

# **FCC REPORT**

## **(UNII)**

**Applicant:** 8devices

**Address of Applicant:** Gedimino 47, Kaunas, LT-44242, Lithuania

**Equipment Under Test (EUT)**

Product Name: Broadband Digital Transmission System

Model No.: Rambutan

**FCC ID:** Z9W-RMB

**Applicable standards:** FCC CFR Title 47 Part 15 Subpart E Section 15.407

**Date of sample receipt:** 24 Nov., 2016

**Date of Test:** 24 Nov., 2016 to 05 Feb., 2017

**Date of report issued:** 05 Feb., 2017

**Test Result:** PASS\*

\* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Bruce Zhang  
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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## 2 Version

| Version No. | Date          | Description  |
|-------------|---------------|--|
| 00          | 05 Feb., 2017 | <i>This report was amended on FCC ID: Z9W-RMB follow FCC Class II Permissive Change.</i> |
|             |               |  |
|             |               |  |
|             |               |  |
|             |               |  |

**Tested by:**

*M. Liang*

**Test Engineer**

**Date:**

*05 Feb., 2017*

**Reviewed by:**

*Ryan. Lee*

**Project Engineer**

**Date:**

*05 Feb., 2017*

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## 4 Test Summary

| Test Item                        | Section in CFR 47 | Result |
|----------------------------------|-------------------|--------|
| Antenna requirement              | 15.203/15.407 (g) | Pass   |
| AC Power Line Conducted Emission | 15.207            | Pass*  |
| Conducted Peak Output Power      | 15.407 (a)        | Pass   |
| 26dB Occupied Bandwidth          | 15.407 (a)        | Pass*  |
| 6dB Emission Bandwidth           | 15.407(e)         | Pass*  |
| Power Spectral Density           | 15.407 (a)        | Pass*  |
| Band Edge                        | 15.407(b)         | Pass   |
| Spurious Emission                | 15.205/15.209     | Pass   |
| Frequency Stability              | 15.407(g)         | Pass   |

*Pass: The EUT complies with the essential requirements in the standard.*

*Pass\*: Please refer to FCC ID: Z9W-RMB.*

## 5 General Information

### 5.1 Client Information

|                                 |  |
|---------------------------------|--|
| Applicant:                      | 8devices                                 |
| Address of Applicant:           | Gedimino 47, Kaunas, LT-44242, Lithuania |
| Manufacturer/ Factory:          | 8devices                                 |
| Address of Manufacture/Factory: | Gedimino 47, Kaunas, LT-44242, Lithuania |

### 5.2 General Description of E.U.T.

|  |  |
|--|--|
| Product Name:                            | Broadband Digital Transmission System  |
| Model No.:                               | Rambutan   |
| Operation Frequency:                     | Band 1: 5150MHz-5250MHz<br>Band 4: 5725MHz-5850MHz   |
| Channel numbers:                         | Band 1: 802.11a/802.11n20: 4,802.11n40: 2<br>Band 4: 802.11a/802.11n20: 5,802.11n40: 2                     |
| Channel separation:                      | 802.11a/802.11n20: 20MHz, 802.11n40: 40MHz   |
| Modulation technology:<br>(IEEE 802.11a) | BPSK,QPSK,16-QAM,64-QAM  |
| Modulation technology:<br>(IEEE 802.11n) | BPSK,QPSK,16-QAM,64-QAM  |
| Data speed(IEEE 802.11a)                 | 6Mbps, 9Mbps,12Mbps,18Mbps,24Mbps,36Mbps,48Mbps,54Mbps   |
| Data speed (IEEE 802.11n20):             | MCS0: 6.5Mbps,MCS1:13Mbps,MCS2:19.5Mbps,MCS3:26Mbps,<br>MCS4: 39Mbps,MCS5:52Mbps,MCS6:58.5Mbps,MCS7:65Mbps |
| Data speed (IEEE 802.11n40):             | MCS0:15Mbps,MCS1:30Mbps,MCS2:45Mbps,MCS3:60Mbps,<br>MCS4: 90Mbps,MCS5:120Mbps,MCS6:135Mbps,MCS7:150Mbps    |
| Antenna Type:                            | Antenna 0: Ceramic Antenna (Indoor used only)<br>Antenna 1: Rod Antenna (Used for 5725MHz~5850MHz only)    |
| Antenna gain:                            | Antenna 0: 5 dBi (5150~5250MHz indoor, 5725~5850MHz)<br>Antenna 1:10 dBi (5725~5850MHz)                    |
| Power supply:                            | DC 5V  |
| Remark:                                  | 802.11b/g/n all support 2x2 MIMO   |

Operation Frequency each of channel

| Band 1            |           |           |           |
|-------------------|-----------|-----------|-----------|
| 802.11a/802.11n20 |           | 802.11n40 |           |
| Channel           | Frequency | Channel   | Frequency |
| 36                | 5180MHz   | 38        | 5190MHz   |
| 40                | 5200MHz   | 46        | 5230MHz   |
| 44                | 5220MHz   |           |           |
| 48                | 5240MHz   |           |           |
| Band 4            |           |           |           |
| 802.11a/802.11n20 |           | 802.11n40 |           |
| Channel           | Frequency | Channel   | Frequency |
| 149               | 5745MHz   | 151       | 5755MHz   |
| 153               | 5765MHz   | 159       | 5795MHz   |
| 157               | 5785MHz   |           |           |
| 161               | 5805MHz   |           |           |
| 165               | 5825MHz   |           |           |

Note:

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

| Band 1              |           |                     |           |
|---------------------|-----------|---------------------|-----------|
| 802.11a/802.11n20   |           | 802.11n40           |           |
| Channel             | Frequency | Channel             | Frequency |
| The lowest channel  | 5180MHz   | The lowest channel  | 5190MHz   |
| The middle channel  | 5200MHz   | The highest channel | 5230MHz   |
| The highest channel | 5240MHz   |                     |           |
| Band 4              |           |                     |           |
| 802.11a/802.11n20   |           | 802.11n40           |           |
| Channel             | Frequency | Channel             | Frequency |
| The lowest channel  | 5745MHz   | The lowest channel  | 5755MHz   |
| The middle channel  | 5785MHz   | The highest channel | 5795MHz   |
| The highest channel | 5825MHz   |                     |           |

### 5.3 Test environment and mode

|                                |   |
|--------------------------------|---|
| <b>Operating Environment:</b>  |   |
| Temperature:                   | 24.0 °C   |
| Humidity:                      | 54 % RH   |
| Atmospheric Pressure:          | 1010 mbar   |
| <b>Test mode:</b>              |   |
| Continuously transmitting mode | Keep the EUT in 100% duty cycle transmitting with modulation.   |
| Remark                         | During the test, pre-scan the Antenna 0 and Antenna 1, and found the Antenna 1 is the worst case, so only shows the data of Antenna 1 in this report. |

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

**Per-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.**

| Mode      | Data rate |
|-----------|-----------|
| 802.11a   | 6Mbps     |
| 802.11n20 | 6.5Mbps   |
| 802.11n40 | 13Mbps    |

#### Final Test Mode:

According to ANSI C63.4 standards, the test results are both the “worst case” and “worst setup” 6Mbps for 802.11a, 6.5 Mbps for 802.11n20, 13 Mbps for 802.11n40. All test items for 802.11a, 802.11n were performed with duty cycle above 98%, meet the requirements of KDB789033.

### 5.4 Description of Support Units

| Manufacturer | Description | Model       | Serial Number | FCC ID/DoC |
|--------------|-------------|-------------|---------------|------------|
| DELL         | PC          | OPTIPLEX745 | N/A           | DoC        |
| DELL         | MONITOR     | E178FPC     | N/A           | DoC        |
| DELL         | KEYBOARD    | SK-8115     | N/A           | DoC        |
| DELL         | MOUSE       | MOC5UO      | N/A           | DoC        |

### 5.5 Measurement Uncertainty

| Items                               | Expanded Uncertainty (Confidence of 95%) |
|-------------------------------------|--|
| Conducted Emission (9kHz ~ 30MHz)   | 2.14 dB (k=2)                            |
| Radiated Emission (9kHz ~ 30MHz)    | 4.24 dB (k=2)                            |
| Radiated Emission (30MHz ~ 1000MHz) | 4.35 dB (k=2)                            |
| Radiated Emission (1GHz ~ 18GHz)    | 4.44 dB (k=2)                            |
| Radiated Emission (18GHz ~ 26.5GHz) | 4.56 dB (k=2)                            |

## 5.6 Laboratory Facility

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

● **FCC- Registration No.: 817957**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in out files. Registration 817957, February 27, 2012.

