANSI C63.10-2013.

The tested samples and the sample information are provided by the client.

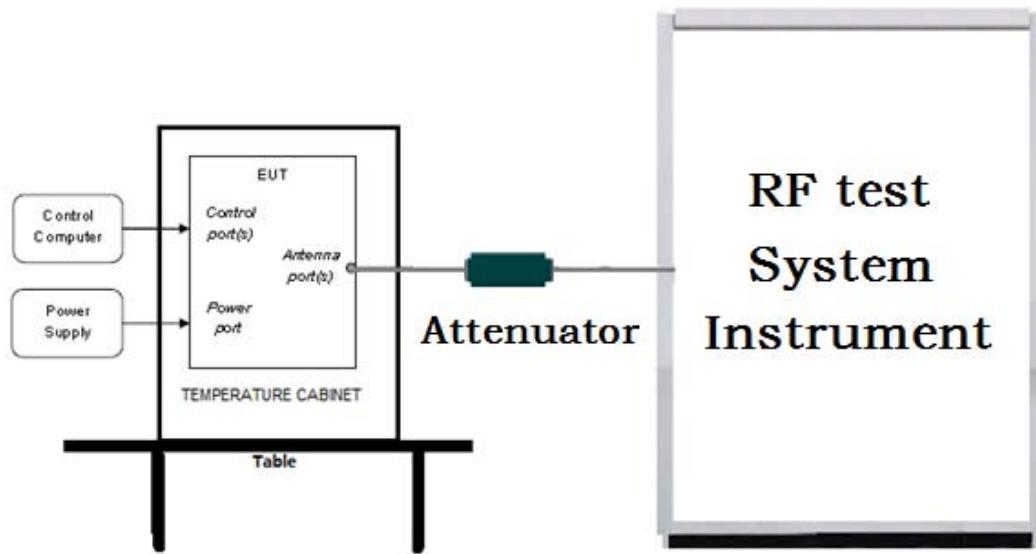
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## 5 Test Requirement

### 5.1 Test setup

#### 5.1.1 For Conducted test setup



#### 5.1.2 For Radiated Emissions test setup

Radiated Emissions setup:

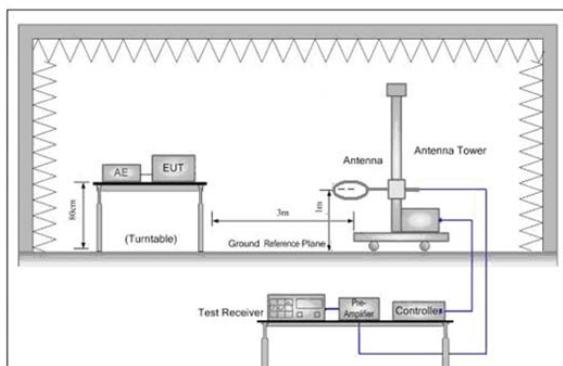


Figure 1. Below 30MHz

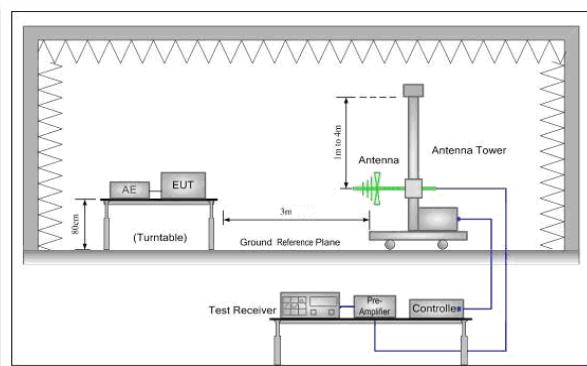


Figure 2. 30MHz to 1GHz

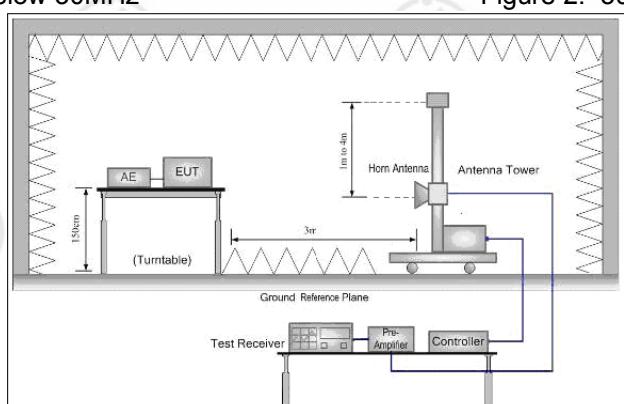
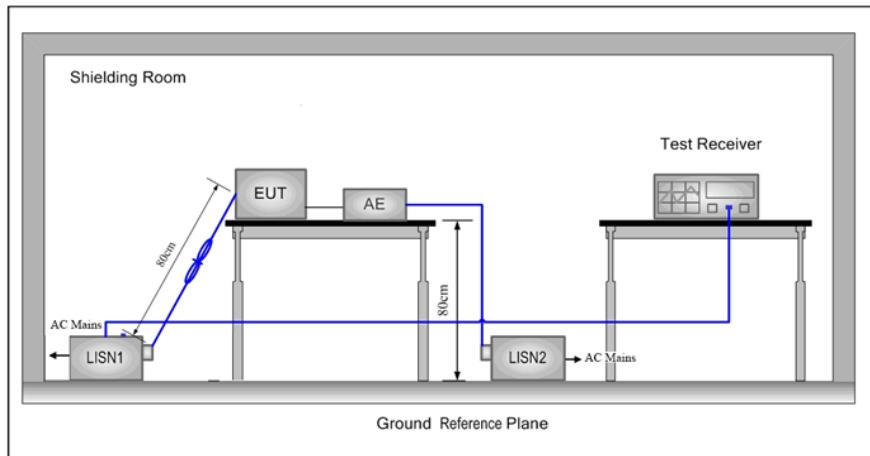


Figure 3. Above 1GHz

### 5.1.3 For Conducted Emissions test setup

#### Conducted Emissions setup



## 5.2 Test Environment

### Operating Environment:

|                       |          |
|-----------------------|----------|
| Temperature:          | 23°C     |
| Humidity:             | 50% RH   |
| Atmospheric Pressure: | 1010mbar |

## 5.3 Test Condition

### Test channel:

| Test Mode          | Tx   | RF Channel           |                      |                      |
|--------------------|--|----------------------|----------------------|----------------------|
|                    |  | Low(L)               | Middle(M)            | High(H)              |
| 802.11b/g/n(HT20)  | 2412MHz ~2462 MHz  | Channel 1<br>2412MHz | Channel 6<br>2437MHz | Channel11<br>2462MHz |
| Transmitting mode: | Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate. |                      |                      |                      |

### Test mode:

#### Pre-scan under all rate at lowest channel 1

| Mode       | 802.11b |        |          |        | 802.11g |        |          |        | 802.11n (HT20) |        |        |        |
|------------|---------|--------|----------|--------|---------|--------|----------|--------|----------------|--------|--------|--------|
| Data Rate  | 1Mbps   | 2Mbps  | 5.5Mbps  | 11Mbps | 6Mbps   | 9Mbps  | 12Mbps   | 18Mbps | 24Mbps         | 36Mbps | 48Mbps | 54Mbps |
| Power(dBm) | 8.52    | 8.63   | 8.67     | 8.70   | 7.52    | 7.47   | 7.41     | 7.39   | 7.33           | 7.29   | 7.22   | 7.21   |
| Mode       | 802.11b |        |          |        |         |        |          |        |                |        |        |        |
| Data Rate  | 6.5Mbps | 13Mbps | 19.5Mbps | 26Mbps | 39Mbps  | 52Mbps | 58.5Mbps | 65Mbps |                |        |        |        |
| Power(dBm) | 7.37    | 7.36   | 7.34     | 7.29   | 7.20    | 7.20   | 7.19     | 7.08   |                |        |        |        |

Through Pre-scan, 11Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20).

## 6 General Information

### 6.1 Client Information

|                          |  |
|--------------------------|--|
| Applicant:               | Shenzhen Universal IoT Corporation Limited   |
| Address of Applicant:    | B Block, 20th Floor, Xusheng Building, No.4004 Baoan Road, Xixiang, Baoan District, Shenzhen, china      |
| Manufacturer:            | ShenZhen FN-LINK Technology Co., LTD   |
| Address of Manufacturer: | Block A, Huixin Industrial park, Yonghe Road, Fuyong, Bao'an District, Shenzhen City, Guangdong province |
| Factory:                 | ShenZhen FN-LINK Technology Co.,LTD  |
| Address of Factory:      | Block A, Huixin Industrial park, Yonghe Road, Fuyong, Bao'an District, Shenzhen City, Guangdong province |

### 6.2 General Description of EUT

|                                  |                                |   |
|----------------------------------|--------------------------------|---|
| Product Name:                    | VR                             |   |
| Model No.(EUT):                  | CP-V8                          |   |
| Trade Mark:                      | N/A                            |   |
| EUT Supports Radios application: | Wlan 2.4GHz 802.11b/g/n(HT20)  |   |
| Power Supply:                    | Adapter:                       | Model No.: K-T10A0502000E<br>Input: AC 100V-240V, 50-60Hz,0.35A Max<br>Output: DC 5.0V,2000mA |
|                                  | Battery:                       | DC3.7V,3000 mAh   |
| AC Adapter output line:          | 48 cm(Unshielded)              |   |
| Sample Received Date:            | Aug. 18, 2016                  |   |
| Sample tested Date:              | Aug. 18, 2016 to Sep. 02, 2016 |   |

### 6.3 Product Specification subjective to this standard

|                       |   |
|-----------------------|---|
| Operation Frequency:  | IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz  |
| Channel Numbers:      | IEEE 802.11b/g, IEEE 802.11n HT20: 11 Channels  |
| Channel Separation:   | 5MHz  |
| Type of Modulation:   | IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK)<br>IEEE for 802.11g:OFDM(64QAM, 16QAM, QPSK, BPSK)<br>IEEE for 802.11n(HT20): OFDM (64QAM, 16QAM,QPSK,BPSK) |
| Sample Type:          | Portable production   |
| Test Power Grade:     | N/A   |
| Test Software of EUT: | N/A   |
| Antenna Type:         | Monopole  |
| Antenna Gain:         | 0.5dBi  |
| Test Voltage:         | AC 120V/60Hz  |

Operation Frequency each of channel(802.11b/g/n HT20)

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

## 6.4 Description of Support Units

The EUT has been tested independently.

## 6.5 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd.

Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China 518101

Telephone: +86 (0) 755 3368 3668 Fax:+86 (0) 755 3368 3385

No tests were sub-contracted.

## 6.6 Test Facility

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

### **CNAS-Lab Code: L1910**

Centre Testing International Group Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories..

### **A2LA-Lab Cert. No. 3061.01**

Centre Testing International Group Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

### **FCC-Registration No.: 886427**

Centre Testing International Group Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 886427.

### **IC-Registration No.: 7408A-2**

The 3m Alternate Test Site of Centre Testing International Group Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 7408A-2 .

### **IC-Registration No.: 7408B-1**

The 10m Alternate Test Site of Centre Testing International Group Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 7408B-1.

### **NEMKO-Aut. No.: ELA503**

Centre Testing International Group Co., Ltd. has been assessed the quality assurance system, the testing facilities, qualifications and testing practices of the relevant parts of the organization. The quality assurance system of the Laboratory has been validated against ISO/IEC 17025 or equivalent. The laboratory also fulfils the conditions described in Nemko Document NLA-10.

### **VCCI**

The Radiation 3 &10 meters site of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-4096.

Main Ports Conducted Interference Measurement of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-4563.

Telecommunication Ports Conducted Disturbance Measurement of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-2146.

The Radiation 3 meters site of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-758

## 6.7 Deviation from Standards

None.

## 6.8 Abnormalities from Standard Conditions

None.

## 6.9 Other Information Requested by the Customer

None.

## 6.10 Measurement Uncertainty(95% confidence levels, k=2)

| No. | Item                            | Measurement Uncertainty |
|-----|---------------------------------|-------------------------|
| 1   | Radio Frequency                 | $7.9 \times 10^{-8}$    |
| 2   | RF power, conducted             | 0.31dB (30MHz-1GHz)     |
|     |                                 | 0.57dB(1GHz-18GHz)      |
| 3   | Radiated Spurious emission test | 4.5dB (30MHz-1GHz)      |
|     |                                 | 4.8dB(1GHz-12.75GHz)    |
| 4   | Conduction emission             | 3.6dB (9kHz to 150kHz)  |
|     |                                 | 3.2dB (150kHz to 30MHz) |
| 5   | Temperature test                | 0.64°C                  |
| 6   | Humidity test                   | 2.8%                    |
| 7   | DC power voltages               | 0.025%                  |

## 7 Equipment List

| RF test system                   |               |                           |               |                        |                            |
|----------------------------------|---------------|---------------------------|---------------|------------------------|----------------------------|
| Equipment                        | Manufacturer  | Model No.                 | Serial Number | Cal. Date (mm-dd-yyyy) | Cal. Due date (mm-dd-yyyy) |
| Signal Generator                 | Keysight      | E8257D                    | MY53401106    | 04-01-2016             | 03-31-2017                 |
| Communication test set test set  | Agilent       | N4010A                    | MY51400230    | 04-01-2016             | 03-31-2017                 |
| Spectrum Analyzer                | Keysight      | N9010A                    | MY54510339    | 04-01-2016             | 03-31-2017                 |
| Signal Generator                 | Keysight      | N5182B                    | MY53051549    | 04-01-2016             | 03-31-2017                 |
| High-pass filter                 | Sinoscite     | FL3CX03WG18 NM12-0398-002 | ---           | 01-12-2016             | 01-11-2017                 |
| High-pass filter                 | MICRO-TRONICS | SPA-F-63029-4             | ---           | 01-12-2016             | 01-11-2017                 |
| DC Power                         | Keysight      | E3642A                    | MY54436035    | 04-01-2016             | 03-31-2017                 |
| PC-1                             | Lenovo        | R4960d                    | ---           | 04-01-2016             | 03-31-2017                 |
| power meter & power sensor       | R&S           | OSP120                    | 101374        | 04-01-2016             | 03-31-2017                 |
| RF control unit                  | JS Tonscend   | JS0806-2                  | 158060006     | 04-01-2016             | 03-31-2017                 |
| BT&WI-FI Automatic test software | JS Tonscend   | JS1120-2                  | ---           | 04-01-2016             | 03-31-2017                 |

| Conducted disturbance Test      |              |           |               |                        |                            |
|---------------------------------|--------------|-----------|---------------|------------------------|----------------------------|
| Equipment                       | Manufacturer | Model No. | Serial Number | Cal. date (mm-dd-yyyy) | Cal. Due date (mm-dd-yyyy) |
| Receiver                        | R&S          | ESCI      | 100009        | 06-16-2016             | 06-15-2017                 |
| Temperature/ Humidity Indicator | TAYLOR       | 1451      | 1905          | 04-27-2016             | 04-26-2017                 |
| Communication test set          | Agilent      | E5515C    | GB47050534    | 04-01-2016             | 03-31-2017                 |
| Communication test set          | R&S          | CMW500    | 152394        | 04-01-2016             | 03-31-2017                 |
| LISN                            | R&S          | ENV216    | 100098        | 06-16-2016             | 06-15-2017                 |
| LISN                            | schwarzbeck  | NNLK8121  | 8121-529      | 06-16-2016             | 06-15-2017                 |
| Voltage Probe                   | R&S          | ESH2-Z3   | --            | 07-09-2014             | 07-07-2017                 |
| Current Probe                   | R&S          | EZ17      | 100106        | 06-16-2016             | 06-15-2017                 |
| ISN                             | TESEQ GmbH   | ISN T800  | 30297         | 01-29-2015             | 01-27-2017                 |

| <b>3M Semi/full-anechoic Chamber</b> |                     |                              |                      |                               |                                   |
|--------------------------------------|---------------------|------------------------------|----------------------|-------------------------------|-----------------------------------|
| <b>Equipment</b>                     | <b>Manufacturer</b> | <b>Model No.</b>             | <b>Serial Number</b> | <b>Cal. date (mm-dd-yyyy)</b> | <b>Cal. Due date (mm-dd-yyyy)</b> |
| 3M Chamber & Accessory Equipment     | TDK                 | SAC-3                        | ---                  | 06-05-2016                    | 06-05-2019                        |
| TRILOG Broadband Antenna             | SCHWARZBECK         | VULB9163                     | 9163-484             | 05-23-2016                    | 05-22-2017                        |
| Microwave Preamplifier               | Agilent             | 8449B                        | 3008A02425           | 02-04-2016                    | 02-03-2017                        |
| Horn Antenna                         | ETS-LINDGREN        | 3117                         | 00057410             | 06-30-2015                    | 06-28-2018                        |
| Horn Antenna                         | A.H.SYSTEMS         | SAS-574                      | 374                  | 06-30-2015                    | 06-28-2018                        |
| Loop Antenna                         | ETS                 | 6502                         | 00071730             | 07-30-2015                    | 07-28-2017                        |
| Spectrum Analyzer                    | R&S                 | FSP40                        | 100416               | 06-16-2016                    | 06-15-2017                        |
| Receiver                             | R&S                 | ESCI                         | 100435               | 06-16-2016                    | 06-15-2017                        |
| Multi device Controller              | maturo              | NCD/070/1071<br>1112         | ---                  | 01-12-2016                    | 01-11-2017                        |
| LISN                                 | schwarzbeck         | NNBM8125                     | 81251547             | 06-16-2016                    | 06-15-2017                        |
| LISN                                 | schwarzbeck         | NNBM8125                     | 81251548             | 06-16-2016                    | 06-15-2017                        |
| Signal Generator                     | Agilent             | E4438C                       | MY45095744           | 04-01-2016                    | 03-31-2017                        |
| Signal Generator                     | Keysight            | E8257D                       | MY53401106           | 04-01-2016                    | 03-31-2017                        |
| Temperature/ Humidity Indicator      | TAYLOR              | 1451                         | 1905                 | 04-27-2016                    | 04-26-2017                        |
| Communication test set               | Agilent             | E5515C                       | GB47050534           | 04-01-2016                    | 03-31-2017                        |
| Cable line                           | Fulai(7M)           | SF106                        | 5219/6A              | 01-12-2016                    | 01-11-2017                        |
| Cable line                           | Fulai(6M)           | SF106                        | 5220/6A              | 01-12-2016                    | 01-11-2017                        |
| Cable line                           | Fulai(3M)           | SF106                        | 5216/6A              | 01-12-2016                    | 01-11-2017                        |
| Cable line                           | Fulai(3M)           | SF106                        | 5217/6A              | 01-12-2016                    | 01-11-2017                        |
| Communication test set               | R&S                 | CMW500                       | 152394               | 04-01-2016                    | 03-31-2017                        |
| High-pass filter                     | Sinoscite           | FL3CX03WG1<br>8NM12-0398-002 | ---                  | 01-12-2016                    | 01-11-2017                        |
| High-pass filter                     | MICRO-TRONICS       | SPA-F-63029-4                | ---                  | 01-12-2016                    | 01-11-2017                        |
| band rejection filter                | Sinoscite           | FL5CX01CA09<br>CL12-0395-001 | ---                  | 01-12-2016                    | 01-11-2017                        |
| band rejection filter                | Sinoscite           | FL5CX01CA08<br>CL12-0393-001 | ---                  | 01-12-2016                    | 01-11-2017                        |
| band rejection filter                | Sinoscite           | FL5CX02CA04<br>CL12-0396-002 | ---                  | 01-12-2016                    | 01-11-2017                        |
| band rejection filter                | Sinoscite           | FL5CX02CA03<br>CL12-0394-001 | ---                  | 01-12-2016                    | 01-11-2017                        |

## 8 Radio Technical Requirements Specification

### Reference documents for testing:

| No. | Identity           | Document Title   |
|-----|--------------------|--|
| 1   | FCC Part15C (2015) | Subpart C-Intentional Radiators                                    |
| 2   | ANSI C63.10-2013   | American National Standard for Testing Unlicensed Wireless Devices |

### Test Results List:

| Test Requirement                  | Test method             | Test item   | Verdict | Note        |
|-----------------------------------|-------------------------|---|---------|-------------|
| Part15C Section 15.247 (b)(3)     | ANSI C63.10/ KDB 558074 | Conducted Peak Output Power                                       | PASS    | Appendix A) |
| Part15C Section 15.247 (a)(2)     | ANSI C63.10/ KDB 558074 | 6dB Occupied Bandwidth  | PASS    | Appendix B) |
| Part15C Section 15.247(d)         | ANSI C63.10/ KDB 558074 | Band-edge for RF Conducted Emissions                              | PASS    | Appendix C) |
| Part15C Section 15.247(d)         | ANSI C63.10/ KDB 558074 | RF Conducted Spurious Emissions                                   | PASS    | Appendix D) |
| Part15C Section 15.247 (e)        | ANSI C63.10/ KDB 558074 | Power Spectral Density  | PASS    | Appendix E) |
| Part15C Section 15.203/15.247 (c) | ANSI C63.10             | Antenna Requirement   | PASS    | Appendix F) |
| Part15C Section 15.207            | ANSI C63.10             | AC Power Line Conducted Emission                                  | PASS    | Appendix G) |
| Part15C Section 15.205/15.209     | ANSI C63.10             | Restricted bands around fundamental frequency (Radiated Emission) | PASS    | Appendix H) |
| Part15C Section 15.205/15.209     | ANSI C63.10             | Radiated Spurious Emissions                                       | PASS    | Appendix I) |

## Appendix A): Conducted Peak Output Power

### Test Procedure

1. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Measure the conducted output power and record the results in the test report.

