

# FCC Part 15 Subpart B&C §15.407

## Test Report

|                      |                                                                                                     |
|----------------------|-----------------------------------------------------------------------------------------------------|
| Equipment Under Test | Car AVN                                                                                             |
| Model Name           | DGU-12T5-Q300SA-2                                                                                   |
| Variant Model Name   | DGU-12T5-Q300SA-1, DGU-12T5-Q300SA-3,<br>DGU-12T5-Q300SA-4, DGU-12T5-Q300SA-5,<br>DGU-12T5-Q300SA-6 |
| FCC ID               | 2AE77DGU12T5Q300SA2                                                                                 |
| IC Number            | -                                                                                                   |
| Applicant            | HYOLIM XE CO., LTD.                                                                                 |
| Manufacturer         | HYOLIM XE CO., LTD.                                                                                 |
| Date of Test(s)      | 2025. 10. 28 ~ 2025. 11. 10                                                                         |
| Date of Issue        | 2025. 11. 25                                                                                        |

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.  
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| Issue to                                                                                                                               | Issue by                                                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>HYOLIM XE CO., LTD.</b><br>89, Seongseo4chacheomdan-ro,<br>Dalseo-gu, Daegu,<br>South Korea<br><br>Tel.: +82-10-9250-6343<br>Fax: - | <b>DEKRA Korea Co., Ltd.</b><br>498-2, Geumeo-ro, Pogok-eup,<br>Cheoin-gu, Yongin-si, Gyeonggi-do,<br>17030, Rep. of Korea<br><br>Tel.: +82 31-338-8837<br>Fax: +82 31-338-8847 |

**Revision history**

| Revision | Date of issue | Description | Revised by |
|----------|---------------|-------------|------------|
| --       | 2025.11.25    | Initial     | -          |
| --       |               |             |            |

## **Table of contents**

|                                                                                     |            |
|-------------------------------------------------------------------------------------|------------|
| <b>1. Applicant Information .....</b>                                               | <b>4</b>   |
| <b>2. Laboratory Information .....</b>                                              | <b>4</b>   |
| <b>3. Summary of test results.....</b>                                              | <b>5</b>   |
| <b>4. EUT Description .....</b>                                                     | <b>6</b>   |
| <b>5. Measurement equipment .....</b>                                               | <b>8</b>   |
| <b>6. Antenna Requirement .....</b>                                                 | <b>9</b>   |
| <b>7. Emission bandwidth &amp; 99% bandwidth .....</b>                              | <b>10</b>  |
| <b>8. Maximum conducted output power .....</b>                                      | <b>52</b>  |
| <b>9. Maximum power spectral density .....</b>                                      | <b>80</b>  |
| <b>10. Frequency stability .....</b>                                                | <b>109</b> |
| <b>11. Dynamic frequency selection.....</b>                                         | <b>114</b> |
| <b>12. Transmitter radiated spurious emissions and conducted spurious emissions</b> | <b>119</b> |

## 1. Applicant Information

### 1.1. Details of applicant

Applicant : HYOLIM XE CO., LTD.  
Address : 89, Seongseo4chacheomdan-ro, Dalseo-gu, Daegu, South Korea  
Contact Person : KiSuk Lee  
Telephone : +82-10-9250-6343  
Fax : -

### 1.2. Manufacturer Information

Manufacturer : HYOLIM XE CO., LTD.  
Address : 89, Seongseo4chacheomdan-ro, Dalseo-gu, Daegu, South Korea

## 2. Laboratory Information

Company name : DEKRA Korea Co., Ltd.  
Test site number : FCC (247193, KR0151), IC (24841)  
Address : 498-2, Geumeo-ro, Pogok-eup, Cheoin-gu, Yongin-si, Gyeonggi-do, 17030, Rep. of Korea  
Web site : <http://www.dekra.kr>  
Telephone : +82 31-338-8837  
Facsimile : +82 31-338-8847

### 3. Summary of test results

The EUT has been tested according to the following specifications:

| FCC Rule<br>FCC part 15 | Description                                                             | Result               |
|-------------------------|-------------------------------------------------------------------------|----------------------|
| 15.205(a)<br>15.209(a)  | Transmitter radiated spurious emissions,<br>Conducted spurious emission | C                    |
| 15.407(e)               | Emission bandwidth & 99 % bandwidth                                     | C                    |
| 15.407(a)(1)            | Maximum conducted output power                                          | C                    |
| 15.407(a)(1)            | Maximum Power spectral density                                          | C                    |
| 15.407(g)               | Frequency stability                                                     | C                    |
| 15.407(h)               | Dynamic frequency selection                                             | C                    |
| 15.207(a)               | AC Conducted power line test                                            | N/A <sup>Note1</sup> |
| 15.203                  | Antenna requirement                                                     | C                    |

#### ※ Abbreviation

C Complied  
N/A Not applicable  
F Fail

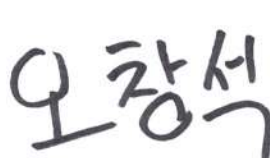
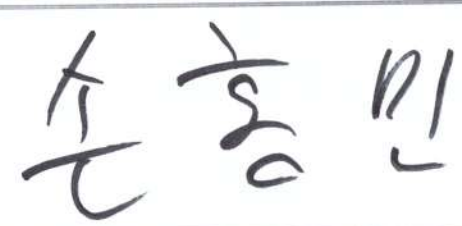
#### ※ Note

Note 1 : This test is not applicable because the EUT uses battery and it's not to be connected to the Public utility(AC) power line

#### The sample was tested according to the following specification:

FCC Parts 15.407; ANSI C63.4:2014, ANSI C63.10:2020  
FCC Public Notice KDB 789033 D02 v02r01  
FCC Public Notice KDB 905462 D02 v02

#### Approval Signatories

| Test and Report Completed by :                                                      | Report Approval by :                                                                 |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|  |  |
| David Oh<br>Test Engineer<br>DEKRA Korea Co., Ltd.                                  | Kin Son<br>Technical Manager<br>DEKRA Korea Co., Ltd.                                |

The above test certificate is a test report not related to the Korean Laboratory Accreditation Scheme

#### 4. EUT Description

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Kind of product               | Car AVN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Model Name                    | DGU-12T5-Q300SA-2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Variant Model Name            | DGU-12T5-Q300SA-1, DGU-12T5-Q300SA-3,<br>DGU-12T5-Q300SA-4, DGU-12T5-Q300SA-5,<br>DGU-12T5-Q300SA-6                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| FCC ID                        | 2AE77DGU12T5Q300SA2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| IC Number                     | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Power supply                  | DC 12.00 V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Frequency range               | UNII-1<br>5 180 MHz ~ 5 240 MHz (802.11a/n_HT20)<br>5 190 MHz ~ 5 230 MHz (802.11n_HT40)<br>5 210 MHz (802.11ac_VHT80)<br>UNII-2A<br>5 260 MHz ~ 5 320 MHz (802.11a/n_HT20)<br>5 270 MHz ~ 5 310 MHz (802.11n_HT40)<br>5 290 MHz (802.11ac_VHT80)<br>UNII-2C<br>5 500 MHz ~ 5 700 MHz (802.11a/n_HT20)<br>5 510 MHz ~ 5 670 MHz (802.11n_HT40)<br>5 530 MHz (802.11ac_VHT80)<br>UNII-3<br>5 745 MHz ~ 5 825 MHz (802.11a/n_HT20)<br>5 755 MHz ~ 5 795 MHz (802.11n_HT40)<br>5 775 MHz (802.11ac_VHT80)                                                             |
| Modulation technique          | OFDM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Number of channels            | UNII-1<br>5 180 MHz ~ 5 240 MHz_4 ch (802.11a/n_HT20)<br>5 190 MHz ~ 5 230 MHz_2 ch (802.11n_HT40)<br>5 210 MHz_1 ch (802.11ac_VHT80)<br>UNII-2A<br>5 260 MHz ~ 5 320 MHz_4 ch (802.11a/n_HT20)<br>5 270 MHz ~ 5 310 MHz_2 ch (802.11n_HT40)<br>5 290 MHz_1 ch (802.11ac_VHT80)<br>UNII-2C<br>5 500 MHz ~ 5 700 MHz_8 ch (802.11a/n_HT20)<br>5 510 MHz ~ 5 670 MHz_3 ch (802.11n_HT40)<br>5 530 MHz_1 ch (802.11ac_VHT80)<br>UNII-3<br>5 745 MHz ~ 5 825 MHz_5 ch (802.11a/n_HT20)<br>5 755 MHz ~ 5 795 MHz_2 ch (802.11n_HT40)<br>5 775 MHz_1 ch (802.11ac_VHT80) |
| Antenna gain / Type           | 1.30 dBi / PCB Antenna                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Test Site Registration Number | FCC (247193, KR0151), IC (24841)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| H/W version / S/W version     | 1.0 / 1.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Test S/W version              | ADB Command                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

#### 4.1. Table for Test Modes and Frequency (WLAN)

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

| Mode           | Data rate (Worst case) | Frequency (Freq. MHz)                                                                                                                                                                                                                                                                                                                                                      |
|----------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 802.11a        | 6 Mbps                 | <b>UNII-1</b><br><b>Lowest</b> (5 180) / <b>Middle</b> (5 200) / <b>Highest</b> (5 240)<br><b>UNII-2A</b><br><b>Lowest</b> (5 260) / <b>Middle</b> (5 280) / <b>Highest</b> (5 320)<br><b>UNII-2C</b><br><b>Lowest</b> (5 500) / <b>Middle</b> (5 580) / <b>Highest</b> (5 700)<br><b>UNII-3</b><br><b>Lowest</b> (5 745) / <b>Middle</b> (5 785) / <b>Highest</b> (5 825) |
| 802.11n_HT20   | MCS0                   | <b>UNII-1</b><br><b>Lowest</b> (5 180) / <b>Middle</b> (5 200) / <b>Highest</b> (5 240)<br><b>UNII-2A</b><br><b>Lowest</b> (5 260) / <b>Middle</b> (5 280) / <b>Highest</b> (5 320)<br><b>UNII-2C</b><br><b>Lowest</b> (5 500) / <b>Middle</b> (5 580) / <b>Highest</b> (5 700)<br><b>UNII-3</b><br><b>Lowest</b> (5 745) / <b>Middle</b> (5 785) / <b>Highest</b> (5 825) |
| 802.11n_HT40   | MCS0                   | <b>UNII-1</b><br><b>Lowest</b> (5 190) / <b>Highest</b> (5 230)<br><b>UNII-2A</b><br><b>Lowest</b> (5 270) / <b>Highest</b> (5 310)<br><b>UNII-2C</b><br><b>Lowest</b> (5 510) / <b>Middle</b> (5 550) / <b>Highest</b> (5 670)<br><b>UNII-3</b><br><b>Lowest</b> (5 755) / <b>Highest</b> (5 795)                                                                         |
| 802.11ac_VHT80 | MCS0                   | <b>UNII-1</b><br><b>Lowest</b> (5 210)<br><b>UNII-2A</b><br><b>Lowest</b> (5 290)<br><b>UNII-2C</b><br><b>Lowest</b> (5 530)<br><b>UNII-3</b><br><b>Lowest</b> (5 775)                                                                                                                                                                                                     |

## 5. Measurement equipment

| Equipment         | Manufacturer | Model               | Serial number         | Calibration Interval | Calibration date | Calibration due. |
|-------------------|--------------|---------------------|-----------------------|----------------------|------------------|------------------|
| Test Receiver     | R&S          | ESW44               | 103182                | 1 year               | 25.08.23         | 26.08.23         |
| Signal Generator  | R&S          | SMB100A             | 178128                | 1 year               | 25.05.15         | 26.05.15         |
| Spectrum Analyzer | R&S          | FSVA40              | 101591                | 1 year               | 25.03.13         | 26.05.13         |
| DC Power Supply   | R&S          | NGE100              | 102415                | 1 year               | 25.05.15         | 26.05.15         |
| Power Sensor      | R&S          | NRP-Z85             | 102464                | 1 year               | 25.05.16         | 26.05.16         |
| Horn Antenna      | R&S          | HF906               | 100236                | 1 year               | 25.06.05         | 26.06.05         |
| Horn Antenna      | AH Systems   | SAS-572             | 269                   | 1 year               | 25.05.26         | 26.05.26         |
| Horn Antenna      | AH Systems   | SAS-572             | 164                   | 1 year               | 25.05.26         | 26.05.26         |
| Bi-Log Ant.       | S/B          | VULB 9161SE         | 4159                  | 2 year               | 24.03.21         | 26.03.21         |
| Loop Antenna      | ETS LINDGREN | 6502                | 00118166              | 2 year               | 24.05.16         | 26.05.16         |
| Power Amplifier   | TESTEK       | TK-PA18H            | 170013-L              | 1 year               | 25.05.12         | 26.05.12         |
| Power Amplifier   | MITEQ        | PAM-840A            | 18050014              | 1 year               | 25.05.19         | 26.05.19         |
| Step Attenuator   | Agilent      | 8494B               | US37181955            | 1 year               | 25.05.15         | 26.05.15         |
| Step Attenuator   | Agilent      | 8496B               | US39212569            | 1 year               | 25.05.15         | 26.05.15         |
| Controller        | INNCO        | CO3000              | CO3000/812/34240914/L | N/A                  | N/A              | N/A              |
| Antenna Master    | INNCO        | MA4640-XP-ET        | None                  | N/A                  | N/A              | N/A              |
| RF Cable          | SUHNER       | SUCOFLEX100         | 84047746              | 6 month              | 25.06.23         | 25.12.23         |
| RF Cable          | SUHNER       | SUCOFLEX102         | 801270/2              | 6 month              | 25.06.23         | 25.12.23         |
| RF Cable          | SUHNER       | SUCOFLEX102         | 801532/2              | 6 month              | 25.06.23         | 25.12.23         |
| High Pass Filter  | Wainwright   | WHKX7.0/18G-8S<br>S | 25                    | 1 year               | 25.05.15         | 26.05.15         |

### ※Remark

#### Support equipment

| Description       | Manufacturer | Model  | Serial number  |
|-------------------|--------------|--------|----------------|
| Notebook computer | DELL         | E5440  | 8HCMN12        |
| AP                | LINKSYS      | WRT32X | 22C1060B708568 |

## **6. Antenna Requirement**

### **6.1. Standard applicable**

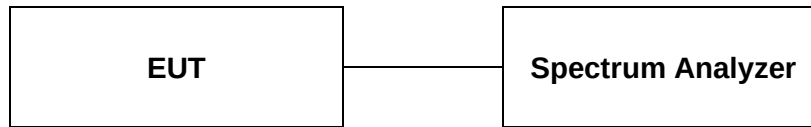
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§ 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

### **6.2. Antenna connected construction**

Antenna used in this product is PCB antenna,  
Antenna gain is 1.30 dBi.

## 7. Emission bandwidth & 99% bandwidth

### 7.1. Test setup



### 7.2. Limit

#### 7.2.1. Emission bandwidth for the Band 5.15-5.25 GHz, 5.25-5.35 GHz, 5.47-5.725 GHz

Not applicable

#### 7.2.2. Emission bandwidth for the Band 5.725-5.85 GHz

The minimum 6 dB emission bandwidth of at least 500 kHz

### 7.3. Test procedure (KDB 789033)

#### 7.3.1. Emission bandwidth for the Band 5.15-5.25 GHz, 5.25-5.35 GHz, 5.47-5.725 GHz

- Set RBW = approximately 1% of the emission bandwidth.
- Set the VBW > RBW.
- Detector = Peak.
- Trace mode = max hold.
- Measure the maximum width of the emission that is 26 dB down from the maximum 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%.

#### 7.3.2. Emission bandwidth for the Band 5.725-5.85 GHz

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 kHz for the band 5.725-5.850 GHz. The following procedure shall be used for measuring this bandwidth:

- Set RBW = 100 kHz.
  - Set the video bandwidth (VBW)  $\geq 3 * \text{RBW}$ .
  - Detector = Peak.
  - Trace mode = max hold.
  - Sweep = auto couple.
  - Allow the trace to stabilize.
  - Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.
- Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

## 7.4. Test results

### Test mode : 802.11a (UNII-1)

| Frequency(MHz) | 26 dB bandwidth(MHz) | 99% bandwidth(MHz) |
|----------------|----------------------|--------------------|
| 5 180          | 21.50                | 16.50              |
| 5 200          | 21.20                | 16.50              |
| 5 240          | 21.60                | 16.40              |

### Test mode : 802.11a (UNII-2A)

| Frequency(MHz) | 26 dB bandwidth(MHz) | 99% bandwidth(MHz) |
|----------------|----------------------|--------------------|
| 5 260          | 21.60                | 16.50              |
| 5 280          | 21.60                | 16.50              |
| 5 320          | 21.60                | 16.40              |

### Test mode : 802.11a (UNII-2C)

| Frequency(MHz) | 26 dB bandwidth(MHz) | 99% bandwidth(MHz) |
|----------------|----------------------|--------------------|
| 5 500          | 21.30                | 16.50              |
| 5 580          | 21.30                | 16.40              |
| 5 700          | 21.60                | 16.50              |

### Test mode : 802.11a (UNII-3)

| Frequency(MHz) | 6 dB bandwidth(MHz) | 99% bandwidth(MHz) |
|----------------|---------------------|--------------------|
| 5 745          | 16.10               | 16.50              |
| 5 785          | 15.40               | 16.40              |
| 5 825          | 15.60               | 16.50              |

### ※Remark

1. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

**Test mode : 802.11n\_HT20 (UNII-1)**

| Frequency(MHz) | 26 dB bandwidth(MHz) | 99% bandwidth(MHz) |
|----------------|----------------------|--------------------|
| 5 180          | 21.90                | 17.60              |
| 5 200          | 22.50                | 17.60              |
| 5 240          | 21.60                | 17.70              |

**Test mode : 802.11n\_HT20 (UNII-2A)**

| Frequency(MHz) | 26 dB bandwidth(MHz) | 99% bandwidth(MHz) |
|----------------|----------------------|--------------------|
| 5 260          | 21.30                | 17.70              |
| 5 280          | 21.40                | 17.70              |
| 5 320          | 21.90                | 17.60              |

**Test mode : 802.11n\_HT20 (UNII-2C)**

| Frequency(MHz) | 26 dB bandwidth(MHz) | 99% bandwidth(MHz) |
|----------------|----------------------|--------------------|
| 5 500          | 21.60                | 17.60              |
| 5 580          | 21.30                | 17.60              |
| 5 700          | 21.60                | 17.70              |

**Test mode : 802.11n\_HT20 (UNII-3)**

| Frequency(MHz) | 6 dB bandwidth(MHz) | 99% bandwidth(MHz) |
|----------------|---------------------|--------------------|
| 5 745          | 16.60               | 17.60              |
| 5 785          | 16.25               | 17.60              |
| 5 825          | 16.85               | 17.60              |

**※Remark**

1. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

**Test mode : 802.11n\_HT40 (UNII-1)**

| Frequency(MHz) | 26 dB bandwidth(MHz) | 99% bandwidth(MHz) |
|----------------|----------------------|--------------------|
| 5 190          | 41.58                | 36.25              |
| 5 230          | 41.28                | 36.50              |

**Test mode : 802.11n\_HT40 (UNII-2A)**

| Frequency(MHz) | 26 dB bandwidth(MHz) | 99% bandwidth(MHz) |
|----------------|----------------------|--------------------|
| 5 270          | 41.58                | 36.25              |
| 5 310          | 41.28                | 36.25              |

**Test mode : 802.11n\_HT40 (UNII-2C)**

| Frequency(MHz) | 26 dB bandwidth(MHz) | 99% bandwidth(MHz) |
|----------------|----------------------|--------------------|
| 5 510          | 40.68                | 36.25              |
| 5 550          | 41.58                | 36.25              |
| 5 670          | 41.58                | 36.25              |

**Test mode : 802.11n\_HT40 (UNII-3)**

| Frequency(MHz) | 6 dB bandwidth(MHz) | 99% bandwidth(MHz) |
|----------------|---------------------|--------------------|
| 5 755          | 35.15               | 36.25              |
| 5 795          | 35.40               | 36.25              |

**※Remark**

1. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

Test mode : 802.11ac\_VHT80 (UNII-1)

| Frequency(MHz) | 26 dB bandwidth(MHz) | 99% bandwidth(MHz) |
|----------------|----------------------|--------------------|
| 5 210          | 84.00                | 76.00              |

Test mode : 802.11ac\_VHT80 (UNII-2A)

| Frequency(MHz) | 26 dB bandwidth(MHz) | 99% bandwidth(MHz) |
|----------------|----------------------|--------------------|
| 5 290          | 85.50                | 76.00              |

Test mode : 802.11ac\_VHT80 (UNII-2C)

| Frequency(MHz) | 26 dB bandwidth(MHz) | 99% bandwidth(MHz) |
|----------------|----------------------|--------------------|
| 5 530          | 86.00                | 76.00              |

Test mode : 802.11ac\_VHT80 (UNII-3)

| Frequency(MHz) | 6 dB bandwidth(MHz) | 99% bandwidth(MHz) |
|----------------|---------------------|--------------------|
| 5 775          | 75.20               | 75.50              |

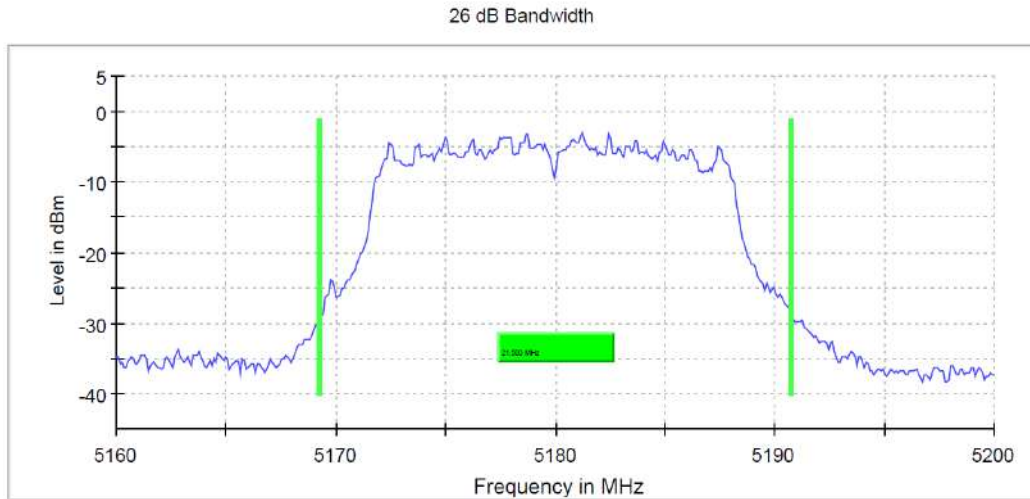
## ※Remark

1. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

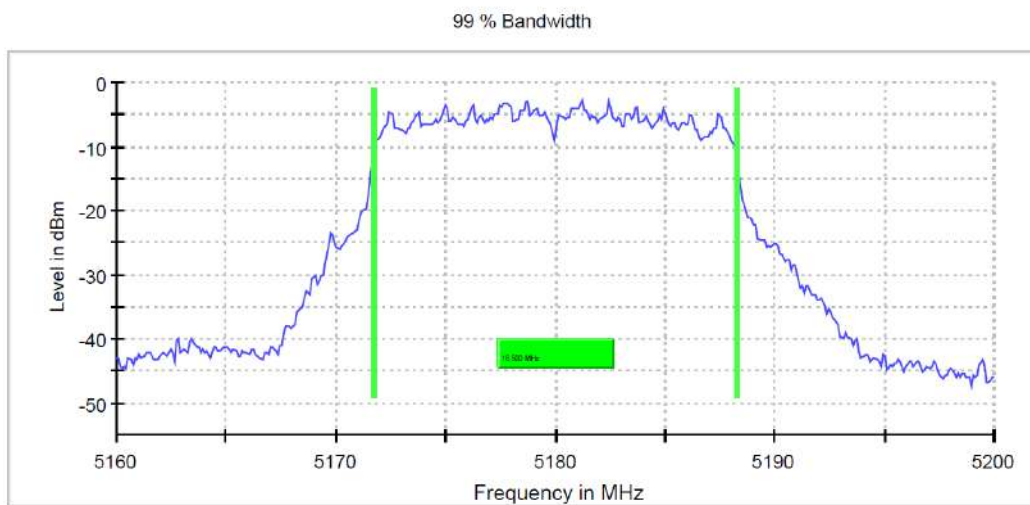
### 7.4.1 Test plot

Test mode : 802.11a (UNII-1)

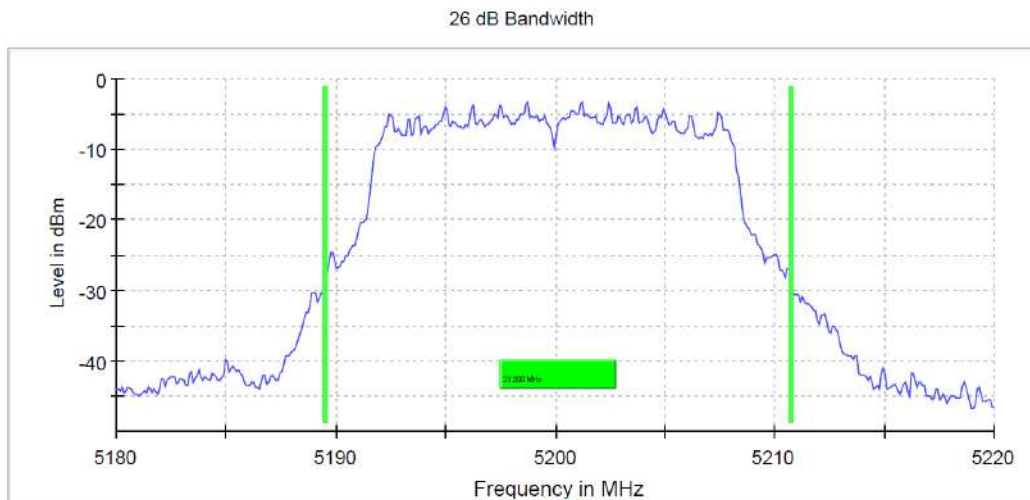
#### A.1. Lowest Ch. (5 180 MHz)\_26 dB Bandwidth



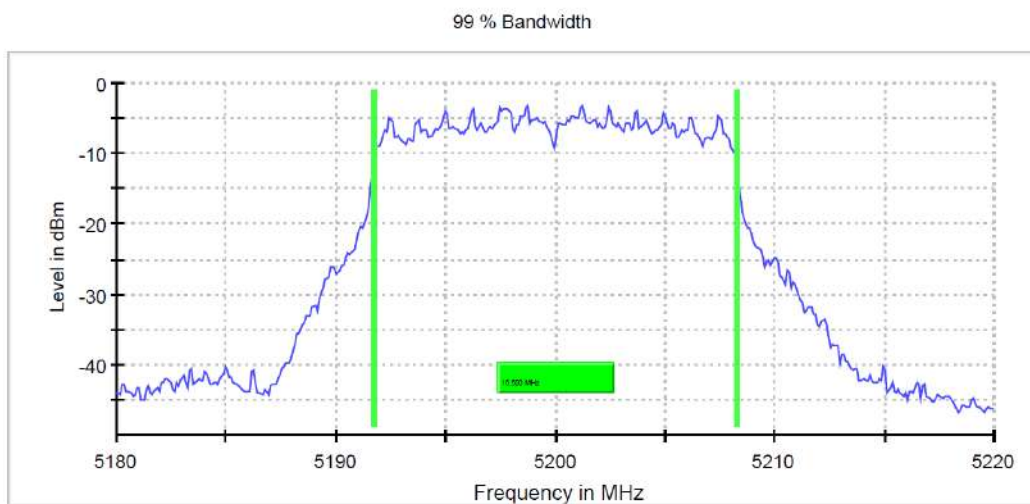
#### A.2. Lowest Ch. (5 180 MHz)\_99% Bandwidth



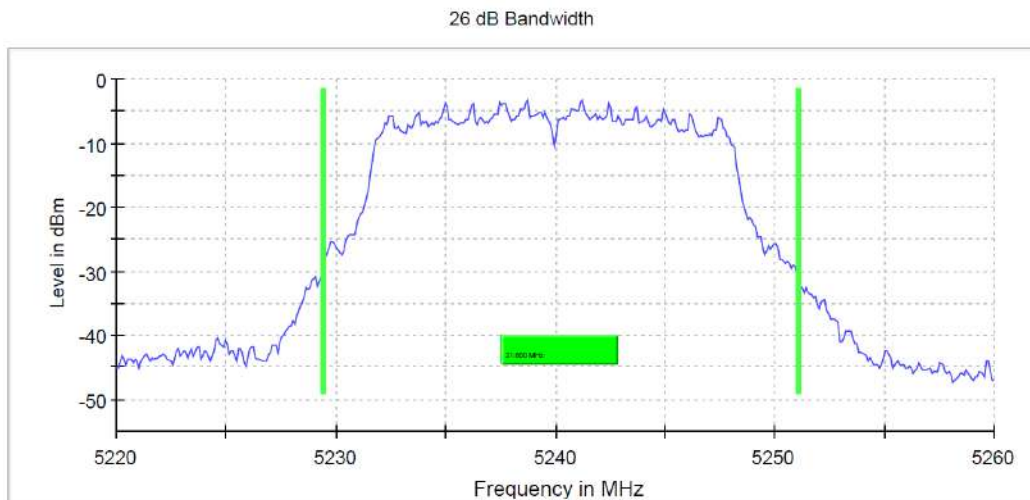
### B.1. Middle Ch. (5 200 MHz)\_26 dB Bandwidth



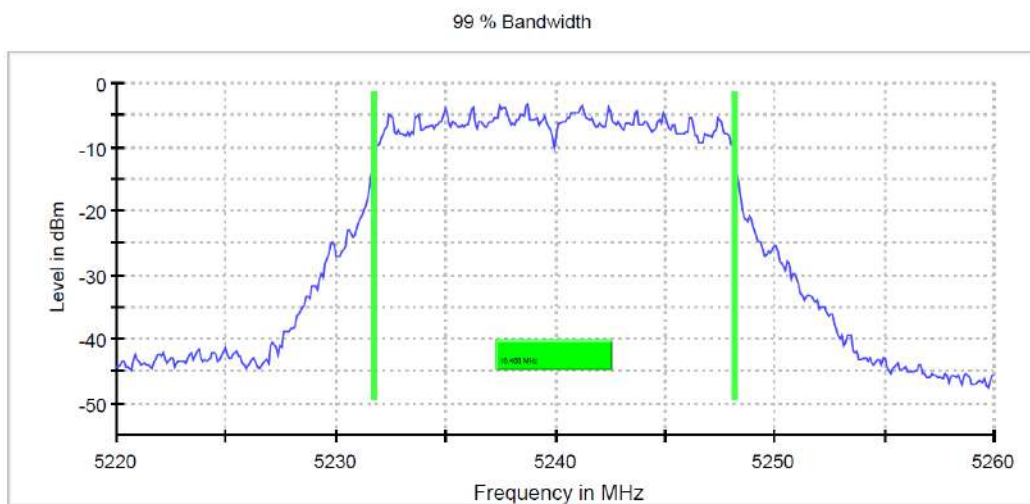
### B.2. Middle Ch. (5 200 MHz)\_99% Bandwidth



### C.1. Highest Ch. (5 240 MHz)\_26 dB Bandwidth

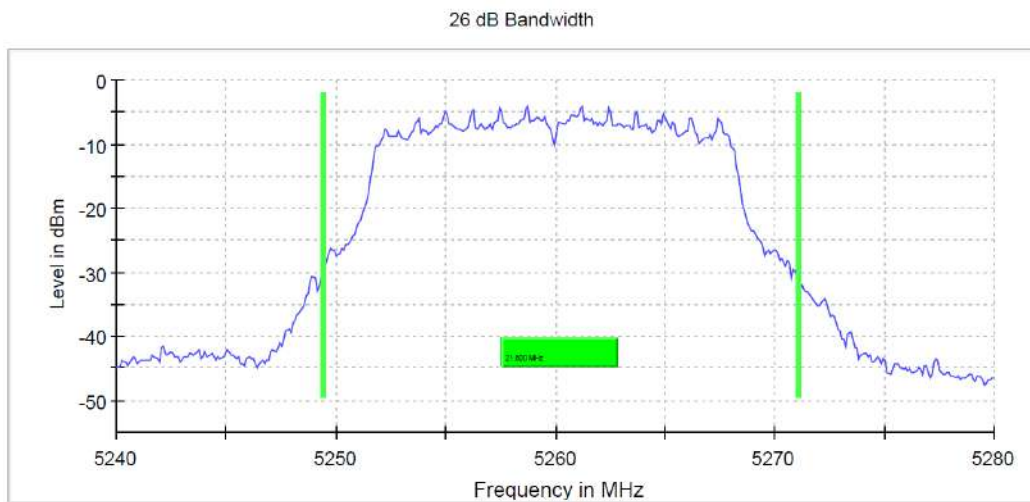


### C.2. Highest Ch. (5 240 MHz)\_99% Bandwidth

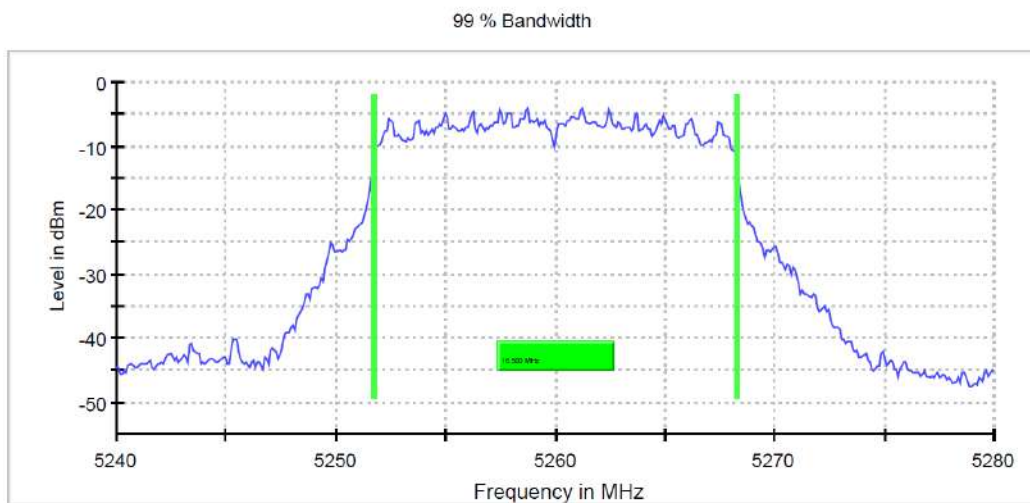


Test mode : 802.11a (UNII-2A)

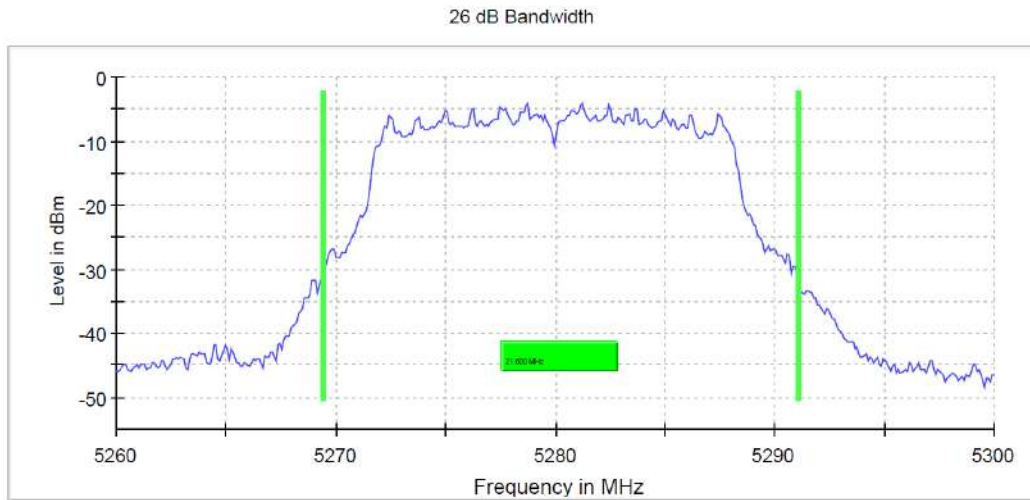
**A.1. Lowest Ch. (5 260 MHz)\_26 dB Bandwidth**



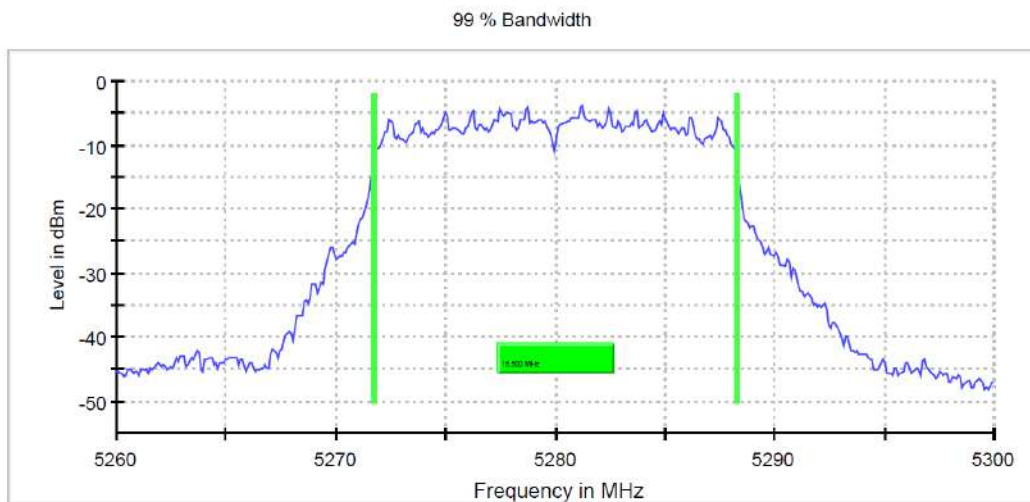
**A.2. Lowest Ch. (5 260 MHz)\_99% Bandwidth**

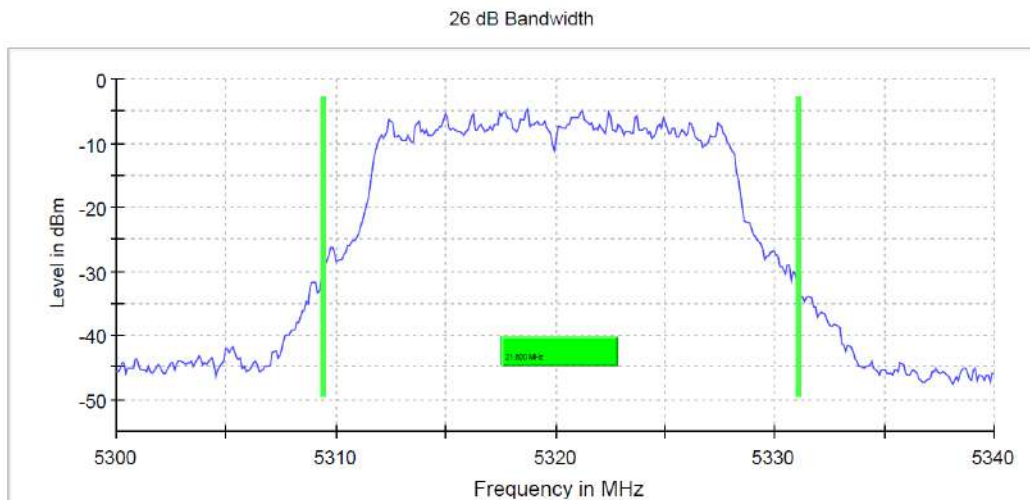
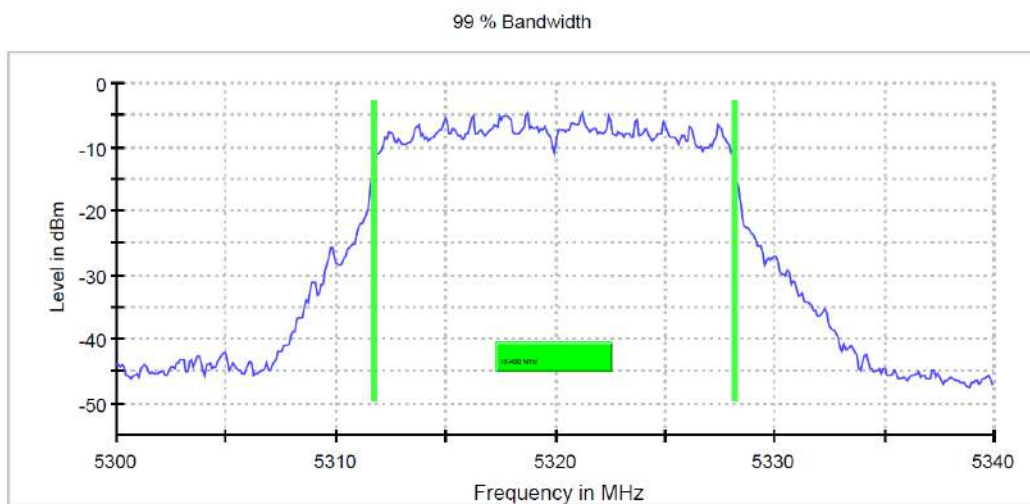


### B.1. Middle Ch. (5 280 MHz)\_26 dB Bandwidth



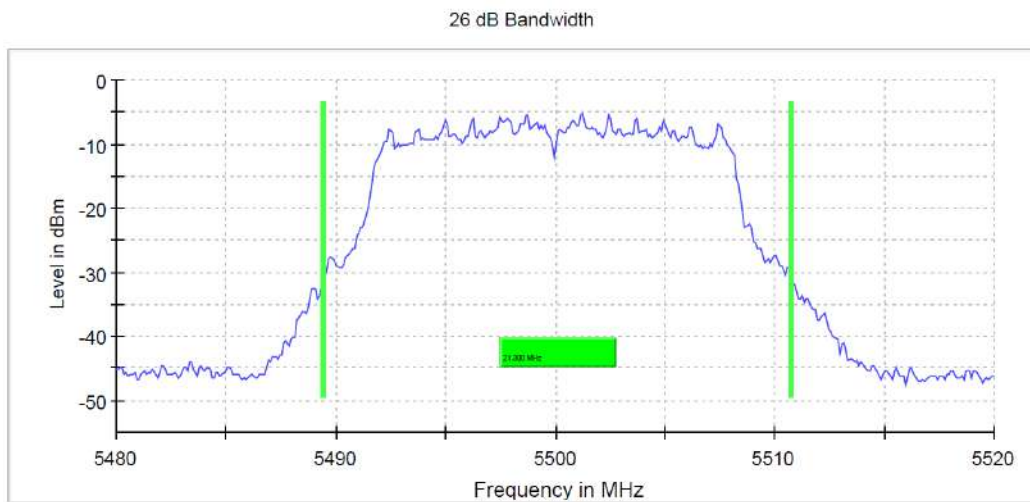
### B.2. Middle Ch. (5 280 MHz)\_99% Bandwidth



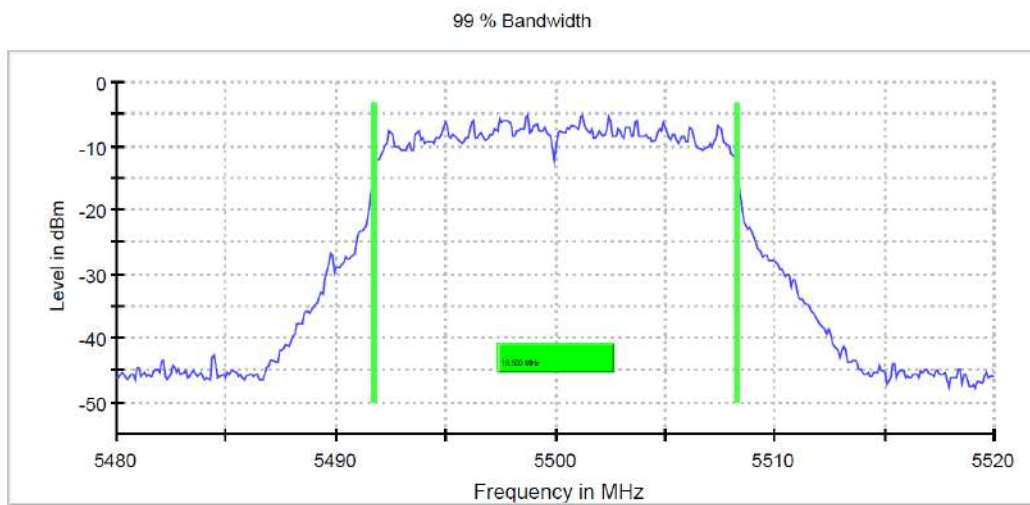
**C.1. Highest Ch. (5 320 MHz)\_26 dB Bandwidth****C.2. Highest Ch. (5 320 MHz)\_99% Bandwidth**

Test mode : 802.11a (UNII-2C)

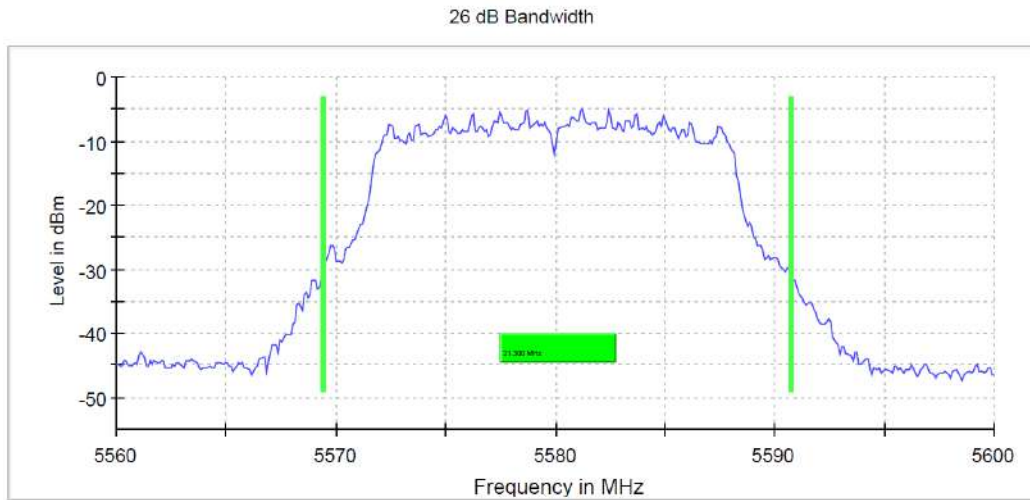
**A.1. Lowest Ch. (5 500 MHz)\_26 dB Bandwidth**