● **IC - Registration No.: 10106A-1**

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

● **CNAS - Registration No.: CNAS L6048**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

## 5.7 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.  
Address: No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,  
Bao'an District, Shenzhen, Guangdong, China  
Tel: +86-755-23118282  
Fax: +86-755-23116366

## 5.8 Test Instruments list


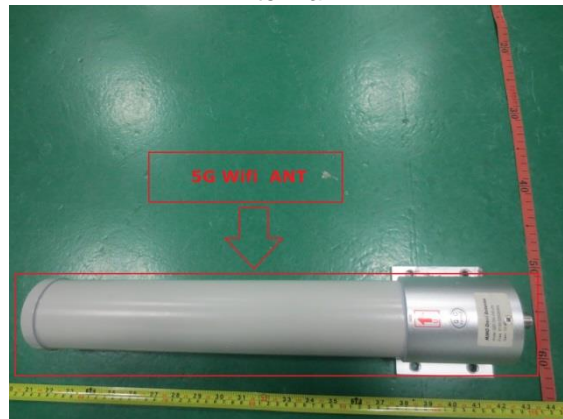
| Radiated Emission            |                                   |                 |               |                      |                          |
|------------------------------|-----------------------------------|-----------------|---------------|----------------------|--------------------------|
| Test Equipment               | Manufacturer                      | Model No.       | Inventory No. | Cal. Date (mm-dd-yy) | Cal. Due date (mm-dd-yy) |
| 3m SAC                       | SAEMC                             | 9(L)*6(W)* 6(H) | CCIS0001      | 08-23-2014           | 08-22-2017               |
| BiConiLog Antenna            | SCHWARZBECK                       | VULB9163        | CCIS0005      | 03-25-2016           | 03-25-2017               |
| Horn Antenna                 | SCHWARZBECK                       | BBHA9120D       | CCIS0006      | 03-25-2016           | 03-25-2017               |
| Pre-amplifier (10kHz-1.3GHz) | HP                                | 8447D           | CCIS0003      | 03-25-2016           | 03-25-2017               |
| Pre-amplifier (1GHz-18GHz)   | Compliance Direction Systems Inc. | PAP-1G18        | CCIS0011      | 03-25-2016           | 03-25-2017               |
| Pre-amplifier (18-40GHz)     | A.H System                        | PAM-1840        | GTS219        | 04-01-2016           | 03-31-2017               |
| Horn Antenna                 | ETS-LINDGREN                      | 3160            | GTS217        | 04-01-2016           | 03-31-2017               |
| Spectrum analyzer 9k-30GHz   | Rohde & Schwarz                   | FSP30           | CCIS0023      | 03-28-2016           | 03-28-2017               |
| EMI Test Receiver            | Rohde & Schwarz                   | ESRP7           | CCIS0167      | 04-01-2016           | 03-31-2017               |
| Loop antenna                 | Laplace instrument                | RF300           | EMC0701       | 04-01-2016           | 03-31-2017               |
| Spectrum Analyzer            | HP                                | 8564E           | CCIS0150      | 05-24-2016           | 05-23-2017               |
| EMI Test Software            | AUDIX                             | E3              | N/A           | N/A                  | N/A                      |

| Conducted Emission |                    |                       |               |                      |                          |
|--------------------|--------------------|-----------------------|---------------|----------------------|--------------------------|
| Test Equipment     | Manufacturer       | Model No.             | Inventory No. | Cal. Date (mm-dd-yy) | Cal. Due date (mm-dd-yy) |
| Shielding Room     | ZhongShuo Electron | 11.0(L)x4.0(W)x3.0(H) | CCIS0061      | 11-10-2014           | 11-09-2017               |
| EMI Test Receiver  | Rohde & Schwarz    | ESCI                  | CCIS0002      | 03-24-2016           | 03-24-2017               |
| LISN               | CHASE              | MN2050D               | CCIS0074      | 03-26-2016           | 03-26-2017               |
| Coaxial Cable      | CCIS               | N/A                   | CCIS0086      | 04-01-2016           | 03-31-2017               |
| EMI Test Software  | AUDIX              | E3                    | N/A           | N/A                  | N/A                      |

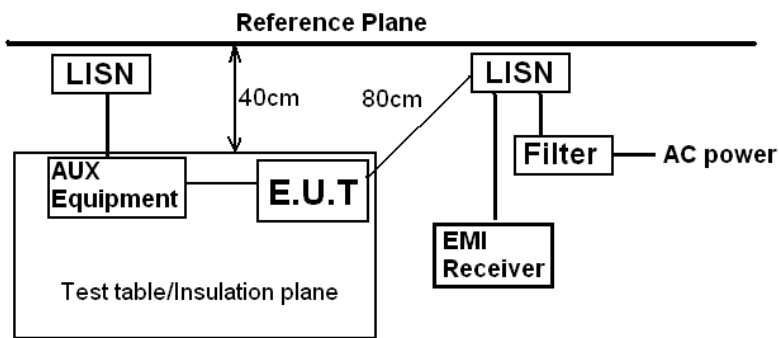


## 6 Test results and Measurement Data

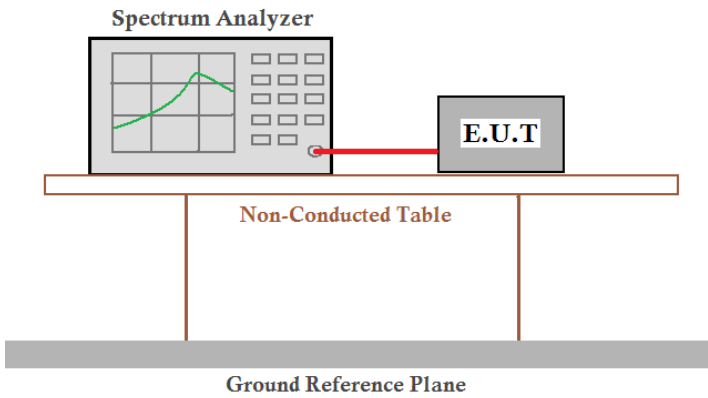
### 6.1 Antenna requirement

|   |                                     |  |                          |
|---|-------------------------------------|--|--------------------------|
| Standard requirement:   | FCC Part15 E Section 15.203 /407(a) |  |                          |
| 15.203 requirement:<br><i>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</i><br><i>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, or § 15.221. 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.</i> |                                     |  |                          |
| E.U.T Antenna:  |                                     |  |                          |
| The product is a professionally installed device which has two types of antennas for the application. The antennas information as below table:  |                                     |  |                          |
| Antenna No.   | Antenna Type                        | Antenna Gain (dBi)   | Remark                   |
| Antenna 0   | Ceramic Antenna                     | 5  | Indoor use only          |
| Antenna 1   | Rod Antenna                         | 10   | 5725MHz~5850MHz use only |
| According to above information, the antennas meet the requirements of this section  |                                     |  |                          |
| Antenna 0:  |                                     | Antenna 1:   |                          |
|    |                                     |  |                          |

## 6.2 Conducted Emission

|                       |  |              |           |
|-----------------------|--|--------------|-----------|
| Test Requirement:     | FCC Part15 C Section 15.207  |              |           |
| Test Method:          | ANSI C63.4: 2014   |              |           |
| Test Frequency Range: | 150kHz to 30MHz  |              |           |
| Class / Severity:     | Class B  |              |           |
| Receiver setup:       | RBW=9kHz, VBW=30kHz  |              |           |
| Limit:                | Frequency range (MHz)  | Limit (dBuV) |           |
|                       |  | Quasi-peak   | Average   |
|                       | 0.15-0.5   | 66 to 56*    | 56 to 46* |
|                       | 0.5-5  | 56           | 46        |
|                       | 5-30   | 60           | 50        |
|                       | * Decreases with the logarithm of the frequency.   |              |           |
| Test procedure        | <ol style="list-style-type: none"> <li>1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). It provides a 50ohm/50uH coupling impedance for the measuring equipment.</li> <li>2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).</li> <li>3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.</li> </ol> |              |           |
| Test setup:           |  <p><i>Remark:</i><br/> E.U.T: Equipment Under Test<br/> LISN: Line Impedance Stabilization Network<br/> Test table height=0.8m</p>  |              |           |
| Test Instruments:     | Refer to section 5.8 for details   |              |           |
| Test mode:            | Refer to section 5.3 for details.  |              |           |
| Test results:         | Refer to FCC ID:Z9W-RMB  |              |           |