**Result Table**

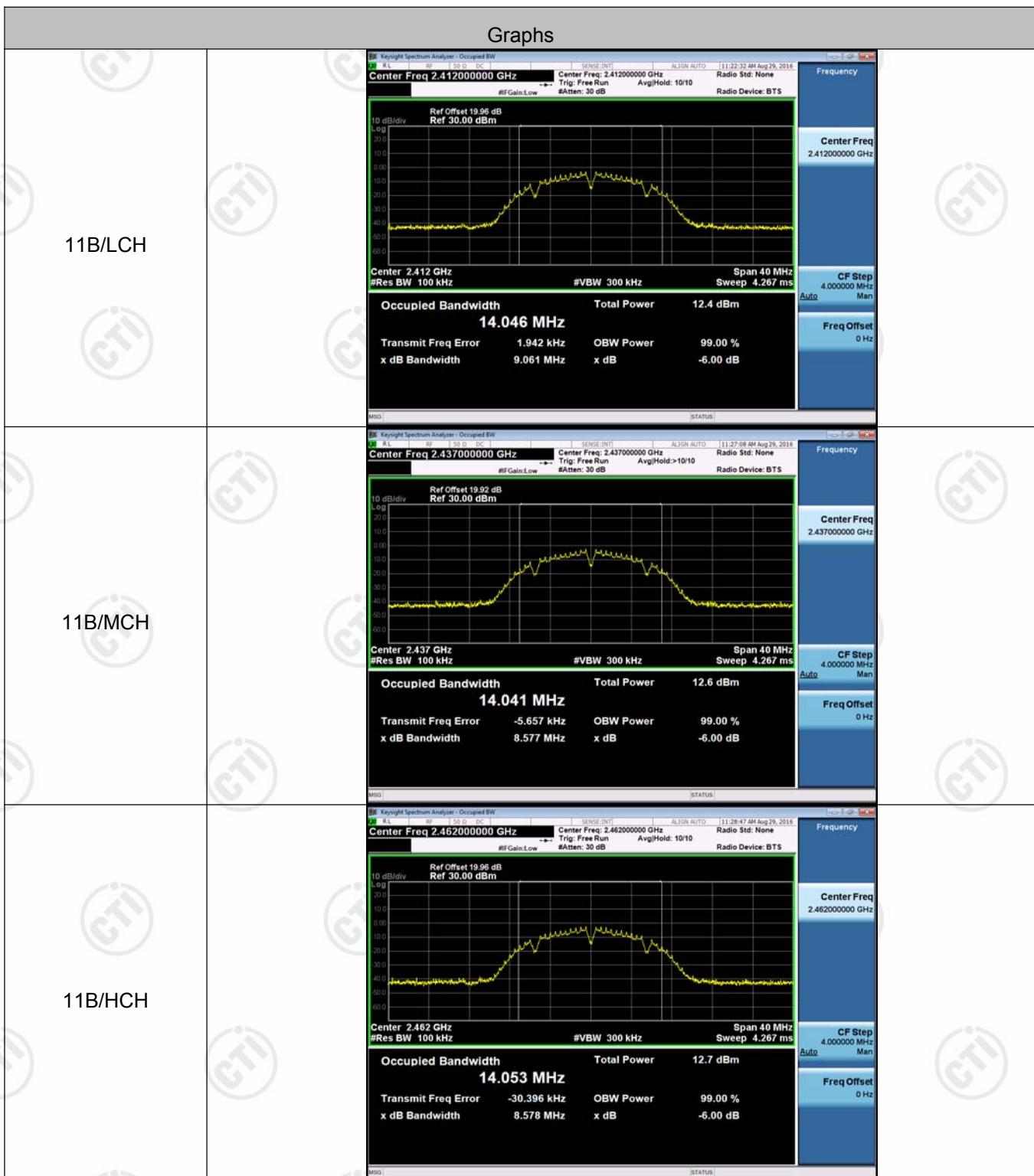
| Mode      | Channel | Conducted Peak Output Power [dBm] | Verdict |
|-----------|---------|-----------------------------------|---------|
| 11B       | LCH     | 8.7                               | PASS    |
| 11B       | MCH     | 8.65                              | PASS    |
| 11B       | HCH     | 8.78                              | PASS    |
| 11G       | LCH     | 7.52                              | PASS    |
| 11G       | MCH     | 7.87                              | PASS    |
| 11G       | HCH     | 7.52                              | PASS    |
| 11N20SISO | LCH     | 7.37                              | PASS    |
| 11N20SISO | MCH     | 7.66                              | PASS    |
| 11N20SISO | HCH     | 7.59                              | PASS    |

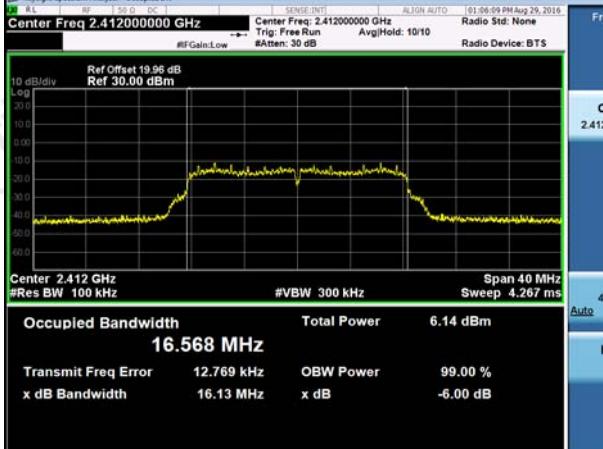
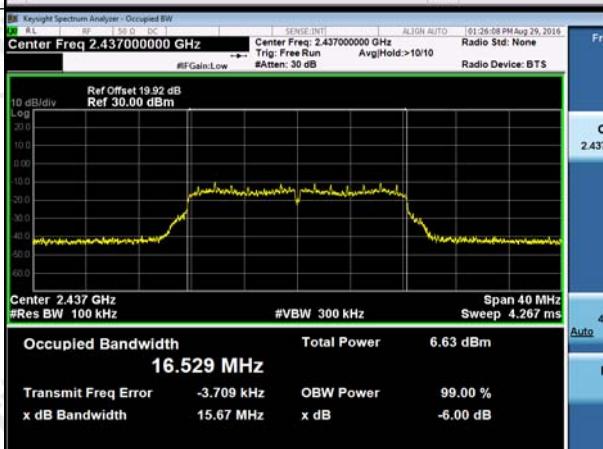
## Appendix B): 6dB Occupied Bandwidth

**Result Table**

| Mode      | Channel | 6dB Bandwidth [MHz] | 99% OBW [MHz] | Verdict | Remark           |
|-----------|---------|---------------------|---------------|---------|------------------|
| 11B       | LCH     | 9.061               | 14.046        | PASS    | Peak<br>detector |
| 11B       | MCH     | 8.577               | 14.041        | PASS    |                  |
| 11B       | HCH     | 8.578               | 14.053        | PASS    |                  |
| 11G       | LCH     | 16.13               | 16.568        | PASS    |                  |
| 11G       | MCH     | 15.67               | 16.529        | PASS    |                  |
| 11G       | HCH     | 15.49               | 16.582        | PASS    |                  |
| 11N20SISO | LCH     | 17.54               | 17.778        | PASS    |                  |
| 11N20SISO | MCH     | 17.14               | 17.777        | PASS    |                  |
| 11N20SISO | HCH     | 16.55               | 17.778        | PASS    |                  |

### Test Graph



|         |  |
|---------|--|
| 11G/LCH |  <p>Keylight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.412000000 GHz</p> <p>Ref Offset 19.96 dB<br/>Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>Center 2.412 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms</p> <p>Occupied Bandwidth Total Power 6.14 dBm<br/><b>16.568 MHz</b></p> <p>Transmit Freq Error 12.769 kHz OBW Power 99.00 %<br/>x dB Bandwidth 16.13 MHz x dB -6.00 dB</p> <p>MSG STATUS</p>    |
| 11G/MCH |  <p>Keylight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.437000000 GHz</p> <p>Ref Offset 19.92 dB<br/>Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms</p> <p>Occupied Bandwidth Total Power 6.63 dBm<br/><b>16.529 MHz</b></p> <p>Transmit Freq Error -3.709 kHz OBW Power 99.00 %<br/>x dB Bandwidth 15.67 MHz x dB -6.00 dB</p> <p>MSG STATUS</p>   |
| 11G/HCH |  <p>Keylight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.462000000 GHz</p> <p>Ref Offset 19.96 dB<br/>Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>Center 2.462 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms</p> <p>Occupied Bandwidth Total Power 6.10 dBm<br/><b>16.582 MHz</b></p> <p>Transmit Freq Error -16.430 kHz OBW Power 99.00 %<br/>x dB Bandwidth 15.49 MHz x dB -6.00 dB</p> <p>MSG STATUS</p> |

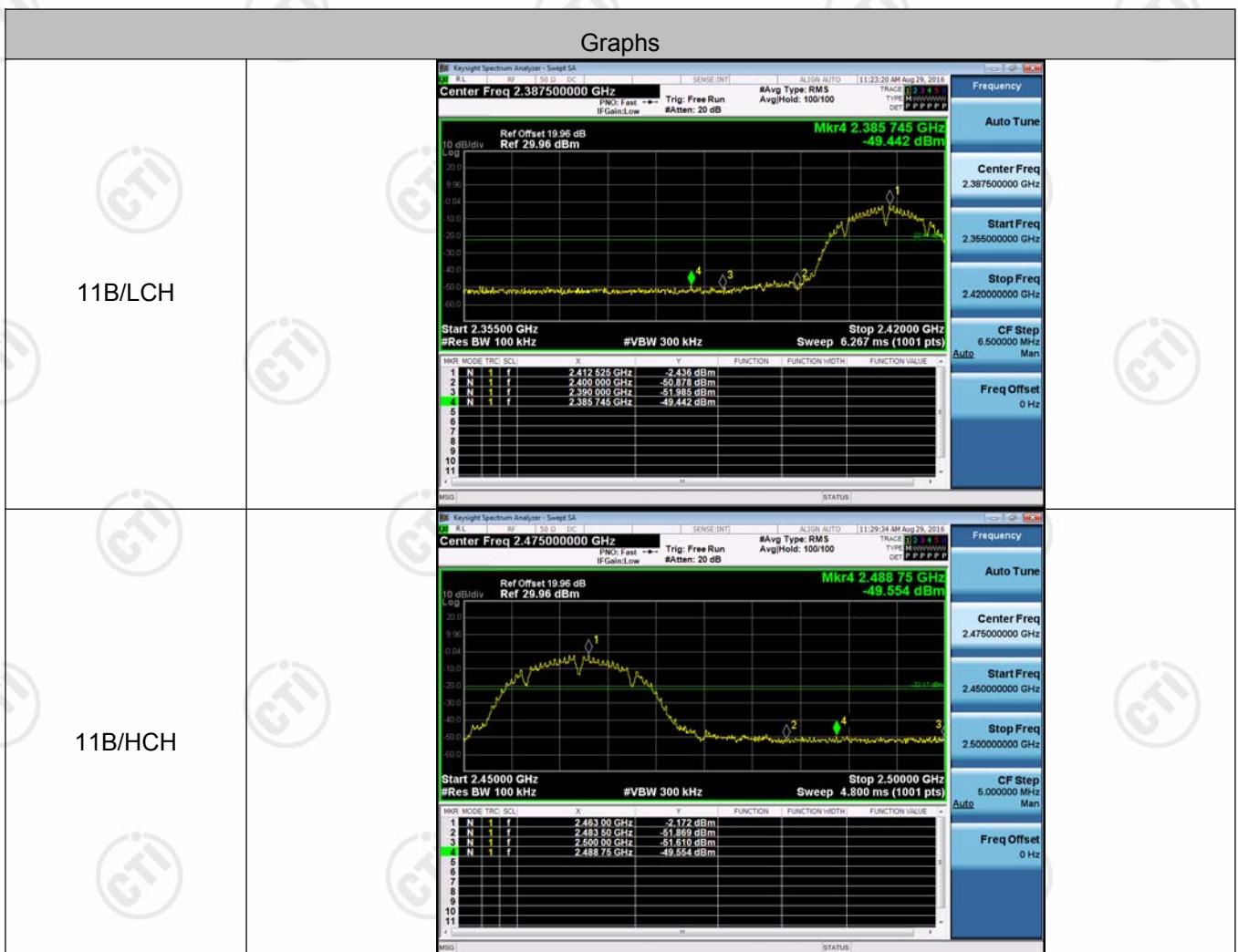
|               |  |
|---------------|--|
| 11N20SISO/LCH | <p>Keylight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.412000000 GHz</p> <p>Ref Offset 19.96 dB<br/>Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>Center 2.412 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms</p> <p>Occupied Bandwidth Total Power 5.99 dBm<br/><b>17.778 MHz</b></p> <p>Transmit Freq Error -1.833 kHz OBW Power 99.00 %<br/>x dB Bandwidth 17.54 MHz x dB -6.00 dB</p> |
| 11N20SISO/MCH | <p>Keylight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.437000000 GHz</p> <p>Ref Offset 19.92 dB<br/>Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms</p> <p>Occupied Bandwidth Total Power 6.31 dBm<br/><b>17.777 MHz</b></p> <p>Transmit Freq Error 5.173 kHz OBW Power 99.00 %<br/>x dB Bandwidth 17.14 MHz x dB -6.00 dB</p>  |
| 11N20SISO/HCH | <p>Keylight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.462000000 GHz</p> <p>Ref Offset 19.96 dB<br/>Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>Center 2.462 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms</p> <p>Occupied Bandwidth Total Power 6.67 dBm<br/><b>17.778 MHz</b></p> <p>Transmit Freq Error -7.269 kHz OBW Power 99.00 %<br/>x dB Bandwidth 16.55 MHz x dB -6.00 dB</p> |

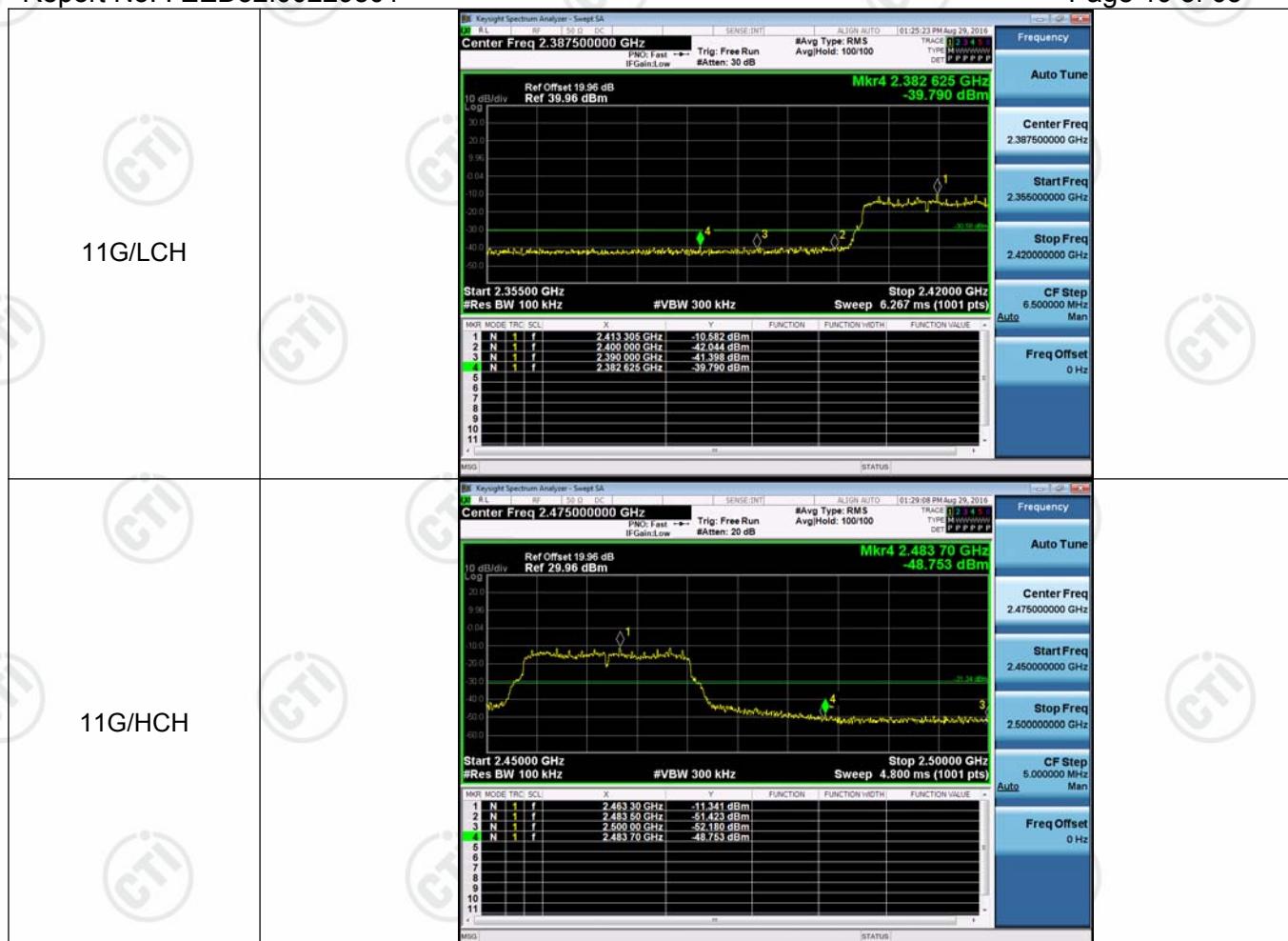
## Appendix C): Band-edge for RF Conducted Emissions

**Result Table**

| Mode      | Channel | Carrier Power[dBm] | Max.Spurious Level [dBm] | Limit [dBm] | Verdict |
|-----------|---------|--------------------|--------------------------|-------------|---------|
| 11B       | LCH     | -2.436             | -49.442                  | -22.44      | PASS    |
| 11B       | HCH     | -2.172             | -49.554                  | -22.17      | PASS    |
| 11G       | LCH     | -10.582            | -39.790                  | -30.58      | PASS    |
| 11G       | HCH     | -11.341            | -48.753                  | -31.34      | PASS    |
| 11N20SISO | LCH     | -10.888            | -49.980                  | -30.89      | PASS    |
| 11N20SISO | HCH     | -10.007            | -49.918                  | -30.01      | PASS    |

**Test Graph**





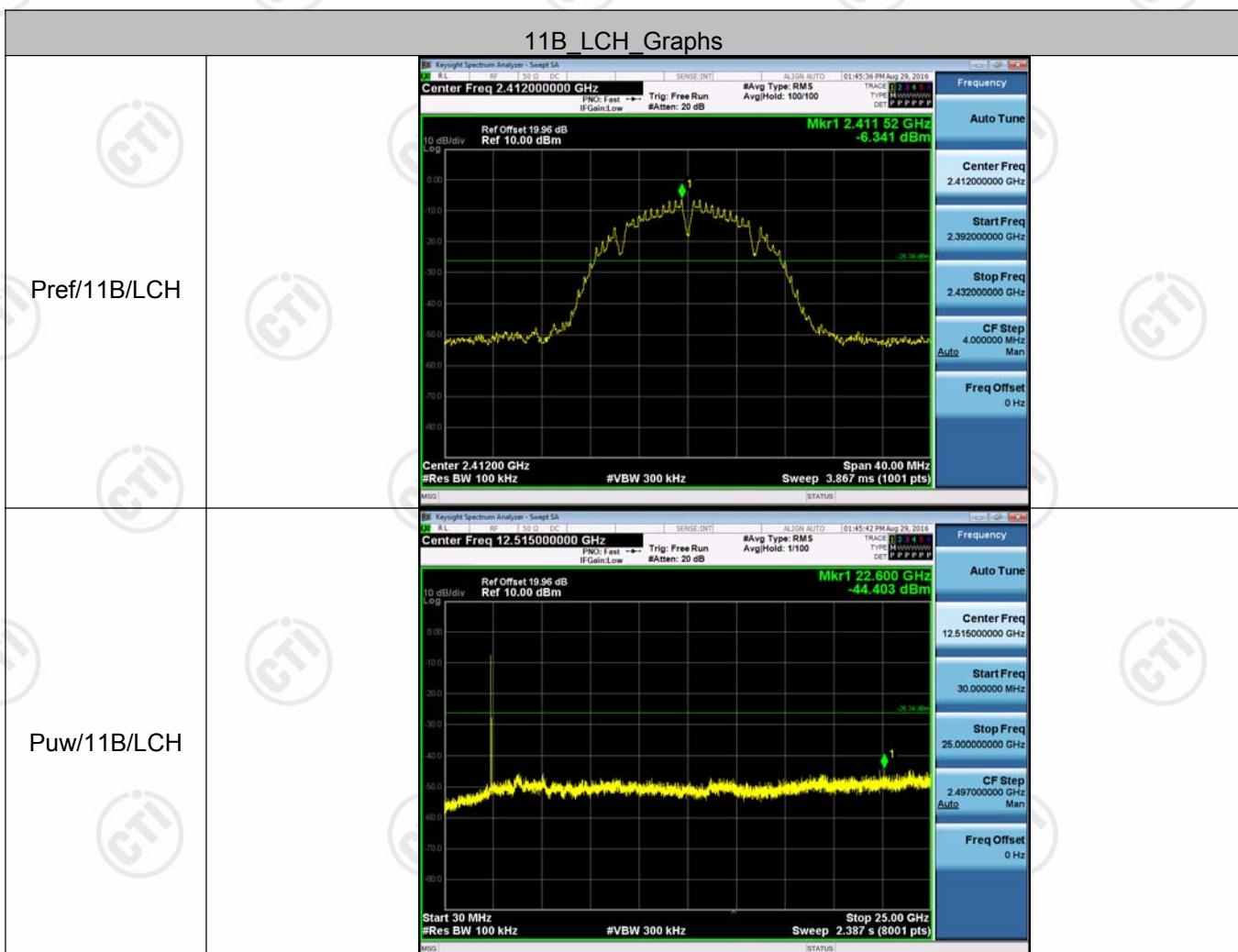


## Appendix D): RF Conducted Spurious Emissions

**Result Table**

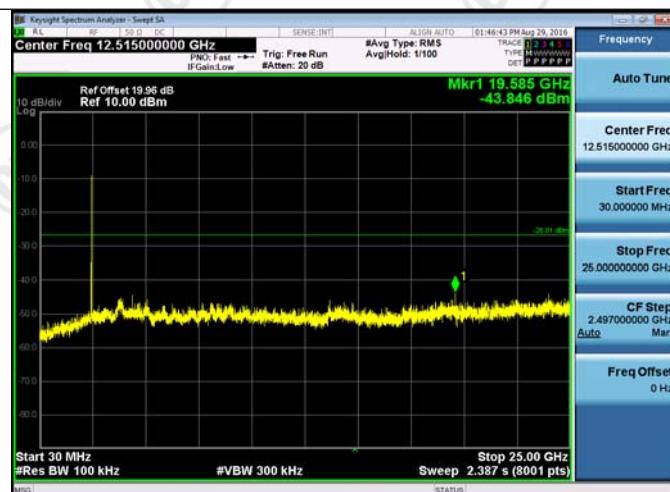
| Mode      | Channel | Pref [dBm] | Puw[dBm] | Verdict |
|-----------|---------|------------|----------|---------|
| 11B       | LCH     | -6.341     | <Limit   | PASS    |
| 11B       | MCH     | -6.251     | <Limit   | PASS    |
| 11B       | HCH     | -6.808     | <Limit   | PASS    |
| 11G       | LCH     | -10.541    | <Limit   | PASS    |
| 11G       | MCH     | -10.675    | <Limit   | PASS    |
| 11G       | HCH     | -10.183    | <Limit   | PASS    |
| 11N20SISO | LCH     | -10.894    | <Limit   | PASS    |
| 11N20SISO | MCH     | -10.648    | <Limit   | PASS    |
| 11N20SISO | HCH     | -10.071    | <Limit   | PASS    |

