



# RADIO TEST REPORT

Report No.: SHATBL2110016W04

Applicant:  
SBOT Technologies LLC

Address:  
230 W 39th St, 8th FL, New York, NY, USA, 10018

Product Name : Smart shopping cart model 2

Brand Name : Caper

Model Name : Caper-V011.0

Series Model : N/A

Test Standard : FCC Part15.407

FCC ID : 2A3Q4CAPER-V011

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## TEST RESULT CERTIFICATION

Applicant's name.....: SBOT Technologies LLC  
Address.....: 230 W 39th St, 8th FL, New York, NY, USA, 10018  
Manufacture's Name.....: SBOT Technologies LLC  
Address.....: 230 W 39th St, 8th FL, New York, NY, USA, 10018  
Product description  
Product Name.....: Smart shopping cart model 2  
Brand Name.....: Caper  
Model Name.....: Caper-V011.0  
Series Model.....: N/A  
Test Standards.....: FCC Part15.407  
Test procedure.....: ANSI C63.10-2013

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

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Date of Test

Date (s) of performance of tests.....: 01 Nov. 2021 ~ 12 Nov. 2021

Date of Issue.....: 13 Nov. 2021

Test Result.....: Pass

Report Prepared by :

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| Table of Contents                                                  | Page       |
|--------------------------------------------------------------------|------------|
| <b>. SUMMARY OF TEST RESULTS.....</b>                              | <b>6</b>   |
| <b>.GENERAL INFORMATION.....</b>                                   | <b>7</b>   |
| GENERAL DESCRIPTION OF THE EUT.....                                | 7          |
| DESCRIPTION OF TEST MODES.....                                     | 9          |
| BLOCKDIGRAMSHOWINGTHECONFIGURATIONOFSYSTEMTESTED.....              | 10         |
| DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS.....        | 11         |
| 2.5 LABORATORY INFORMATION.....                                    | 12         |
| 2.6 MEASUREMENT UNCERTAINTY.....                                   | 12         |
| 2.7EQUIPMENTS LIST FOR ALL TEST ITEMS.....                         | 13         |
| <b>.EMC EMISSION TEST.....</b>                                     | <b>15</b>  |
| CONDUCTED EMISSION MEASUREMENT.....                                | 15         |
| RADIATED EMISSION AND ( BANDEGE)MEASUREMENT.....                   | 19         |
| 4.1LIMIT.....                                                      | 45         |
| 4.2 TEST PROCEDURE.....                                            | 45         |
| 4.3DEVIATION FROM STANDARD.....                                    | 47         |
| 4.4TEST SETUP.....                                                 | 47         |
| 4.5EUT OPERATION CONDITIONS.....                                   | 47         |
| 4.6TEST RESULTS .....                                              | 47         |
| <b>5.BANDWIDTH MEASUREMENT.....</b>                                | <b>61</b>  |
| 5.1EMISSION BANDWIDTH (EBW) 26 BANDWID PROCEDURES / LIMIT.....     | 61         |
| 5.2 OCCUPIED BANDWIDTH ( 99%) TEST APPLIED PROCEDURES / LIMIT..... | 76         |
| 5.3 MINIMUM EMISSION BANDWIDTH(6 DB) PROCEDURES / LIMIT.....       | 91         |
| <b>6.MAXIMUM CONDUCTED OUTPUT POWER.....</b>                       | <b>99</b>  |
| 6.1LIMIT.....                                                      | 99         |
| 6.2TEST PROCEDURE.....                                             | 99         |
| 6.3DEVIATION FROM STANDARD.....                                    | 99         |
| 6.4TEST SETUP.....                                                 | 99         |
| 6.5EUT OPERATION CONDITIONS.....                                   | 99         |
| 6.6TEST RESULTS.....                                               | 100        |
| <b>7.AUTOMATICALLY DISCONTINUE TRANSMISSION.....</b>               | <b>102</b> |
| 7.1LIMIT OF AUTOMATICALLY DISCONTINUE TRANSMISSION.....            | 102        |
| 7.2TEST RESULT OF AUTOMATICALLY DISCONTINUE TRANSMISSION.....      | 102        |
| <b>8.ANTENNA REQUIREMENT.....</b>                                  | <b>103</b> |
| 8.1STANDARD REQUIREMENT.....                                       | 103        |

| Table of Contents                          | Page       |
|--------------------------------------------|------------|
| 8.2EUT ANTENNA.....                        | 103        |
| <b>APPENDIX- PHOTOS OF TEST SETUP.....</b> | <b>104</b> |



**Revision History**

| Rev. | Issue Date   | Report NO.       | Effect Page | Contents      |
|------|--------------|------------------|-------------|---------------|
| 00   | 13 Nov. 2021 | SHATBL2110016W04 | ALL         | Initial Issue |
|      |              |                  |             |               |



**. SUMMARY OF TEST RESULTS**

Test procedures according to the technical standards:

§ 15.407,KDB789033 D02 General U-NII Test Procedures New Rules v02r01

| FCC Part15.407          |                                                        |         |
|-------------------------|--------------------------------------------------------|---------|
| FCC standard            | Test Item                                              | Results |
| 15.207                  | AC Conducted Emission                                  | PASS    |
| 15.407 (a) /15.407 (e)  | 26dB/6dB&99% Bandwidth                                 | PASS    |
| 15.407(a)               | Maximum Conducted Output Power                         | PASS    |
| 15.407(b)/15.205/15.209 | Radiated Emission And (bandedge Emissions) Measurement | PASS    |
| 15.407(a)               | Power Spectral Density                                 | PASS    |
| 15.407(c)               | Automatically Discontinue Transmission                 | PASS    |
| 15.203                  | Antenna Requirement                                    | PASS    |

**NOTE:**

(1)" N/A" denotes test is not applicable in this Test Report

(2)all tests are according to ANSI C63.10-2013

## GENERAL DESCRIPTION OF THE EUT

|                         |                                                                                 |                                                                                                                                              |
|-------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Product Name            | Smart shopping cart model 2                                                     |                                                                                                                                              |
| Trade Name              | Caper                                                                           |                                                                                                                                              |
| Model Name              | Caper-V011.0                                                                    |                                                                                                                                              |
| Series Model            | N/A                                                                             |                                                                                                                                              |
| Model Difference        | N/A                                                                             |                                                                                                                                              |
| Product Description     | The EUT is a Smart shopping cart model 2                                        |                                                                                                                                              |
|                         | Operation Frequency:                                                            | IEEE 802.11a/ n/ac(HT20) 5.180GHz-5.240GHz<br>IEEE 802.11n/ac(HT40) 5.190GHz-5.230GHz<br>IEEE 802.11ac(HT80) 5.210GHz                        |
|                         |                                                                                 | IEEE 802.11a/ n/ac(HT20)5.745GHz-5.825GHz<br>IEEE 802.11a/ n/ac(HT40)5.755GHz-5.795GHz<br>IEEE 802.11ac(HT80) 5.775GHz                       |
|                         | Modulation Type:                                                                | 802.11a(OFDM):<br>BPSK,QPSK,16-QAM,64-QAM<br>802.11n(OFDM):<br>BPSK,QPSK,16-QAM,64-QAM<br>802.11ac(OFDM):<br>BPSK,QPSK,16-QAM,64-QAM,256-QAM |
|                         | Antenna Designation:                                                            | Please refer to the Note 2.                                                                                                                  |
|                         | Max.Output Power(Conducted):                                                    | 18.04dBm                                                                                                                                     |
|                         | Duty Cycle:                                                                     | >98%                                                                                                                                         |
|                         | More details of EUT technical specification, please refer to the User's Manual. |                                                                                                                                              |
| Test Channel            | Please refer to the Note 1.                                                     |                                                                                                                                              |
| Adapter                 | Input:100-240V,50-60Hz,2.5A                                                     |                                                                                                                                              |
|                         | Output:24V,6.25A                                                                |                                                                                                                                              |
| Battery                 | Rated Voltage:18 V                                                              |                                                                                                                                              |
|                         | Charge Limit:8A<br>Capacity:57600mAh                                            |                                                                                                                                              |
| Hardware version number | V1.2                                                                            |                                                                                                                                              |
| Software versionnumber  | 7.1.2                                                                           |                                                                                                                                              |
| Connecting I/O Port(s)  | Please refer to the User's Manual                                               |                                                                                                                                              |

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

|                                   |           |                   |           |
|-----------------------------------|-----------|-------------------|-----------|
| 1. Operation Frequency of channel |           |                   |           |
| 5.180GHz-5.240GHz                 |           | 5.745GHz-5.825GHz |           |
| Channel                           | Frequency | Channel           | Frequency |
| 36                                | 5180      | 149               | 5745      |
| 38                                | 5190      | 151               | 5755      |
| 40                                | 5200      | 153               | 5765      |
| 42                                | 5210      | 157               | 5785      |
| 44                                | 5220      | 159               | 5795      |
| 46                                | 5230      | 161               | 5805      |
| 48                                | 5240      | 165               | 5825      |

Note:

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

Carrier Frequency Channel

5GHz:

|                         |            |         |            |
|-------------------------|------------|---------|------------|
| For 802.11a/n/ac (HT20) |            |         |            |
| Channel                 | Freq.(MHz) | Channel | Freq.(MHz) |
| 36                      | 5180       | 149     | 5745       |
| 44                      | 5220       | 157     | 5785       |
| 48                      | 5240       | 165     | 5825       |

|                       |            |         |            |
|-----------------------|------------|---------|------------|
| For 802.11n/ac (HT40) |            |         |            |
| Channel               | Freq.(MHz) | Channel | Freq.(MHz) |
| 38                    | 5190       | 151     | 5755       |
| 46                    | 5230       | 159     | 5795       |

|                     |            |         |            |
|---------------------|------------|---------|------------|
| For 802.11ac (HT80) |            |         |            |
| Channel             | Freq.(MHz) | Channel | Freq.(MHz) |
| 42                  | 5210       | 155     | 5775       |
|                     |            |         |            |

|    |     |       |              |          |           |            |          |
|----|-----|-------|--------------|----------|-----------|------------|----------|
| 2. | Ant | Brand | Model Name   | Ant Type | Connector | Gain (dBi) | NOTE     |
|    | 1   | N/A   | Caper-V011.0 | FPC      | N/A       | 2dBi       | WLAN ANT |



## DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

| Worst Mode | Description                             | Data Rate |
|------------|-----------------------------------------|-----------|
| Mode 1     | TX IEEE 802.11a HT20 CH36&CH44&CH48     | 6 Mbps    |
| Mode 2     | TX IEEE 802.11a HT20 CH149&CH157&CH165  | 6 Mbps    |
| Mode 3     | TX IEEE 802.11n HT20 CH36&CH44&CH48     | MCS 0     |
| Mode 4     | TX IEEE 802.11 HT20 CH149&CH157&CH165   | MCS 0     |
| Mode 5     | TX IEEE 802.11acVHT20 CH36&CH44&CH48    | MCS 0     |
| Mode 6     | TX IEEE 802.11acVHT20 CH149&CH157&CH165 | MCS 0     |
| Mode 7     | TX IEEE 802.11n HT40 CH38&CH46          | MCS 0     |
| Mode 8     | TX IEEE 802.11n HT40 CH151&CH159        | MCS 0     |
| Mode 9     | TX IEEE 802.11acVHT40 CH38&CH46         | MCS 0     |
| Mode 10    | TX IEEE 802.11acVHT40 CH151&CH159       | MCS 0     |
| Mode 11    | TX IEEE 802.11ac VHT80 CH42             | MCS 0     |
| Mode 12    | TX IEEE 802.11ac VHT80 CH155            | MCS 0     |

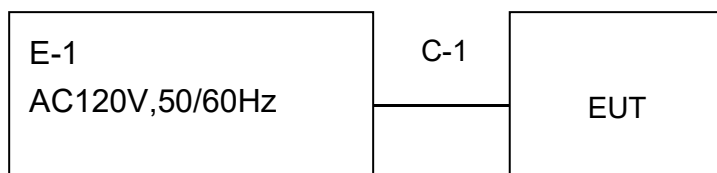
- Note: (1) The measurements are performed at the highest, middle, lowest available channels.  
(2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported  
(3) We have been tested for all available U.S. voltage and frequencies (For 120V, 50/60Hz and 240V, 50/60Hz) for which the device is capable of operation.

## AC Conducted Emission

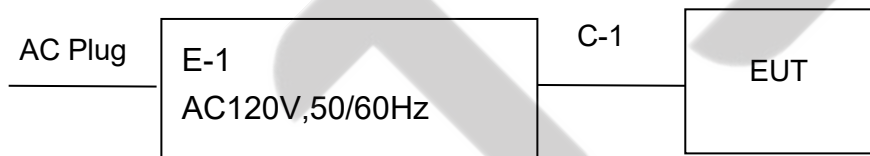
| Test Case             |                    |
|-----------------------|--------------------|
| AC Conducted Emission | Mode13: Keeping TX |

## BLOCKDIGRAMSHOWINGTHECONFIGURATIONOFSYSTEMTESTED

Radiated Spurious Emission Test



Conducted Emission Test



**DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS**

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

**Necessary accessories**

| Item | Equipment | Mfr/Brand | Model/Type No. | Series No. | Note |
|------|-----------|-----------|----------------|------------|------|
| N/A  | N/A       | N/A       | N/A            | N/A        | N/A  |
|      |           |           |                |            |      |
|      |           |           |                |            |      |
|      |           |           |                |            |      |
|      |           |           |                |            |      |
|      |           |           |                |            |      |

**Support units**

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

**Note:**

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

## 2.5 LABORATORY INFORMATION

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

## 2.6 MEASUREMENT UNCERTAINTY

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

| No. | Item                               | Uncertainty          |
|-----|------------------------------------|----------------------|
| 1   | RF output power, conducted         | $\pm 0.958\text{dB}$ |
| 2   | Conducted spurious emissions       | $\pm 2.988\text{dB}$ |
| 3   | All emissions, radiated 30MHz-1GHz | $\pm 2.50\text{dB}$  |
| 4   | All emissions, radiated 1GHz-18GHz | $\pm 3.51\text{dB}$  |
| 5   | Occupied bandwidth                 | $\pm 23.20\text{dB}$ |
| 6   | Power spectral density             | $\pm 0.886\text{dB}$ |

## 2.7EQUIPMENTS LIST FOR ALL TEST ITEMS

### Radiation Test equipment

| Kind of Equipment            | Manufacturer | Type No.        | Serial No.       | Management number | Calibrated until |
|------------------------------|--------------|-----------------|------------------|-------------------|------------------|
| Test Receiver                | R&S          | ESCI            | 100469           | SHATBL-E003       | 2022.07.13       |
| Spectrum Analyzer            | Agilent      | N9020A          | MY50200811       | SHATBL-E017       | 2022.07.13       |
| Bilog Antenna                | SCHWARZBECK  | VLUB 9168       | 01174            | SHATBL-E008       | 2023.09.27       |
| Horn Antenna                 | SCHWARZBECK  | BBHA 9120D      | 02014            | SHATBL-E009       | 2023.09.27       |
| Pre-Amplifier (0.1M-3GHz)    | JPT          | JPA-10M1G35     | 21010100035001   | SHATBL-E005       | 2022.10.07       |
| Pre-Amplifier (1G-18GHz)     | JPT          | JPA0118-55-303A | 1910001800055000 | SHATBL-E006       | 2022.07.13       |
| Temperature & Humidity       | DeLi         | DeLi            | N/A              | SHATBL-E016       | 2022.10.07       |
| Antenna/Turntable Controller | Brilliant    | N/A             | N/A              | SHATBL-E007       | N/A              |
| Test SW                      | FALA         | EMC-RI(Ver.4A2) |                  | SHATBL-E046       | N/A              |

### Conduction Test equipment

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

| Kind of Equipment                     | Manufacturer       | Type No.               | Serial No.     | Management number | Calibrated until |
|---------------------------------------|--------------------|------------------------|----------------|-------------------|------------------|
| MIMO Power measurement test Set       | DARE               | RPR3006W               | 16I00054SN016  | SHATBL-W006       | 2022.10.07       |
|                                       |                    |                        | RPR6W-20001005 | SHATBL-W013       | 2022.10.07       |
| Signal Analyzer                       | Agilent            | N9020A                 | MY57300196     | SHATBL-W004       | 2022.10.07       |
| Signal Generator                      | Agilent            | N5182B                 | MY46240556     | SHATBL-W005       | 2022.10.07       |
| Wireless Communication s Test Set     | R&S                | CMW500                 | 101331         | SHATBL-W007       | 2022.10.07       |
| Temperature & Humidity                | Deli               | deli                   | N/A            | SHATBL-W011       | 2022.10.07       |
| Attenuator                            | Agilent            | 8494B                  | DC-18G         | SHATBL-W009       | 2022.10.07       |
| Attenuator                            | Agilent            | 8496B                  | DC-18G         | SHATBL-W010       | 2022.10.07       |
| power splitter                        | MNK                | MPD-DC/6-2S            | 62315 G51      | SHATBL-W015       | 2022.10.07       |
|                                       |                    |                        | 62315 G52      | SHATBL-W016       | 2022.10.07       |
| Filter                                | Chengdu kangmaiwei | ZBSF-C2400-2483.5-T3   | N/A            | SHATBL-W021       | N/A              |
|                                       |                    | ZBSF-C5150-5350-T5     | N/A            | SHATBL-W022       | 2022.01.26       |
|                                       |                    | ZBSF-C5725-5850-T5     | N/A            | SHATBL-W024       | N/A              |
| Constant temperature and humidity box | KSON               | THS-B6C-150            | 6159K          | SHATBL-W019       | 2022.10.07       |
| Test SW                               | FALA               | LZ-RF(Ver.LzRF-03A3.1) |                | SHATBL-W020       | N/A              |

## EMC EMISSION TEST

### CONDUCTED EMISSION MEASUREMENT

#### POWER LINE CONDUCTED EMISSION Limits

(Frequency Range 150KHz-30MHz)

| FREQUENCY (MHz) | Class B (dBuV) |           | Standard |
|-----------------|----------------|-----------|----------|
|                 | Quasi-peak     | Average   |          |
| 0.15 -0.5       | 66 - 56 *      | 56 - 46 * | CISPR    |
| 0.50 -5.0       | 56.00          | 46.00     | CISPR    |
| 5.0 -30.0       | 60.00          | 50.00     | CISPR    |

|           |           |           |     |
|-----------|-----------|-----------|-----|
| 0.15 -0.5 | 66 - 56 * | 56 - 46 * | FCC |
| 0.50 -5.0 | 56.00     | 46.00     | FCC |
| 5.0 -30.0 | 60.00     | 50.00     | FCC |

Note:

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

The following table is the setting of the receiver

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

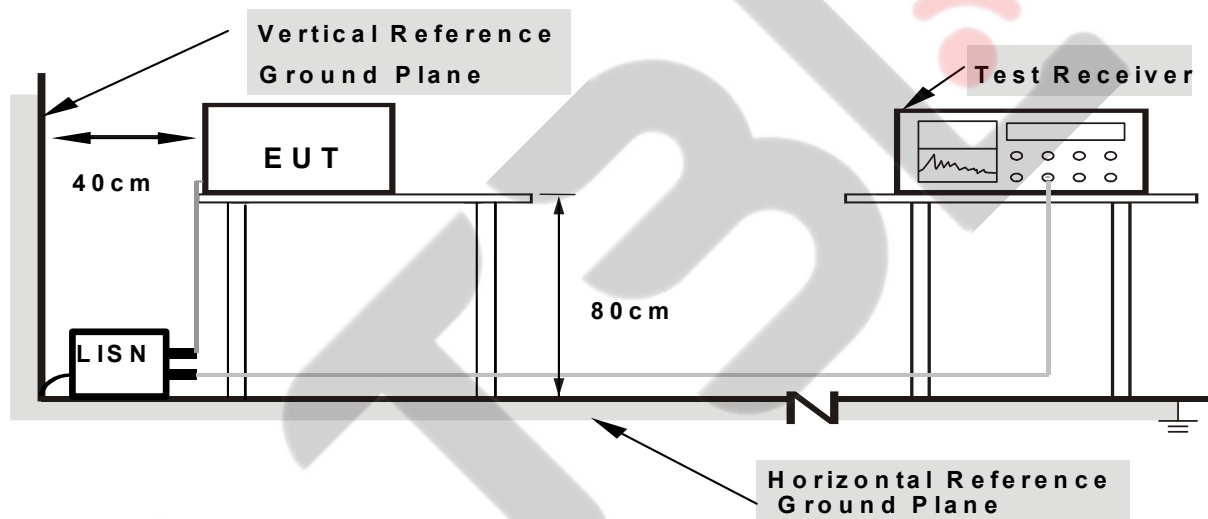
## TEST PROCEDURE

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

## DEVIATION FROM TEST STANDARD

No deviation

## TEST SETUP



**Note:** 1.Support units were connected to second LISN.  
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

## EUT OPERATING CONDITIONS

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



## TEST RESULTS

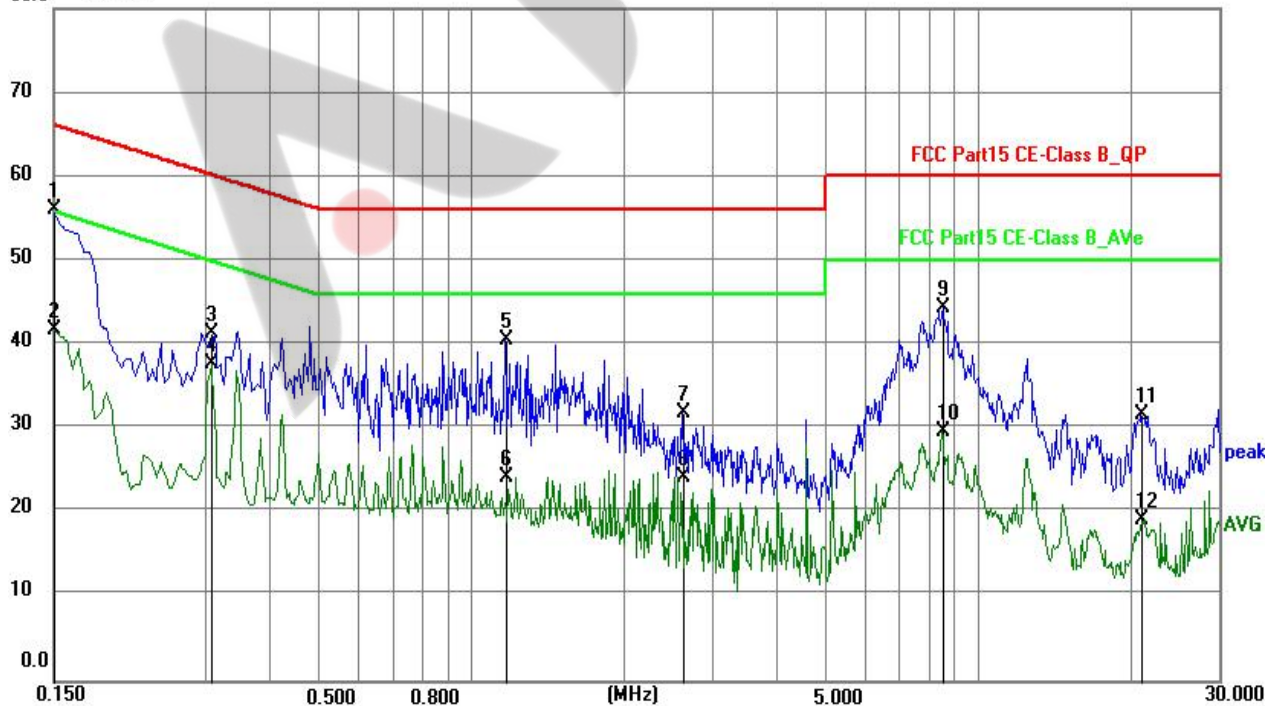
|               |              |                    |     |
|---------------|--------------|--------------------|-----|
| Temperature:  | 26 °C        | Relative Humidity: | 54% |
| Test Voltage: | AC 120V/60Hz | Phase:             | L   |
| Test Mode :   | Mode 13      |                    |     |

| Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB) | Result<br>(dBuV) | Limit<br>(dBuV) | Margin<br>(dB) | Remark |
|--------------------|-------------------|-----------------------|------------------|-----------------|----------------|--------|
| 0.1500             | 45.93             | 10.14                 | 56.07            | 66.00           | -9.93          | QP     |
| 0.1500             | 31.75             | 10.14                 | 41.89            | 56.00           | -14.11         | AVG    |
| 0.3074             | 31.40             | 10.08                 | 41.48            | 60.04           | -18.56         | QP     |
| 0.3074             | 27.79             | 10.08                 | 37.87            | 50.04           | -12.17         | AVG    |
| 1.1669             | 30.71             | 9.95                  | 40.66            | 56.00           | -15.34         | QP     |
| 1.1669             | 14.38             | 9.95                  | 24.33            | 46.00           | -21.67         | AVG    |
| 2.6114             | 22.00             | 9.99                  | 31.99            | 56.00           | -24.01         | QP     |
| 2.6114             | 14.22             | 9.99                  | 24.21            | 46.00           | -21.79         | AVG    |
| 8.5692             | 34.26             | 10.22                 | 44.48            | 60.00           | -15.52         | QP     |
| 8.5692             | 19.44             | 10.22                 | 29.66            | 50.00           | -20.34         | AVG    |
| 21.1467            | 20.80             | 10.92                 | 31.72            | 60.00           | -28.28         | QP     |
| 21.1467            | 8.23              | 10.92                 | 19.15            | 50.00           | -30.85         | AVG    |

Remark:

1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result = Reading + Factor )-Limit