## 6.3 Conducted Output Power

|                   |   |
|-------------------|---|
| Test Requirement: | FCC Part15 E Section 15.407 (a) (1) (ii) & (a) (3)  |
| Test Method:      | ANSI C63.10: 2013, KDB789033  |
| Limit:            | <p><b>Band 1:</b> 1W (For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.)</p> <p><b>Band 4:</b> 1W (If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.).</p> |
| Test setup:       |  <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. The table is supported by a Ground Reference Plane.</p>   |
| Test Instruments: | Refer to section 5.8 for details  |
| Test mode:        | Refer to section 5.3 for details  |
| Test results:     | Passed  |

**Measurement Data:**

**Band 1:**

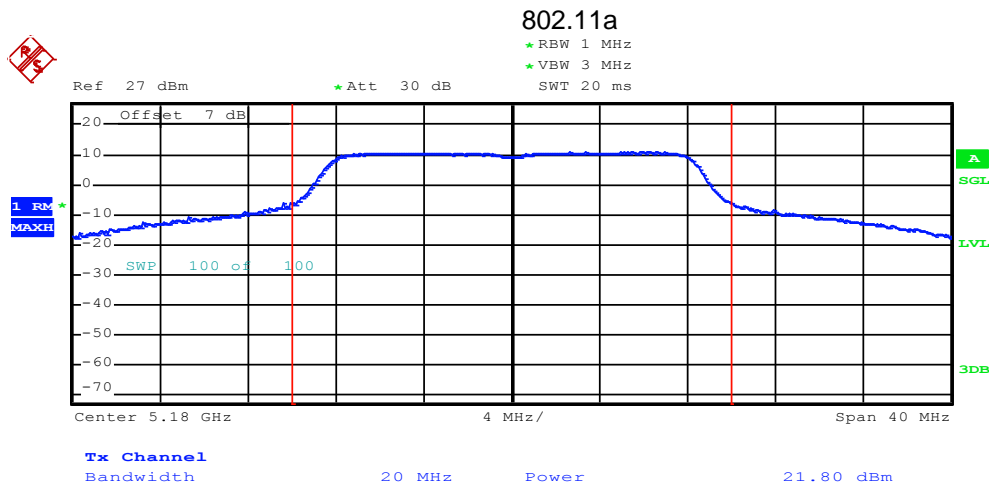
| Mode  | Test CH | Ant. Port | Conducted<br>Output power<br>(dBm) | Total power<br>(dBm) | Limit<br>(dBm) | Result |
|---|---------|-----------|------------------------------------|----------------------|----------------|--------|
| 802.11a   | Lowest  | TX0       | 21.80                              | 24.07                | 30.00          | Pass   |
|   |         | TX1       | 20.17                              |                      |                |        |
|   | Middle  | TX0       | 20.09                              | 23.07                | 30.00          | Pass   |
|   |         | TX1       | 20.03                              |                      |                |        |
|   | Highest | TX0       | 20.00                              | 22.84                | 30.00          | Pass   |
|   |         | TX1       | 19.66                              |                      |                |        |
| 802.11n20   | Lowest  | TX0       | 19.87                              | 22.77                | 30.00          | Pass   |
|   |         | TX1       | 19.64                              |                      |                |        |
|   | Middle  | TX0       | 19.50                              | 22.63                | 30.00          | Pass   |
|   |         | TX1       | 19.73                              |                      |                |        |
|   | Highest | TX0       | 20.04                              | 22.81                | 30.00          | Pass   |
|   |         | TX1       | 19.54                              |                      |                |        |
| 802.11n40   | Lowest  | TX0       | 20.40                              | 23.17                | 30.00          | Pass   |
|   |         | TX1       | 19.90                              |                      |                |        |
|   | Highest | TX0       | 20.09                              | 22.99                | 30.00          | Pass   |
|   |         | TX1       | 19.86                              |                      |                |        |
| Remark:<br>1. Because the transmit signals are completely uncorrelated, so the Directional gain = $G_{ANT}$ .<br>2. Only 5 dBi antenna used for 5150MHz~5250MHz.<br>3. The maximum directional Gain of antenna is 5 dBi, so the limit of power is 30 dBm. |         |           |                                    |                      |                |        |

**Band 4:**

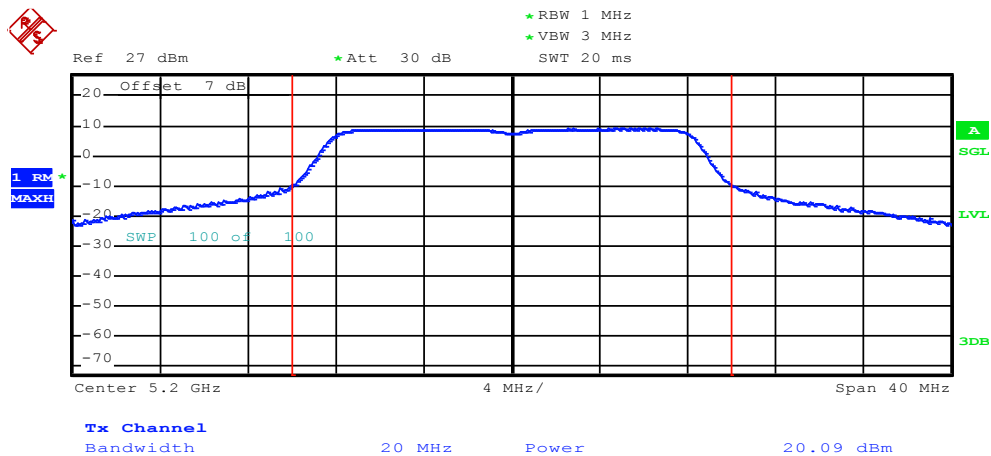
| Mode  | Test CH | Ant. Port | Conducted<br>Output power<br>(dBm) | Total power<br>(dBm) | Limit<br>(dBm) | Result |
|---|---------|-----------|------------------------------------|----------------------|----------------|--------|
| 802.11a   | Lowest  | TX0       | 21.04                              | 24.22                | 26.00          | Pass   |
|   |         | TX1       | 21.38                              |                      |                |        |
|   | Middle  | TX0       | 20.81                              | 24.07                | 26.00          | Pass   |
|   |         | TX1       | 21.29                              |                      |                |        |
|   | Highest | TX0       | 20.44                              | 23.53                | 26.00          | Pass   |
|   |         | TX1       | 20.60                              |                      |                |        |
| 802.11n20   | Lowest  | TX0       | 21.12                              | 24.31                | 26.00          | Pass   |
|   |         | TX1       | 21.47                              |                      |                |        |
|   | Middle  | TX0       | 20.79                              | 24.04                | 26.00          | Pass   |
|   |         | TX1       | 21.25                              |                      |                |        |
|   | Highest | TX0       | 20.81                              | 23.75                | 26.00          | Pass   |
|   |         | TX1       | 20.66                              |                      |                |        |
| 802.11n40   | Lowest  | TX0       | 20.84                              | 24.05                | 26.00          | Pass   |
|   |         | TX1       | 21.23                              |                      |                |        |
|   | Highest | TX0       | 20.60                              | 23.83                | 26.00          | Pass   |
|   |         | TX1       | 21.03                              |                      |                |        |
| Remark:<br>1. Because the transmit signals are completely uncorrelated, so the Directional gain = $G_{ANT}$ .<br>2. The maximum directional Gain of antennas is10 dBi, so the limit of power is 26 dBm. |         |           |                                    |                      |                |        |

Test plot as follows:

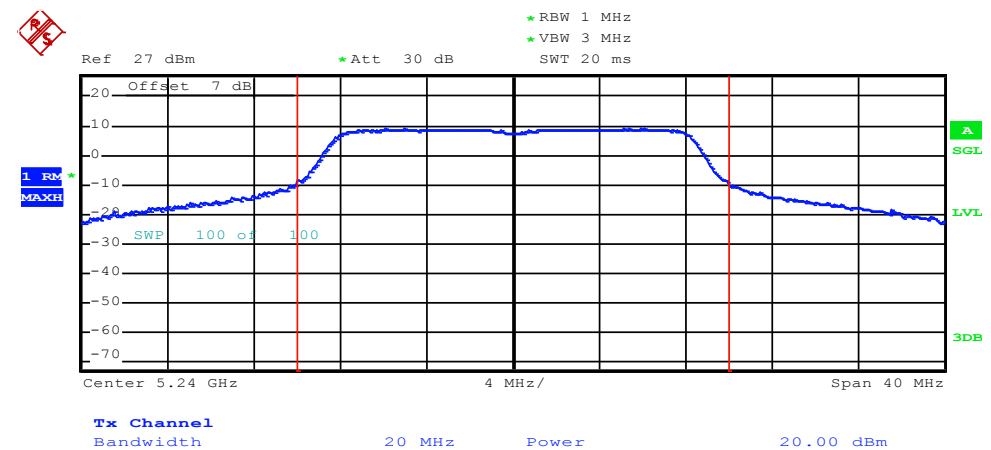
Band 1: TX0



Lowest channel

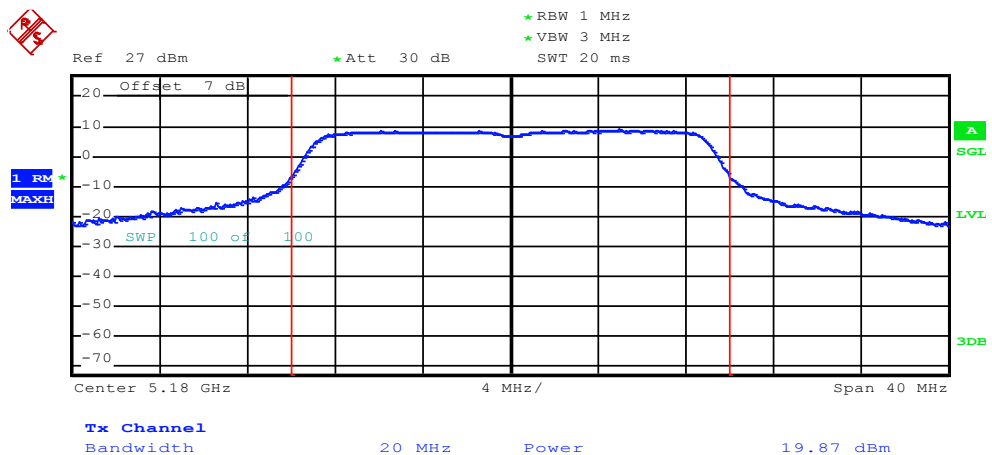


Middle channel

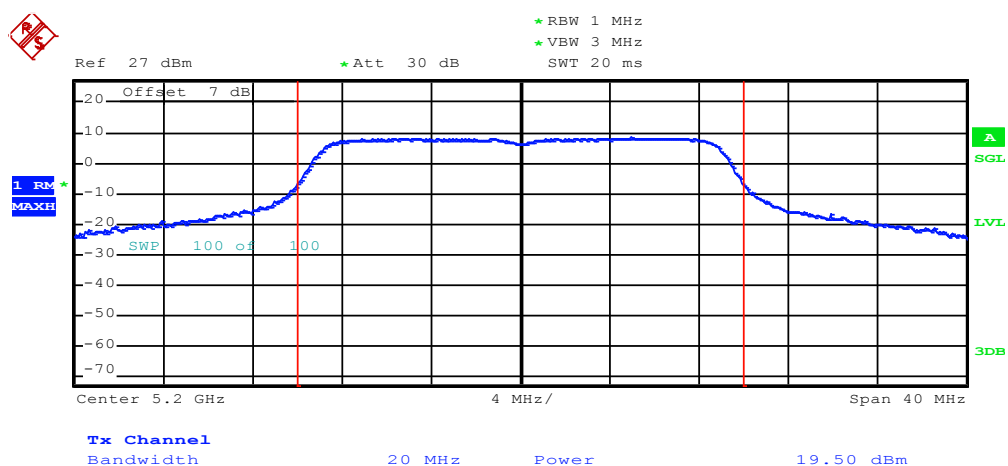


Highest channel

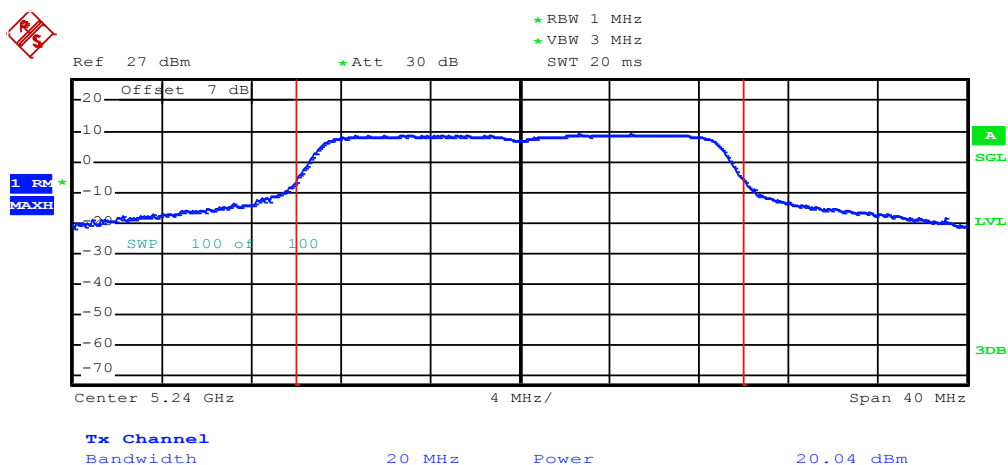
## 802.11n20



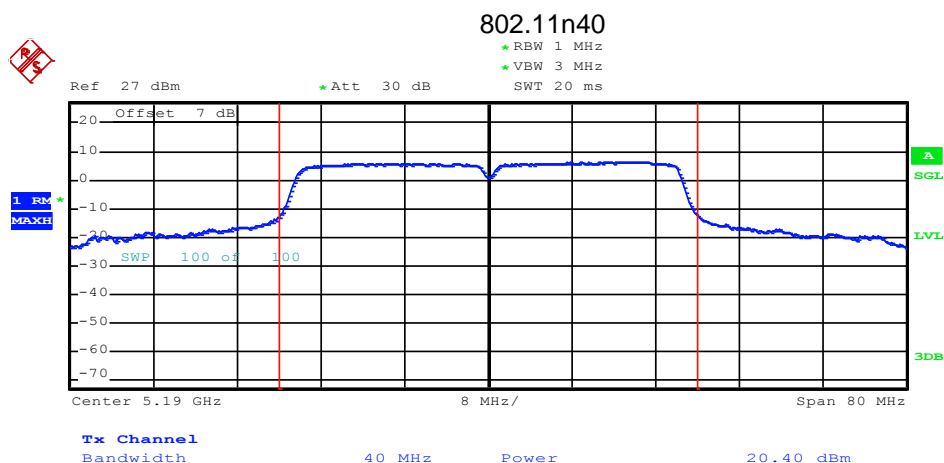