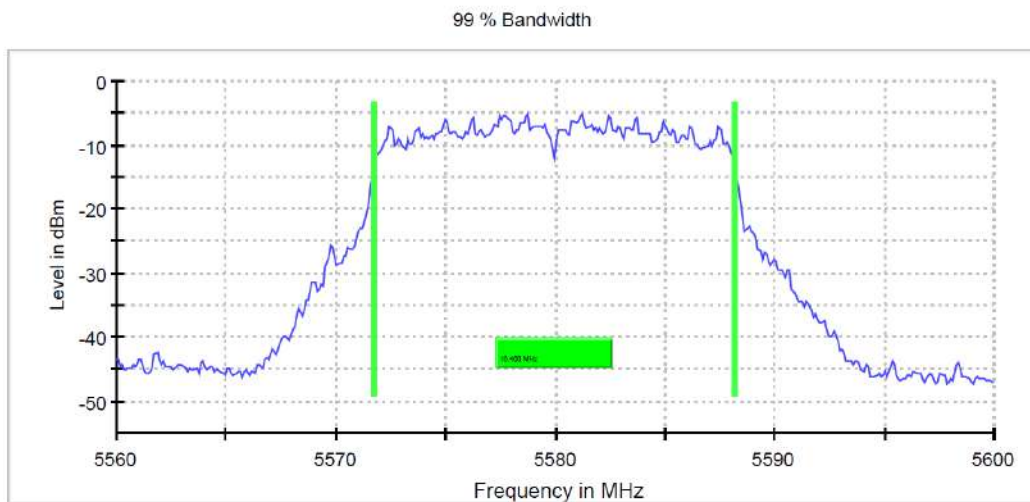
**A.2. Lowest Ch. (5 500 MHz)\_99% Bandwidth**



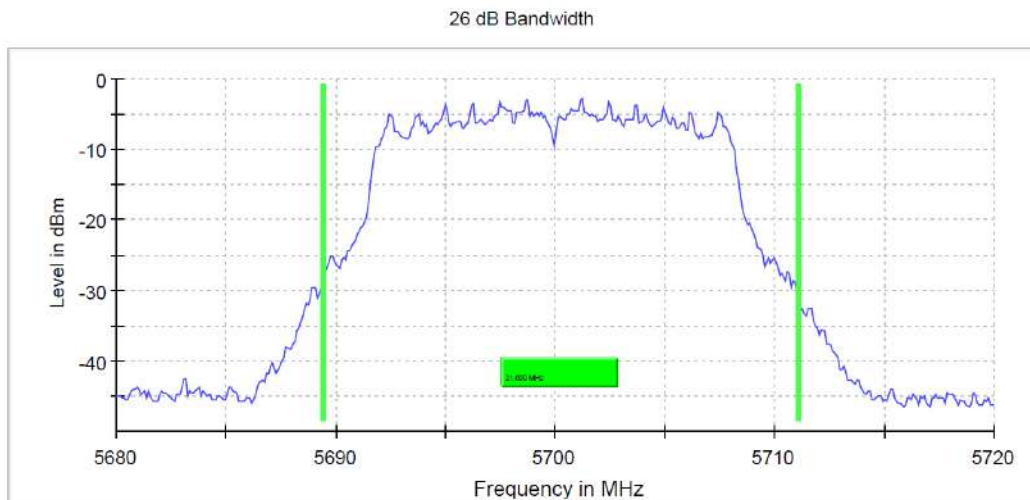
### B.1. Middle Ch. (5 580 MHz)\_26 dB Bandwidth



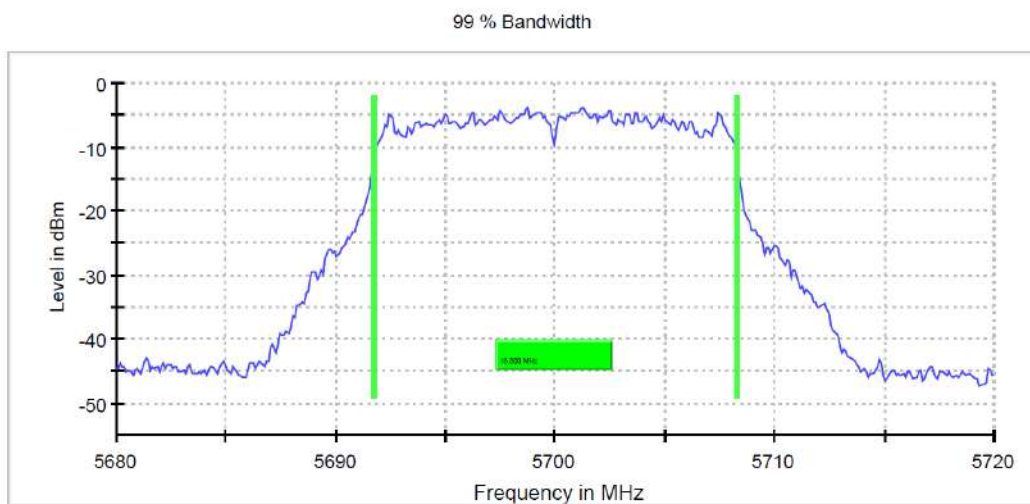
### B.2. Middle Ch. (5 580 MHz)\_99% Bandwidth



### C.1. Highest Ch. (5 700 MHz)\_26 dB Bandwidth

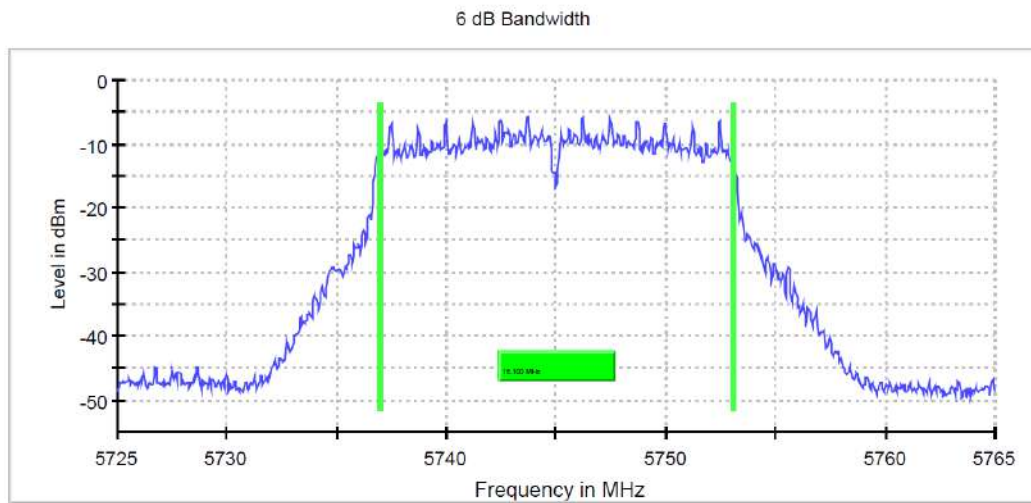


### C.2. Highest Ch. (5 700 MHz)\_99% Bandwidth

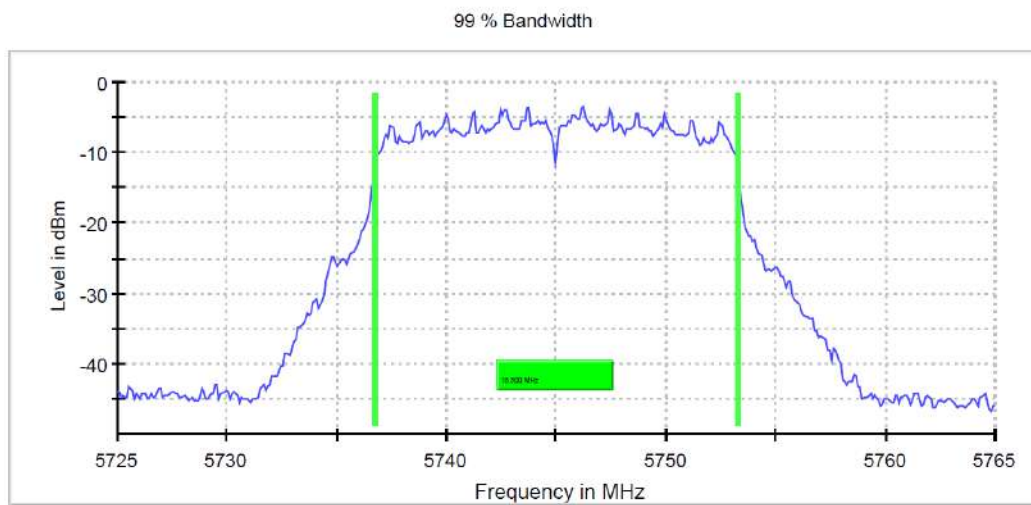


Test mode : 802.11a (UNII-3)

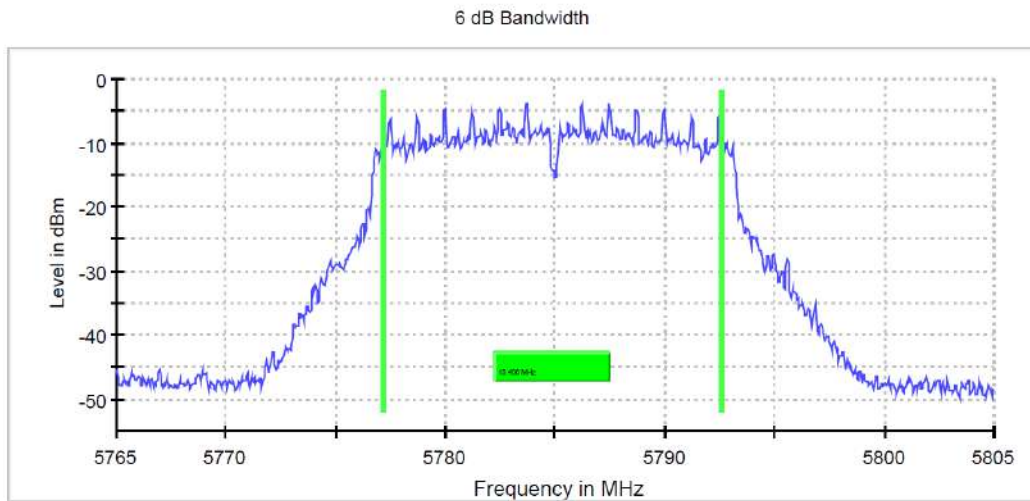
**A.1. Lowest Ch. (5 745 MHz)\_6 dB Bandwidth**



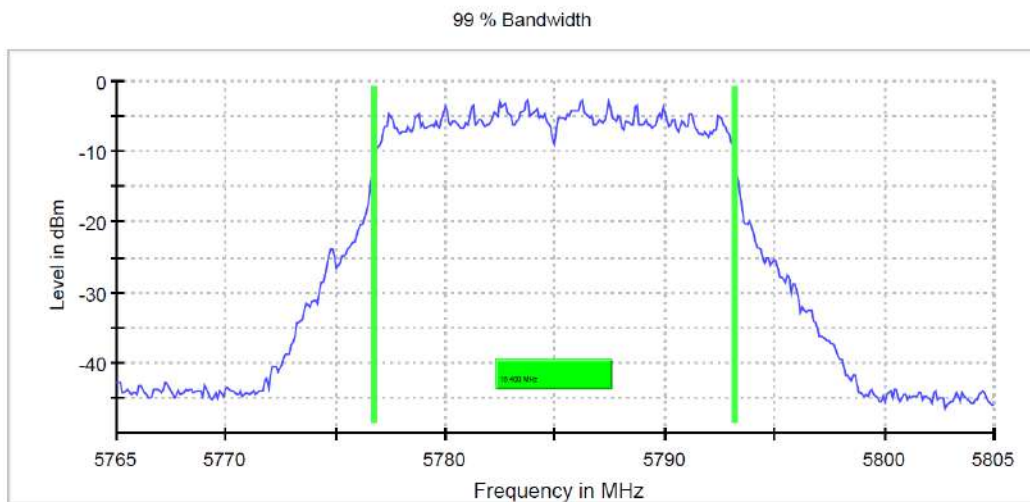
**A.2. Lowest Ch. (5 745 MHz)\_99% Bandwidth**

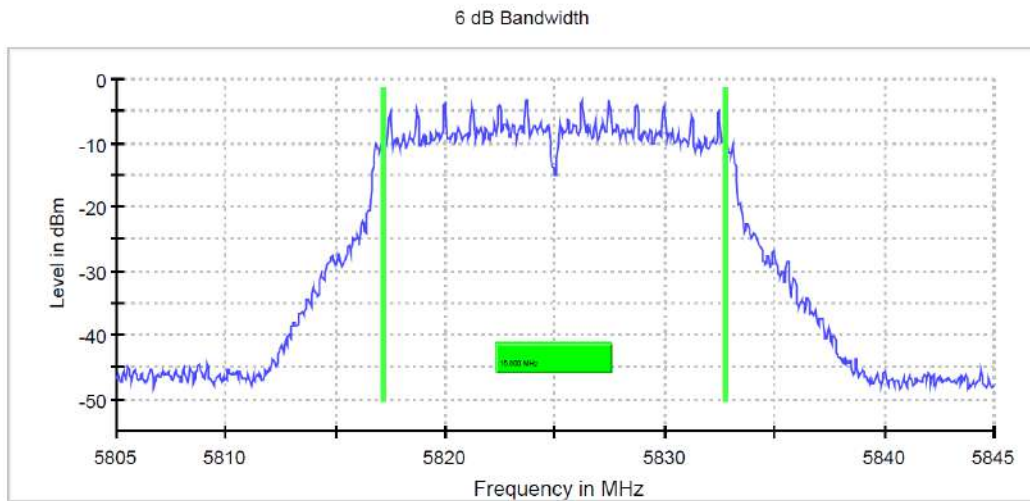
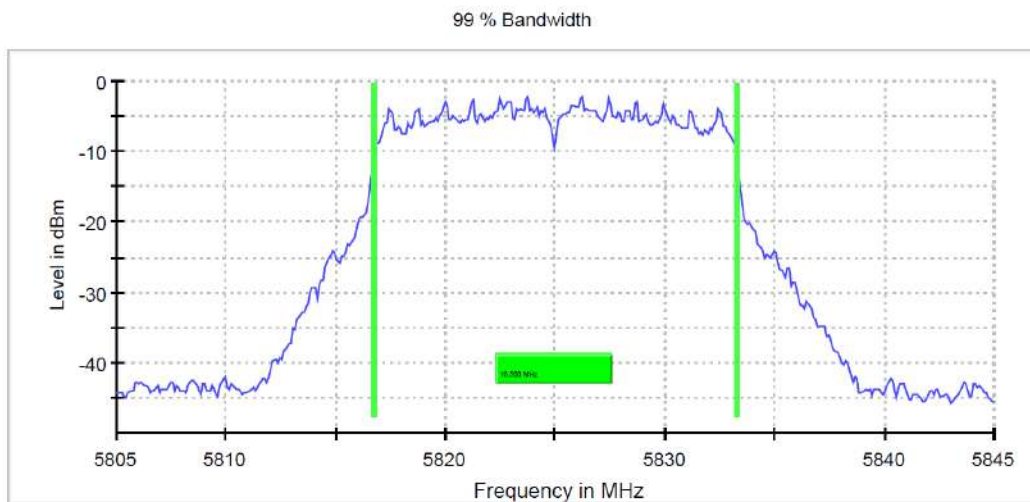


### B.1. Middle Ch. (5 785 MHz)\_6 dB Bandwidth



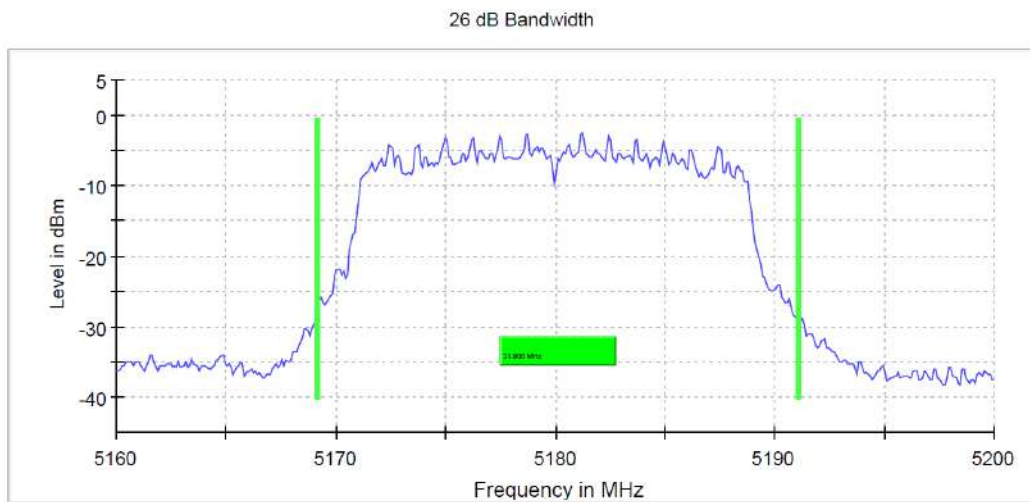
### B.2. Middle Ch. (5 785 MHz)\_99% Bandwidth



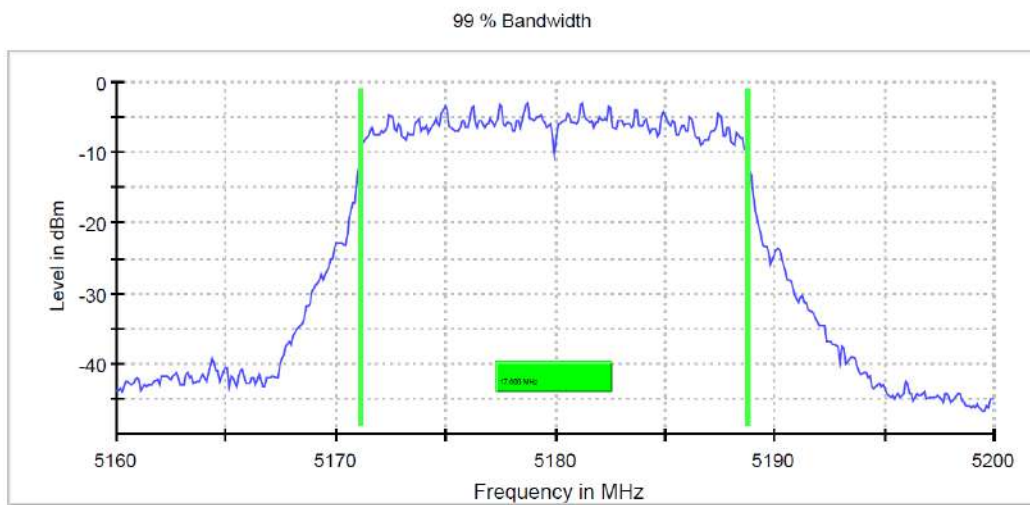
**C.1. Highest Ch. (5 825 MHz)\_6 dB Bandwidth****C.2. Highest Ch. (5 825 MHz)\_99% Bandwidth**

Test mode : 802.11n\_HT20 (UNII-1)

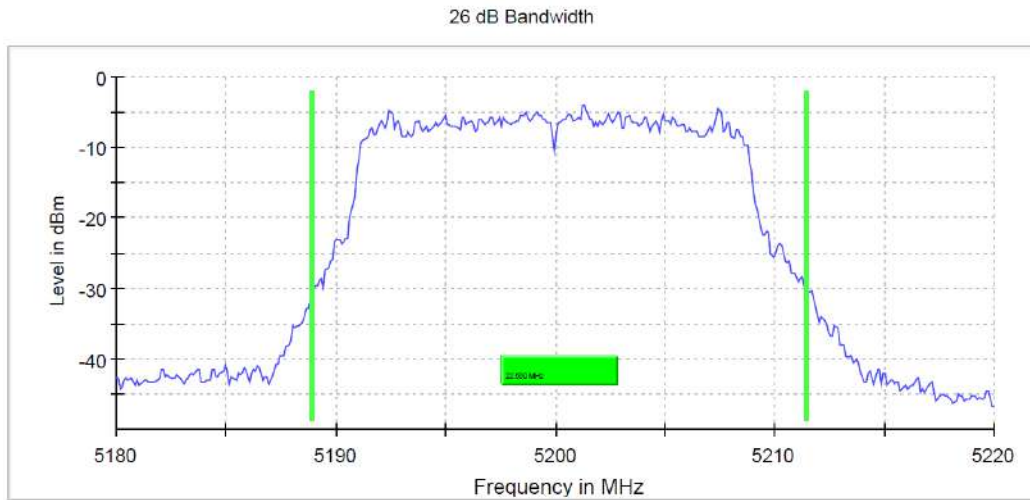
**A.1. Lowest Ch. (5 180 MHz)\_26 dB Bandwidth**



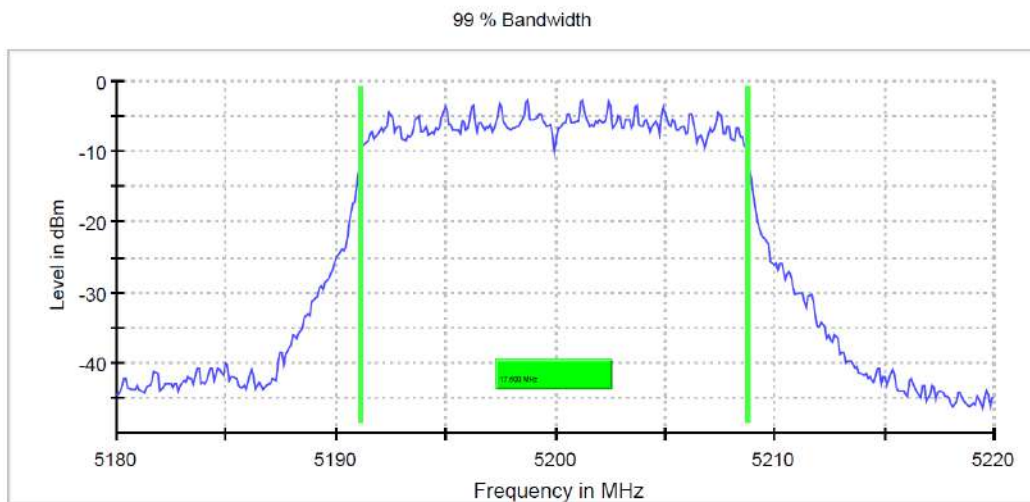
**A.2. Lowest Ch. (5 180 MHz)\_99% Bandwidth**



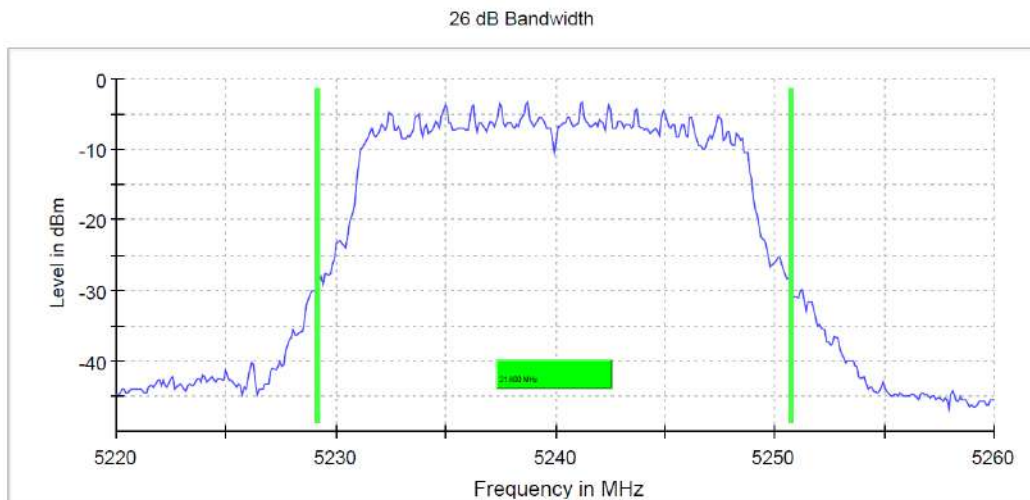
### B.1. Middle Ch. (5 200 MHz)\_26 dB Bandwidth



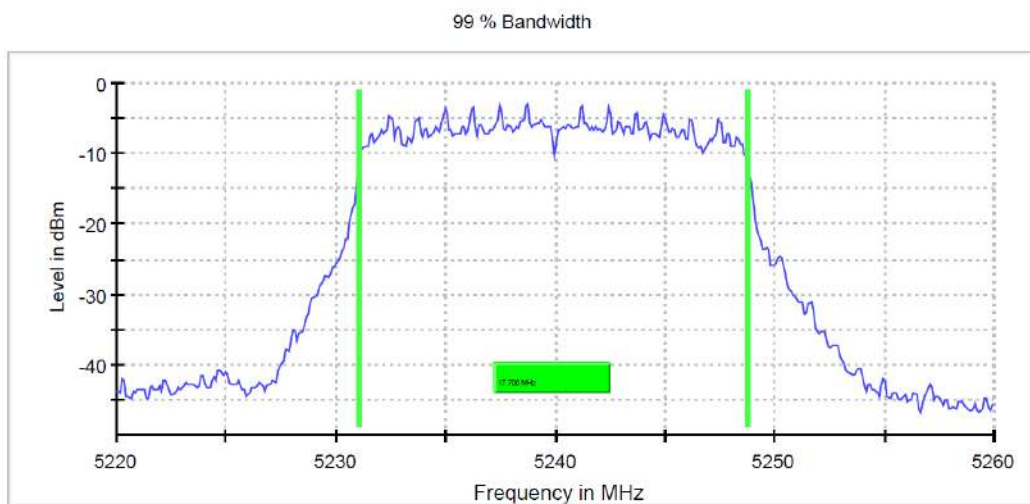
### B.2. Middle Ch. (5 200 MHz)\_99% Bandwidth



### C.1. Highest Ch. (5 240 MHz)\_26 dB Bandwidth

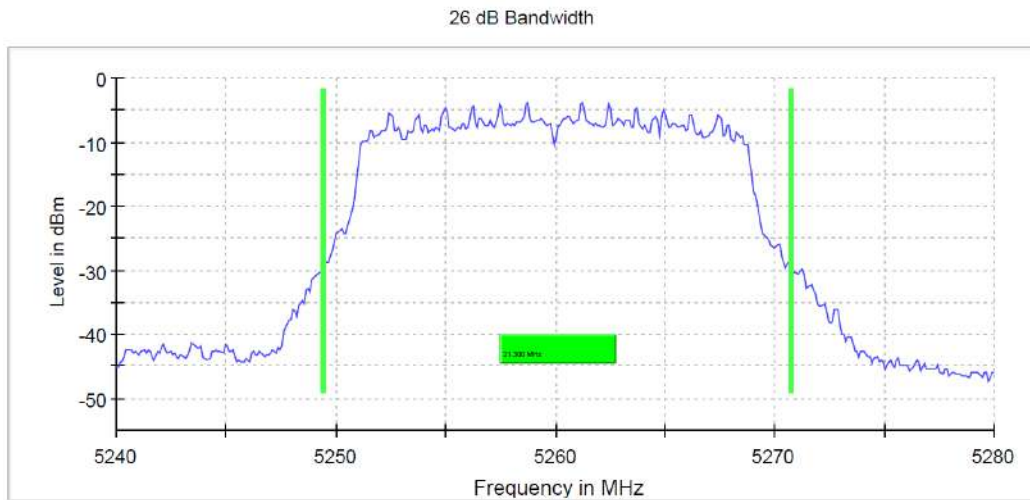


### C.2. Highest Ch. (5 240 MHz)\_99% Bandwidth

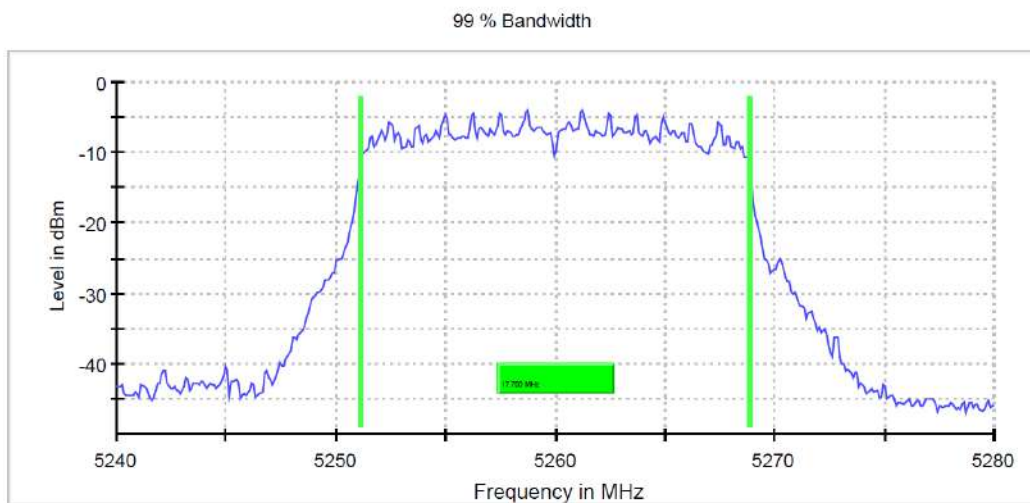


Test mode : 802.11n\_HT20 (UNII-2A)

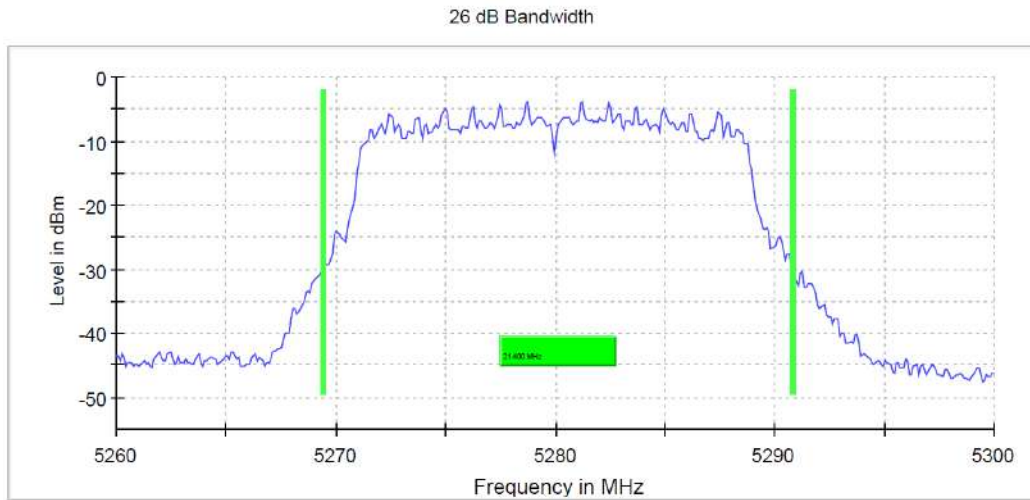
#### A.1. Lowest Ch. (5 260 MHz)\_26 dB Bandwidth



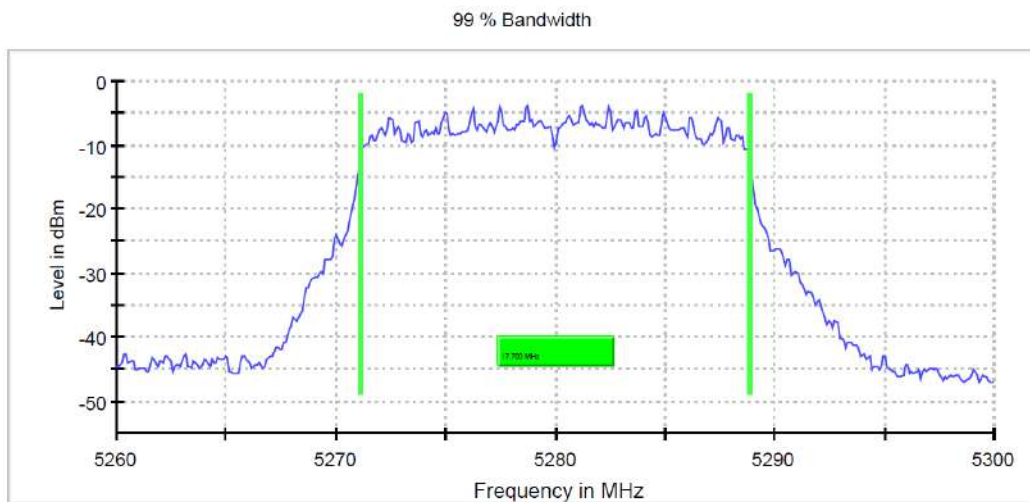
#### A.2. Lowest Ch. (5 260 MHz)\_99% Bandwidth

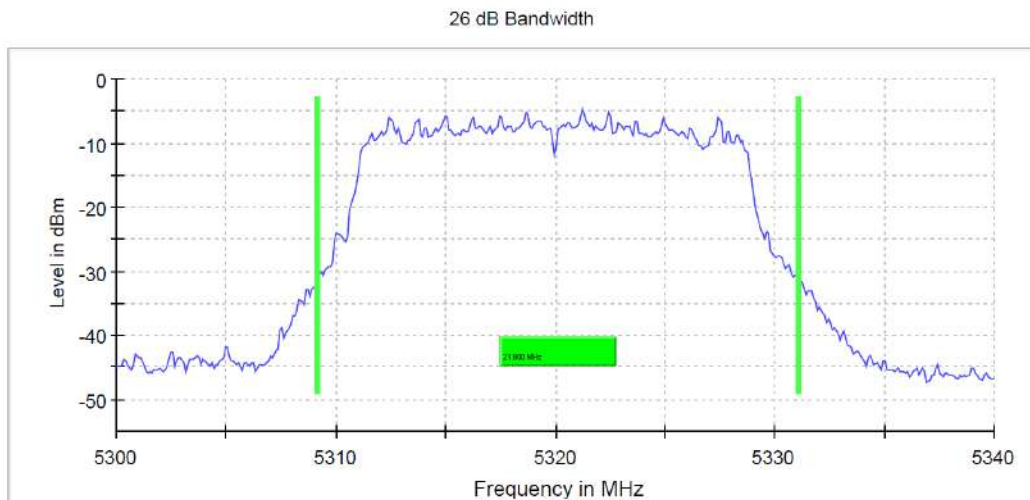
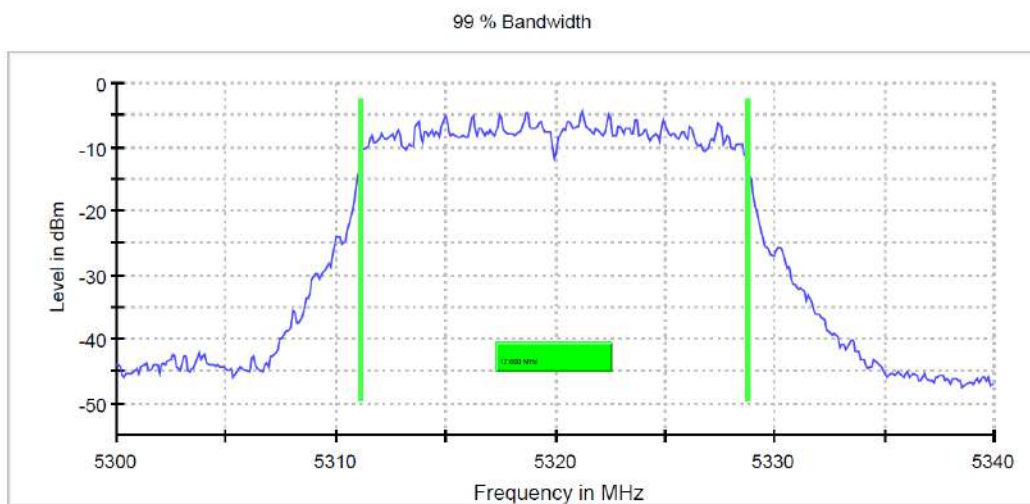


### B.1. Middle Ch. (5 280 MHz)\_26 dB Bandwidth



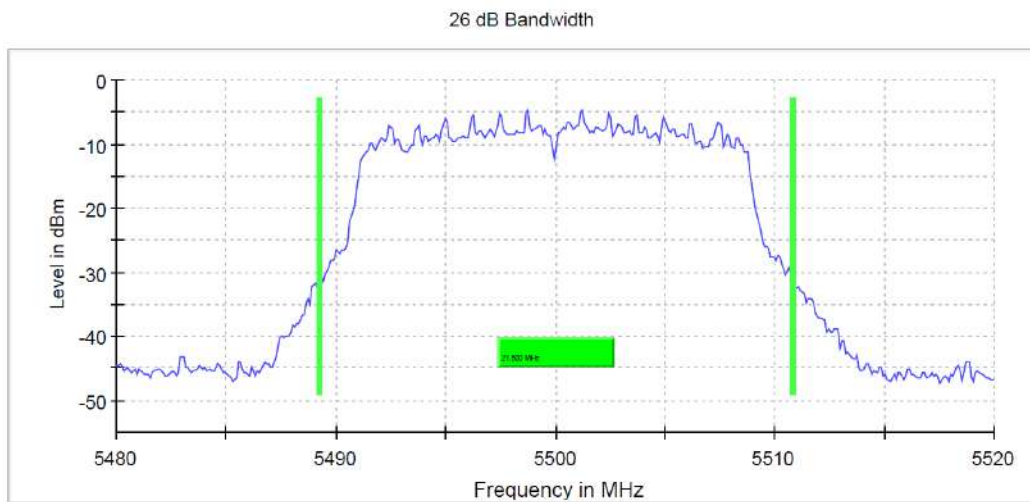
### B.2. Middle Ch. (5 280 MHz)\_99% Bandwidth



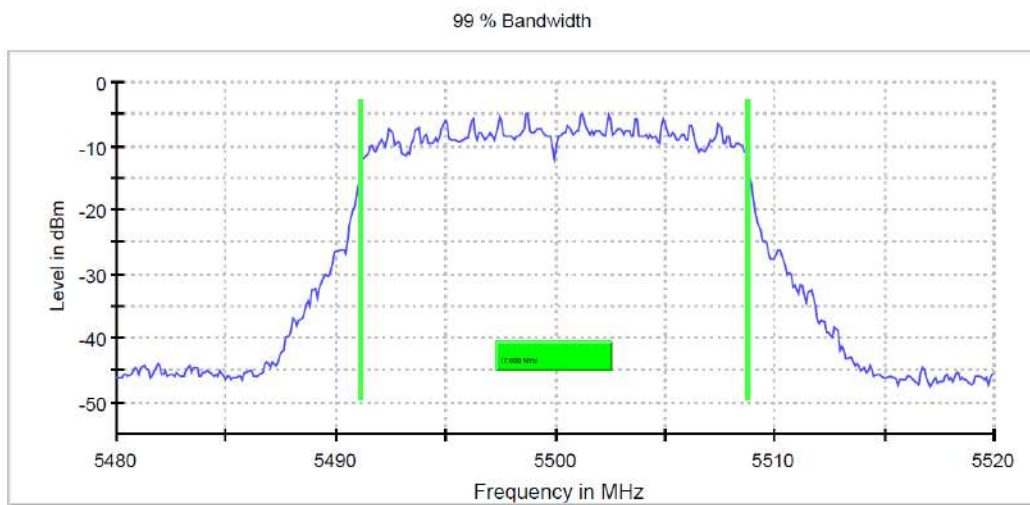
**C.1. Highest Ch. (5 320 MHz)\_26 dB Bandwidth****C.2. Highest Ch. (5 320 MHz)\_99% Bandwidth**

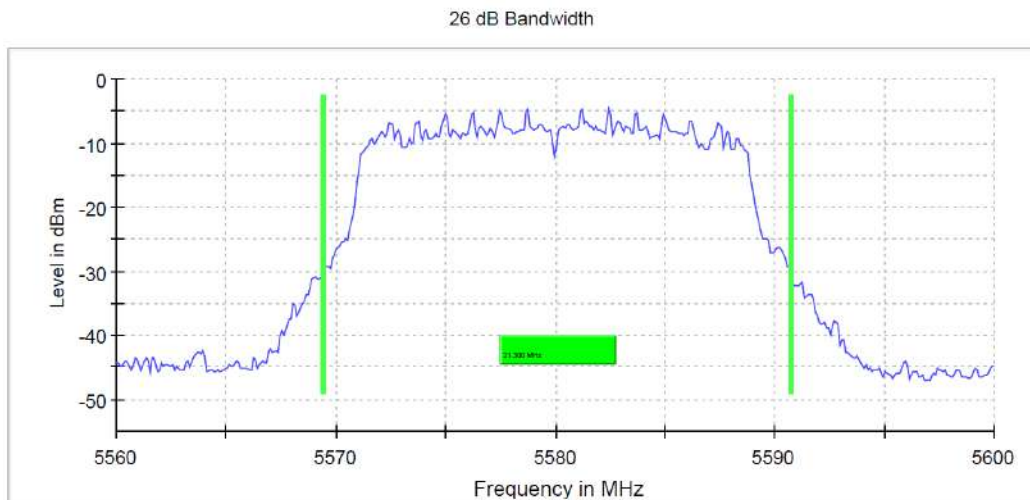
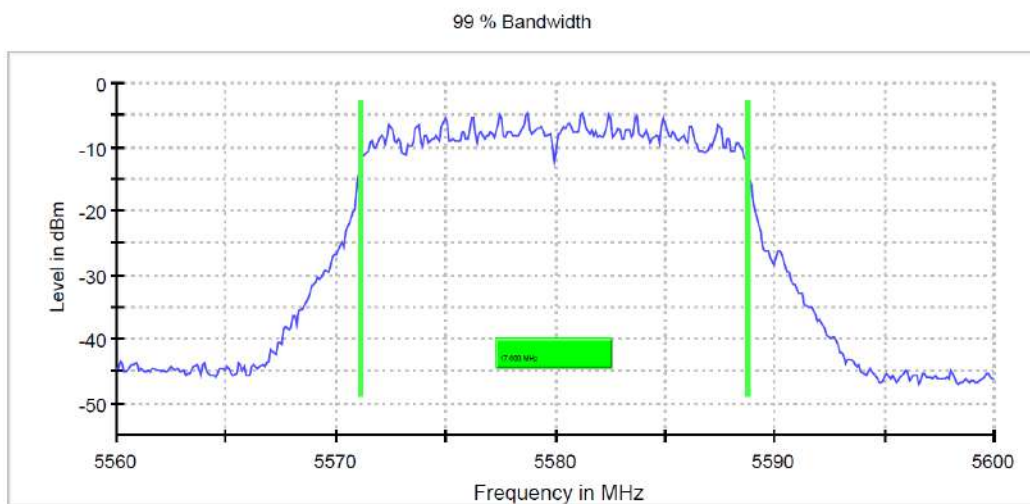
Test mode : 802.11n\_HT20 (UNII-2C)