80.0 dBuV/m



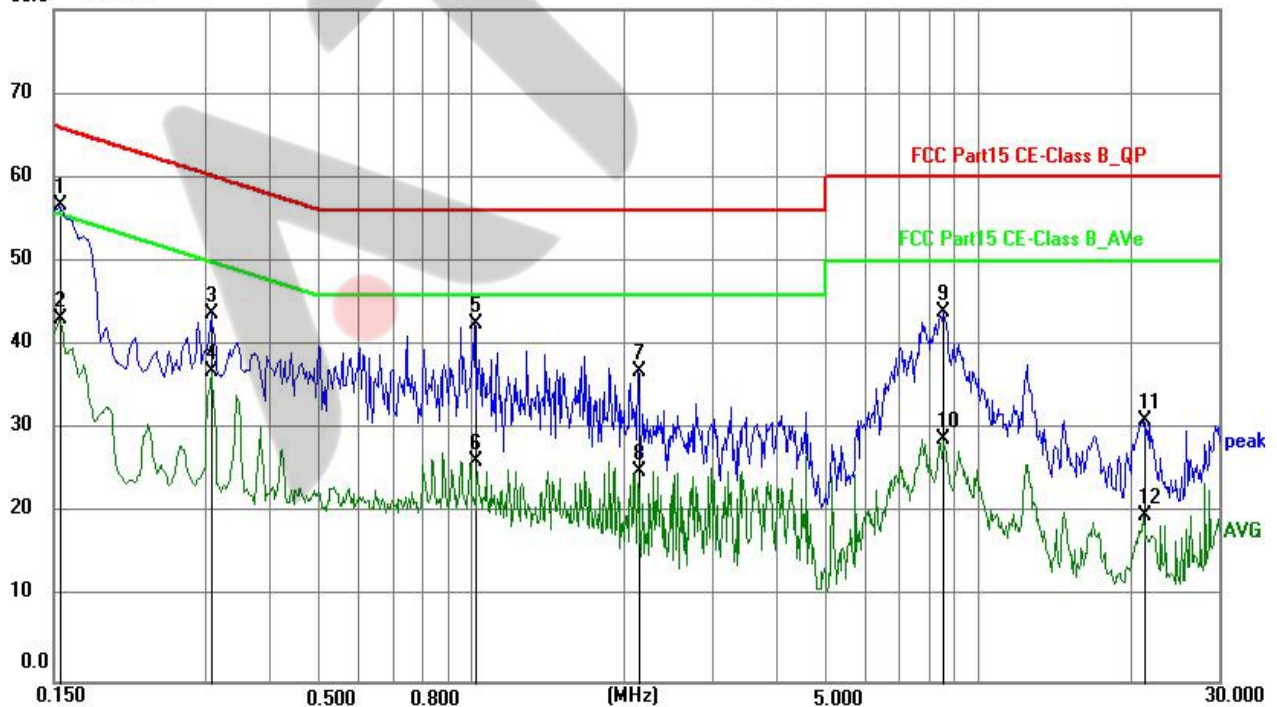
|              |              |                    |     |
|--------------|--------------|--------------------|-----|
| Temperature: | 26 °C        | Relative Humidity: | 54% |
| Test Voltage | AC 120V/60Hz | Phase:             | N   |
| Test Mode    | Mode 13      |                    |     |

| Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>Factor(dB) | Result<br>(dBuV) | Limit<br>(dBuV) | Margin<br>(dB) | Remark |
|--------------------|-------------------|-----------------------|------------------|-----------------|----------------|--------|
| 0.1544             | 46.29             | 10.45                 | 56.74            | 65.76           | -9.02          | QP     |
| 0.1544             | 32.83             | 10.45                 | 43.28            | 55.76           | -12.48         | AVG    |
| 0.3074             | 33.40             | 10.33                 | 43.73            | 60.04           | -16.31         | QP     |
| 0.3074             | 26.65             | 10.33                 | 36.98            | 50.04           | -13.06         | AVG    |
| 1.0182             | 32.50             | 10.15                 | 42.65            | 56.00           | -13.35         | QP     |
| 1.0182             | 16.23             | 10.15                 | 26.38            | 46.00           | -19.62         | AVG    |
| 2.1433             | 26.73             | 10.22                 | 36.95            | 56.00           | -19.05         | QP     |
| 2.1433             | 14.96             | 10.22                 | 25.18            | 46.00           | -20.82         | AVG    |
| 8.5692             | 33.97             | 10.16                 | 44.13            | 60.00           | -15.87         | QP     |
| 8.5692             | 18.72             | 10.16                 | 28.88            | 50.00           | -21.12         | AVG    |
| 21.3270            | 20.59             | 10.61                 | 31.20            | 60.00           | -28.80         | QP     |
| 21.3270            | 9.17              | 10.61                 | 19.78            | 50.00           | -30.22         | AVG    |

Remark:

1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result = Reading + Factor) – Limit

80.0 dBuV/m



## RADIATED EMISSION AND (BANDEDGE) MEASUREMENT

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

In case the emission fall within the restricted band specified on 15.407(b)7& 15.205/209(a), then the (a); limit in the table below has to be followed.

| Frequencies (MHz) | Field Strength (micorvolts/meter) | Measurement Distance (meters) |
|-------------------|-----------------------------------|-------------------------------|
| 0.009~0.490       | 2400/F(KHz)                       | 300                           |
| 0.490~1.705       | 24000/F(KHz)                      | 30                            |
| 1.705~30.0        | 30                                | 30                            |
| 30~88             | 100                               | 3                             |
| 88~216            | 150                               | 3                             |
| 216~960           | 200                               | 3                             |
| Above 960         | 500                               | 3                             |

### LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

| FREQUENCY (MHz) | Class B (dBuV/m) (at 3M) |         |
|-----------------|--------------------------|---------|
|                 | PEAK                     | AVERAGE |
| Above 1000      | 68.2                     | 54      |

Notes:

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

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

For Band edge

| Spectrum Parameter                    | Setting                      |
|---------------------------------------|------------------------------|
| Detector                              | Peak                         |
| RB / VB (emission in restricted band) | 1MHz / 1MHz, AV=1 MHz /3 MHz |

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

### 3.2.2 TEST PROCEDURE

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

Note:

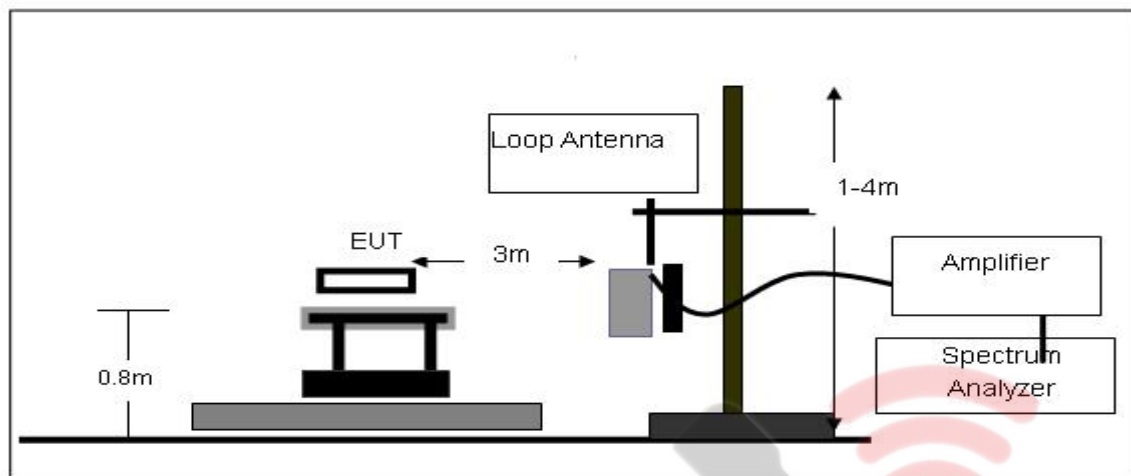
Both horizontal and vertical antenna polarities were tested and performed test to three orthogonal axis. The worst case emissions were reported

### DEVIATION FROM TEST STANDARD

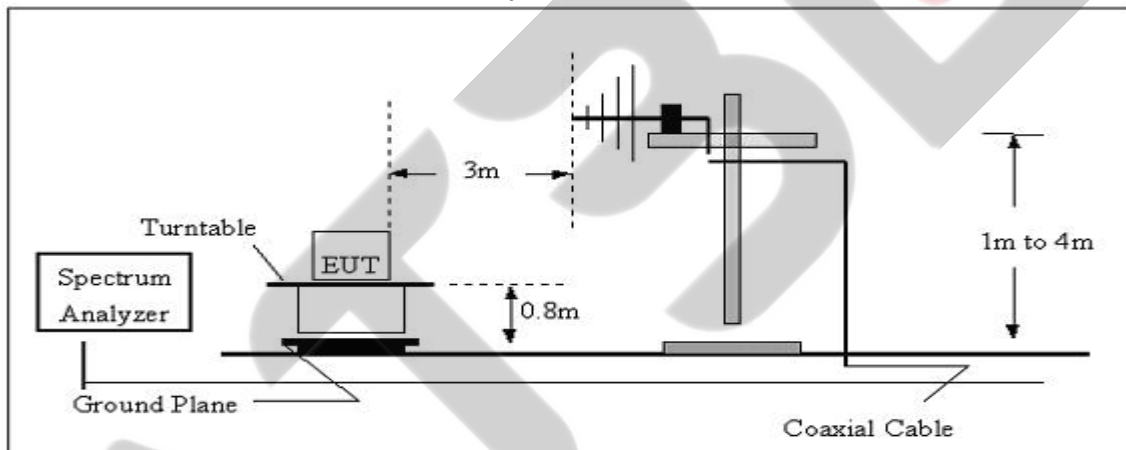
No deviation

## TESTSETUP

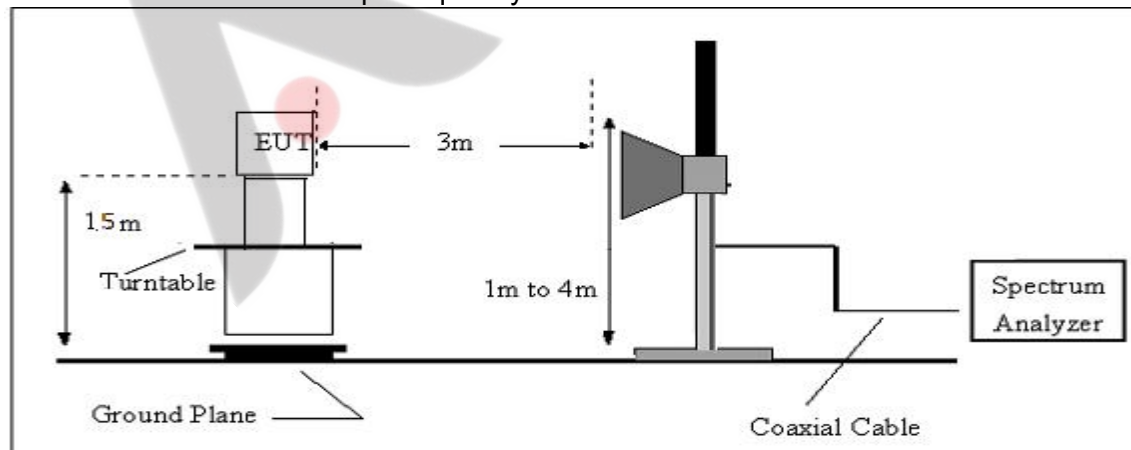
### (A) Radiated Emission Test-Up Frequency Below 30MHz



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



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



### 3.2.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

### 3.2.5 FIELD STRENGTH CALCULATION

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

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

Where

FS = Field Strength

CL = Cable Attenuation Factor (Cable Loss)

RA = Reading Amplitude

AG = Amplifier Gain

AF = Antenna Factor

For example

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

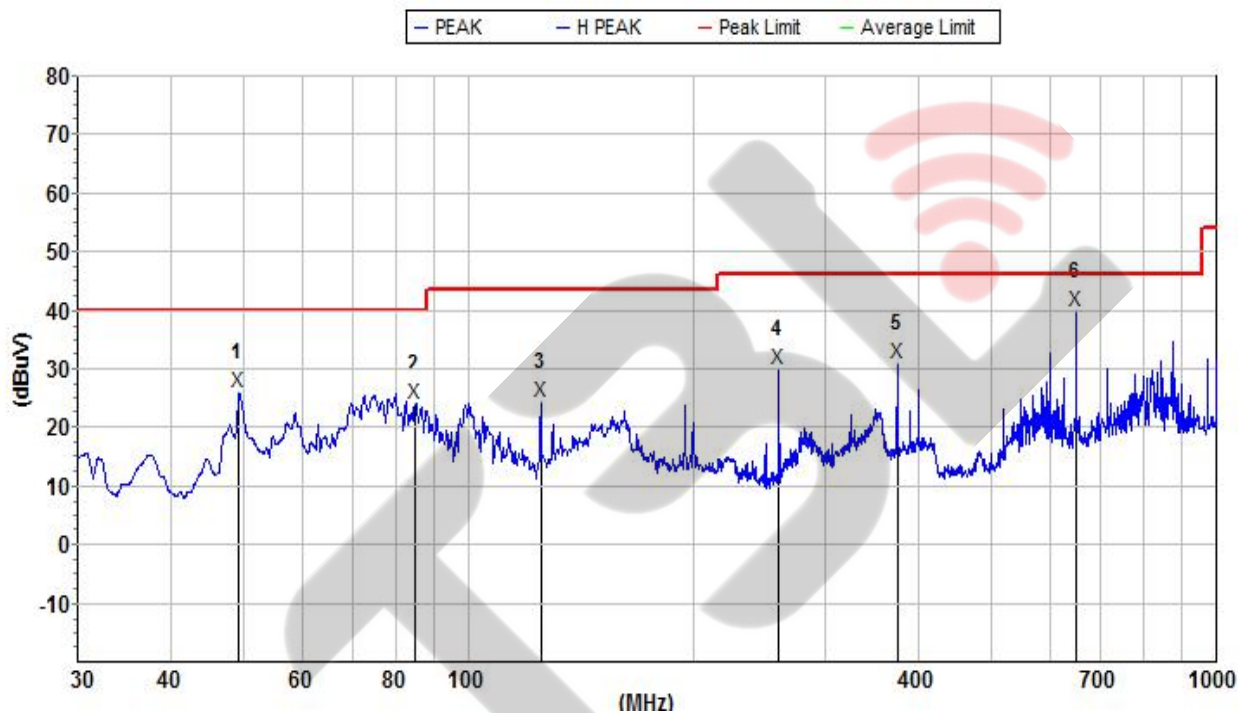
$$\text{Factor} = AF + CL - AG$$



### 3.2.7 TEST RESULTS(Between 30MHz – 1GHz)

|              |                          |                   |            |
|--------------|--------------------------|-------------------|------------|
| Temperature  | 26 °C                    | Relative Humidity | 56%        |
| Test Voltage | AC 120V/60Hz             | Polarization      | Horizontal |
| Test Mode    | Mode 3(Mode3 worst mode) |                   |            |

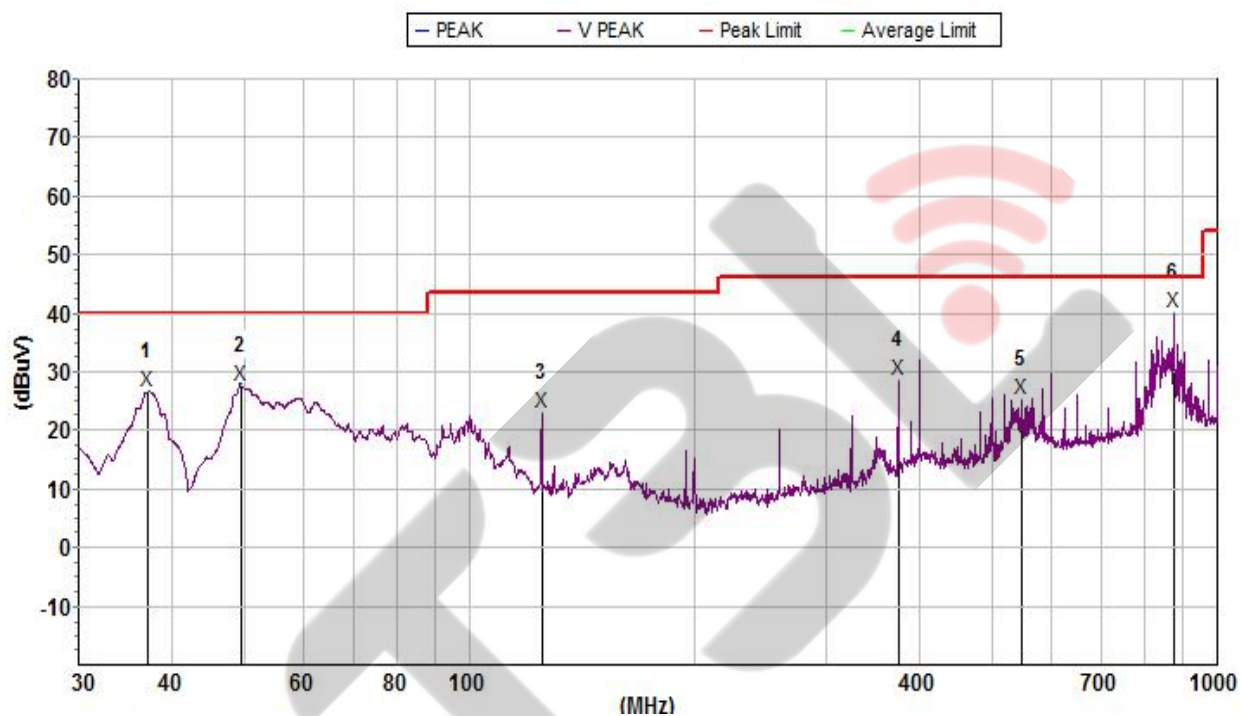
Low Channel (802.11 n20/ 5180 MHz)



| Mk. | Freq.(MHz) | Level(d BuV/m) | Limit(dB uV/m) | Margin (dB) | Ant.F/G.( dB/m) | Amp.G.( dB) | Cbl.L .(dB) | Pol. |
|-----|------------|----------------|----------------|-------------|-----------------|-------------|-------------|------|
| 1   | 49.359419  | 26.1           | 40.0           | 13.9        | 13.6            | 32.6        | 0.8         | H    |
| 2   | 84.701941  | 24.1           | 40.0           | 15.9        | 9.4             | 32.9        | 1.0         | H    |
| 3   | 125.006589 | 24.3           | 43.5           | 19.2        | 12.5            | 32.9        | 1.4         | H    |
| 4   | 259.688742 | 30.1           | 46.0           | 15.9        | 11.8            | 32.8        | 2.6         | H    |
| 5   | 374.622581 | 31.1           | 46.0           | 14.9        | 13.6            | 32.4        | 2.7         | H    |
| 6   | 649.659681 | 40.0           | 46.0           | 6.0         | 16.2            | 32.3        | 3.4         | H    |

|              |                          |                   |          |
|--------------|--------------------------|-------------------|----------|
| Temperature  | 26 °C                    | Relative Humidity | 56%      |
| Test Voltage | AC 120V/60Hz             | Polarization      | Vertical |
| Test Mode    | Mode 3(Mode3 worst mode) |                   |          |

Low Channel  
(802.11n20/5180MHz)

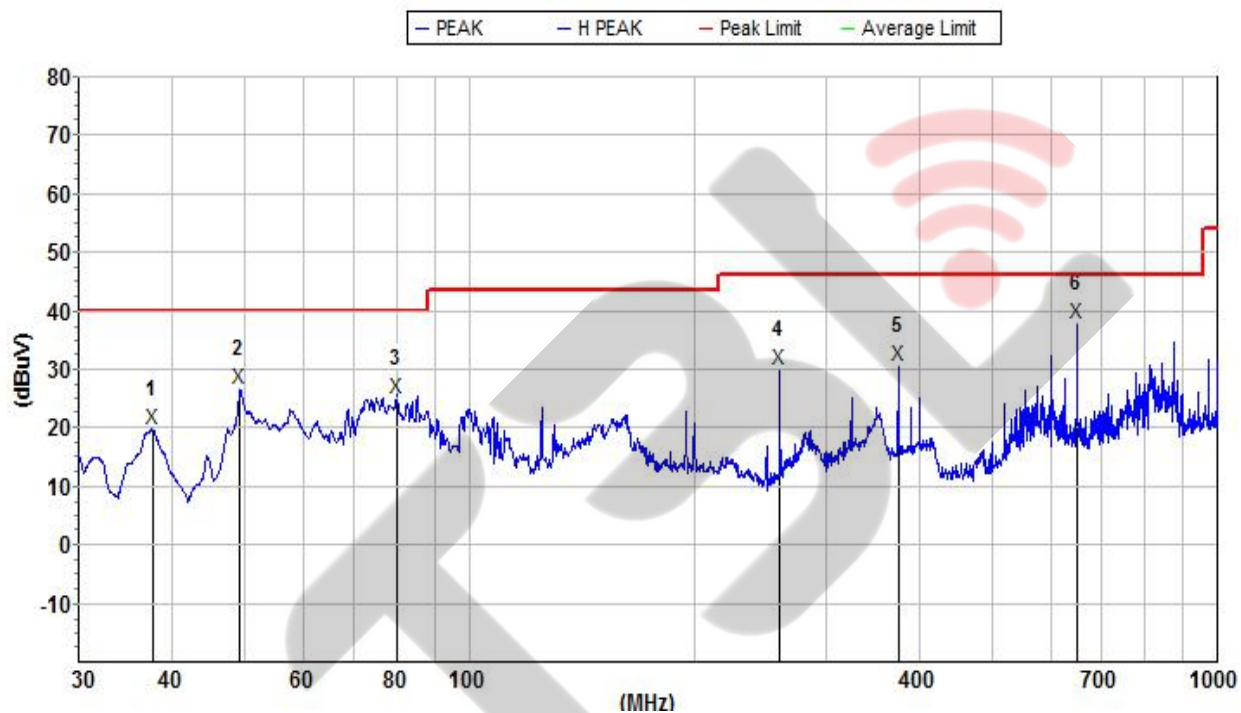


| Mk. | Freq.(MHz) | Level(dBuV/m) | Limit(dBuV/m) | Margin (dB) | Ant.F/G.(dB/m) | Amp.G.(dB) | Cbl.L.(dB) | Pol. |
|-----|------------|---------------|---------------|-------------|----------------|------------|------------|------|
| 1   | 37.220165  | 26.8          | 40.0          | 13.2        | 13.7           | 32.3       | 0.8        | V    |
| 2   | 49.619725  | 27.7          | 40.0          | 12.3        | 13.6           | 32.6       | 0.8        | V    |
| 3   | 125.006589 | 23.2          | 43.5          | 20.3        | 12.5           | 32.9       | 1.4        | V    |
| 4   | 374.622581 | 28.6          | 46.0          | 17.4        | 14.3           | 32.4       | 2.7        | V    |
| 5   | 549.019455 | 25.5          | 46.0          | 20.5        | 17.4           | 32.4       | 3.1        | V    |
| 6   | 873.713746 | 40.1          | 46.0          | 5.9         | 21.3           | 31.8       | 3.6        | V    |



|              |                          |                   |            |
|--------------|--------------------------|-------------------|------------|
| Temperature  | 26 °C                    | Relative Humidity | 56%        |
| Test Voltage | AC 120V/60Hz             | Polarization      | Horizontal |
| Test Mode    | Mode 3(Mode3 worst mode) |                   |            |

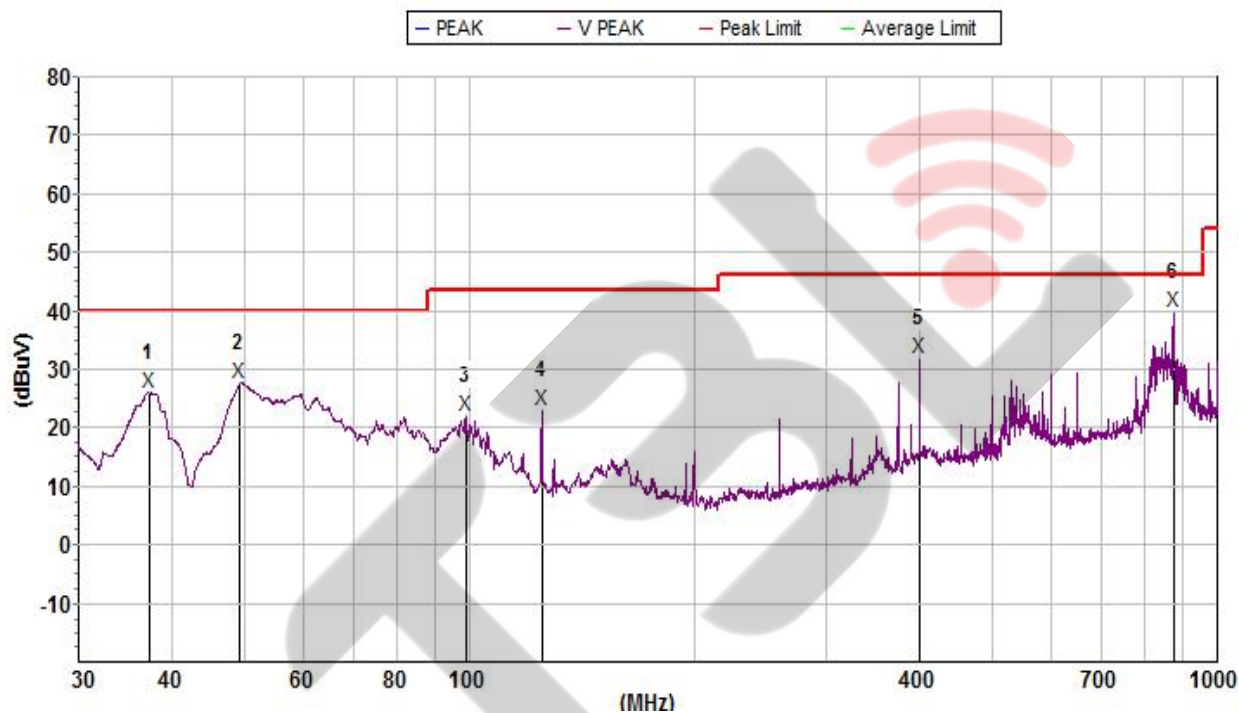
Mid Channel (802.11 n20/ 5220 MHz)



| Mk. | Freq.(MHz) | Level(dBuV/m) | Limit(dBuV/m) | Margin (dB) | Ant.F/G.(dB/m) | Amp.G.(dB) | Cbl.L.(dB) | Pol. |
|-----|------------|---------------|---------------|-------------|----------------|------------|------------|------|
| 1   | 37.745902  | 19.9          | 40.0          | 20.1        | 13.8           | 32.3       | 0.8        | H    |
| 2   | 49.359419  | 26.7          | 40.0          | 13.3        | 13.6           | 32.6       | 0.8        | H    |
| 3   | 79.800282  | 25.1          | 40.0          | 14.9        | 9.3            | 32.9       | 0.9        | H    |
| 4   | 259.688742 | 30.0          | 46.0          | 16.0        | 11.8           | 32.8       | 2.6        | H    |
| 5   | 374.622581 | 30.7          | 46.0          | 15.3        | 13.6           | 32.4       | 2.7        | H    |
| 6   | 649.659681 | 37.9          | 46.0          | 8.1         | 16.2           | 32.3       | 3.4        | H    |

|              |                          |                   |          |
|--------------|--------------------------|-------------------|----------|
| Temperature  | 26 °C                    | Relative Humidity | 56%      |
| Test Voltage | AC 120V/60Hz             | Polarization      | Vertical |
| Test Mode    | Mode 3(Mode3 worst mode) |                   |          |

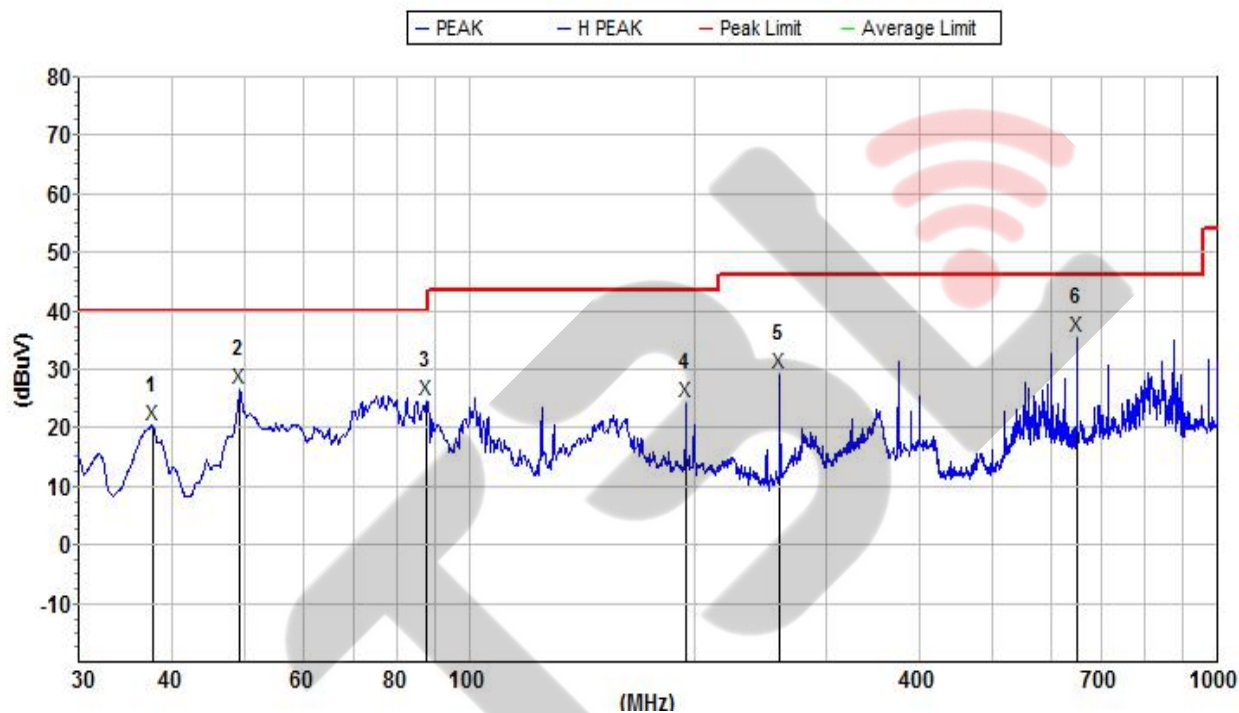
Mid Channel (802.11 n20/ 5220 MHz)



| Mk. | Freq.(MHz) | Level(dBuV/m) | Limit(dBuV/m) | Margin (dB) | Ant.F/G.(dB/m) | Amp.G.(dB) | Cbl.L.(dB) | Pol. |
|-----|------------|---------------|---------------|-------------|----------------|------------|------------|------|
| 1   | 37.285480  | 26.1          | 40.0          | 13.9        | 13.7           | 32.3       | 0.8        | V    |
| 2   | 49.359419  | 27.7          | 40.0          | 12.3        | 13.6           | 32.6       | 0.8        | V    |
| 3   | 98.832556  | 22.2          | 43.5          | 21.3        | 10.1           | 32.9       | 1.4        | V    |
| 4   | 125.006589 | 23.1          | 43.5          | 20.4        | 12.5           | 32.9       | 1.4        | V    |
| 5   | 399.730428 | 31.9          | 46.0          | 14.1        | 14.7           | 32.3       | 2.7        | V    |
| 6   | 873.713746 | 39.9          | 46.0          | 6.1         | 21.3           | 31.8       | 3.6        | V    |

|              |                          |                   |            |
|--------------|--------------------------|-------------------|------------|
| Temperature  | 26 °C                    | Relative Humidity | 56%        |
| Test Voltage | AC 120V/60Hz             | Polarization      | Horizontal |
| Test Mode    | Mode 3(Mode3 worst mode) |                   |            |