**Test Graph**





Puw/11B/HCH

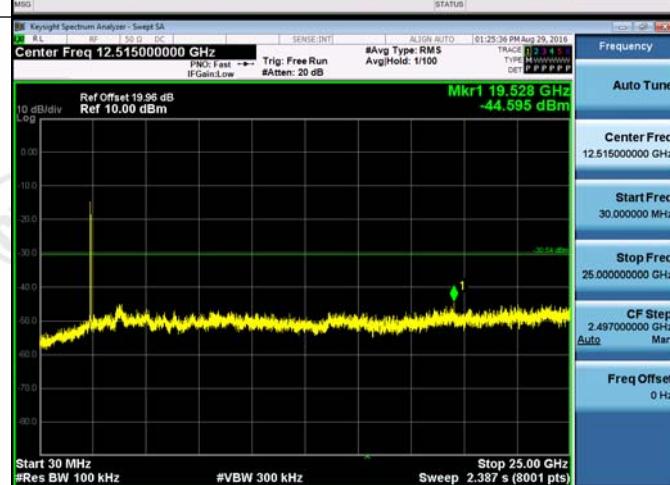


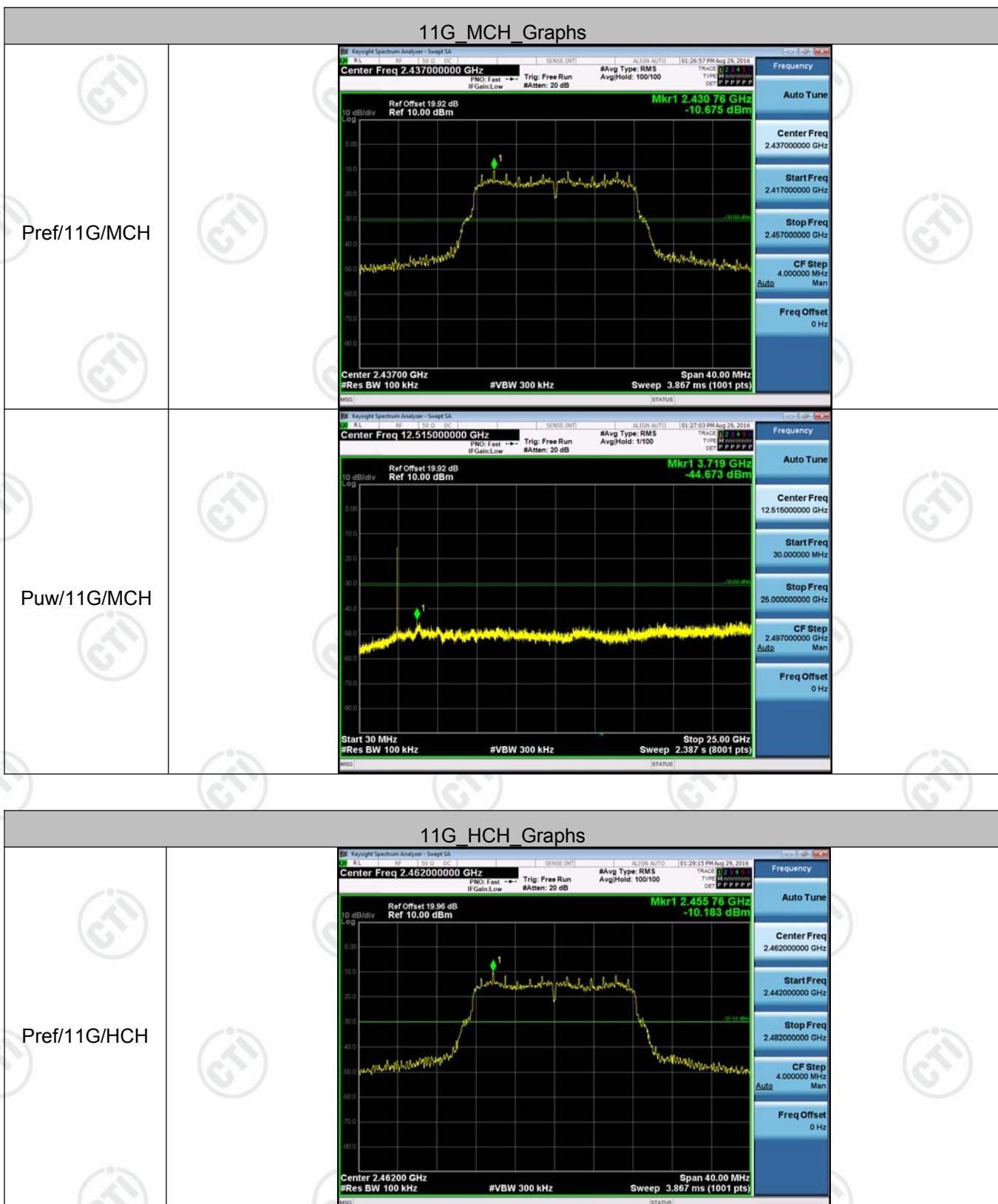
### 11G LCH Graphs

Pref/11G/LCH

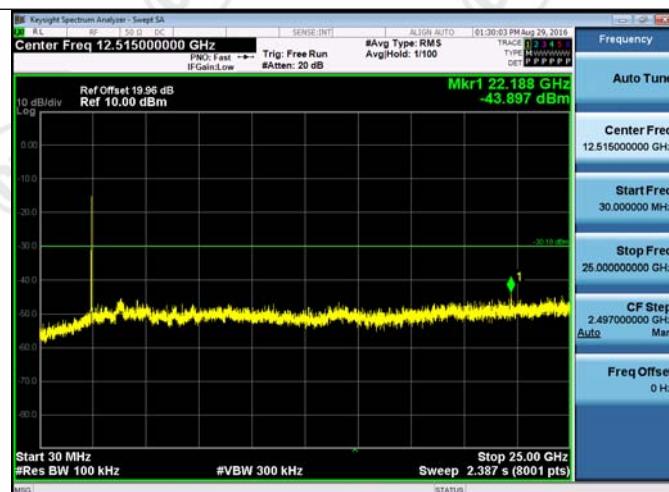


Puw/11G/LCH





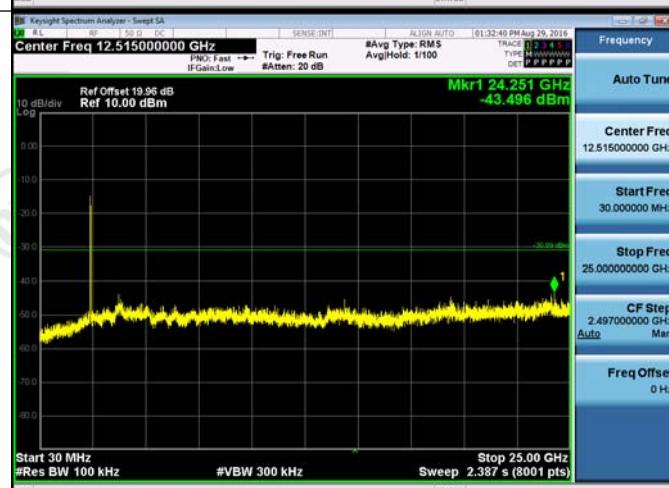
Puw/11G/HCH

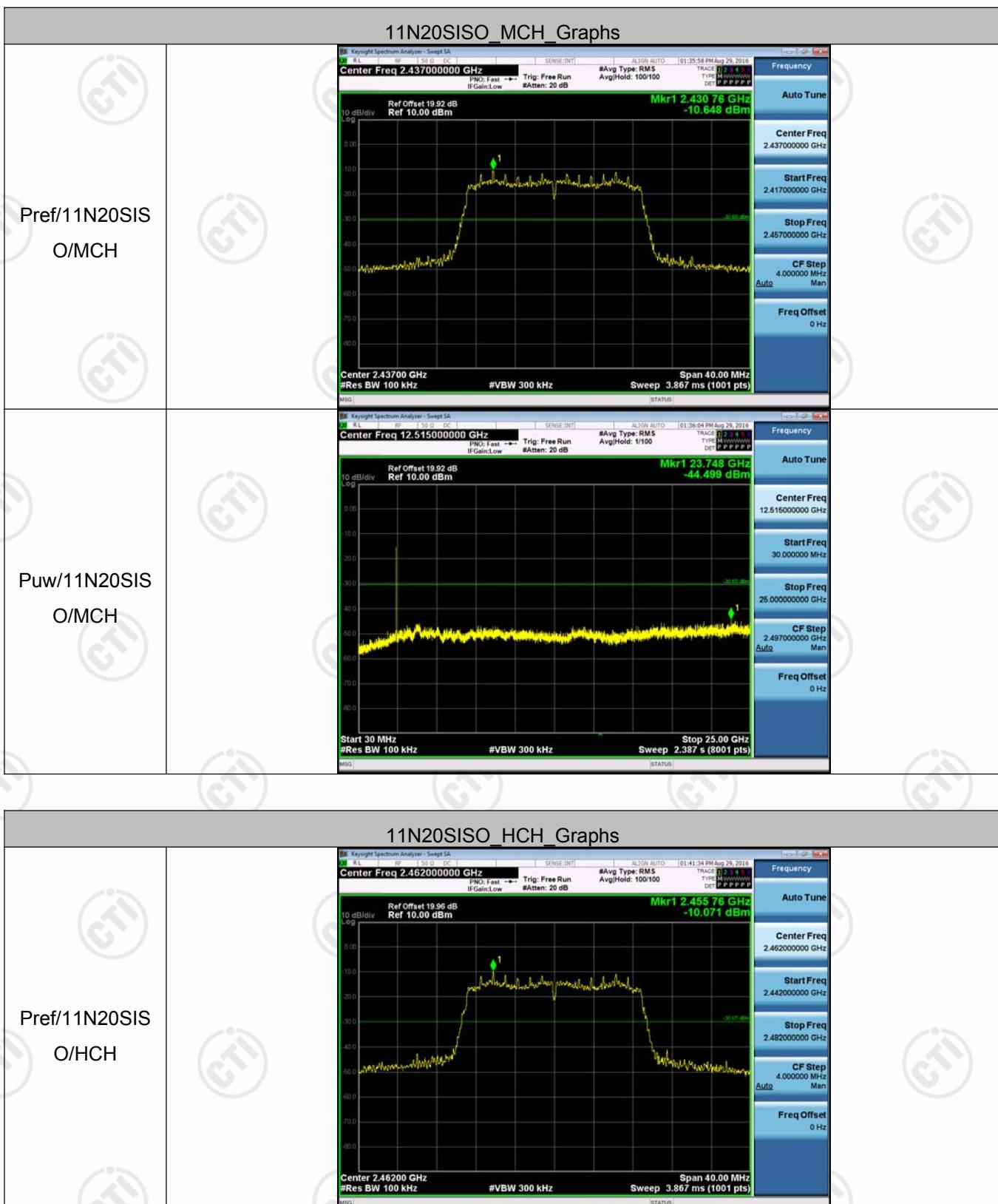


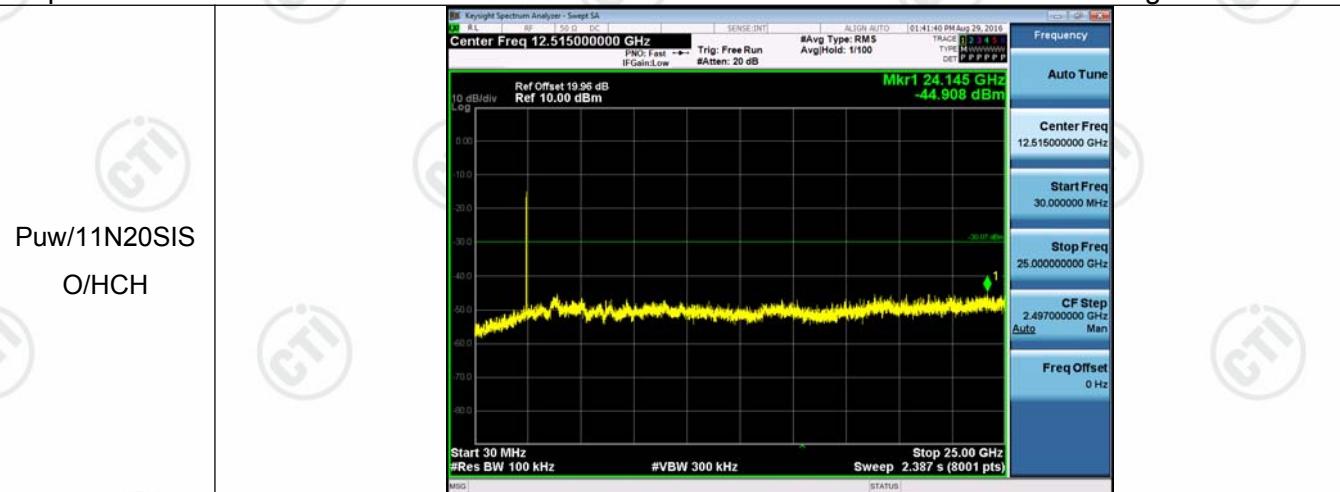
Pref/11N20SIS  
O/LCH



/11N20SISO/L  
CH





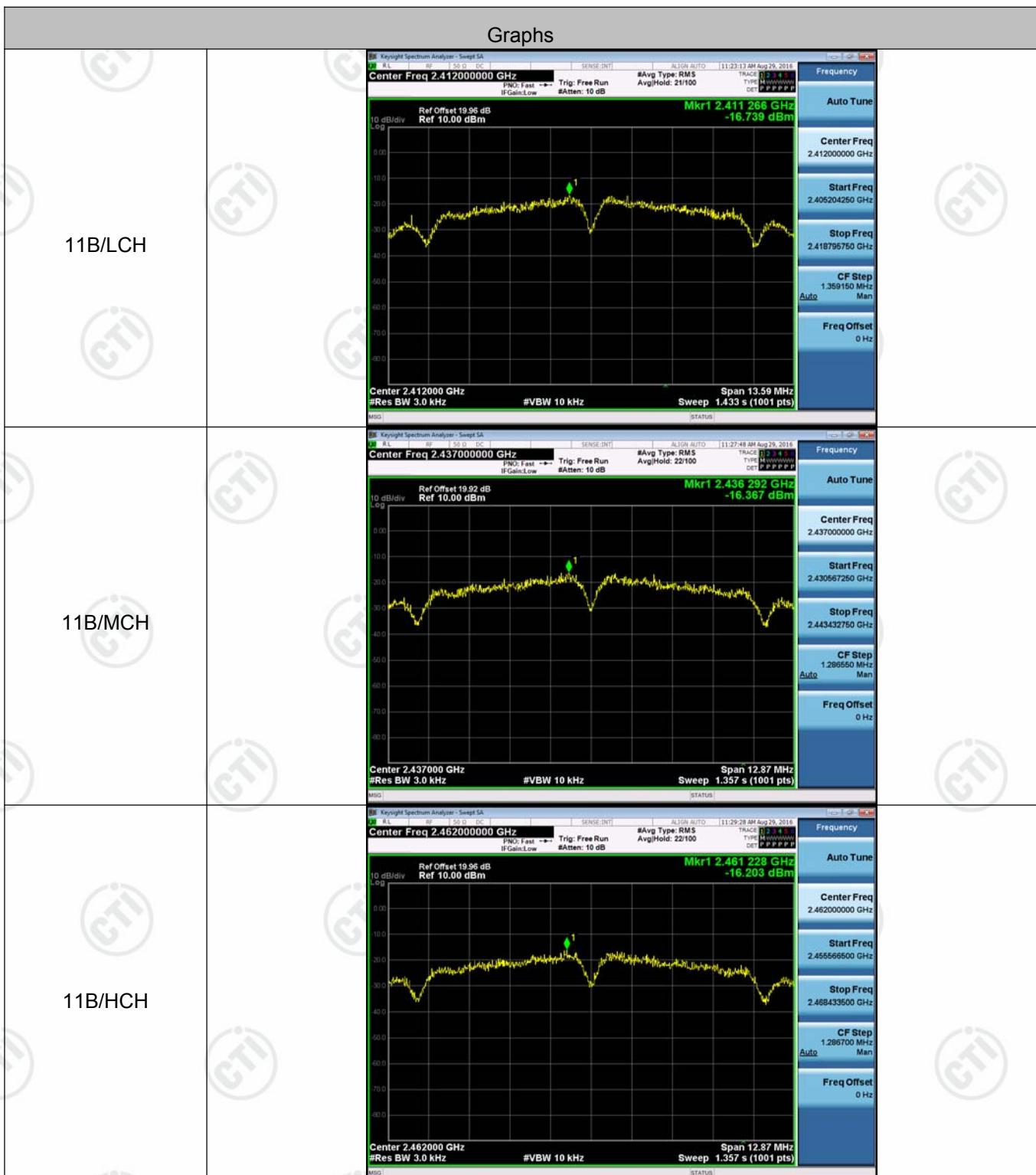


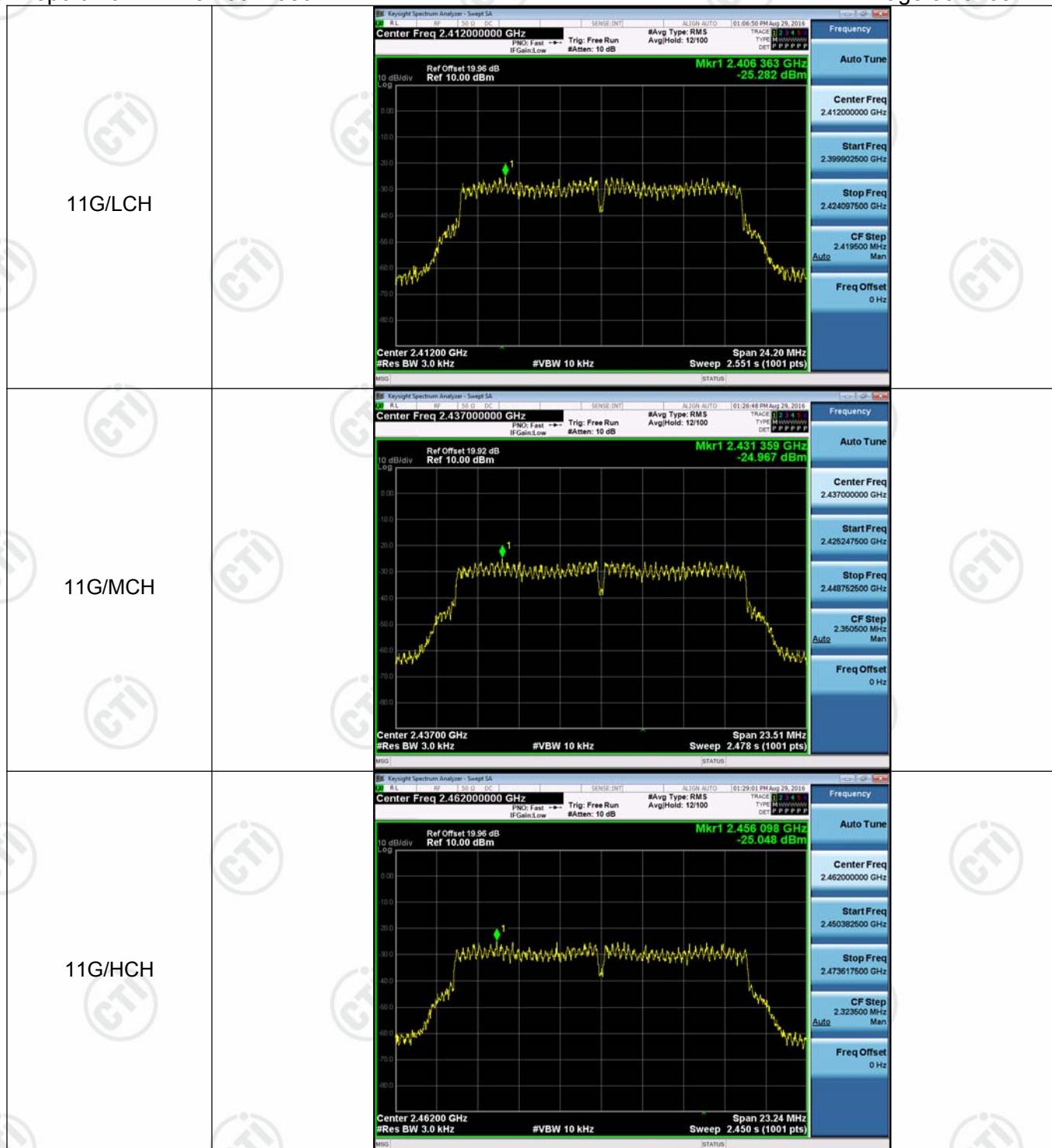
## Appendix E): Power Spectral Density

**Result Table**

| Mode      | Channel | Power Spectral Density[dBm/3kHz] | Limit[dBm/3kHz] | Verdict |
|-----------|---------|----------------------------------|-----------------|---------|
| 11B       | LCH     | -16.739                          | 8               | PASS    |
| 11B       | MCH     | -16.367                          | 8               | PASS    |
| 11B       | HCH     | -16.203                          | 8               | PASS    |
| 11G       | LCH     | -25.282                          | 8               | PASS    |
| 11G       | MCH     | -24.967                          | 8               | PASS    |
| 11G       | HCH     | -25.048                          | 8               | PASS    |
| 11N20SISO | LCH     | -24.878                          | 8               | PASS    |
| 11N20SISO | MCH     | -24.257                          | 8               | PASS    |
| 11N20SISO | HCH     | -24.523                          | 8               | PASS    |

### Test Graph







## Appendix F): Antenna Requirement

### 15.203 requirement:

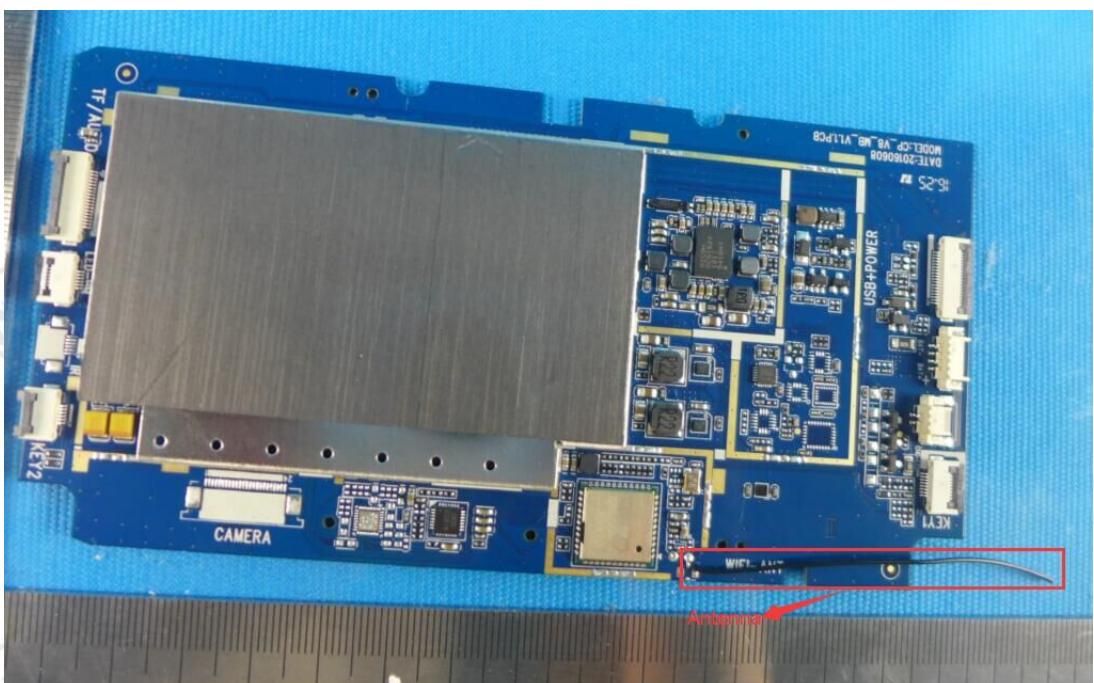
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

### 15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### EUT Antenna:

The antenna is Monopole antenna and no consideration of replacement. The best case gain of the antenna is 0.5dBi.



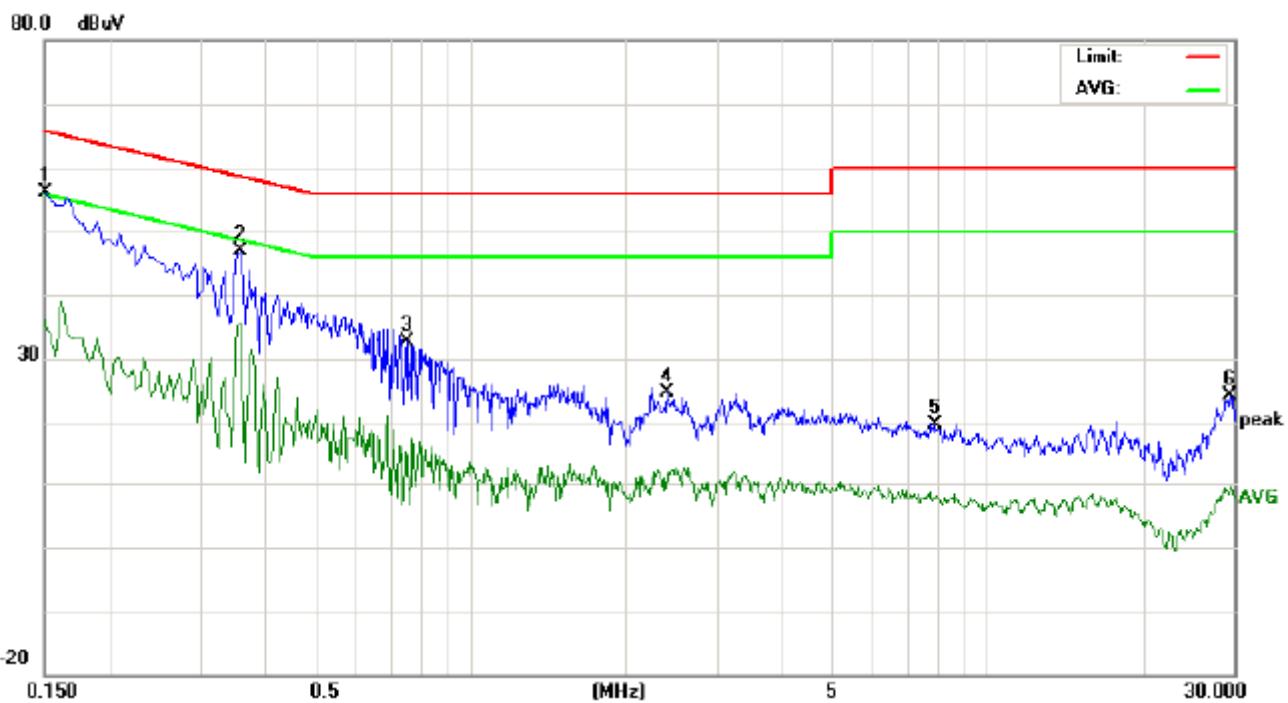
## Appendix G): AC Power Line Conducted Emission

| Test Procedure:       | <p>Test frequency range :150KHz-30MHz</p> <p>1)The mains terminal disturbance voltage test was conducted in a shielded room.</p> <p>2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a <math>50\Omega/50\mu\text{H} + 5\Omega</math> linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.</p> <p>3)The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,</p> <p>4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.</p> <p>5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.</p> |                       |                    |  |            |         |          |           |           |       |    |    |      |    |    |
|-----------------------|--|-----------------------|--------------------|--|------------|---------|----------|-----------|-----------|-------|----|----|------|----|----|
| Limit:                | <table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th> <th colspan="2">Limit (dB<math>\mu</math>V)</th> </tr> <tr> <th>Quasi-peak</th> <th>Average</th> </tr> </thead> <tbody> <tr> <td>0.15-0.5</td> <td>66 to 56*</td> <td>56 to 46*</td> </tr> <tr> <td>0.5-5</td> <td>56</td> <td>46</td> </tr> <tr> <td>5-30</td> <td>60</td> <td>50</td> </tr> </tbody> </table> <p>* The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.</p> <p>NOTE : The lower limit is applicable at the transition frequency</p>  | Frequency range (MHz) | Limit (dB $\mu$ V) |  | Quasi-peak | Average | 0.15-0.5 | 66 to 56* | 56 to 46* | 0.5-5 | 56 | 46 | 5-30 | 60 | 50 |
| Frequency range (MHz) | Limit (dB $\mu$ V)   |                       |                    |  |            |         |          |           |           |       |    |    |      |    |    |
|                       | Quasi-peak   | Average               |                    |  |            |         |          |           |           |       |    |    |      |    |    |
| 0.15-0.5              | 66 to 56*  | 56 to 46*             |                    |  |            |         |          |           |           |       |    |    |      |    |    |
| 0.5-5                 | 56   | 46                    |                    |  |            |         |          |           |           |       |    |    |      |    |    |
| 5-30                  | 60   | 50                    |                    |  |            |         |          |           |           |       |    |    |      |    |    |