**A.1. Lowest Ch. (5 500 MHz)\_26 dB Bandwidth**

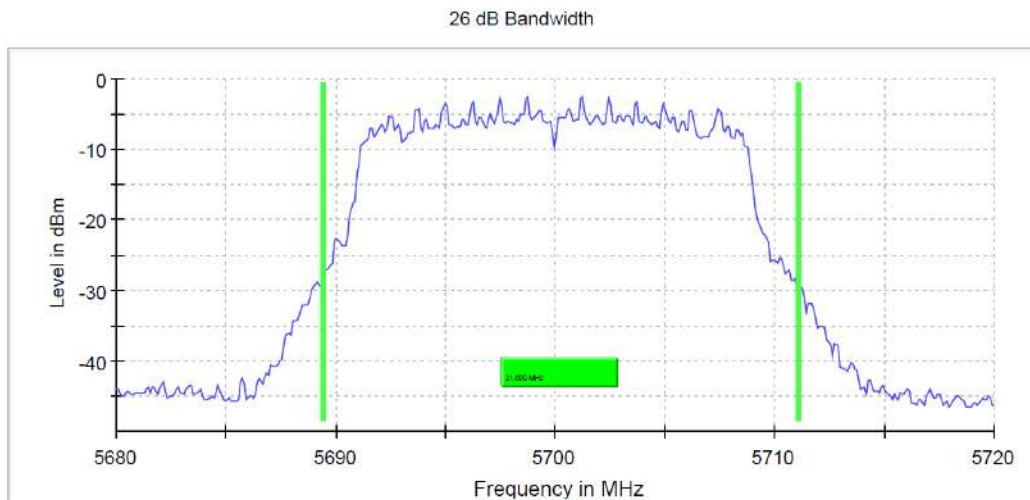


**A.2. Lowest Ch. (5 500 MHz)\_99% Bandwidth**

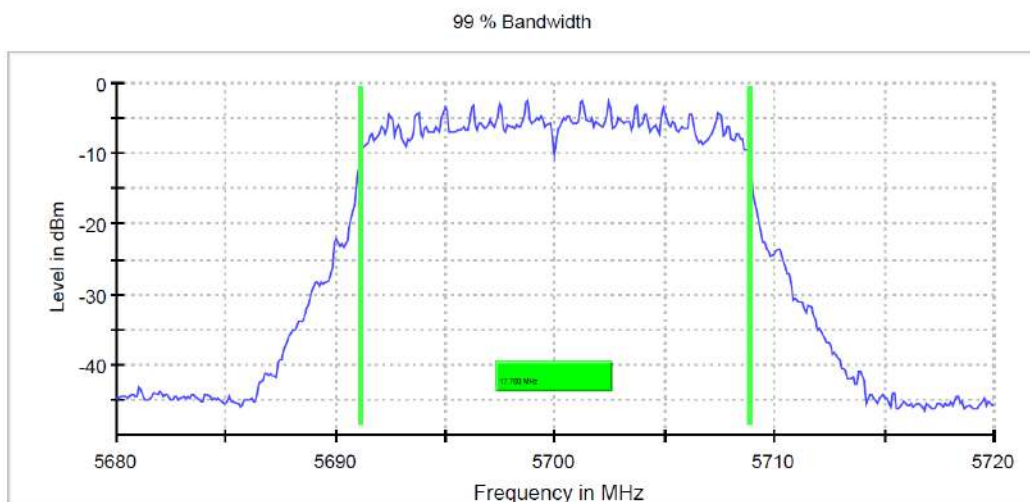


**B.1. Middle Ch. (5 580 MHz)\_26 dB Bandwidth****B.2. Middle Ch. (5 580 MHz)\_99% Bandwidth**

### C.1. Highest Ch. (5 700 MHz)\_26 dB Bandwidth

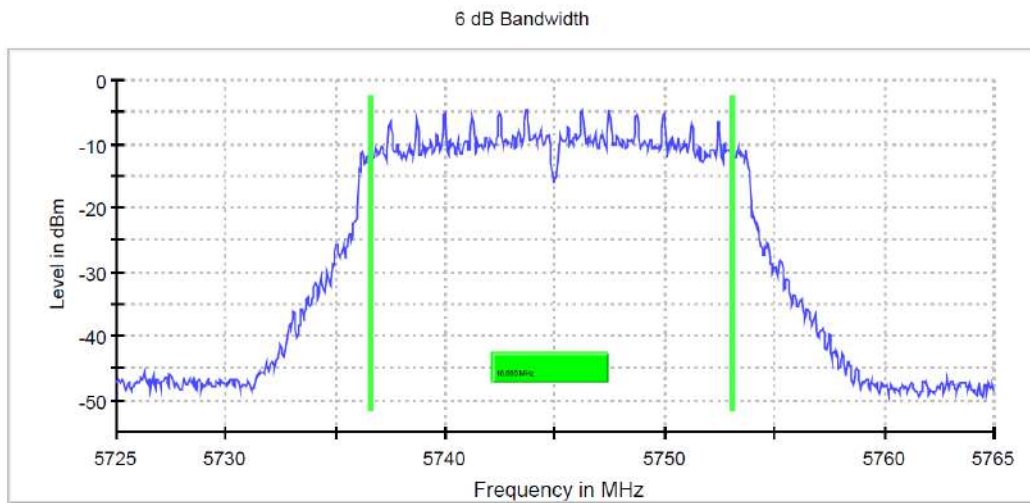


### C.2. Highest Ch. (5 700 MHz)\_99% Bandwidth

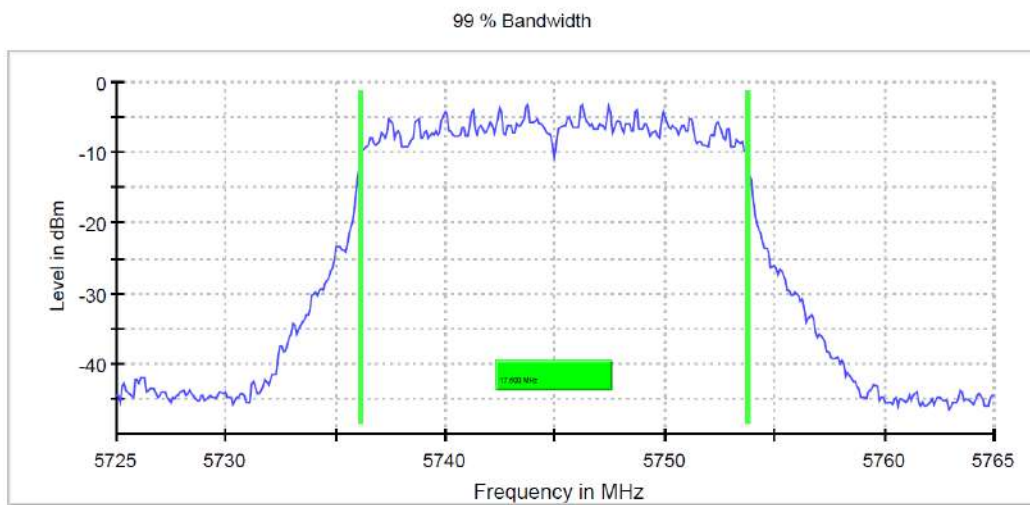


Test mode : 802.11n\_HT20 (UNII-3)

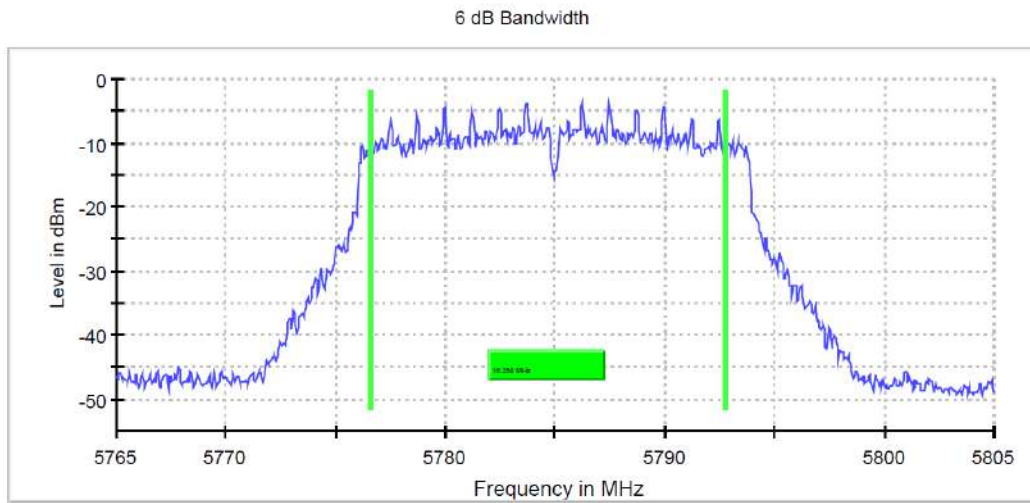
**A.1. Lowest Ch. (5 745 MHz)\_6 dB Bandwidth**



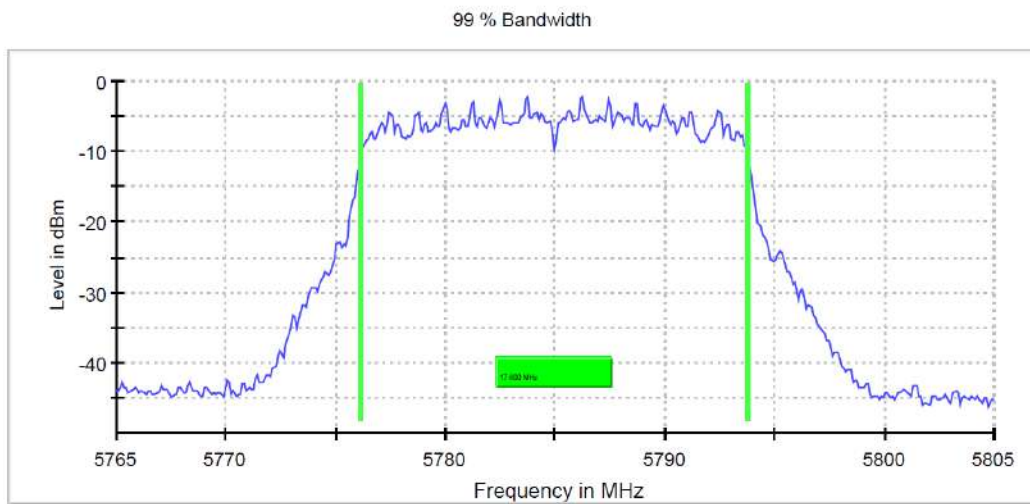
**A.2. Lowest Ch. (5 745 MHz)\_99% Bandwidth**



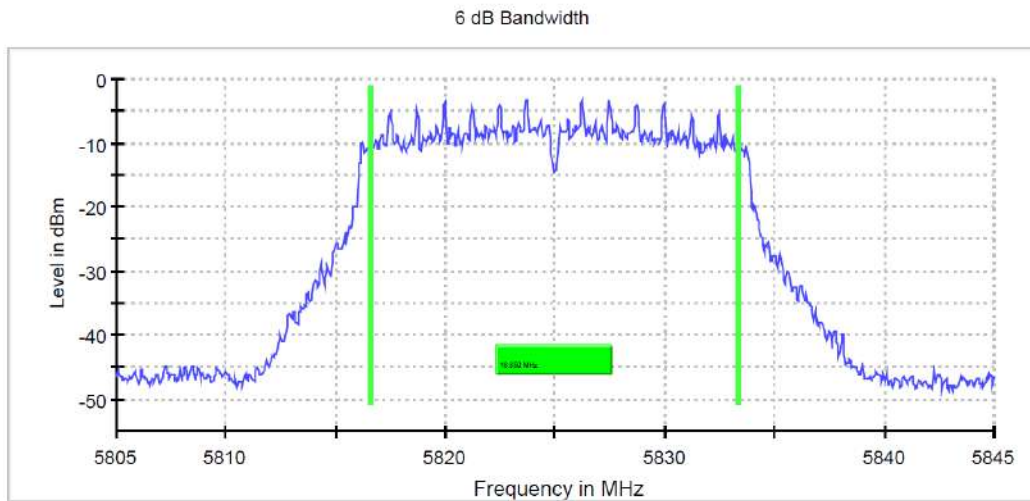
### B.1. Middle Ch. (5 785 MHz)\_6 dB Bandwidth



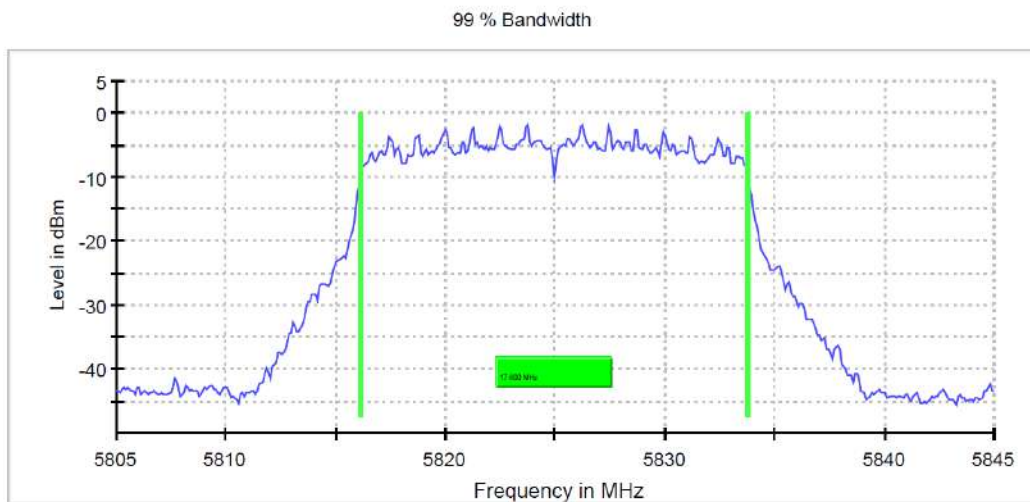
### B.2. Middle Ch. (5 785 MHz)\_99% Bandwidth



### C.1. Highest Ch. (5 825 MHz)\_6 dB Bandwidth

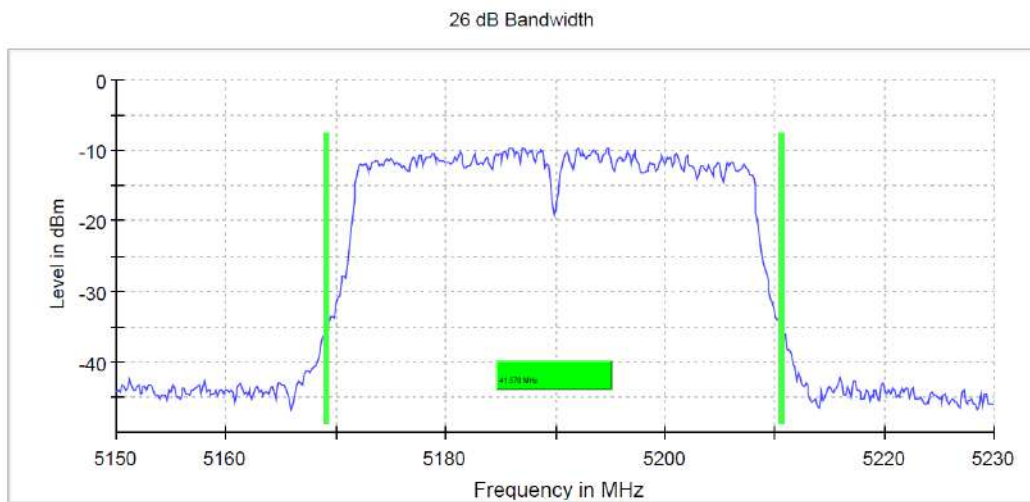


### C.2. Highest Ch. (5 825 MHz)\_99% Bandwidth

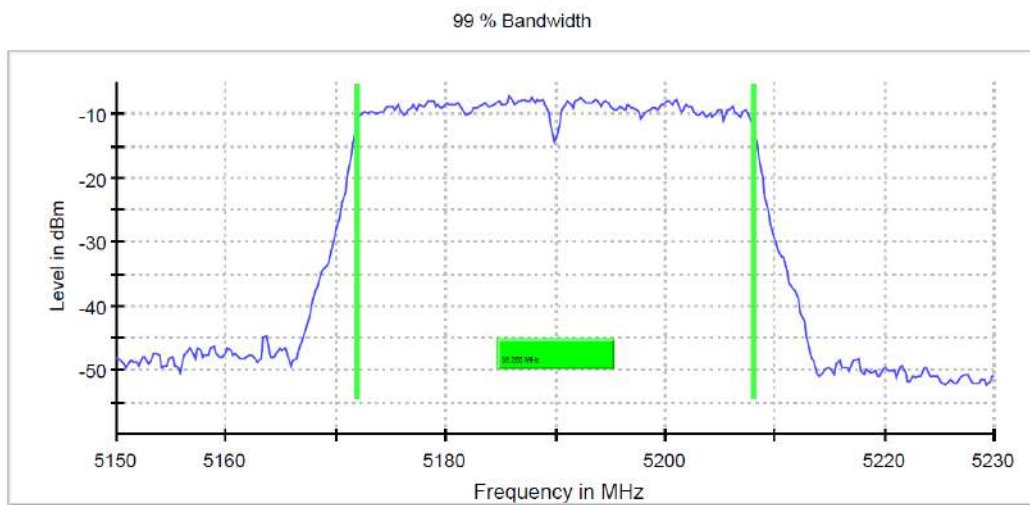


Test mode : 802.11n\_HT40 (UNII-1)

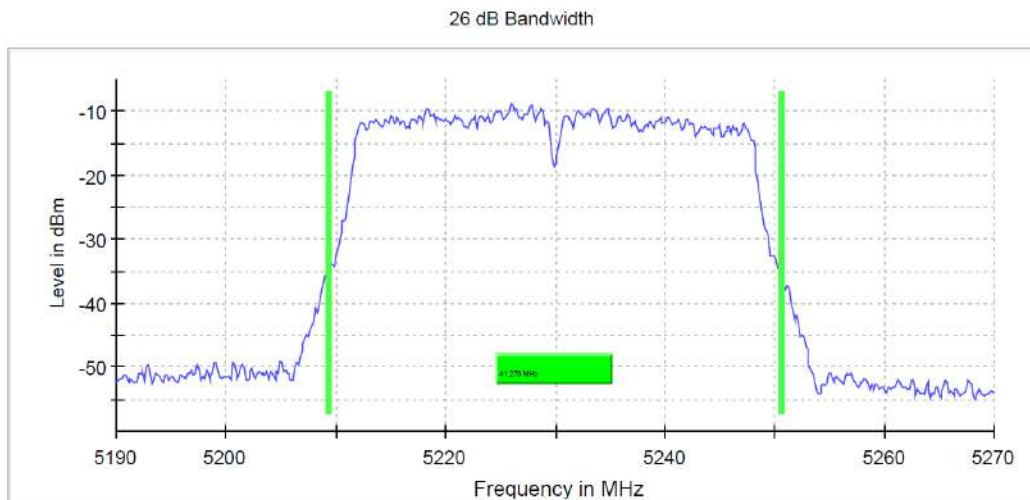
**A.1. Lowest Ch. (5 190 MHz)\_26 dB Bandwidth**



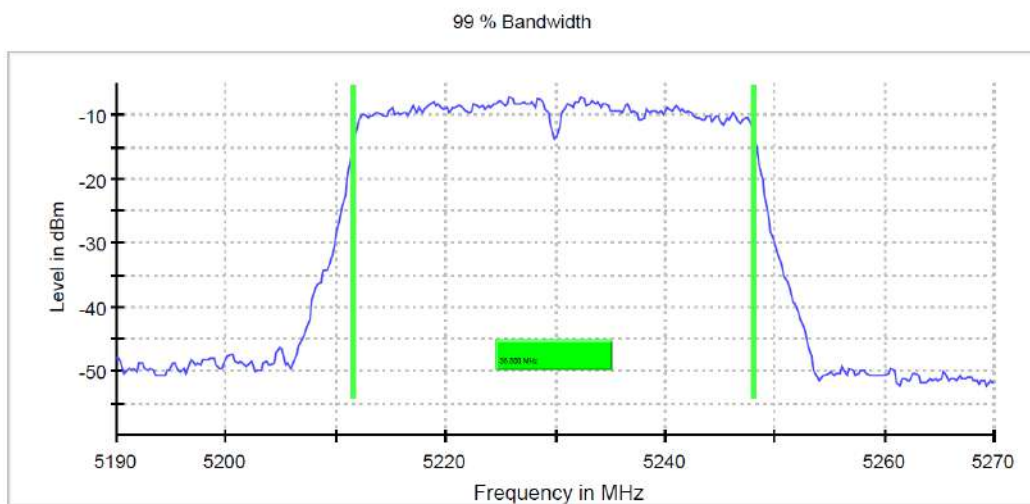
**A.2. Lowest Ch. (5 190 MHz)\_99% Bandwidth**



### B.1. Highest Ch. (5 230 MHz)\_26 dB Bandwidth

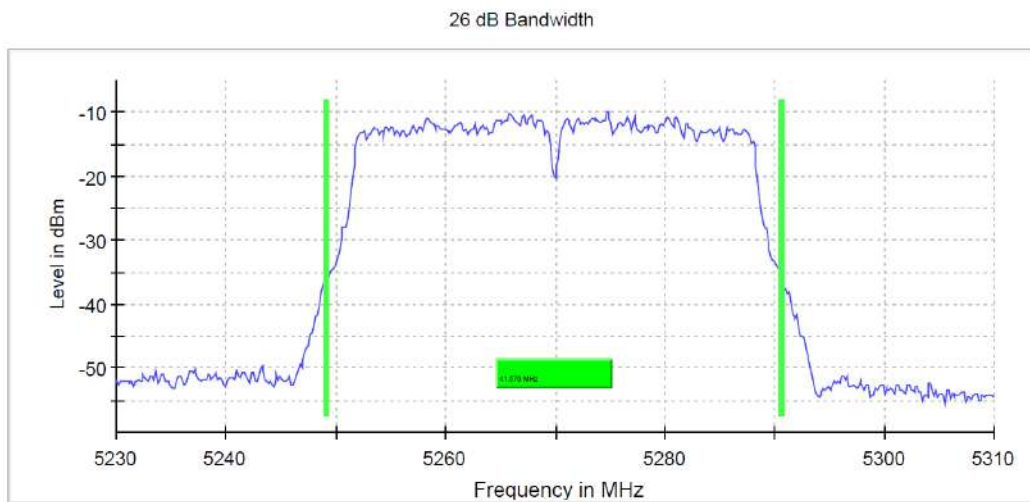


### B.2. Highest Ch. (5 230 MHz)\_99% Bandwidth

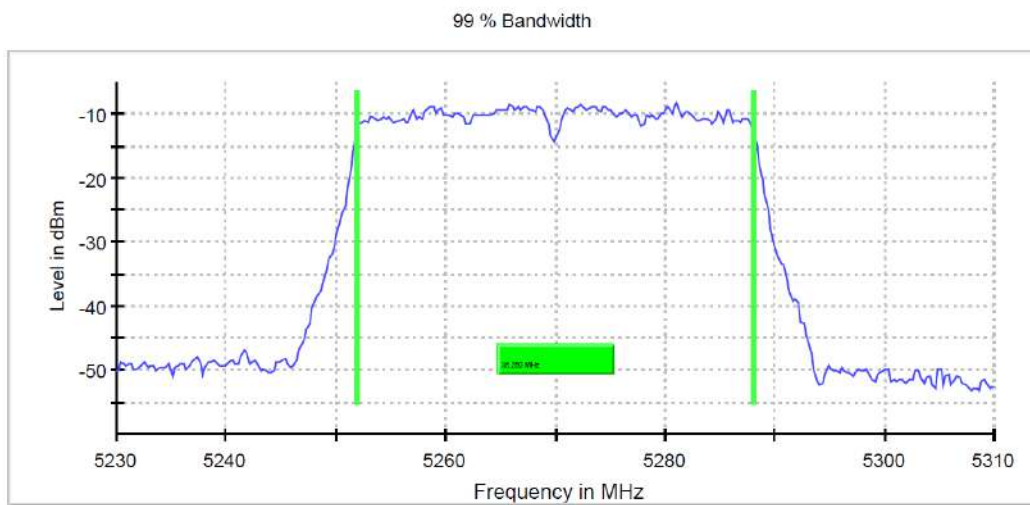


Test mode : 802.11n\_HT40 (UNII-2A)

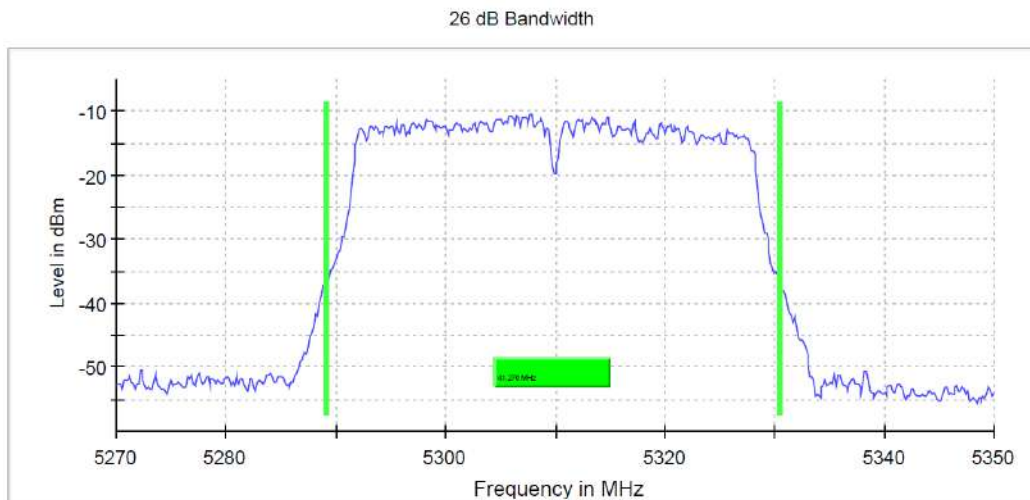
**A.1. Lowest Ch. (5 270 MHz)\_26 dB Bandwidth**



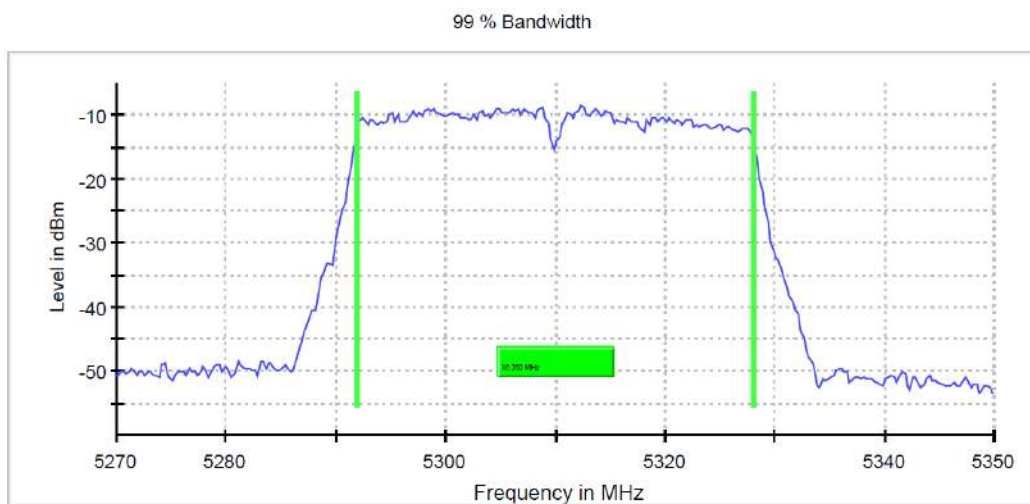
**A.2. Lowest Ch. (5 270 MHz)\_99% Bandwidth**



### B.1. Highest Ch. (5 310 MHz)\_26 dB Bandwidth

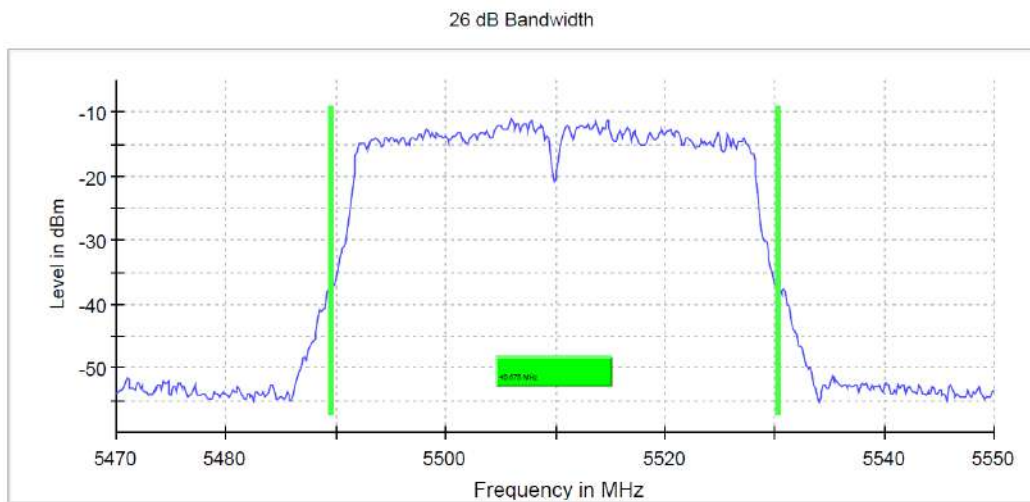


### B.2. Highest Ch. (5 310 MHz)\_99% Bandwidth

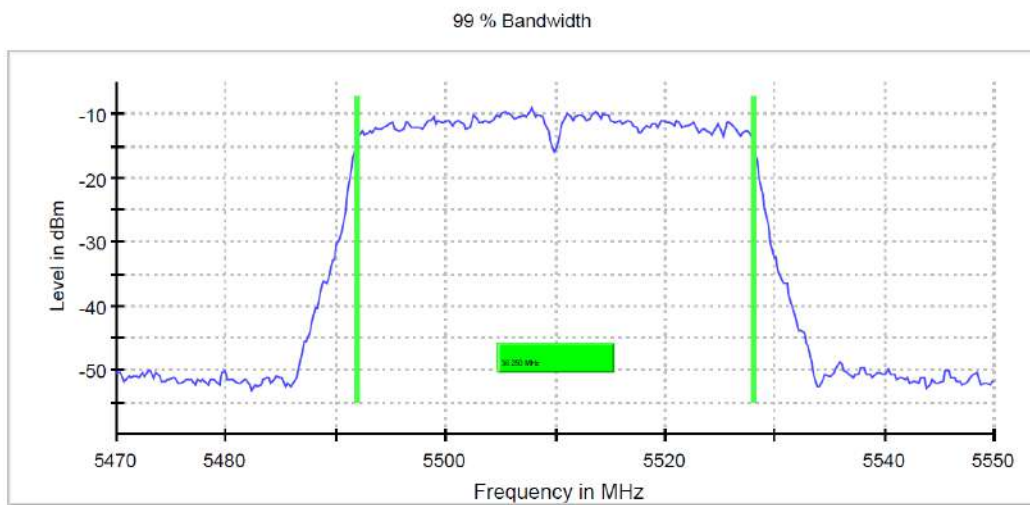


Test mode : 802.11n\_HT40 (UNII-2C)

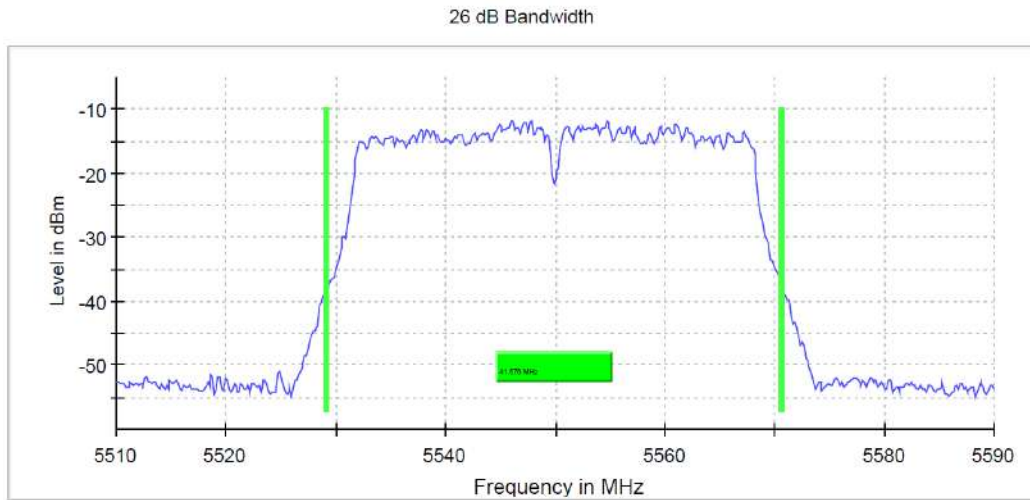
**A.1. Lowest Ch. (5 510 MHz)\_26 dB Bandwidth**



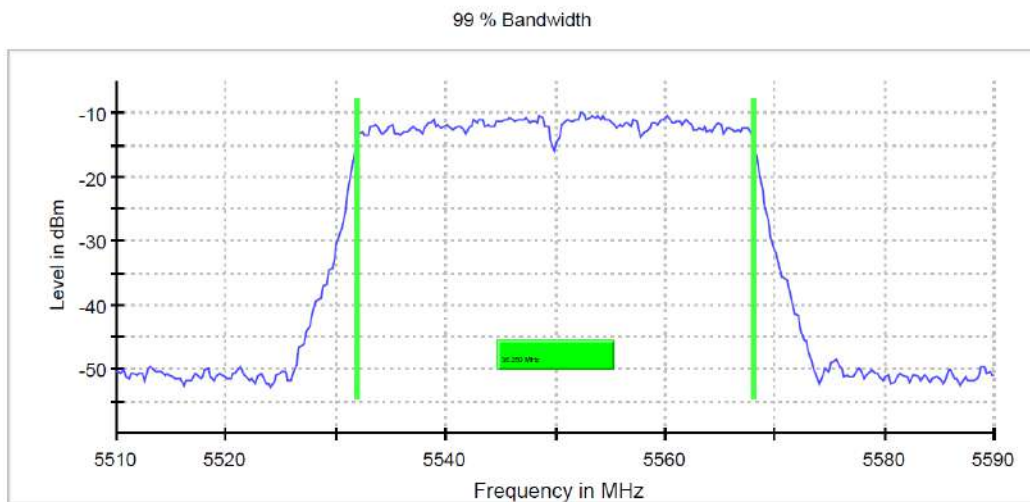
**A.2. Lowest Ch. (5 510 MHz)\_99% Bandwidth**

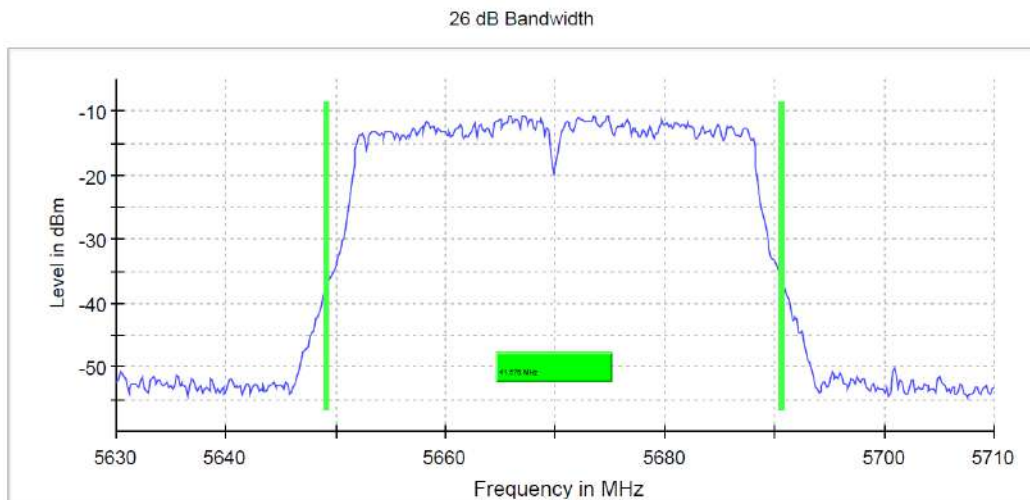
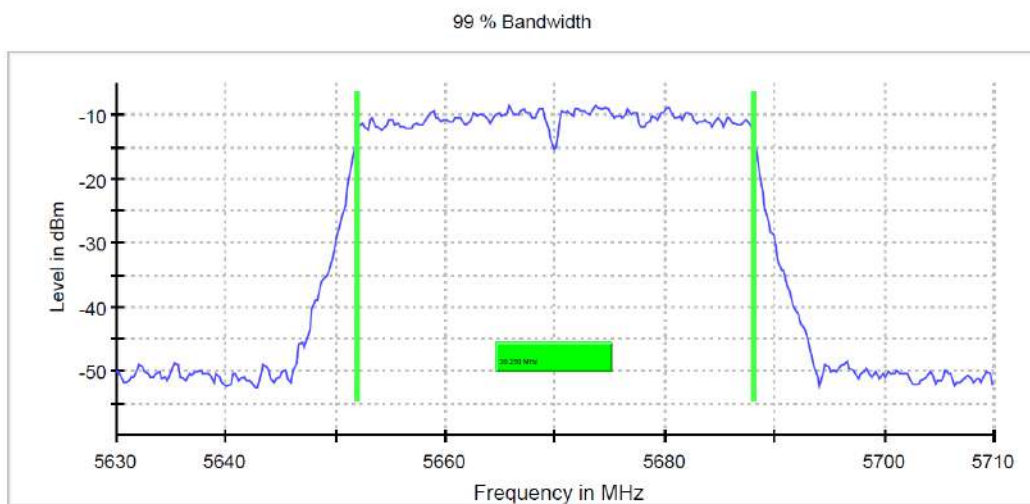


### B.1. Middle Ch. (5 550 MHz)\_26 dB Bandwidth



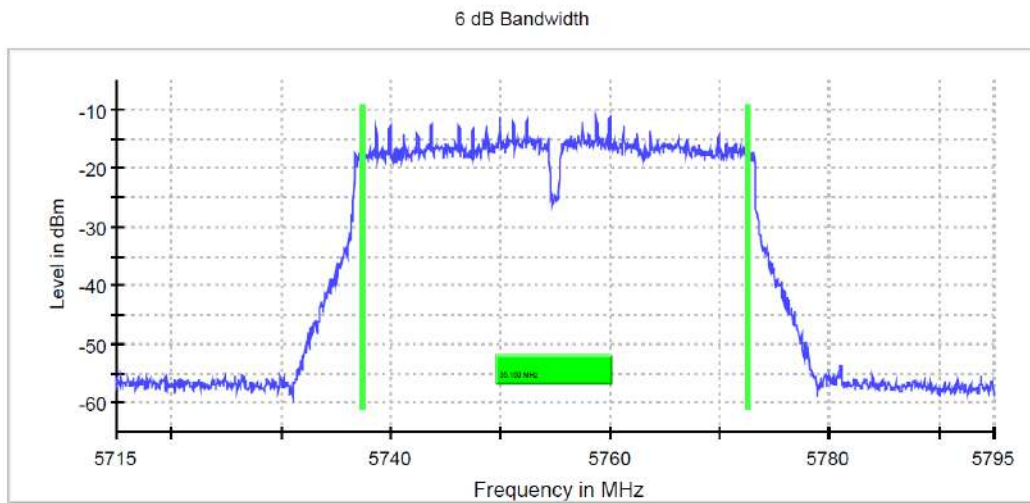
### B.2. Middle Ch. (5 550 MHz)\_99% Bandwidth



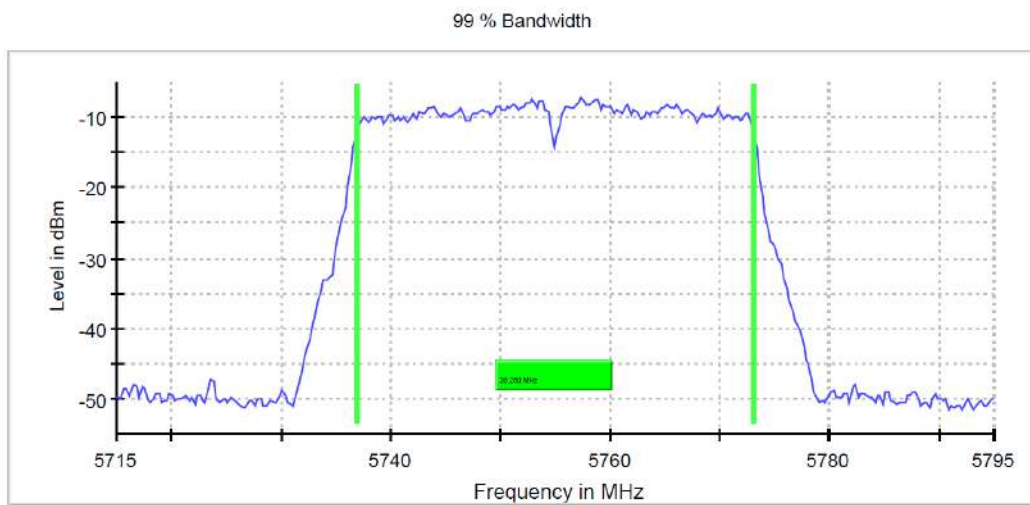
**C.1. Highest Ch. (5 670 MHz)\_26 dB Bandwidth****C.2. Highest Ch. (5 670 MHz)\_99% Bandwidth**

Test mode : 802.11n\_HT40 (UNII-3)

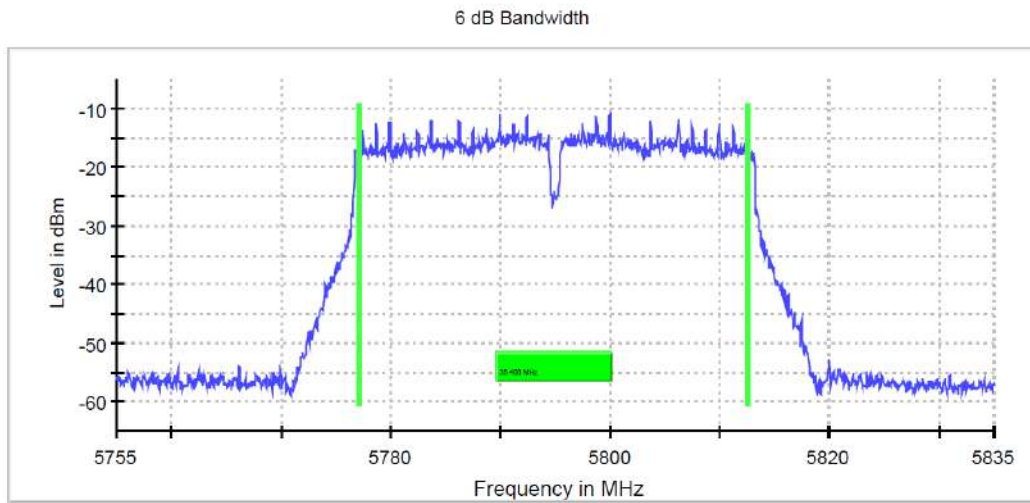
**A.1. Lowest Ch. (5 755 MHz)\_6 dB Bandwidth**



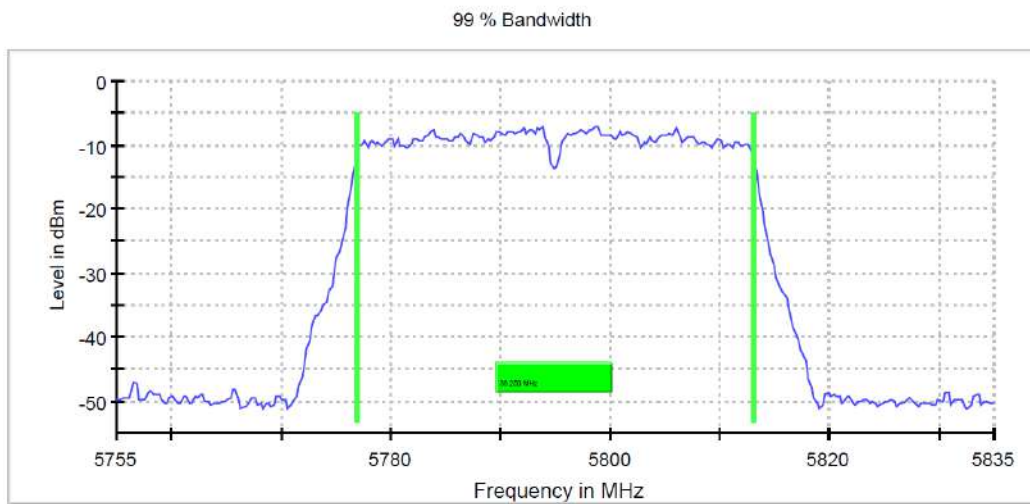
**A.2. Lowest Ch. (5 755 MHz)\_99% Bandwidth**



### B.1. Highest Ch. (5 795 MHz)\_6 dB Bandwidth

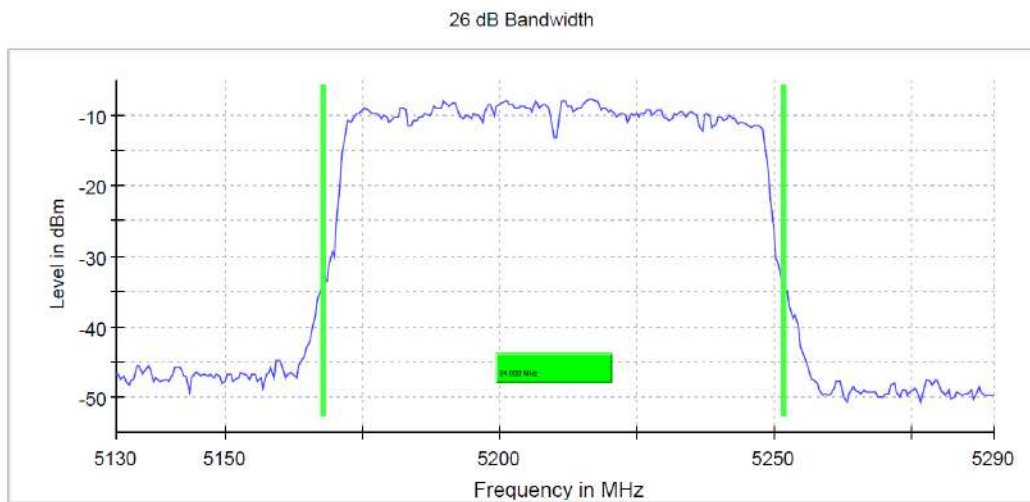


### B.2. Highest Ch. (5 795 MHz)\_99% Bandwidth

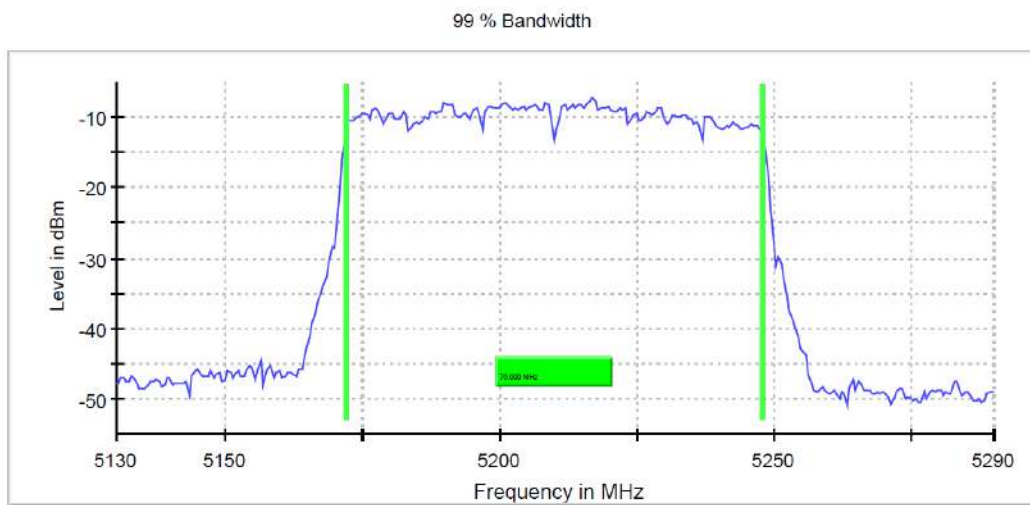


Test mode : 802.11ac\_VHT80 (UNII-1)