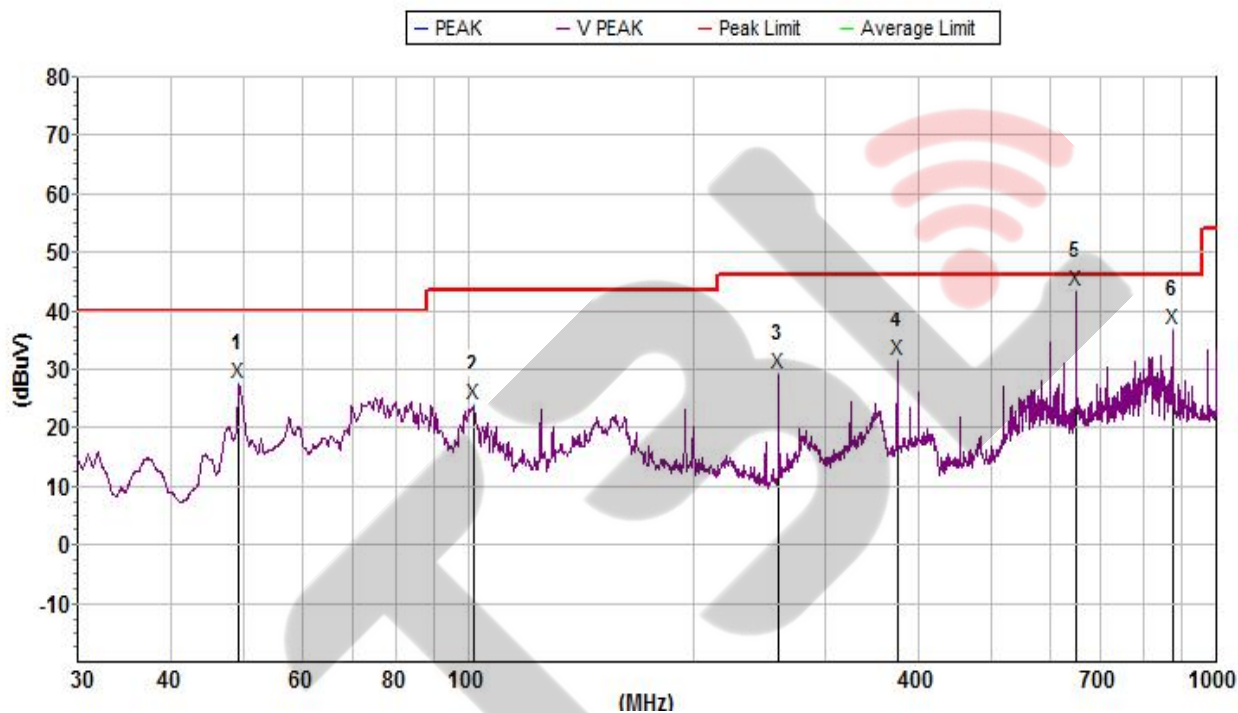
High Channel (802.11 n20/ 5240 MHz)



| Mk. | Freq.(MHz) | Level(dBuV/m) | Limit(dBuV/m) | Margin (dB) | Ant.F/G.(dB/m) | Amp.G.(dB) | Cbl.L.(dB) | Pol. |
|-----|------------|---------------|---------------|-------------|----------------|------------|------------|------|
| 1   | 37.745902  | 20.6          | 40.0          | 19.4        | 13.8           | 32.3       | 0.8        | H    |
| 2   | 49.359419  | 26.6          | 40.0          | 13.4        | 13.6           | 32.6       | 0.8        | H    |
| 3   | 87.571081  | 24.9          | 40.0          | 15.1        | 9.4            | 32.9       | 1.1        | H    |
| 4   | 194.794668 | 24.5          | 43.5          | 19.0        | 10.2           | 32.8       | 2.2        | H    |
| 5   | 259.688742 | 29.4          | 46.0          | 16.6        | 11.8           | 32.8       | 2.6        | H    |
| 6   | 649.659681 | 35.6          | 46.0          | 10.4        | 16.2           | 32.3       | 3.4        | H    |

|              |                          |                   |          |
|--------------|--------------------------|-------------------|----------|
| Temperature  | 26 °C                    | Relative Humidity | 56%      |
| Test Voltage | AC 120V/60Hz             | Polarization      | Vertical |
| Test Mode    | Mode 3(Mode3 worst mode) |                   |          |

High Channel  
(802.11n20/5240MHz)



| Mk. | Freq.(MHz) | Level(dBuV/m) | Limit(dBuV/m) | Margin (dB) | Ant.F/G.(dB/m) | Amp.G.(dB) | Cbl.L.(dB) | Pol. |
|-----|------------|---------------|---------------|-------------|----------------|------------|------------|------|
| 1   | 49.359419  | 27.6          | 40.0          | 12.4        | 13.6           | 32.6       | 0.8        | V    |
| 2   | 101.644307 | 24.0          | 43.5          | 19.5        | 10.3           | 32.9       | 1.4        | V    |
| 3   | 259.688742 | 29.2          | 46.0          | 16.8        | 11.8           | 32.8       | 2.6        | V    |
| 4   | 374.622581 | 31.5          | 46.0          | 14.5        | 14.3           | 32.4       | 2.7        | V    |
| 5   | 649.659681 | 43.5          | 46.0          | 2.5         | 19.4           | 32.3       | 3.4        | V    |
| 6   | 873.713746 | 36.9          | 46.0          | 9.1         | 21.3           | 31.8       | 3.6        | V    |

Note:

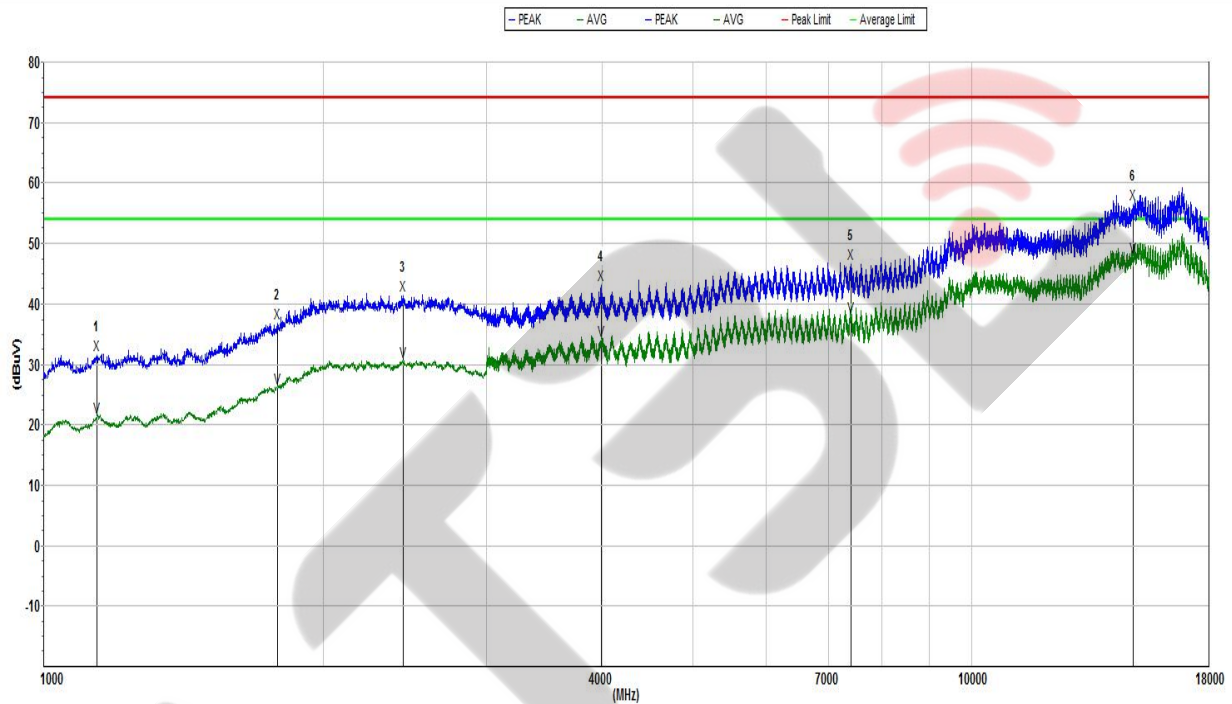
1. Factor=Ant.Factor+cable loss-Amp.Gain .
2. Level contains the factor; Margin=Limit-Level.

### 3.2.8 TEST RESULTS(Above 1000 MHz)

#### Band I 5150-5250MHz

|              |                          |                   |            |
|--------------|--------------------------|-------------------|------------|
| Temperature  | 26 °C                    | Relative Humidity | 56%        |
| Test Voltage | AC 120V/60Hz             | Polarization      | Horizontal |
| Test Mode    | Mode 3(Mode3 worst mode) |                   |            |

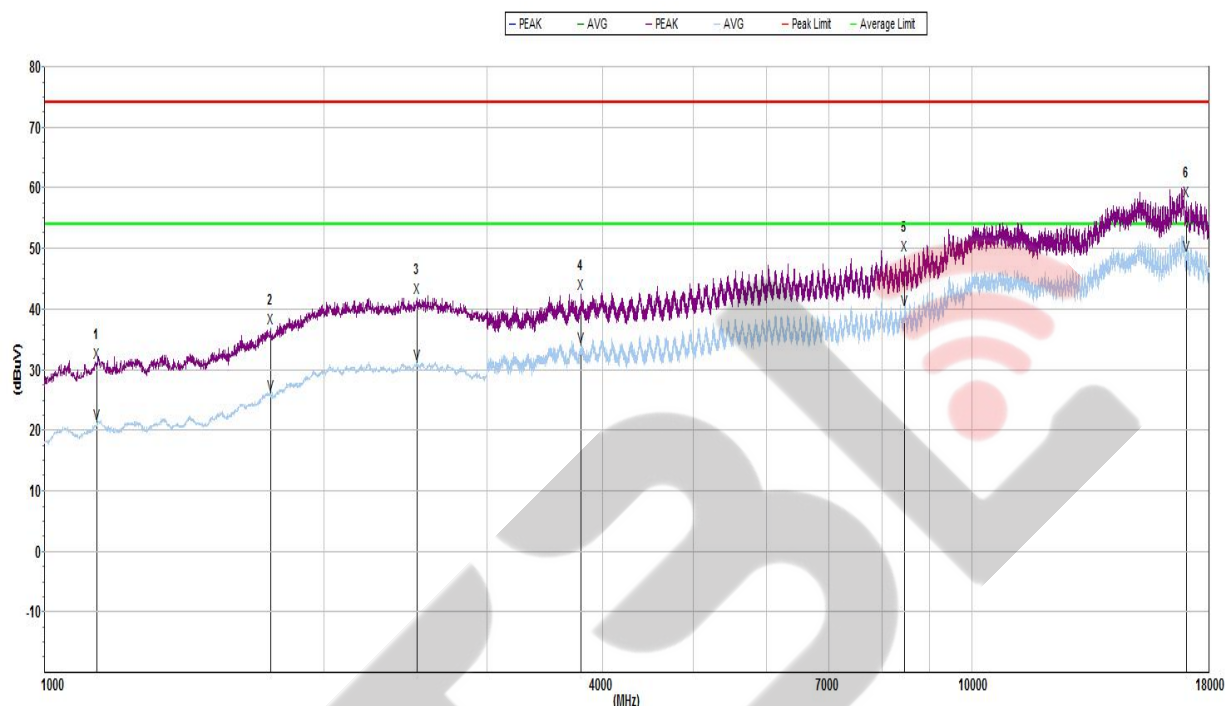
Low Channel  
(802.11n20/5180MHz)



| Mk. | Freq.(MHz)   | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Ant.F/G.<br>(dB/m) | Amp.G.<br>(dB) | Cbl.L.<br>(dB) | Pol. |
|-----|--------------|-------------------|-------------------|----------------|--------------------|----------------|----------------|------|
| PK  |              |                   |                   |                |                    |                |                |      |
| 1   | 1142.000000  | 31.6              | 74.0              | 42.4           | 20.7               | 57.3           | 2.2            | H    |
| 2   | 1787.000000  | 36.9              | 74.0              | 37.1           | 21.7               | 53.2           | 2.6            | H    |
| 3   | 2442.000000  | 41.5              | 74.0              | 32.5           | 22.8               | 50.2           | 2.8            | H    |
| 4   | 3984.000000  | 43.3              | 74.0              | 30.7           | 24.3               | 50.1           | 3.3            | H    |
| 5   | 7403.250000  | 46.7              | 74.0              | 27.3           | 25.7               | 48.8           | 4.6            | H    |
| 6   | 14907.750000 | 56.6              | 74.0              | 17.4           | 30.4               | 46.9           | 6.3            | H    |
| AVG |              |                   |                   |                |                    |                |                |      |
| 1   | 1142.000000  | 21.3              | 54.0              | 32.7           | 20.7               | 57.3           | 2.2            | H    |
| 2   | 1787.000000  | 26.1              | 54.0              | 27.9           | 21.7               | 53.2           | 2.6            | H    |
| 3   | 2442.000000  | 30.5              | 54.0              | 23.5           | 22.8               | 50.2           | 2.8            | H    |
| 4   | 3984.000000  | 34.0              | 54.0              | 20.0           | 24.3               | 50.1           | 3.3            | H    |
| 5   | 7403.250000  | 38.0              | 54.0              | 16.0           | 25.7               | 48.8           | 4.6            | H    |
| 6   | 14907.750000 | 47.9              | 54.0              | 6.1            | 30.4               | 46.9           | 6.3            | H    |

|              |                          |                   |          |
|--------------|--------------------------|-------------------|----------|
| Temperature  | 26 °C                    | Relative Humidity | 56%      |
| Test Voltage | AC 120V/60Hz             | Polarization      | Vertical |
| Test Mode    | Mode 3(Mode3 worst mode) |                   |          |

Low Channel  
(802.11n20/5180MHz)

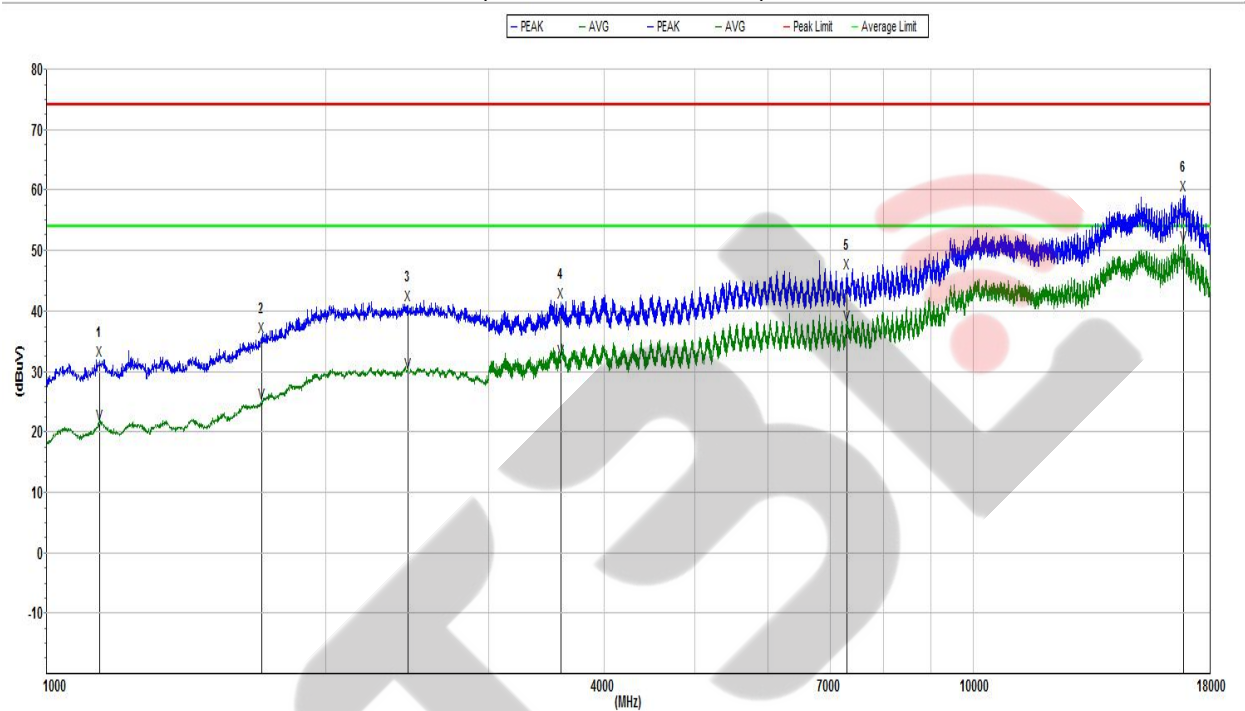


| Mk. | Freq.(MHz)   | Level (dBuV /m) | Limit (dBuV/m) | Margin (dB) | Ant.F/G. (dB/m) | Amp.G. (dB) | Cbl.L. (dB) | Pol. |
|-----|--------------|-----------------|----------------|-------------|-----------------|-------------|-------------|------|
| PK  |              |                 |                |             |                 |             |             |      |
| 1   | 1140.000000  | 31.3            | 74.0           | 42.7        | 20.7            | 57.3        | 2.2         | V    |
| 2   | 1752.000000  | 36.9            | 74.0           | 37.1        | 21.6            | 53.7        | 2.6         | V    |
| 3   | 2523.000000  | 41.9            | 74.0           | 32.1        | 23.4            | 50.3        | 2.8         | V    |
| 4   | 3789.750000  | 42.5            | 74.0           | 31.5        | 24.7            | 50.3        | 3.2         | V    |
| 5   | 8458.500000  | 48.9            | 74.0           | 25.1        | 27.1            | 48.6        | 5.1         | V    |
| 6   | 17040.750000 | 57.8            | 74.0           | 16.2        | 31.6            | 47.3        | 6.9         | V    |
| AVG |              |                 |                |             |                 |             |             |      |
| 1   | 1140.000000  | 21.1            | 54.0           | 32.9        | 20.7            | 57.3        | 2.2         | V    |
| 2   | 1752.000000  | 26.0            | 54.0           | 28.0        | 21.6            | 53.7        | 2.6         | V    |
| 3   | 2523.000000  | 30.9            | 54.0           | 23.1        | 23.4            | 50.3        | 2.8         | V    |
| 4   | 3789.750000  | 33.8            | 54.0           | 20.2        | 24.7            | 50.3        | 3.2         | V    |
| 5   | 8458.500000  | 39.9            | 54.0           | 14.1        | 27.1            | 48.6        | 5.1         | V    |
| 6   | 17040.750000 | 48.9            | 54.0           | 5.1         | 31.6            | 47.3        | 6.9         | V    |



|              |                          |                   |            |
|--------------|--------------------------|-------------------|------------|
| Temperature  | 26 °C                    | Relative Humidity | 56%        |
| Test Voltage | AC 120V/60Hz             | Polarization      | Horizontal |
| Test Mode    | Mode 3(Mode3 worst mode) |                   |            |

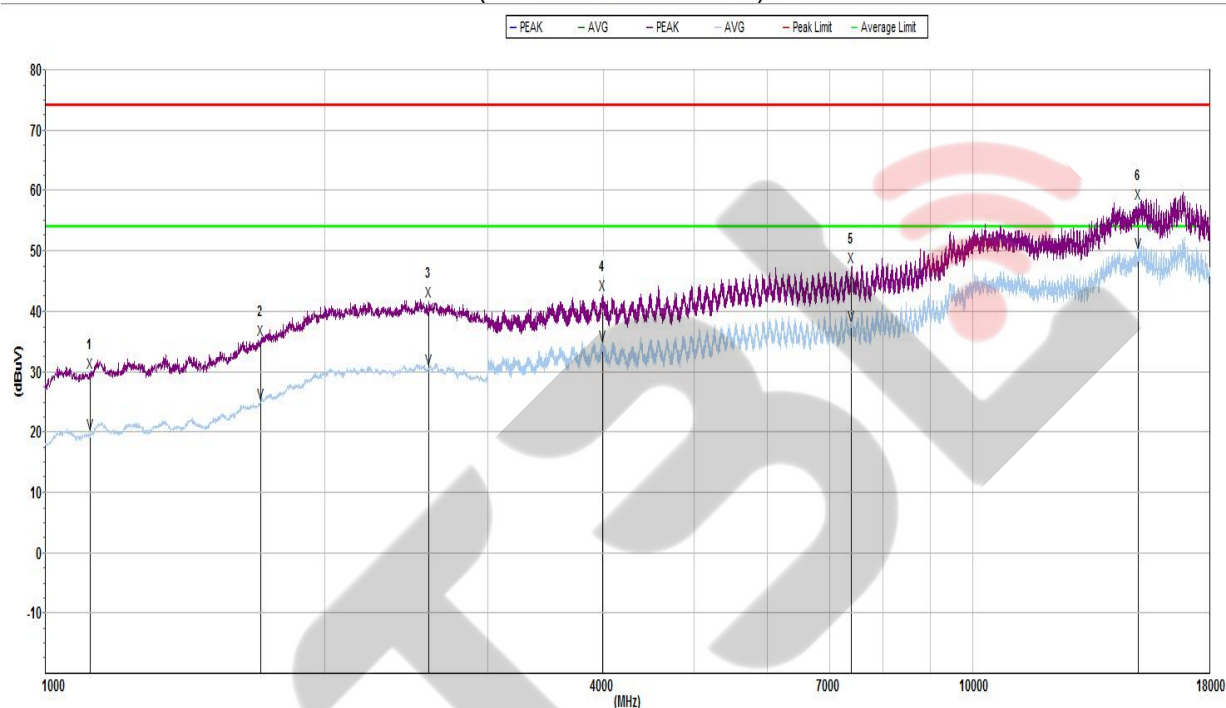
Mid Channel  
(802.11n20/5220MHz)



| Mk. | Freq.(MHz)   | Level (dBuV /m) | Limit (dBuV/m) | Margin (dB) | Ant.F/G. (dB/m) | Amp.G. (dB) | Cbl.L. (dB) | Pol. |
|-----|--------------|-----------------|----------------|-------------|-----------------|-------------|-------------|------|
| PK  |              |                 |                |             |                 |             |             |      |
| 1   | 1141.000000  | 31.8            | 74.0           | 42.2        | 20.7            | 57.3        | 2.2         | H    |
| 2   | 1708.000000  | 35.8            | 74.0           | 38.2        | 21.4            | 54.3        | 2.6         | H    |
| 3   | 2455.000000  | 41.0            | 74.0           | 33.0        | 22.8            | 50.2        | 2.8         | H    |
| 4   | 3591.000000  | 41.5            | 74.0           | 32.5        | 24.2            | 50.4        | 3.2         | H    |
| 5   | 7302.000000  | 46.4            | 74.0           | 27.6        | 25.7            | 48.8        | 4.5         | H    |
| 6   | 16832.250000 | 59.2            | 74.0           | 14.8        | 30.9            | 47.4        | 6.8         | H    |
| AVG |              |                 |                |             |                 |             |             |      |
| 1   | 1141.000000  | 21.3            | 54.0           | 32.7        | 20.7            | 57.3        | 2.2         | H    |
| 2   | 1708.000000  | 24.9            | 54.0           | 29.1        | 21.4            | 54.3        | 2.6         | H    |
| 3   | 2455.000000  | 29.9            | 54.0           | 24.1        | 22.8            | 50.2        | 2.8         | H    |
| 4   | 3591.000000  | 32.1            | 54.0           | 21.9        | 24.2            | 50.4        | 3.2         | H    |
| 5   | 7302.000000  | 37.8            | 54.0           | 16.2        | 25.7            | 48.8        | 4.5         | H    |
| 6   | 16832.250000 | 50.8            | 54.0           | 3.2         | 30.9            | 47.4        | 6.8         | H    |

|              |                          |                   |          |
|--------------|--------------------------|-------------------|----------|
| Temperature  | 26 °C                    | Relative Humidity | 56%      |
| Test Voltage | AC 120V/60Hz             | Polarization      | Vertical |
| Test Mode    | Mode 3(Mode3 worst mode) |                   |          |

Mid Channel  
(802.11n20/5220MHz)