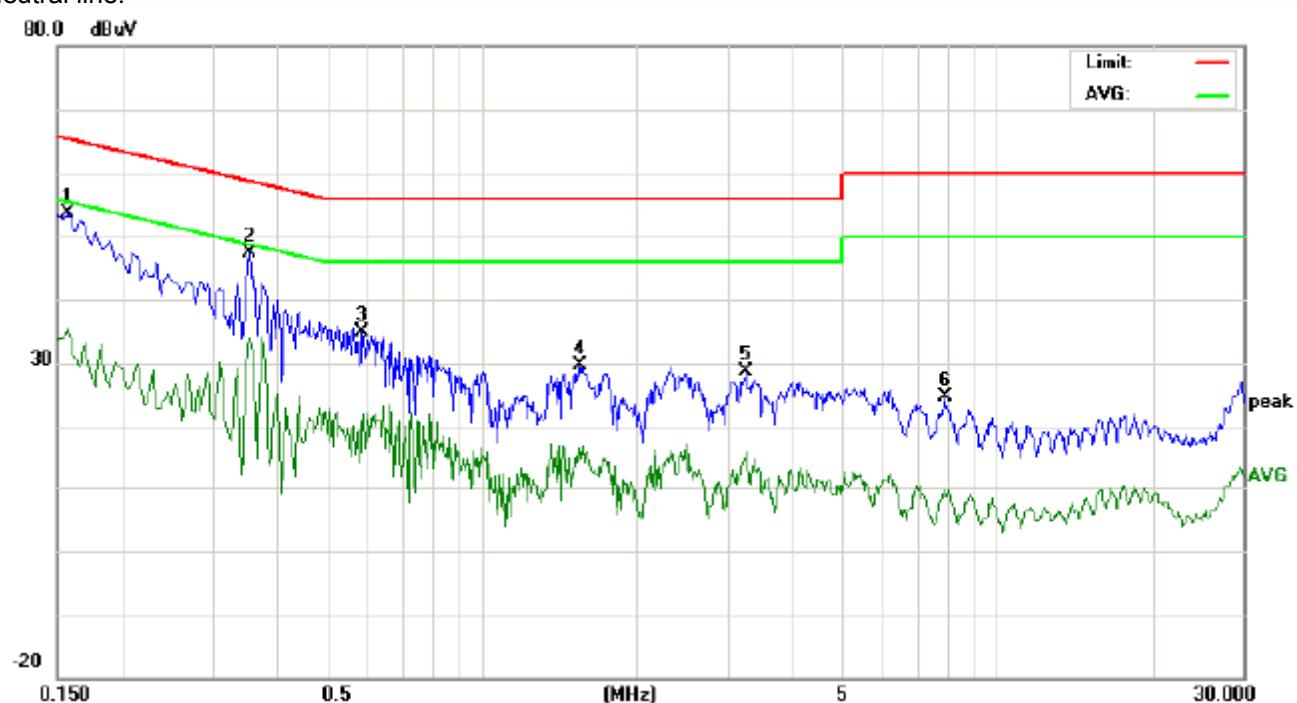
### Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.



| No. | Freq.<br>MHz | Reading_Level<br>(dBuV) |    |       | Correct<br>Factor |       | Measurement<br>(dBuV) |       |       | Limit<br>(dBuV) |        |        | Margin<br>(dB) |         |
|-----|--------------|-------------------------|----|-------|-------------------|-------|-----------------------|-------|-------|-----------------|--------|--------|----------------|---------|
|     |              | Peak                    | QP | Avg   | dB                | peak  | QP                    | Avg   | QP    | Avg             | QP     | Avg    | P/F            | Comment |
| 1   | 0.1500       | 46.36                   |    | 26.24 | 9.80              | 56.16 |                       | 36.04 | 65.99 | 55.99           | -9.83  | -19.95 | P              |         |
| 2   | 0.3580       | 37.05                   |    | 25.80 | 9.86              | 46.91 |                       | 35.66 | 58.77 | 48.77           | -11.86 | -13.11 | P              |         |
| 3   | 0.7539       | 22.82                   |    | 4.83  | 9.90              | 32.72 |                       | 14.73 | 56.00 | 46.00           | -23.28 | -31.27 | P              |         |
| 4   | 2.4060       | 14.69                   |    | 2.07  | 10.00             | 24.69 |                       | 12.07 | 56.00 | 46.00           | -31.31 | -33.93 | P              |         |
| 5   | 7.9700       | 9.69                    |    | -2.38 | 10.00             | 19.69 |                       | 7.62  | 60.00 | 50.00           | -40.31 | -42.38 | P              |         |
| 6   | 29.4140      | 14.28                   |    | -0.85 | 9.80              | 24.08 |                       | 8.95  | 60.00 | 50.00           | -35.92 | -41.05 | P              |         |



| No. | Freq.<br>MHz | Reading_Level<br>(dBuV) |       |       | Correct<br>Factor | Measurement<br>(dBuV) |       |       | Limit<br>(dBuV) | Margin<br>(dB) |     |     |
|-----|--------------|-------------------------|-------|-------|-------------------|-----------------------|-------|-------|-----------------|----------------|-----|-----|
|     |              | Peak                    | QP    | AVG   |                   | peak                  | QP    | Avg   |                 | QP             | Avg | P/F |
| 1   | 0.1580       | 43.74                   | 25.53 | 9.80  | 53.54             | 35.33                 | 65.56 | 55.56 | -12.02          | -20.23         | P   |     |
| 2   | 0.3540       | 37.49                   | 24.13 | 9.85  | 47.34             | 33.98                 | 58.87 | 48.87 | -11.53          | -14.89         | P   |     |
| 3   | 0.5860       | 25.04                   | 9.89  | 9.90  | 34.94             | 19.79                 | 56.00 | 46.00 | -21.06          | -26.21         | P   |     |
| 4   | 1.5460       | 19.77                   | 6.81  | 9.86  | 29.63             | 16.67                 | 56.00 | 46.00 | -26.37          | -29.33         | P   |     |
| 5   | 3.2740       | 18.51                   | 5.07  | 10.00 | 28.51             | 15.07                 | 56.00 | 46.00 | -27.49          | -30.93         | P   |     |
| 6   | 7.9260       | 14.71                   | -0.92 | 10.00 | 24.71             | 9.08                  | 60.00 | 50.00 | -35.29          | -40.92         | P   |     |

Notes:

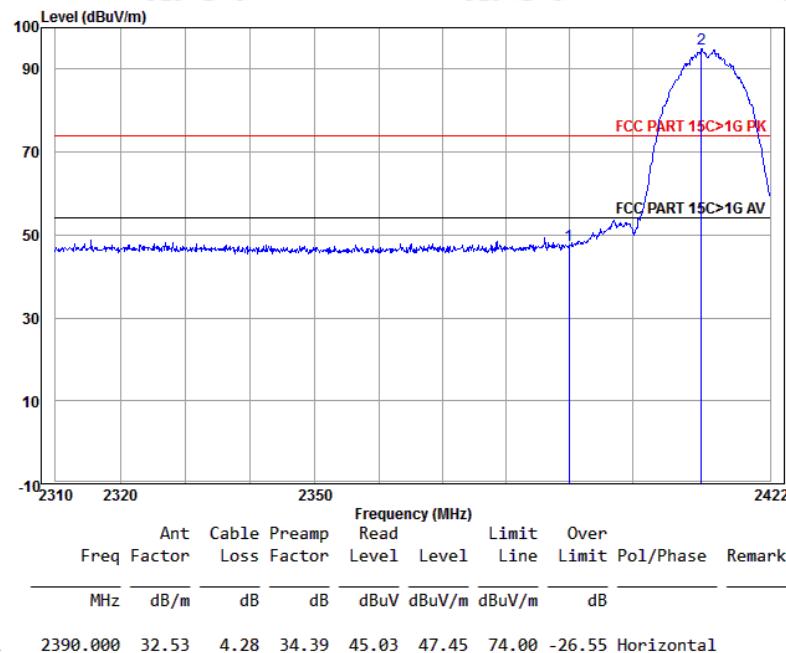
1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

## Appendix H): Restricted bands around fundamental frequency (Radiated)

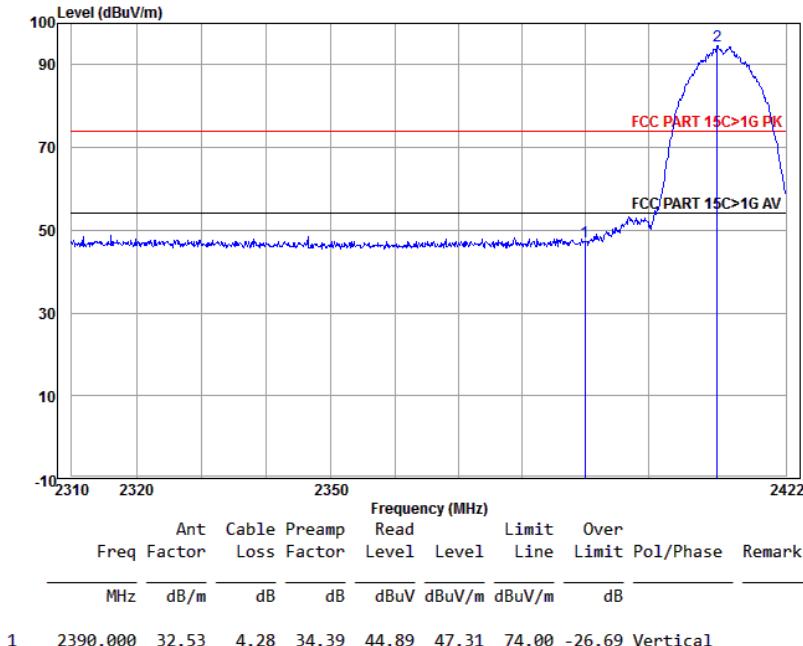
| Receiver Setup:   | Frequency     | Detector                 | RBW    | VBW              | Remark     |  |
|---|---------------|--------------------------|--------|------------------|------------|--|
| Test Procedure:   | 30MHz-1GHz    | Quasi-peak               | 120kHz | 300kHz           | Quasi-peak |  |
|   | Above 1GHz    | Peak                     | 1MHz   | 3MHz             | Peak       |  |
|   |               | Peak                     | 1MHz   | 10Hz             | Average    |  |
| <p><b>Below 1GHz test procedure as below:</b></p> <ul style="list-style-type: none"> <li>a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</li> <li>b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li> <li>c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</li> <li>d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading.</li> <li>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>f. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel</li> </ul> <p><b>Above 1GHz test procedure as below:</b></p> <ul style="list-style-type: none"> <li>g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber change form table 0.8 meter to 1.5 meter( Above 18GHz the distance is 1 meter and table is 1.5 meter).</li> <li>h. Test the EUT in the lowest channel , the Highest channel</li> <li>i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.</li> <li>j. Repeat above procedures until all frequencies measured was complete.</li> </ul> |               |                          |        |                  |            |  |
| Limit:  | Frequency     | Limit (dB $\mu$ V/m @3m) |        | Remark           |            |  |
|   | 30MHz-88MHz   | 40.0                     |        | Quasi-peak Value |            |  |
|   | 88MHz-216MHz  | 43.5                     |        | Quasi-peak Value |            |  |
|   | 216MHz-960MHz | 46.0                     |        | Quasi-peak Value |            |  |
|   | 960MHz-1GHz   | 54.0                     |        | Quasi-peak Value |            |  |
|   | Above 1GHz    | 54.0                     |        | Average Value    |            |  |
|   |               | 74.0                     |        | Peak Value       |            |  |

**Test plot as follows:**

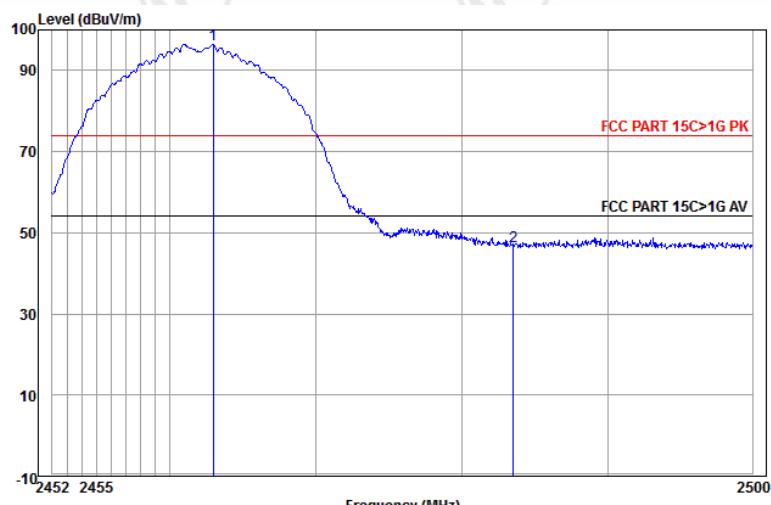
|                      |                      |                          |              |
|----------------------|----------------------|--------------------------|--------------|
| Worse case mode:     | 802.11b (11Mbps)     |                          |              |
| Frequency: 2390.0MHz | Test channel: Lowest | Polarization: Horizontal | Remark: Peak |



|                      |                      |                        |              |
|----------------------|----------------------|------------------------|--------------|
| Worse case mode:     | 802.11b (11Mbps)     |                        |              |
| Frequency: 2390.0MHz | Test channel: Lowest | Polarization: Vertical | Remark: Peak |

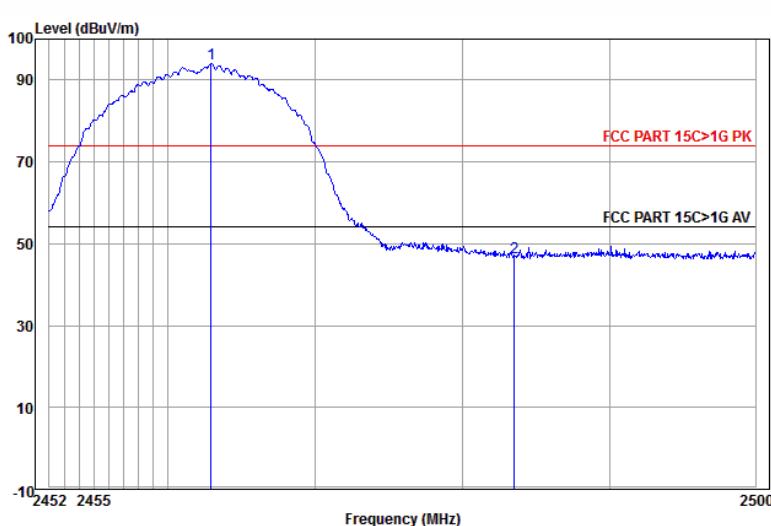


|                      |                       |                          |              |
|----------------------|-----------------------|--------------------------|--------------|
| Worse case mode:     | 802.11b (11Mbps)      |                          |              |
| Frequency: 2483.5MHz | Test channel: Highest | Polarization: Horizontal | Remark: Peak |



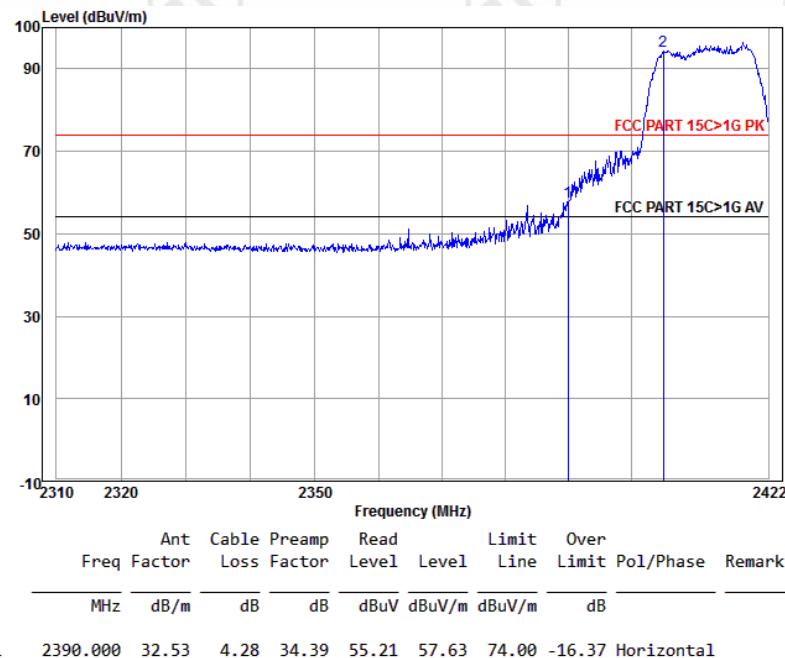
| Freq       | Ant Factor | Cable Loss | Preamp Factor | Read Level | Limit Level | Line Limit | Over Line Limit | Over Pol/Phase | Remark |
|------------|------------|------------|---------------|------------|-------------|------------|-----------------|----------------|--------|
| MHz        | dB/m       | dB         | dB            | dBuV       | dBuV/m      | dBuV/m     | dBuV/m          | dB             |        |
| 2 2483.500 | 32.71      | 4.51       | 34.41         | 43.80      | 46.61       | 74.00      | -27.39          | Horizontal     |        |

|                      |                       |                        |              |
|----------------------|-----------------------|------------------------|--------------|
| Worse case mode:     | 802.11b (11Mbps)      |                        |              |
| Frequency: 2483.5MHz | Test channel: Highest | Polarization: Vertical | Remark: Peak |

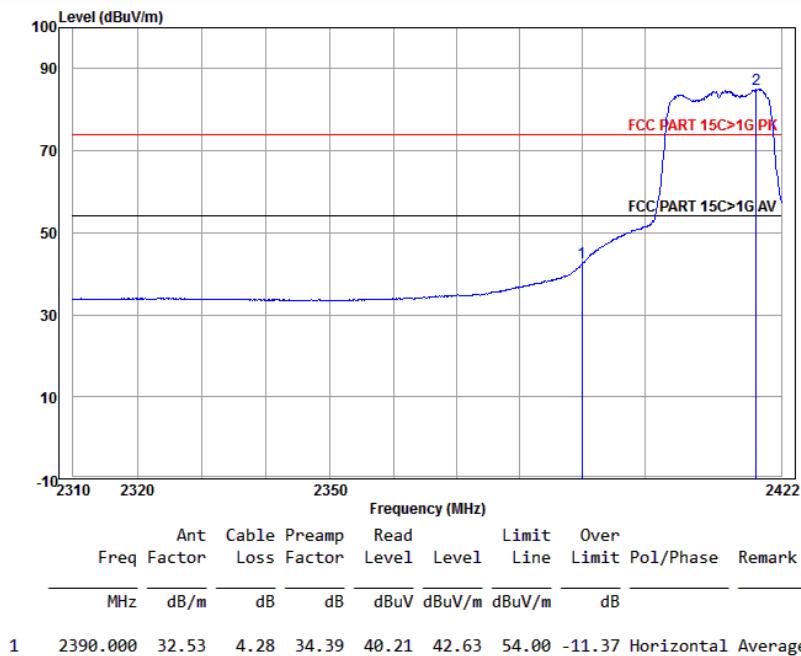


| Freq       | Ant Factor | Cable Loss | Preamp Factor | Read Level | Limit Level | Line Limit | Over Line Limit | Over Pol/Phase | Remark |
|------------|------------|------------|---------------|------------|-------------|------------|-----------------|----------------|--------|
| MHz        | dB/m       | dB         | dB            | dBuV       | dBuV/m      | dBuV/m     | dBuV/m          | dB             |        |
| 2 2483.500 | 32.71      | 4.51       | 34.41         | 43.72      | 46.53       | 74.00      | -27.47          | Vertical       |        |

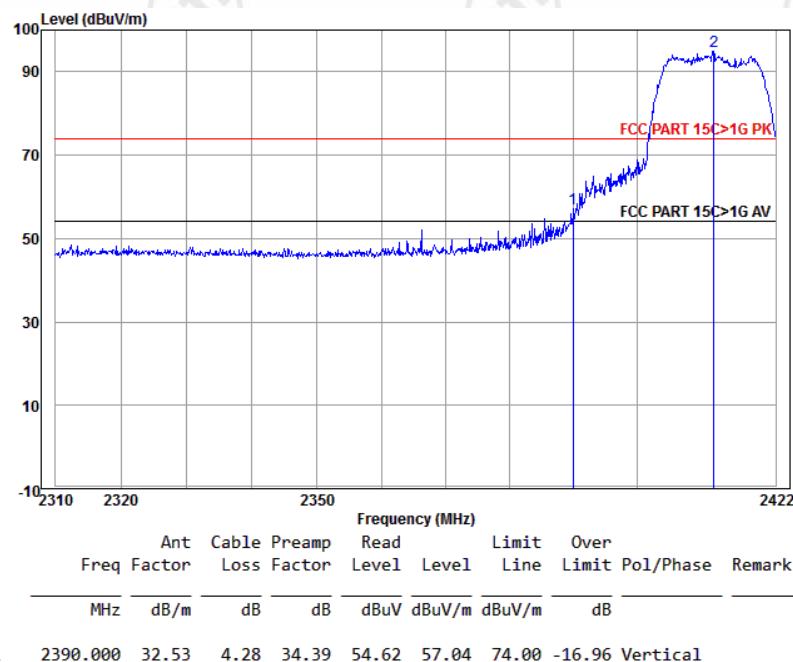
|                      |                      |                          |              |
|----------------------|----------------------|--------------------------|--------------|
| Worse case mode:     | 802.11g (6Mbps)      |                          |              |
| Frequency: 2390.0MHz | Test channel: Lowest | Polarization: Horizontal | Remark: Peak |



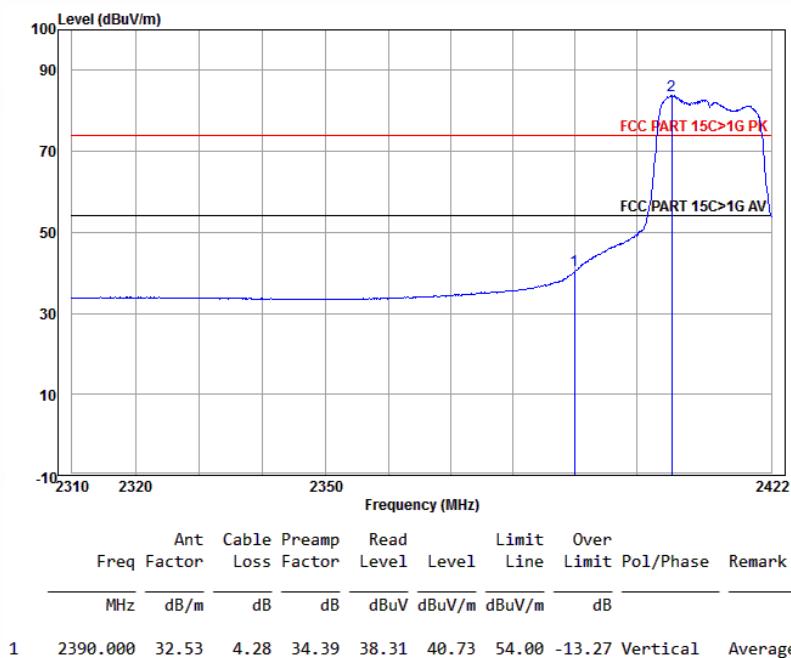
|                      |                      |                          |                 |
|----------------------|----------------------|--------------------------|-----------------|
| Worse case mode:     | 802.11g (6Mbps)      |                          |                 |
| Frequency: 2390.0MHz | Test channel: Lowest | Polarization: Horizontal | Remark: Average |



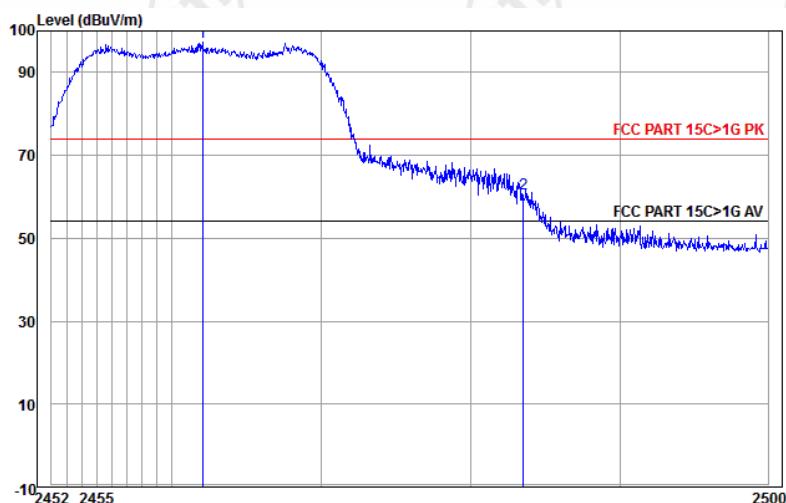
|                      |                      |                        |              |
|----------------------|----------------------|------------------------|--------------|
| Worse case mode:     | 802.11g (6Mbps)      |                        |              |
| Frequency: 2390.0MHz | Test channel: Lowest | Polarization: Vertical | Remark: Peak |



|                      |                      |                        |                 |
|----------------------|----------------------|------------------------|-----------------|
| Worse case mode:     | 802.11g (6Mbps)      |                        |                 |
| Frequency: 2390.0MHz | Test channel: Lowest | Polarization: Vertical | Remark: Average |