**A.1. Lowest Ch. (5 210 MHz)\_26 dB Bandwidth**

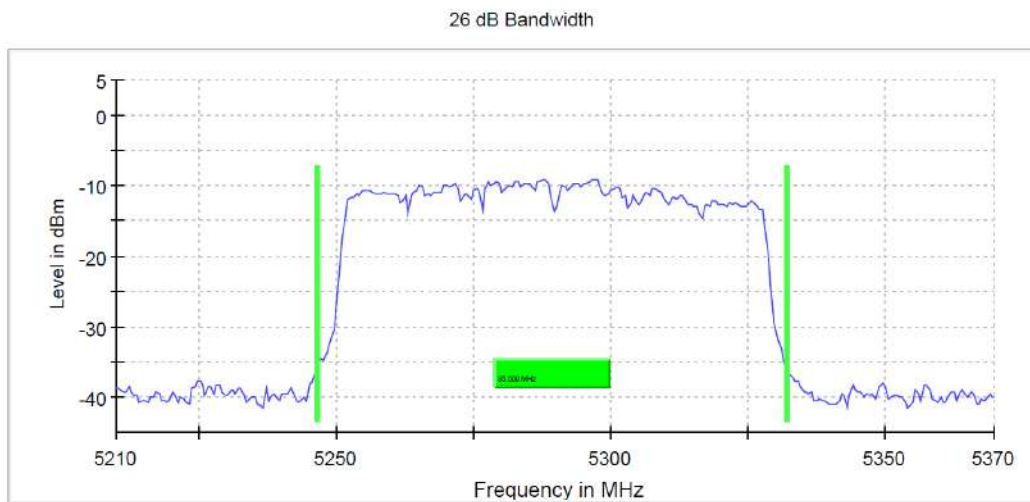


**A.2. Lowest Ch. (5 210 MHz)\_99% Bandwidth**

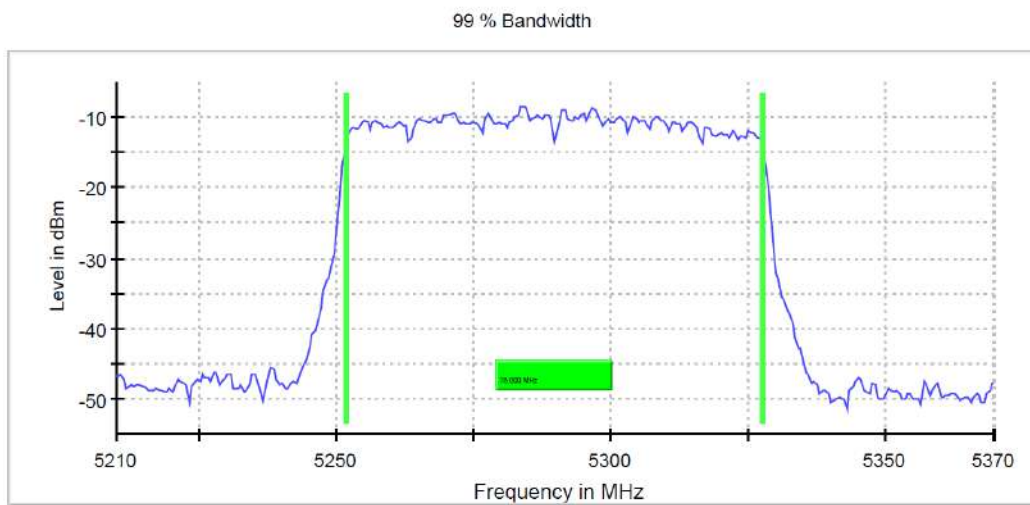


Test mode : 802.11ac\_VHT80 (UNII-2A)

**A.1. Lowest Ch. (5 290 MHz)\_26 dB Bandwidth**

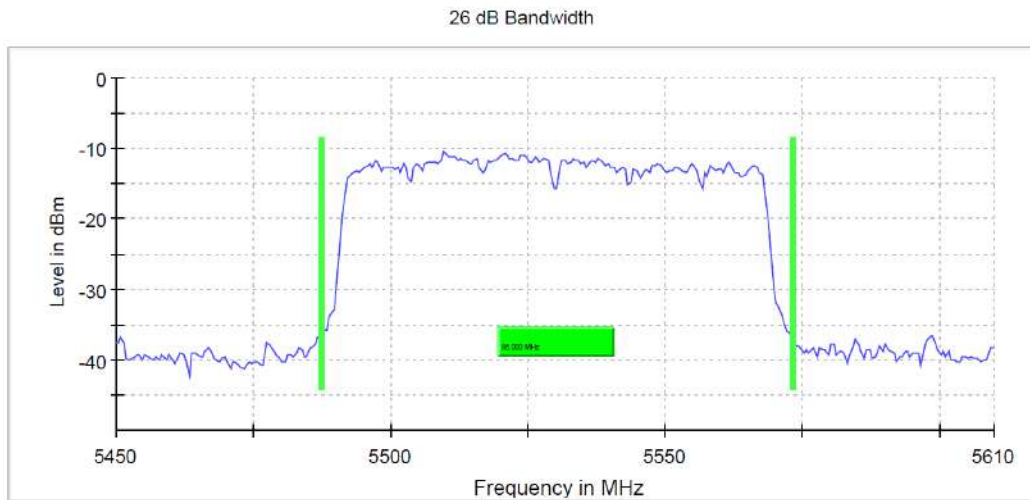


**A.2. Lowest Ch. (5 290 MHz)\_99% Bandwidth**

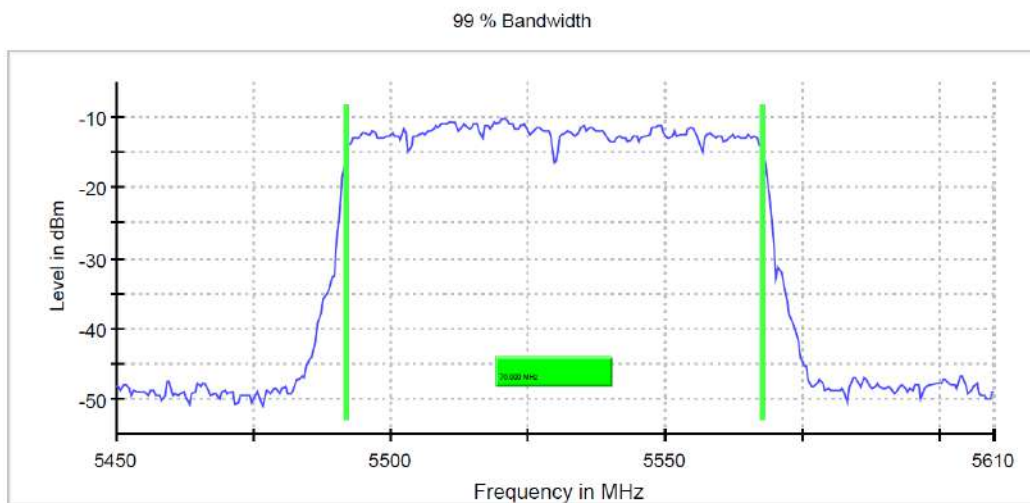


Test mode : 802.11ac\_VHT80 (UNII-2C)

**A.1. Lowest Ch. (5 530 MHz)\_26 dB Bandwidth**

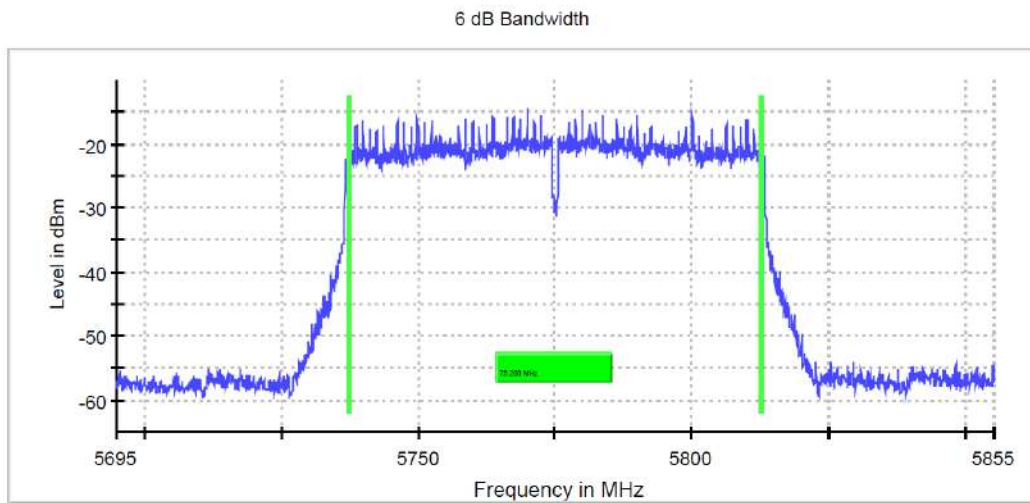


**A.2. Lowest Ch. (5 530 MHz)\_99% Bandwidth**

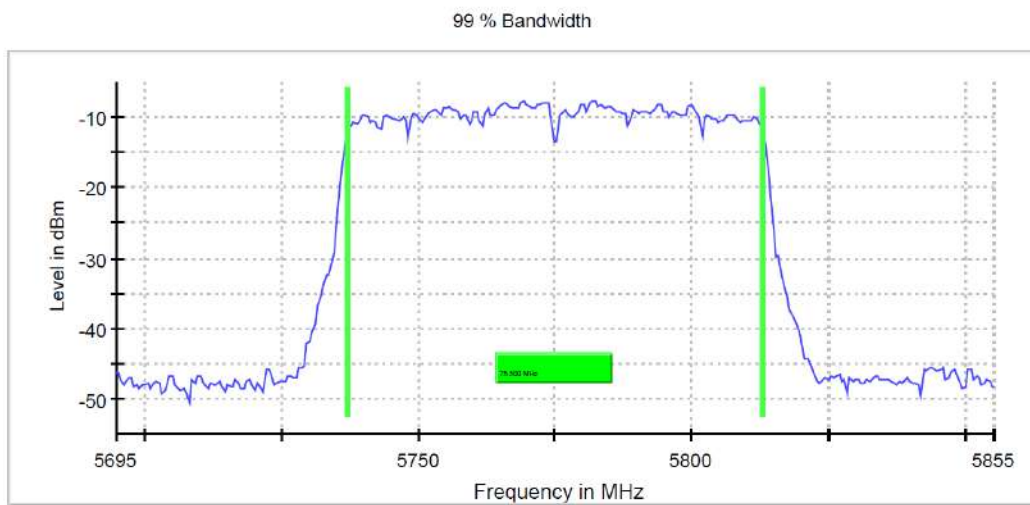


Test mode : 802.11ac\_VHT80 (UNII-3)

**A.1. Lowest Ch. (5 775 MHz)\_6 dB Bandwidth**

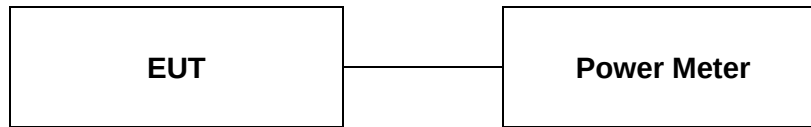


**A.2. Lowest Ch. (5 775 MHz)\_99% Bandwidth**



## 8. Maximum conducted output power

### 8.1. Test setup



### 8.2. Limit

| Frequency Band                                 | Limit                                         |
|------------------------------------------------|-----------------------------------------------|
| 5150-5250MHz                                   | Not exceed 250mW(24dBm)                       |
| 5250-5350MHz                                   | The lesser of 250mW(24dBm) or $11 + 10\log B$ |
| 5470-5725MHz                                   | The lesser of 250mW(24dBm) or $11 + 10\log B$ |
| 5725-5850MHz                                   | Not exceed 1W(30dBm)                          |
| *Where B is the 26dB emission bandwidth in MHz |                                               |

The maximum e.i.r.p. shall not exceed 200 mW or  $10 + 10 \log_{10} B$ , dBm, whichever power is less. B is the 99% emission bandwidth in megahertz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

### 8.3. Test procedure (KDB 789033)

b) Method PM-G (Measurement using a gated RF average power meter):

Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

#### 8.4. Test results

##### Test mode : 802.11a (UNII-1)

| Frequency(MHz) | Conducted output power (dBm) | Limit (dBm) |
|----------------|------------------------------|-------------|
| 5 180          | 8.22                         | 24          |
| 5 200          | 8.15                         |             |
| 5 240          | 7.99                         |             |

##### Test mode : 802.11a (UNII-2A)

| Frequency(MHz) | Conducted output power (dBm) | Limit (dBm) |
|----------------|------------------------------|-------------|
| 5 260          | 7.18                         | 24          |
| 5 280          | 6.89                         |             |
| 5 320          | 6.32                         |             |

##### Test mode : 802.11a (UNII-2C)

| Frequency(MHz) | Conducted output power (dBm) | Limit (dBm) |
|----------------|------------------------------|-------------|
| 5 500          | 5.83                         | 24          |
| 5 580          | 6.21                         |             |
| 5 700          | 8.46                         |             |

##### Test mode : 802.11a (UNII-3)

| Frequency(MHz) | Conducted output power (dBm) | Limit (dBm) |
|----------------|------------------------------|-------------|
| 5 745          | 8.02                         | 30          |
| 5 785          | 8.75                         |             |
| 5 825          | 9.31                         |             |

#### ※Remark

1. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

**Test mode : 802.11n\_HT20 (UNII-1)**

| Frequency(MHz) | Conducted output power (dBm) | Limit (dBm) |
|----------------|------------------------------|-------------|
| 5 180          | 8.14                         | 24          |
| 5 200          | 8.08                         |             |
| 5 240          | 7.92                         |             |

**Test mode : 802.11n\_HT20 (UNII-2A)**

| Frequency(MHz) | Conducted output power (dBm) | Limit (dBm) |
|----------------|------------------------------|-------------|
| 5 260          | 7.11                         | 24          |
| 5 280          | 6.80                         |             |
| 5 320          | 6.36                         |             |

**Test mode : 802.11n\_HT20 (UNII-2C)**

| Frequency(MHz) | Conducted output power (dBm) | Limit (dBm) |
|----------------|------------------------------|-------------|
| 5 500          | 5.83                         | 24          |
| 5 580          | 6.20                         |             |
| 5 700          | 8.53                         |             |

**Test mode : 802.11n\_HT20 (UNII-3)**

| Frequency(MHz) | Conducted output power (dBm) | Limit (dBm) |
|----------------|------------------------------|-------------|
| 5 745          | 7.98                         | 30          |
| 5 785          | 8.72                         |             |
| 5 825          | 9.32                         |             |

**※Remark**

1. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

**Test mode : 802.11n\_HT40 (UNII-1)**

| Frequency(MHz) | Conducted output power (dBm) | Limit (dBm) |
|----------------|------------------------------|-------------|
| 5 190          | 4.18                         | 24          |
| 5 230          | 4.36                         |             |

**Test mode : 802.11n\_HT40 (UNII-2A)**

| Frequency(MHz) | Conducted output power (dBm) | Limit (dBm) |
|----------------|------------------------------|-------------|
| 5 270          | 3.15                         | 24          |
| 5 310          | 2.73                         |             |

**Test mode : 802.11n\_HT40 (UNII-2C)**

| Frequency(MHz) | Conducted output power (dBm) | Limit (dBm) |
|----------------|------------------------------|-------------|
| 5 510          | 1.84                         | 24          |
| 5 550          | 1.55                         |             |
| 5 670          | 3.08                         |             |

**Test mode : 802.11n\_HT40 (UNII-3)**

| Frequency(MHz) | Conducted output power (dBm) | Limit (dBm) |
|----------------|------------------------------|-------------|
| 5 755          | 4.26                         | 30          |
| 5 795          | 4.53                         |             |

**※Remark**

1. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

**Test mode : 802.11ac\_VHT80 (UNII-1)**

| Frequency(MHz) | Conducted output power (dBm) | Limit (dBm) |
|----------------|------------------------------|-------------|
| 5 210          | 3.07                         | 24          |

**Test mode : 802.11ac\_VHT80 (UNII-2A)**

| Frequency(MHz) | Conducted output power (dBm) | Limit (dBm) |
|----------------|------------------------------|-------------|
| 5 290          | 1.70                         | 24          |

**Test mode : 802.11ac\_VHT80 (UNII-2C)**

| Frequency(MHz) | Conducted output power (dBm) | Limit (dBm) |
|----------------|------------------------------|-------------|
| 5 530          | 0.38                         | 24          |

**Test mode : 802.11ac\_VHT80 (UNII-3)**

| Frequency(MHz) | Conducted output power (dBm) | Limit (dBm) |
|----------------|------------------------------|-------------|
| 5 775          | 3.25                         | 30          |

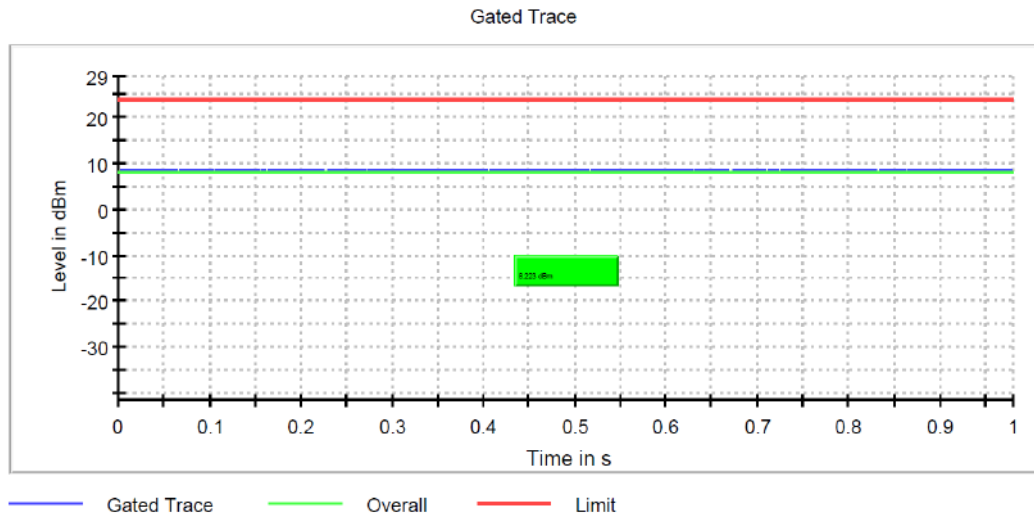
**※Remark**

1. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

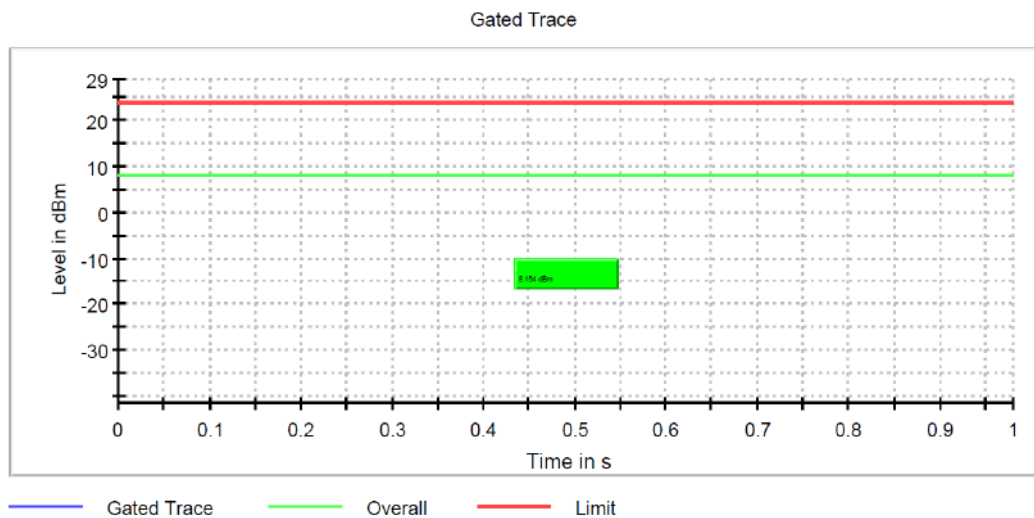
### 8.4.1 Test plot

Test mode : 802.11a (UNII-1)

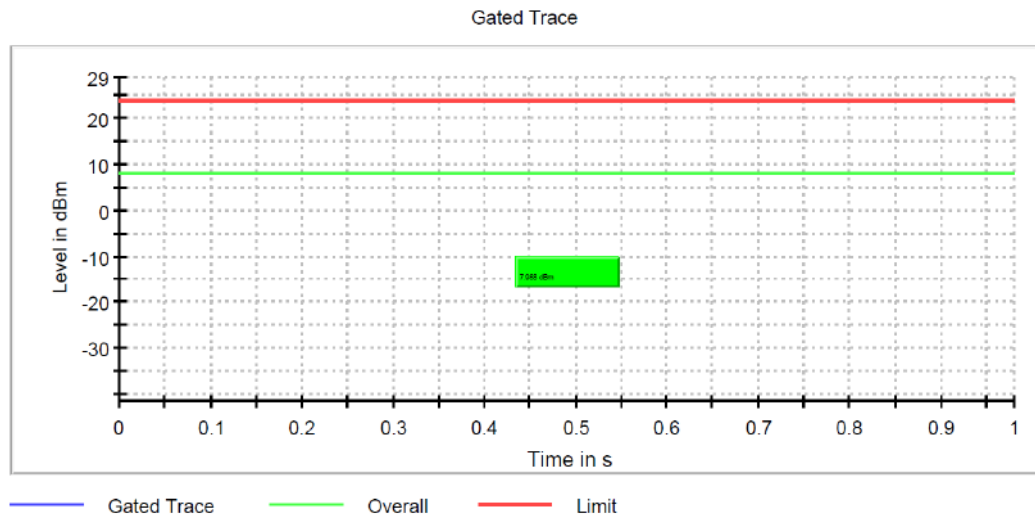
#### A. Lowest Ch. (5 180 MHz)



#### B. Middle Ch. (5 200 MHz)

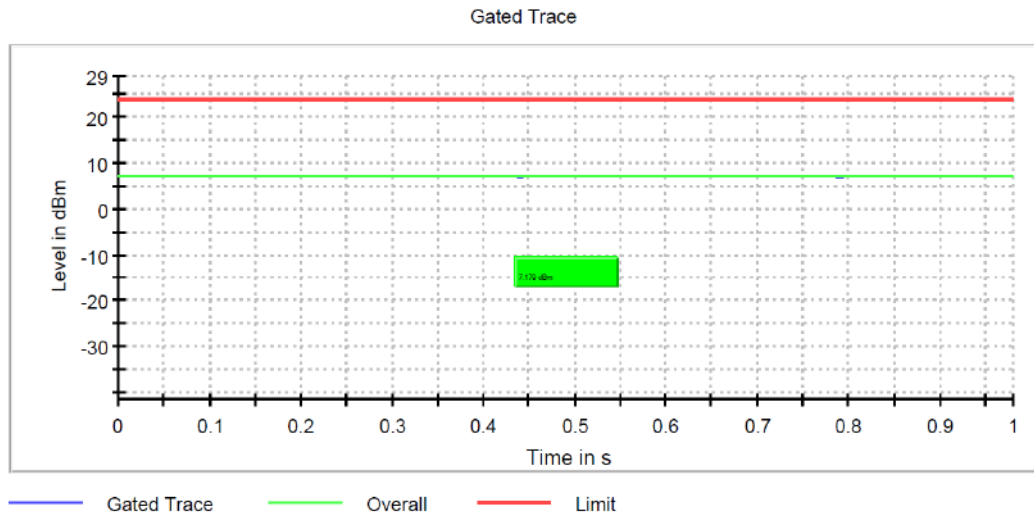


C. Highest Ch. (5 240 MHz)

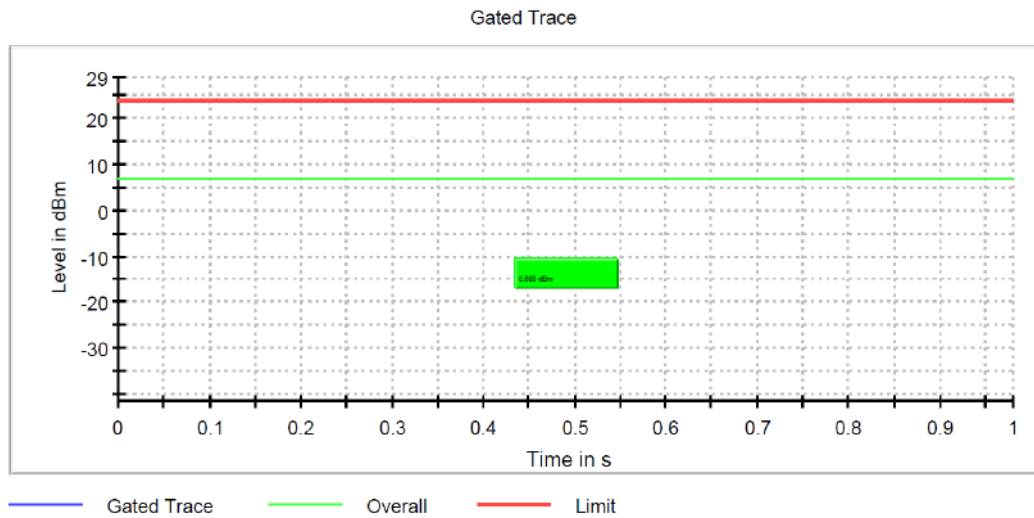


Test mode : 802.11a (UNII-2A)

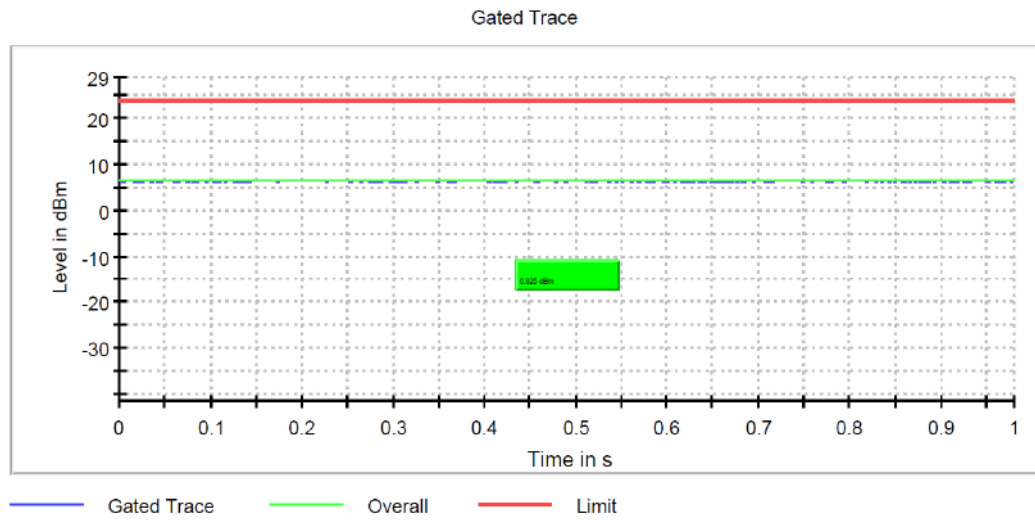
**A. Lowest Ch. (5 260 MHz)**



**B. Middle Ch. (5 280 MHz)**

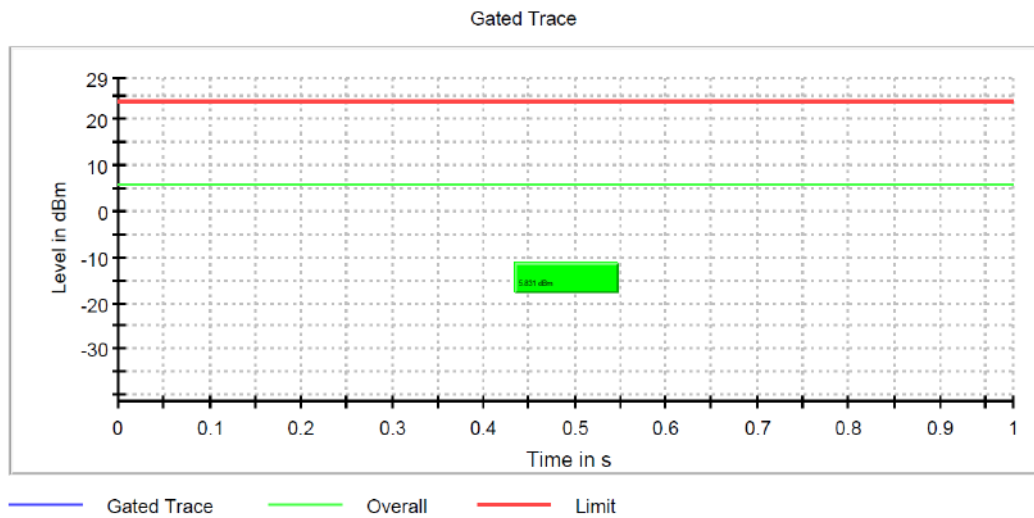


C. Highest Ch. (5 320 MHz)

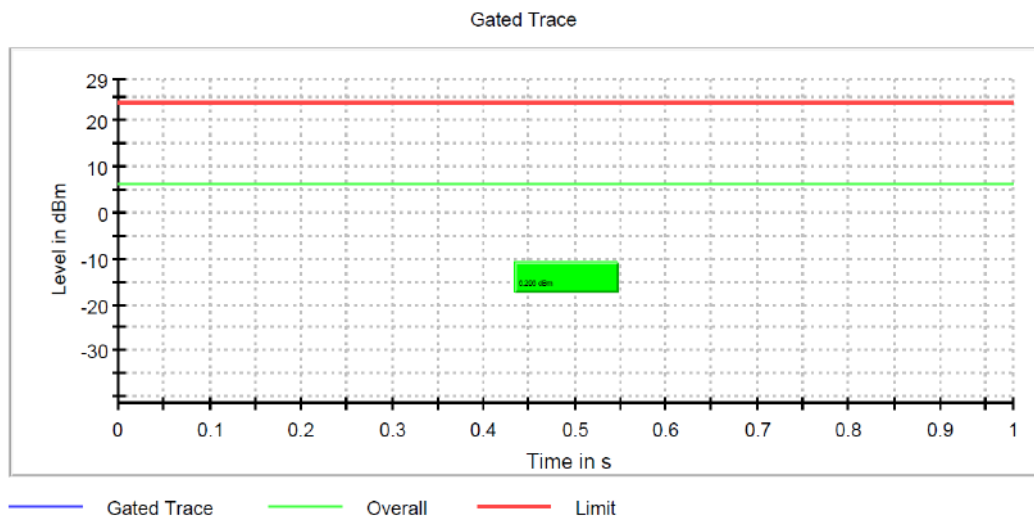


Test mode : 802.11a (UNII-2C)

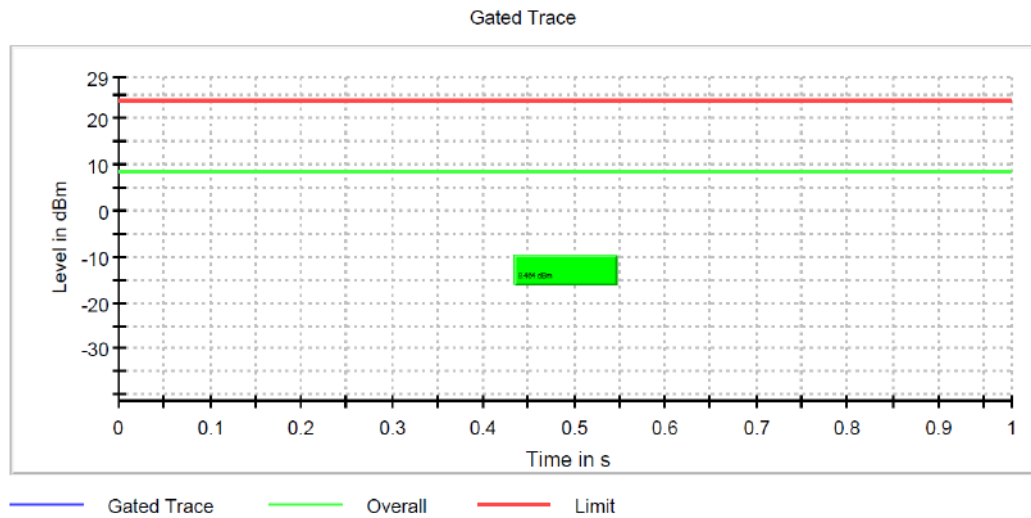
**A. Lowest Ch. (5 500 MHz)**



**B. Middle Ch. (5 580 MHz)**

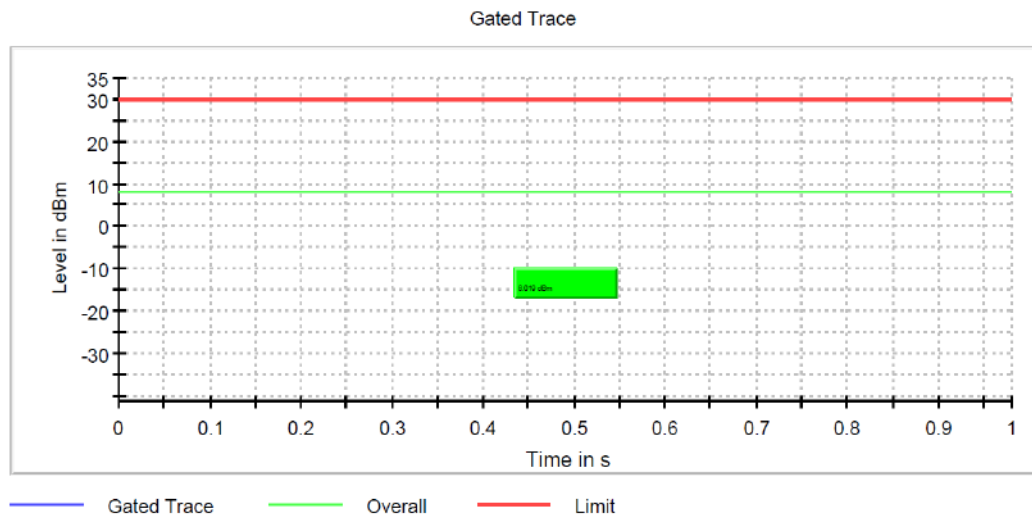


C. Highest Ch. (5 700 MHz)

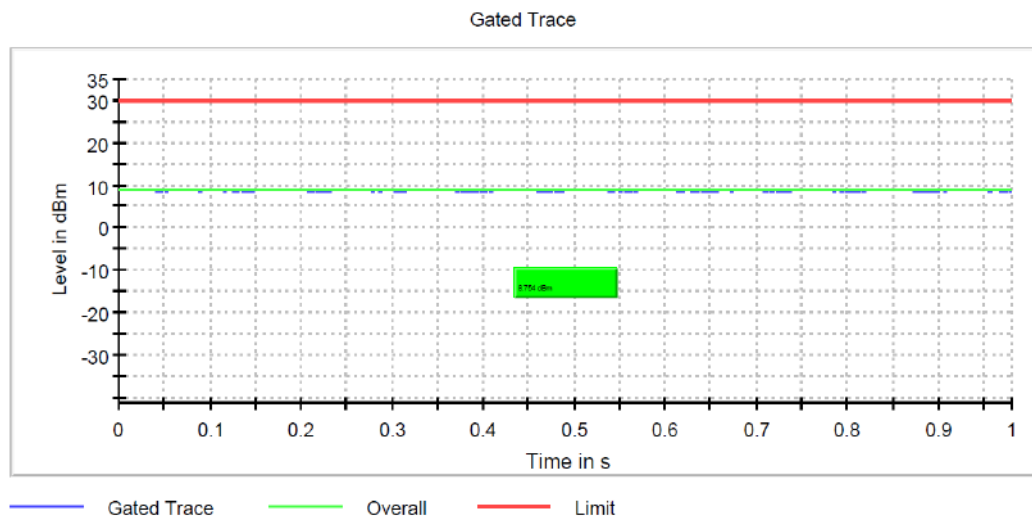


Test mode : 802.11a (UNII-3)

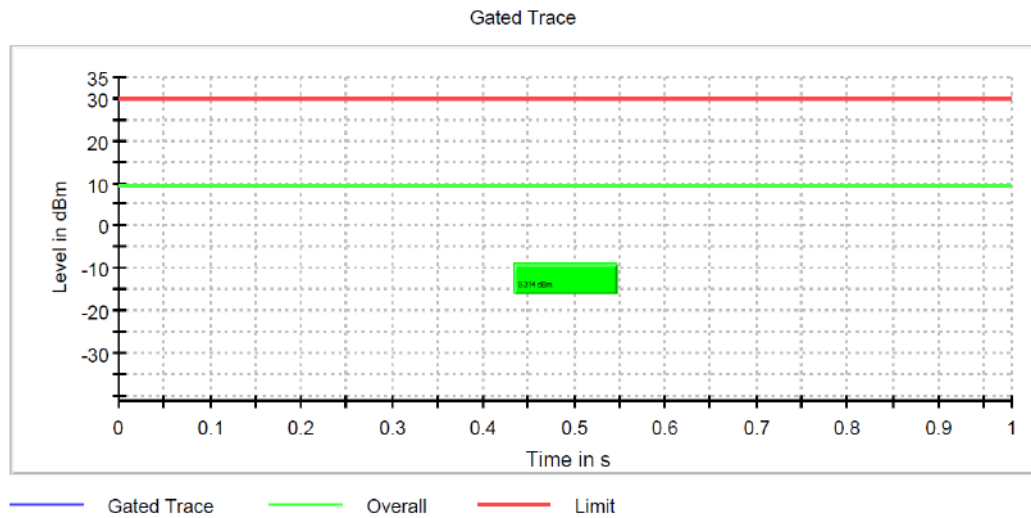
**A. Lowest Ch. (5 745 MHz)**



**B. Middle Ch. (5 785 MHz)**

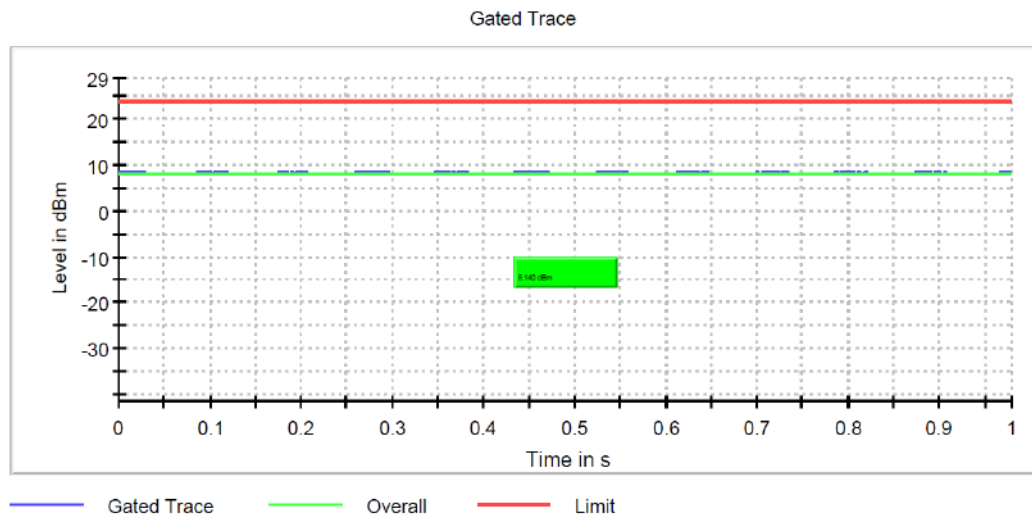


C. Highest Ch. (5 825 MHz)

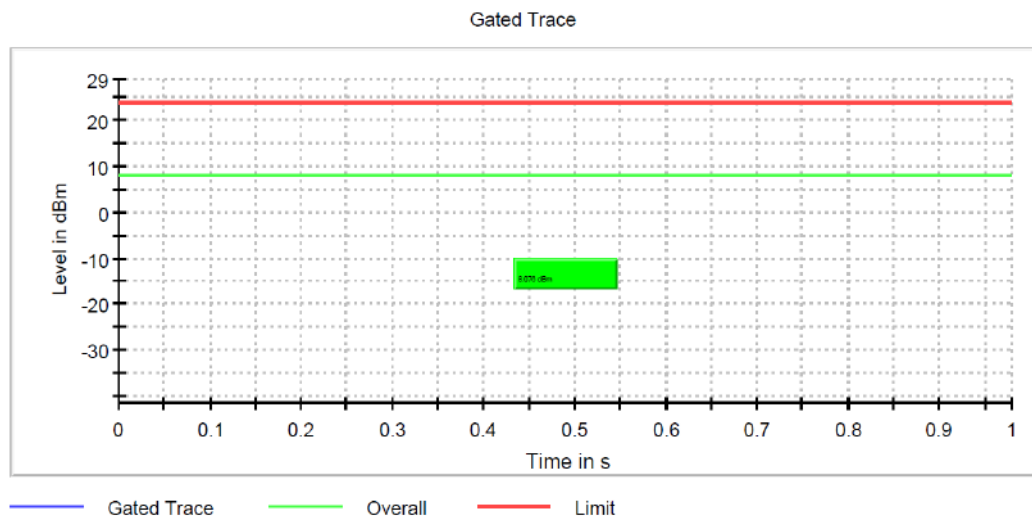


Test mode : 802.11n\_HT20 (UNII-1)

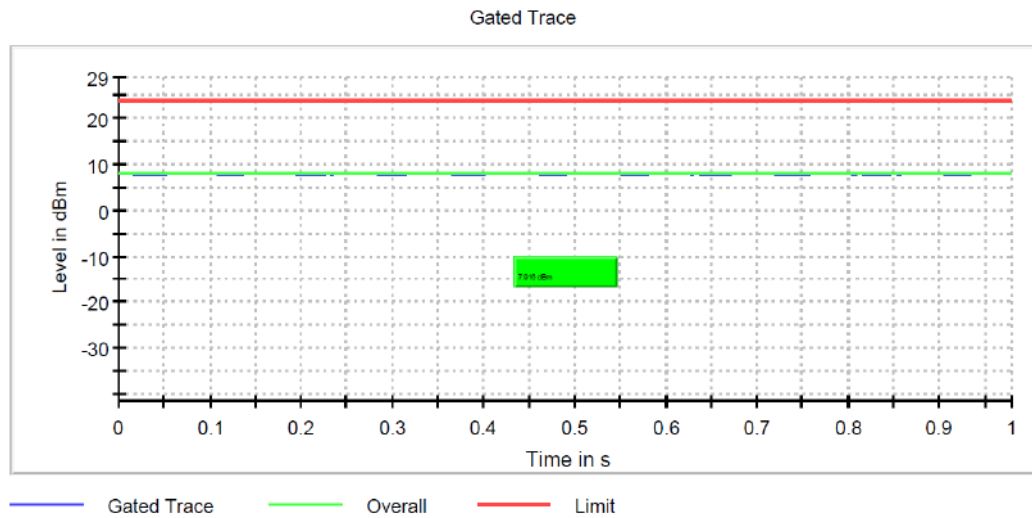
**A. Lowest Ch. (5 180 MHz)**



**B. Middle Ch. (5 200 MHz)**

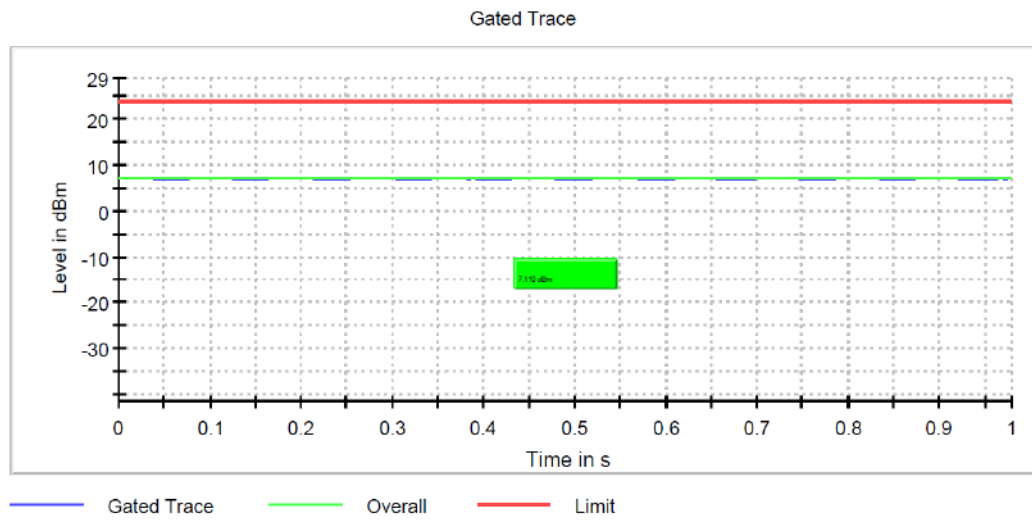


**C. Highest Ch. (5 240 MHz)**

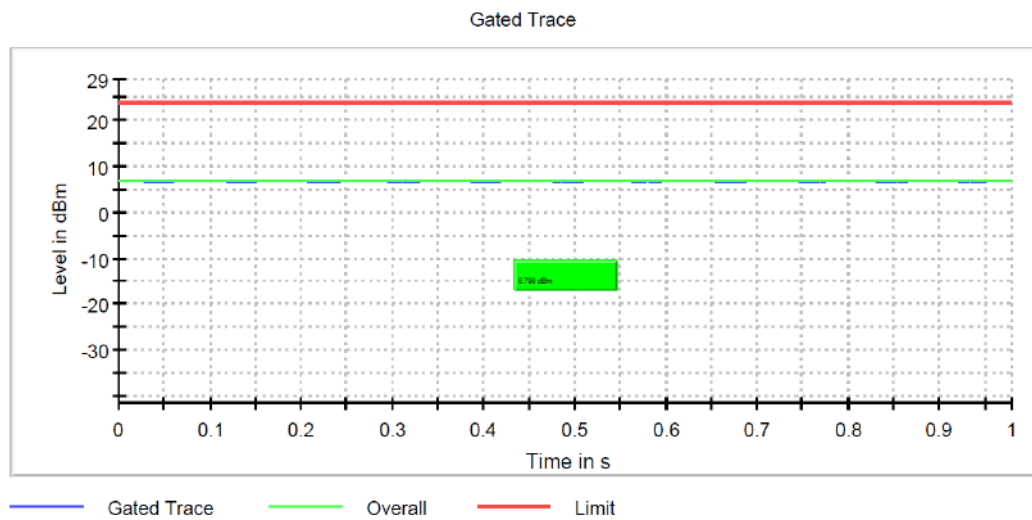


Test mode : 802.11n\_HT20 (UNII-2A)