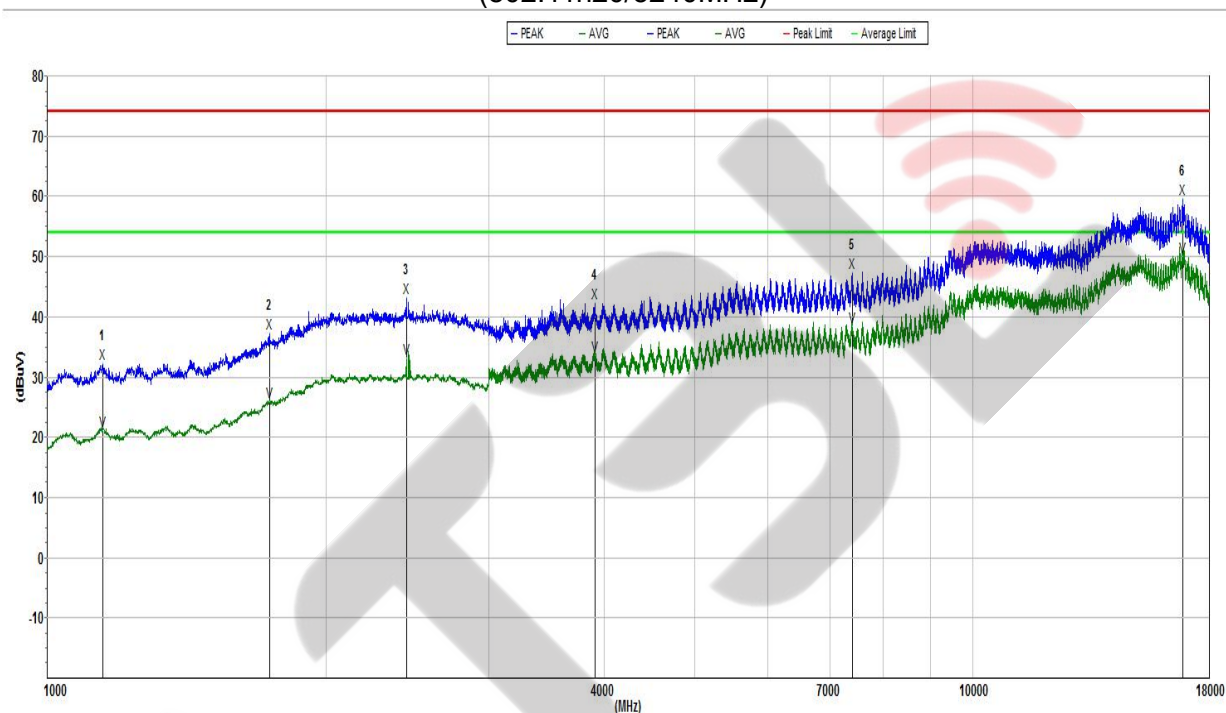


| Mk. | Freq.(MHz)   | Level<br>(dBuV<br>/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Ant.F/G.<br>(dB/m) | Amp.G.<br>(dB) | Cbl.L.<br>(dB) | Pol. |
|-----|--------------|-----------------------|-------------------|----------------|--------------------|----------------|----------------|------|
| PK  |              |                       |                   |                |                    |                |                |      |
| 1   | 1118.000000  | 29.9                  | 74.0              | 44.1           | 20.5               | 57.3           | 2.2            | V    |
| 2   | 1706.000000  | 35.3                  | 74.0              | 38.7           | 21.5               | 54.3           | 2.6            | V    |
| 3   | 2590.000000  | 41.6                  | 74.0              | 32.4           | 23.6               | 50.5           | 2.9            | V    |
| 4   | 3988.500000  | 42.7                  | 74.0              | 31.3           | 24.8               | 50.1           | 3.3            | V    |
| 5   | 7388.250000  | 47.3                  | 74.0              | 26.7           | 26.5               | 48.8           | 4.6            | V    |
| 6   | 15082.500000 | 58.0                  | 74.0              | 16.0           | 31.1               | 46.9           | 6.3            | V    |
| AVG |              |                       |                   |                |                    |                |                |      |
| 1   | 1118.000000  | 19.8                  | 54.0              | 34.2           | 20.5               | 57.3           | 2.2            | V    |
| 2   | 1706.000000  | 24.8                  | 54.0              | 29.2           | 21.5               | 54.3           | 2.6            | V    |
| 3   | 2590.000000  | 30.6                  | 54.0              | 23.4           | 23.6               | 50.5           | 2.9            | V    |
| 4   | 3988.500000  | 34.4                  | 54.0              | 19.6           | 24.8               | 50.1           | 3.3            | V    |
| 5   | 7388.250000  | 37.7                  | 54.0              | 16.3           | 26.5               | 48.8           | 4.6            | V    |
| 6   | 15082.500000 | 49.8                  | 54.0              | 4.2            | 31.1               | 46.9           | 6.3            | V    |



|              |                          |                   |            |
|--------------|--------------------------|-------------------|------------|
| Temperature  | 26 °C                    | Relative Humidity | 56%        |
| Test Voltage | AC 120V/60Hz             | Polarization      | Horizontal |
| Test Mode    | Mode 3(Mode3 worst mode) |                   |            |

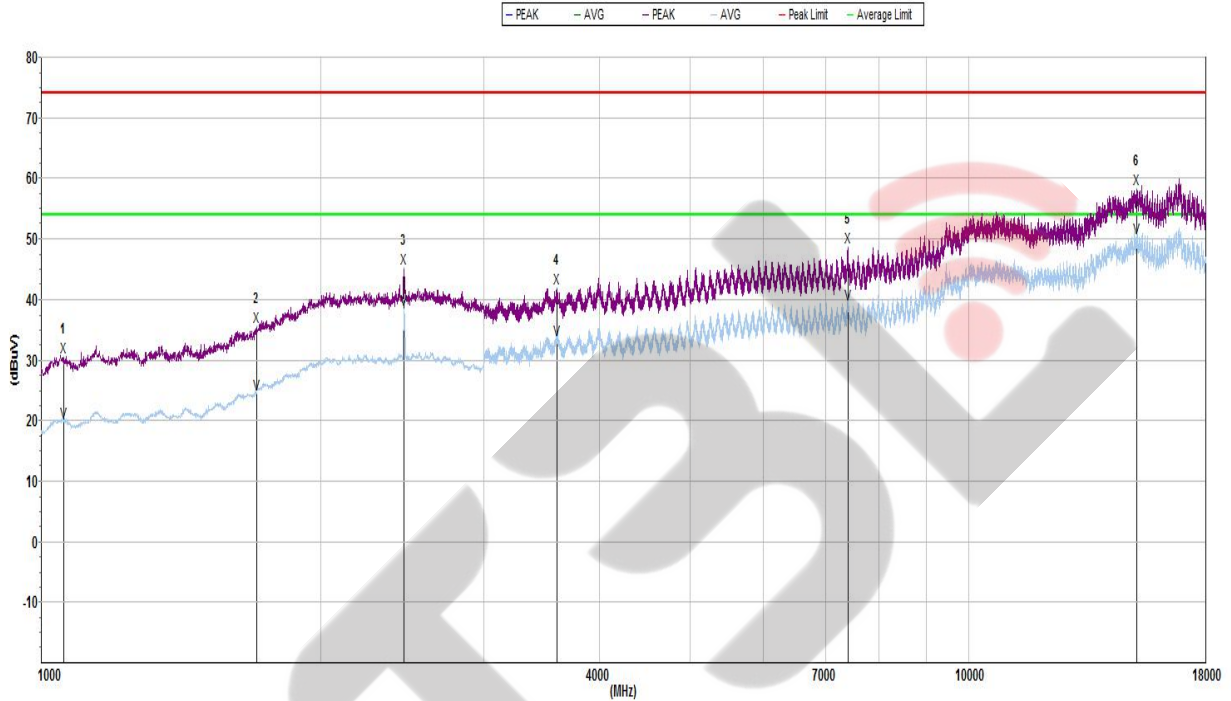
High Channel  
(802.11n20/5240MHz)



| Mk. | Freq.(MHz)   | Level<br>(dBuV<br>/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Ant.F/G.<br>(dB/m) | Amp.G.<br>(dB) | Cbl.L.<br>(dB) | Pol. |
|-----|--------------|-----------------------|-------------------|----------------|--------------------|----------------|----------------|------|
| PK  |              |                       |                   |                |                    |                |                |      |
| 1   | 1149.000000  | 32.4                  | 74.0              | 41.6           | 20.8               | 57.3           | 2.2            | H    |
| 2   | 1738.000000  | 37.3                  | 74.0              | 36.7           | 21.5               | 53.9           | 2.6            | H    |
| 3   | 2444.000000  | 43.3                  | 74.0              | 30.7           | 22.8               | 50.2           | 2.8            | H    |
| 4   | 3906.750000  | 42.3                  | 74.0              | 31.7           | 24.3               | 50.2           | 3.2            | H    |
| 5   | 7401.000000  | 47.4                  | 74.0              | 26.6           | 25.7               | 48.8           | 4.6            | H    |
| 6   | 16833.000000 | 59.6                  | 74.0              | 14.4           | 30.9               | 47.4           | 6.8            | H    |
| AVG |              |                       |                   |                |                    |                |                |      |
| 1   | 1149.000000  | 21.2                  | 54.0              | 32.8           | 20.8               | 57.3           | 2.2            | H    |
| 2   | 1738.000000  | 25.9                  | 54.0              | 28.1           | 21.5               | 53.9           | 2.6            | H    |
| 3   | 2444.000000  | 33.1                  | 54.0              | 20.9           | 22.8               | 50.2           | 2.8            | H    |
| 4   | 3906.750000  | 33.6                  | 54.0              | 20.4           | 24.3               | 50.2           | 3.2            | H    |
| 5   | 7401.000000  | 38.5                  | 54.0              | 15.5           | 25.7               | 48.8           | 4.6            | H    |
| 6   | 16833.000000 | 50.0                  | 54.0              | 4.0            | 30.9               | 47.4           | 6.8            | H    |

|              |                          |                   |          |
|--------------|--------------------------|-------------------|----------|
| Temperature  | 26 °C                    | Relative Humidity | 56%      |
| Test Voltage | AC 120V/60Hz             | Polarization      | Vertical |
| Test Mode    | Mode 3(Mode3 worst mode) |                   |          |

High Channel  
(802.11n20/5240MHz)

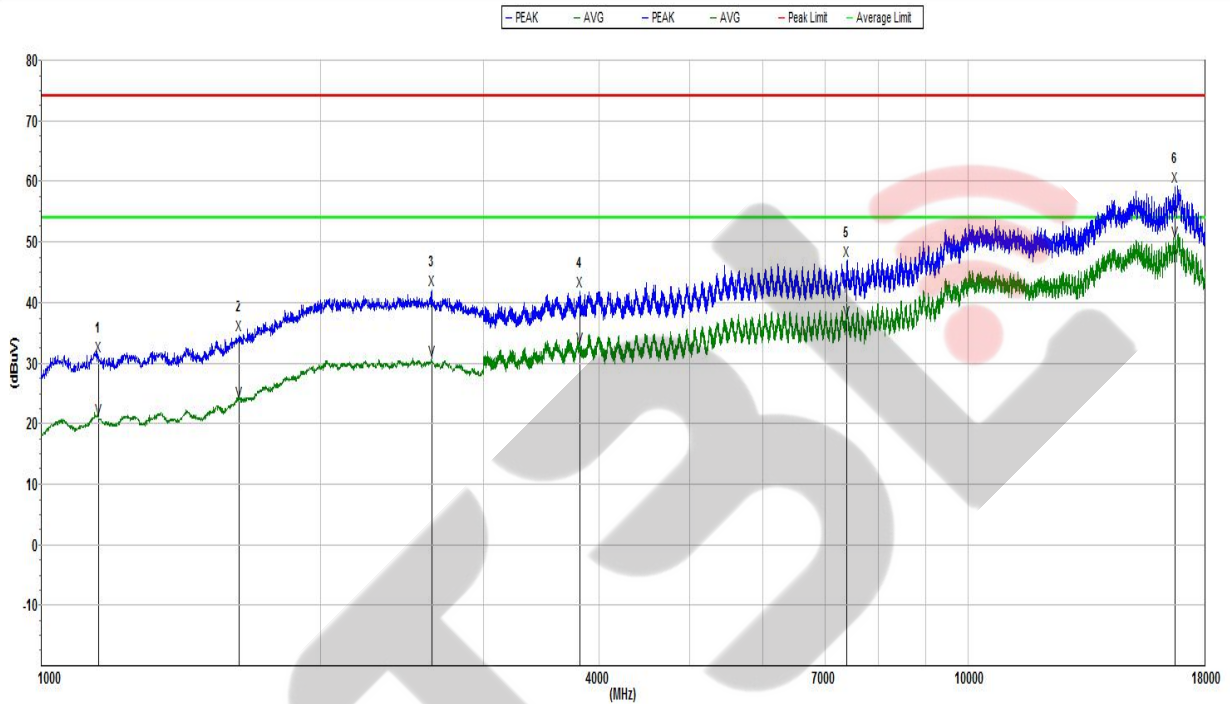


| Mk. | Freq.(MHz)   | Level (dBuV /m) | Limit (dBuV/m) | Margin (dB) | Ant.F/G. (dB/m) | Amp.G. (dB) | Cbl.L. (dB) | Pol. |
|-----|--------------|-----------------|----------------|-------------|-----------------|-------------|-------------|------|
| PK  |              |                 |                |             |                 |             |             |      |
| 1   | 1057.000000  | 30.6            | 74.0           | 43.4        | 20.2            | 57.3        | 2.2         | V    |
| 2   | 1707.000000  | 35.6            | 74.0           | 38.4        | 21.5            | 54.3        | 2.6         | V    |
| 3   | 2461.000000  | 45.3            | 74.0           | 28.7        | 23.3            | 50.2        | 2.8         | V    |
| 4   | 3595.500000  | 41.9            | 74.0           | 32.1        | 24.6            | 50.4        | 3.2         | V    |
| 5   | 7410.000000  | 48.6            | 74.0           | 25.4        | 26.5            | 48.8        | 4.6         | V    |
| 6   | 15178.500000 | 58.4            | 74.0           | 15.6        | 31.1            | 47.1        | 6.4         | V    |
| AVG |              |                 |                |             |                 |             |             |      |
| 1   | 1057.000000  | 19.8            | 54.0           | 34.2        | 20.2            | 57.3        | 2.2         | V    |
| 2   | 1707.000000  | 24.5            | 54.0           | 29.5        | 21.5            | 54.3        | 2.6         | V    |
| 3   | 2461.000000  | 38.4            | 54.0           | 15.6        | 23.3            | 50.2        | 2.8         | V    |
| 4   | 3595.500000  | 33.5            | 54.0           | 20.5        | 24.6            | 50.4        | 3.2         | V    |
| 5   | 7410.000000  | 39.2            | 54.0           | 14.8        | 26.5            | 48.8        | 4.6         | V    |
| 6   | 15178.500000 | 50.3            | 54.0           | 3.7         | 31.1            | 47.1        | 6.4         | V    |

# Band IV(5.725-5.850) GHz

|              |                          |                   |            |
|--------------|--------------------------|-------------------|------------|
| Temperature  | 26 °C                    | Relative Humidity | 56%        |
| Test Voltage | AC 120V/60Hz             | Polarization      | Horizontal |
| Test Mode    | Mode 3(Mode3 worst mode) |                   |            |

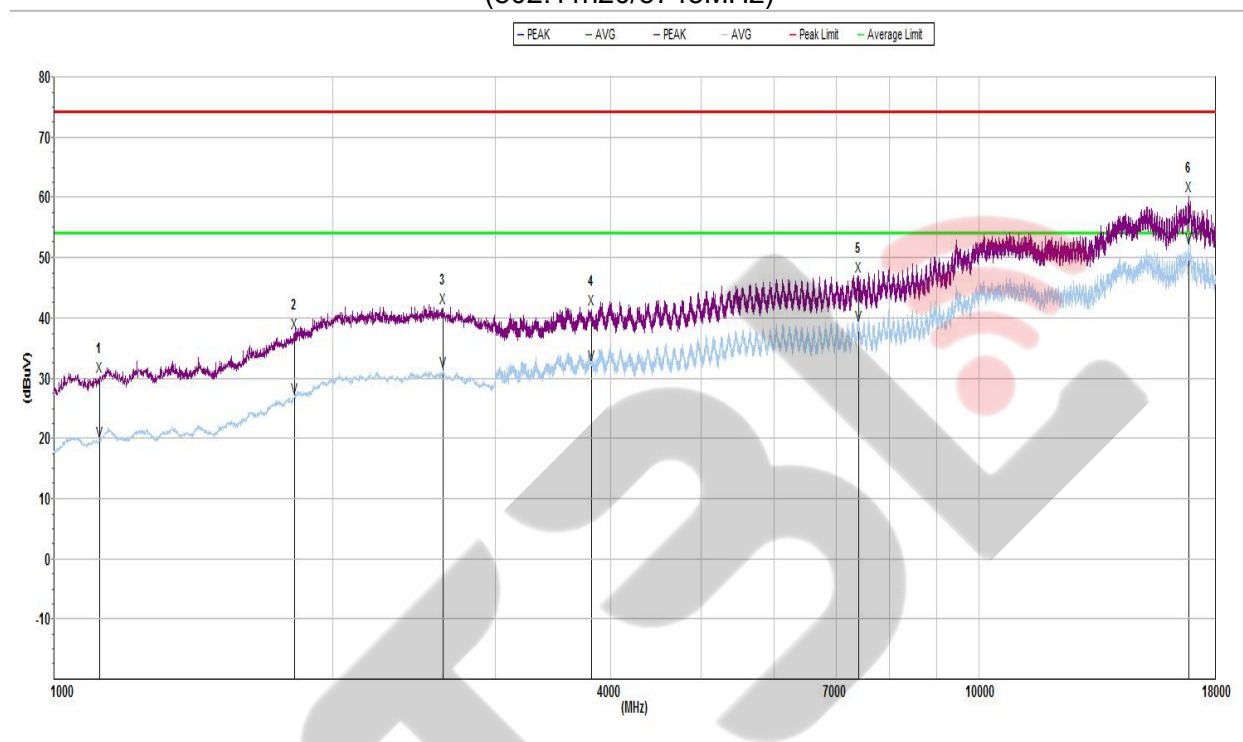
## Low Channel (802.11n20/5745MHz)



| Mk. | Freq.(MHz)   | Level<br>(dBuV/<br>m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Ant.F/G.<br>(dB/m) | Amp.G.<br>(dB) | Cbl.L.<br>(dB) | Pol. |
|-----|--------------|-----------------------|-------------------|----------------|--------------------|----------------|----------------|------|
| PK  |              |                       |                   |                |                    |                |                |      |
| 1   | 1154.000000  | 31.1                  | 74.0              | 42.9           | 20.8               | 57.3           | 2.2            | H    |
| 2   | 1636.000000  | 34.7                  | 74.0              | 39.3           | 21.3               | 55.3           | 2.5            | H    |
| 3   | 2638.000000  | 42.2                  | 74.0              | 31.8           | 23.2               | 50.6           | 2.9            | H    |
| 4   | 3809.250000  | 41.9                  | 74.0              | 32.1           | 24.3               | 50.3           | 3.2            | H    |
| 5   | 7397.250000  | 47.0                  | 74.0              | 27.0           | 25.7               | 48.8           | 4.6            | H    |
| 6   | 16721.250000 | 59.3                  | 74.0              | 14.7           | 30.9               | 47.6           | 6.8            | H    |
| AVG |              |                       |                   |                |                    |                |                |      |
| 1   | 1154.000000  | 21.0                  | 54.0              | 33.0           | 20.8               | 57.3           | 2.2            | H    |
| 2   | 1636.000000  | 23.8                  | 54.0              | 30.2           | 21.3               | 55.3           | 2.5            | H    |
| 3   | 2638.000000  | 30.5                  | 54.0              | 23.5           | 23.2               | 50.6           | 2.9            | H    |
| 4   | 3809.250000  | 32.7                  | 54.0              | 21.3           | 24.3               | 50.3           | 3.2            | H    |
| 5   | 7397.250000  | 37.2                  | 54.0              | 16.8           | 25.7               | 48.8           | 4.6            | H    |
| 6   | 16721.250000 | 50.2                  | 54.0              | 3.8            | 30.9               | 47.6           | 6.8            | H    |

|              |                          |                   |          |
|--------------|--------------------------|-------------------|----------|
| Temperature  | 26 °C                    | Relative Humidity | 56%      |
| Test Voltage | AC 120V/60Hz             | Polarization      | Vertical |
| Test Mode    | Mode 3(Mode3 worst mode) |                   |          |

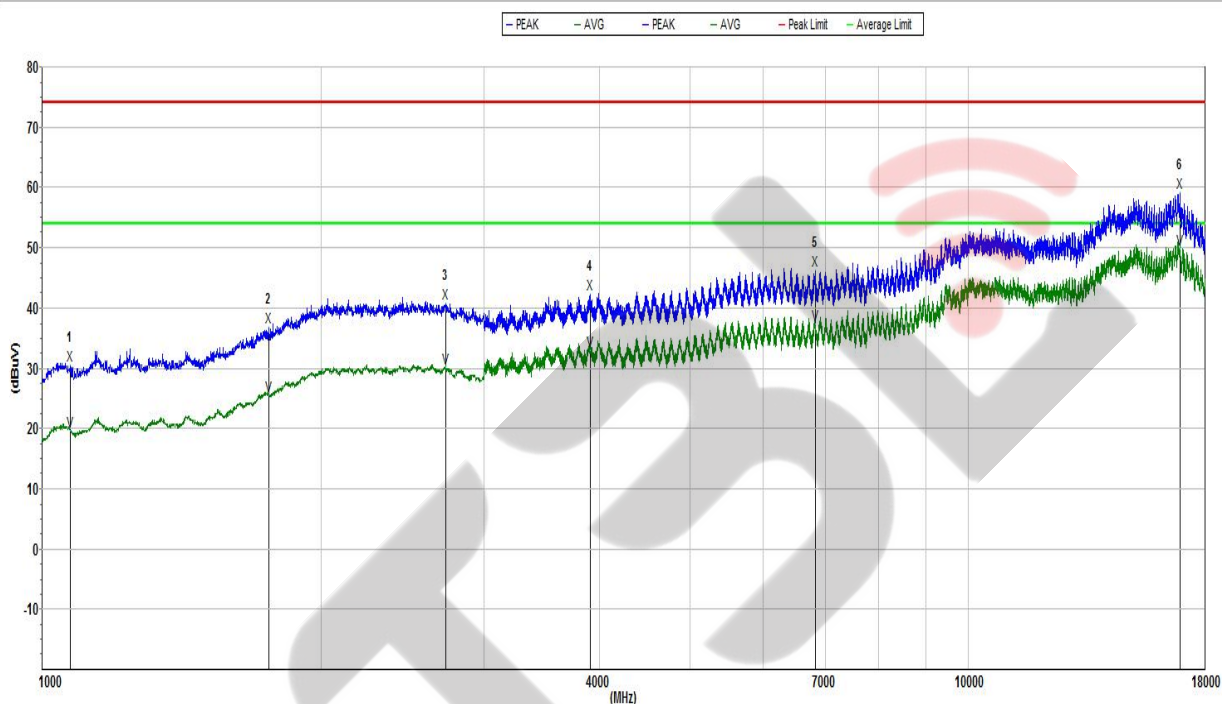
Low Channel  
(802.11n20/5745MHz)



| Mk. | Freq.(MHz)   | Level (dBuV /m) | Limit (dBuV/m) | Margin (dB) | Ant.F/G. (dB/m) | Amp.G. (dB) | Cbl.L. (dB) | Pol. |
|-----|--------------|-----------------|----------------|-------------|-----------------|-------------|-------------|------|
| PK  |              |                 |                |             |                 |             |             |      |
| 1   | 1121.000000  | 30.4            | 74.0           | 43.6        | 20.5            | 57.3        | 2.2         | V    |
| 2   | 1820.000000  | 37.5            | 74.0           | 36.5        | 21.7            | 52.7        | 2.6         | V    |
| 3   | 2635.000000  | 41.8            | 74.0           | 32.2        | 23.7            | 50.6        | 2.9         | V    |
| 4   | 3808.500000  | 41.5            | 74.0           | 32.5        | 24.7            | 50.3        | 3.2         | V    |
| 5   | 7413.000000  | 47.0            | 74.0           | 27.0        | 26.5            | 48.8        | 4.6         | V    |
| 6   | 16833.000000 | 60.3            | 74.0           | 13.7        | 31.4            | 47.4        | 6.8         | V    |
| AVG |              |                 |                |             |                 |             |             |      |
| 1   | 1121.000000  | 19.6            | 54.0           | 34.4        | 20.5            | 57.3        | 2.2         | V    |
| 2   | 1820.000000  | 26.8            | 54.0           | 27.2        | 21.7            | 52.7        | 2.6         | V    |
| 3   | 2635.000000  | 31.1            | 54.0           | 22.9        | 23.7            | 50.6        | 2.9         | V    |
| 4   | 3808.500000  | 32.3            | 54.0           | 21.7        | 24.7            | 50.3        | 3.2         | V    |
| 5   | 7413.000000  | 38.9            | 54.0           | 15.1        | 26.5            | 48.8        | 4.6         | V    |
| 6   | 16833.000000 | 51.8            | 54.0           | 2.2         | 31.4            | 47.4        | 6.8         | V    |

|              |                          |                   |            |
|--------------|--------------------------|-------------------|------------|
| Temperature  | 26 °C                    | Relative Humidity | 56%        |
| Test Voltage | AC 120V/60Hz             | Polarization      | Horizontal |
| Test Mode    | Mode 3(Mode3 worst mode) |                   |            |

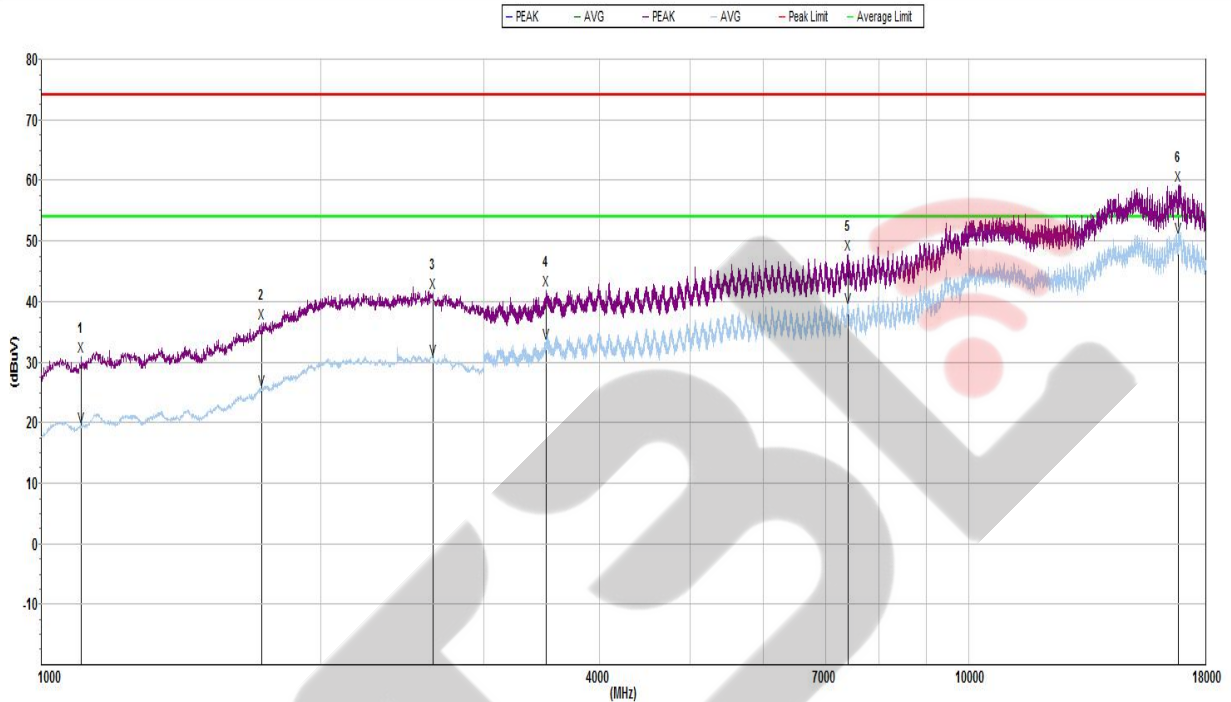
Mid Channel  
(802.11n20/5785MHz)



| Mk. | Freq.(MHz)   | Level (dBuV /m) | Limit (dBuV/m) | Margin (dB) | Ant.F/G. (dB/m) | Amp.G. (dB) | Cbl.L. (dB) | Pol. |
|-----|--------------|-----------------|----------------|-------------|-----------------|-------------|-------------|------|
| PK  |              |                 |                |             |                 |             |             |      |
| 1   | 1073.000000  | 30.6            | 74.0           | 43.4        | 20.5            | 57.3        | 2.2         | H    |
| 2   | 1756.000000  | 36.8            | 74.0           | 37.2        | 21.6            | 53.6        | 2.6         | H    |
| 3   | 2726.000000  | 40.9            | 74.0           | 33.1        | 23.4            | 50.9        | 2.9         | H    |
| 4   | 3907.500000  | 42.3            | 74.0           | 31.7        | 24.3            | 50.2        | 3.2         | H    |
| 5   | 6829.500000  | 46.3            | 74.0           | 27.7        | 25.5            | 48.9        | 4.3         | H    |
| 6   | 16921.500000 | 59.3            | 74.0           | 14.7        | 31.0            | 47.3        | 6.8         | H    |
| AVG |              |                 |                |             |                 |             |             |      |
| 1   | 1073.000000  | 19.7            | 54.0           | 34.3        | 20.5            | 57.3        | 2.2         | H    |
| 2   | 1756.000000  | 25.5            | 54.0           | 28.5        | 21.6            | 53.6        | 2.6         | H    |
| 3   | 2726.000000  | 30.1            | 54.0           | 23.9        | 23.4            | 50.9        | 2.9         | H    |
| 4   | 3907.500000  | 32.9            | 54.0           | 21.1        | 24.3            | 50.2        | 3.2         | H    |
| 5   | 6829.500000  | 37.3            | 54.0           | 16.7        | 25.5            | 48.9        | 4.3         | H    |
| 6   | 16921.500000 | 49.9            | 54.0           | 4.1         | 31.0            | 47.3        | 6.8         | H    |

|              |                          |                   |          |
|--------------|--------------------------|-------------------|----------|
| Temperature  | 26 °C                    | Relative Humidity | 56%      |
| Test Voltage | AC 120V/60Hz             | Polarization      | Vertical |
| Test Mode    | Mode 3(Mode3 worst mode) |                   |          |