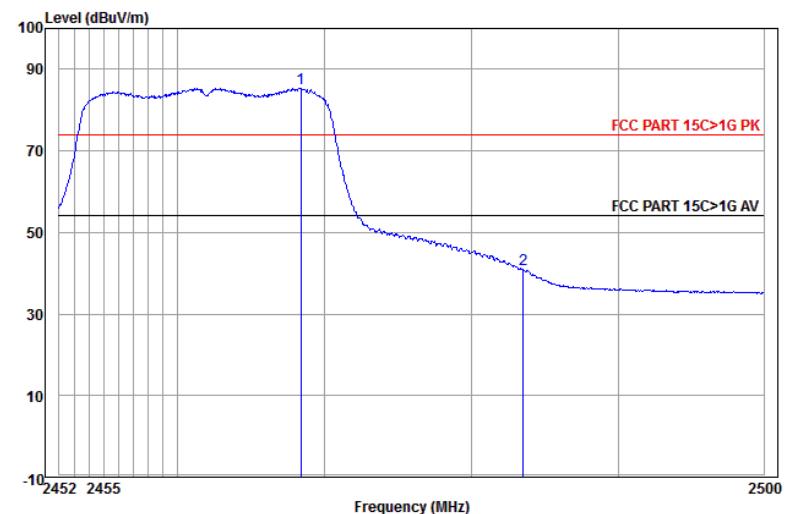
|                      |                       |                          |              |
|----------------------|-----------------------|--------------------------|--------------|
| Worse case mode:     | 802.11g (6Mbps)       |                          |              |
| Frequency: 2483.5MHz | Test channel: Highest | Polarization: Horizontal | Remark: Peak |



| Freq     | Ant Factor | Cable Loss | Preamp Factor | Read Level | Limit Level | Line Limit | Over Limit | Pol/Phase  | Remark |
|----------|------------|------------|---------------|------------|-------------|------------|------------|------------|--------|
| MHz      | dB/m       | dB         | dB            | dBuV       | dBuV/m      | dBuV/m     | dBuV/m     | dB         |        |
| 2483.500 | 32.71      | 4.51       | 34.41         | 57.95      | 60.76       | 74.00      | -13.24     | Horizontal |        |

2 2483.500 32.71 4.51 34.41 57.95 60.76 74.00 -13.24 Horizontal

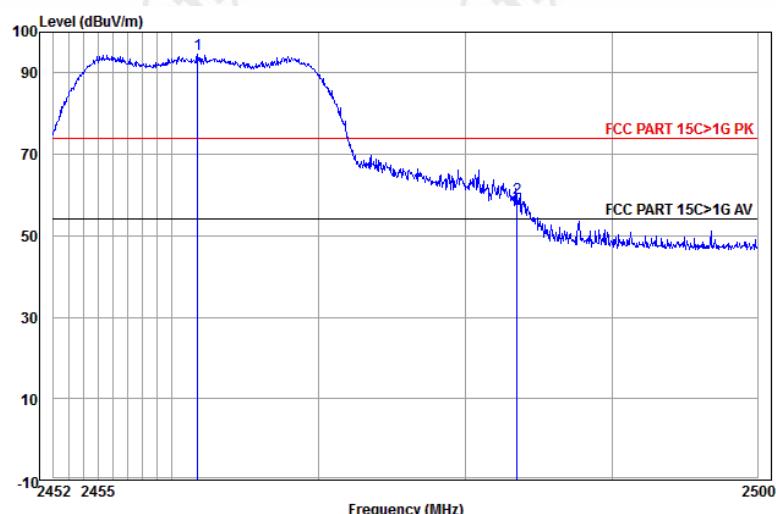
|                      |                       |                          |                 |
|----------------------|-----------------------|--------------------------|-----------------|
| Worse case mode:     | 802.11g (6Mbps)       |                          |                 |
| Frequency: 2483.5MHz | Test channel: Highest | Polarization: Horizontal | Remark: Average |



| Freq     | Ant Factor | Cable Loss | Preamp Factor | Read Level | Limit Level | Line Limit | Over Limit | Pol/Phase  | Remark  |
|----------|------------|------------|---------------|------------|-------------|------------|------------|------------|---------|
| MHz      | dB/m       | dB         | dB            | dBuV       | dBuV/m      | dBuV/m     | dBuV/m     | dB         |         |
| 2483.500 | 32.71      | 4.51       | 34.41         | 38.22      | 41.03       | 54.00      | -12.97     | Horizontal | Average |

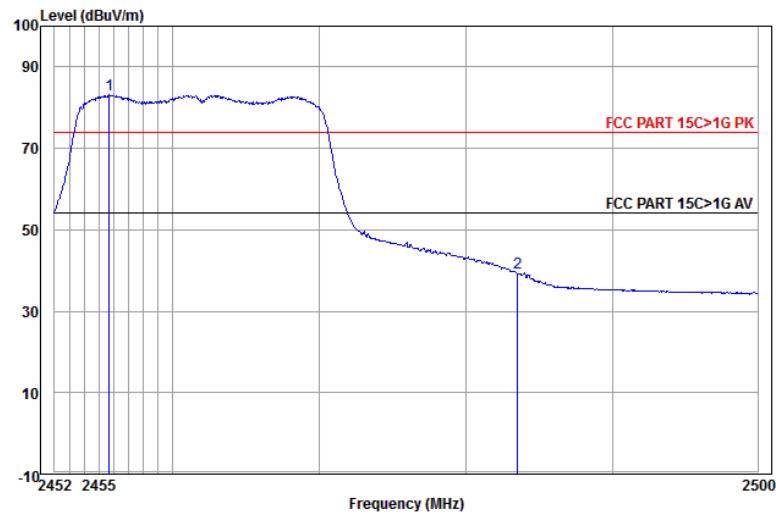
2 2483.500 32.71 4.51 34.41 38.22 41.03 54.00 -12.97 Horizontal Average

|                      |                       |                        |              |
|----------------------|-----------------------|------------------------|--------------|
| Worse case mode:     | 802.11g (6Mbps)       |                        |              |
| Frequency: 2483.5MHz | Test channel: Highest | Polarization: Vertical | Remark: Peak |



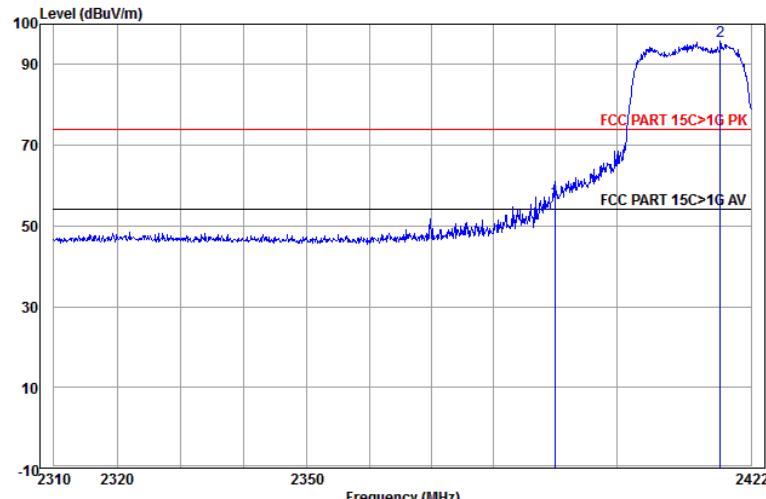
| Freq       | Ant Factor | Cable Loss | Preamp Factor | Read Level | Limit Level | Line Limit | Over Limit | Pol/Phase | Remark |
|------------|------------|------------|---------------|------------|-------------|------------|------------|-----------|--------|
| MHz        | dB/m       | dB         | dB            | dBuV       | dBuV/m      | dBuV/m     | dBuV/m     | dB        |        |
| 2 2483.500 | 32.71      | 4.51       | 34.41         | 56.40      | 59.21       | 74.00      | -14.79     | Vertical  |        |

|                      |                       |                        |                 |
|----------------------|-----------------------|------------------------|-----------------|
| Worse case mode:     | 802.11g (6Mbps)       |                        |                 |
| Frequency: 2483.5MHz | Test channel: Highest | Polarization: Vertical | Remark: Average |



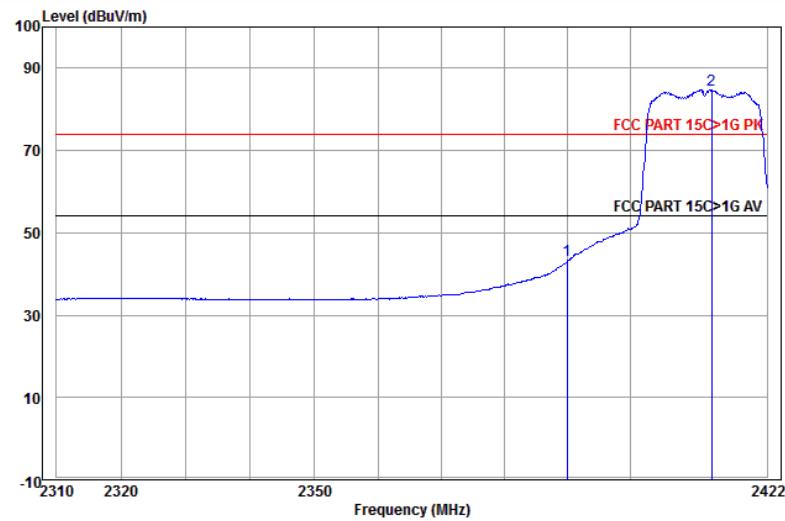
| Freq       | Ant Factor | Cable Loss | Preamp Factor | Read Level | Limit Level | Line Limit | Over Limit | Pol/Phase | Remark  |
|------------|------------|------------|---------------|------------|-------------|------------|------------|-----------|---------|
| MHz        | dB/m       | dB         | dB            | dBuV       | dBuV/m      | dBuV/m     | dBuV/m     | dB        |         |
| 2 2483.500 | 32.71      | 4.51       | 34.41         | 36.52      | 39.33       | 54.00      | -14.67     | Vertical  | Average |

|                      |                         |                          |              |
|----------------------|-------------------------|--------------------------|--------------|
| Worse case mode:     | 802.11n(HT20) (6.5Mbps) |                          |              |
| Frequency: 2390.0MHz | Test channel: Lowest    | Polarization: Horizontal | Remark: Peak |



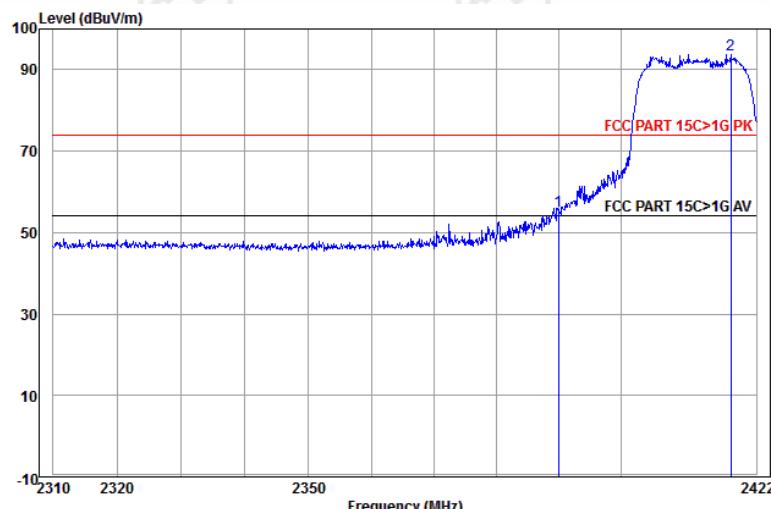
|   | Ant Freq | Cable Factor | Preamp Loss | Read Factor | Level Level | Limit Line | Over Limit | Over Line Pol/Phase | Remark     |
|---|----------|--------------|-------------|-------------|-------------|------------|------------|---------------------|------------|
|   | MHz      | dB/m         | dB          | dB          | dBuV        | dBuV/m     | dBuV/m     | dB                  |            |
| 1 | 2390.000 | 32.53        | 4.28        | 34.39       | 53.72       | 56.14      | 74.00      | -17.86              | Horizontal |

|                      |                         |                          |                 |
|----------------------|-------------------------|--------------------------|-----------------|
| Worse case mode:     | 802.11n(HT20) (6.5Mbps) |                          |                 |
| Frequency: 2390.0MHz | Test channel: Lowest    | Polarization: Horizontal | Remark: Average |



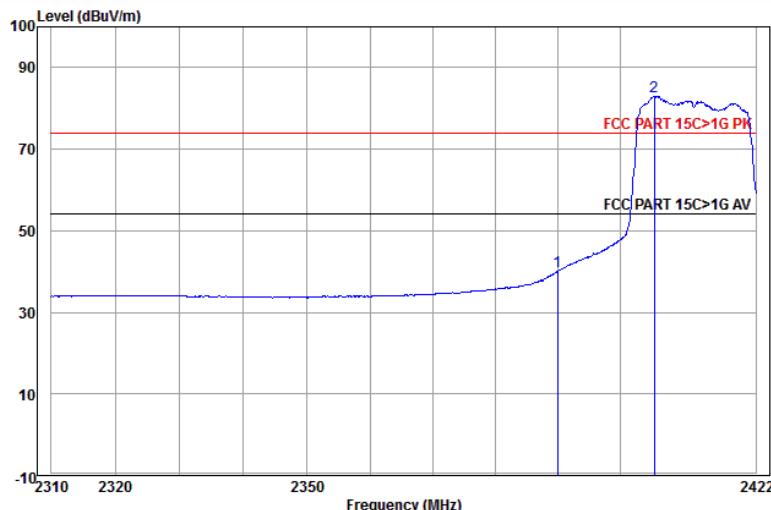
|   | Ant Freq | Cable Factor | Preamp Loss | Read Factor | Level Level | Limit Line | Over Limit | Over Line Pol/Phase | Remark     |
|---|----------|--------------|-------------|-------------|-------------|------------|------------|---------------------|------------|
|   | MHz      | dB/m         | dB          | dB          | dBuV        | dBuV/m     | dBuV/m     | dB                  |            |
| 1 | 2390.000 | 32.53        | 4.28        | 34.39       | 40.81       | 43.23      |            |                     | Horizontal |

|                      |                         |                        |              |
|----------------------|-------------------------|------------------------|--------------|
| Worse case mode:     | 802.11n(HT20) (6.5Mbps) |                        |              |
| Frequency: 2390.0MHz | Test channel: Lowest    | Polarization: Vertical | Remark: Peak |



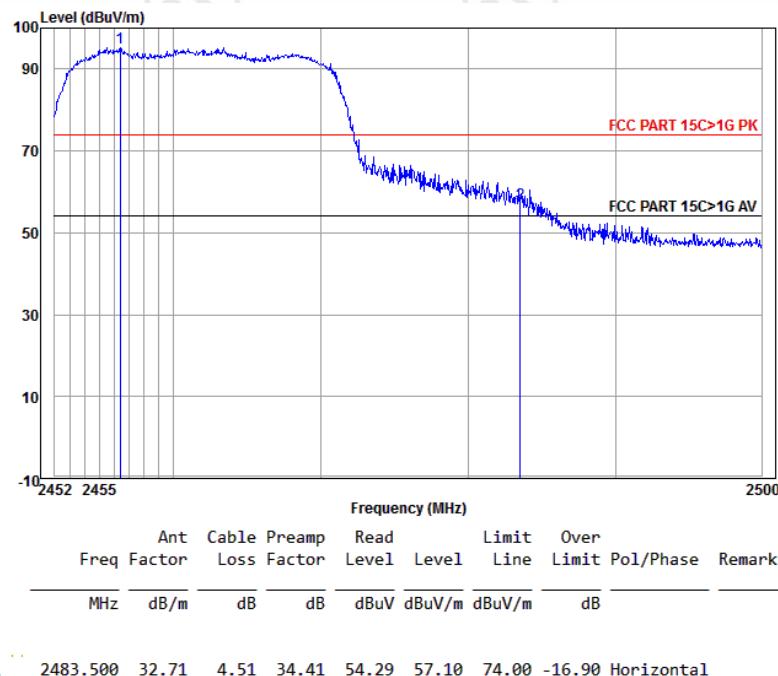
|   | Ant Freq | Cable Factor | Preamp Loss | Read Factor | Level Level | Limit Line | Over Limit | Over Pol/Phase | Remark   |
|---|----------|--------------|-------------|-------------|-------------|------------|------------|----------------|----------|
|   | MHz      | dB/m         | dB          | dB          | dBuV        | dBuV/m     | dBuV/m     | dB             |          |
| 1 | 2390.000 | 32.53        | 4.28        | 34.39       | 52.81       | 55.23      | 74.00      | -18.77         | Vertical |

|                      |                         |                        |                 |
|----------------------|-------------------------|------------------------|-----------------|
| Worse case mode:     | 802.11n(HT20) (6.5Mbps) |                        |                 |
| Frequency: 2390.0MHz | Test channel: Lowest    | Polarization: Vertical | Remark: Average |

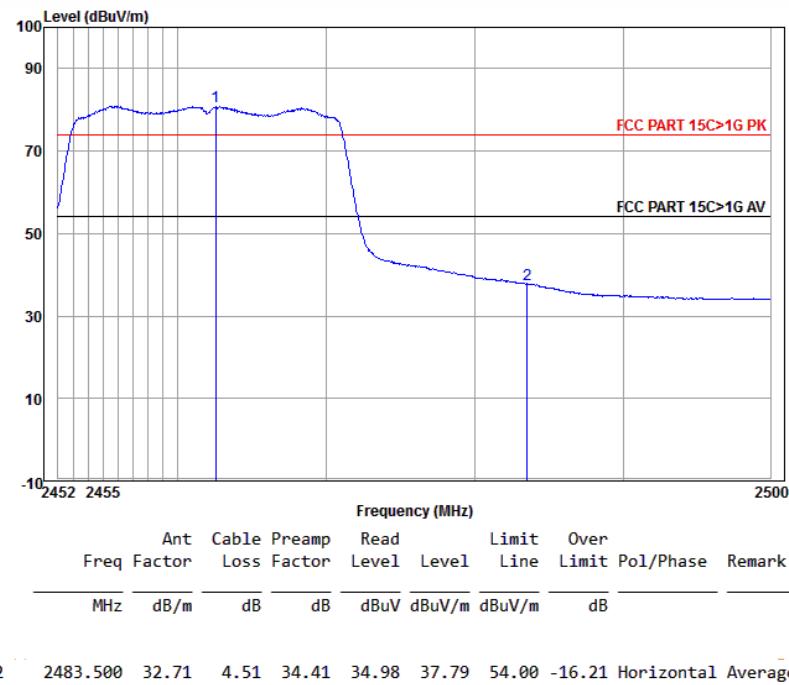


|   | Ant Freq | Cable Factor | Preamp Loss | Read Factor | Level Level | Limit Line | Over Limit | Over Pol/Phase | Remark           |
|---|----------|--------------|-------------|-------------|-------------|------------|------------|----------------|------------------|
|   | MHz      | dB/m         | dB          | dB          | dBuV        | dBuV/m     | dBuV/m     | dB             |                  |
| 1 | 2390.000 | 32.53        | 4.28        | 34.39       | 37.66       | 40.08      | 54.00      | -13.92         | Vertical Average |

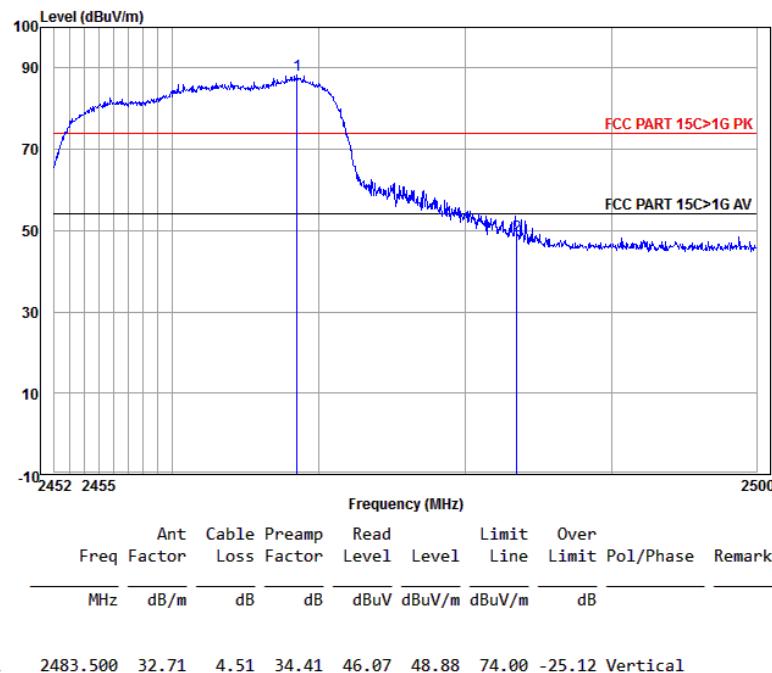
|                      |                         |                          |              |
|----------------------|-------------------------|--------------------------|--------------|
| Worse case mode:     | 802.11n(HT20) (6.5Mbps) |                          |              |
| Frequency: 2483.5MHz | Test channel: Highest   | Polarization: Horizontal | Remark: Peak |



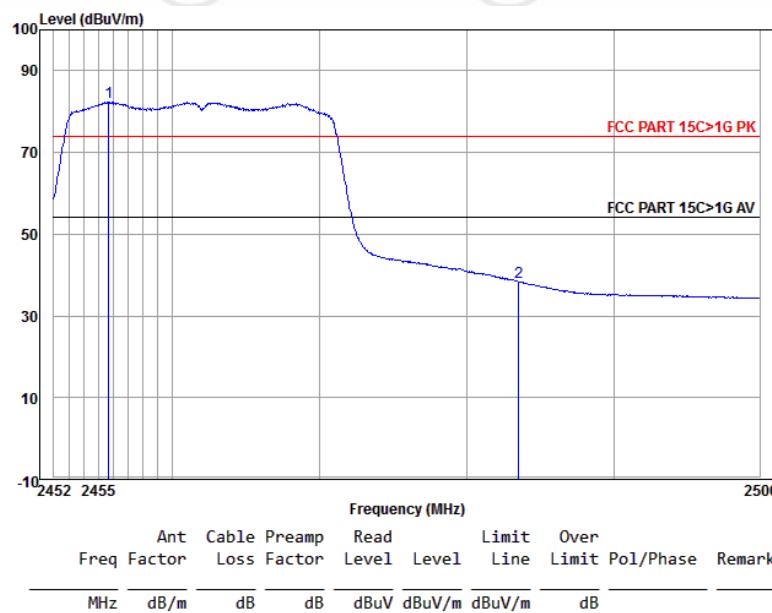
|                      |                         |                          |                 |
|----------------------|-------------------------|--------------------------|-----------------|
| Worse case mode:     | 802.11n(HT20) (6.5Mbps) |                          |                 |
| Frequency: 2483.5MHz | Test channel: Highest   | Polarization: Horizontal | Remark: Average |



|                      |                         |                        |              |
|----------------------|-------------------------|------------------------|--------------|
| Worse case mode:     | 802.11n(HT20) (6.5Mbps) |                        |              |
| Frequency: 2483.5MHz | Test channel: Highest   | Polarization: Vertical | Remark: Peak |



|                      |                         |                        |                 |
|----------------------|-------------------------|------------------------|-----------------|
| Worse case mode:     | 802.11n(HT20) (6.5Mbps) |                        |                 |
| Frequency: 2483.5MHz | Test channel: Highest   | Polarization: Vertical | Remark: Average |



Note:

1) Through Pre-scan transmitting mode with all kind of modulation and data rate, find the 11Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20), and then Only the worst case is recorded in the report.