## Lowest channel



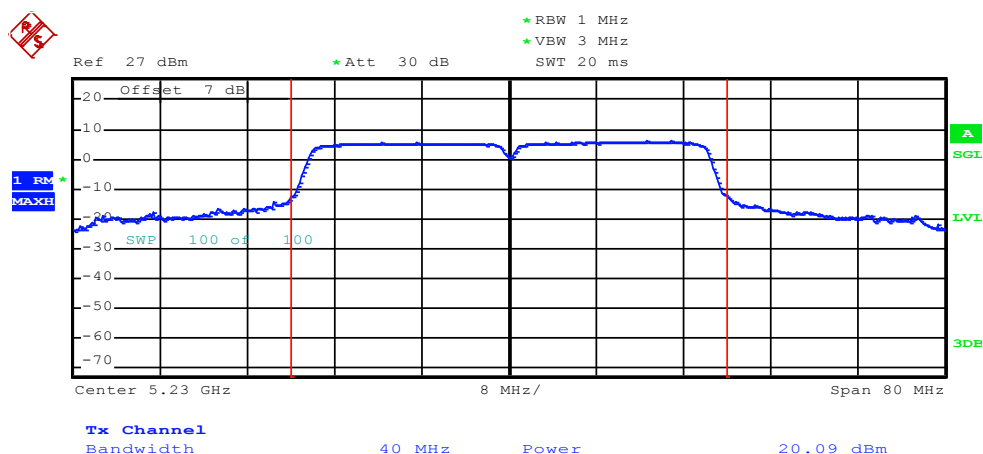
## Middle channel



## Highest channel



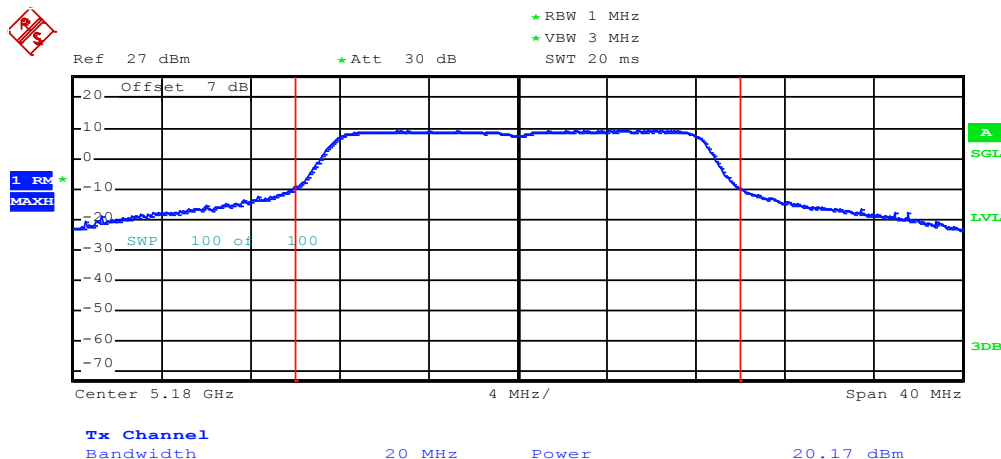
Lowest channel



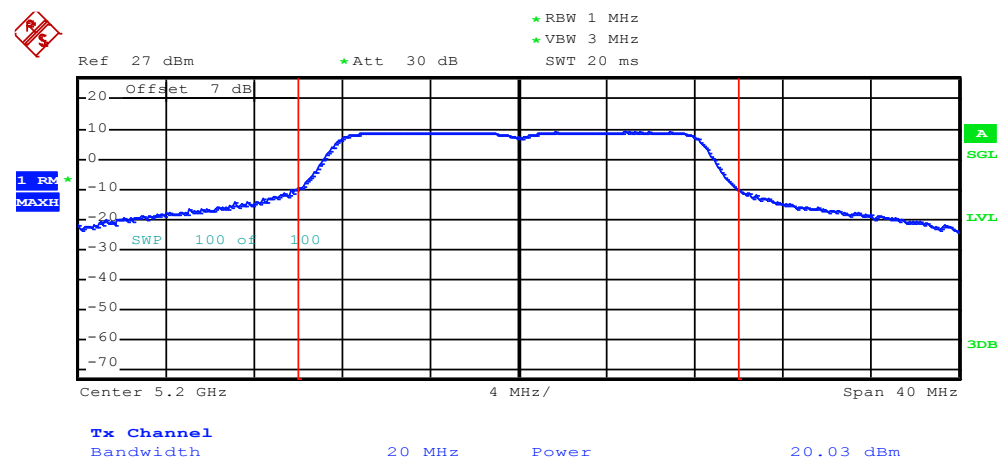
Highest channel

TX1

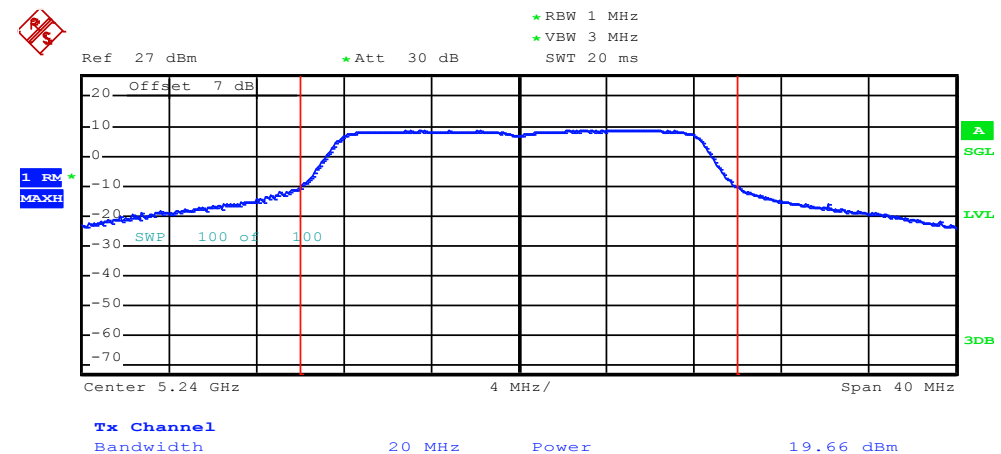
802.11a



Lowest channel



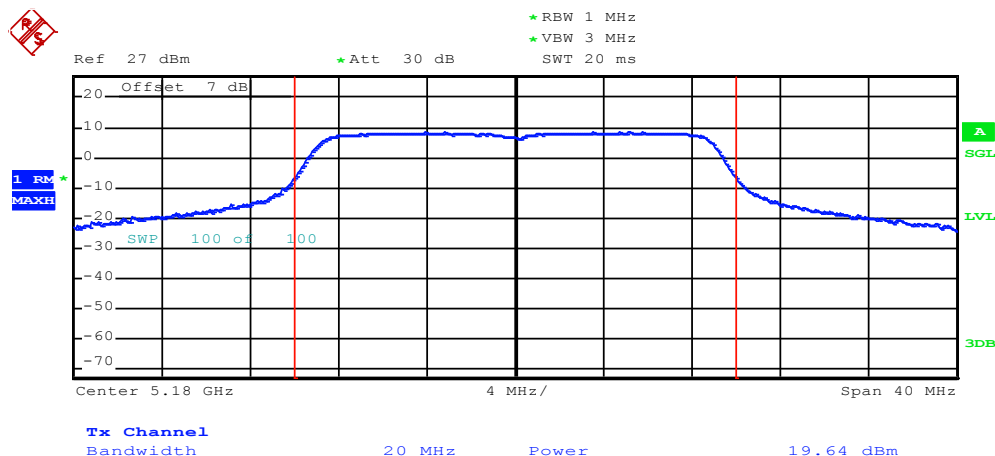
Middle channel