Mid Channel  
(802.11n20/5785MHz)

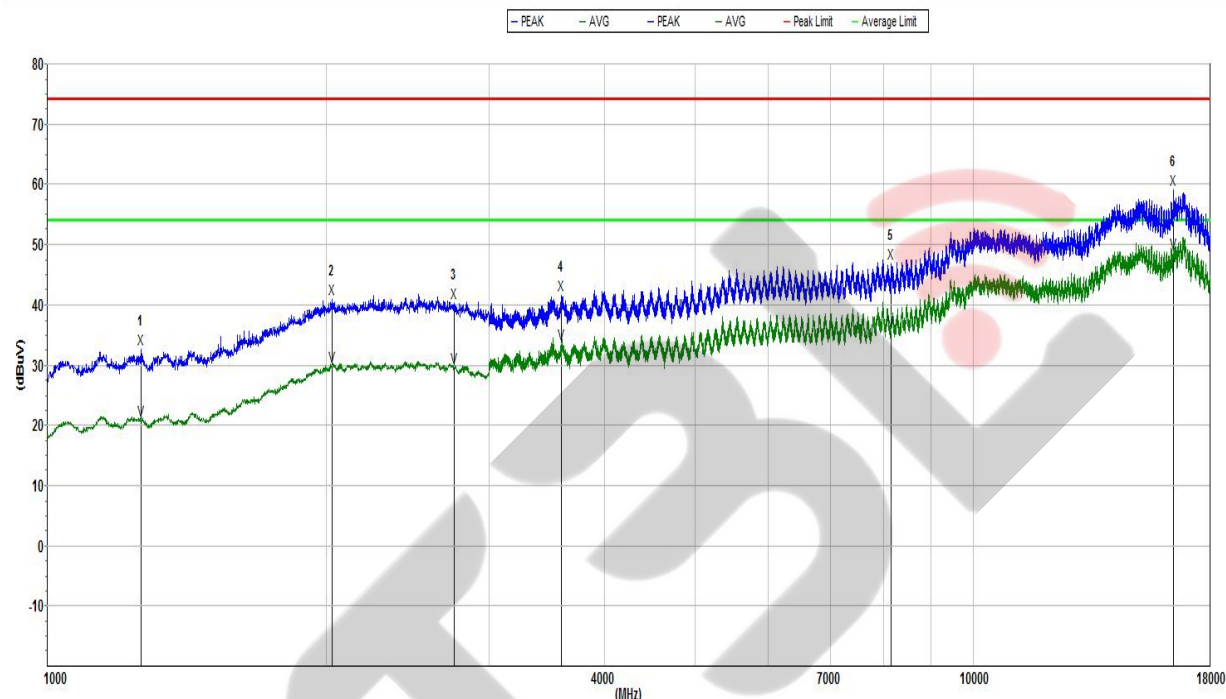


| Mk. | Freq.(MHz)   | Level (dBuV /m) | Limit (dBuV/m) | Margin (dB) | Ant.F/G. (dB/m) | Amp.G. (dB) | Cbl.L. (dB) | Pol. |
|-----|--------------|-----------------|----------------|-------------|-----------------|-------------|-------------|------|
| PK  |              |                 |                |             |                 |             |             |      |
| 1   | 1105.000000  | 31.0            | 74.0           | 43.0        | 20.4            | 57.3        | 2.2         | V    |
| 2   | 1730.000000  | 36.5            | 74.0           | 37.5        | 21.5            | 54.0        | 2.6         | V    |
| 3   | 2644.000000  | 41.5            | 74.0           | 32.5        | 23.7            | 50.7        | 2.9         | V    |
| 4   | 3504.750000  | 41.9            | 74.0           | 32.1        | 24.6            | 50.5        | 3.1         | V    |
| 5   | 7405.500000  | 47.8            | 74.0           | 26.2        | 26.5            | 48.8        | 4.6         | V    |
| 6   | 16828.500000 | 59.3            | 74.0           | 14.7        | 31.4            | 47.4        | 6.8         | V    |
| AVG |              |                 |                |             |                 |             |             |      |
| 1   | 1105.000000  | 19.3            | 54.0           | 34.7        | 20.4            | 57.3        | 2.2         | V    |
| 2   | 1730.000000  | 25.6            | 54.0           | 28.4        | 21.5            | 54.0        | 2.6         | V    |
| 3   | 2644.000000  | 30.5            | 54.0           | 23.5        | 23.7            | 50.7        | 2.9         | V    |
| 4   | 3504.750000  | 33.1            | 54.0           | 20.9        | 24.6            | 50.5        | 3.1         | V    |
| 5   | 7405.500000  | 39.0            | 54.0           | 15.0        | 26.5            | 48.8        | 4.6         | V    |
| 6   | 16828.500000 | 50.6            | 54.0           | 3.4         | 31.4            | 47.4        | 6.8         | V    |



|              |                          |                   |            |
|--------------|--------------------------|-------------------|------------|
| Temperature  | 26 °C                    | Relative Humidity | 56%        |
| Test Voltage | AC 120V/60Hz             | Polarization      | Horizontal |
| Test Mode    | Mode 3(Mode3 worst mode) |                   |            |

High Channel  
(802.11n20/5825MHz)

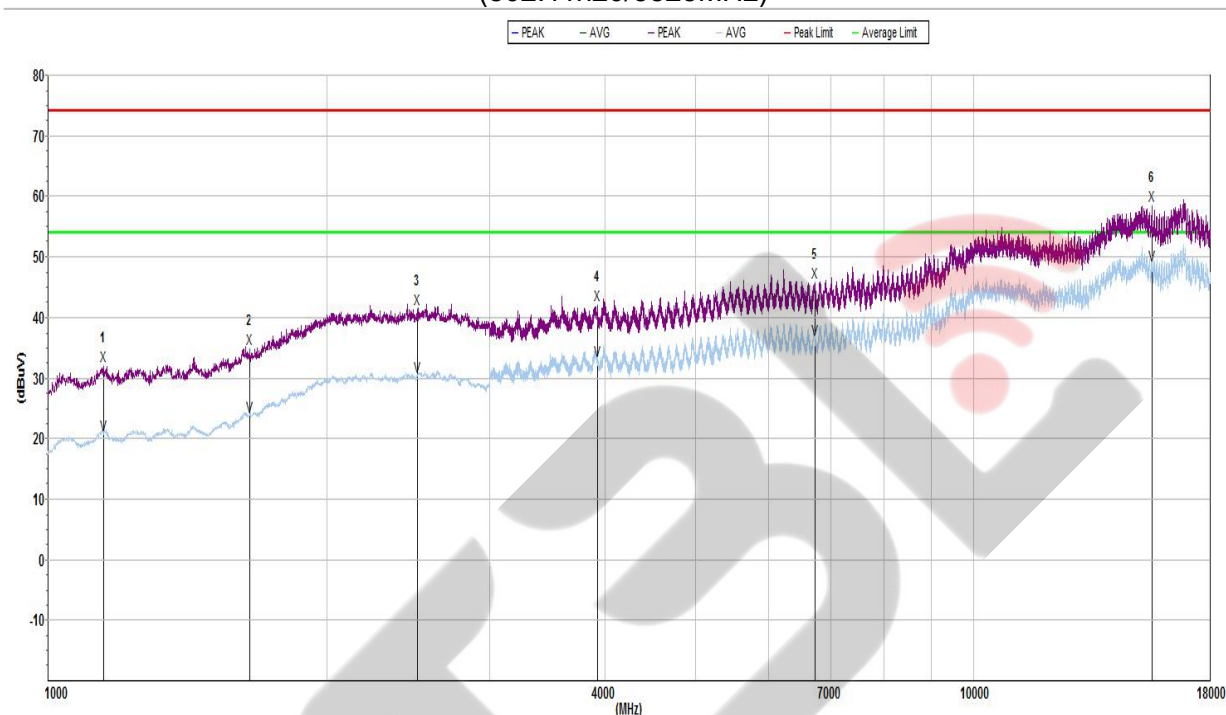


| Mk. | Freq.(MHz)   | Level (dBuV /m) | Limit (dBuV/m) | Margin (dB) | Ant.F/G. (dB/m) | Amp.G. (dB) | Cbl.L .(dB) | Pol. |
|-----|--------------|-----------------|----------------|-------------|-----------------|-------------|-------------|------|
| PK  |              |                 |                |             |                 |             |             |      |
| 1   | 1264.000000  | 32.7            | 74.0           | 41.3        | 20.7            | 57.3        | 2.3         | H    |
| 2   | 2032.000000  | 41.0            | 74.0           | 33.0        | 21.9            | 50.1        | 2.7         | H    |
| 3   | 2750.000000  | 40.4            | 74.0           | 33.6        | 23.5            | 51.0        | 2.9         | H    |
| 4   | 3591.000000  | 41.6            | 74.0           | 32.4        | 24.2            | 50.4        | 3.2         | H    |
| 5   | 8153.250000  | 47.0            | 74.0           | 27.0        | 26.2            | 48.6        | 5.0         | H    |
| 6   | 16448.250000 | 59.2            | 74.0           | 14.8        | 30.8            | 47.9        | 6.7         | H    |
| AVG |              |                 |                |             |                 |             |             |      |
| 1   | 1264.000000  | 21.0            | 54.0           | 33.0        | 20.7            | 57.3        | 2.3         | H    |
| 2   | 2032.000000  | 29.9            | 54.0           | 24.1        | 21.9            | 50.1        | 2.7         | H    |
| 3   | 2750.000000  | 29.7            | 54.0           | 24.3        | 23.5            | 51.0        | 2.9         | H    |
| 4   | 3591.000000  | 33.6            | 54.0           | 20.4        | 24.2            | 50.4        | 3.2         | H    |
| 5   | 8153.250000  | 35.9            | 54.0           | 18.1        | 26.2            | 48.6        | 5.0         | H    |
| 6   | 16448.250000 | 48.6            | 54.0           | 5.4         | 30.8            | 47.9        | 6.7         | H    |



|              |                          |                   |          |
|--------------|--------------------------|-------------------|----------|
| Temperature  | 26 °C                    | Relative Humidity | 56%      |
| Test Voltage | AC 120V/60Hz             | Polarization      | Vertical |
| Test Mode    | Mode 3(Mode3 worst mode) |                   |          |

High Channel  
(802.11n20/5825MHz)



| Mk. | Freq.(MHz)   | Level (dBuV /m) | Limit (dBuV/m) | Margin (dB) | Ant.F/G. (dB/m) | Amp.G. (dB) | Cbl.L. (dB) | Pol. |
|-----|--------------|-----------------|----------------|-------------|-----------------|-------------|-------------|------|
| PK  |              |                 |                |             |                 |             |             |      |
| 1   | 1149.000000  | 32.1            | 74.0           | 41.9        | 20.8            | 57.3        | 2.2         | V    |
| 2   | 1652.000000  | 35.0            | 74.0           | 39.0        | 21.3            | 55.1        | 2.5         | V    |
| 3   | 2504.000000  | 41.4            | 74.0           | 32.6        | 23.4            | 50.2        | 2.8         | V    |
| 4   | 3920.250000  | 42.1            | 74.0           | 31.9        | 24.7            | 50.2        | 3.2         | V    |
| 5   | 6733.500000  | 45.9            | 74.0           | 28.1        | 26.0            | 48.9        | 4.3         | V    |
| 6   | 15566.250000 | 58.6            | 74.0           | 15.4        | 31.2            | 47.8        | 6.5         | V    |
| AVG |              |                 |                |             |                 |             |             |      |
| 1   | 1149.000000  | 20.8            | 54.0           | 33.2        | 20.8            | 57.3        | 2.2         | V    |
| 2   | 1652.000000  | 23.7            | 54.0           | 30.3        | 21.3            | 55.1        | 2.5         | V    |
| 3   | 2504.000000  | 30.3            | 54.0           | 23.7        | 23.4            | 50.2        | 2.8         | V    |
| 4   | 3920.250000  | 33.0            | 54.0           | 21.0        | 24.7            | 50.2        | 3.2         | V    |
| 5   | 6733.500000  | 36.4            | 54.0           | 17.6        | 26.0            | 48.9        | 4.3         | V    |
| 6   | 15566.250000 | 48.7            | 54.0           | 5.3         | 31.2            | 47.8        | 6.5         | V    |

Note:

- Factor=Ant.Factor+cable loss-Amp.Gain .
- Level contains the factor; Margin=Limit-Level.

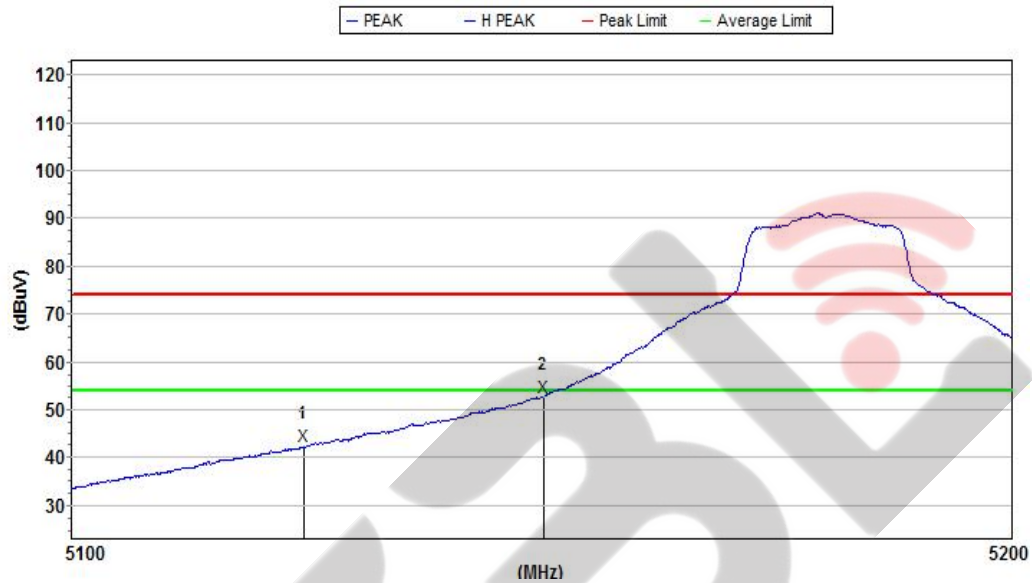
3. 802.11b, 802.11g, 802.11n (HT-20), 802.11n (HT-40) mode all have been tested, the worst case is 802.11b, only show the worst case.

4. Other 18G-40G Emission detected are more than 20dB below the limit.

### 3.2.9 TEST RESULTS (Band edgeRequirements)

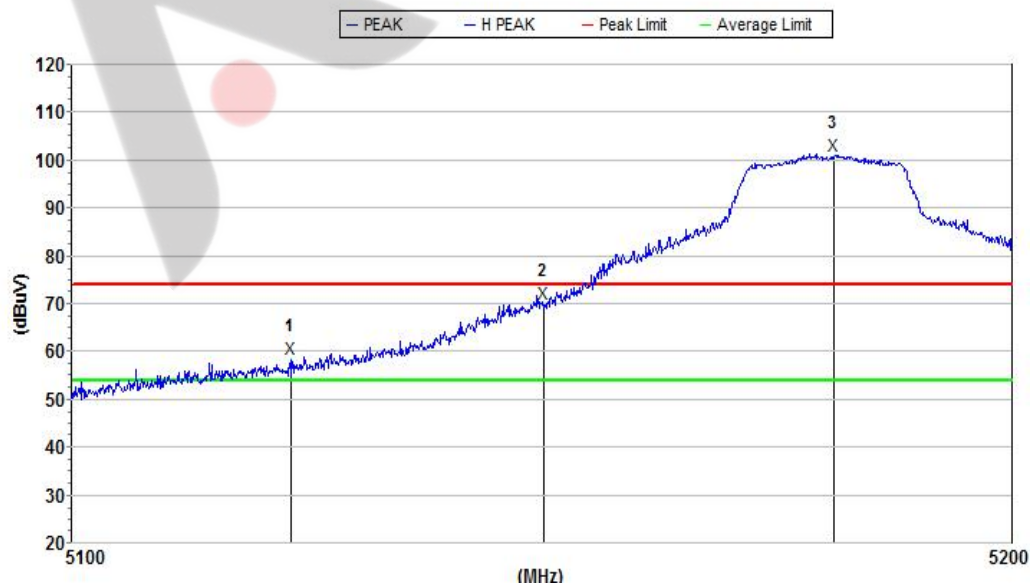
#### Band I (5.15-5.25)GHz

##### 802.11 n20/ 5180 MHz- Horizontal



| Mk.  | Freq.(MHz)  | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Ant.F/G. (dB/m) | Amp.G. (dB) | Cbl.L. (dB) | Pol. |
|------|-------------|----------------|----------------|-------------|-----------------|-------------|-------------|------|
| Avg: |             |                |                |             |                 |             |             |      |
| 1    | 5124.519717 | 42.3           | 54.0           | 11.7        | 24.8            | 49.2        | 3.7         | H    |
| 2    | 5150.000000 | 52.7           | 54.0           | 1.3         | 24.8            | 49.2        | 3.7         | H    |

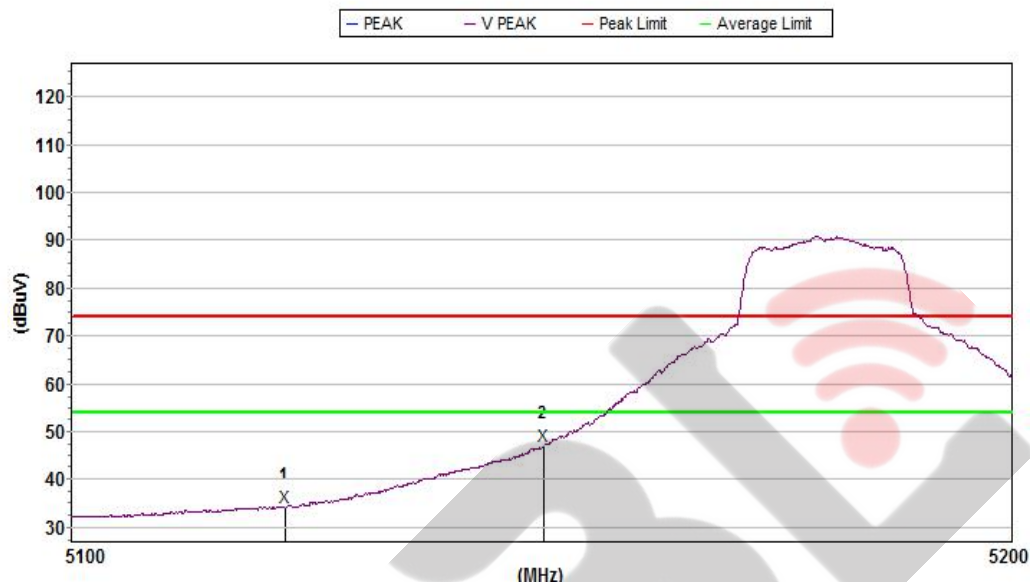
##### 802.11 n20/ 5180 MHz- Horizontal



| Mk.  | Freq.(MHz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Ant.F/G. (dB/m) | Amp.G. (dB) | Cbl.L. (dB) | Pol. |
|------|------------|----------------|----------------|-------------|-----------------|-------------|-------------|------|
| Peak |            |                |                |             |                 |             |             |      |

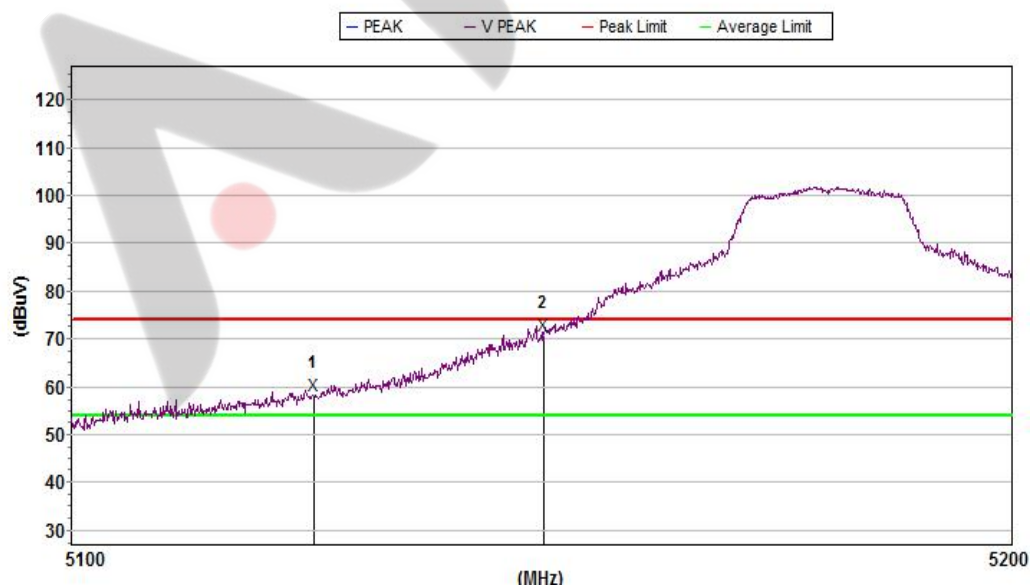
|   |             |      |      |      |      |      |     |   |
|---|-------------|------|------|------|------|------|-----|---|
| 1 | 5123.126790 | 58.6 | 74.0 | 15.4 | 24.8 | 49.2 | 3.7 | H |
| 2 | 5150.000000 | 69.9 | 74.0 | 4.1  | 24.8 | 49.2 | 3.7 | H |

## 802.11 n20/ 5180 MHz- Vertical



| Mk.  | Freq.(MHz)  | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Ant.F/G. (dB/m) | Amp.G. (dB) | Cbl.L. (dB) | Pol. |
|------|-------------|----------------|----------------|-------------|-----------------|-------------|-------------|------|
| Avg: |             |                |                |             |                 |             |             |      |
| 1    | 5122.529936 | 34.4           | 54.0           | 19.6        | 25.7            | 49.2        | 3.7         | V    |
| 2    | 5150.000000 | 47.2           | 54.0           | 6.8         | 25.6            | 49.2        | 3.7         | V    |

## 802.11 n20/ 5180 MHz- Vertical



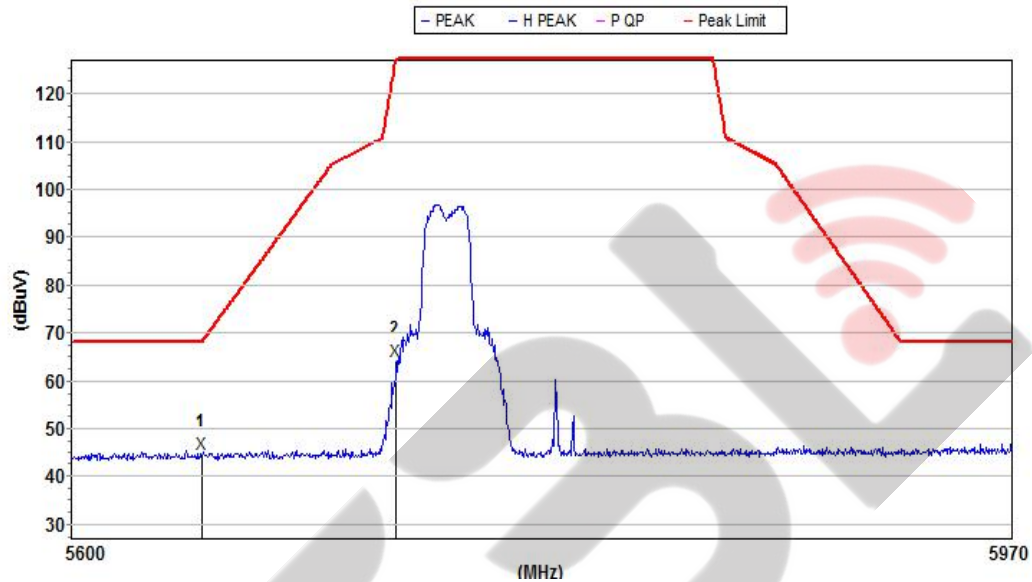
| Mk.  | Freq.(MHz)  | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Ant.F/G. (dB/m) | Amp.G. (dB) | Cbl.L. (dB) | Pol. |
|------|-------------|----------------|----------------|-------------|-----------------|-------------|-------------|------|
| Peak |             |                |                |             |                 |             |             |      |
| 1    | 5125.614426 | 58.3           | 74.0           | 15.7        | 25.7            | 49.2        | 3.7         | V    |
| 2    | 5150.000000 | 70.6           | 74.0           | 3.4         | 25.6            | 49.2        | 3.7         | V    |

## Note:

1. 802.11a , 802.11n (HT-20), 802.11n (HT-40) , 802.11ac (VHT-20), 802.11ac(VHT-40) , 802.11ac(VHT-80)mode all have been tested, the worst case is 802.11n20, only show the worst case.
2. 802.11b, 802.11g, 802.11n (HT-20), 802.11n (HT-40) mode all have been tested, the worst case is 802.11b, only show the worst case.