2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading - Correct Factor

Correct Factor = Preamplifier Factor - Antenna Factor - Cable Factor

## Appendix I): Radiated Spurious Emissions

| Receiver Setup:   | Frequency                                  | Detector                         | RBW                  | VBW        | Remark                   |
|---|--|----------------------------------|----------------------|------------|--------------------------|
|   | 0.009MHz-0.090MHz                          | Peak                             | 10kHz                | 30kHz      | Peak                     |
|   | 0.009MHz-0.090MHz                          | Average                          | 10kHz                | 30kHz      | Average                  |
|   | 0.090MHz-0.110MHz                          | Quasi-peak                       | 10kHz                | 30kHz      | Quasi-peak               |
|   | 0.110MHz-0.490MHz                          | Peak                             | 10kHz                | 30kHz      | Peak                     |
|   | 0.110MHz-0.490MHz                          | Average                          | 10kHz                | 30kHz      | Average                  |
|   | 0.490MHz -30MHz                            | Quasi-peak                       | 10kHz                | 30kHz      | Quasi-peak               |
|   | 30MHz-1GHz                                 | Quasi-peak                       | 120kHz               | 300kHz     | Quasi-peak               |
|   | Above 1GHz                                 | Peak                             | 1MHz                 | 3MHz       | Peak                     |
|   |  | Peak                             | 1MHz                 | 10Hz       | Average                  |
| Test Procedure:   | <b>Below 1GHz test procedure as below:</b> |                                  |                      |            |                          |
| a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.<br>b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.<br>c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.<br>d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading.<br>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.<br>f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. |  |                                  |                      |            |                          |
| <b>Above 1GHz test procedure as below:</b>  |  |                                  |                      |            |                          |
| g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter( Above 18GHz the distance is 1 meter and table is 1.5 meter)..<br>h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel<br>i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.<br>j. Repeat above procedures until all frequencies measured was complete.   |  |                                  |                      |            |                          |
| Limit:  | Frequency                                  | Field strength (microvolt/meter) | Limit (dB $\mu$ V/m) | Remark     | Measurement distance (m) |
|   | 0.009MHz-0.490MHz                          | 2400/F(kHz)                      | -                    | -          | 300                      |
|   | 0.490MHz-1.705MHz                          | 24000/F(kHz)                     | -                    | -          | 30                       |
|   | 1.705MHz-30MHz                             | 30                               | -                    | -          | 30                       |
|   | 30MHz-88MHz                                | 100                              | 40.0                 | Quasi-peak | 3                        |
|   | 88MHz-216MHz                               | 150                              | 43.5                 | Quasi-peak | 3                        |
|   | 216MHz-960MHz                              | 200                              | 46.0                 | Quasi-peak | 3                        |
|   | 960MHz-1GHz                                | 500                              | 54.0                 | Quasi-peak | 3                        |
|   | Above 1GHz                                 | 500                              | 54.0                 | Average    | 3                        |
| Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.   |  |                                  |                      |            |                          |

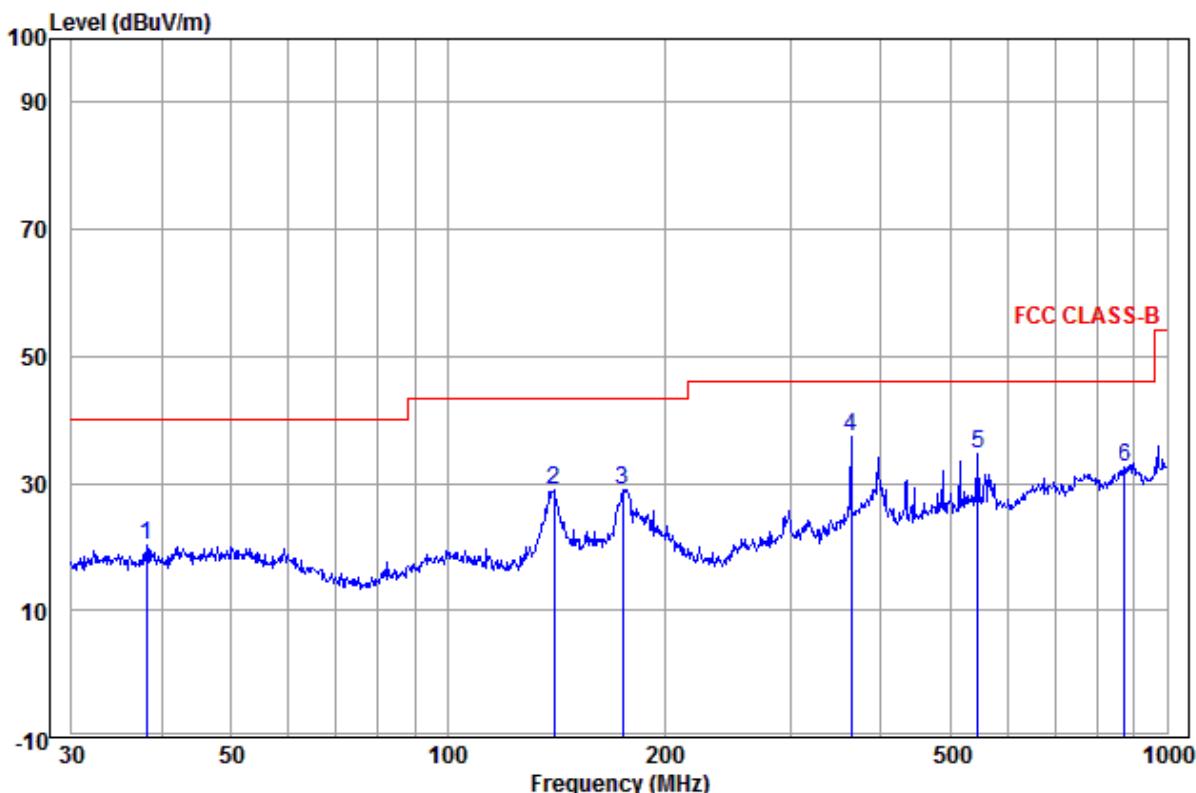
## Radiated Spurious Emissions test Data: Radiated Emission below 1GHz

30MHz~1GHz (QP)

Test mode:

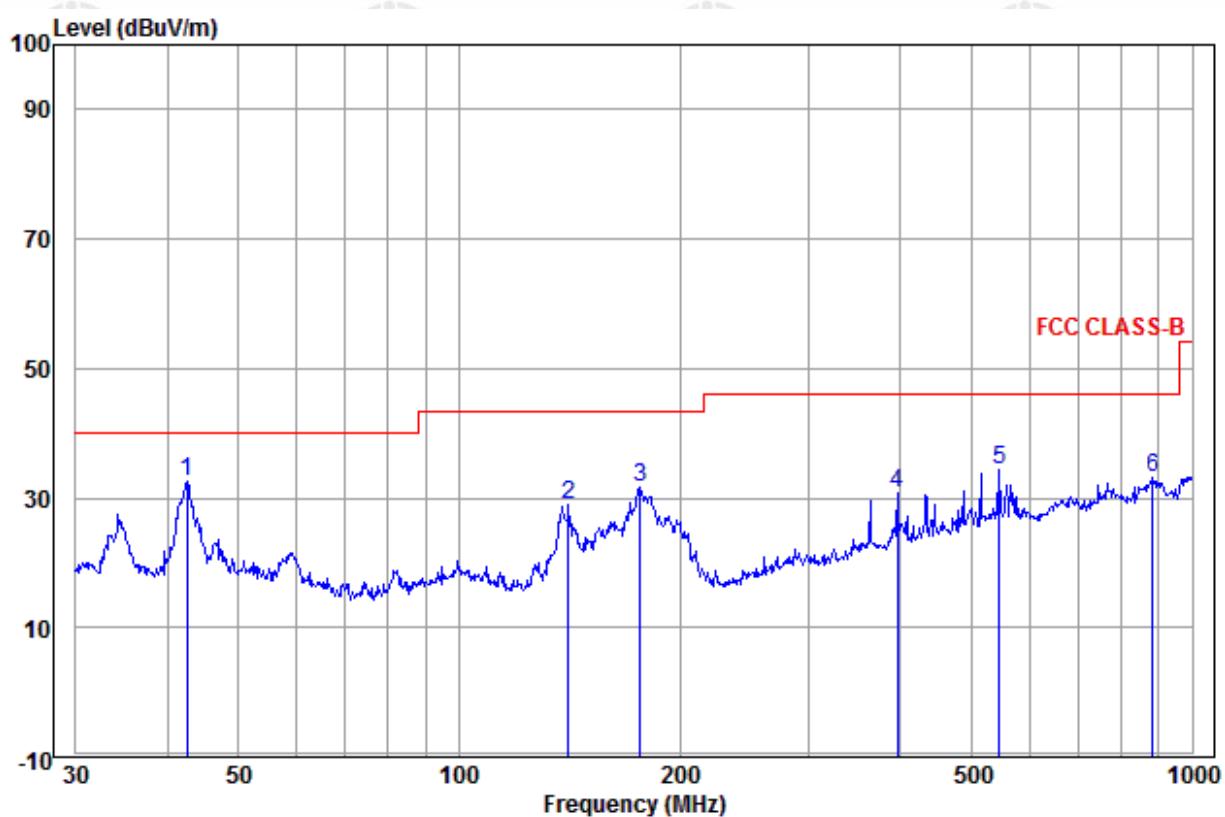
Transmitting

Horizontal



|      | Freq    | Ant    | Cable | Read  | Limit  | Over   | Over   | Pol/Phase  | Remark |
|------|---------|--------|-------|-------|--------|--------|--------|------------|--------|
|      |         | Factor | Loss  | Level |        |        |        |            |        |
|      | MHz     | dB/m   | dB    | dBuV  | dBuV/m | dBuV/m | dB     |            |        |
| 1    | 38.078  | 13.91  | 0.64  | 5.60  | 20.15  | 40.00  | -19.85 | Horizontal |        |
| 2    | 140.342 | 10.27  | 1.58  | 17.18 | 29.03  | 43.50  | -14.47 | Horizontal |        |
| 3    | 175.037 | 10.72  | 1.92  | 16.38 | 29.02  | 43.50  | -14.48 | Horizontal |        |
| 4 pp | 364.260 | 15.25  | 2.74  | 19.36 | 37.35  | 46.00  | -8.65  | Horizontal |        |
| 5    | 545.183 | 18.58  | 3.20  | 12.97 | 34.75  | 46.00  | -11.25 | Horizontal |        |
| 6    | 872.183 | 22.13  | 4.25  | 6.12  | 32.50  | 46.00  | -13.50 | Horizontal |        |

|            |              |          |
|------------|--------------|----------|
| Test mode: | Transmitting | Vertical |
|------------|--------------|----------|



| 1 pp | Freq    | Ant Factor | Cable | Read  | Limit  | Over   | Remark          |
|------|---------|------------|-------|-------|--------|--------|-----------------|
|      |         |            | Loss  | Level | Level  | Line   |                 |
|      | MHz     | dB/m       | dB    | dBuV  | dBuV/m | dBuV/m | dB              |
| 1    | 42.600  | 14.45      | 0.78  | 17.39 | 32.62  | 40.00  | -7.38 Vertical  |
| 2    | 140.835 | 10.24      | 1.58  | 17.08 | 28.90  | 43.50  | -14.60 Vertical |
| 3    | 176.888 | 10.79      | 1.94  | 19.07 | 31.80  | 43.50  | -11.70 Vertical |
| 4    | 396.242 | 16.19      | 2.79  | 11.73 | 30.71  | 46.00  | -15.29 Vertical |
| 5    | 545.183 | 18.58      | 3.20  | 12.61 | 34.39  | 46.00  | -11.61 Vertical |
| 6    | 884.503 | 22.25      | 4.29  | 6.48  | 33.02  | 46.00  | -12.98 Vertical |

**Transmitter Emission above 1GHz**

| Test mode:802.11b(11Mbps) |                       |                 | Test Frequency: 2412MHz |                         |                      | Remark: Peak         |                 |        |                 |
|---------------------------|-----------------------|-----------------|-------------------------|-------------------------|----------------------|----------------------|-----------------|--------|-----------------|
| Frequency (MHz)           | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Gain (dB)        | Read Level (dB $\mu$ V) | Level (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Over Limit (dB) | Result | Antenna Polaxis |
| 1192.011                  | 30.21                 | 2.51            | 34.97                   | 48.28                   | 46.03                | 74                   | -27.97          | Pass   | Horizontal      |
| 1737.384                  | 31.29                 | 3.03            | 34.48                   | 45.77                   | 45.61                | 74                   | -28.39          | Pass   | Horizontal      |
| 4824.000                  | 34.73                 | 5.10            | 34.35                   | 40.53                   | 46.01                | 74                   | -27.99          | Pass   | Horizontal      |
| 5910.798                  | 35.83                 | 7.23            | 34.30                   | 41.52                   | 50.28                | 74                   | -23.72          | Pass   | Horizontal      |
| 7236.000                  | 36.42                 | 6.69            | 34.90                   | 37.86                   | 46.07                | 74                   | -27.93          | Pass   | Horizontal      |
| 9648.000                  | 37.93                 | 7.70            | 35.07                   | 36.34                   | 46.90                | 74                   | -27.10          | Pass   | Horizontal      |
| 1185.958                  | 30.19                 | 2.50            | 34.98                   | 48.38                   | 46.09                | 74                   | -27.91          | Pass   | Vertical        |
| 1724.166                  | 31.27                 | 3.02            | 34.49                   | 45.48                   | 45.28                | 74                   | -28.72          | Pass   | Vertical        |
| 4824.000                  | 34.73                 | 5.10            | 34.35                   | 40.83                   | 46.31                | 74                   | -27.69          | Pass   | Vertical        |
| 5895.771                  | 35.82                 | 7.20            | 34.30                   | 41.40                   | 50.12                | 74                   | -23.88          | Pass   | Vertical        |
| 7236.000                  | 36.42                 | 6.69            | 34.90                   | 37.01                   | 45.22                | 74                   | -28.78          | Pass   | Vertical        |
| 9648.000                  | 37.93                 | 7.70            | 35.07                   | 36.28                   | 46.84                | 74                   | -27.16          | Pass   | Vertical        |

| Test mode:802.11b(11Mbps) |                       |                 | Test Frequency: 2437MHz |                         |                      | Remark: Peak         |                 |        |                 |
|---------------------------|-----------------------|-----------------|-------------------------|-------------------------|----------------------|----------------------|-----------------|--------|-----------------|
| Frequency (MHz)           | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Gain (dB)        | Read Level (dB $\mu$ V) | Level (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Over Limit (dB) | Result | Antenna Polaxis |
| 1238.405                  | 30.32                 | 2.56            | 34.92                   | 48.03                   | 45.99                | 74                   | -28.01          | Pass   | Horizontal      |
| 1842.139                  | 31.46                 | 3.11            | 34.41                   | 45.85                   | 46.01                | 74                   | -27.99          | Pass   | Horizontal      |
| 4874.000                  | 34.84                 | 5.09            | 34.33                   | 40.47                   | 46.07                | 74                   | -27.93          | Pass   | Horizontal      |
| 5880.782                  | 35.81                 | 7.17            | 34.30                   | 41.55                   | 50.23                | 74                   | -23.77          | Pass   | Horizontal      |
| 7311.000                  | 36.43                 | 6.76            | 34.90                   | 38.83                   | 47.12                | 74                   | -26.88          | Pass   | Horizontal      |
| 9748.000                  | 38.03                 | 7.61            | 35.05                   | 36.47                   | 47.06                | 74                   | -26.94          | Pass   | Horizontal      |
| 1127.091                  | 30.05                 | 2.43            | 35.04                   | 47.21                   | 44.65                | 74                   | -29.35          | Pass   | Vertical        |
| 1589.289                  | 31.04                 | 2.91            | 34.60                   | 46.33                   | 45.68                | 74                   | -28.32          | Pass   | Vertical        |
| 4874.000                  | 34.84                 | 5.09            | 34.33                   | 42.29                   | 47.89                | 74                   | -26.11          | Pass   | Vertical        |
| 6331.329                  | 36.07                 | 7.10            | 34.51                   | 41.54                   | 50.20                | 74                   | -23.80          | Pass   | Vertical        |
| 7311.000                  | 36.43                 | 6.76            | 34.90                   | 37.80                   | 46.09                | 74                   | -27.91          | Pass   | Vertical        |
| 9748.000                  | 38.03                 | 7.61            | 35.05                   | 37.47                   | 48.06                | 74                   | -25.94          | Pass   | Vertical        |

| Test mode:802.11b(11Mbps) |                       |                 | Test Frequency: 2462MHz |                         |                      | Remark: Peak         |                 |        |                 |
|---------------------------|-----------------------|-----------------|-------------------------|-------------------------|----------------------|----------------------|-----------------|--------|-----------------|
| Frequency (MHz)           | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Gain (dB)        | Read Level (dB $\mu$ V) | Level (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Over Limit (dB) | Result | Antenna Polaxis |
| 1188.980                  | 30.20                 | 2.50            | 34.98                   | 49.44                   | 47.16                | 74                   | -26.84          | Pass   | Horizontal      |
| 4924.000                  | 34.94                 | 5.07            | 34.32                   | 40.02                   | 45.71                | 74                   | -28.29          | Pass   | Horizontal      |
| 5821.207                  | 35.77                 | 7.03            | 34.30                   | 39.64                   | 48.14                | 74                   | -25.86          | Pass   | Horizontal      |
| 7386.000                  | 36.44                 | 6.83            | 34.90                   | 35.12                   | 43.49                | 74                   | -30.51          | Pass   | Horizontal      |
| 9848.000                  | 38.14                 | 7.53            | 35.03                   | 33.84                   | 44.48                | 74                   | -29.52          | Pass   | Horizontal      |
| 11842.690                 | 39.55                 | 8.37            | 34.35                   | 34.49                   | 48.06                | 74                   | -25.94          | Pass   | Horizontal      |
| 1110.008                  | 30.00                 | 2.41            | 35.06                   | 47.30                   | 44.65                | 74                   | -29.35          | Pass   | Vertical        |
| 1759.638                  | 31.33                 | 3.05            | 34.47                   | 44.88                   | 44.79                | 74                   | -29.21          | Pass   | Vertical        |
| 4924.000                  | 34.94                 | 5.07            | 34.32                   | 41.11                   | 46.80                | 74                   | -27.20          | Pass   | Vertical        |
| 5910.798                  | 35.83                 | 7.23            | 34.30                   | 40.42                   | 49.18                | 74                   | -24.82          | Pass   | Vertical        |
| 7386.000                  | 36.44                 | 6.83            | 34.90                   | 37.95                   | 46.32                | 74                   | -27.68          | Pass   | Vertical        |
| 9848.000                  | 38.14                 | 7.53            | 35.03                   | 36.85                   | 47.49                | 74                   | -26.51          | Pass   | Vertical        |

| Test mode:802.11g(6Mbps) |                       |                 | Test Frequency: 2412MHz |                         |                      | Remark: Peak         |                 |        |                 |
|--------------------------|-----------------------|-----------------|-------------------------|-------------------------|----------------------|----------------------|-----------------|--------|-----------------|
| Frequency (MHz)          | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Gain (dB)        | Read Level (dB $\mu$ V) | Level (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Over Limit (dB) | Result | Antenna Polaxis |
| 1054.911                 | 29.85                 | 2.33            | 35.13                   | 47.67                   | 44.72                | 74                   | -29.28          | Pass   | Horizontal      |
| 1746.251                 | 31.31                 | 3.04            | 34.48                   | 45.02                   | 44.89                | 74                   | -29.11          | Pass   | Horizontal      |
| 4824.000                 | 34.73                 | 5.10            | 34.35                   | 40.83                   | 46.31                | 74                   | -27.69          | Pass   | Horizontal      |
| 5821.207                 | 35.77                 | 7.03            | 34.30                   | 42.33                   | 50.83                | 74                   | -23.17          | Pass   | Horizontal      |
| 7236.000                 | 36.42                 | 6.69            | 34.90                   | 39.14                   | 47.35                | 74                   | -26.65          | Pass   | Horizontal      |
| 9648.000                 | 37.93                 | 7.70            | 35.07                   | 37.76                   | 48.32                | 74                   | -25.68          | Pass   | Horizontal      |
| 1280.072                 | 30.41                 | 2.61            | 34.88                   | 45.84                   | 43.98                | 74                   | -30.02          | Pass   | Vertical        |
| 1786.719                 | 31.37                 | 3.07            | 34.45                   | 43.25                   | 43.24                | 74                   | -30.76          | Pass   | Vertical        |
| 4824.000                 | 34.73                 | 5.10            | 34.35                   | 38.68                   | 44.16                | 74                   | -29.84          | Pass   | Vertical        |
| 5925.863                 | 35.85                 | 7.27            | 34.30                   | 39.70                   | 48.52                | 74                   | -25.48          | Pass   | Vertical        |
| 7236.000                 | 36.42                 | 6.69            | 34.90                   | 36.08                   | 44.29                | 74                   | -29.71          | Pass   | Vertical        |
| 9648.000                 | 37.93                 | 7.70            | 35.07                   | 35.29                   | 45.85                | 74                   | -28.15          | Pass   | Vertical        |

| Test mode:802.11g(6Mbps) |                       |                 | Test Frequency: 2437MHz |                         |                      | Remark: Peak         |                 |        |                 |
|--------------------------|-----------------------|-----------------|-------------------------|-------------------------|----------------------|----------------------|-----------------|--------|-----------------|
| Frequency (MHz)          | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Gain (dB)        | Read Level (dB $\mu$ V) | Level (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Over Limit (dB) | Result | Antenna Polaxis |
| 1283.335                 | 30.42                 | 2.61            | 34.88                   | 47.12                   | 45.27                | 74                   | -28.73          | Pass   | Horizontal      |
| 1728.561                 | 31.28                 | 3.03            | 34.49                   | 45.34                   | 45.16                | 74                   | -28.84          | Pass   | Horizontal      |
| 4874.000                 | 34.84                 | 5.09            | 34.33                   | 39.46                   | 45.06                | 74                   | -28.94          | Pass   | Horizontal      |
| 5791.646                 | 35.74                 | 6.97            | 34.30                   | 40.09                   | 48.50                | 74                   | -25.50          | Pass   | Horizontal      |
| 7311.000                 | 36.43                 | 6.76            | 34.90                   | 35.16                   | 43.45                | 74                   | -30.55          | Pass   | Horizontal      |
| 9748.000                 | 38.03                 | 7.61            | 35.05                   | 36.26                   | 46.85                | 74                   | -27.15          | Pass   | Horizontal      |
| 1192.011                 | 30.21                 | 2.51            | 34.97                   | 46.22                   | 43.97                | 74                   | -30.03          | Pass   | Vertical        |
| 1724.166                 | 31.27                 | 3.02            | 34.49                   | 45.40                   | 45.20                | 74                   | -28.80          | Pass   | Vertical        |
| 4874.000                 | 34.84                 | 5.09            | 34.33                   | 41.12                   | 46.72                | 74                   | -27.28          | Pass   | Vertical        |
| 5806.408                 | 35.76                 | 7.00            | 34.30                   | 40.25                   | 48.71                | 74                   | -25.29          | Pass   | Vertical        |
| 7311.000                 | 36.43                 | 6.76            | 34.90                   | 37.11                   | 45.40                | 74                   | -28.60          | Pass   | Vertical        |
| 9748.000                 | 38.03                 | 7.61            | 35.05                   | 35.15                   | 45.74                | 74                   | -28.26          | Pass   | Vertical        |

| Test mode:802.11g(6Mbps) |                       |                 | Test Frequency: 2462MHz |                         |                      | Remark: Peak         |                 |        |                 |
|--------------------------|-----------------------|-----------------|-------------------------|-------------------------|----------------------|----------------------|-----------------|--------|-----------------|
| Frequency (MHz)          | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Gain (dB)        | Read Level (dB $\mu$ V) | Level (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Over Limit (dB) | Result | Antenna Polaxis |
| 1182.943                 | 30.18                 | 2.50            | 34.98                   | 48.86                   | 46.56                | 74                   | -27.44          | Pass   | Horizontal      |
| 1573.189                 | 31.01                 | 2.89            | 34.61                   | 46.35                   | 45.64                | 74                   | -28.36          | Pass   | Horizontal      |
| 4924.000                 | 34.94                 | 5.07            | 34.32                   | 41.63                   | 47.32                | 74                   | -26.68          | Pass   | Horizontal      |
| 5747.586                 | 35.71                 | 6.87            | 34.30                   | 41.04                   | 49.32                | 74                   | -24.68          | Pass   | Horizontal      |
| 7386.000                 | 36.44                 | 6.83            | 34.90                   | 37.14                   | 45.51                | 74                   | -28.49          | Pass   | Horizontal      |
| 9848.000                 | 38.14                 | 7.53            | 35.03                   | 36.08                   | 46.72                | 74                   | -27.28          | Pass   | Horizontal      |
| 1182.943                 | 30.18                 | 2.50            | 34.98                   | 46.72                   | 44.42                | 74                   | -29.58          | Pass   | Vertical        |
| 1518.111                 | 30.90                 | 2.84            | 34.66                   | 46.98                   | 46.06                | 74                   | -27.94          | Pass   | Vertical        |
| 4924.000                 | 34.94                 | 5.07            | 34.32                   | 39.48                   | 45.17                | 74                   | -28.83          | Pass   | Vertical        |
| 6315.233                 | 36.07                 | 7.11            | 34.50                   | 41.02                   | 49.70                | 74                   | -24.30          | Pass   | Vertical        |
| 7386.000                 | 36.44                 | 6.83            | 34.90                   | 37.65                   | 46.02                | 74                   | -27.98          | Pass   | Vertical        |
| 9848.000                 | 38.14                 | 7.53            | 35.03                   | 37.22                   | 47.86                | 74                   | -26.14          | Pass   | Vertical        |