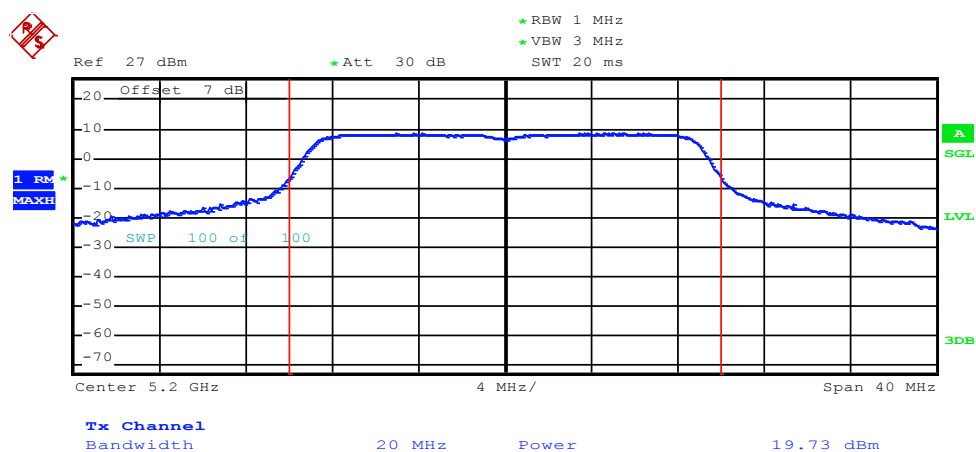
Highest channel



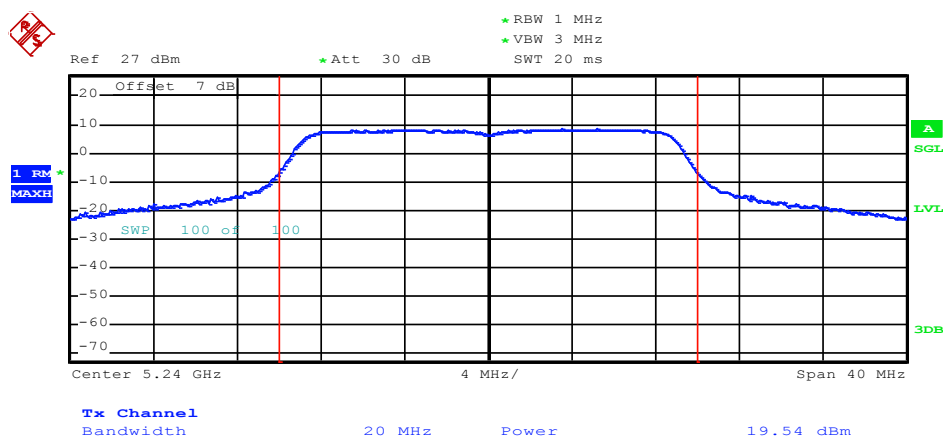
## 802.11n20



## Lowest channel

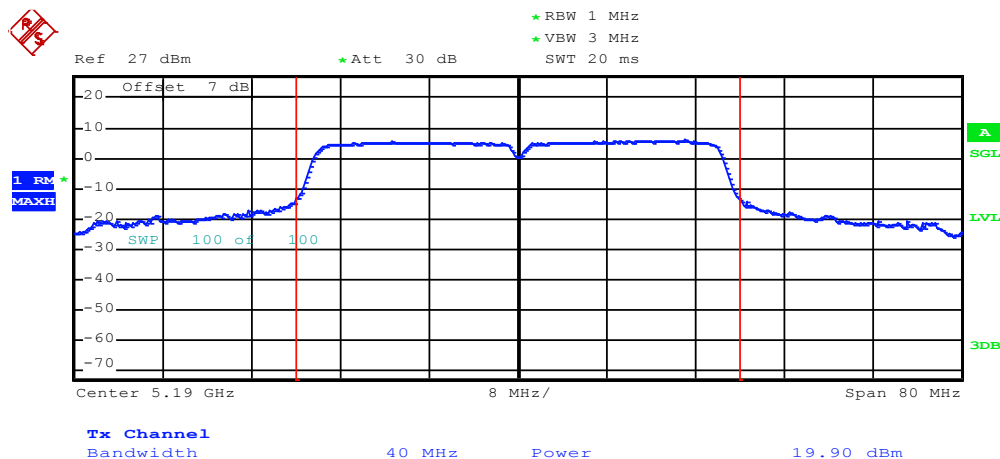


## Middle channel

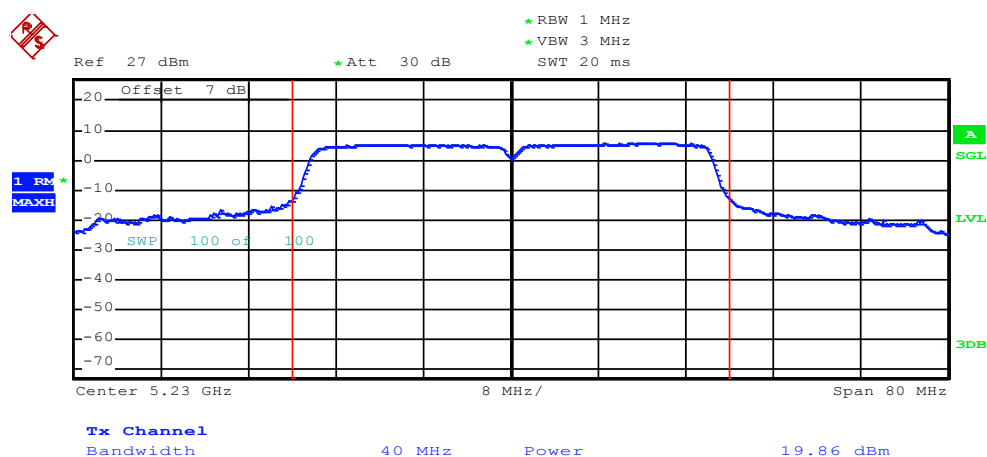


## Highest channel

## 802.11n40

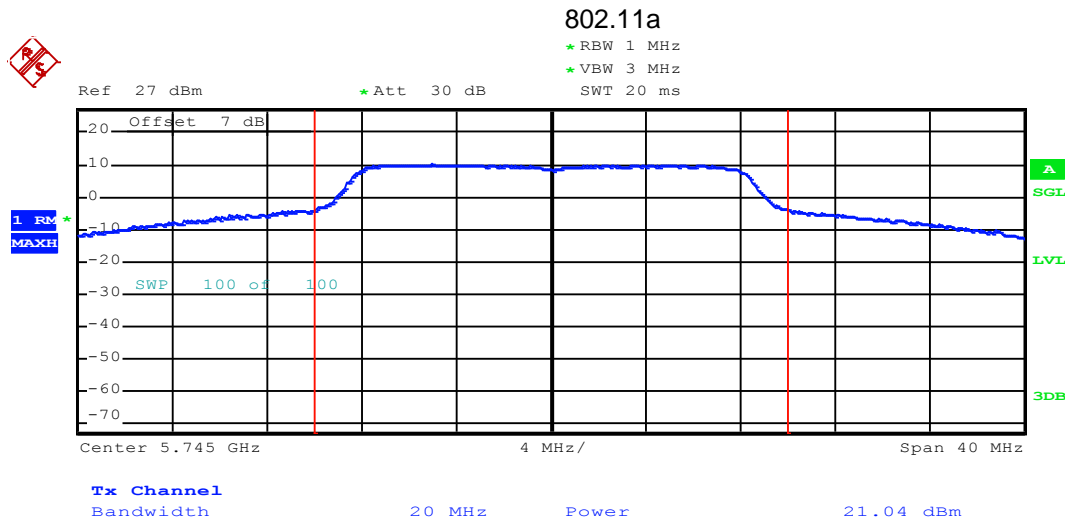