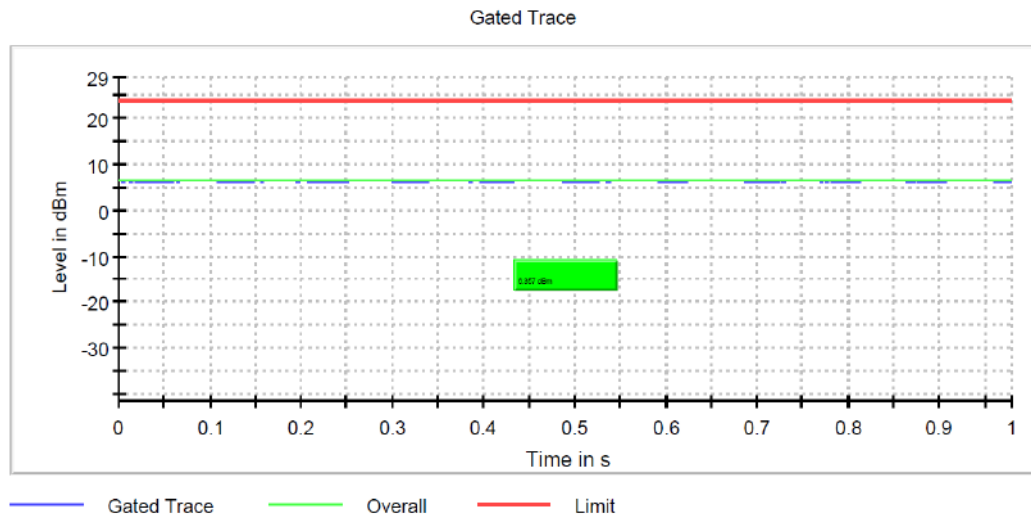
**A. Lowest Ch. (5 260 MHz)**



**B. Middle Ch. (5 280 MHz)**

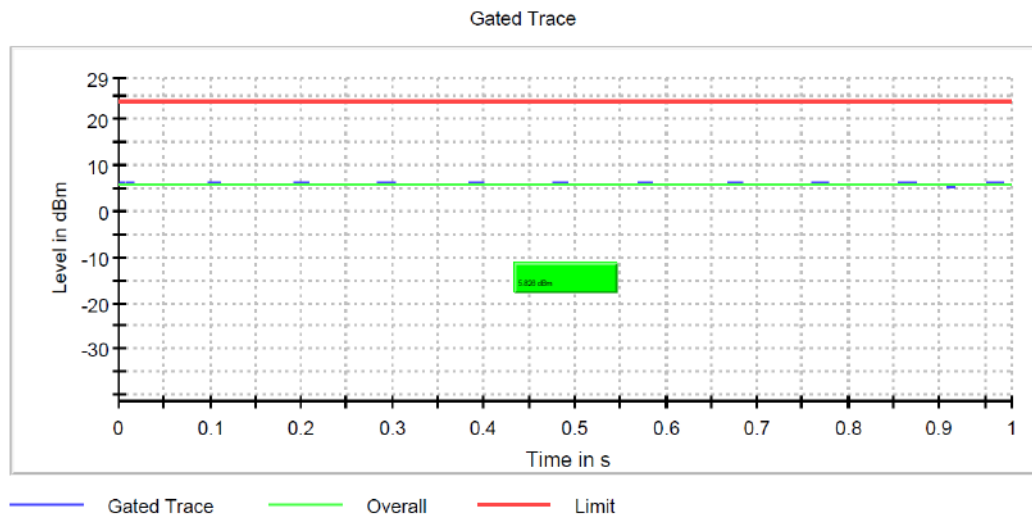


C. Highest Ch. (5 320 MHz)

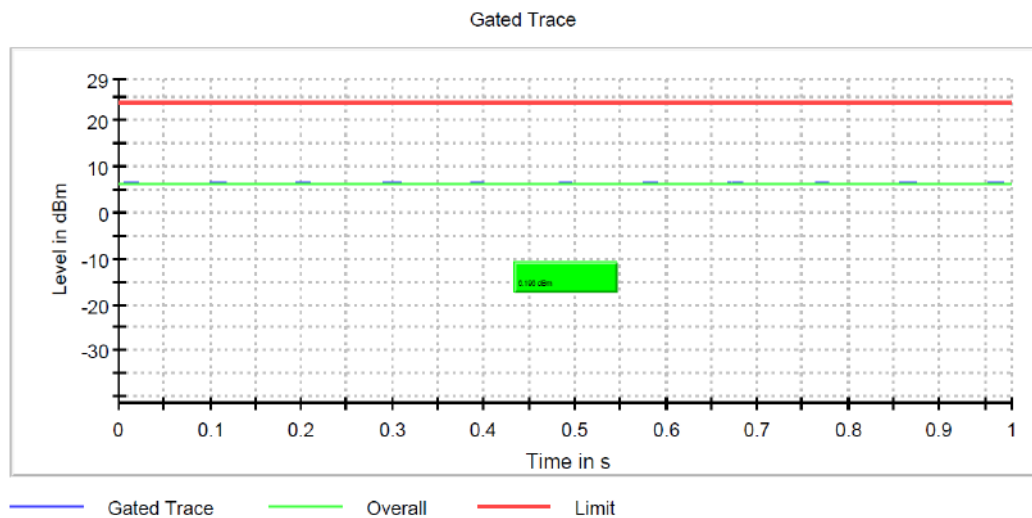


Test mode : 802.11n\_HT20 (UNII-2C)

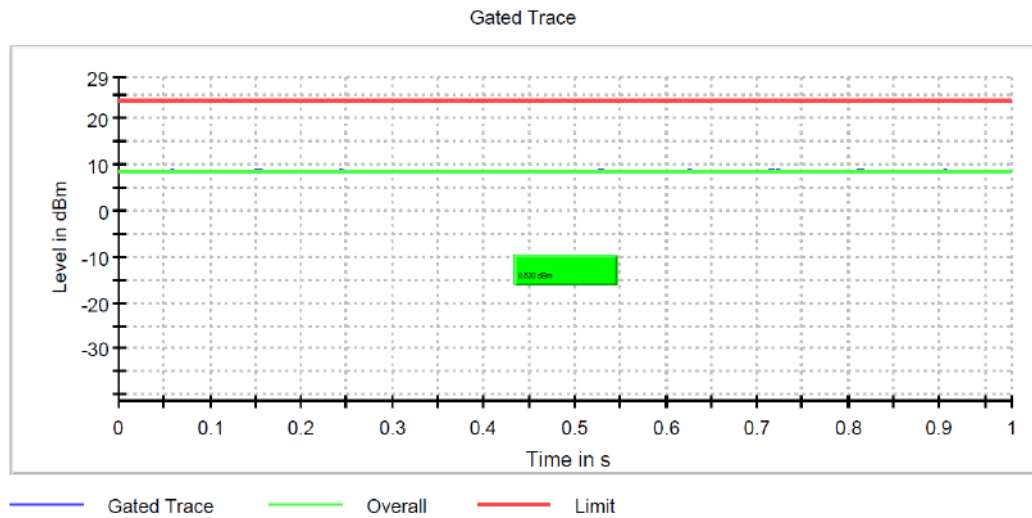
**A. Lowest Ch. (5 500 MHz)**



**B. Middle Ch. (5 580 MHz)**

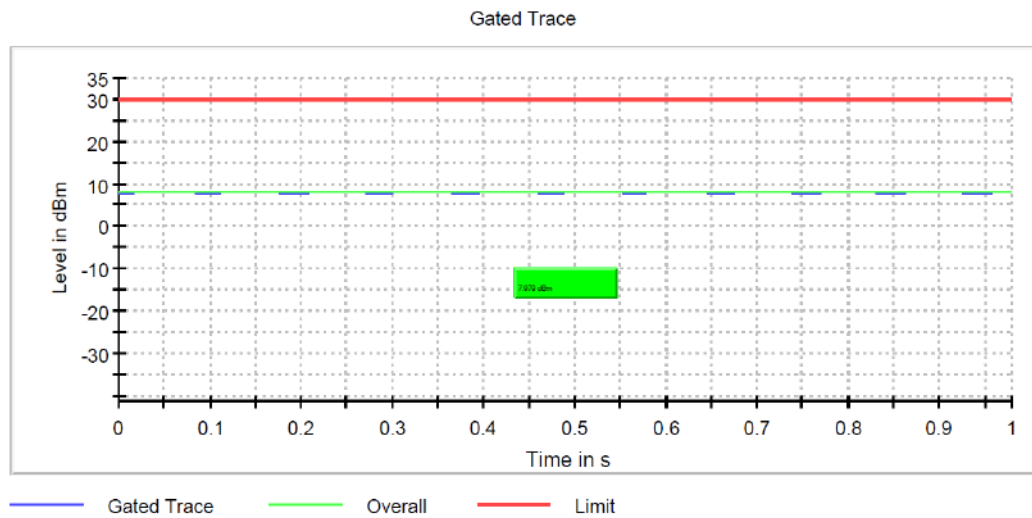


**C. Highest Ch. (5 700 MHz)**

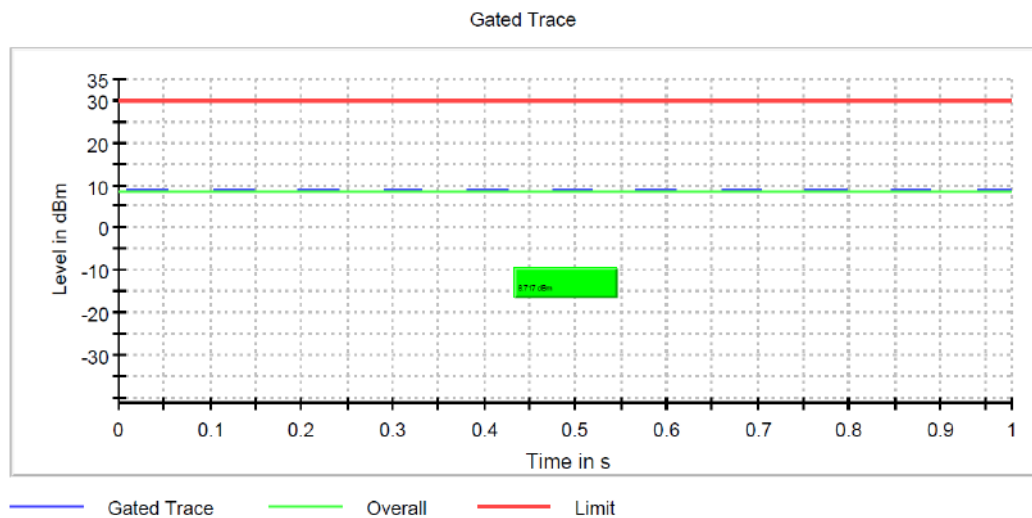


Test mode : 802.11n\_HT20 (UNII-3)

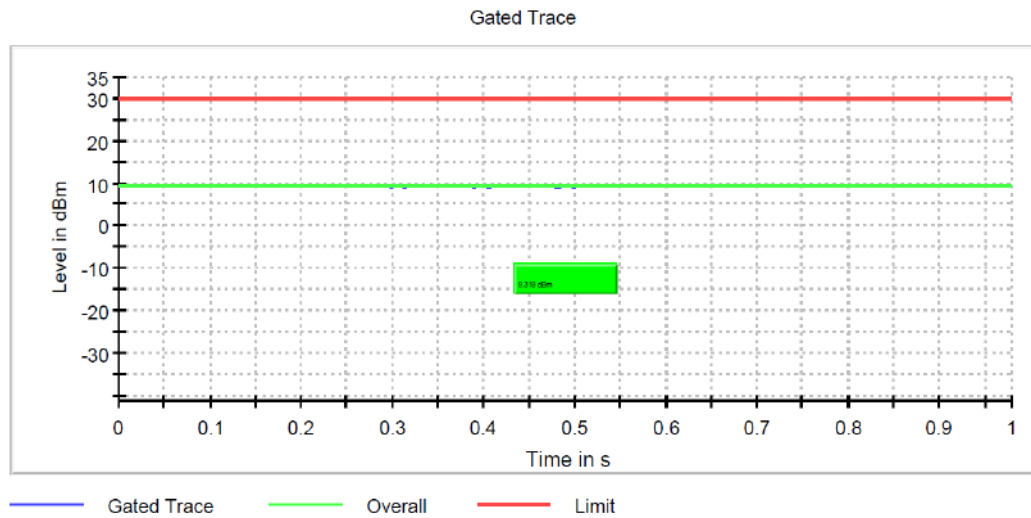
**A. Lowest Ch. (5 745 MHz)**



**B. Middle Ch. (5 785 MHz)**

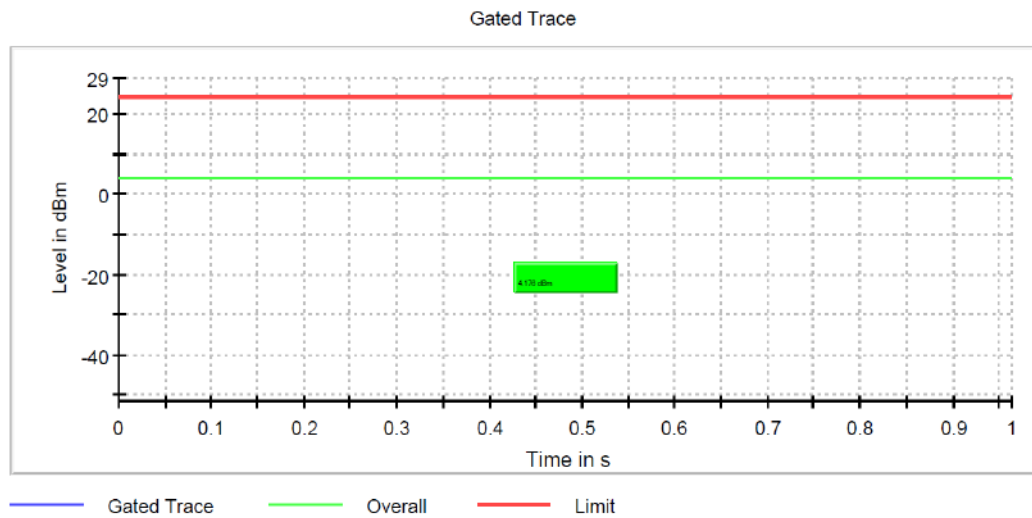


**C. Highest Ch. (5 825 MHz)**

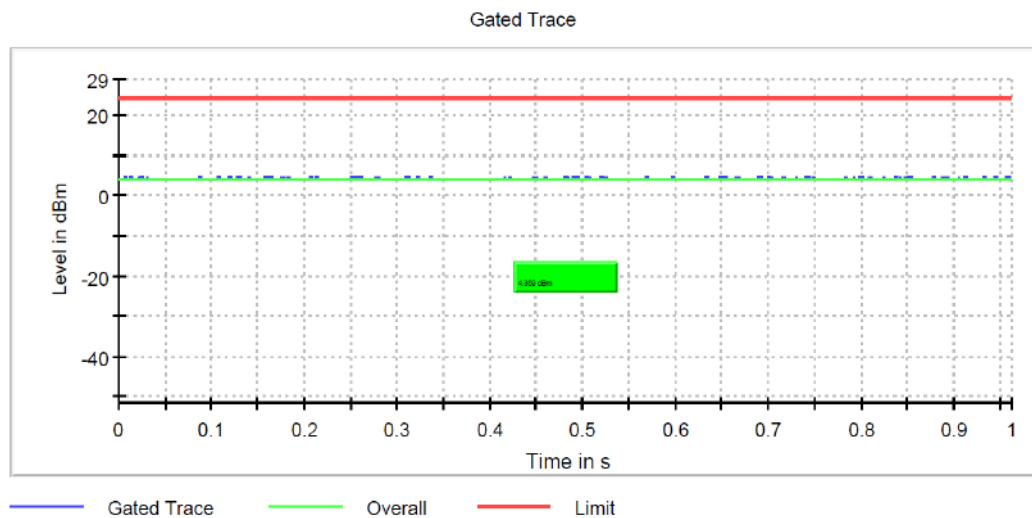


Test mode : 802.11n\_HT40 (UNII-1)

**A. Lowest Ch. (5 190 MHz)**

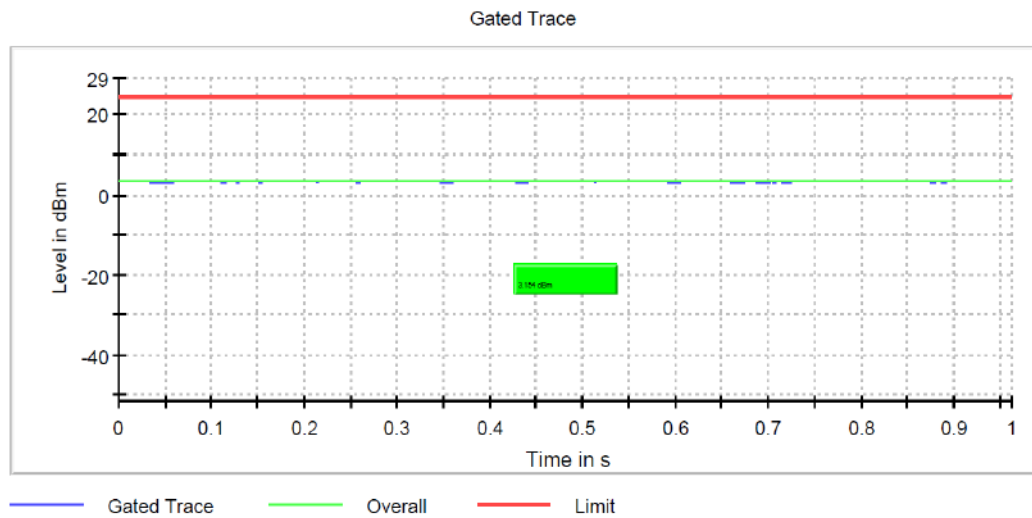


**B. Highest Ch. (5 230 MHz)**

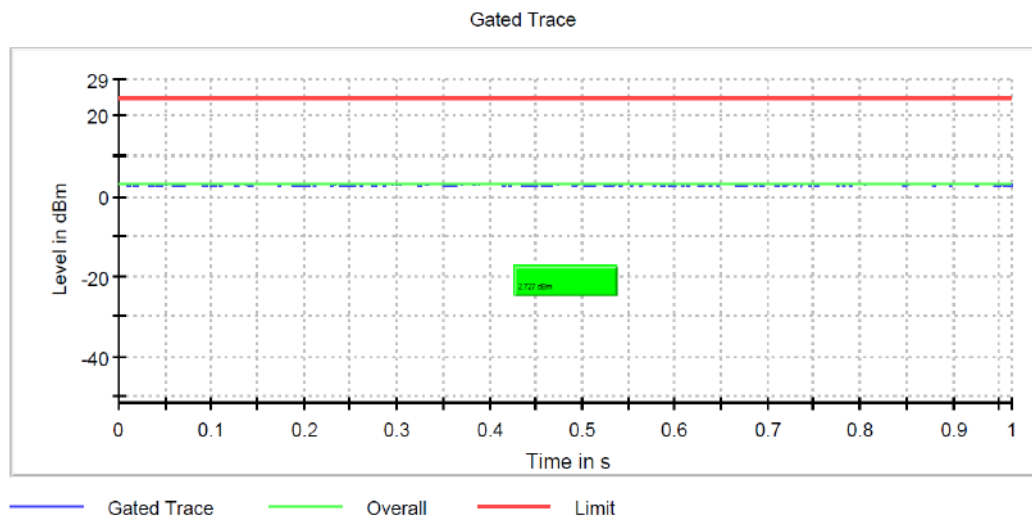


Test mode : 802.11n\_HT40 (UNII-2A)

**A. Lowest Ch. (5 270 MHz)**

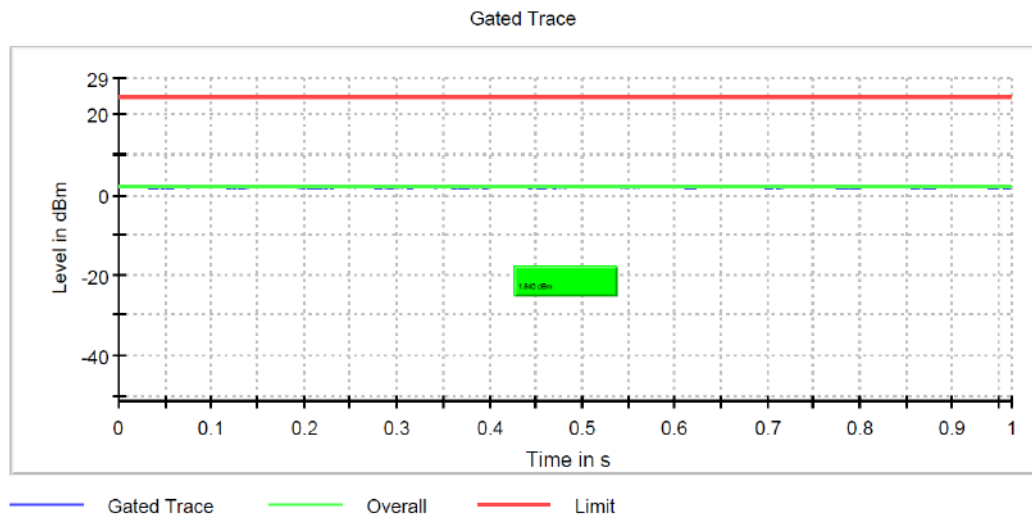


**B. Highest Ch. (5 310 MHz)**

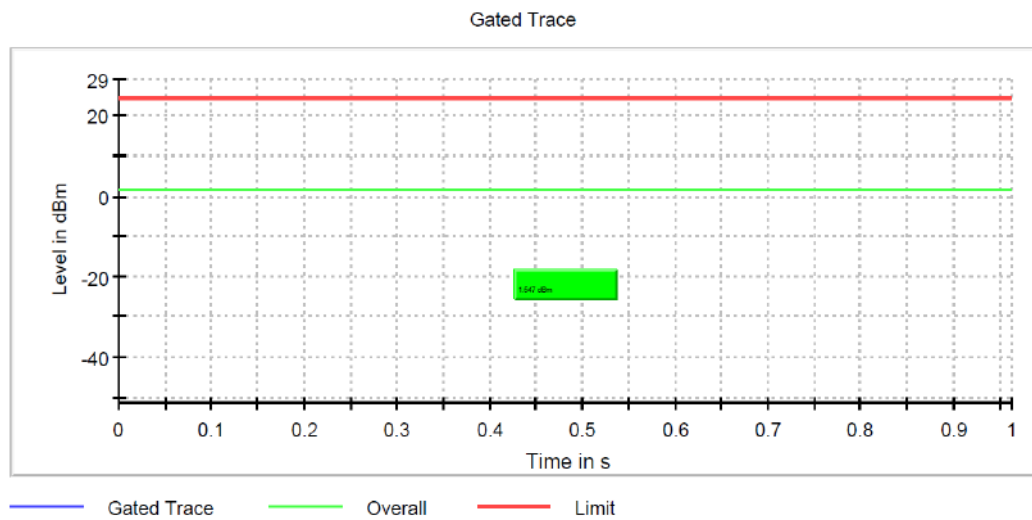


Test mode : 802.11n\_HT40 (UNII-2C)

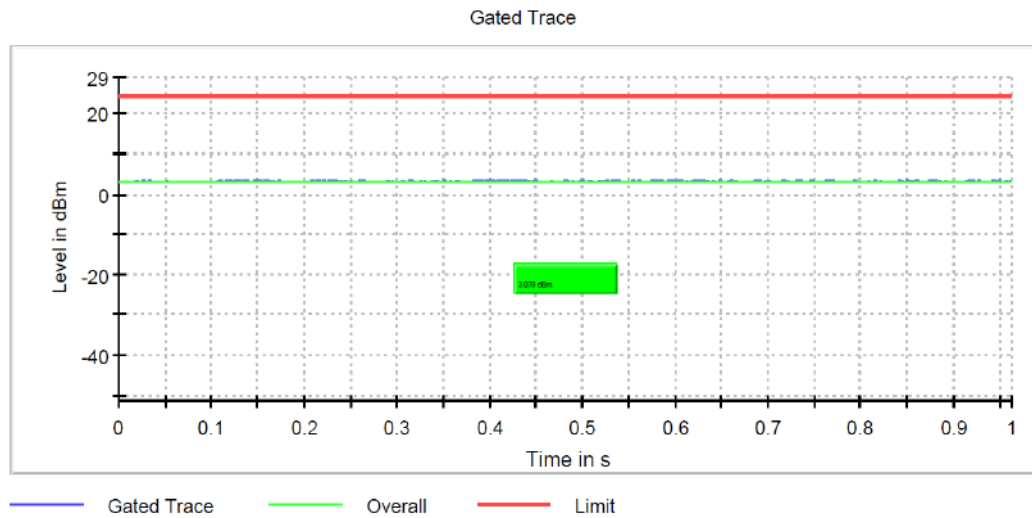
**A. Lowest Ch. (5 510 MHz)**



**B. Middle Ch. (5 550 MHz)**

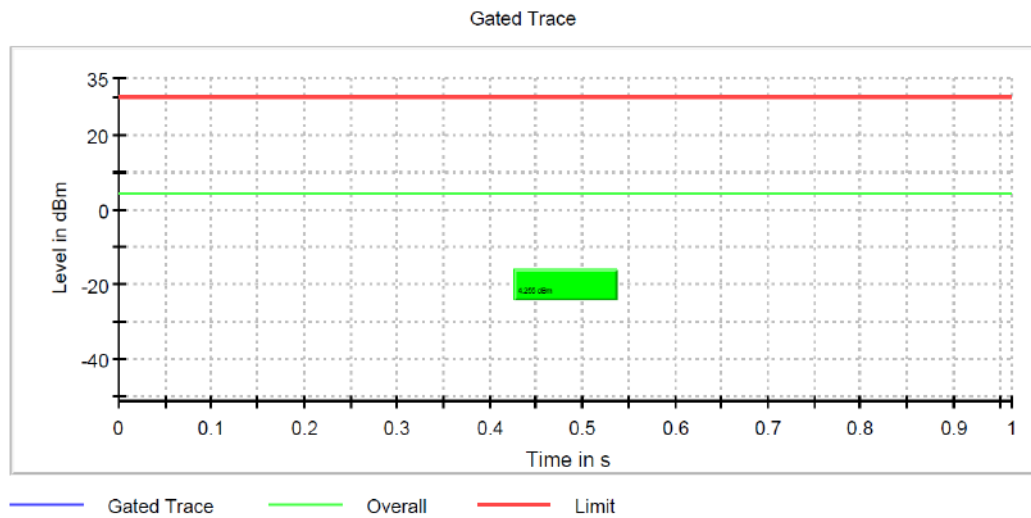


**C. Highest Ch. (5 670 MHz)**

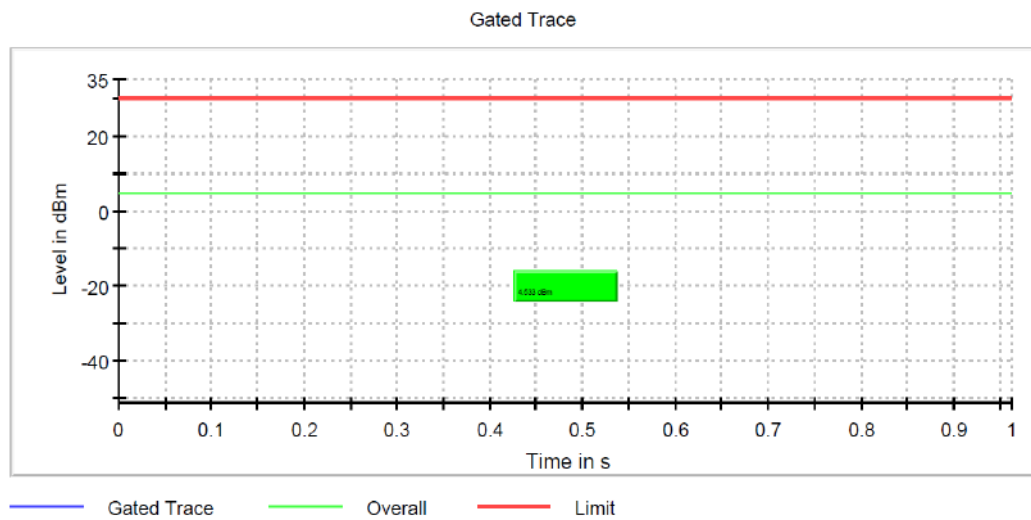


Test mode : 802.11n\_HT40 (UNII-3)

**A. Lowest Ch. (5 755 MHz)**

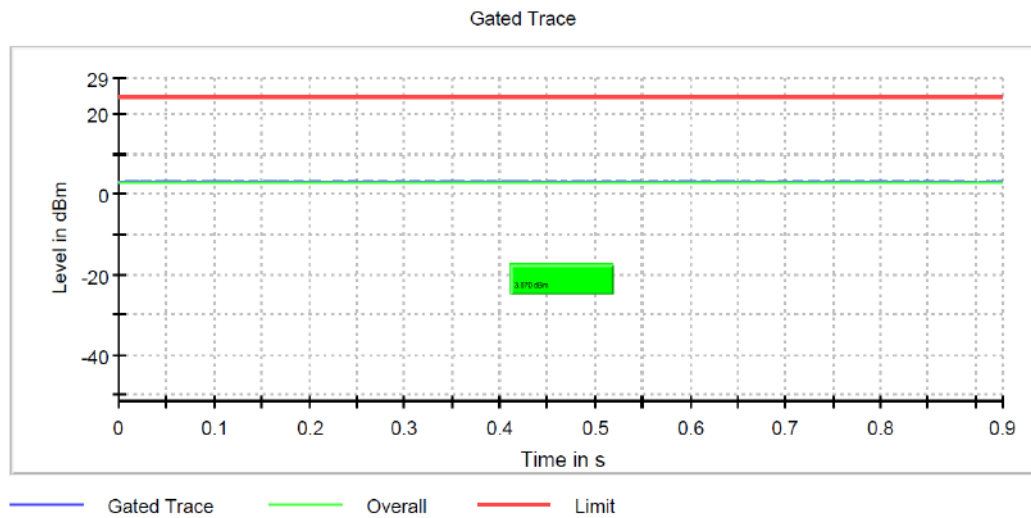


**B. Highest Ch. (5 795 MHz)**



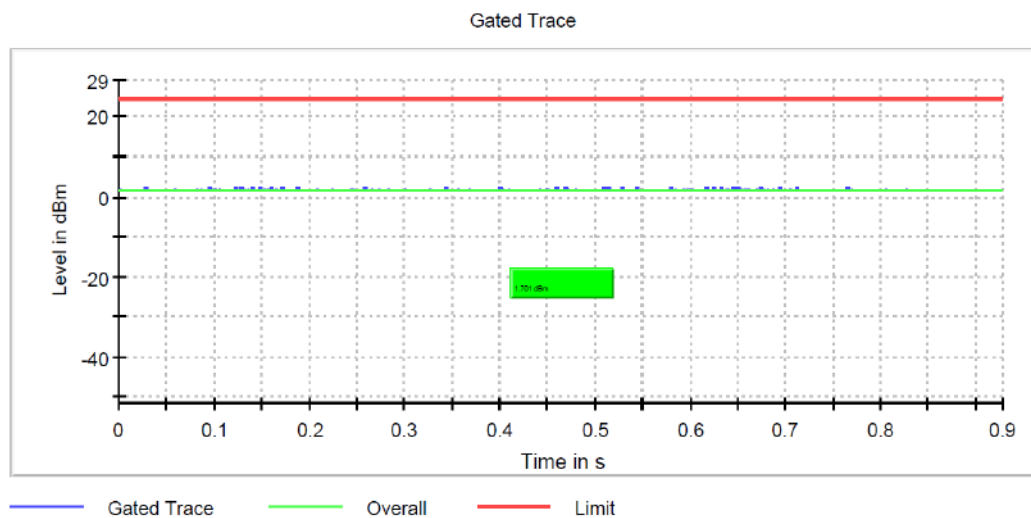
Test mode : 802.11ac\_VHT80 (UNII-1)

A. Lowest Ch. (5 210 MHz)



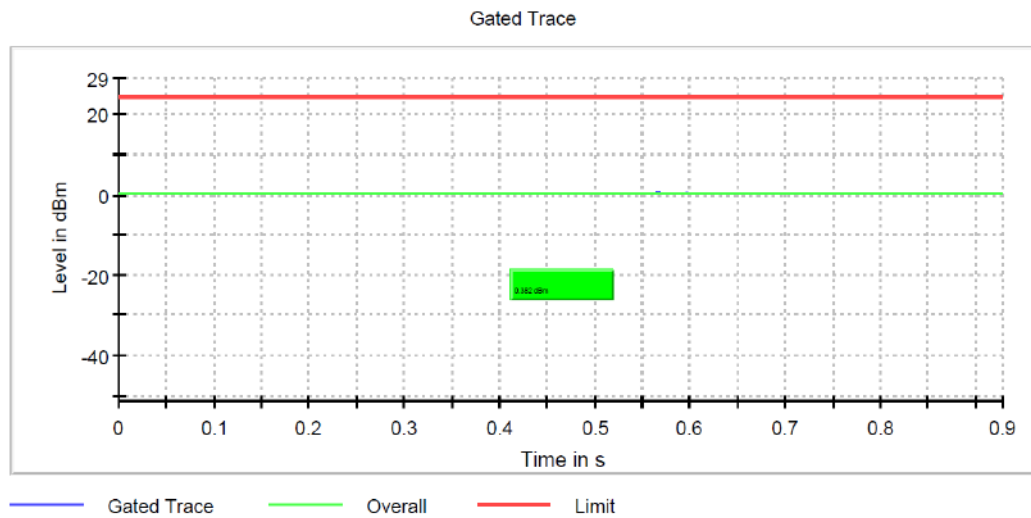
Test mode : 802.11ac\_VHT80 (UNII-2A)

A. Lowest Ch. (5 290 MHz)



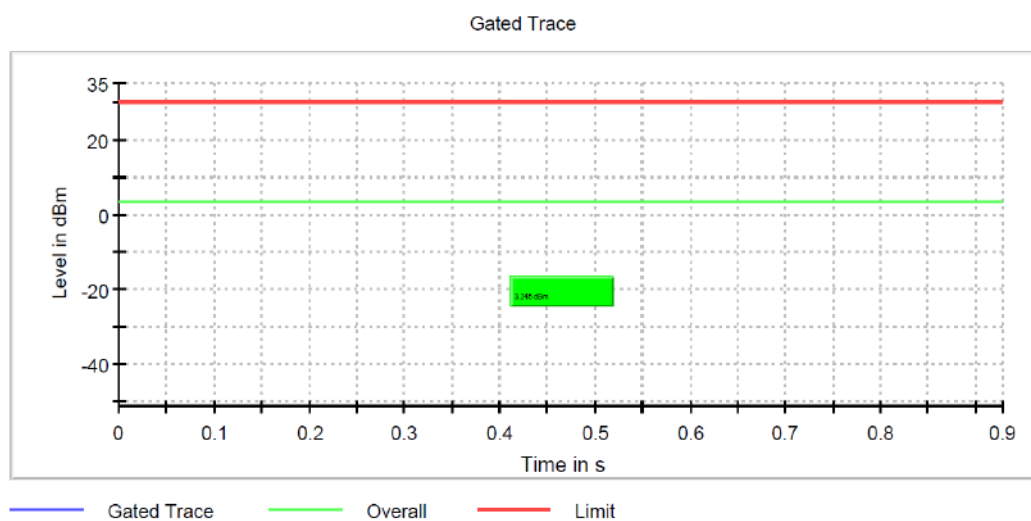
Test mode : 802.11ac\_VHT80 (UNII-2C)

A. Lowest Ch. (5 530 MHz)



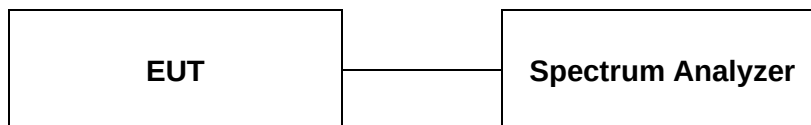
Test mode : 802.11ac\_VHT80 (UNII-3)

A. Lowest Ch. (5 775 MHz)



## 9. Maximum power spectral density

### 9.1. Test setup



### 9.2. Limit

| Frequency Band | Limit                                             |
|----------------|---------------------------------------------------|
| 5150-5250MHz   | The power spectral density less than 11dBm/1MHz   |
| 5250-5350MHz   | The power spectral density less than 11dBm/1MHz   |
| 5470-5725MHz   | The power spectral density less than 11dBm/1MHz   |
| 5725-5850MHz   | The power spectral density less than 30dBm/500kHz |

### 9.3. Test procedure

The rules requires “maximum power spectral density” measurements where the intent is to measure the maximum value of the time average of the power spectral density measured during a period of continuous transmission.

1. Create an average power spectrum for the EUT operating mode being tested by following the instructions in II.E.2. for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, “Compute power....” (This procedure is required even if the maximum conducted output power measurement was performed using a power meter, method PM.)
2. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
3. Make the following adjustments to the peak value of the spectrum, if applicable:
  - a) If Method SA-2 or SA-2 Alternative was used, add  $10 \log (1/x)$ , where  $x$  is the duty cycle, to the peak of the spectrum.
  - b) If Method SA-3 Alternative was used and the linear mode was used in II.E.2.g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.
4. The result is the Maximum PSD over 1 MHz reference bandwidth.
5. For devices operating in the bands 5.15–5.25 GHz, 5.25–5.35 GHz, and 5.47–5.725 GHz, the preceding procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in Section 15.407(a)(5). For devices operating in the band 5.725–5.85 GHz, 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 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 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 ( $< 500$  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 ( $< 1$  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 II.F.5.c) and II.F.5.d), since RBW=100 kHz is available on nearly all spectrum analyzers.

#### 9.4. Test results

##### Test mode : 802.11a (UNII-1)

| Frequency(MHz) | Power spectral density(dBm/MHz) | Limit (dBm/MHz) |
|----------------|---------------------------------|-----------------|
| 5 180          | -4.68                           | 11              |
| 5 200          | -5.07                           |                 |
| 5 240          | -5.29                           |                 |

##### Test mode : 802.11a (UNII-2A)

| Frequency(MHz) | Power spectral density(dBm/MHz) | Limit (dBm/MHz) |
|----------------|---------------------------------|-----------------|
| 5 260          | -5.95                           | 11              |
| 5 280          | -6.02                           |                 |
| 5 320          | -6.67                           |                 |

##### Test mode : 802.11a (UNII-2C)

| Frequency(MHz) | Power spectral density(dBm/MHz) | Limit (dBm/MHz) |
|----------------|---------------------------------|-----------------|
| 5 500          | -7.16                           | 11              |
| 5 580          | -6.94                           |                 |
| 5 700          | -4.83                           |                 |

##### Test mode : 802.11a (UNII-3)

| Frequency(MHz) | Power spectral density(dBm/500 kHz) | Limit (dBm/500 kHz) |
|----------------|-------------------------------------|---------------------|
| 5 745          | -8.23                               | 30                  |
| 5 785          | -7.36                               |                     |
| 5 825          | -6.84                               |                     |

#### ※Remark

1. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

**Test mode : 802.11n\_HT20 (UNII-1)**

| Frequency(MHz) | Power spectral density(dBm/MHz) | Limit (dBm/MHz) |
|----------------|---------------------------------|-----------------|
| 5 180          | -4.92                           | 11              |
| 5 200          | -5.27                           |                 |
| 5 240          | -5.58                           |                 |

**Test mode : 802.11n\_HT20 (UNII-2A)**

| Frequency(MHz) | Power spectral density(dBm/MHz) | Limit (dBm/MHz) |
|----------------|---------------------------------|-----------------|
| 5 260          | -6.26                           | 11              |
| 5 280          | -6.23                           |                 |
| 5 320          | -6.73                           |                 |

**Test mode : 802.11n\_HT20 (UNII-2C)**

| Frequency(MHz) | Power spectral density(dBm/MHz) | Limit (dBm/MHz) |
|----------------|---------------------------------|-----------------|
| 5 500          | -7.22                           | 11              |
| 5 580          | -7.06                           |                 |
| 5 700          | -4.94                           |                 |

**Test mode : 802.11n\_HT20 (UNII-3)**

| Frequency(MHz) | Power spectral density(dBm/500 kHz) | Limit (dBm/500 kHz) |
|----------------|-------------------------------------|---------------------|
| 5 745          | -8.46                               | 30                  |
| 5 785          | -7.60                               |                     |
| 5 825          | -7.04                               |                     |

**※Remark**

1. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

**Test mode : 802.11n\_HT40 (UNII-1)**

| Frequency(MHz) | Power spectral density(dBm/MHz) | Limit (dBm/MHz) |
|----------------|---------------------------------|-----------------|
| 5 190          | -11.75                          | 11              |
| 5 230          | -11.75                          |                 |

**Test mode : 802.11n\_HT40 (UNII-2A)**

| Frequency(MHz) | Power spectral density(dBm/MHz) | Limit (dBm/MHz) |
|----------------|---------------------------------|-----------------|
| 5 270          | -12.79                          | 11              |
| 5 310          | -13.12                          |                 |

**Test mode : 802.11n\_HT40 (UNII-2C)**

| Frequency(MHz) | Power spectral density(dBm/MHz) | Limit (dBm/MHz) |
|----------------|---------------------------------|-----------------|
| 5 510          | -13.91                          | 11              |
| 5 550          | -14.49                          |                 |
| 5 670          | -13.13                          |                 |

**Test mode : 802.11n\_HT40 (UNII-3)**

| Frequency(MHz) | Power spectral density(dBm/500 kHz) | Limit (dBm/500 kHz) |
|----------------|-------------------------------------|---------------------|
| 5 755          | -14.91                              | 30                  |
| 5 795          | -14.43                              |                     |

**※Remark**

1. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

**Test mode : 802.11ac\_VHT80 (UNII-1)**

| Frequency(MHz) | Power spectral density(dBm/MHz) | Limit (dBm/MHz) |
|----------------|---------------------------------|-----------------|
| 5 210          | -16.13                          | 11              |

**Test mode : 802.11ac\_VHT80 (UNII-2A)**

| Frequency(MHz) | Power spectral density(dBm/MHz) | Limit (dBm/MHz) |
|----------------|---------------------------------|-----------------|
| 5 290          | -17.14                          | 11              |

**Test mode : 802.11ac\_VHT80 (UNII-2C)**

| Frequency(MHz) | Power spectral density(dBm/MHz) | Limit (dBm/MHz) |
|----------------|---------------------------------|-----------------|
| 5 530          | -19.06                          | 11              |

**Test mode : 802.11ac\_VHT80 (UNII-3)**

| Frequency(MHz) | Power spectral density(dBm/500 kHz) | Limit (dBm/500 kHz) |
|----------------|-------------------------------------|---------------------|
| 5 775          | -19.03                              | 30                  |