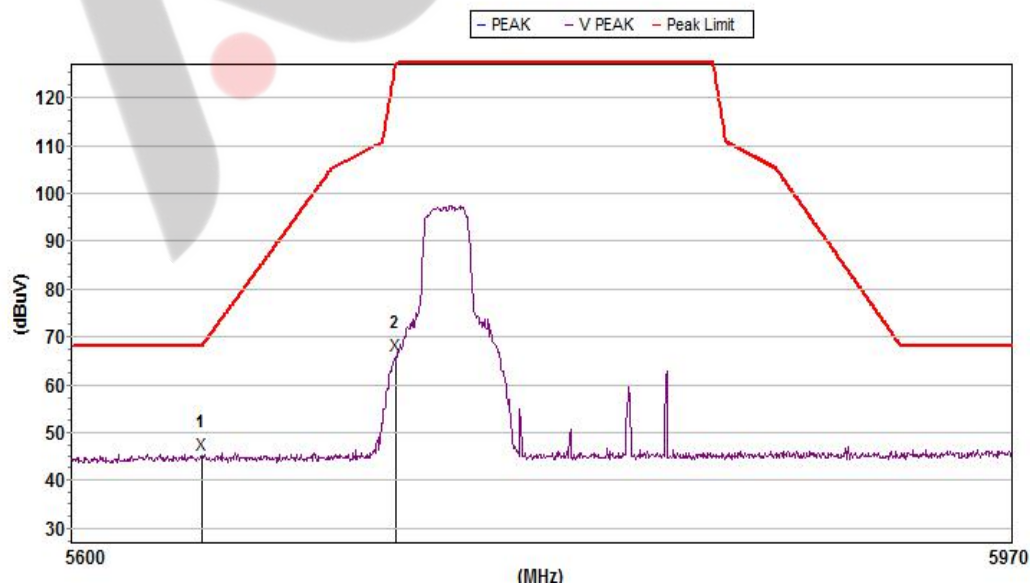
Band IV(5.725-5.85 GHz)

802.11 n20/ 5745 MHz- Horizontal



| Mk.   | Freq.(MHz)  | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Ant.F/G. (dB/m) | Amp.G. (dB) | Cbl.L. (dB) | Pol. |
|-------|-------------|----------------|----------------|-------------|-----------------|-------------|-------------|------|
| Peak: |             |                |                |             |                 |             |             |      |
| 1     | 5650.000000 | 44.9           | 68.2           | 23.3        | 25.0            | 49.0        | 4.0         | H    |
| 2     | 5725.000000 | 64.1           | 127.2          | 63.1        | 25.0            | 49.0        | 4.0         | H    |

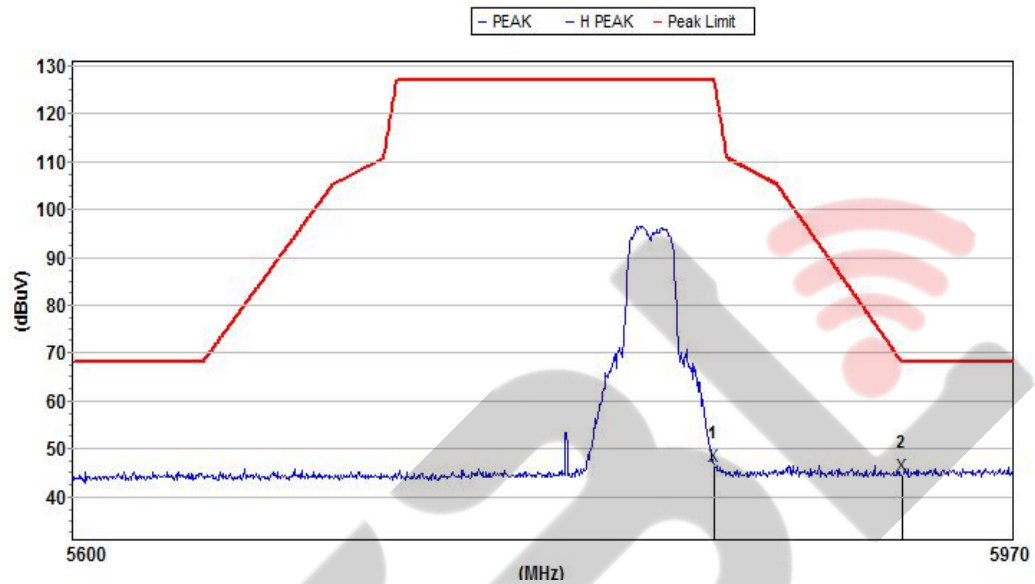
802.11 n20/ 5745 MHz- Vertical



| Mk.  | Freq.(MHz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Ant.F/G. (dB/m) | Amp.G. (dB) | Cbl.L. (dB) | Pol. |
|------|------------|----------------|----------------|-------------|-----------------|-------------|-------------|------|
| Peak |            |                |                |             |                 |             |             |      |

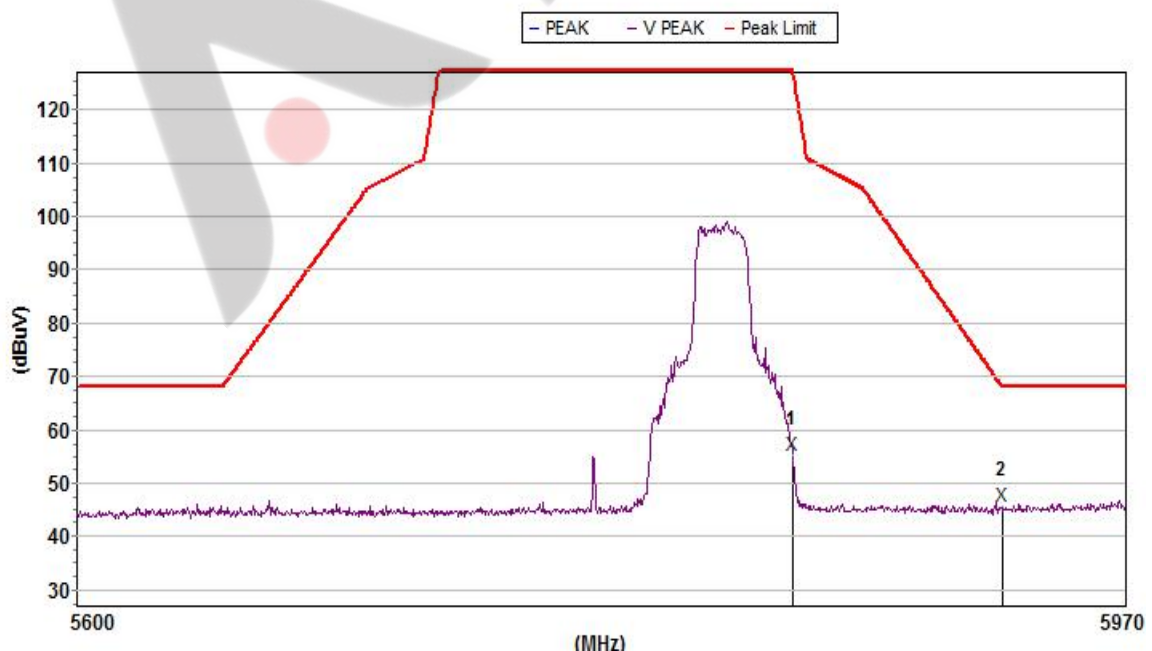
|   |             |      |       |      |      |      |     |   |
|---|-------------|------|-------|------|------|------|-----|---|
| 1 | 5650.000000 | 45.3 | 68.2  | 22.9 | 25.4 | 49.0 | 4.0 | V |
| 2 | 5725.000000 | 66.3 | 127.2 | 60.9 | 25.4 | 49.0 | 4.0 | V |

## 802.11 n20/ 5825 MHz- Horizontal



| Mk.  | Freq.(MHz)  | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Ant.F/G. (dB/m) | Amp.G. (dB) | Cbl.L. (dB) | Pol. |
|------|-------------|----------------|----------------|-------------|-----------------|-------------|-------------|------|
| Avg: |             |                |                |             |                 |             |             |      |
| 1    | 5850.000000 | 46.5           | 127.2          | 80.7        | 25.1            | 49.0        | 4.1         | H    |
| 2    | 5925.000000 | 44.4           | 68.2           | 23.8        | 25.1            | 48.9        | 4.1         | H    |

## 802.11 n20/ 5825 MHz- Vertical



| Mk.  | Freq.(MHz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Ant.F/G. (dB/m) | Amp.G. (dB) | Cbl.L. (dB) | Pol. |
|------|------------|----------------|----------------|-------------|-----------------|-------------|-------------|------|
| Peak |            |                |                |             |                 |             |             |      |

|   |             |      |       |      |      |      |     |   |
|---|-------------|------|-------|------|------|------|-----|---|
| 1 | 5850.000000 | 55.3 | 127.2 | 71.9 | 25.5 | 49.0 | 4.1 | V |
| 2 | 5925.000000 | 45.6 | 68.2  | 22.6 | 25.6 | 48.9 | 4.1 | V |

**Note:** 802.11a , 802.11n (HT-20), 802.11n (HT-40) , 802.11ac (VHT-20), 802.11ac(VHT-40) ,

802.11ac(VHT-80)mode all have been tested, the worst case is 802.11n20, only show the worst case.

#### 4.POWER SPECTRAL DENSITY TEST

##### 4.1LIMIT

- 1.For mobile and portable client devices in the 5.15-5.25 GHz band, , the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- 2.For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- 3.For the band 5.725-5.850 GHz, the peak power spectral density shall not exceed 30 dBm in any500KHz band. If transmitting antenna directional gain is greater than 6 dBi, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

##### 4.2 TEST PROCEDURE



1. The setting follows Method SA-1 of FCC KDB D02 General UNII Test Procedures New Rules v01r03.

For devices operating in the band, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (*i.e.*, 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth ( $< 1$  MHz, or  $< 500$  kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply:

- a) Set  $RBW \geq 1/T$ , where  $T$  is defined in section II.B.I.a).
- b) Set  $VBW \geq 3 RBW$ .
- c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add  $10 \log (500\text{kHz}/RBW)$  to the measured result, whereas  $RBW (< 500 \text{ kHz})$  is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
- d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add  $10 \log (1\text{MHz}/RBW)$  to the measured result, whereas  $RBW (< 1 \text{ MHz})$  is the reduced resolution bandwidth of spectrum analyzer set during measurement.
- e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 kHz for the sections 5.c) and 5.d) above, since  $RBW=100 \text{ KHz}$  is available on nearly all spectrum analyzers.



#### 4.3 DEVIATION FROM STANDARD

No deviation.

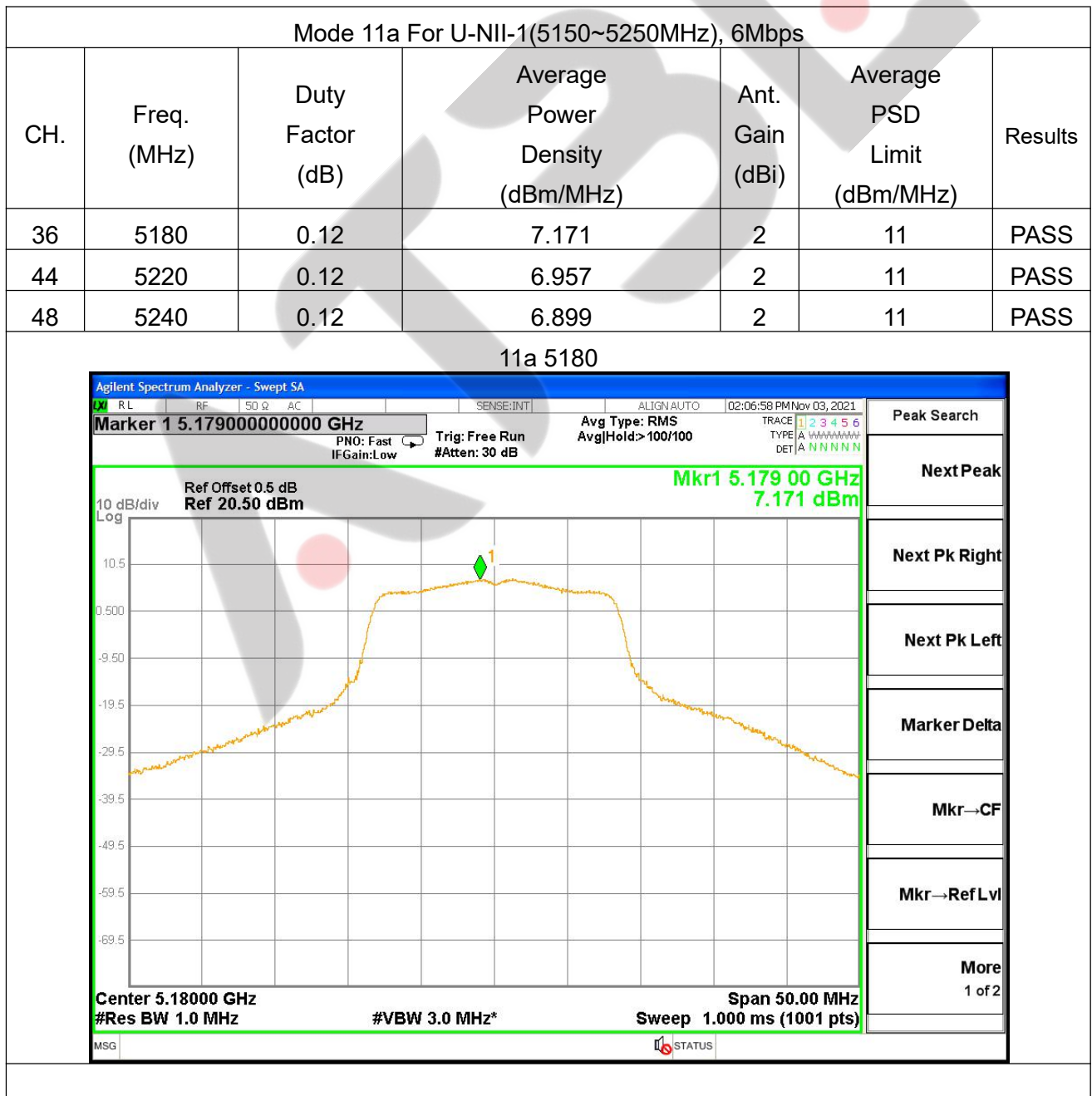
#### 4.4 TEST SETUP



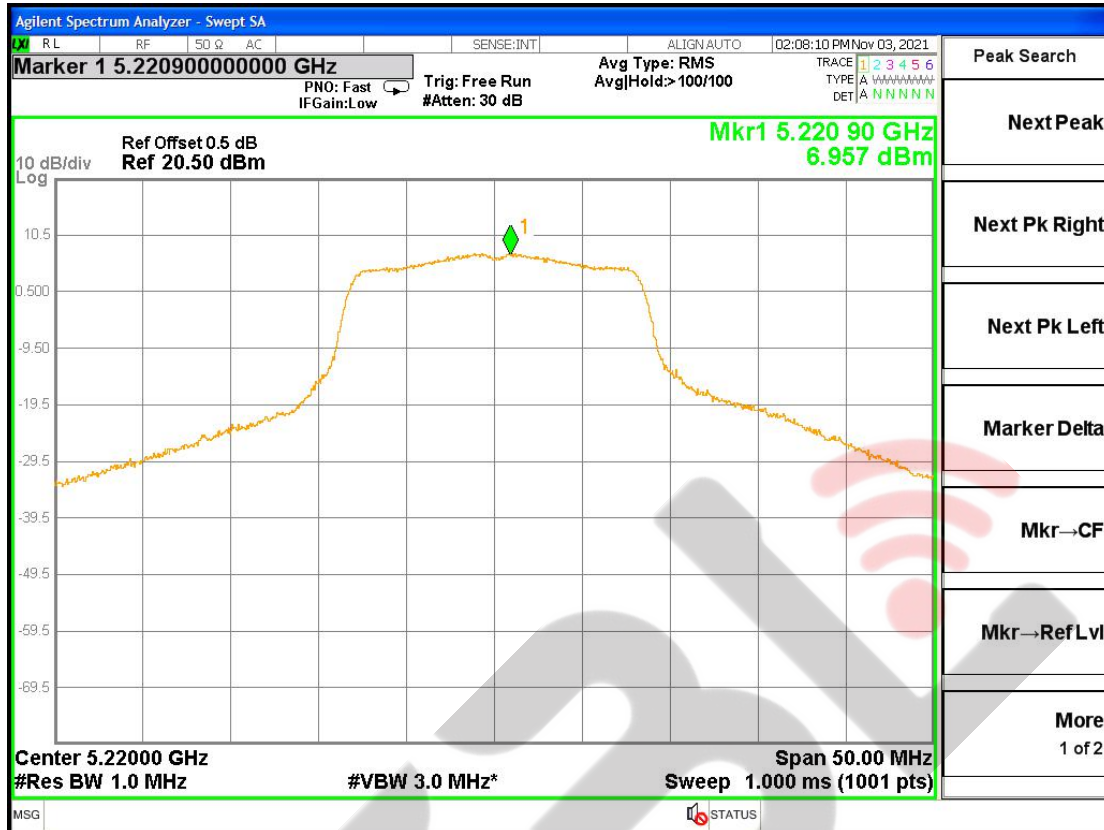
#### 4.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

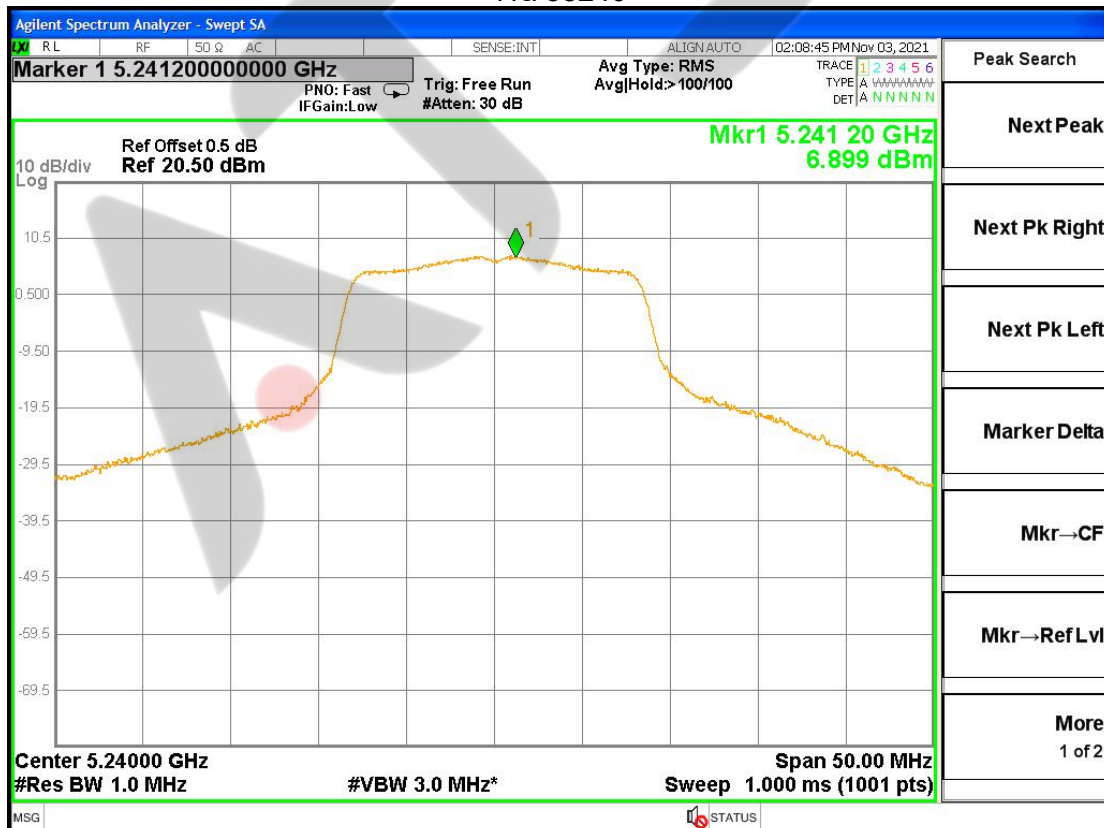
#### 4.6 TEST RESULTS



11a 5220

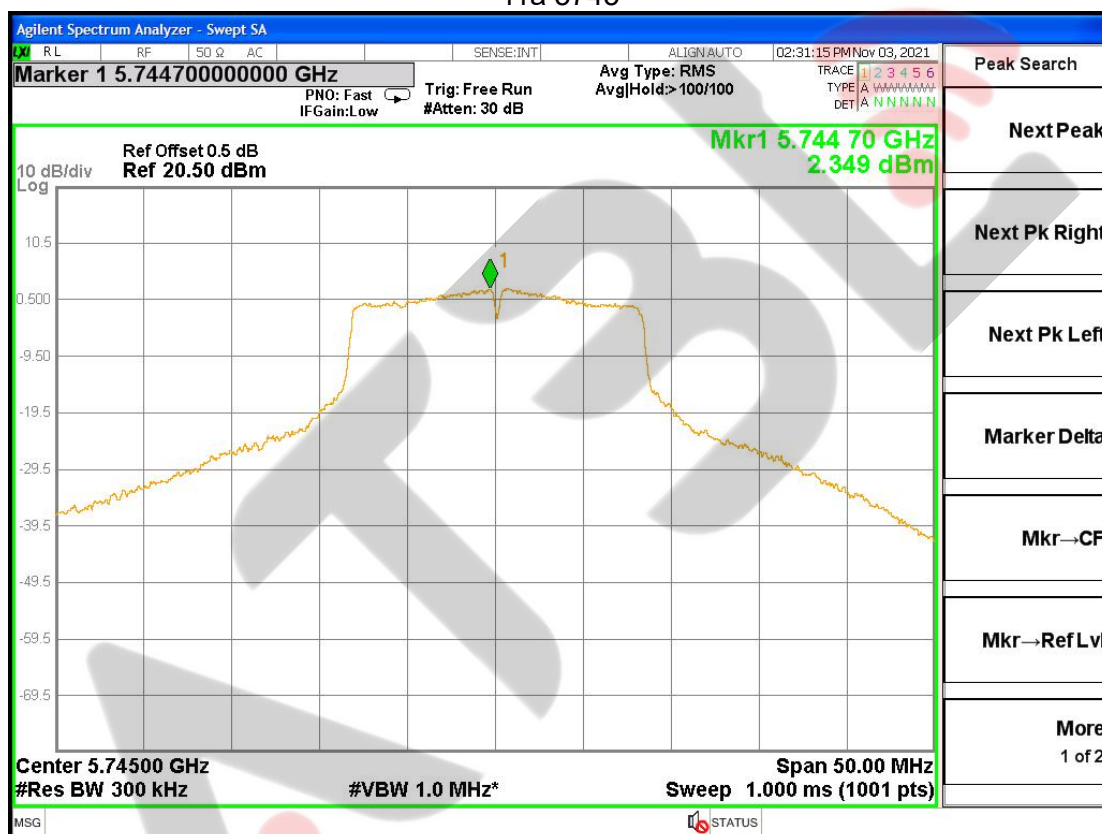


11a 35240

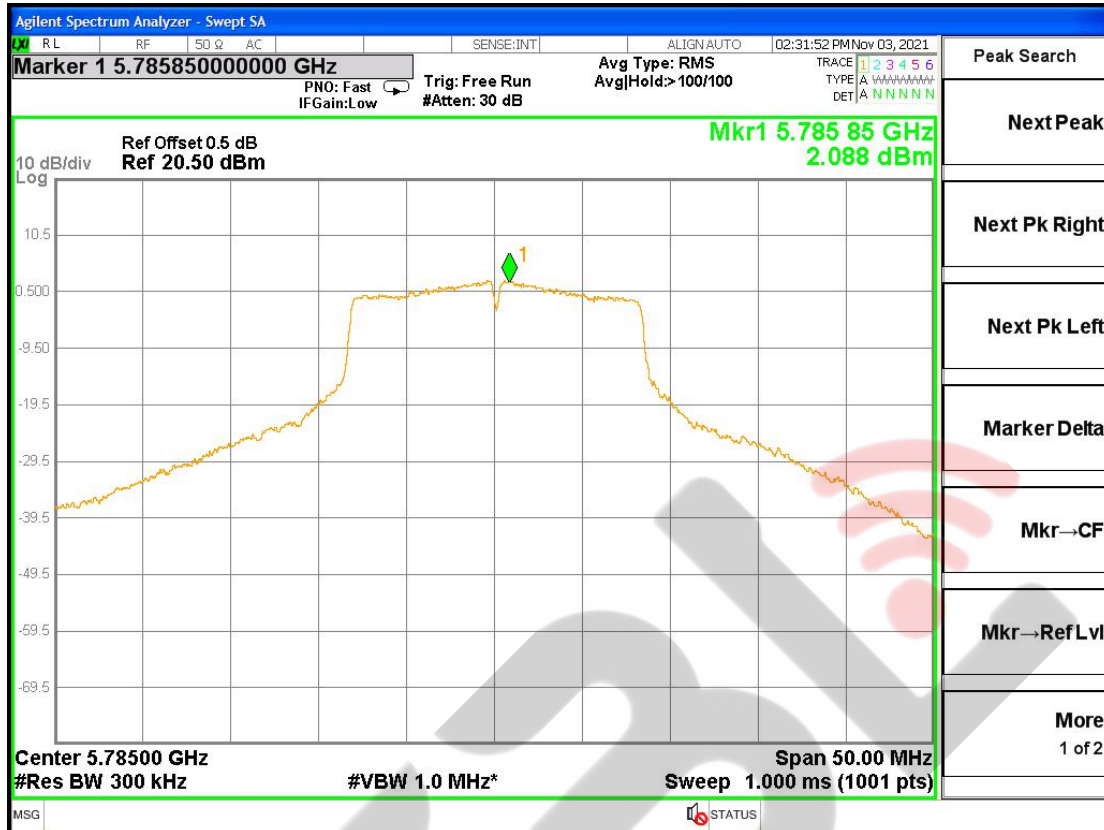


| Mode 11a For U-NII-3(5725~5850MHz) , 6Mbps |                |                        |                                          |                       |                                      |         |
|--------------------------------------------|----------------|------------------------|------------------------------------------|-----------------------|--------------------------------------|---------|
| CH.                                        | Freq.<br>(MHz) | Duty<br>Factor<br>(dB) | Average<br>Power<br>Density<br>(dBm/MHz) | Ant.<br>Gain<br>(dBi) | Average<br>PSD<br>Limit<br>(dBm/MHz) | Results |
| 149                                        | 5745           | 0.12                   | 2.349                                    | 2                     | 30                                   | PASS    |
| 157                                        | 5785           | 0.12                   | 2.088                                    | 2                     | 30                                   | PASS    |
| 165                                        | 5825           | 0.12                   | 1.755                                    | 2                     | 30                                   | PASS    |