| Test mode:802.11n(HT20)(6.5Mbps) |                       |                 | Test Frequency: 2412MHz |                         |                      | Remark: Peak         |                 |        |                 |
|----------------------------------|-----------------------|-----------------|-------------------------|-------------------------|----------------------|----------------------|-----------------|--------|-----------------|
| Frequency (MHz)                  | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Gain (dB)        | Read Level (dB $\mu$ V) | Level (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Over Limit (dB) | Result | Antenna Polaxis |
| 1185.958                         | 30.19                 | 2.50            | 34.98                   | 49.69                   | 47.40                | 74                   | -26.60          | Pass   | Horizontal      |
| 1755.164                         | 31.32                 | 3.05            | 34.47                   | 46.23                   | 46.13                | 74                   | -27.87          | Pass   | Horizontal      |
| 4824.000                         | 34.73                 | 5.10            | 34.35                   | 41.68                   | 47.16                | 74                   | -26.84          | Pass   | Horizontal      |
| 6347.466                         | 36.08                 | 7.08            | 34.52                   | 41.57                   | 50.21                | 74                   | -23.79          | Pass   | Horizontal      |
| 7236.000                         | 36.42                 | 6.69            | 34.90                   | 37.75                   | 45.96                | 74                   | -28.04          | Pass   | Horizontal      |
| 9648.000                         | 37.93                 | 7.70            | 35.07                   | 37.78                   | 48.34                | 74                   | -25.66          | Pass   | Horizontal      |
| 1222.743                         | 30.28                 | 2.54            | 34.94                   | 45.55                   | 43.43                | 74                   | -30.57          | Pass   | Vertical        |
| 1768.619                         | 31.35                 | 3.06            | 34.46                   | 44.60                   | 44.55                | 74                   | -29.45          | Pass   | Vertical        |
| 4824.000                         | 34.73                 | 5.10            | 34.35                   | 39.48                   | 44.96                | 74                   | -29.04          | Pass   | Vertical        |
| 7236.000                         | 36.42                 | 6.69            | 34.90                   | 35.60                   | 43.81                | 74                   | -30.19          | Pass   | Vertical        |
| 9648.000                         | 37.93                 | 7.70            | 35.07                   | 33.31                   | 43.87                | 74                   | -30.13          | Pass   | Vertical        |
| 11903.140                        | 39.57                 | 8.43            | 34.37                   | 35.78                   | 49.41                | 74                   | -24.59          | Pass   | Vertical        |

| Test mode:802.11n(HT20)(6.5Mbps) |                       |                 | Test Frequency: 2437MHz |                         |                      | Remark: Peak         |                 |        |                 |
|----------------------------------|-----------------------|-----------------|-------------------------|-------------------------|----------------------|----------------------|-----------------|--------|-----------------|
| Frequency (MHz)                  | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Gain (dB)        | Read Level (dB $\mu$ V) | Level (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Over Limit (dB) | Result | Antenna Polaxis |
| 1182.943                         | 30.18                 | 2.50            | 34.98                   | 49.35                   | 47.05                | 74                   | -26.95          | Pass   | Horizontal      |
| 1842.139                         | 31.46                 | 3.11            | 34.41                   | 45.50                   | 45.66                | 74                   | -28.34          | Pass   | Horizontal      |
| 4874.000                         | 34.84                 | 5.09            | 34.33                   | 40.73                   | 46.33                | 74                   | -27.67          | Pass   | Horizontal      |
| 5718.399                         | 35.69                 | 6.80            | 34.30                   | 42.18                   | 50.37                | 74                   | -23.63          | Pass   | Horizontal      |
| 7311.000                         | 36.43                 | 6.76            | 34.90                   | 38.05                   | 46.34                | 74                   | -27.66          | Pass   | Horizontal      |
| 9748.000                         | 38.03                 | 7.61            | 35.05                   | 36.04                   | 46.63                | 74                   | -27.37          | Pass   | Horizontal      |
| 1289.885                         | 30.43                 | 2.62            | 34.87                   | 46.06                   | 44.24                | 74                   | -29.76          | Pass   | Vertical        |
| 1676.558                         | 31.19                 | 2.98            | 34.53                   | 45.81                   | 45.45                | 74                   | -28.55          | Pass   | Vertical        |
| 4874.000                         | 34.84                 | 5.09            | 34.33                   | 41.35                   | 46.95                | 74                   | -27.05          | Pass   | Vertical        |
| 5880.782                         | 35.81                 | 7.17            | 34.30                   | 41.49                   | 50.17                | 74                   | -23.83          | Pass   | Vertical        |
| 7311.000                         | 36.43                 | 6.76            | 34.90                   | 38.13                   | 46.42                | 74                   | -27.58          | Pass   | Vertical        |
| 9748.000                         | 38.03                 | 7.61            | 35.05                   | 36.66                   | 47.25                | 74                   | -26.75          | Pass   | Vertical        |

| Test mode:802.11n(HT20)(6.5Mbps) |                       |                 | Test Frequency: 2462MHz |                         |                      | Remark: Peak         |                 |        |                 |
|----------------------------------|-----------------------|-----------------|-------------------------|-------------------------|----------------------|----------------------|-----------------|--------|-----------------|
| Frequency (MHz)                  | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Gain (dB)        | Read Level (dB $\mu$ V) | Level (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Over Limit (dB) | Result | Antenna Polaxis |
| 1185.958                         | 30.19                 | 2.50            | 34.98                   | 50.23                   | 47.94                | 74                   | -26.06          | Pass   | Horizontal      |
| 1814.218                         | 31.42                 | 3.09            | 34.43                   | 46.32                   | 46.40                | 74                   | -27.60          | Pass   | Horizontal      |
| 4924.000                         | 34.94                 | 5.07            | 34.32                   | 41.84                   | 47.53                | 74                   | -26.47          | Pass   | Horizontal      |
| 6363.645                         | 36.09                 | 7.06            | 34.53                   | 42.38                   | 51.00                | 74                   | -23.00          | Pass   | Horizontal      |
| 7386.000                         | 36.44                 | 6.83            | 34.90                   | 39.01                   | 47.38                | 74                   | -26.62          | Pass   | Horizontal      |
| 9848.000                         | 38.14                 | 7.53            | 35.03                   | 37.33                   | 47.97                | 74                   | -26.03          | Pass   | Horizontal      |
| 1192.011                         | 30.21                 | 2.51            | 34.97                   | 48.26                   | 46.01                | 74                   | -27.99          | Pass   | Vertical        |
| 1842.139                         | 31.46                 | 3.11            | 34.41                   | 44.82                   | 44.98                | 74                   | -29.02          | Pass   | Vertical        |
| 4924.000                         | 34.94                 | 5.07            | 34.32                   | 40.57                   | 46.26                | 74                   | -27.74          | Pass   | Vertical        |
| 5836.044                         | 35.78                 | 7.07            | 34.30                   | 42.20                   | 50.75                | 74                   | -23.25          | Pass   | Vertical        |
| 7386.000                         | 36.44                 | 6.83            | 34.90                   | 39.45                   | 47.82                | 74                   | -26.18          | Pass   | Vertical        |
| 9848.000                         | 38.14                 | 7.53            | 35.03                   | 37.83                   | 48.47                | 74                   | -25.53          | Pass   | Vertical        |

## Note:

1) Through Pre-scan transmitting mode with all kind of modulation and data rate, find the 11Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20), and then Only the worst case is recorded in the report.

2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading - Correct Factor

Correct Factor = Preamplifier Factor - Antenna Factor - Cable Factor

3) As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the peak values are measured.

4) Scan from 9kHz to 25GHz, the disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

## PHOTOGRAPHS OF TEST SETUP

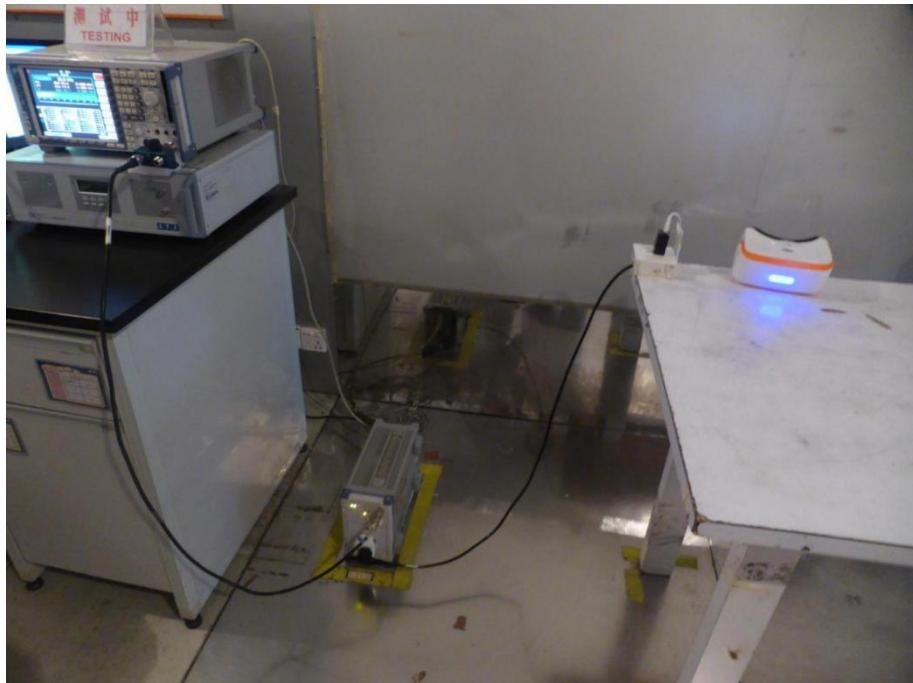
Test model No.: CP-V8



Radiated spurious emission Test Setup-1(Below 1GHz)



Radiated spurious emission Test Setup-2(Above 1GHz)