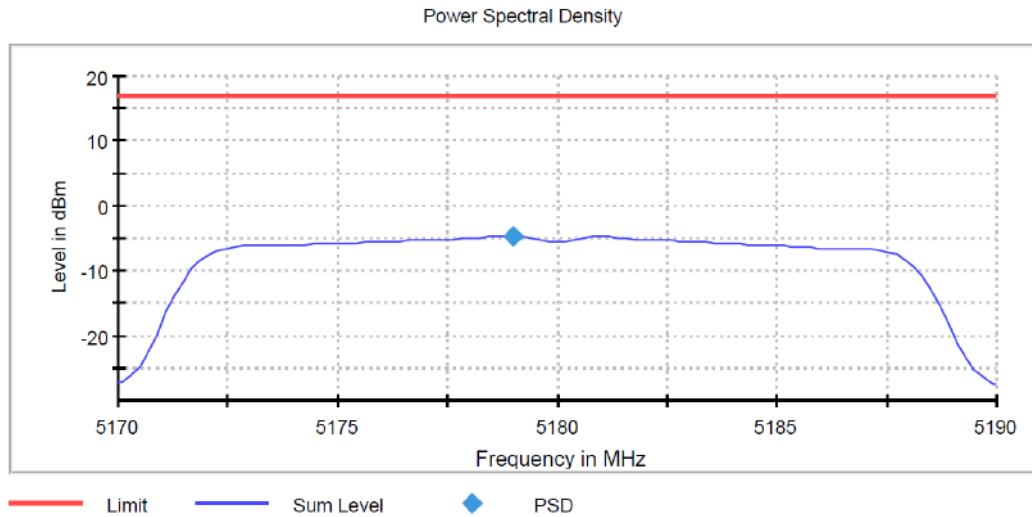
**※Remark**

1. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

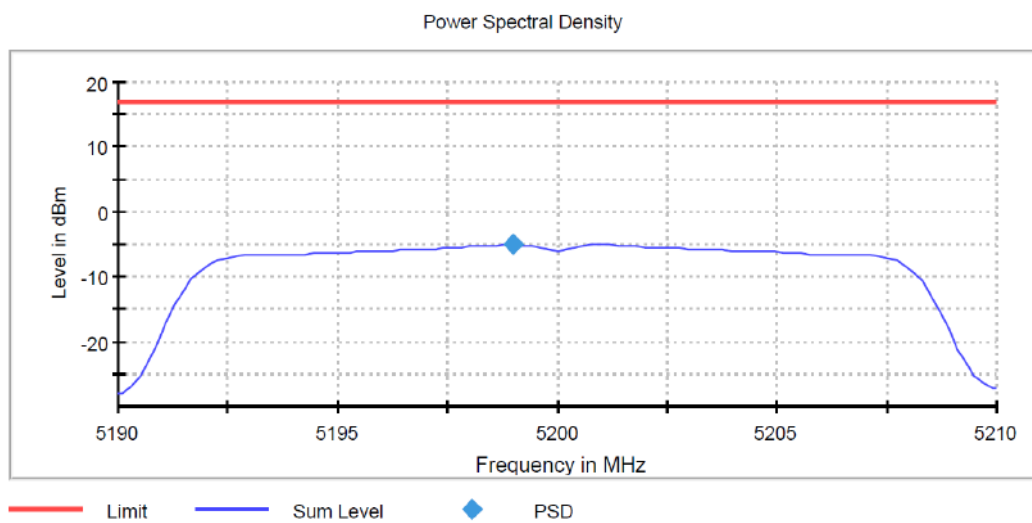
### 8.4.1 Test plot

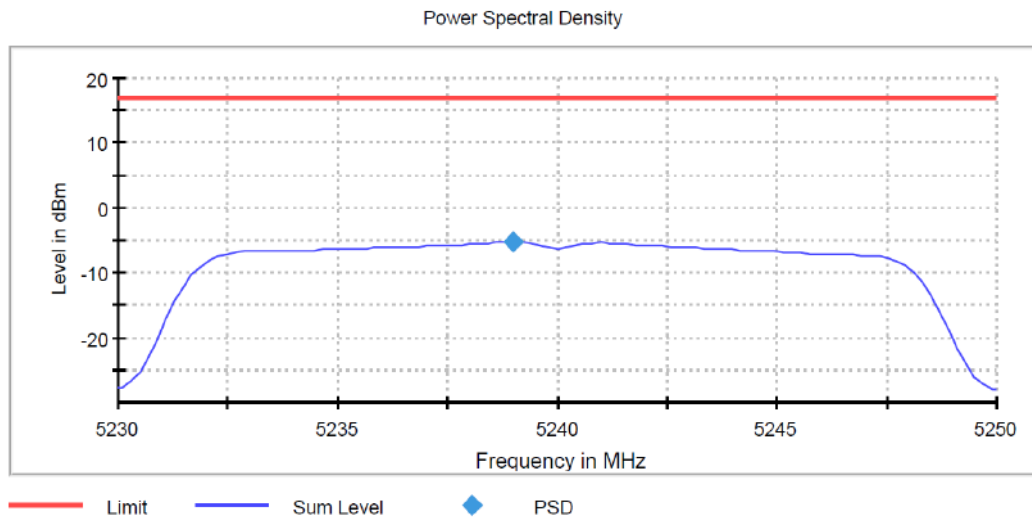
Test mode : 802.11a (UNII-1)

#### A. Lowest Ch. (5 180 MHz)



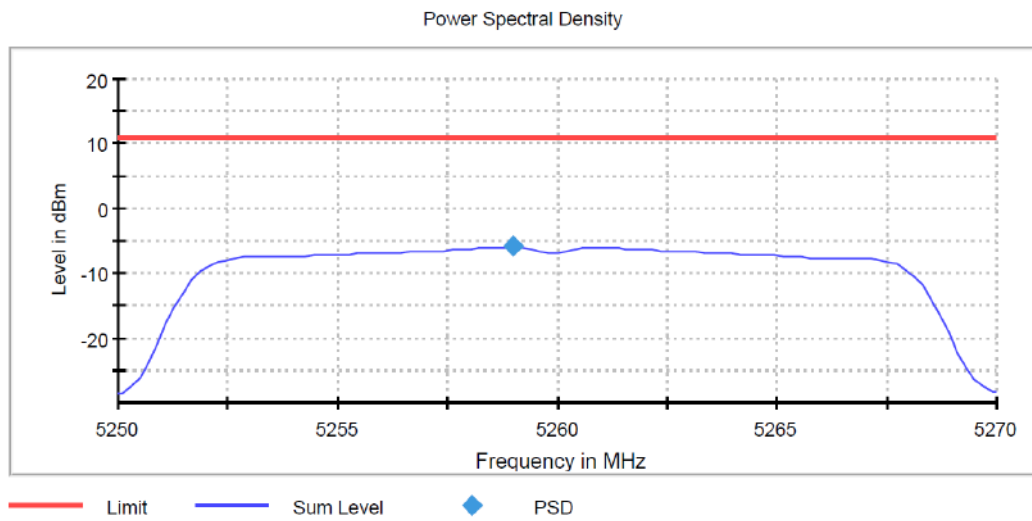
#### B. Middle Ch. (5 200 MHz)



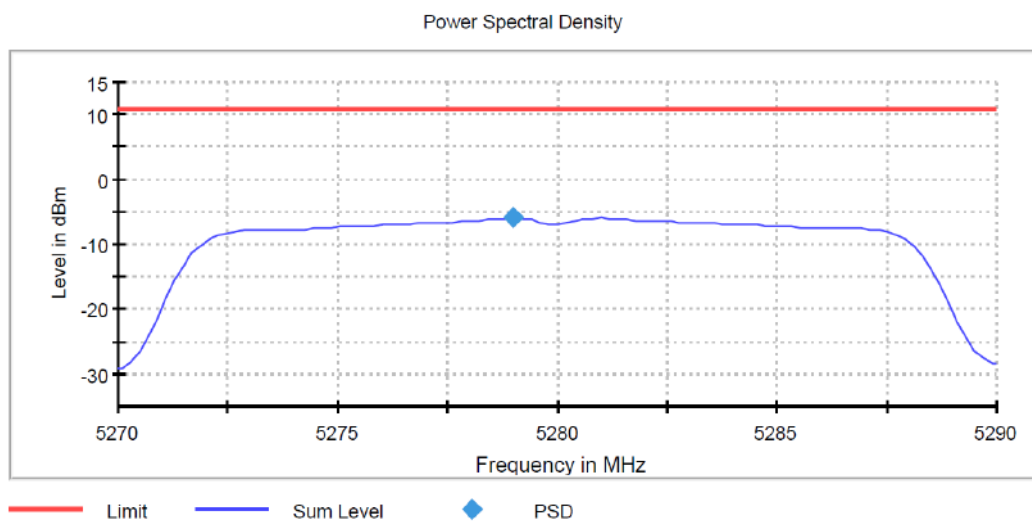
**C. Highest Ch. (5 240 MHz)**

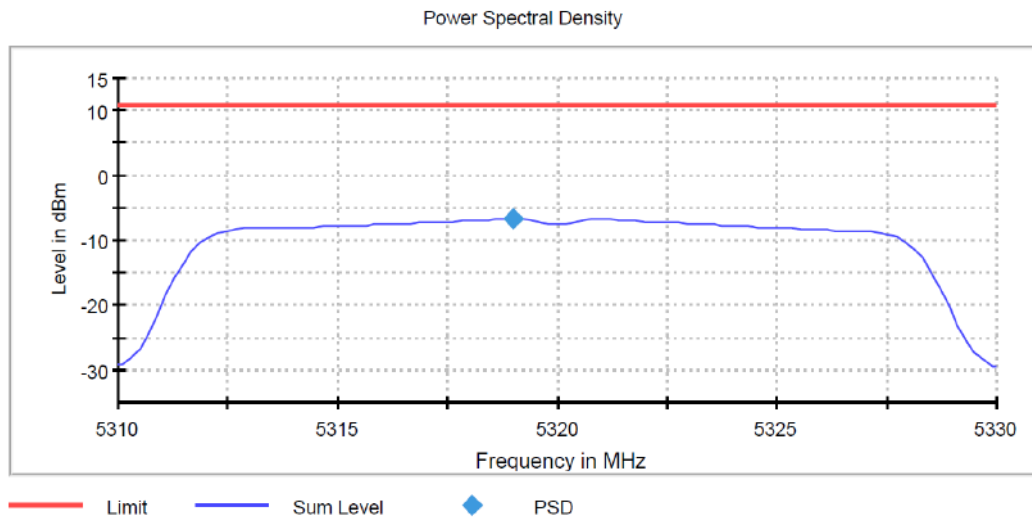
Test mode : 802.11a (UNII-2A)

A. Lowest Ch. (5 260 MHz)



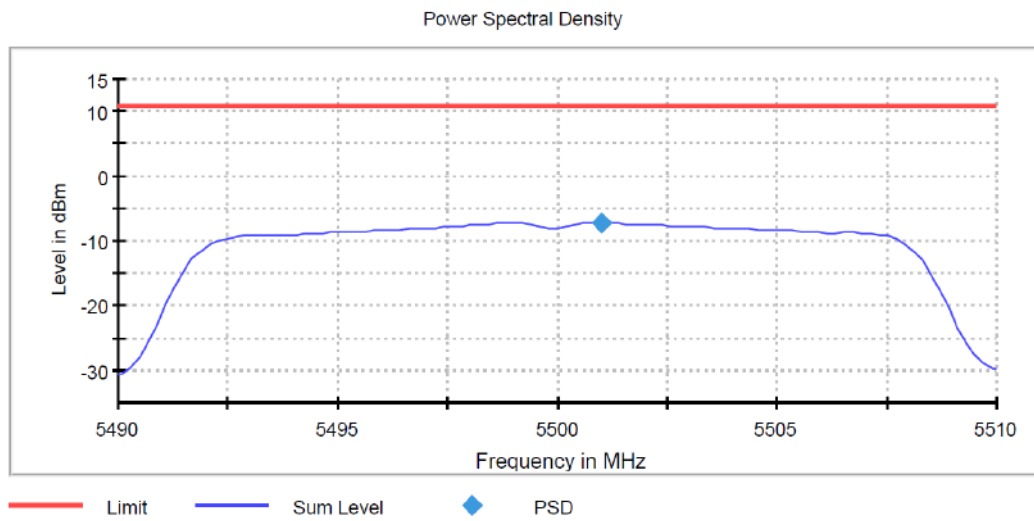
B. Middle Ch. (5 280 MHz)



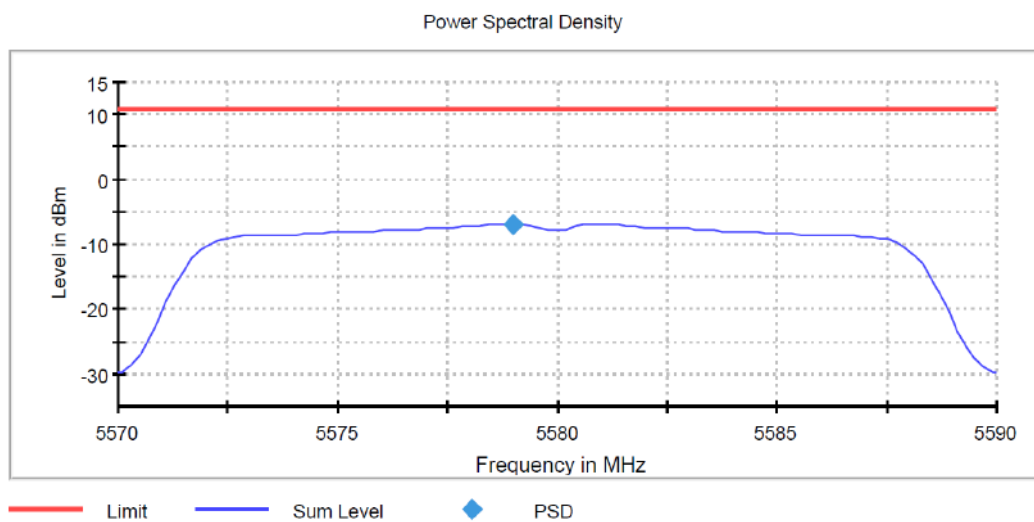
**C. Highest Ch. (5 320 MHz)**

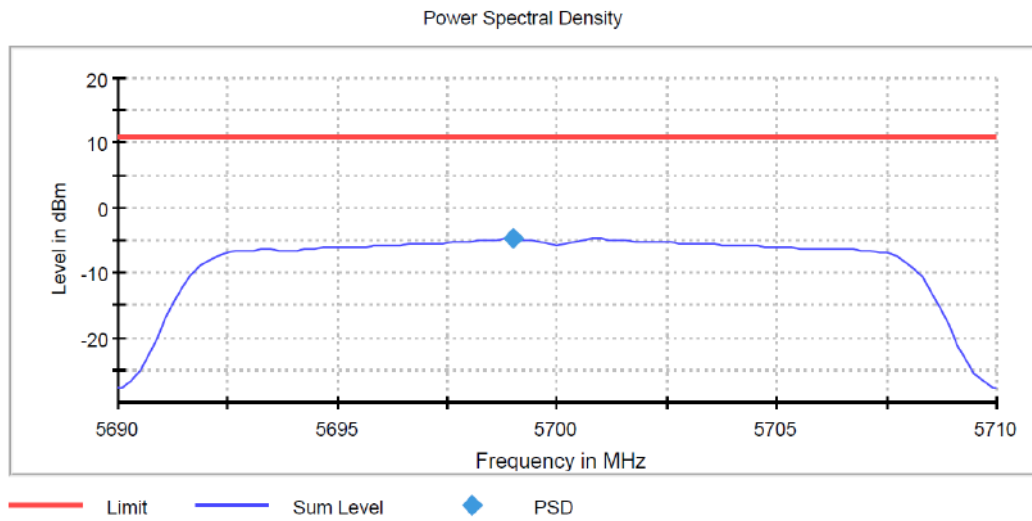
Test mode : 802.11a (UNII-2C)

A. Lowest Ch. (5 500 MHz)



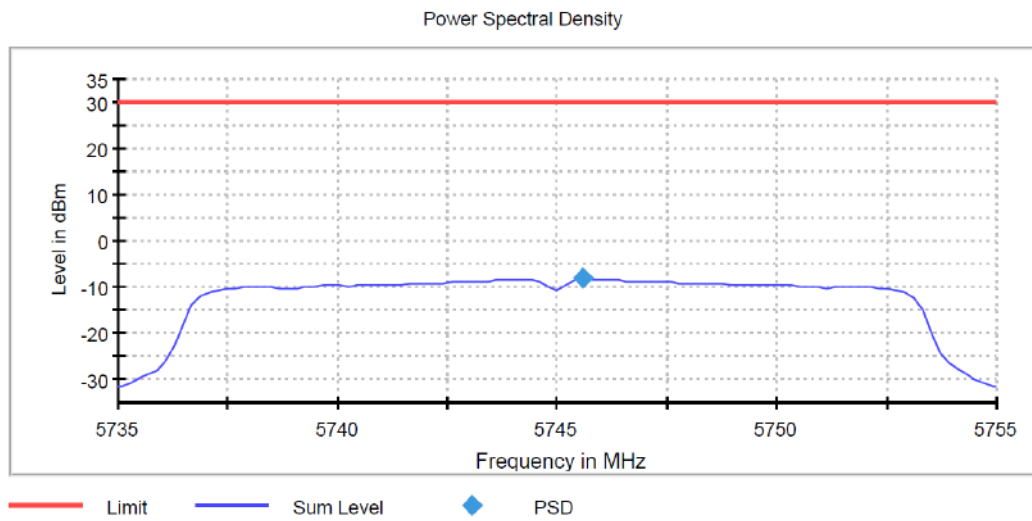
B. Middle Ch. (5 580 MHz)



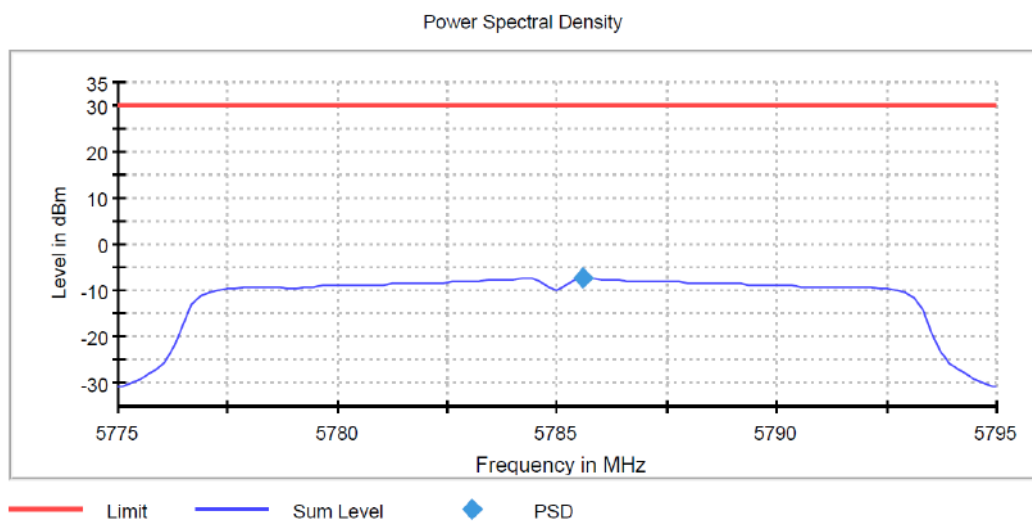
**C. Highest Ch. (5 700 MHz)**

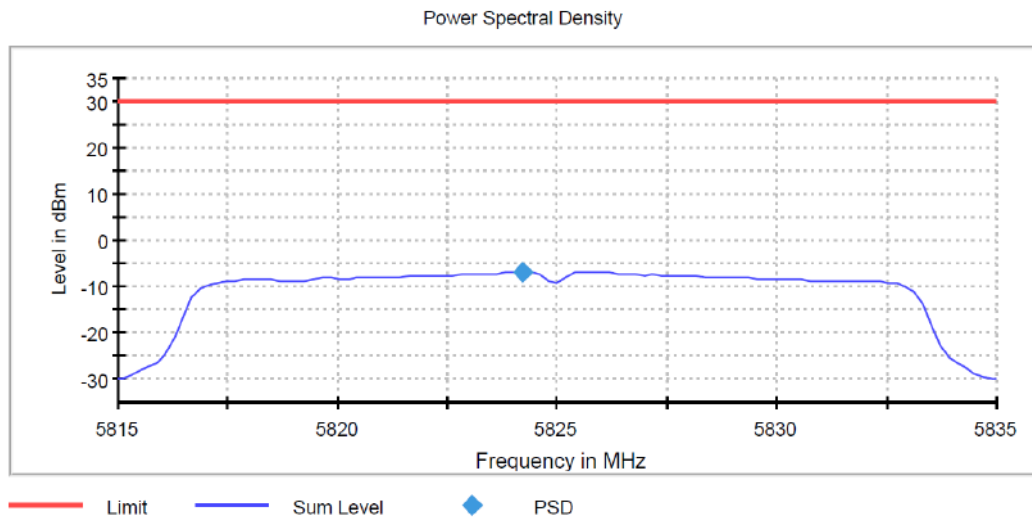
Test mode : 802.11a (UNII-3)

**A. Lowest Ch. (5 745 MHz)**



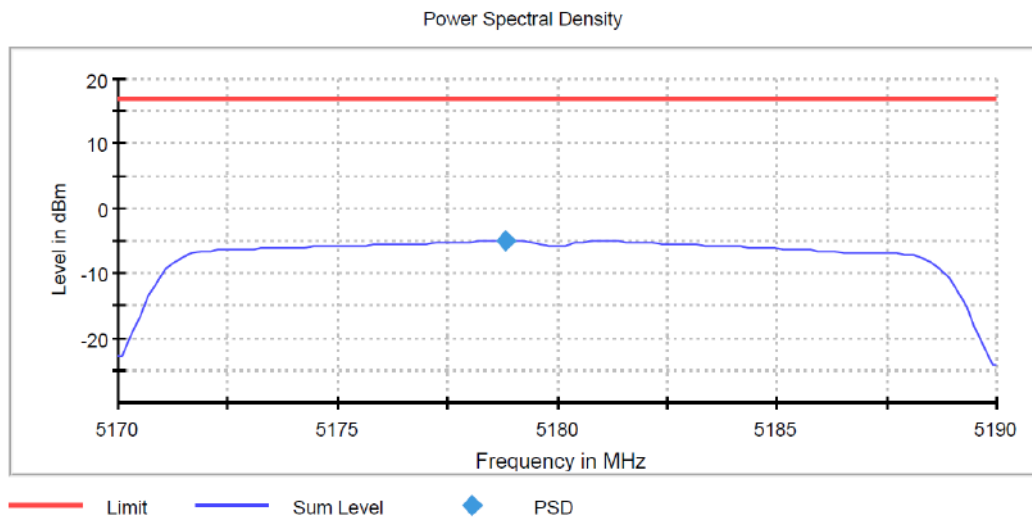
**B. Middle Ch. (5 785 MHz)**



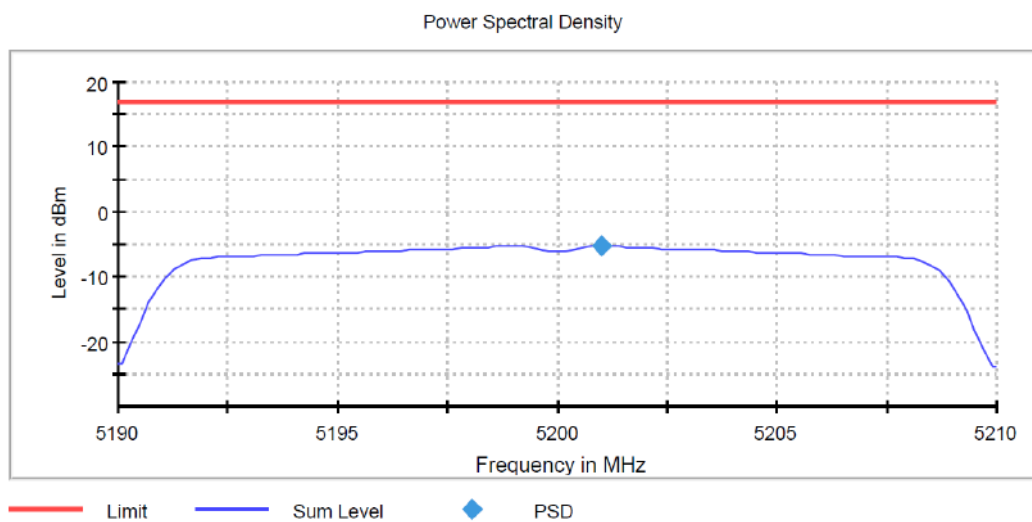
**C. Highest Ch. (5 825 MHz)**

Test mode : 802.11n\_HT20 (UNII-1)

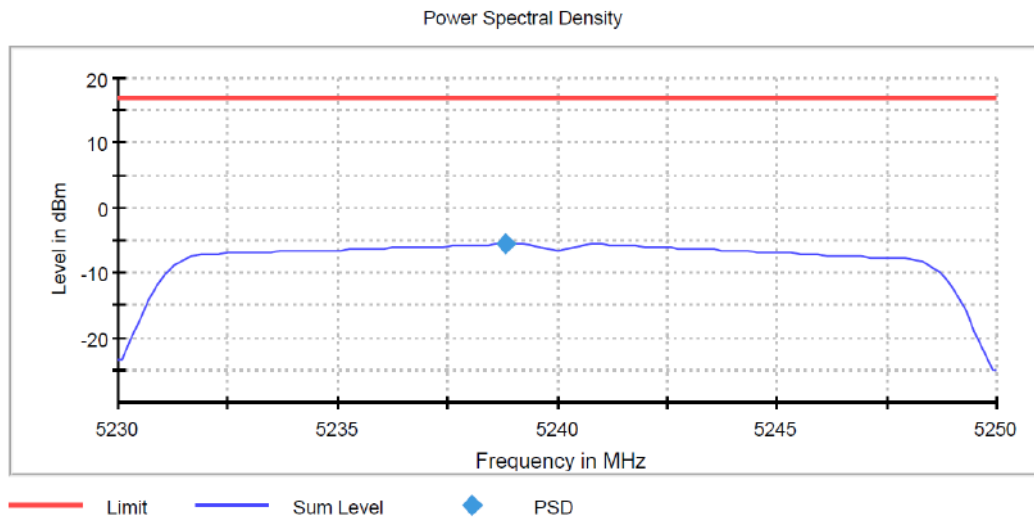
**A. Lowest Ch. (5 180 MHz)**



**B. Middle Ch. (5 200 MHz)**

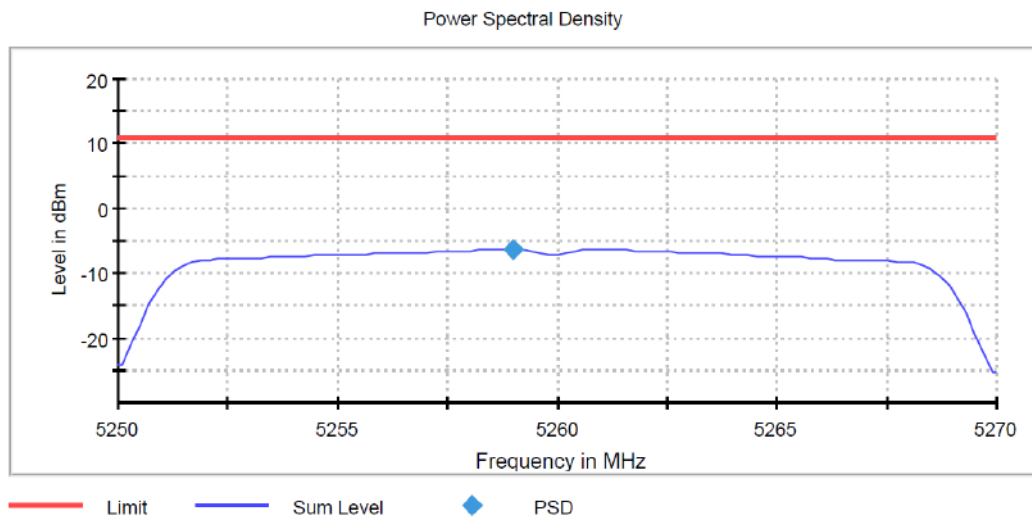


C. Highest Ch. (5 240 MHz)

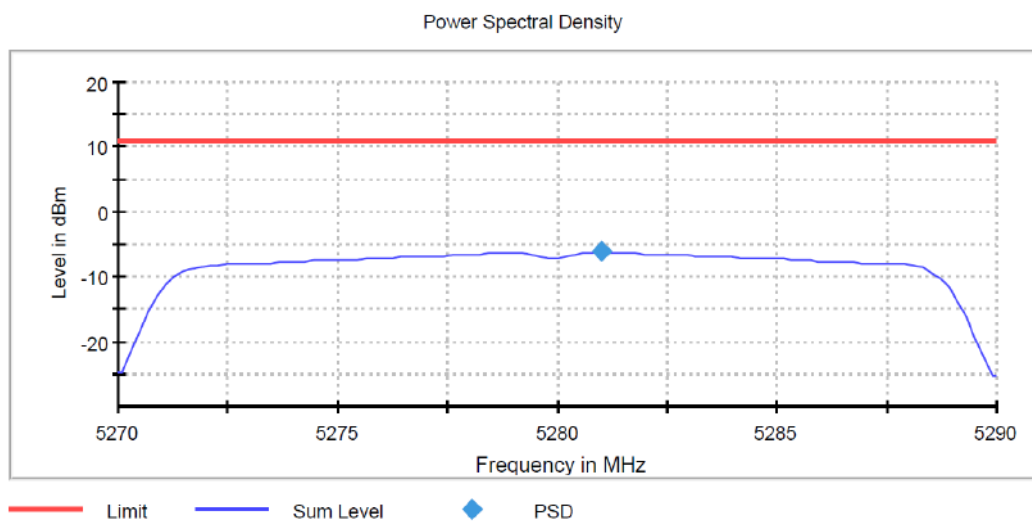


Test mode : 802.11n\_HT20 (UNII-2A)

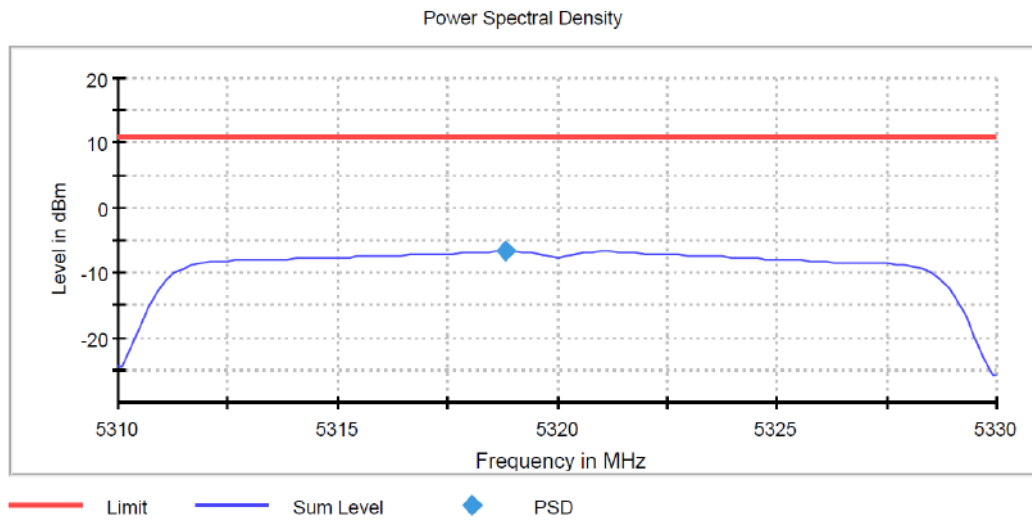
**A. Lowest Ch. (5 260 MHz)**



**B. Middle Ch. (5 280 MHz)**

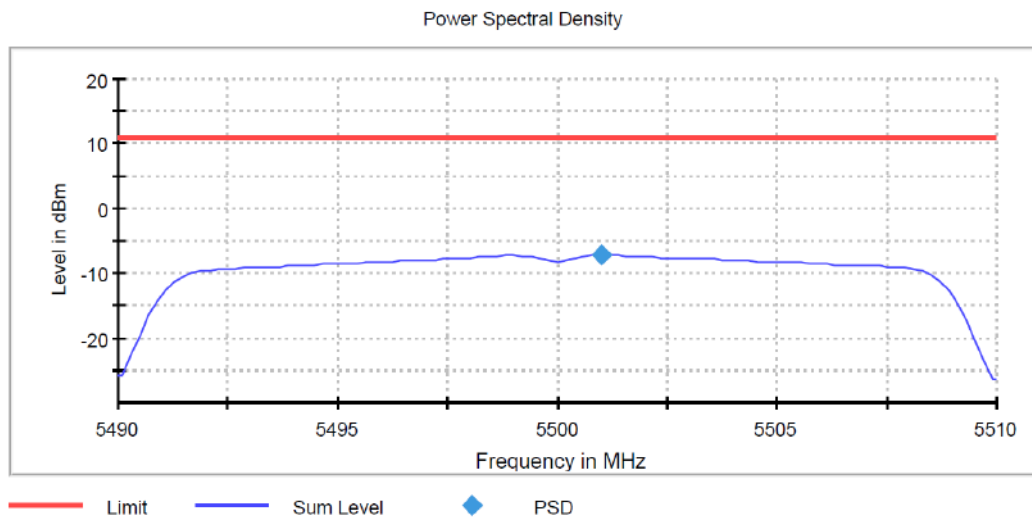


C. Highest Ch. (5 320 MHz)

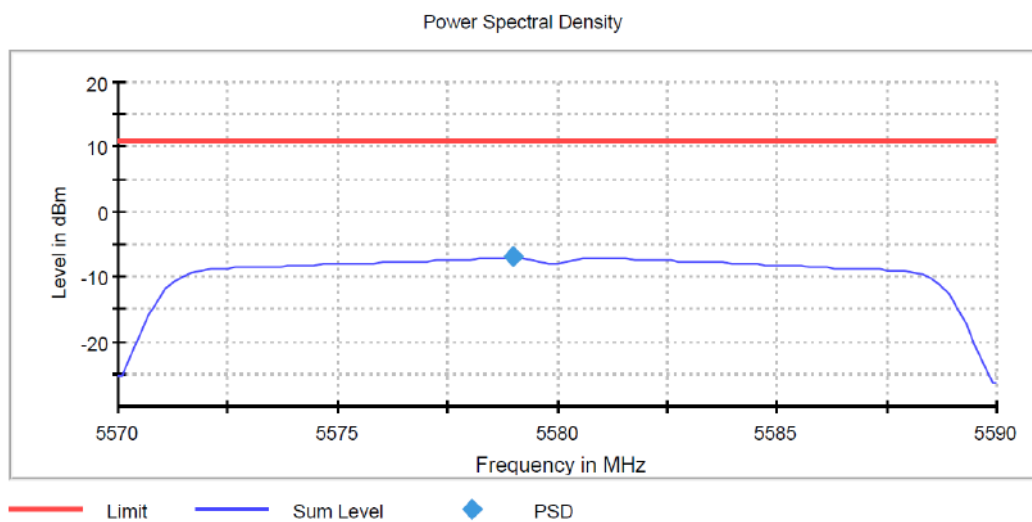


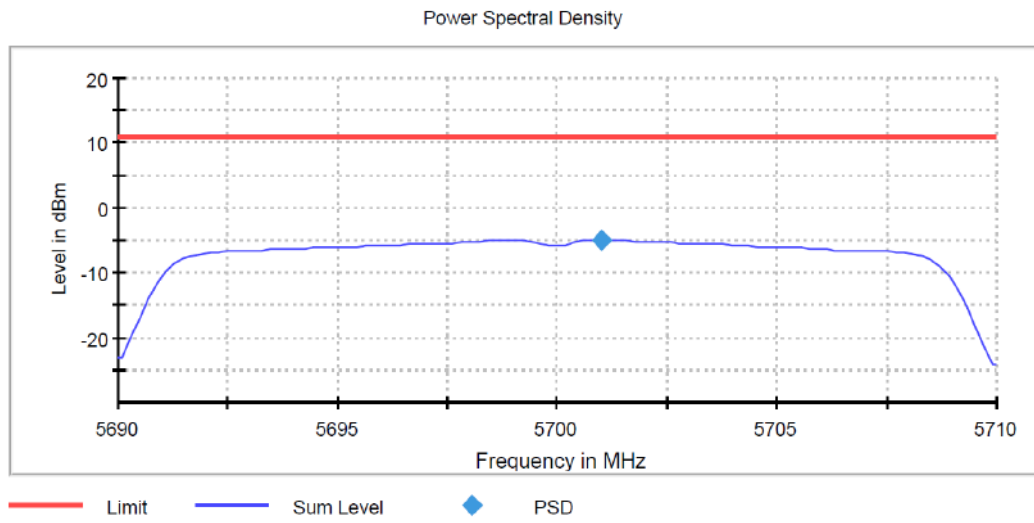
Test mode : 802.11n\_HT20 (UNII-2C)

**A. Lowest Ch. (5 500 MHz)**



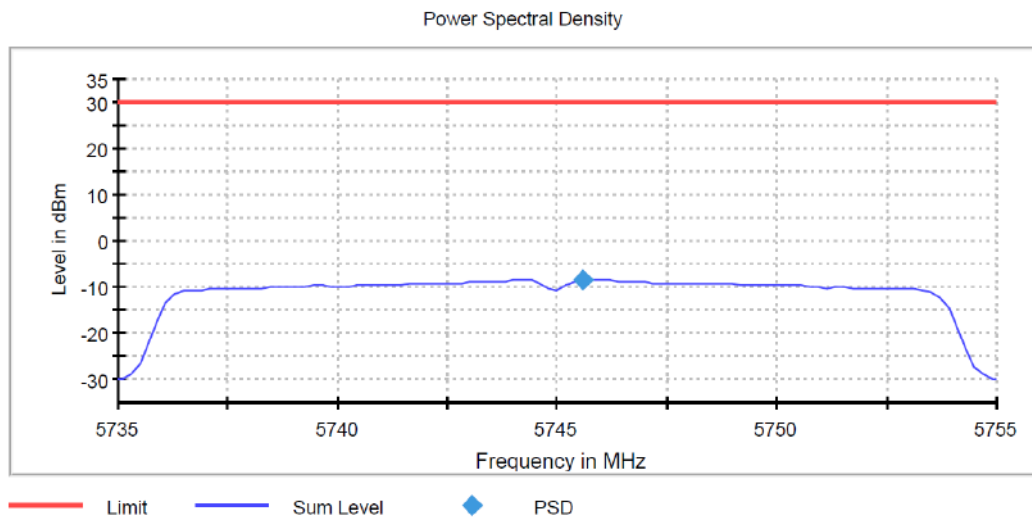
**B. Middle Ch. (5 580 MHz)**



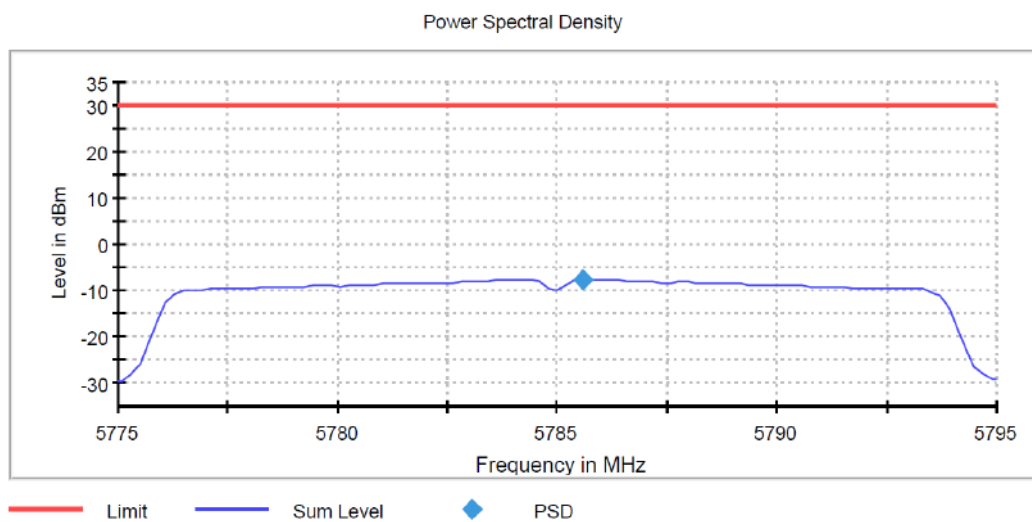
**C. Highest Ch. (5 700 MHz)**

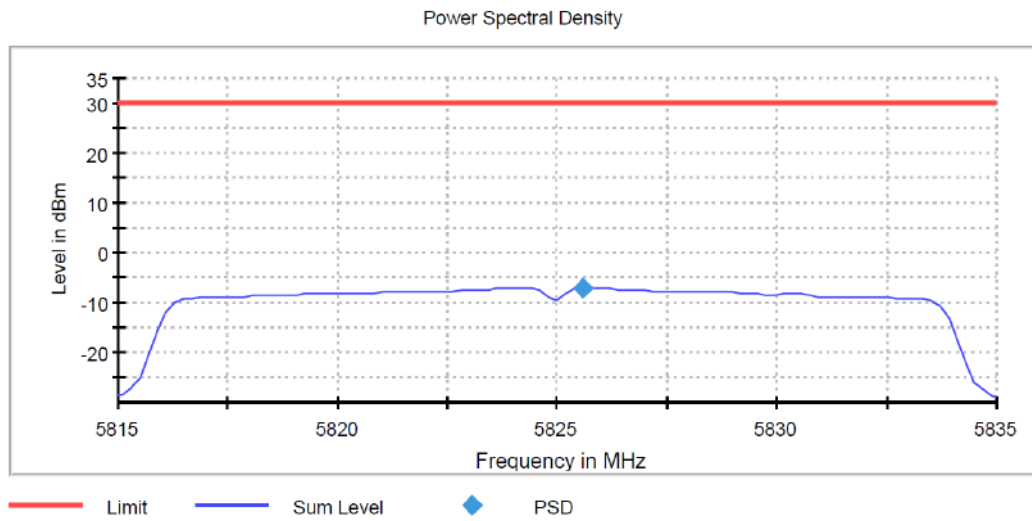
Test mode : 802.11n\_HT20 (UNII-3)

**A. Lowest Ch. (5 745 MHz)**



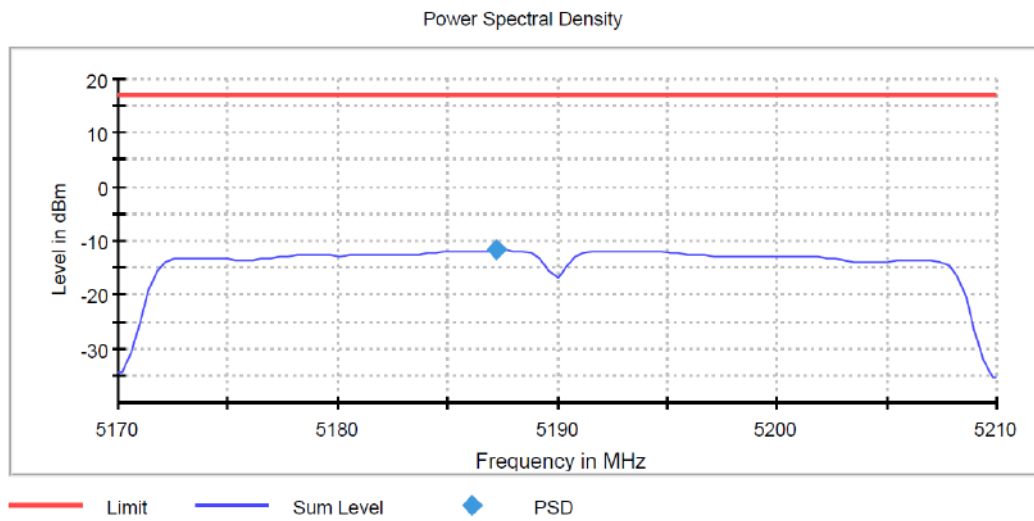
**B. Middle Ch. (5 785 MHz)**



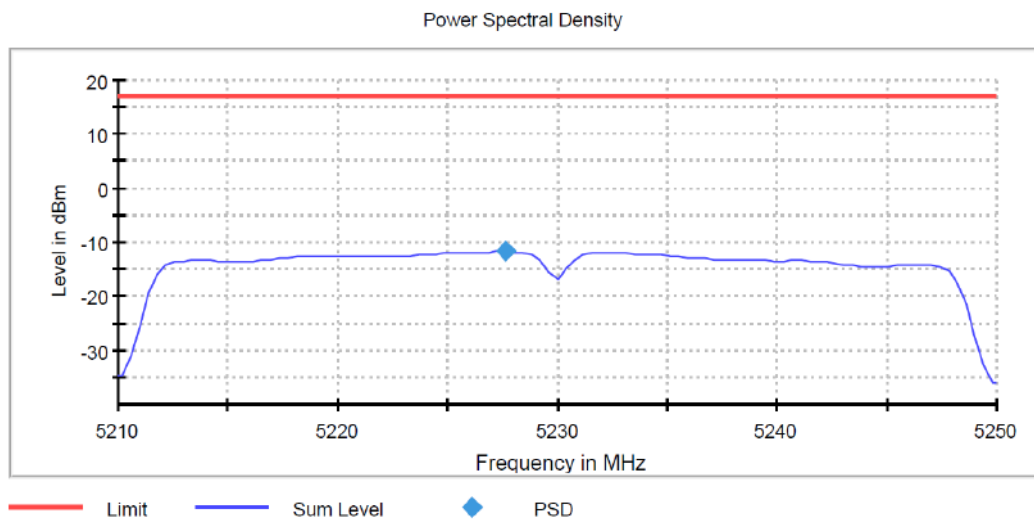
**C. Highest Ch. (5 825 MHz)**

Test mode : 802.11n\_HT40 (UNII-1)

**A. Lowest Ch. (5 190 MHz)**

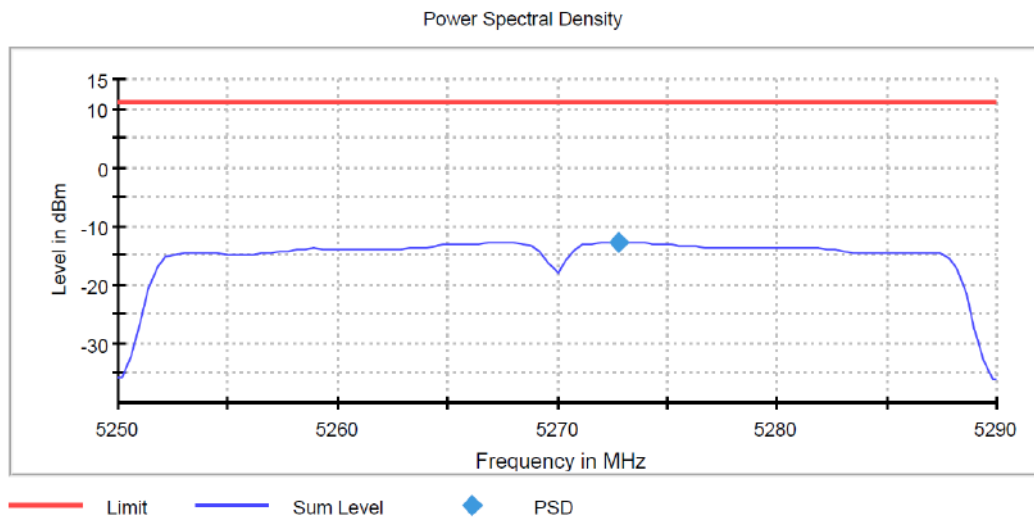


**B. Highest Ch. (5 230 MHz)**

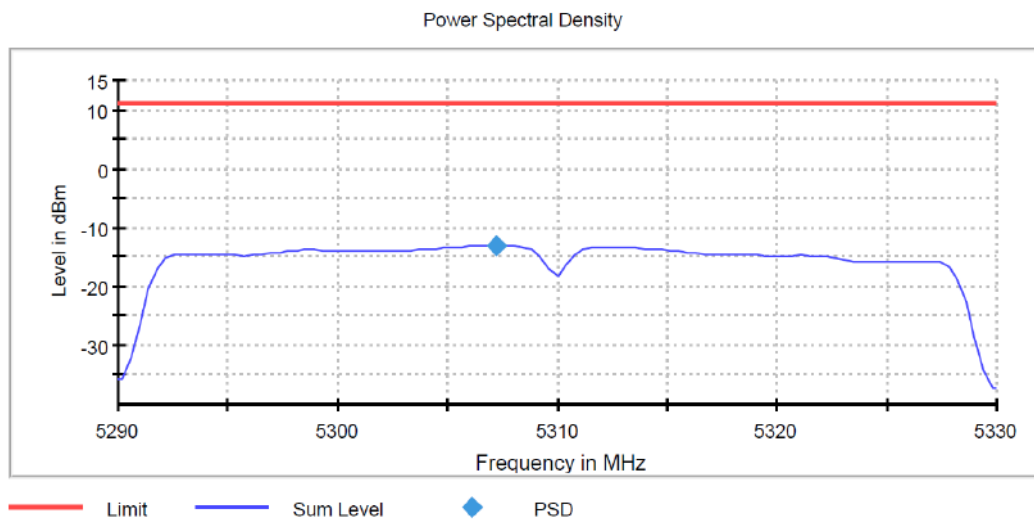


Test mode : 802.11n\_HT40 (UNII-2A)