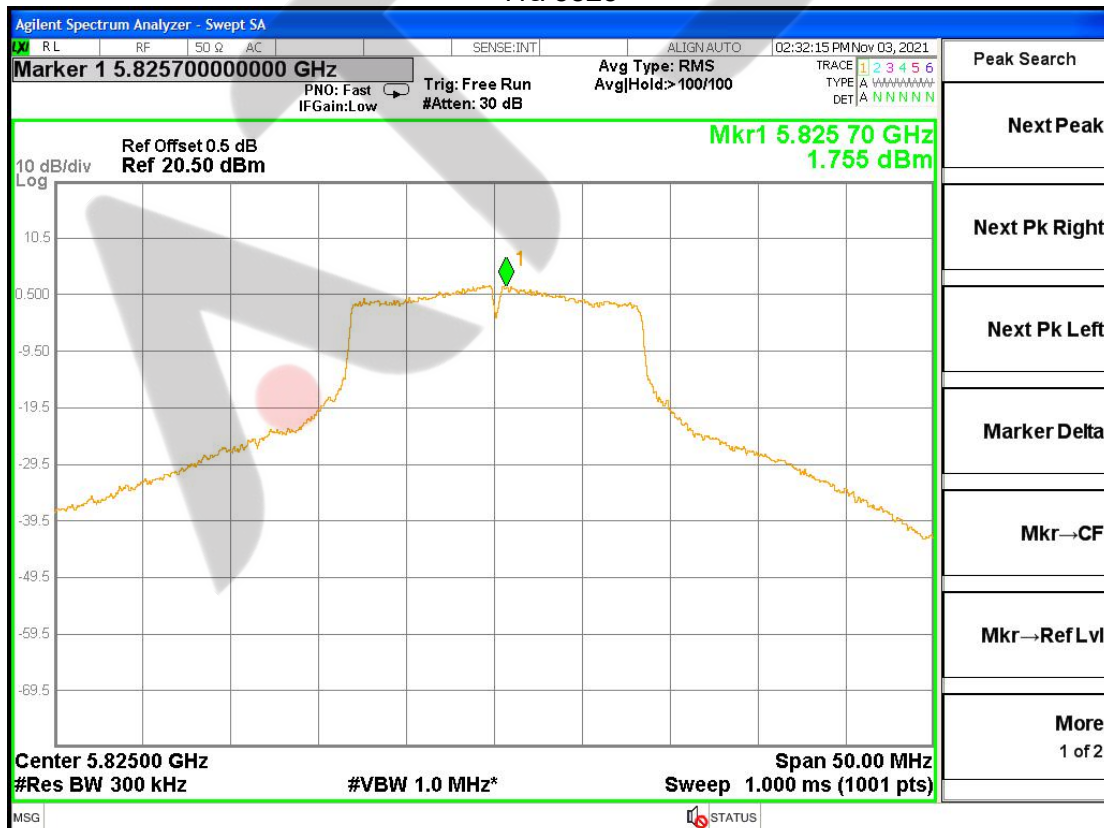
11a 5745



11a 5785



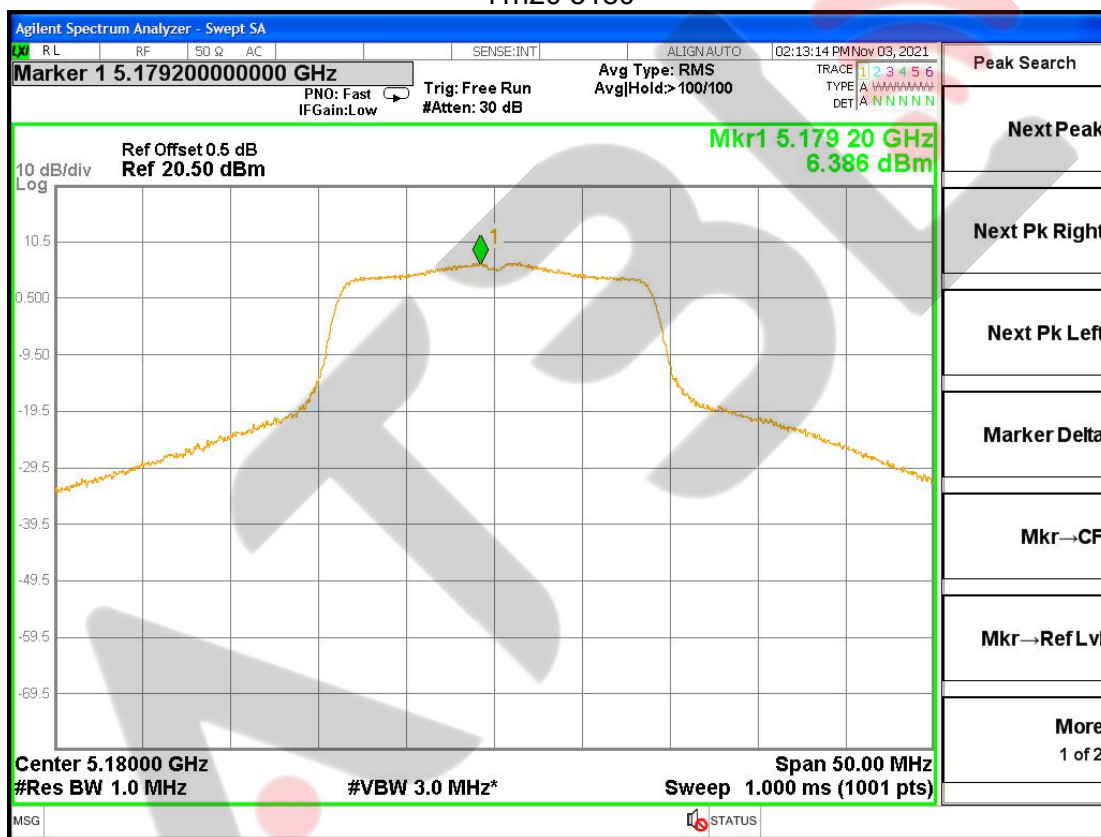
11a 5825



## Mode 11n20 For U-NII-1(5150~5250MHz) , MCS0

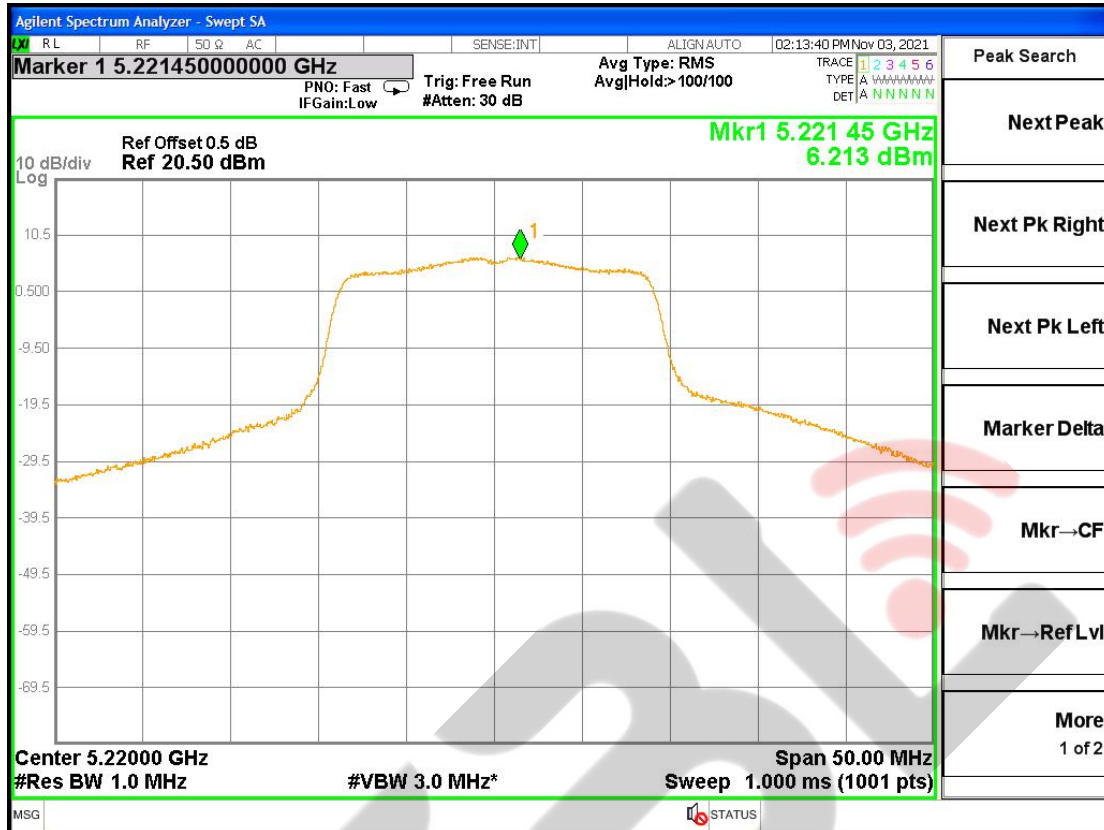
| CH. | Freq.<br>(MHz) | Duty<br>Factor<br>(dB) | Average<br>Power<br>Density<br>(dBm/MHz) | Ant.<br>Gain<br>(dBi) | Average<br>PSD<br>Limit<br>(dBm/MHz) | Results |
|-----|----------------|------------------------|------------------------------------------|-----------------------|--------------------------------------|---------|
| 36  | 5180           | 0.16                   | 6.386                                    | 2                     | 11                                   | PASS    |
| 44  | 5220           | 0.16                   | 6.213                                    | 2                     | 11                                   | PASS    |
| 48  | 5240           | 0.16                   | 6.635                                    | 2                     | 11                                   | PASS    |

## 11n20 5180

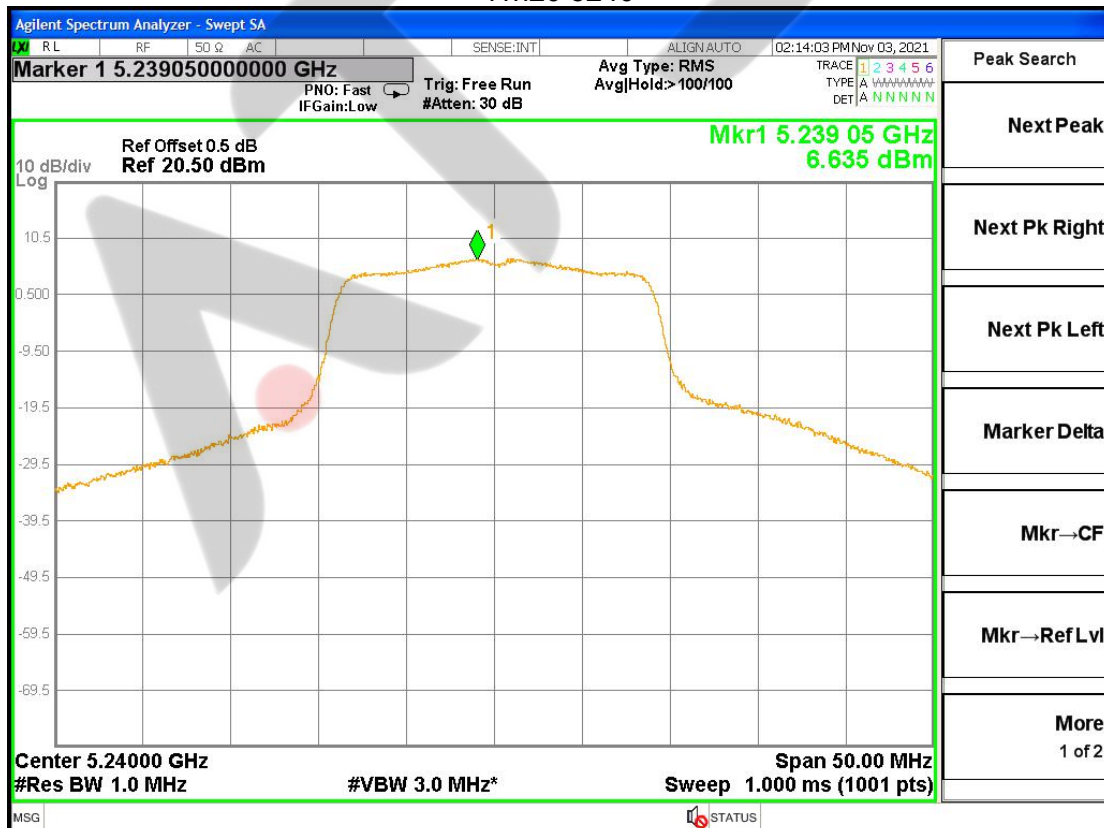




11n20 5220

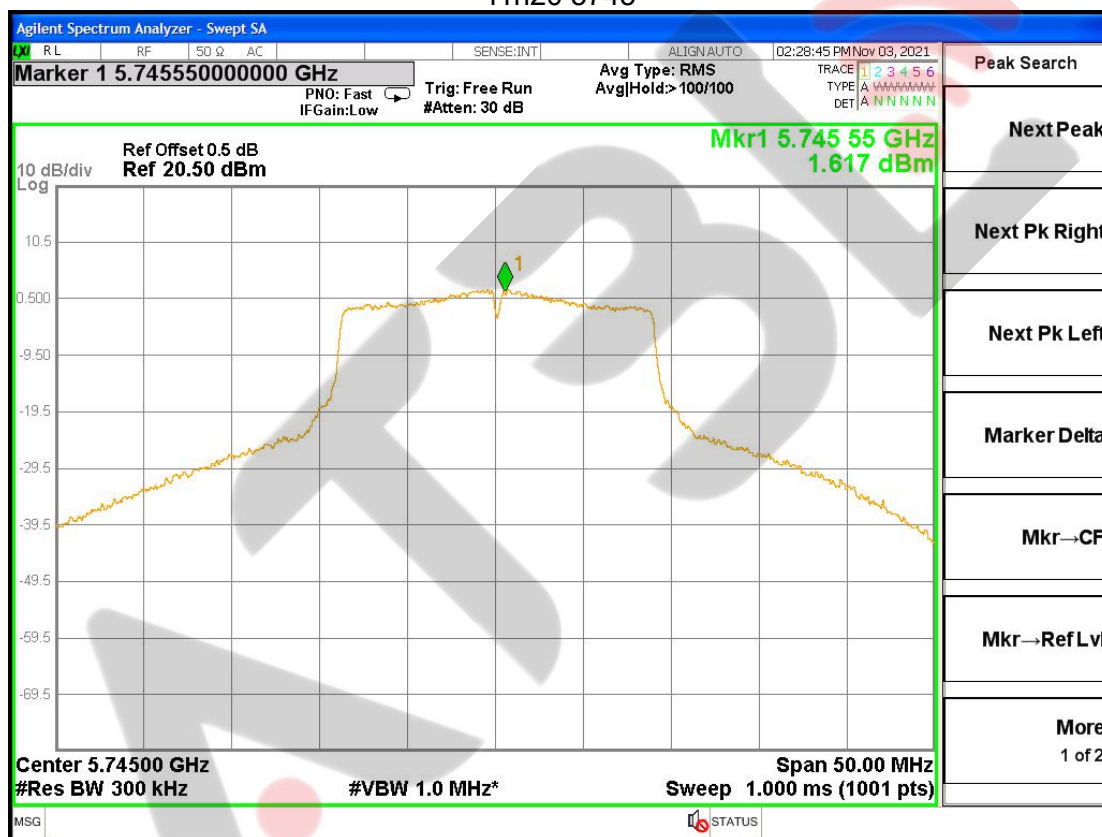


11n20 5240



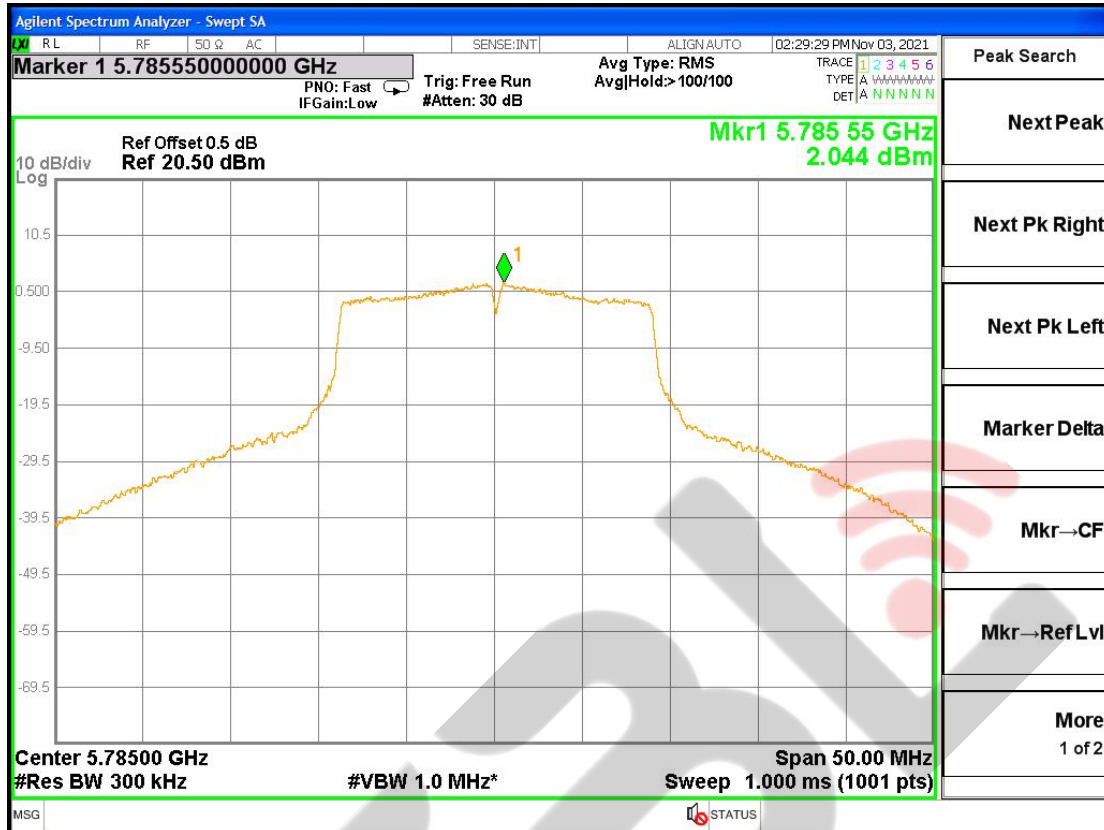
| Mode 11n20 For U-NII-3(5725~5850MHz) , MCS0 |                |                        |                                          |                       |                                      |         |
|---------------------------------------------|----------------|------------------------|------------------------------------------|-----------------------|--------------------------------------|---------|
| CH.                                         | Freq.<br>(MHz) | Duty<br>Factor<br>(dB) | Average<br>Power<br>Density<br>(dBm/MHz) | Ant.<br>Gain<br>(dBi) | Average<br>PSD<br>Limit<br>(dBm/MHz) | Results |
| 149                                         | 5745           | 0.16                   | 1.617                                    | 2                     | 30                                   | PASS    |
| 157                                         | 5785           | 0.16                   | 2.044                                    | 2                     | 30                                   | PASS    |
| 165                                         | 5825           | 0.16                   | 1.279                                    | 2                     | 30                                   | PASS    |

11n20 5745

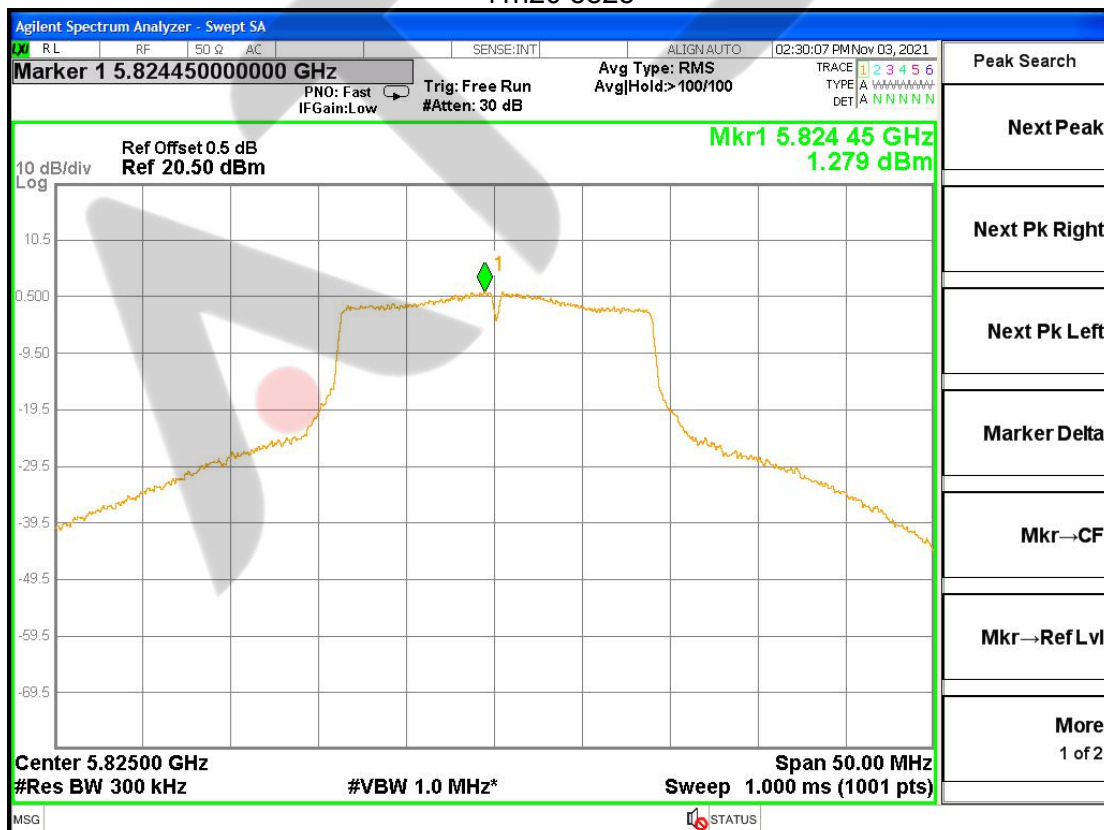




11n20 5785



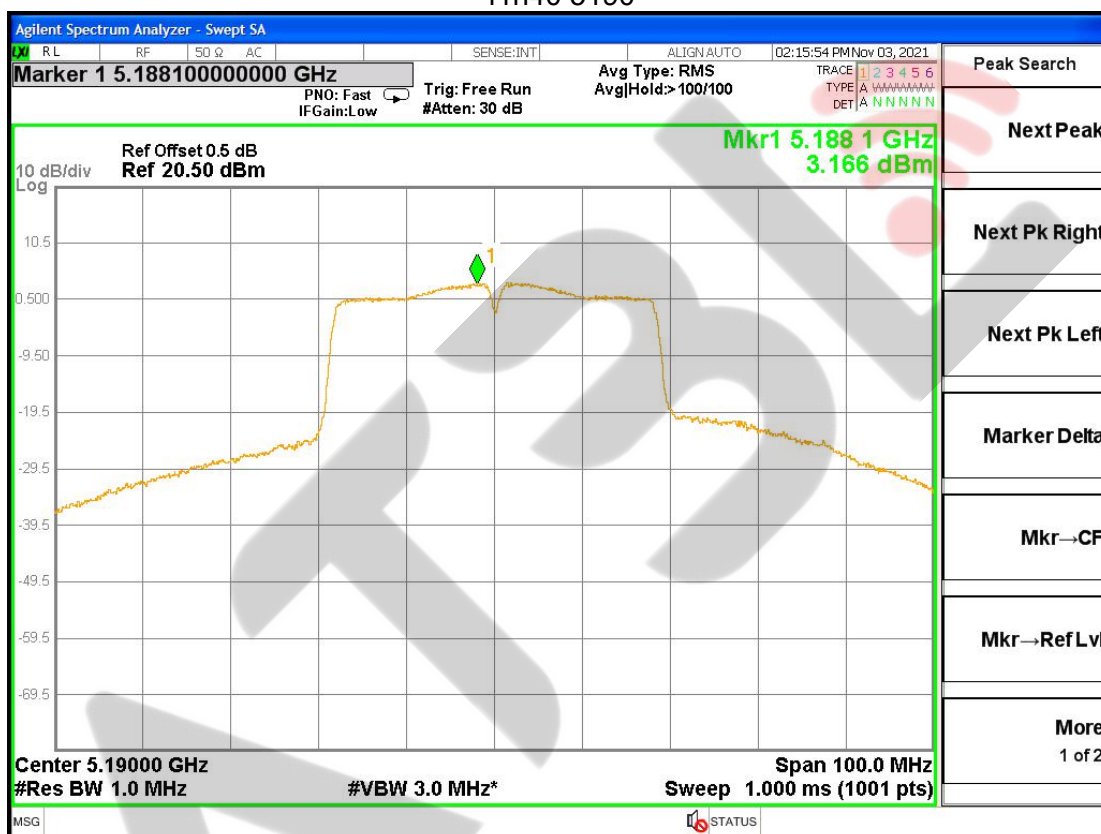
11n20 5825



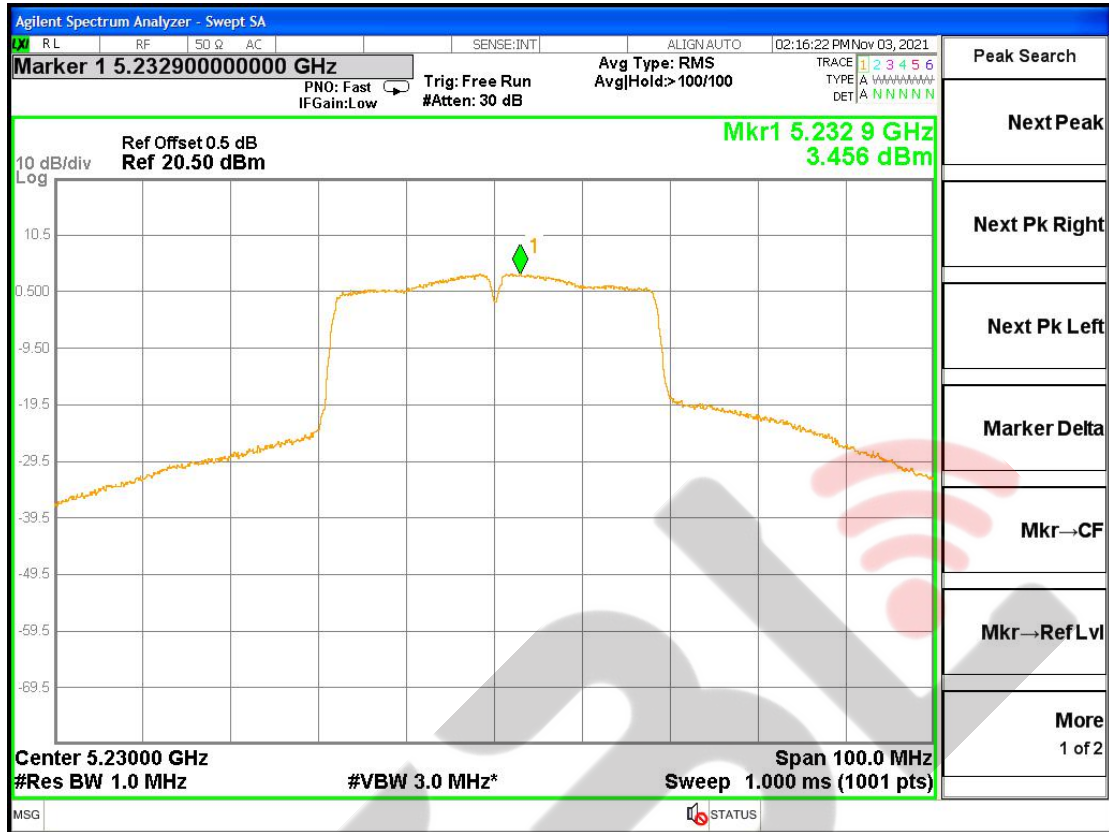
## Mode 11n40 For U-NII-1(5150~5250MHz) , MCS0

| CH. | Freq.<br>(MHz) | Duty<br>Factor<br>(dB) | Average<br>Power<br>Density<br>(dBm/MHz) | Ant.<br>Gain<br>(dBi) | Average<br>PSD<br>Limit<br>(dBm/MHz) | Results |
|-----|----------------|------------------------|------------------------------------------|-----------------------|--------------------------------------|---------|
| 38  | 5190           | 0.29                   | 3.166                                    | 2                     | 11                                   | PASS    |
| 46  | 5230           | 0.29                   | 3.456                                    | 2                     | 11                                   | PASS    |