**Conducted Emissions Test Setup**



## PHOTOGRAPHS OF EUT Constructional Details

Test model No.: CP-V8



View of Product-1



View of Product-2



View of Product-3



View of Product-4



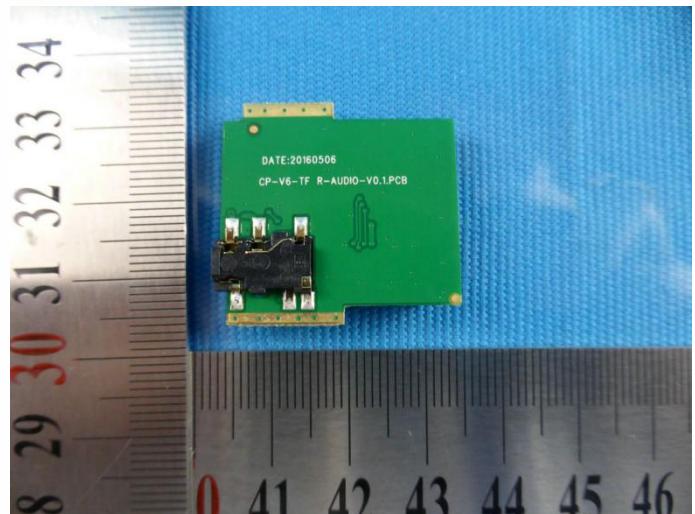
View of Product-5



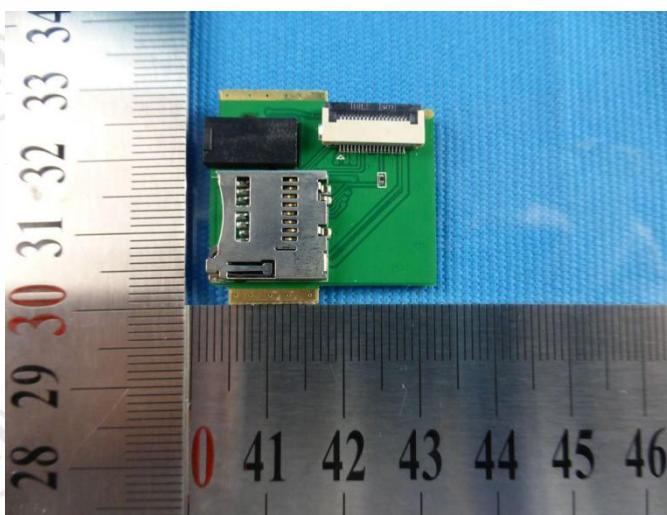
View of Product-6



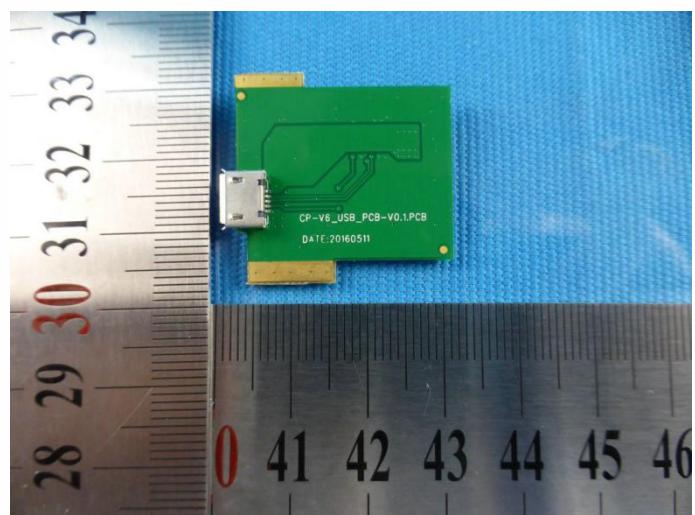
View of Product-7



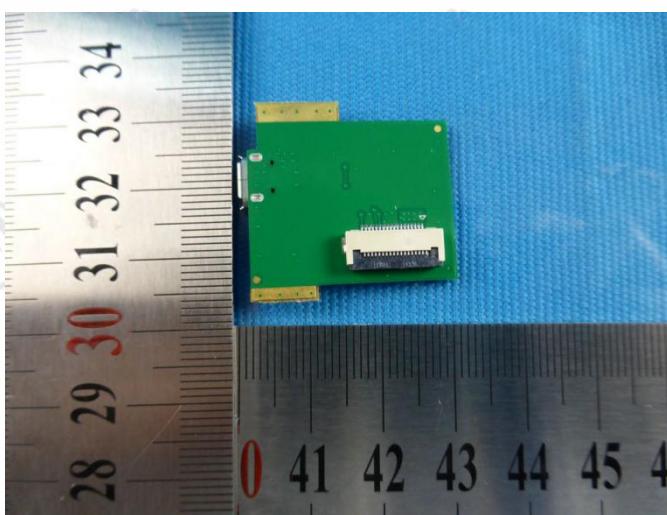
View of Product-8



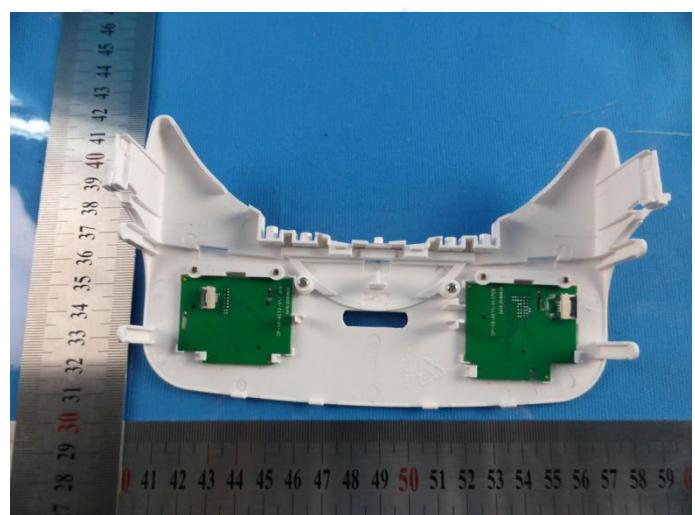
View of Product-9



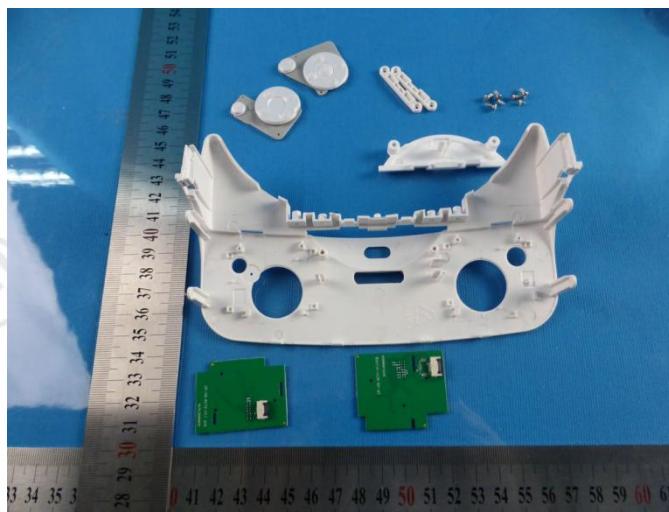
View of Product-10



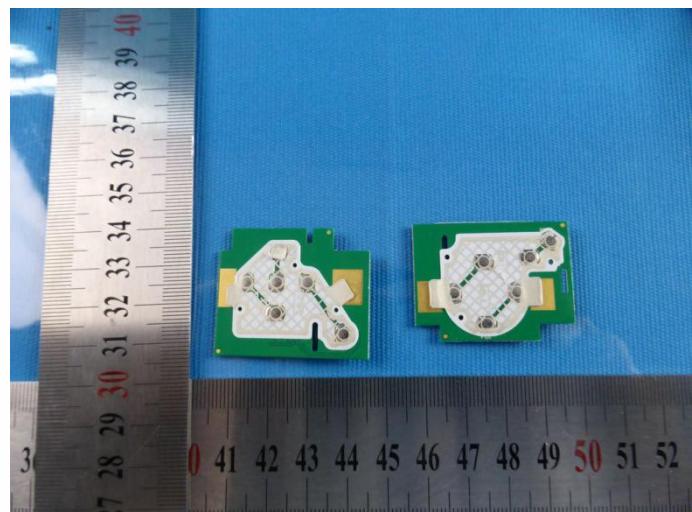
View of Product-11



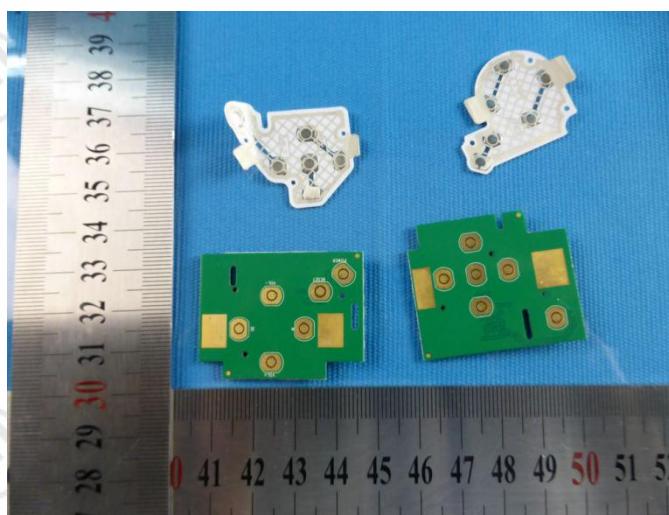
View of Product-12



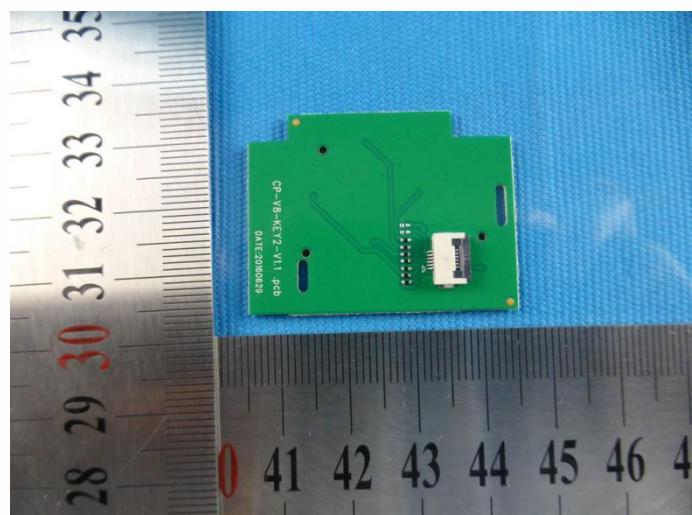
View of Product-13



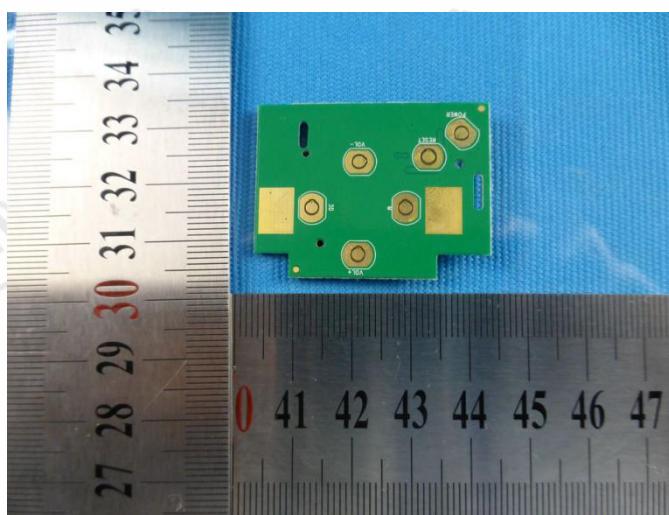
View of Product-14



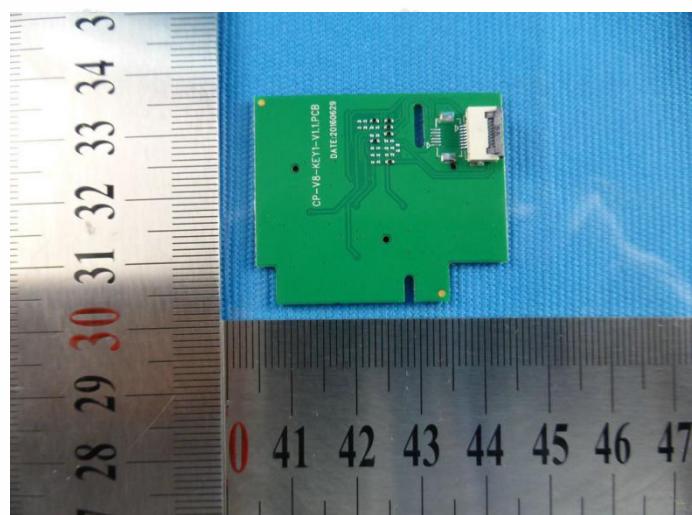
View of Product-15



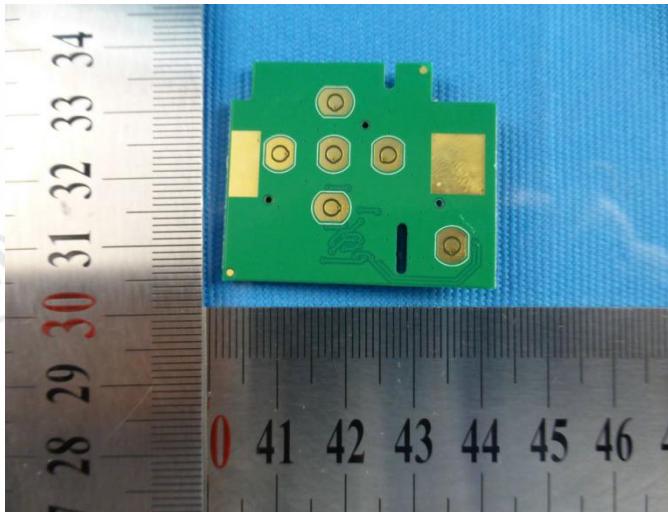
View of Product-16



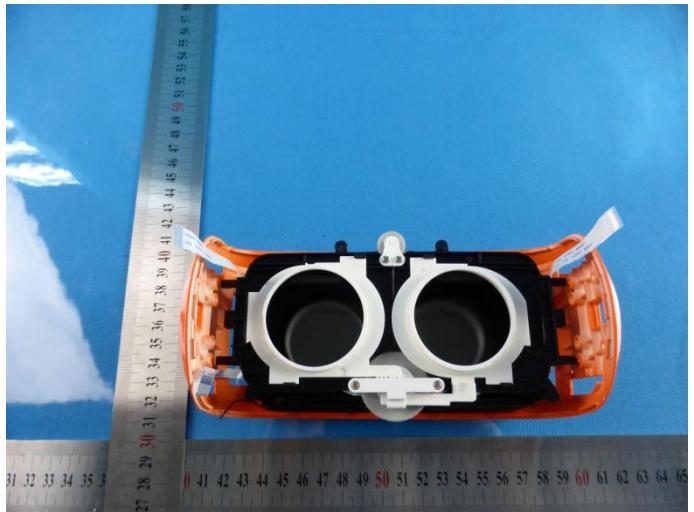
View of Product-17



View of Product-18



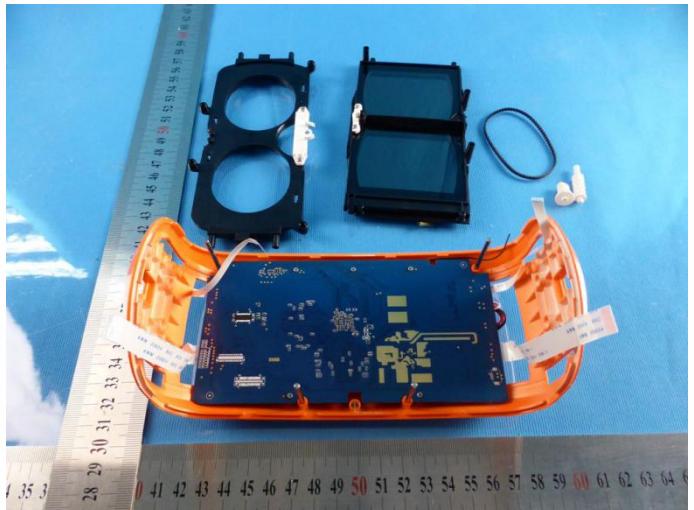
View of Product-19



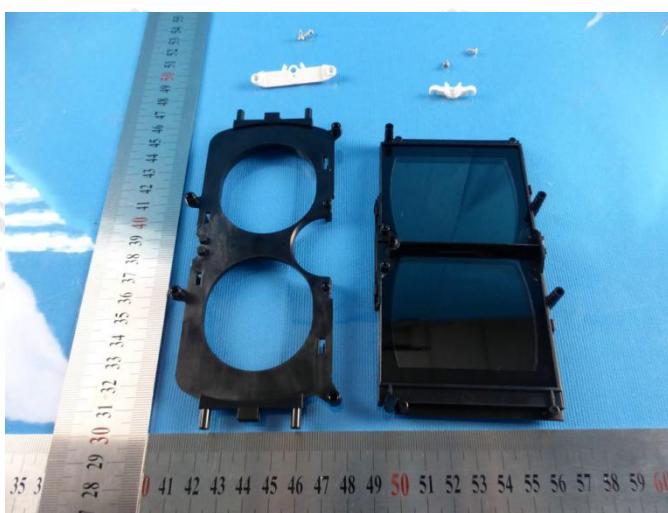
View of Product-20



View of Product-21



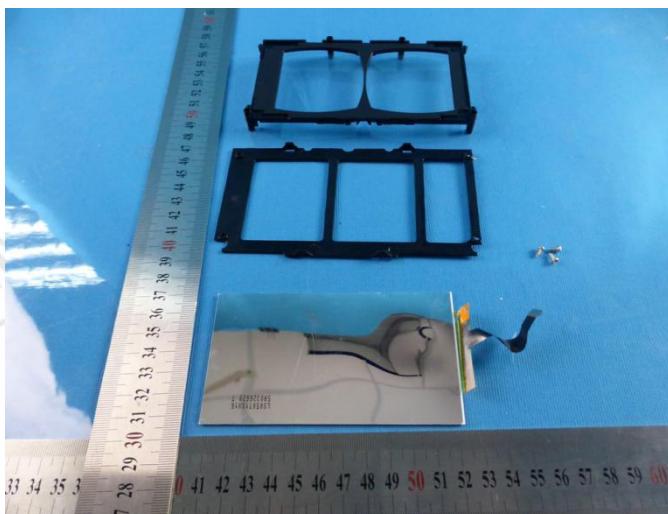
View of Product-22



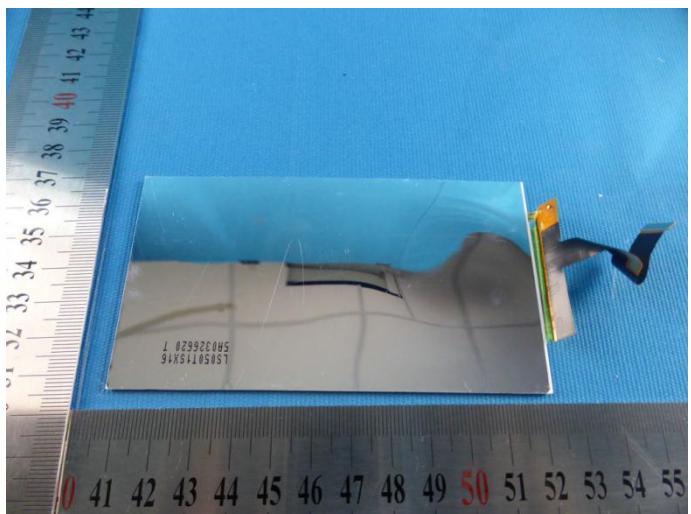
View of Product-23



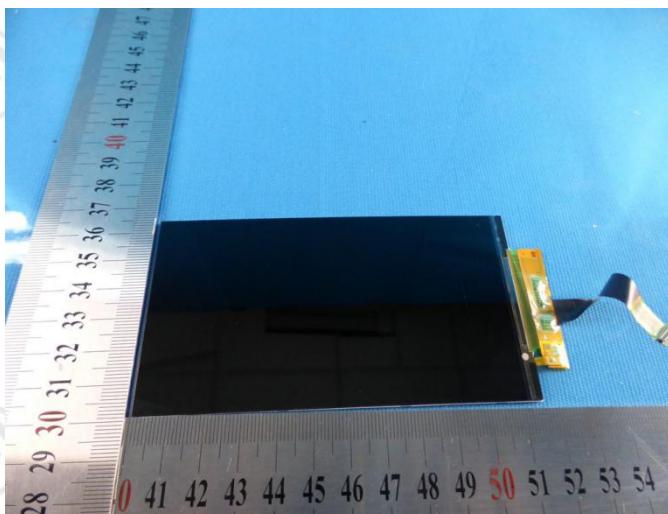
View of Product-24



View of Product-25



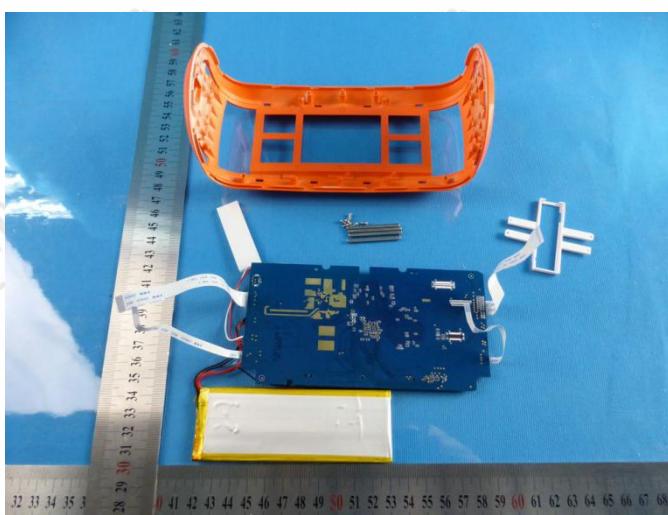
View of Product-26



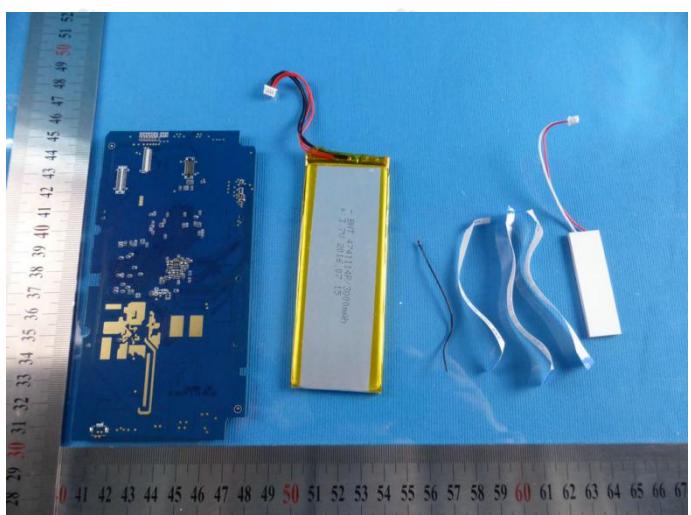
View of Product-27



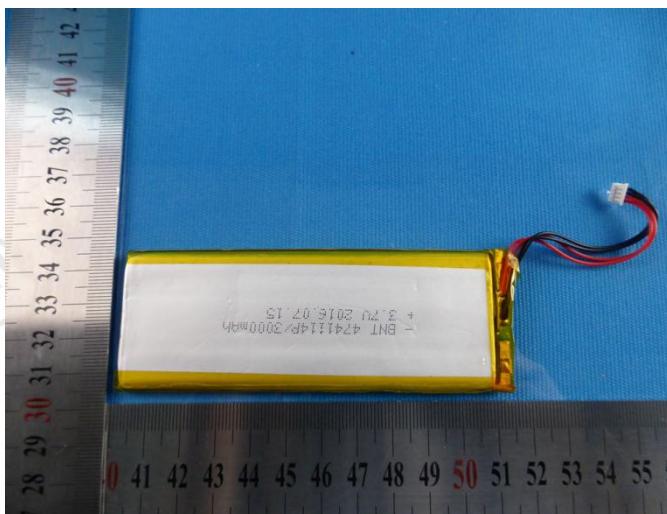
View of Product-28



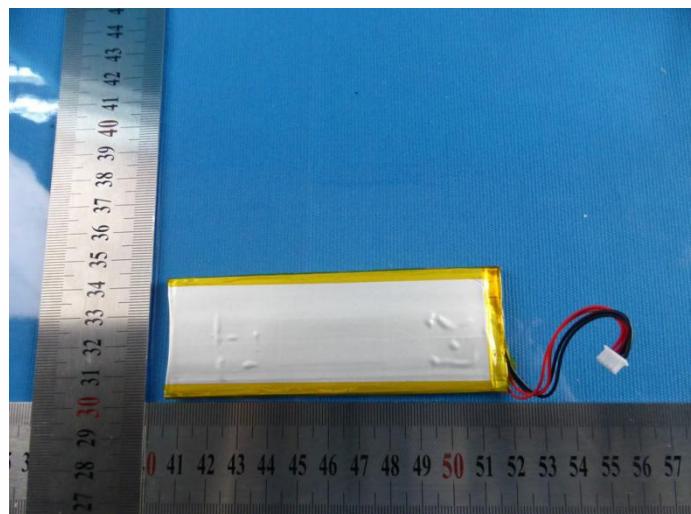
View of Product-29



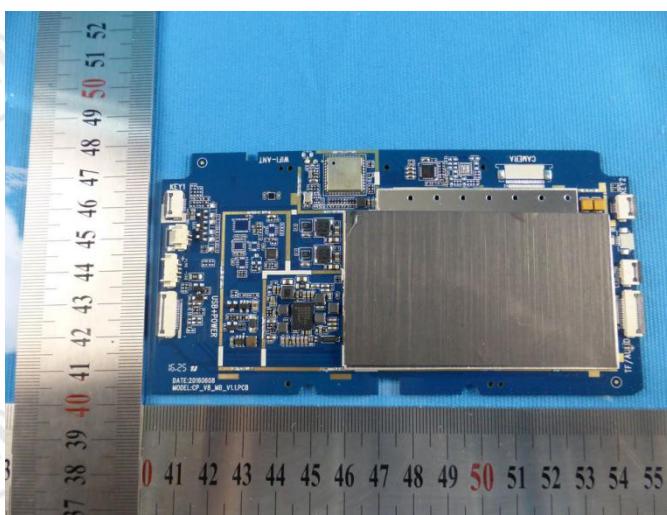
View of Product-30



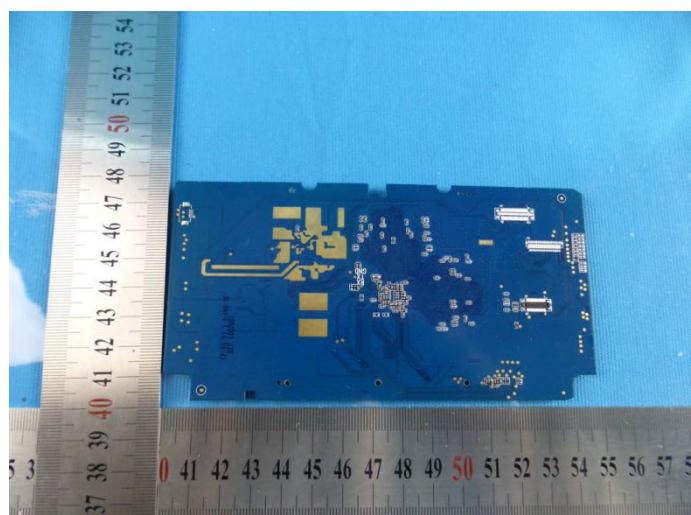
View of Product-31



View of Product-32



View of Product-33



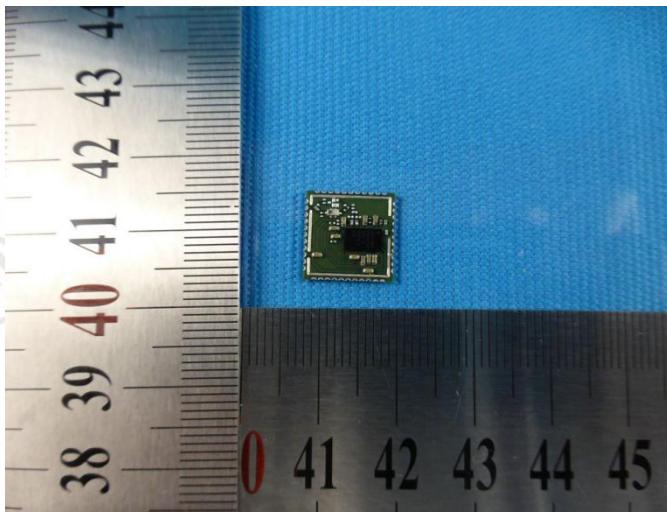
View of Product-34



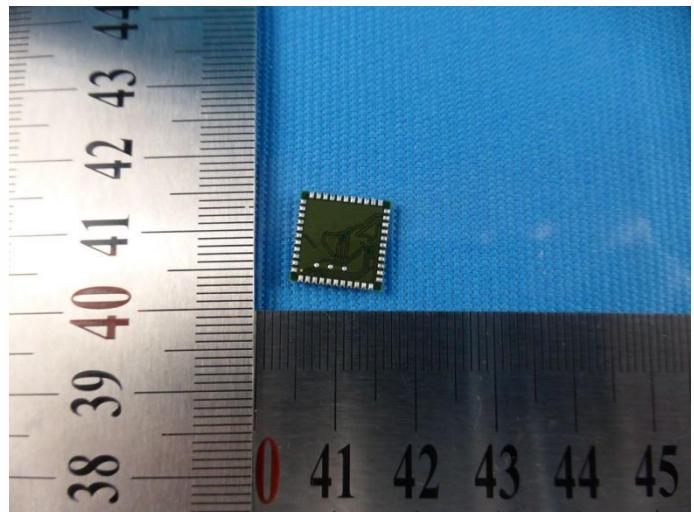
View of Product-35



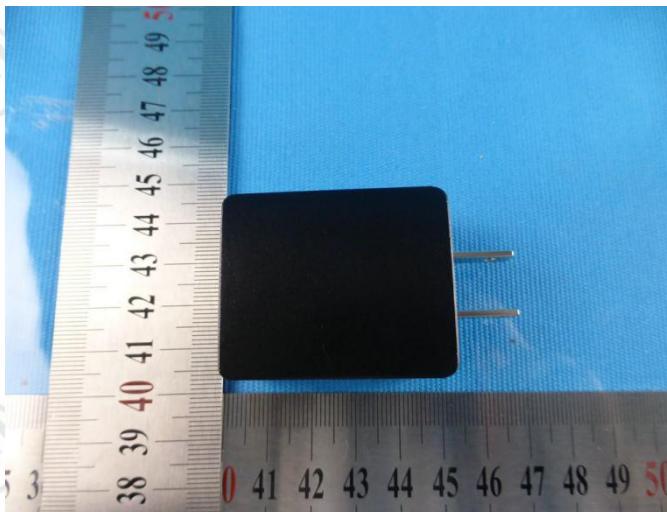
View of Product-36



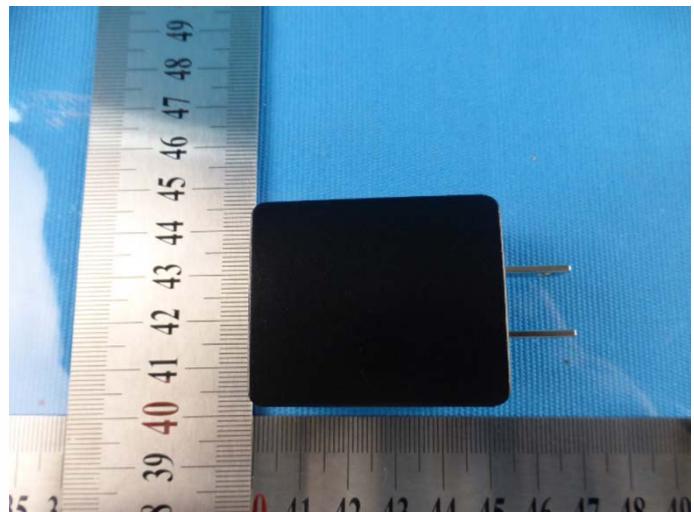
View of Product-37



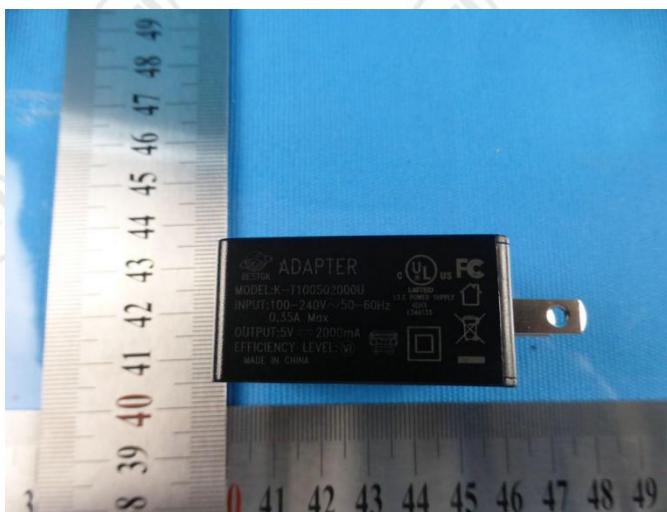
View of Product-38



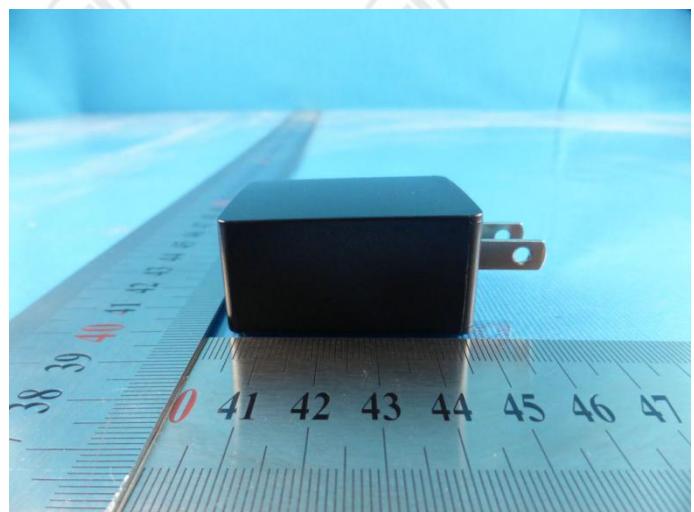
View of Product-39



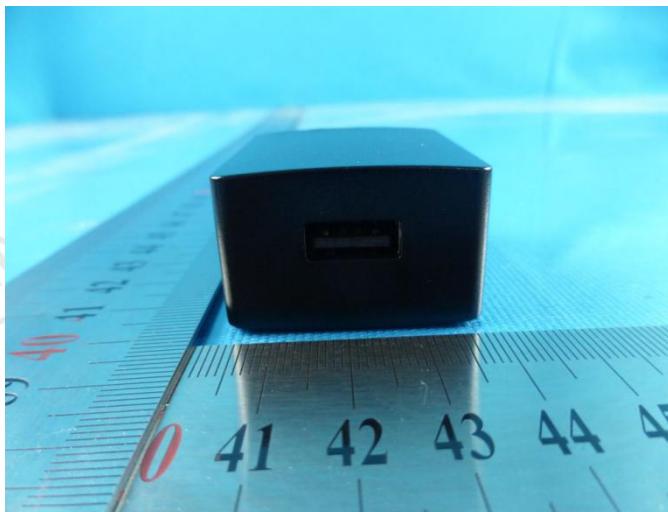
View of Product-40



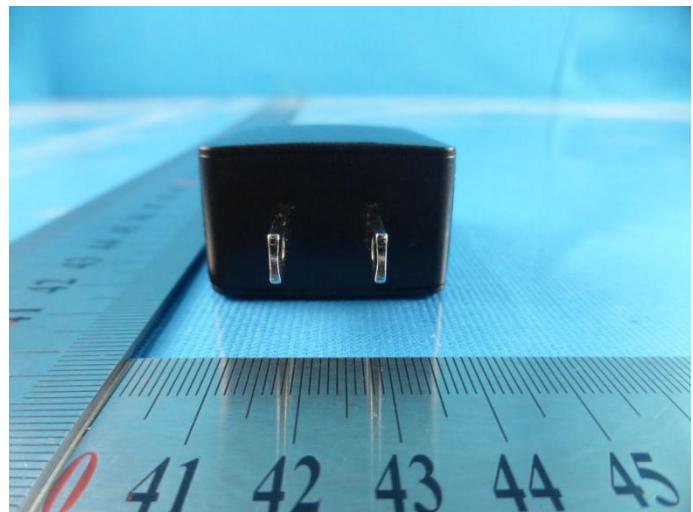
View of Product-41



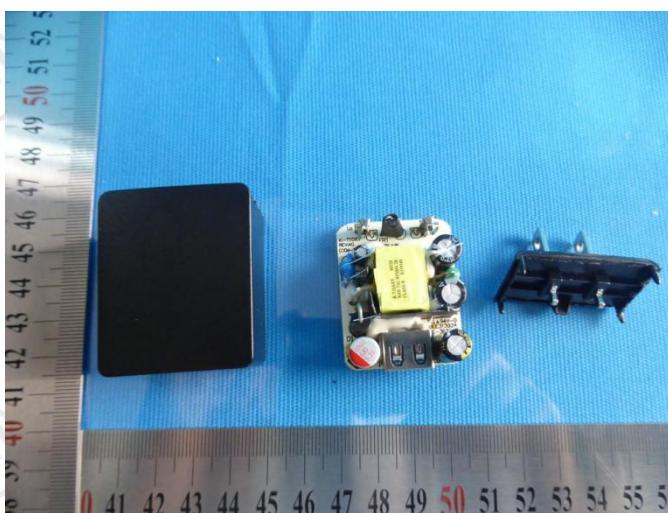
View of Product-42



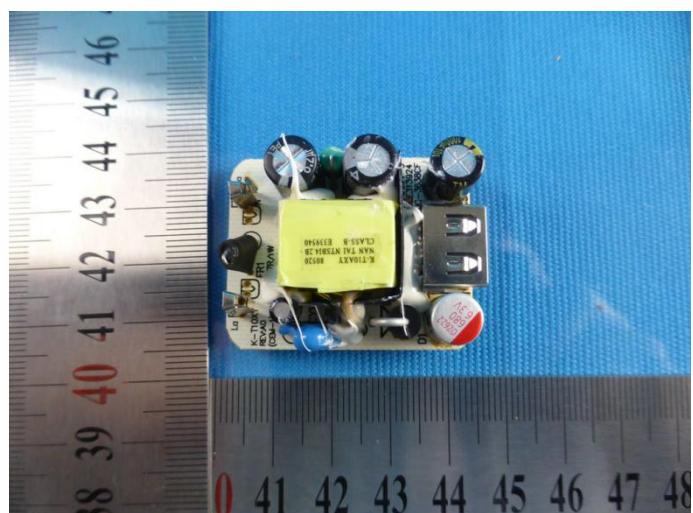
View of Product-43



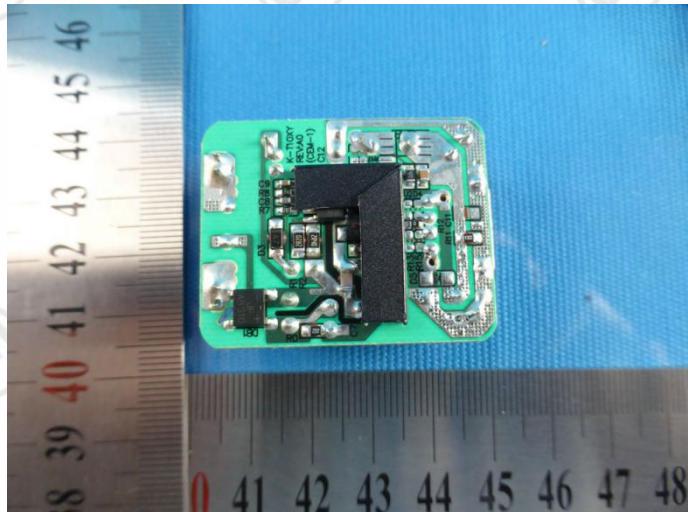
View of Product-44



View of Product-45



View of Product-46



View of Product-47

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

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