**A. Lowest Ch. (5 270 MHz)**

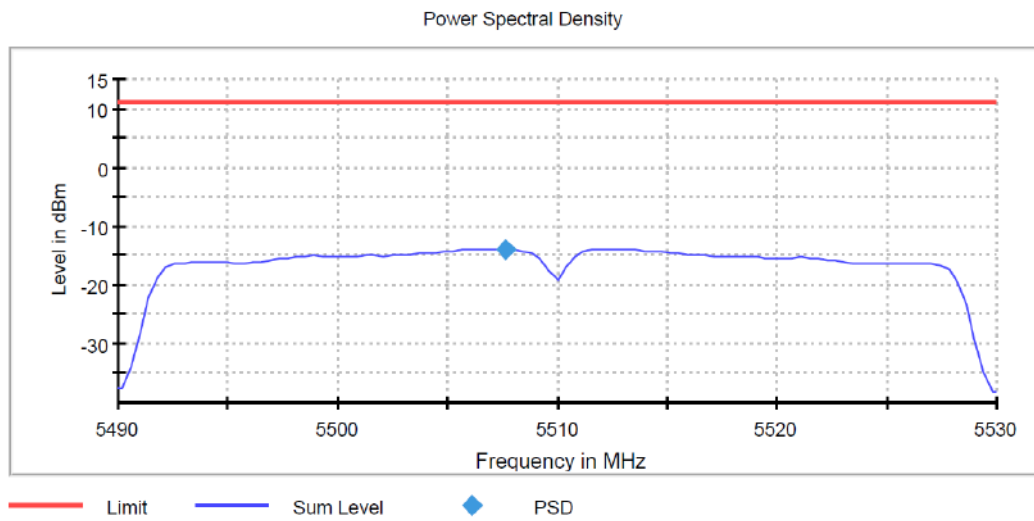


**B. Highest Ch. (5 310 MHz)**

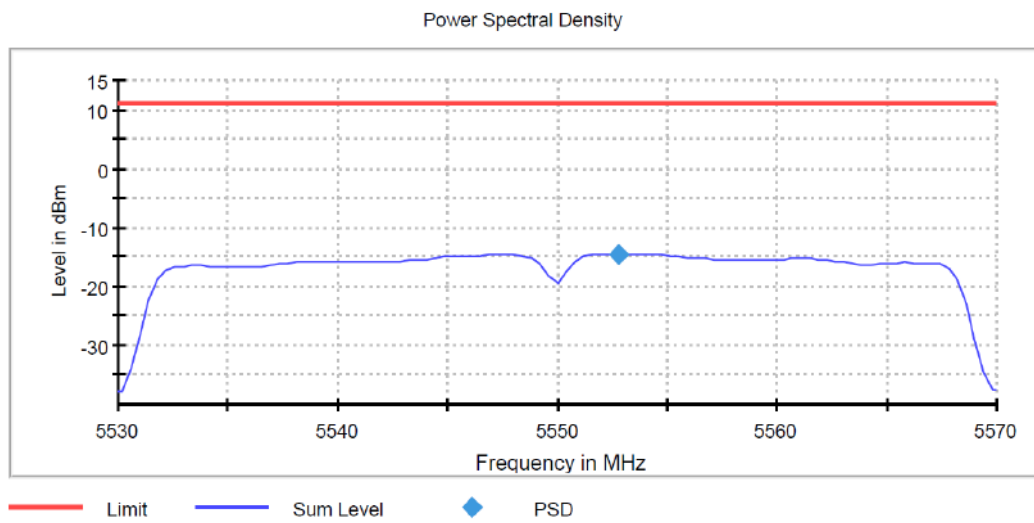


Test mode : 802.11n\_HT40 (UNII-2C)

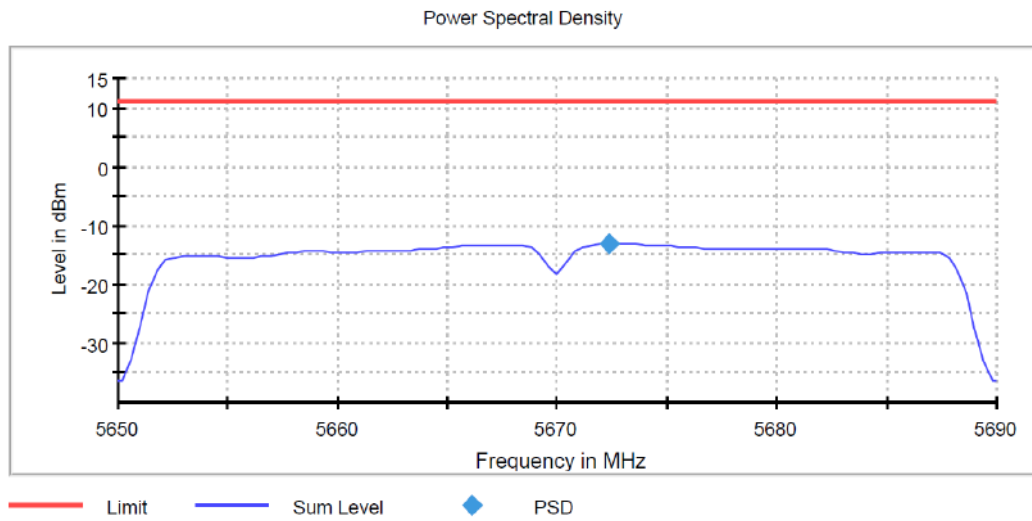
**A. Lowest Ch. (5 510 MHz)**



**B. Middle Ch. (5 550 MHz)**

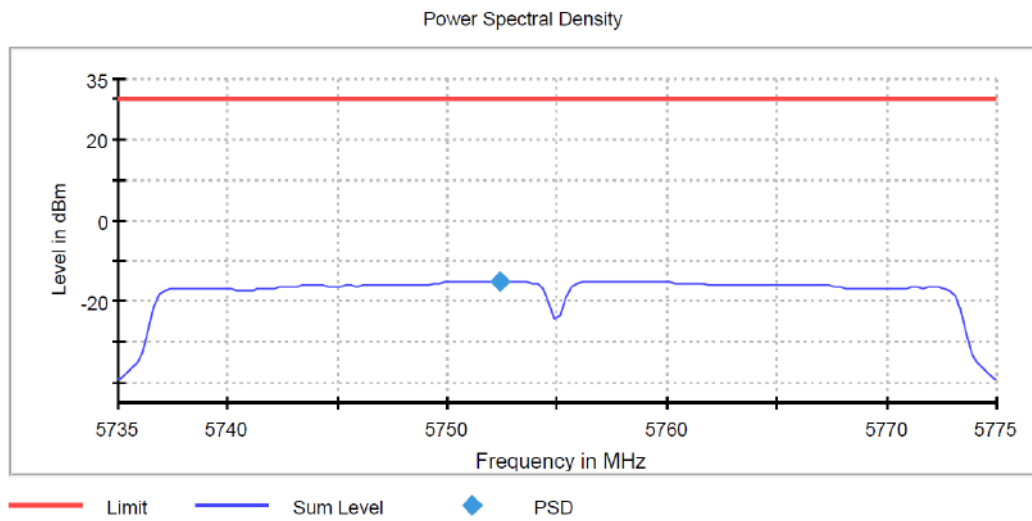


C. Highest Ch. (5 670 MHz)

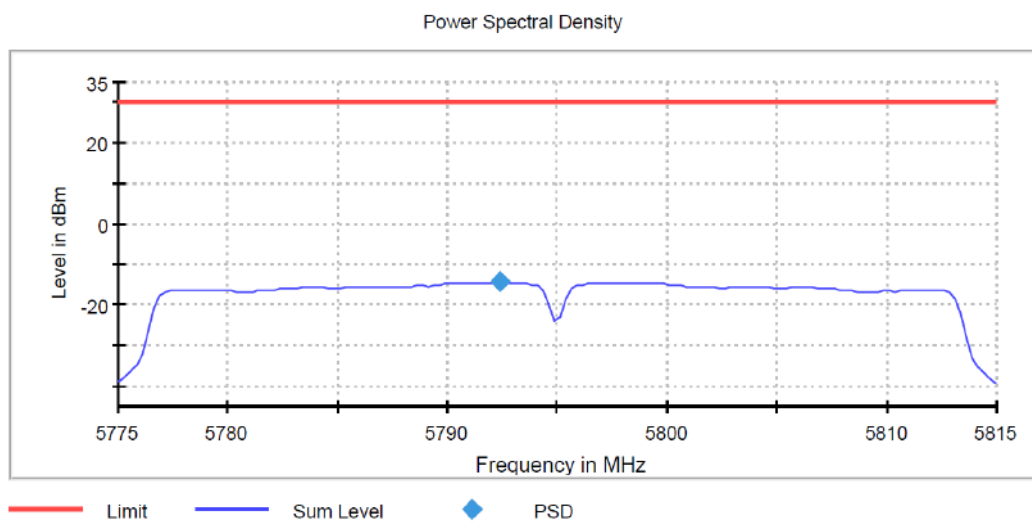


Test mode : 802.11n\_HT40 (UNII-3)

**A. Lowest Ch. (5 755 MHz)**

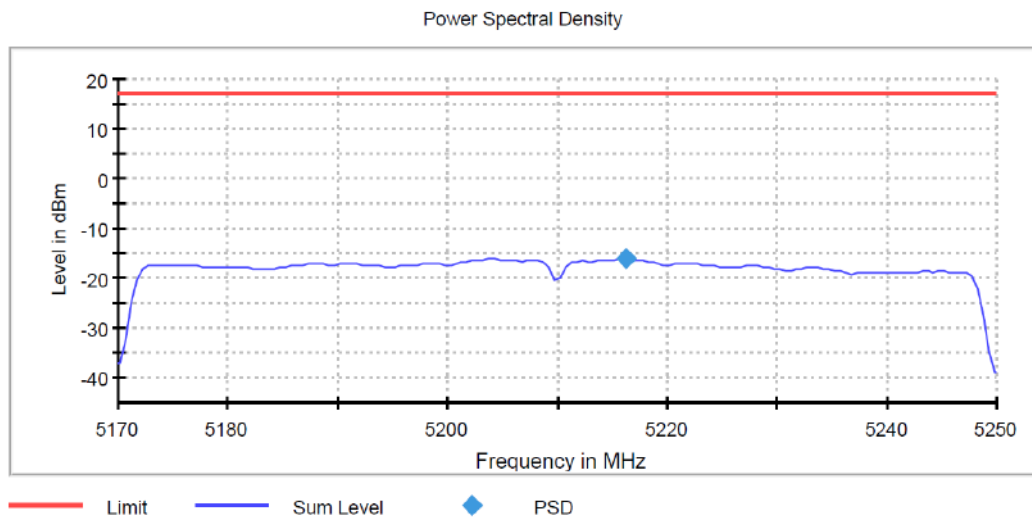


**B. Highest Ch. (5 795 MHz)**



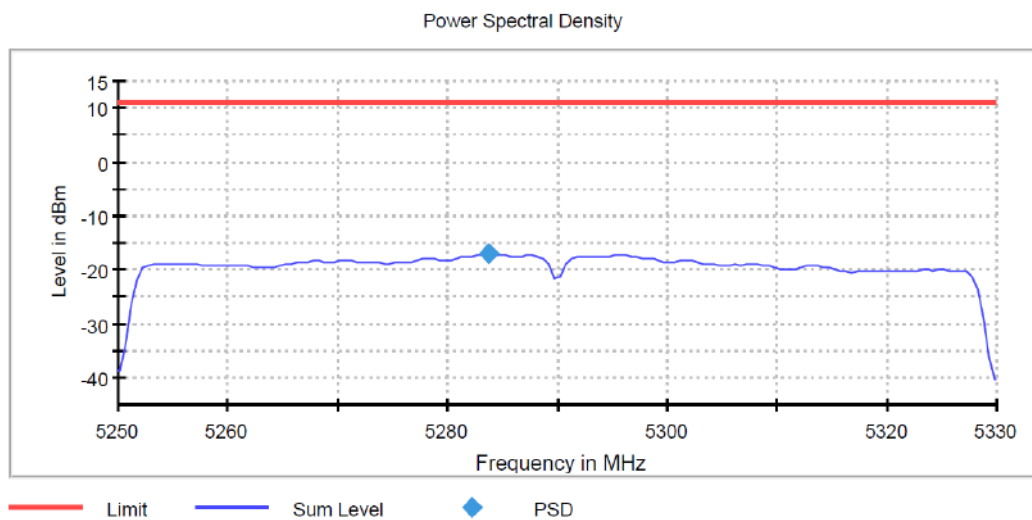
Test mode : 802.11ac\_VHT80 (UNII-1)

A. Lowest Ch. (5 210 MHz)



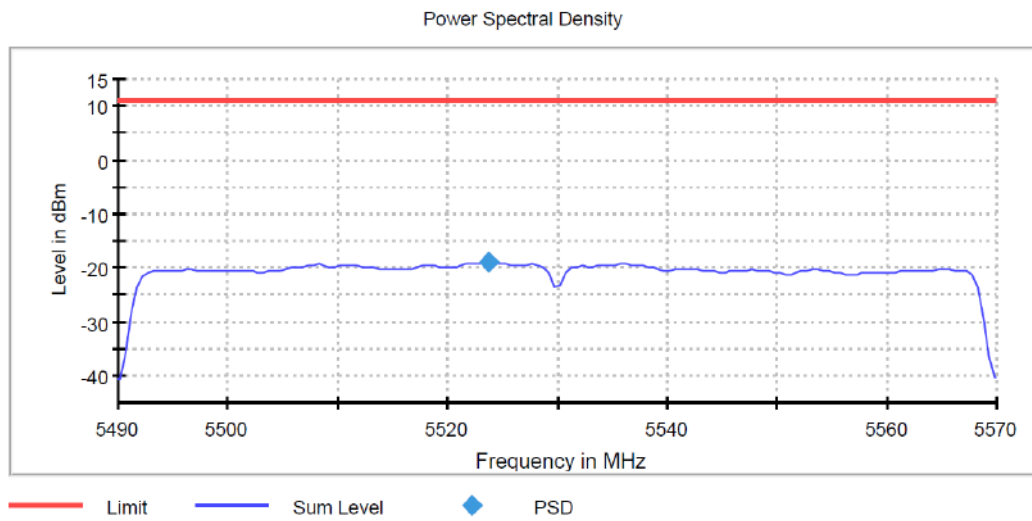
Test mode : 802.11ac\_VHT80 (UNII-2A)

A. Lowest Ch. (5 290 MHz)



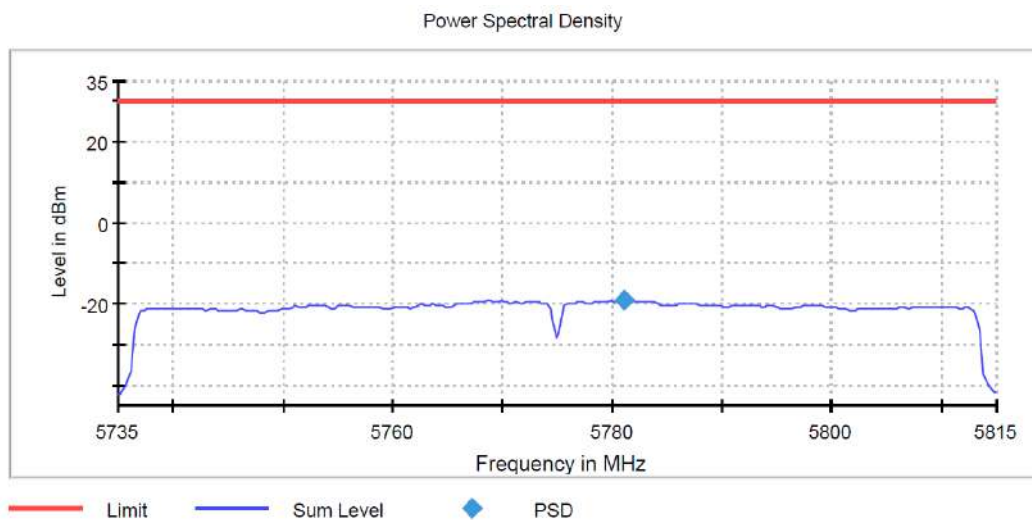
Test mode : 802.11ac\_VHT80 (UNII-2C)

A. Lowest Ch. (5 530 MHz)



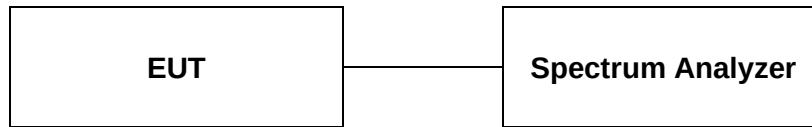
Test mode : 802.11ac\_VHT80 (UNII-3)

A. Lowest Ch. (5 775 MHz)



## 10. Frequency stability

### 10.1. Test setup



### 10.2. Limit

Not applicable

### 10.3. Test procedure

- The EUT was placed inside the environmental test chamber and powered by nominal AC/DC voltage.
  - Turn the EUT on and couple its output to a spectrum analyzer.
  - Turn the EUT off and set the chamber to the highest temperature specified.
  - Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize.
  - Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
  - The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes.
- The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

#### 10.4. Test results

Test mode : UNII-1 (5 180 MHz)

| Voltage(%) | Power(V) | Temp(°C) | Frequency(Hz) | Deviation(ppm) |
|------------|----------|----------|---------------|----------------|
| 100        | 12.00    | -20      | 27 997        | 5.40           |
|            |          | -10      | 17 998        | 3.47           |
|            |          | 0        | 2 000         | 0.39           |
|            |          | 10       | -13 999       | 2.70           |
|            |          | 20       | -24 998       | 4.83           |
|            |          | 30       | -39 996       | 7.72           |
|            |          | 40       | -43 996       | 8.49           |
|            |          | 50       | -25 998       | 5.02           |
|            |          | 23       | -36 996       | 7.14           |
| 85         | 10.20    | 23       | -29 997       | 5.79           |
| 115        | 13.80    | 23       | -30 997       | 5.98           |

Test mode : UNII-2A (5 260 MHz)

| Voltage(%) | Power(V) | Temp(°C) | Frequency(Hz) | Deviation(ppm) |
|------------|----------|----------|---------------|----------------|
| 100        | 12.00    | -20      | 26 997        | 5.13           |
|            |          | -10      | 18 998        | 3.61           |
|            |          | 0        | 3 000         | 0.57           |
|            |          | 10       | -13 999       | 2.66           |
|            |          | 20       | -29 997       | 5.70           |
|            |          | 30       | -40 996       | 7.79           |
|            |          | 40       | -42 996       | 8.17           |
|            |          | 50       | -27 997       | 5.32           |
|            |          | 23       | -33 997       | 6.46           |
| 85         | 10.20    | 23       | -37 996       | 7.22           |
| 115        | 13.80    | 23       | -31 997       | 6.08           |

#### ※Remark

1. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

Test mode : UNII-2C (5 500 MHz)

| Voltage(%) | Power(V) | Temp(°C) | Frequency(Hz) | Deviation(ppm) |
|------------|----------|----------|---------------|----------------|
| 100        | 12.00    | -20      | 30 997        | 5.61           |
|            |          | -10      | 19 528        | 3.55           |
|            |          | 0        | 4 000         | 0.73           |
|            |          | 10       | -13 999       | 2.55           |
|            |          | 20       | -28 997       | 5.27           |
|            |          | 30       | -39.996       | 7.27           |
|            |          | 40       | -44 996       | 8.18           |
|            |          | 50       | -25 997       | 4.73           |
|            |          | 23       | -36 996       | 6.73           |
| 85         | 10.20    | 23       | -32 997       | 6.00           |
| 115        | 13.80    | 23       | -32 997       | 6.00           |

Test mode : UNII-3 (5 745 MHz)

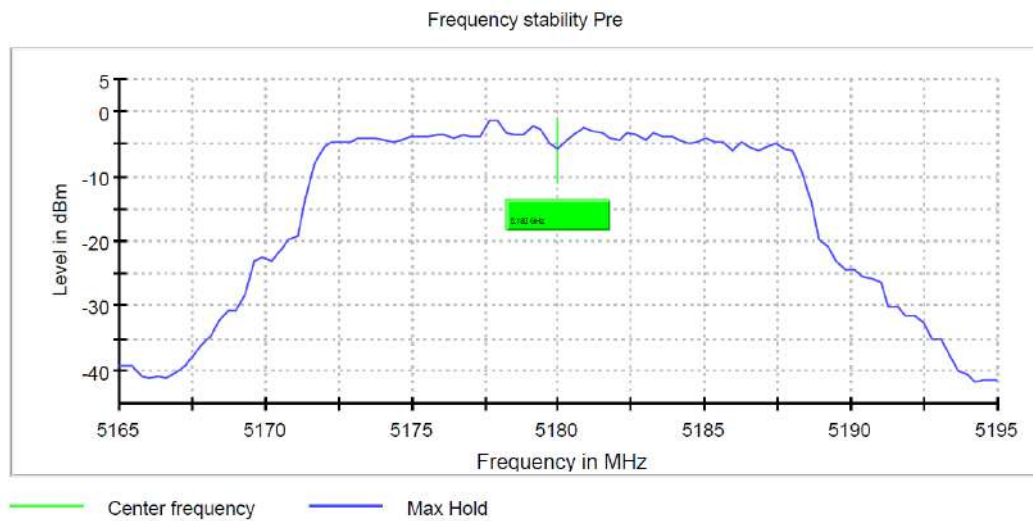
| Voltage(%) | Power(V) | Temp(°C) | Frequency(Hz) | Deviation(ppm) |
|------------|----------|----------|---------------|----------------|
| 100        | 12.00    | -20      | 30 997        | 5.40           |
|            |          | -10      | 20 998        | 3.66           |
|            |          | 0        | 3 000         | 0.52           |
|            |          | 10       | -14 999       | 2.61           |
|            |          | 20       | -28 997       | 5.05           |
|            |          | 30       | -44 996       | 7.83           |
|            |          | 40       | -45 996       | 8.01           |
|            |          | 50       | -28 997       | 5.05           |
|            |          | 23       | -36 997       | 6.44           |
| 85         | 10.20    | 23       | -34 997       | 6.09           |
| 115        | 13.80    | 23       | -37 996       | 6.61           |

※Remark

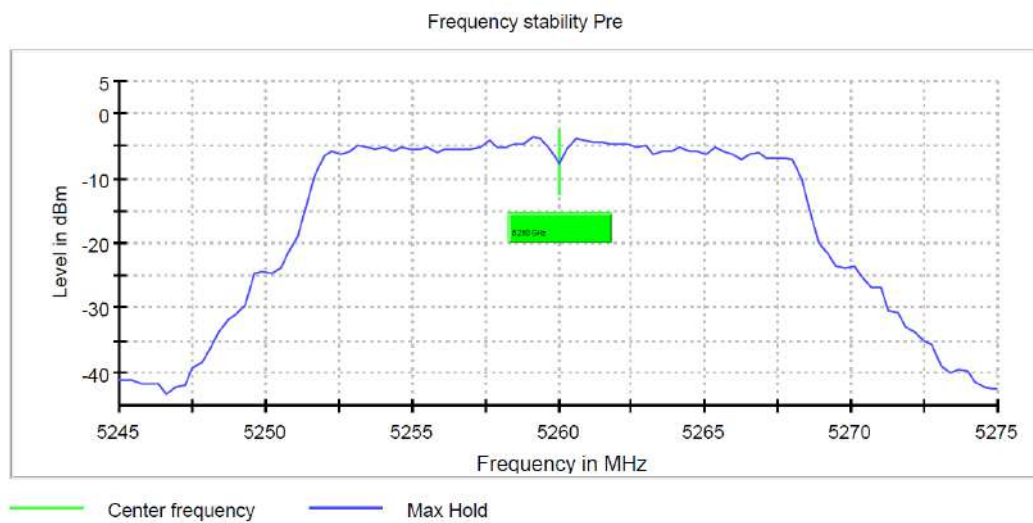
1. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

### 10.4.1 Test plot

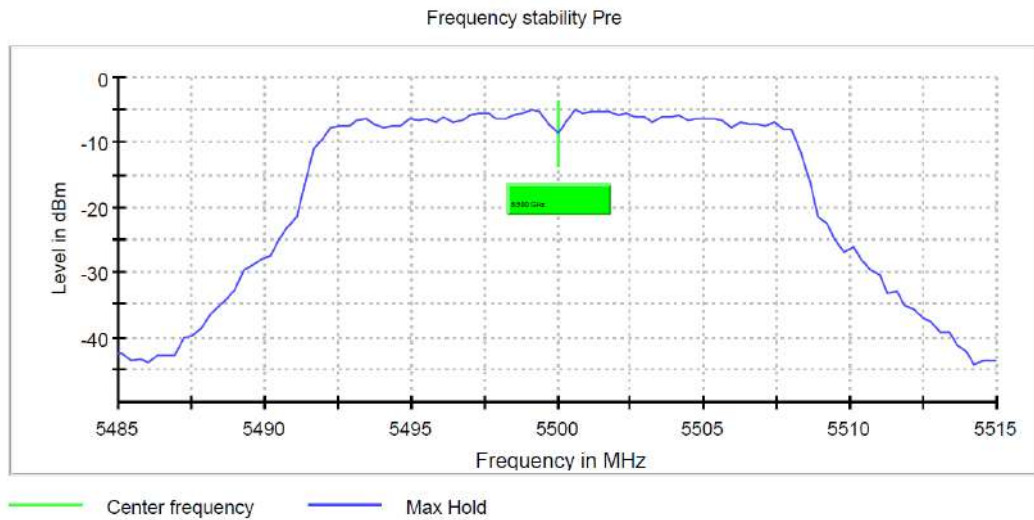
Test mode : UNII-1\_Normal Vol. Normal Temp. (5 180 MHz)



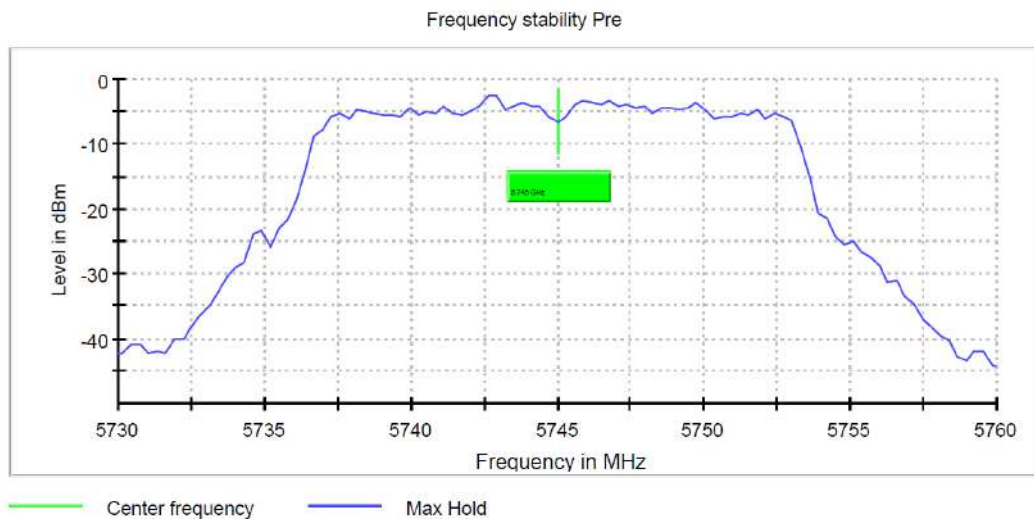
Test mode : UNII-2A\_Normal Vol. Normal Temp. (5 260 MHz)



**Test mode : UNII-2C\_Normal Vol. Normal Temp. (5 500 MHz)**



**Test mode : UNII-3\_Normal Vol. Normal Temp. (5 745 MHz)**



## 11. Dynamic frequency selection

### 11.1. Applicability

The following table from KDB 905462 D02 v02 lists the applicable requirements for the DFS testing. The device evaluated in this report is considered a client device without radar detection capability

| Requirement                            | Operational Mode |                                |                             |
|----------------------------------------|------------------|--------------------------------|-----------------------------|
|                                        | Master           | Client Without Radar Detection | Client With Radar Detection |
| <i>Non-Occupancy Period</i>            | Yes              | Not required                   | Yes                         |
| <i>DFS Detection Threshold</i>         | Yes              | Not required                   | Yes                         |
| <i>Channel Availability Check Time</i> | Yes              | Not required                   | Not required                |
| <i>U-NII Detection Bandwidth</i>       | Yes              | Not required                   | Yes                         |

Table 1. DFS Applicability

| Requirement                              | Operational Mode                             |                                |
|------------------------------------------|----------------------------------------------|--------------------------------|
|                                          | Master Device or Client with Radar Detection | Client Without Radar Detection |
| <i>DFS Detection Threshold</i>           | Yes                                          | Not required                   |
| <i>Channel Closing Transmission Time</i> | Yes                                          | Yes                            |
| <i>Channel Move Time</i>                 | Yes                                          | Yes                            |
| <i>U-NII Detection Bandwidth</i>         | Yes                                          | Not required                   |

| Additional requirements for devices with multiple bandwidth modes                                                                                                                                                                                                                                                                                            | Master Device or Client with Radar Detection | Client Without Radar Detection                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|------------------------------------------------------|
| <i>U-NII Detection Bandwidth and Statistical Performance Check</i>                                                                                                                                                                                                                                                                                           | All BW modes must be tested                  | Not required                                         |
| <i>Channel Move Time and Channel Closing Transmission Time</i>                                                                                                                                                                                                                                                                                               | Test using widest BW mode available          | Test using the widest BW mode available for the link |
| <i>All other tests</i>                                                                                                                                                                                                                                                                                                                                       | Any single BW mode                           | Not required                                         |
| <b>Note:</b> Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency. |                                              |                                                      |

Table1.1 DFS During normal operation

## 11.2. Requirements

KDB 905462 D02 v02 the following are the requirements for Client Devices:

- a) A Client Device will not transmit before having received appropriate control signals from a Master Device.
- b) A Client Device will stop all its transmissions whenever instructed by a Master Device to which it is associated and will meet the Channel Move Time and Channel Closing Transmission Time requirements.  
The Client Device will not resume any transmissions until it has again received control signals from a Master Device.
- c) If a Client Device is performing In-Service Monitoring and detects a Radar Waveform above the DFS Detection Threshold, it will inform the Master Device. This is equivalent to the Master Device detecting the Radar Waveform and d) through f) of section 5.1.1 apply.
- d) Irrespective of Client Device or Master Device detection the Channel Move Time and Channel Closing Transmission Time requirements remain the same.
- e) The client test frequency must be monitored to ensure no transmission of any type has occurred for 30 minutes.

Note: If the client moves with the master, the device is considered compliant if nothing appears in the client non-occupancy period test. For devices that shutdown (rather than moving channels), no beacons should appear

| Parameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Value                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Non-occupancy period                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Minimum 30 minutes                                                                                              |
| Channel Availability Check Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 60 seconds                                                                                                      |
| Channel Move Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 10 seconds<br>See Note 1.                                                                                       |
| Channel Closing Transmission Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 200 milliseconds + an<br>Aggregate of 60 milliseconds over remaining 10<br>second period.<br>See Notes 1 and 2. |
| U-NII Detection Bandwidth                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Minimum 100% of the U-NII 99% transmission<br>power bandwidth. See Note3.                                       |
| <p><b>Note 1:</b> Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.</p> <p><b>Note 2:</b> The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (and aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.</p> <p><b>Note 3:</b> During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.</p> |                                                                                                                 |

Table.1.2 DFS Response Requirement Values

### 11.3. Parameters of DFS test signals

As the EUT is a Client Device with no Radar Detection only Zero type radar pulse is required for the testing. Radar Pulse type 0 was used in the evaluation of the Client device for the purpose of measuring the channel Move Time and the Channel Closing Transmission Time.

| Radar Type                                                                                                                                  | Pulse Width (μsec) | PRI (μsec)                                                                                                                                                    | Number of Pulses                                                    | Minimum Percentage of Successful Detection | Minimum Number of Trials |
|---------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|--------------------------------------------|--------------------------|
| 0                                                                                                                                           | 1                  | 1428                                                                                                                                                          | 18                                                                  | See Note 1                                 | See Note 1               |
| 1                                                                                                                                           | 1                  | Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a                                                                     | Roundup:<br>$\{(1/360) * (19 * 10^6 \text{ PRI}_{\mu\text{sec}})\}$ | 60%                                        | 30                       |
|                                                                                                                                             |                    | Test B: 15 unique PRI values randomly selected within the range of 518-3066 μsec, with a minimum increment of 1 μsec, excluding PRI values selected in Test A |                                                                     |                                            |                          |
| 2                                                                                                                                           | 1-5                | 150-230                                                                                                                                                       | 23-29                                                               | 60%                                        | 30                       |
| 3                                                                                                                                           | 6-10               | 200-500                                                                                                                                                       | 16-18                                                               | 60%                                        | 30                       |
| 4                                                                                                                                           | 11-20              | 200-500                                                                                                                                                       | 12-16                                                               | 60%                                        | 30                       |
| Aggregate (Radar Types 1-4)                                                                                                                 |                    |                                                                                                                                                               |                                                                     | 80%                                        | 120                      |
| <b>Note 1:</b> Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests. |                    |                                                                                                                                                               |                                                                     |                                            |                          |

Table1.3 Short Pulse Radar Test Waveforms

| Radar Type | Pulse Width (μsec) | Chirp Width (MHz) | PRI (μsec) | Pulses per Burst | Number of Bursts | Minimum Percentage of Successful Detection | Minimum Trials |
|------------|--------------------|-------------------|------------|------------------|------------------|--------------------------------------------|----------------|
| 5          | 50-100             | 5-20              | 1000-2000  | 1-3              | 8-20             | 80%                                        | 30             |

Table1.4 Long Pulse Radar Test Waveforms

| Radar Type | Pulse Width (μsec) | PRI (μsec) | Pulses Per Hop | Hopping Rate (kHz) | Hopping Sequence Length (msec) | Minimum Percentage of Successful Detection | Minimum Trials |
|------------|--------------------|------------|----------------|--------------------|--------------------------------|--------------------------------------------|----------------|
| 6          | 1                  | 333        | 9              | 0.333              | 300                            | 70%                                        | 30             |

Table1.5 Frequency Hopping Radar Test Waveforms

#### 11.4. Test setup

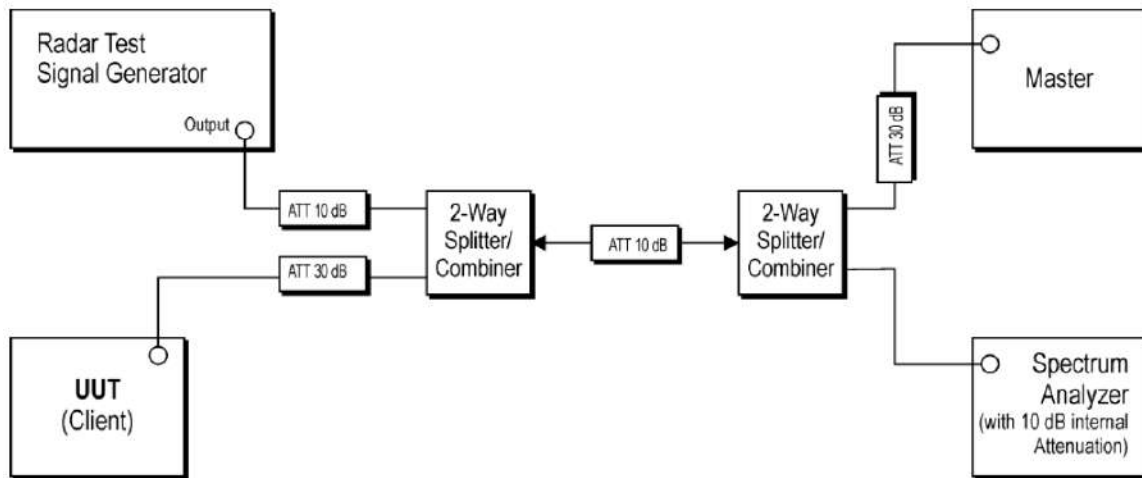


Figure 1: Conducted Test Setup for DFS

#### 11.5. Test procedure

KDB 905462 D02 v02 describes a radiated test setup and a conducted test setup. The conducted test setup was used for this testing. Figure 1 shows the typical test setup.

1. One frequency will be chosen from the Operating Channels of the UUT within the 5250 ~5350 MHz or 5470 ~5725 MHz bands.
2. The Client Device (EUT) is setup per the diagram in Figure 1 and communications between the Master device and the Client is established.
3. An MPEG or data file that is typical for the device is streamed from the Master to the Client to properly load the network.

#### 11.6. Test results

Frequency : 5 290 MHz

| Test Items                             | Result | Limit |
|----------------------------------------|--------|-------|
| Channel move time (s)                  | 0.823  | 10    |
| Channel closing transmission time (ms) | 4.536  | 60    |

Frequency : 5 530 MHz

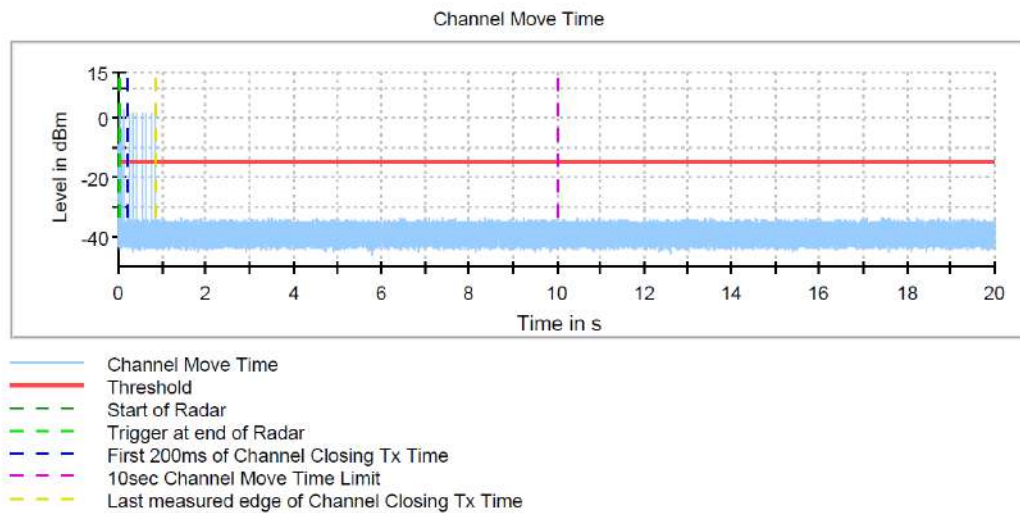
| Test Items                             | Result | Limit |
|----------------------------------------|--------|-------|
| Channel move time (s)                  | 0.922  | 10    |
| Channel closing transmission time (ms) | 5.184  | 60    |

#### ※Remark

These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

### 11.6.1 Test plot

Test mode : 802.11ac\_UNII-2A (5 290 MHz)



Test mode : 802.11a\_UNII-2C (5 530 MHz)

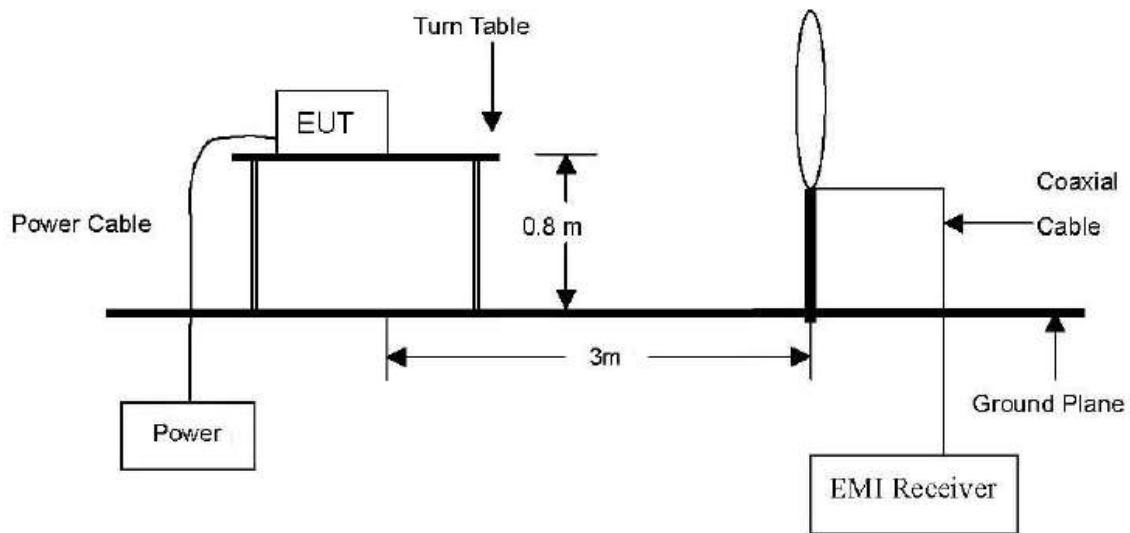


## 12. Transmitter radiated spurious emissions and conducted spurious emissions

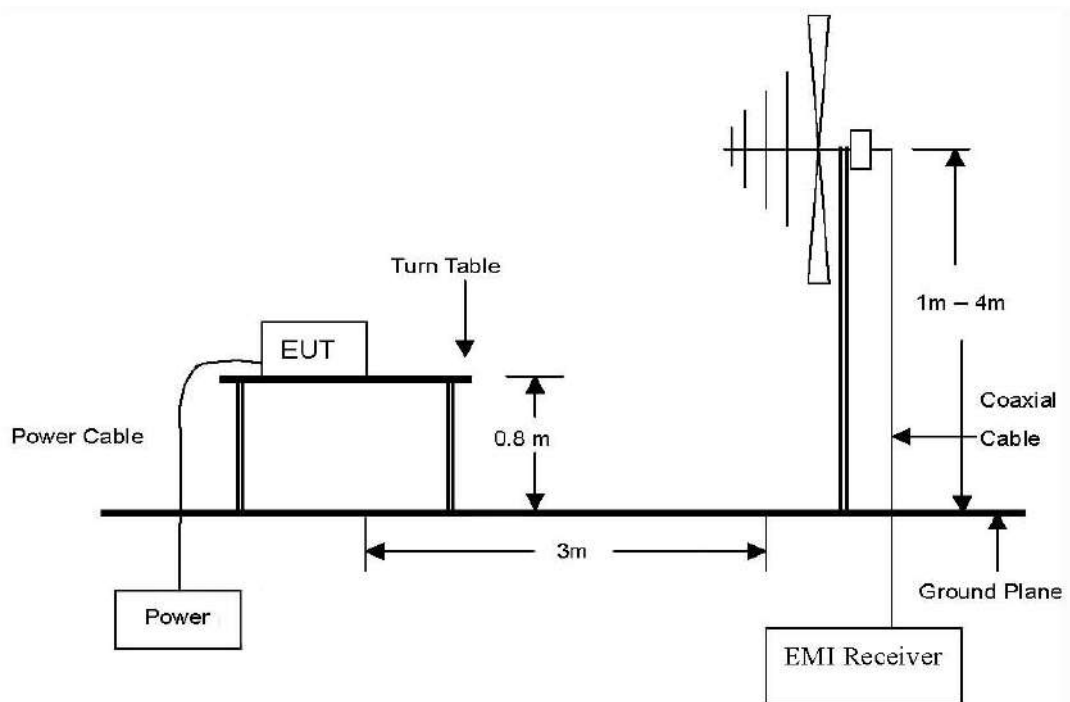
### 6.1. Test setup

#### 6.1.1. Transmitter radiated spurious emissions

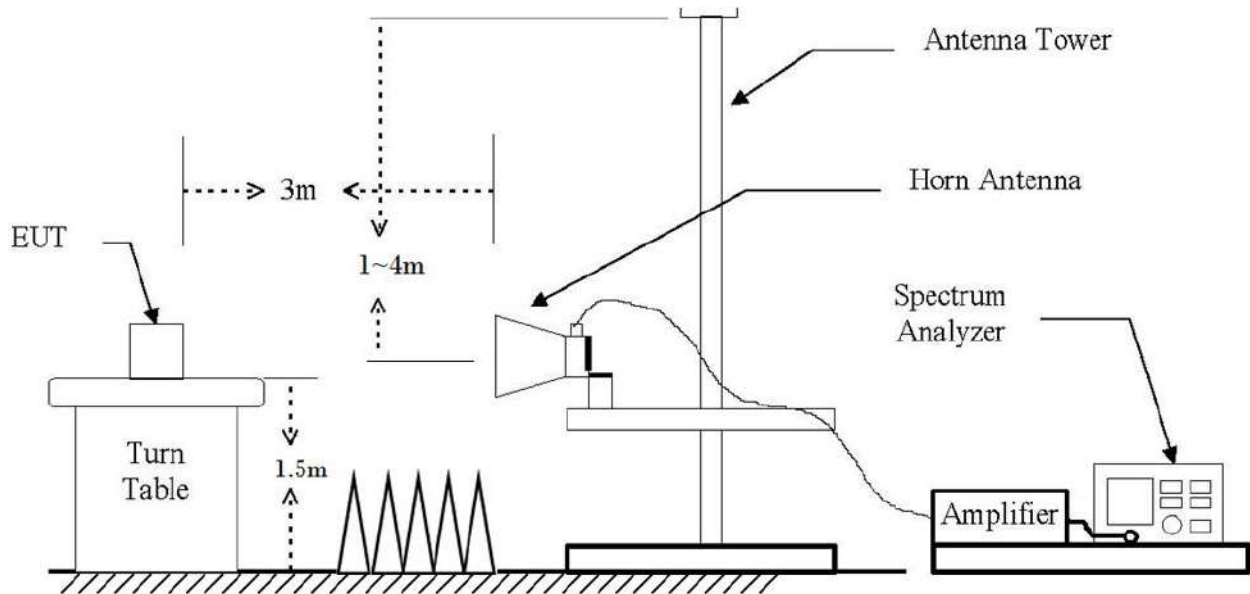
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 kHz to 30 MHz Emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 30 MHz to 1 GHz emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 1 GHz to 40 GHz emissions.