## 11n40 5190

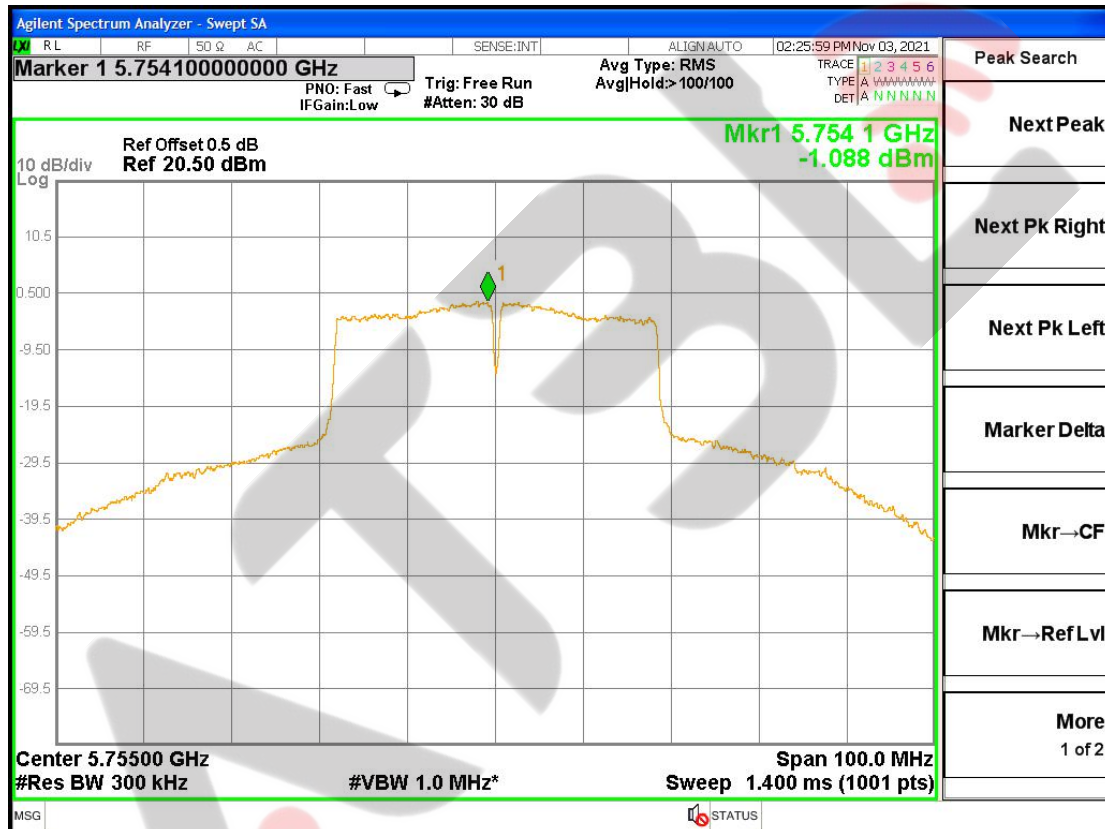


11n40 5230

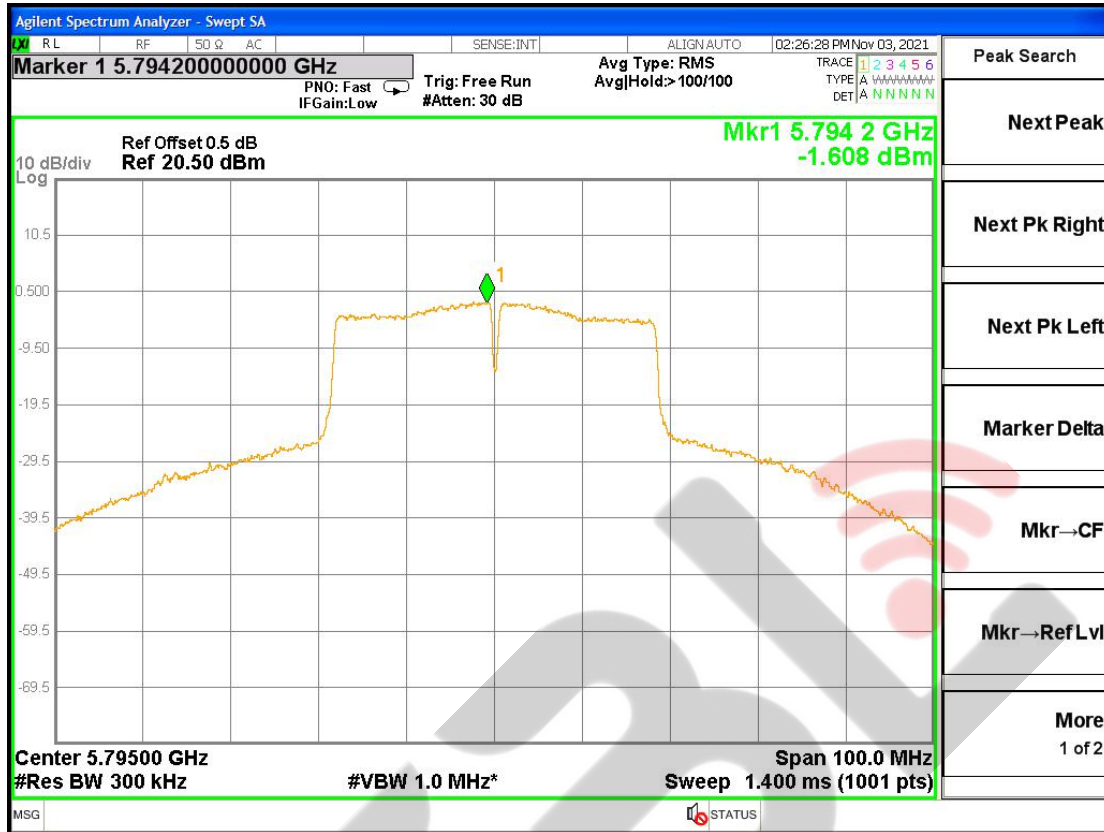


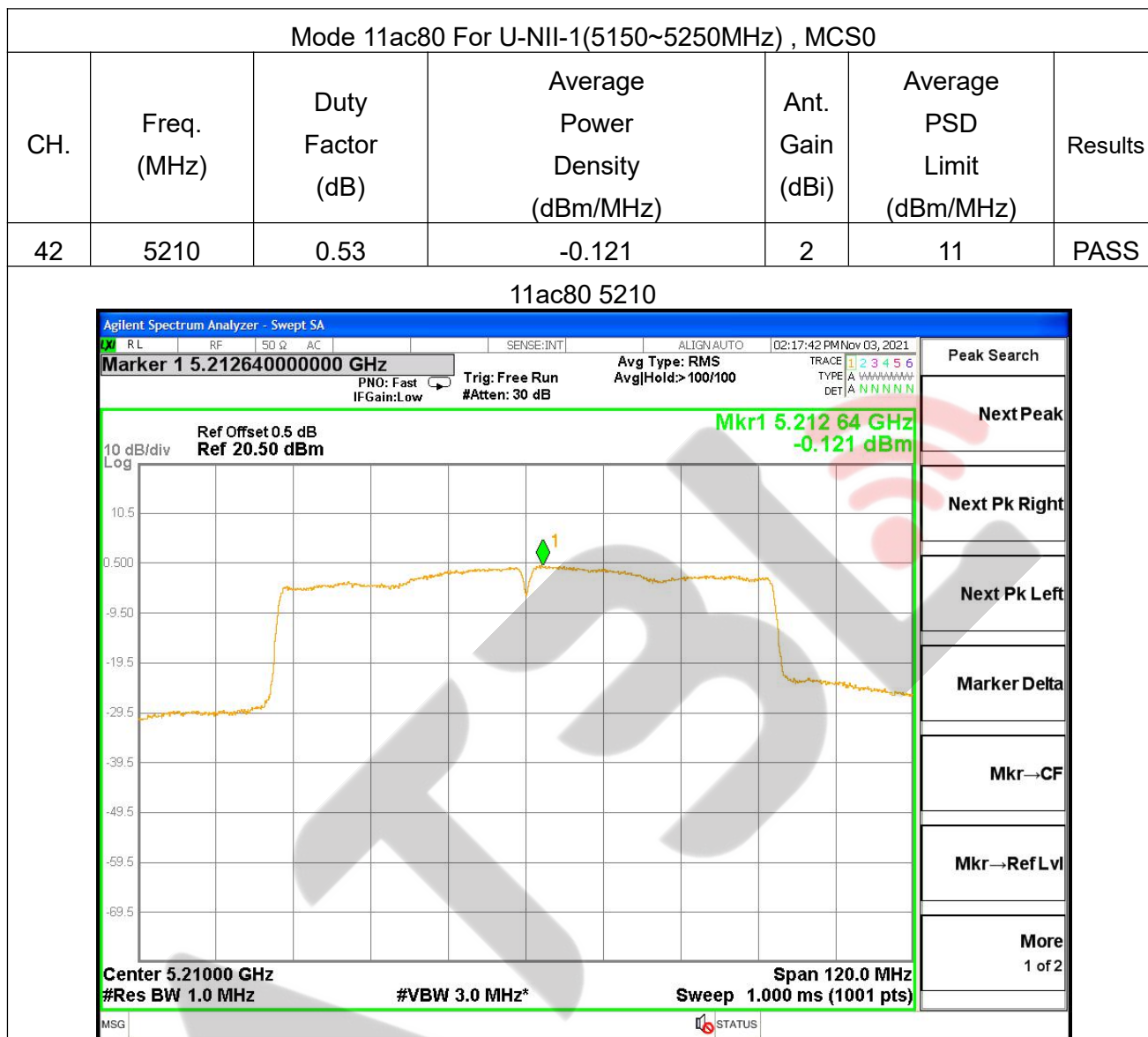
| Mode 11n40 For U-NII-3(5725~5850MHz) , MCS0 |                |                        |                                          |                       |                                      |         |
|---------------------------------------------|----------------|------------------------|------------------------------------------|-----------------------|--------------------------------------|---------|
| CH.                                         | Freq.<br>(MHz) | Duty<br>Factor<br>(dB) | Average<br>Power<br>Density<br>(dBm/MHz) | Ant.<br>Gain<br>(dBi) | Average<br>PSD<br>Limit<br>(dBm/MHz) | Results |
| 151                                         | 5755           | 0.29                   | -1.088                                   | 2                     | 30                                   | PASS    |
| 159                                         | 5795           | 0.29                   | -1.608                                   | 2                     | 30                                   | PASS    |

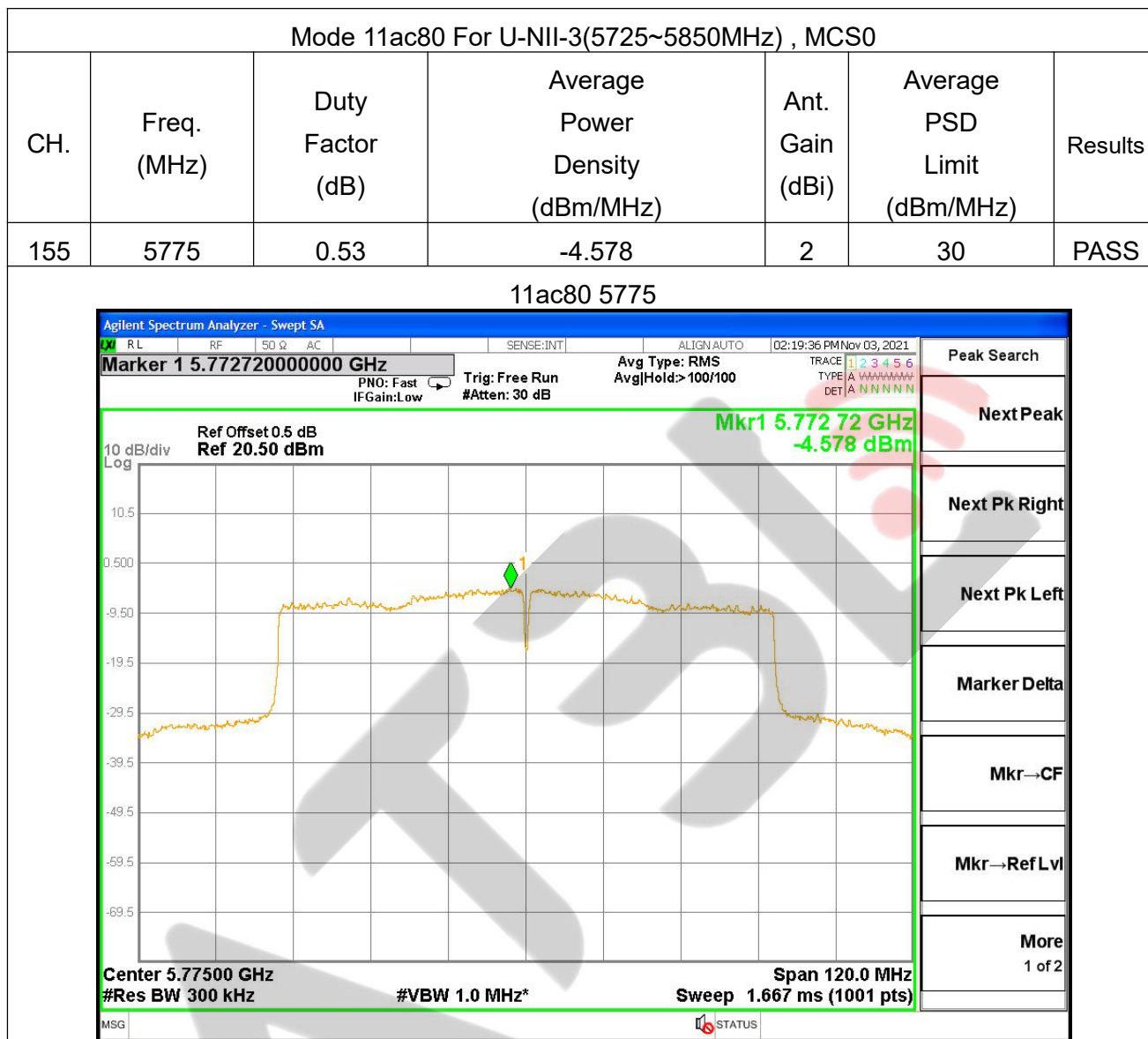
11n40 5755



11n40 5795









## 5.BANDWIDTH MEASUREMENT

### 5.1EMISSION BANDWIDTH (EBW) 26 BANDWID PROCEDURES / LIMIT

See list of measuring instruments of this test report.

#### 5.1.1TEST PROCEDURE

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW  $\geq$  RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

#### 5.1.2DEVIATION FROM STANDARD

No deviation.

#### 5.1.3TEST SETUP



#### 5.1.4EUT OPERATION CONDITIONS

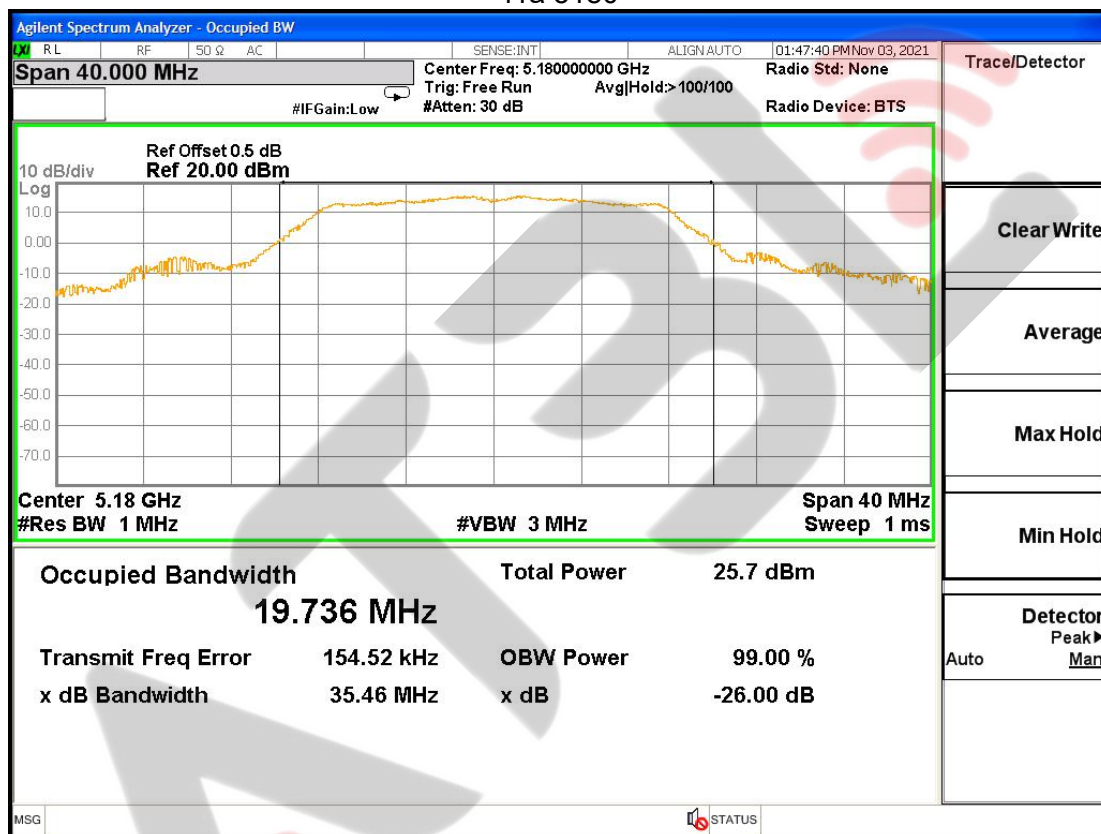
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

## 5.1.5 TEST RESULTS

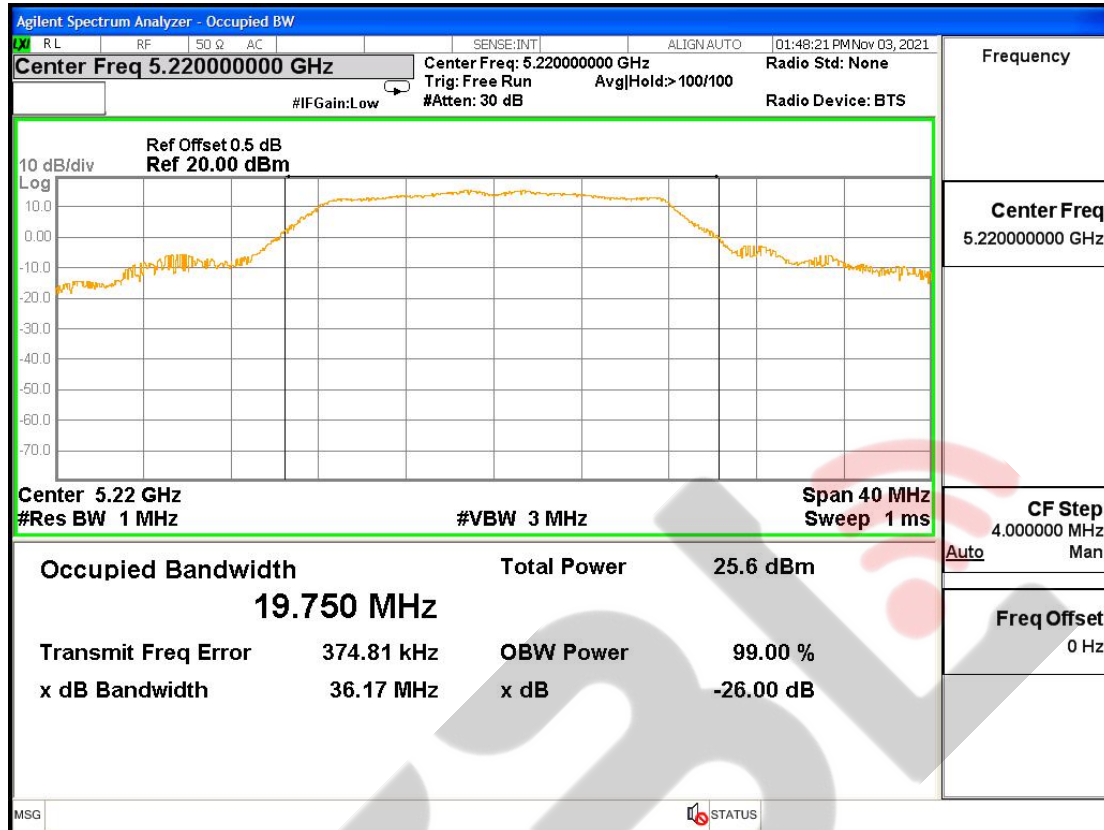
Mode 11a For U-NII-1(5150~5250MHz), 6Mbps

| CH. | Freq.<br>(MHz) | 26dB Bandwidth<br>(MHz) | Results |
|-----|----------------|-------------------------|---------|
| 36  | 5180           | 35.46                   | PASS    |
| 44  | 5220           | 36.17                   | PASS    |
| 48  | 5240           | 35.35                   | PASS    |

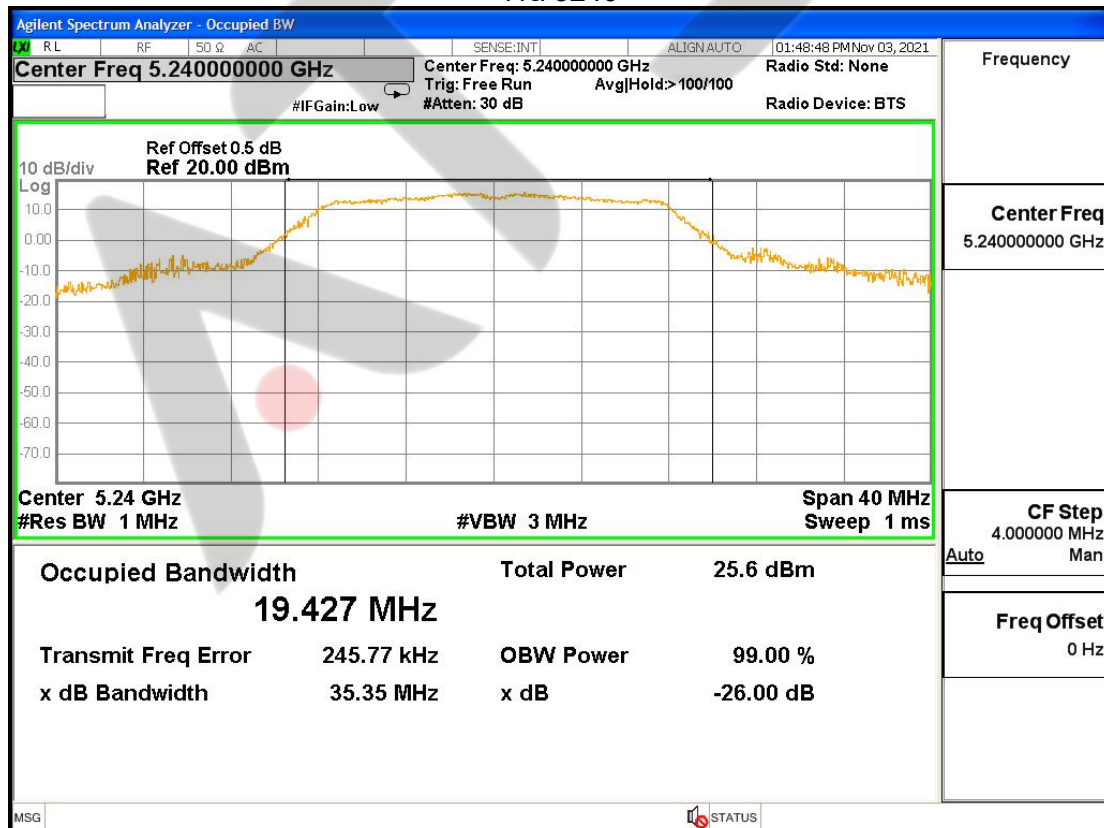
11a 5180



11a 5220



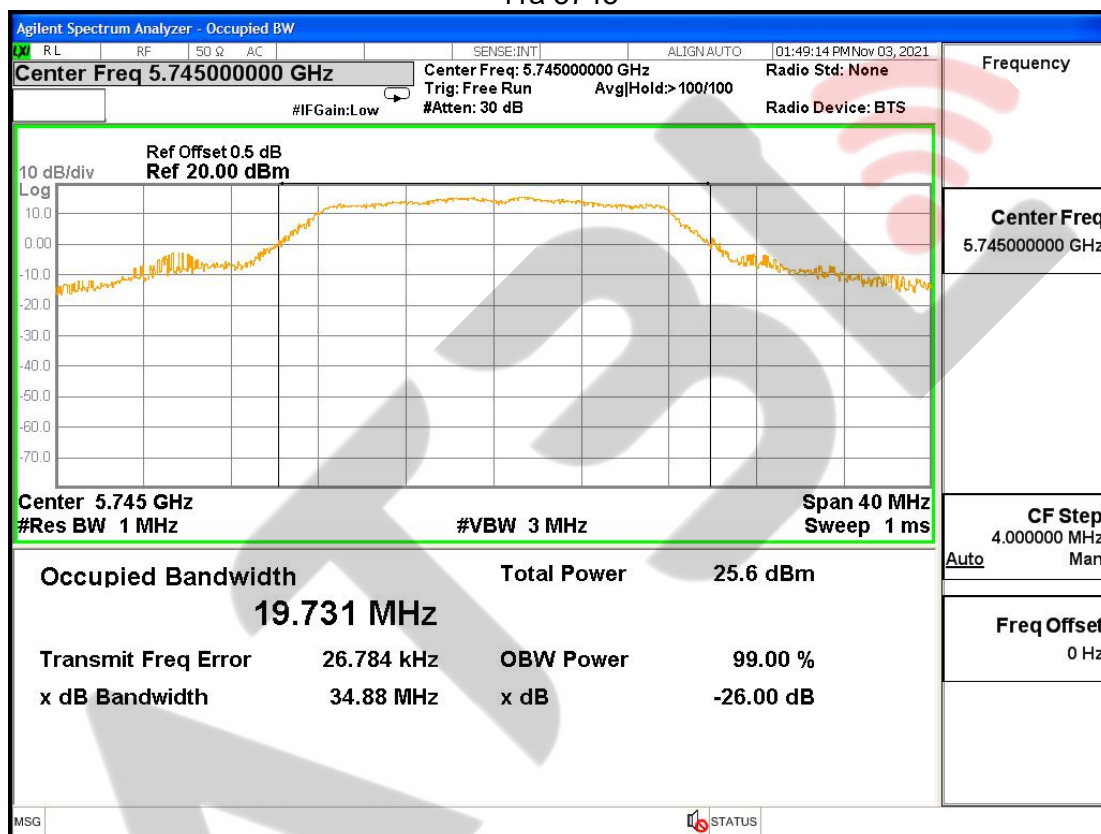
11a 5240



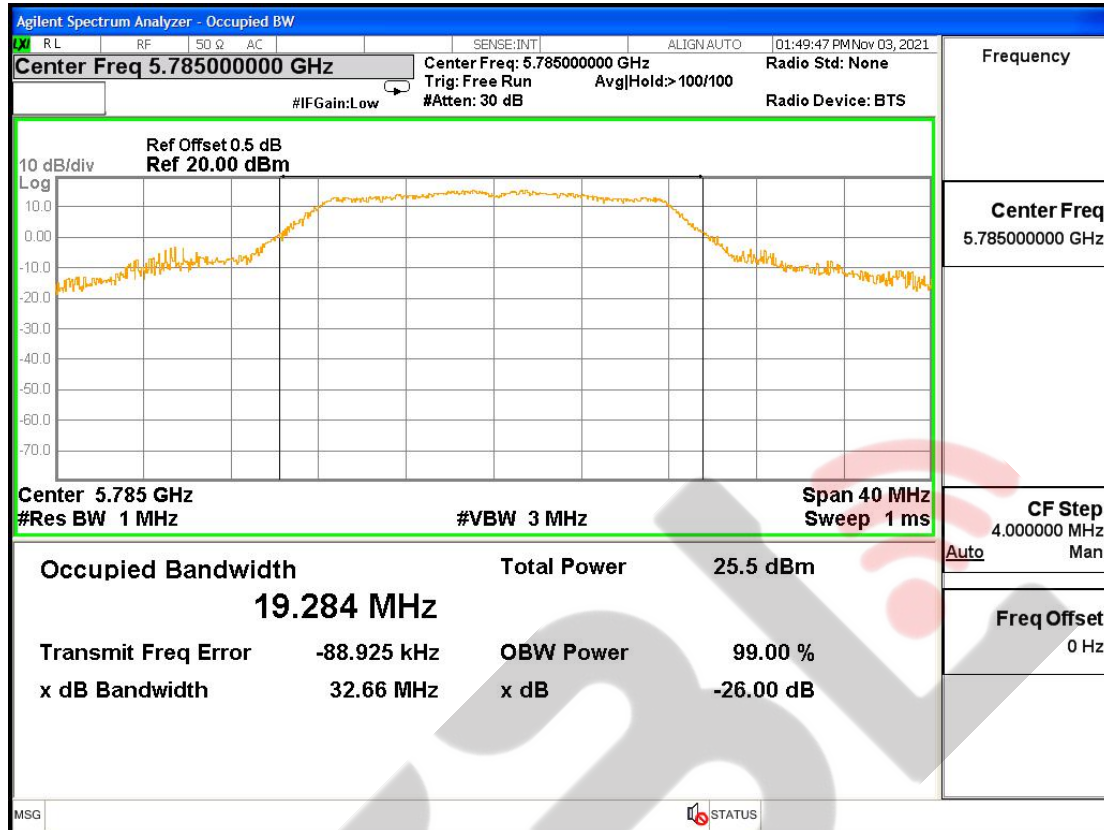
## Mode 11a For U-NII-3(5725~5850MHz), 6Mbps

| CH. | Freq.<br>(MHz) | 26dB Bandwidth<br>(MHz) | Results |
|-----|----------------|-------------------------|---------|
| 149 | 5745           | 34.88                   | PASS    |
| 157 | 5785           | 32.66                   | PASS    |
| 165 | 5825           | 32.74                   | PASS    |

## 11a 5745



11a 5785



11a 5825