## Lowest channel

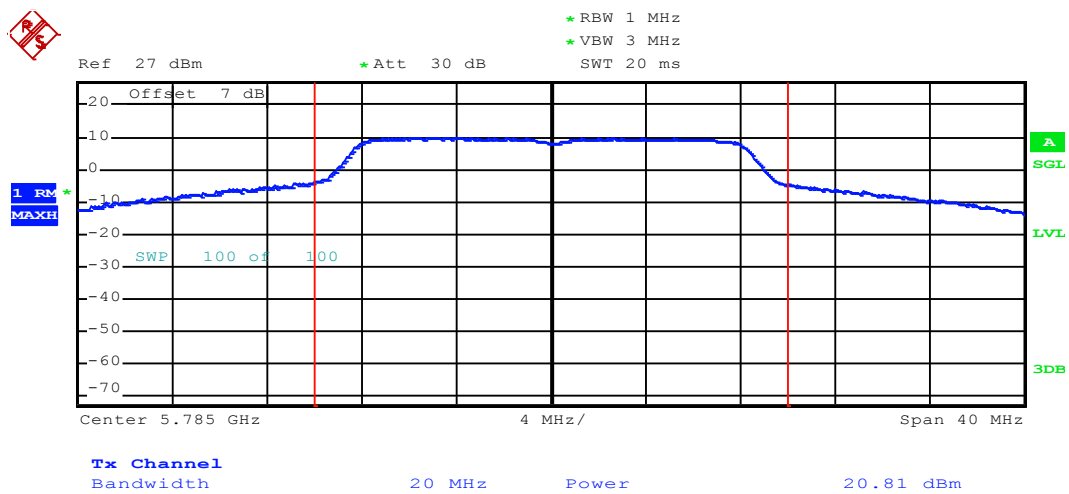


## Highest channel

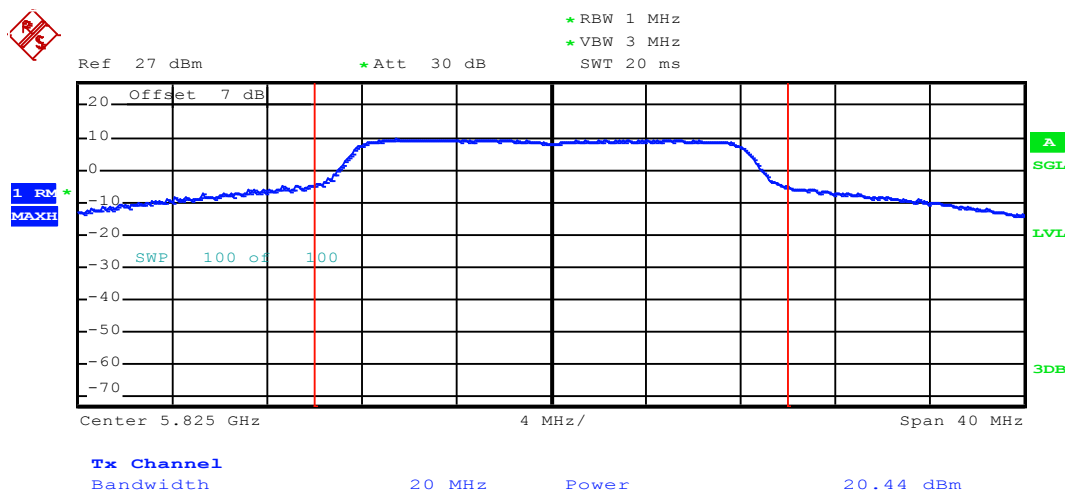
## Band 4: TX0



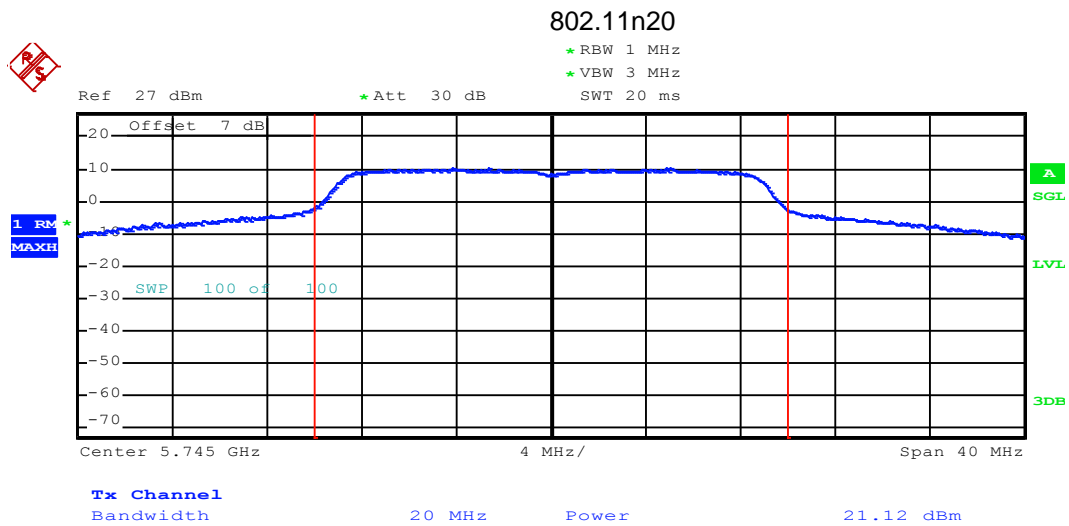
## Lowest channel



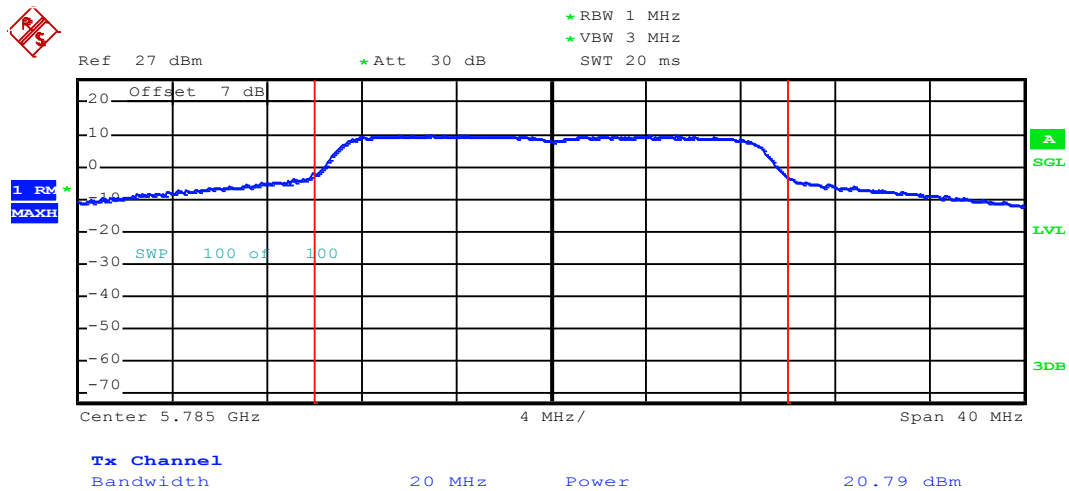
## Middle channel



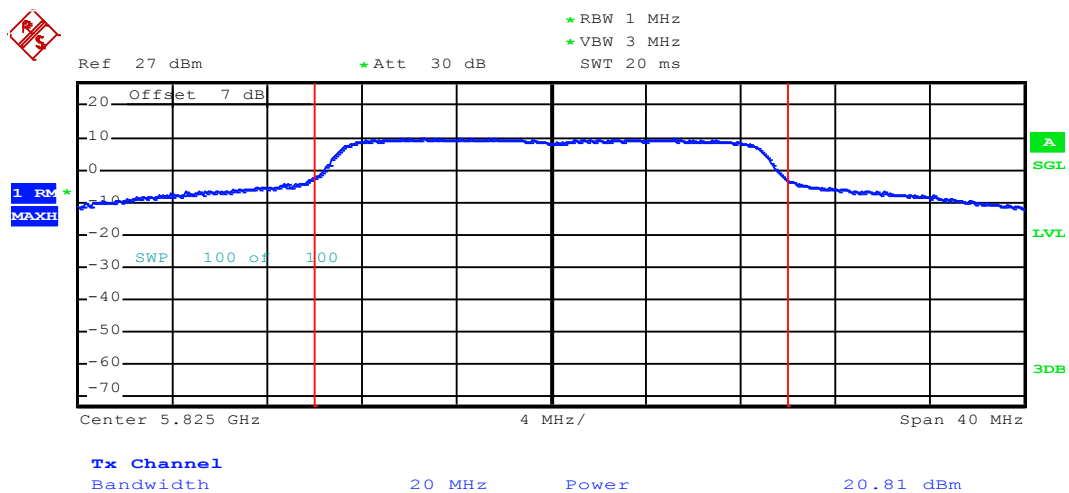