## 6.2. Limit

According to 15.209(a), for an intentional radiator devices, the general required of field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values :

| Frequency (MHz) | Distance (Meters) | Radiated ( $\mu\text{V/m}$ ) |
|-----------------|-------------------|------------------------------|
| 0.009–0.490     | 300               | 2400/F(kHz)                  |
| 0.490–1.705     | 30                | 24000/F(kHz)                 |
| 1.705–30.0      | 30                | 30                           |
| 30 - 88         | 3                 | 100                          |
| 88 – 216        | 3                 | 150                          |
| 216 – 960       | 3                 | 200                          |
| Above 960       | 3                 | 500                          |

\*\*Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54 ~ 72 MHz, 76 ~ 88 MHz, 174 ~ 216 MHz or 470 ~ 806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

According to 15.407(b), (b) Undesirable emission limits: Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- (1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (4) For transmitters operating in the 5.725-5.85 GHz band:
  - (i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
  - (ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.
- (5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.
- (6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.
- (7) The provisions of §15.205 apply to intentional radiators operating under this section.
- (8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits

### 6.3. Test procedures

Radiated emissions from the EUT were measured according to the dictates of ANSI C63.10:2020. In case of the air temperature of the test site is out of the range is 10 to 40 °C before the testing proceeds the warm-up time of EUT maintain adequately.

#### 6.3.1. Test procedures for radiated spurious emissions

1. The EUT is placed on a turntable, which is 0.8 m (Below 1 GHz)/1.5 m (Above 1 GHz) above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.

#### ※Remark

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 10 kHz for Peak detection (PK) at frequency below 30 MHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Peak detection (PK) or Quasi-peak detection (QP) at frequency below 1 GHz.
3. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection and frequency above 1 GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1 GHz.

## 6.4. Test results

### 6.4.1. Radiated spurious emissions (9 kHz to 30 MHz)

The frequency spectrum from 9 kHz to 30 MHz was investigated. Emission levels are not reported much lower than the limits by over 20 dB. All reading values are peak values.

To get a maximum emission levels from the EUT, the EUT was moved throughout the XY, XZ, and YZ planes.

**Test mode : 802.11a\_UNII2C\_5 500 MHz (Worst case)**

| Frequency<br>(MHz)                                                         | Detector<br>Mode | Pol. | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) |
|----------------------------------------------------------------------------|------------------|------|--------------------|-------------------|----------------|
| No other emissions were detected at a level greater than 20dB below limit. |                  |      |                    |                   |                |

#### ※Remark

1. Actual = Reading + Ant. factor - Amp + CL (Cable loss)

2. 15.31 Measurement standards.

The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this part.

3. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

#### 6.4.2. Radiated spurious emissions (30 MHz to 1 000 MHz)

The frequency spectrum from 30 MHz to 1 000 MHz was investigated. Emission levels are not reported much lower than the limits by over 20 dB. All reading values are peak values.

To get a maximum emission levels from the EUT, the EUT was moved throughout the XY, XZ, and YZ planes.

**Test mode : 802.11a\_UNII2C\_5 500 MHz (Worst case)**

| Frequency (MHz)            | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|----------------------------|---------------|------|-----------------|----------------|-------------|
| 299.97                     | Peak          | H    | 36.73           | 46.02          | 9.29        |
| 555.86                     | Peak          | V    | 36.52           | 46.02          | 9.50        |
| Above 600 MHz Not detected |               |      |                 |                |             |

#### ※Remark

1. Actual = Reading + Ant. factor - Amp + CL (Cable loss)

2. 15.31 Measurement standards.

The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this part.

3. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

### 6.4.3. Radiated spurious emissions & Bandedge (Above 1 000 MHz)

The frequency spectrum above 1 000 MHz was investigated. Emission levels are not reported much lower than the limits by over 20 dB.

To get a maximum emission levels from the EUT, the EUT was moved throughout the XY, XZ, and YZ planes.

**Test mode : 802.11a (UNII-1)**

#### A. Lowest Ch. (5 180 MHz)

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *5 084.00                | Peak          | H    | 48.34           | 74.00          | 25.66       |
| Above 6 GHz Not detected |               |      |                 |                |             |

#### B. Middle Ch. (5 200 MHz)

| Frequency (MHz)                                                            | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|----------------------------------------------------------------------------|---------------|------|-----------------|----------------|-------------|
| No other emissions were detected at a level greater than 20dB below limit. |               |      |                 |                |             |

#### C. Highest Ch. (5 240 MHz)

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *5 431.32                | Peak          | H    | 44.50           | 74.00          | 29.5        |
| Above 6 GHz Not detected |               |      |                 |                |             |

#### ※Remark

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental Frequency.
  2. Radiated emissions measured in frequency above 1 000 MHz were made with an instrument using peak/average detector mode.
  3. Average measurement did not take place because the peak data did not exceed Average Limit.
  4. Actual = Reading + Ant. factor - Amp + CL (Cable loss)
  5. 15.31 Measurement standards.
- The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this part.
6. \* is Restricted band.
  7. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

Test mode : 802.11a (UNII-2A)

**A. Lowest Ch. (5 260 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *4 971.95                | Peak          | H    | 49.03           | 74.00          | 24.97       |
| Above 5 GHz Not detected |               |      |                 |                |             |

**B. Middle Ch. (5 280 MHz)**

| Frequency (MHz)                                                            | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|----------------------------------------------------------------------------|---------------|------|-----------------|----------------|-------------|
| No other emissions were detected at a level greater than 20dB below limit. |               |      |                 |                |             |

**C. Highest Ch. (5 320 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *5 416.56                | Peak          | H    | 45.56           | 74.00          | 28.44       |
| Above 6 GHz Not detected |               |      |                 |                |             |

**※Remark**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental Frequency.
2. Radiated emissions measured in frequency above 1 000 MHz were made with an instrument using peak/average detector mode.
3. Average measurement did not take place because the peak data did not exceed Average Limit.
4. Actual = Reading + Ant. factor - Amp + CL (Cable loss)
5. 15.31 Measurement standards.  
The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this part.
6. \* is Restricted band.
7. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

Test mode : 802.11a (UNII-2C)

**A. Lowest Ch. (5 500 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *5 403.99                | Peak          | H    | 45.35           | 74.00          | 28.65       |
| Above 6 GHz Not detected |               |      |                 |                |             |

**B. Middle Ch. (5 580 MHz)**

| Frequency (MHz)                                                            | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|----------------------------------------------------------------------------|---------------|------|-----------------|----------------|-------------|
| No other emissions were detected at a level greater than 20dB below limit. |               |      |                 |                |             |

**C. Highest Ch. (5 700 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *7 604.04                | Peak          | V    | 45.51           | 74.00          | 28.49       |
| Above 8 GHz Not detected |               |      |                 |                |             |

**※Remark**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental Frequency.
2. Radiated emissions measured in frequency above 1 000 MHz were made with an instrument using peak/average detector mode.
3. Average measurement did not take place because the peak data did not exceed Average Limit.
4. Actual = Reading + Ant. factor - Amp + CL (Cable loss)
5. 15.31 Measurement standards.  
The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this part.
6. \* is Restricted band.
7. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

Test mode : 802.11a (UNII-3)

**A. Lowest Ch. (5 745 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *5 457.08                | Peak          | H    | 45.11           | 74.00          | 28.89       |
| Above 6 GHz Not detected |               |      |                 |                |             |

**B. Middle Ch. (5 785 MHz)**

| Frequency (MHz)                                                            | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|----------------------------------------------------------------------------|---------------|------|-----------------|----------------|-------------|
| No other emissions were detected at a level greater than 20dB below limit. |               |      |                 |                |             |

**C. Highest Ch. (5 825 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *7 722.48                | Peak          | V    | 46.00           | 74.00          | 28.00       |
| Above 8 GHz Not detected |               |      |                 |                |             |

**※Remark**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental Frequency.
2. Radiated emissions measured in frequency above 1 000 MHz were made with an instrument using peak/average detector mode.
3. Average measurement did not take place because the peak data did not exceed Average Limit.
4. Actual = Reading + Ant. factor - Amp + CL (Cable loss)
5. 15.31 Measurement standards.  
The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this part.
6. \* is Restricted band.
7. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

**Test mode : 802.11n\_HT20 (UNII-1)****A. Lowest Ch. (5 180 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *5 083.80                | Peak          | H    | 48.31           | 74.00          | 25.69       |
| Above 6 GHz Not detected |               |      |                 |                |             |

**B. Middle Ch. (5 200 MHz)**

| Frequency (MHz)                                                            | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|----------------------------------------------------------------------------|---------------|------|-----------------|----------------|-------------|
| No other emissions were detected at a level greater than 20dB below limit. |               |      |                 |                |             |

**C. Highest Ch. (5 240 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *5 400.38                | Peak          | H    | 44.45           | 74.00          | 29.55       |
| Above 6 GHz Not detected |               |      |                 |                |             |

**※Remark**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental Frequency.
2. Radiated emissions measured in frequency above 1 000 MHz were made with an instrument using peak/average detector mode.
3. Average measurement did not take place because the peak data did not exceed Average Limit.
4. Actual = Reading + Ant. factor - Amp + CL (Cable loss)
5. 15.31 Measurement standards.  
The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this part.
6. \* is Restricted band.
7. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

**Test mode : 802.11n\_HT20 (UNII-2A)****A. Lowest Ch. (5 260 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *4 972.60                | Peak          | H    | 48.58           | 74.00          | 25.42       |
| Above 5 GHz Not detected |               |      |                 |                |             |

**B. Middle Ch. (5 280 MHz)**

| Frequency (MHz)                                                            | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|----------------------------------------------------------------------------|---------------|------|-----------------|----------------|-------------|
| No other emissions were detected at a level greater than 20dB below limit. |               |      |                 |                |             |

**C. Highest Ch. (5 320 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *5 416.62                | Peak          | H    | 45.70           | 74.00          | 28.3        |
| Above 6 GHz Not detected |               |      |                 |                |             |

**※Remark**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental Frequency.
2. Radiated emissions measured in frequency above 1 000 MHz were made with an instrument using peak/average detector mode.
3. Average measurement did not take place because the peak data did not exceed Average Limit.
4. Actual = Reading + Ant. factor - Amp + CL (Cable loss)
5. 15.31 Measurement standards.  
The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this part.
6. \* is Restricted band.
7. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

Test mode : 802.11n\_HT20 (UNII-2C)

**A. Lowest Ch. (5 500 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *5 409.98                | Peak          | H    | 45.05           | 74.00          | 28.95       |
| Above 6 GHz Not detected |               |      |                 |                |             |

**B. Middle Ch. (5 580 MHz)**

| Frequency (MHz)                                                            | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|----------------------------------------------------------------------------|---------------|------|-----------------|----------------|-------------|
| No other emissions were detected at a level greater than 20dB below limit. |               |      |                 |                |             |

**C. Highest Ch. (5 700 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *7 651.54                | Peak          | H    | 45.84           | 74.00          | 28.16       |
| Above 8 GHz Not detected |               |      |                 |                |             |

**※Remark**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental Frequency.
2. Radiated emissions measured in frequency above 1 000 MHz were made with an instrument using peak/average detector mode.
3. Average measurement did not take place because the peak data did not exceed Average Limit.
4. Actual = Reading + Ant. factor - Amp + CL (Cable loss)
5. 15.31 Measurement standards.  
The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this part.
6. \* is Restricted band.
7. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

Test mode : 802.11n\_HT20 (UNII-3)

**A. Lowest Ch. (5 745 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *5 455.71                | Peak          | H    | 45.34           | 74.00          | 28.66       |
| Above 6 GHz Not detected |               |      |                 |                |             |

**B. Middle Ch. (5 785 MHz)**

| Frequency (MHz)                                                            | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|----------------------------------------------------------------------------|---------------|------|-----------------|----------------|-------------|
| No other emissions were detected at a level greater than 20dB below limit. |               |      |                 |                |             |

**C. Highest Ch. (5 825 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *7 405.91                | Peak          | V    | 45.86           | 74.00          | 28.14       |
| Above 8 GHz Not detected |               |      |                 |                |             |

**※Remark**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental Frequency.
2. Radiated emissions measured in frequency above 1 000 MHz were made with an instrument using peak/average detector mode.
3. Average measurement did not take place because the peak data did not exceed Average Limit.
4. Actual = Reading + Ant. factor - Amp + CL (Cable loss)
5. 15.31 Measurement standards.  
The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this part.
6. \* is Restricted band.
7. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

Test mode : 802.11n\_HT40 (UNII-1)

**A. Lowest Ch. (5 190 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *5 147.63                | Peak          | H    | 50.66           | 74.00          | 23.34       |
| Above 6 GHz Not detected |               |      |                 |                |             |

**B. Highest Ch. (5 230 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *5 454.97                | Peak          | V    | 46.14           | 74.00          | 27.86       |
| Above 6 GHz Not detected |               |      |                 |                |             |

**※Remark**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental Frequency.
2. Radiated emissions measured in frequency above 1 000 MHz were made with an instrument using peak/average detector mode.
3. Average measurement did not take place because the peak data did not exceed Average Limit.
4. Actual = Reading + Ant. factor - Amp + CL (Cable loss)
5. 15.31 Measurement standards.  
The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this part.
6. \* is Restricted band.
7. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

Test mode : 802.11n\_HT40 (UNII-2A)

**A. Lowest Ch. (5 270 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *4 994.57                | Peak          | V    | 44.52           | 74.00          | 29.48       |
| Above 5 GHz Not detected |               |      |                 |                |             |

**B. Highest Ch. (5 310 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *5 350.01                | Peak          | H    | 46.96           | 74.00          | 27.04       |
| Above 6 GHz Not detected |               |      |                 |                |             |

**※Remark**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental Frequency.
2. Radiated emissions measured in frequency above 1 000 MHz were made with an instrument using peak/average detector mode.
3. Average measurement did not take place because the peak data did not exceed Average Limit.
4. Actual = Reading + Ant. factor - Amp + CL (Cable loss)
5. 15.31 Measurement standards.  
The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this part.
6. \* is Restricted band.
7. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

**Test mode : 802.11n\_HT40 (UNII-2C)****A. Lowest Ch. (5 510 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *5 459.51                | Peak          | H    | 46.08           | 74.00          | 27.92       |
| Above 6 GHz Not detected |               |      |                 |                |             |

**B. Middle Ch. (5 550 MHz)**

| Frequency (MHz)                                                            | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|----------------------------------------------------------------------------|---------------|------|-----------------|----------------|-------------|
| No other emissions were detected at a level greater than 20dB below limit. |               |      |                 |                |             |

**C. Highest Ch. (5 670 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *7 678.43                | Peak          | H    | 45.98           | 74.00          | 28.02       |
| Above 8 GHz Not detected |               |      |                 |                |             |

**※Remark**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental Frequency.
2. Radiated emissions measured in frequency above 1 000 MHz were made with an instrument using peak/average detector mode.
3. Average measurement did not take place because the peak data did not exceed Average Limit.
4. Actual = Reading + Ant. factor - Amp + CL (Cable loss)
5. 15.31 Measurement standards.  
The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this part.
6. \* is Restricted band.
7. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

Test mode : 802.11n\_HT40 (UNII-3)

**A. Lowest Ch. (5 755 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *5 443.24                | Peak          | H    | 44.41           | 74.00          | 29.59       |
| Above 6 GHz Not detected |               |      |                 |                |             |

**B. Highest Ch. (5 795 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *7 714.18                | Peak          | V    | 46.23           | 74.00          | 27.77       |
| Above 8 GHz Not detected |               |      |                 |                |             |

**※Remark**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental Frequency.
2. Radiated emissions measured in frequency above 1 000 MHz were made with an instrument using peak/average detector mode.
3. Average measurement did not take place because the peak data did not exceed Average Limit.
4. Actual = Reading + Ant. factor - Amp + CL (Cable loss)
5. 15.31 Measurement standards.  
The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this part.
6. \* is Restricted band.
7. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

Test mode : 802.11ac\_VHT80 (UNII-1)

**A. Lowest Ch. (5 210 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *5 145.22                | Peak          | H    | 50.16           | 74.00          | 23.84       |
| Above 6 GHz Not detected |               |      |                 |                |             |

**B. Highest Ch. (5 290 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *5 360.95                | Peak          | V    | 47.72           | 74.00          | 26.28       |
| Above 6 GHz Not detected |               |      |                 |                |             |

**※Remark**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental Frequency.
2. Radiated emissions measured in frequency above 1 000 MHz were made with an instrument using peak/average detector mode.
3. Average measurement did not take place because the peak data did not exceed Average Limit.
4. Actual = Reading + Ant. factor - Amp + CL (Cable loss)
5. 15.31 Measurement standards.  
The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this part.
6. \* is Restricted band.
7. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

Test mode : 802.11ac\_VHT80 (UNII-2C)

**A. Lowest Ch. (5 530 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *5 450.44                | Peak          | H    | 50.68           | 74.00          | 23.32       |
| Above 6 GHz Not detected |               |      |                 |                |             |

**B. Highest Ch. (5 775 MHz)**

| Frequency (MHz)          | Detector Mode | Pol. | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|--------------------------|---------------|------|-----------------|----------------|-------------|
| *7 737.73                | Peak          | V    | 46.76           | 74.00          | 27.27       |
| Above 8 GHz Not detected |               |      |                 |                |             |

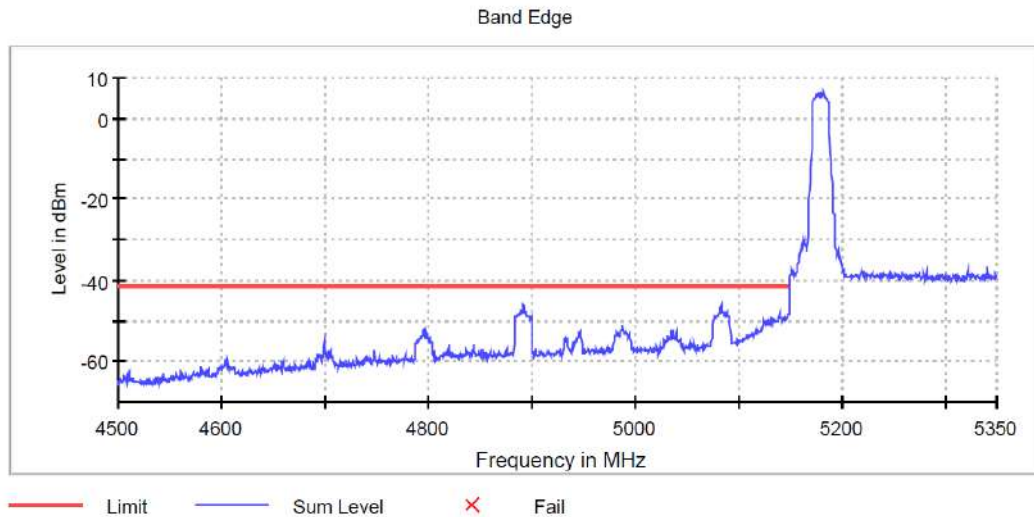
**※Remark**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental Frequency.
2. Radiated emissions measured in frequency above 1 000 MHz were made with an instrument using peak/average detector mode.
3. Average measurement did not take place because the peak data did not exceed Average Limit.
4. Actual = Reading + Ant. factor - Amp + CL (Cable loss)
5. 15.31 Measurement standards.  
The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this part.
6. \* is Restricted band.
7. These results are satisfied in accordance with decision rules, including measurements and estimates of measurement uncertainty

#### 6.4.4. Test plot (Bandedge)

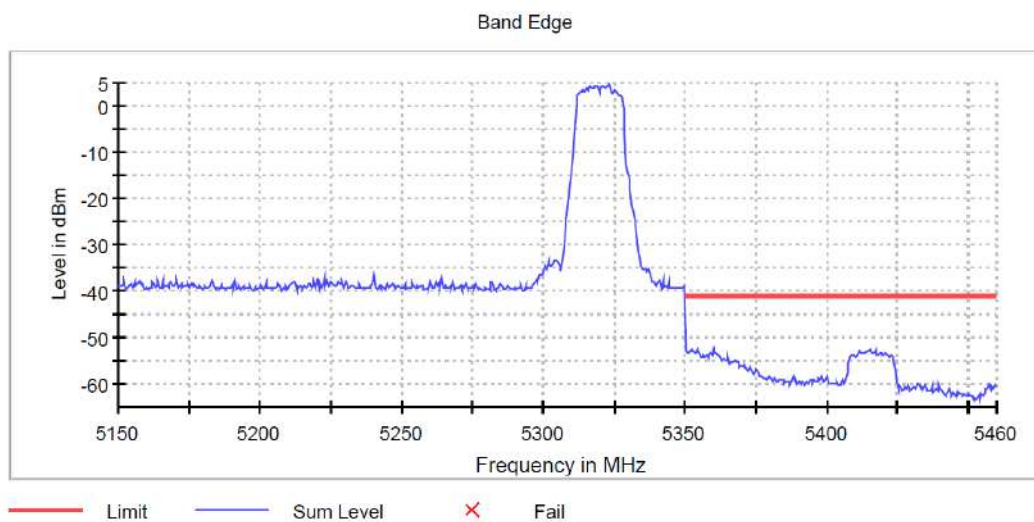
Test mode : 802.11a (UNII-1)

A. Lowest Ch. (5 180 MHz)



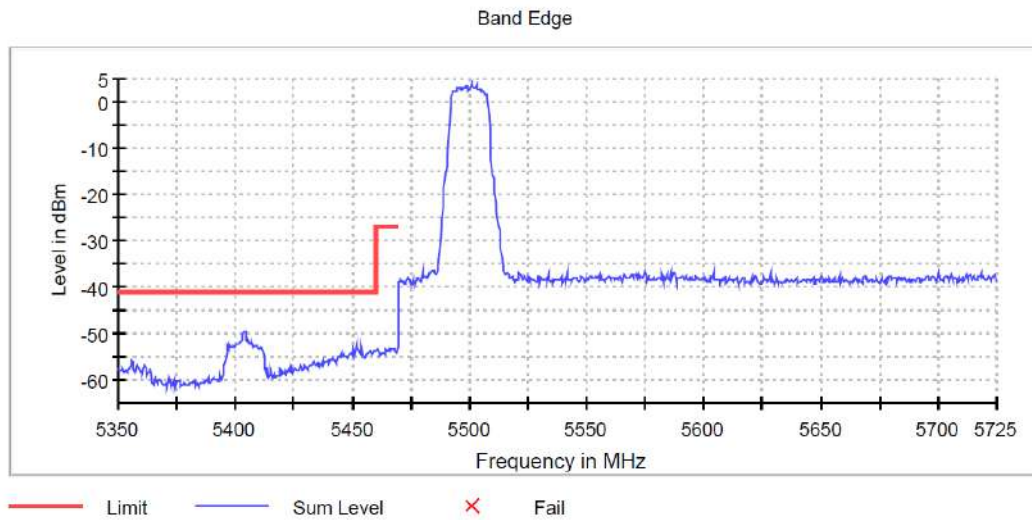
Test mode : 802.11a (UNII-2A)

A. Highest Ch. (5 320 MHz)



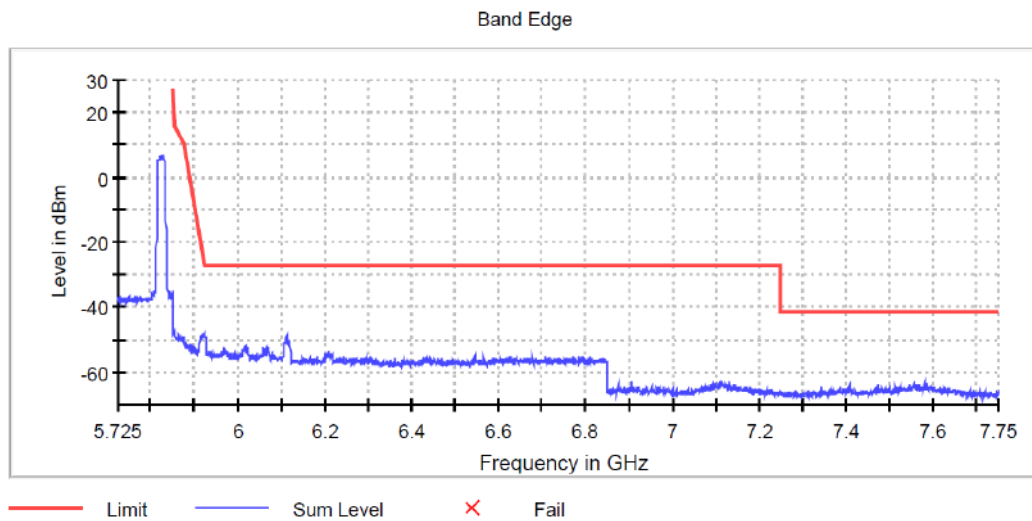
Test mode : 802.11a (UNII-2C)

A. Lowest Ch. (5 500 MHz)



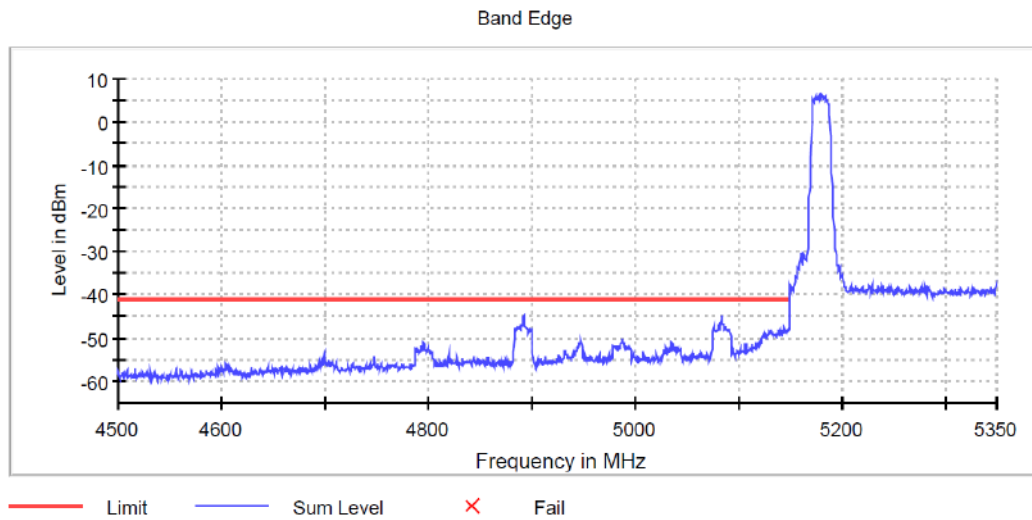
Test mode : 802.11a (UNII-3)

A. Highest Ch. (5 825 MHz)



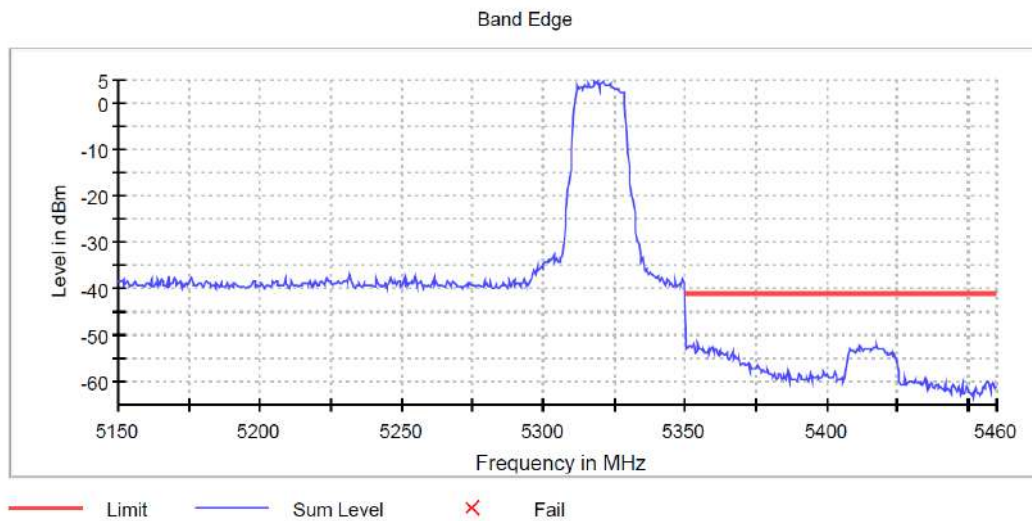
Test mode : 802.11n\_HT20 (UNII-1)

A. Lowest Ch. (5 180 MHz)



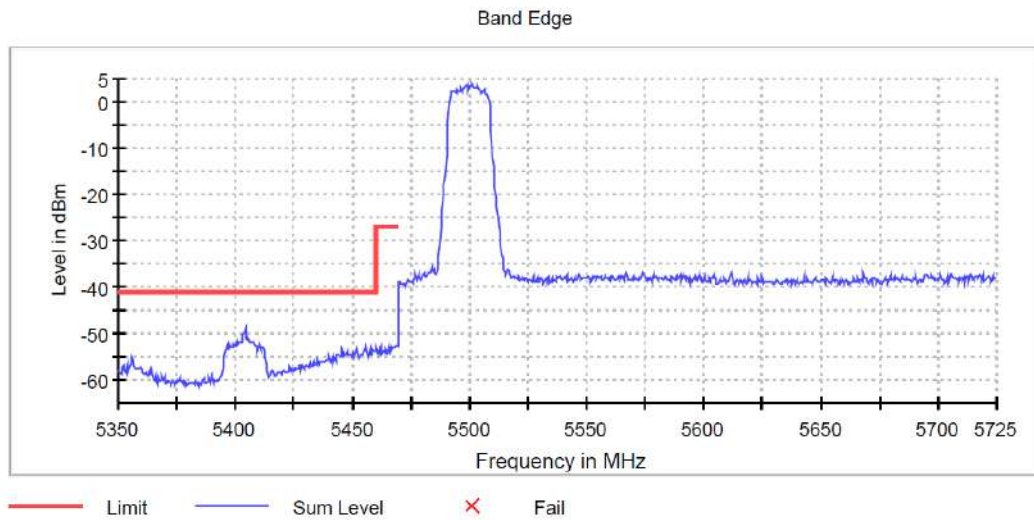
Test mode : 802.11n\_HT20 (UNII-2A)

A. Highest Ch. (5 320 MHz)



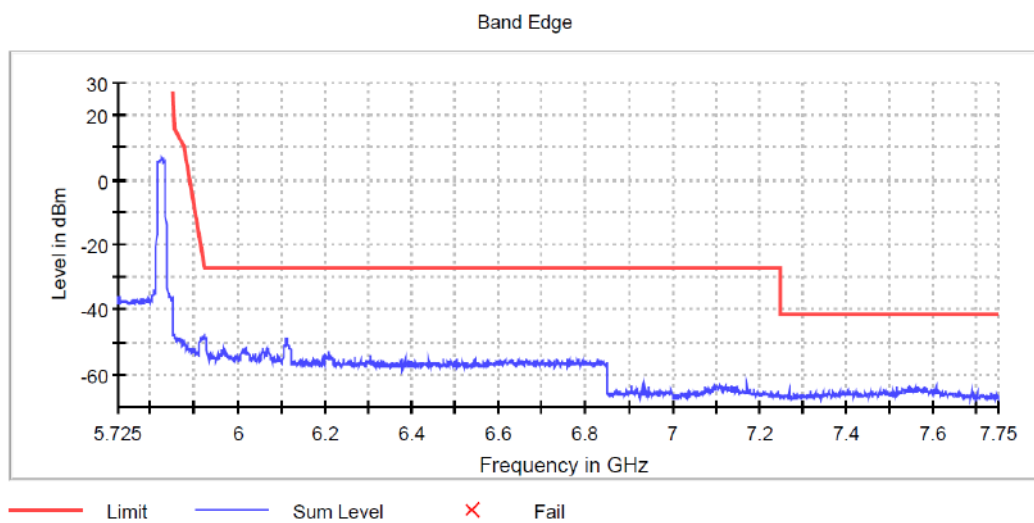
Test mode : 802.11n\_HT20 (UNII-2C)

A. Lowest Ch. (5 500 MHz)



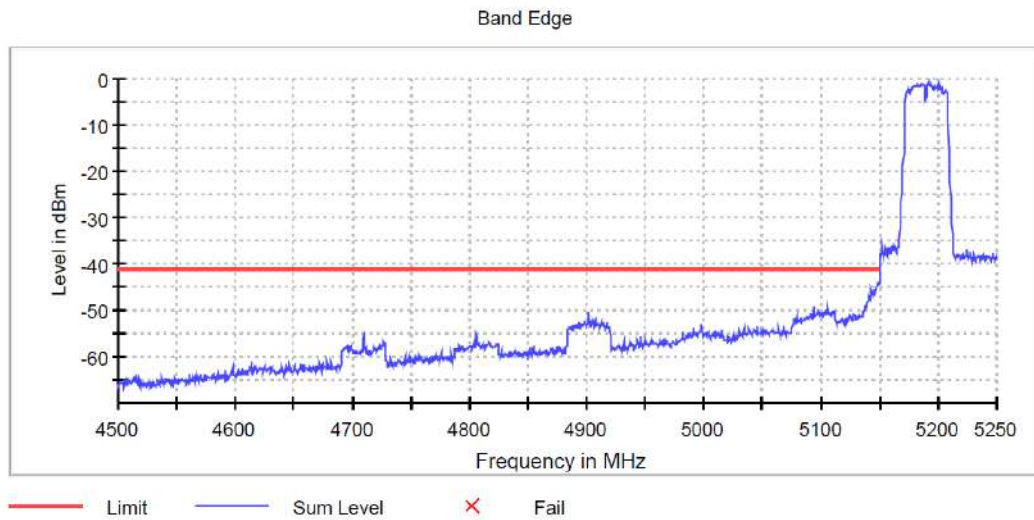
Test mode : 802.11n\_HT20 (UNII-3)

A. Highest Ch. (5 825 MHz)



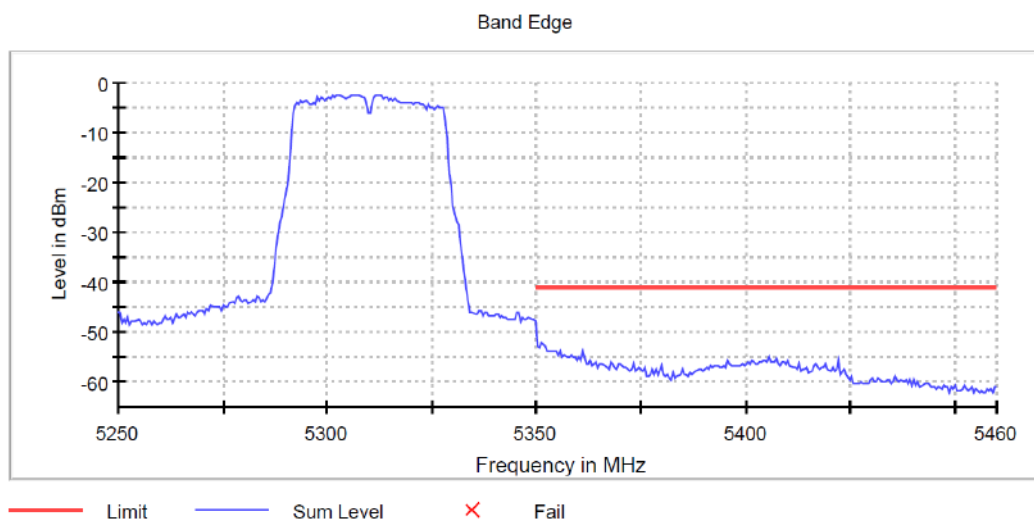
Test mode : 802.11n\_HT40 (UNII-1)

A. Lowest Ch. (5 190 MHz)



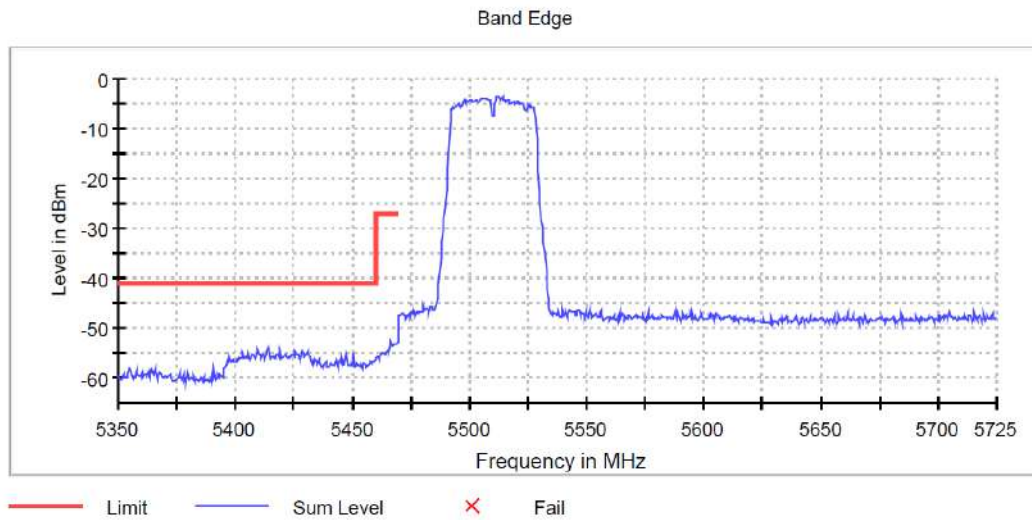
Test mode : 802.11n\_HT40 (UNII-2A)

A. Highest Ch. (5 310 MHz)



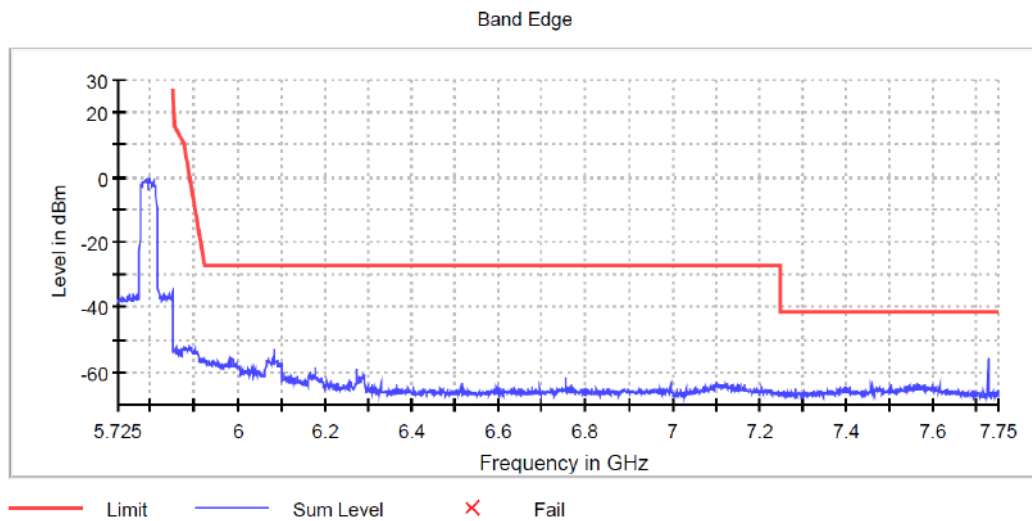
Test mode : 802.11n\_HT40 (UNII-2C)

A. Lowest Ch. (5 510 MHz)



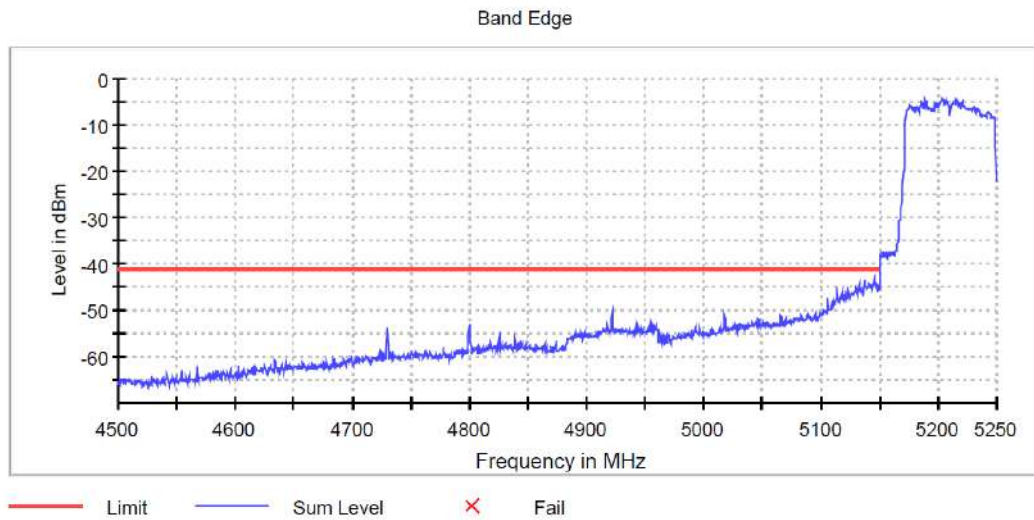
Test mode : 802.11n\_HT40 (UNII-3)

A. Highest Ch. (5 795 MHz)



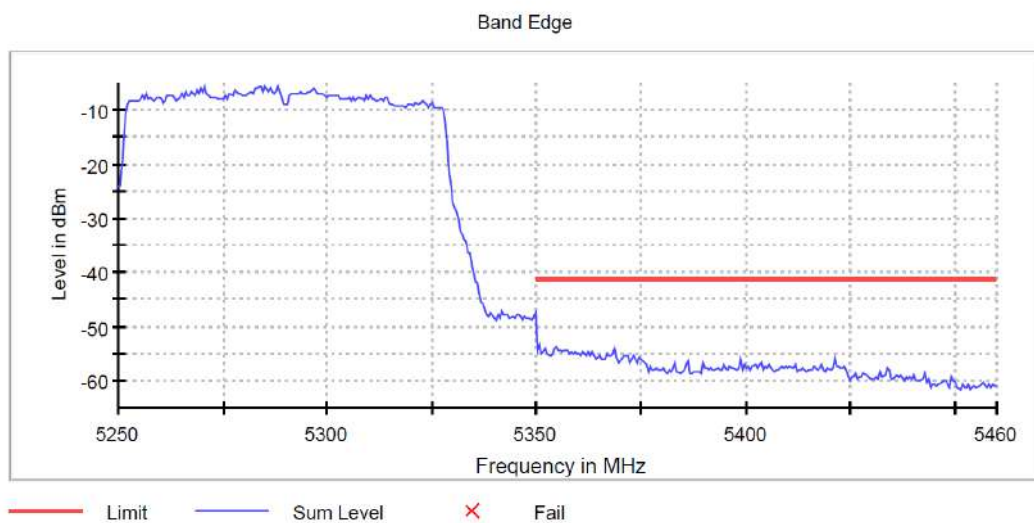
Test mode : 802.11ac\_VHT80 (UNII-1)

A. Lowest Ch. (5 210 MHz)



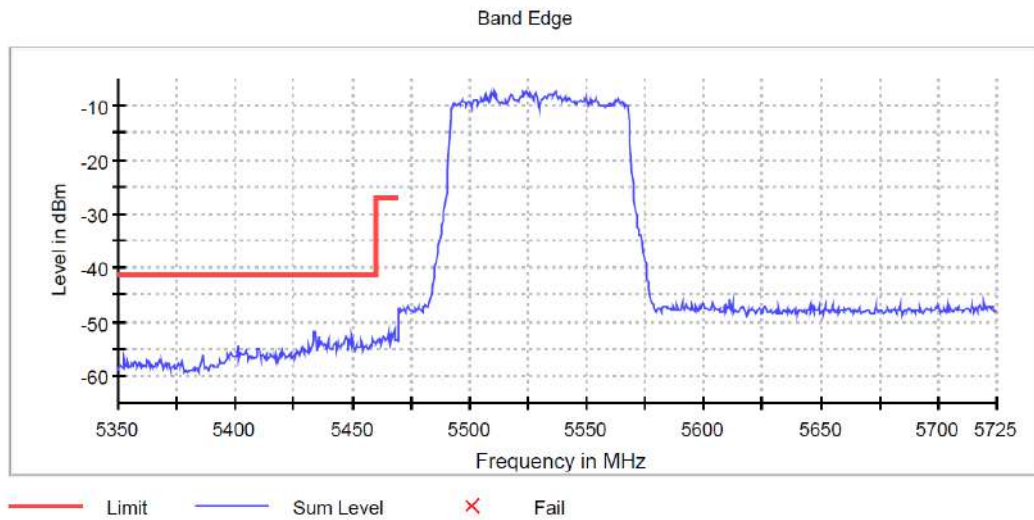
Test mode : 802.11ac\_VHT80 (UNII-2A)

A. Lowest Ch. (5 290 MHz)



Test mode : 802.11ac\_VHT80 (UNII-2C)

A. Lowest Ch. (5 530 MHz)



Test mode : 802.11ac\_VHT80 (UNII-3)

A. Lowest Ch. (5 775 MHz)