## Highest channel



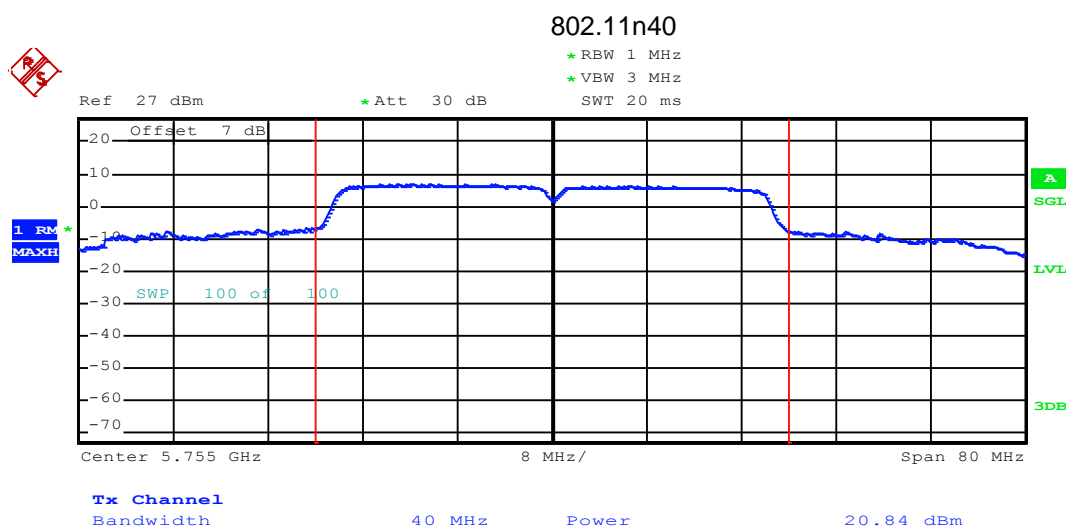
Lowest channel



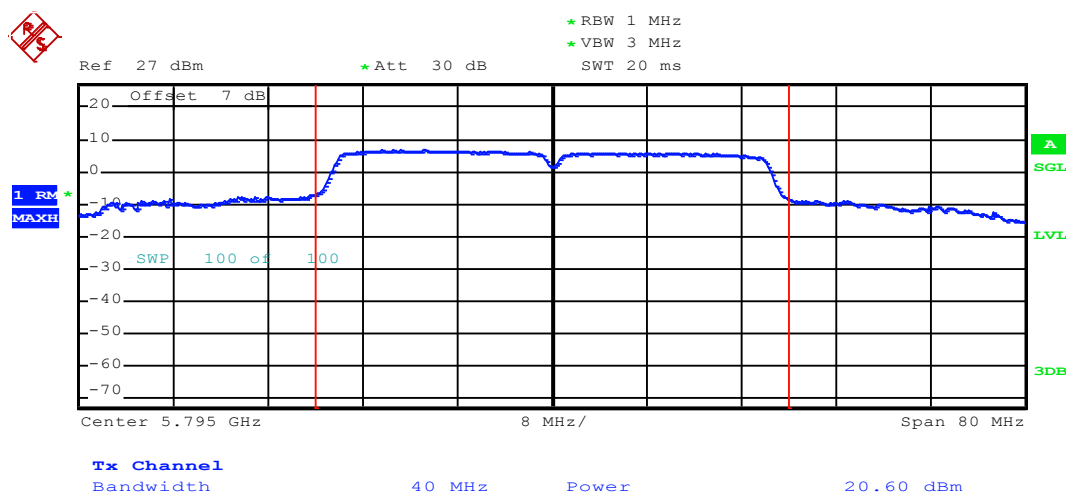
Middle channel



Highest channel

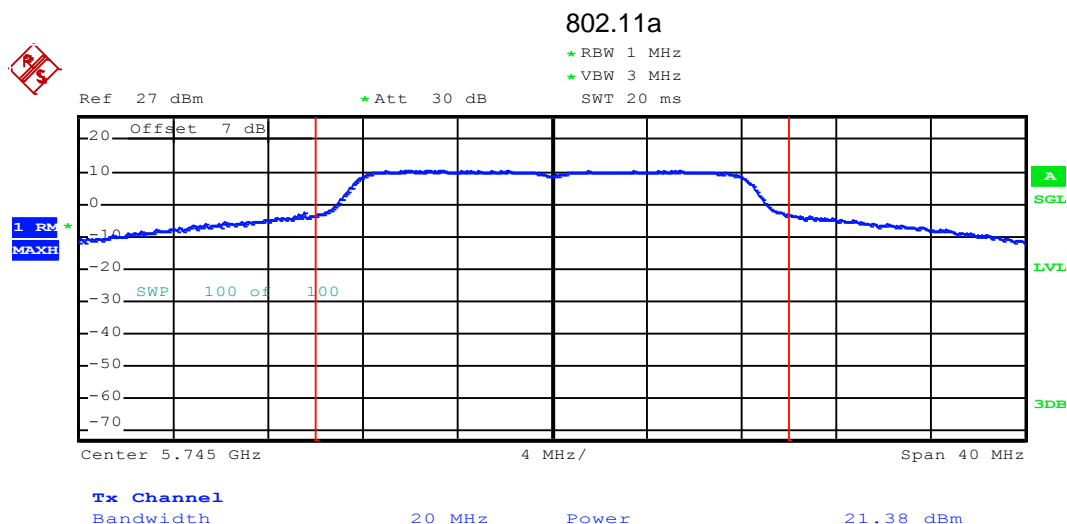


Lowest channel

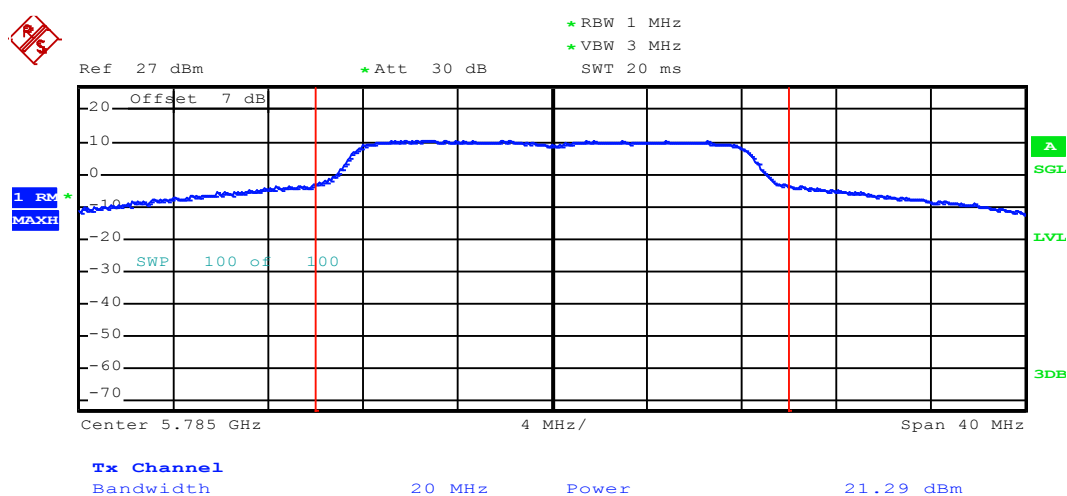


Highest channel

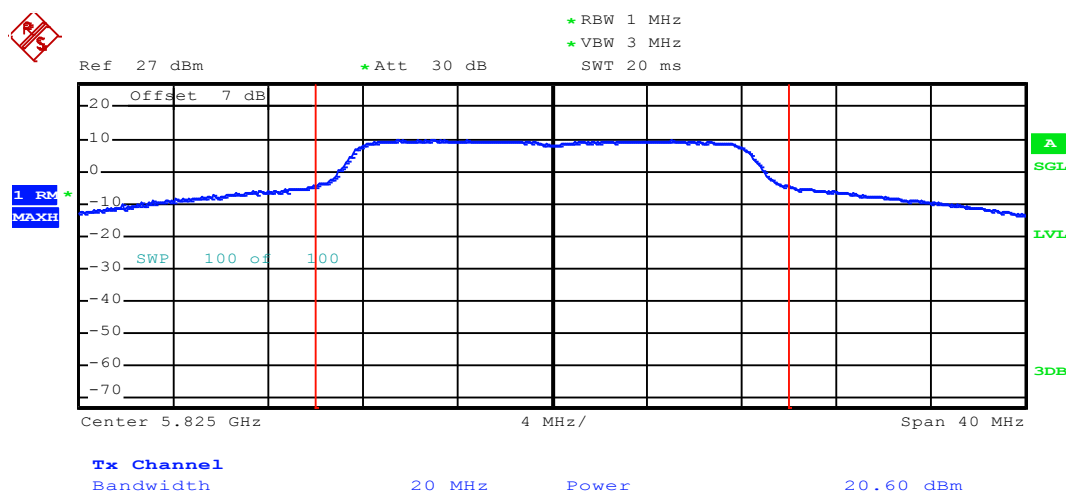
TX1



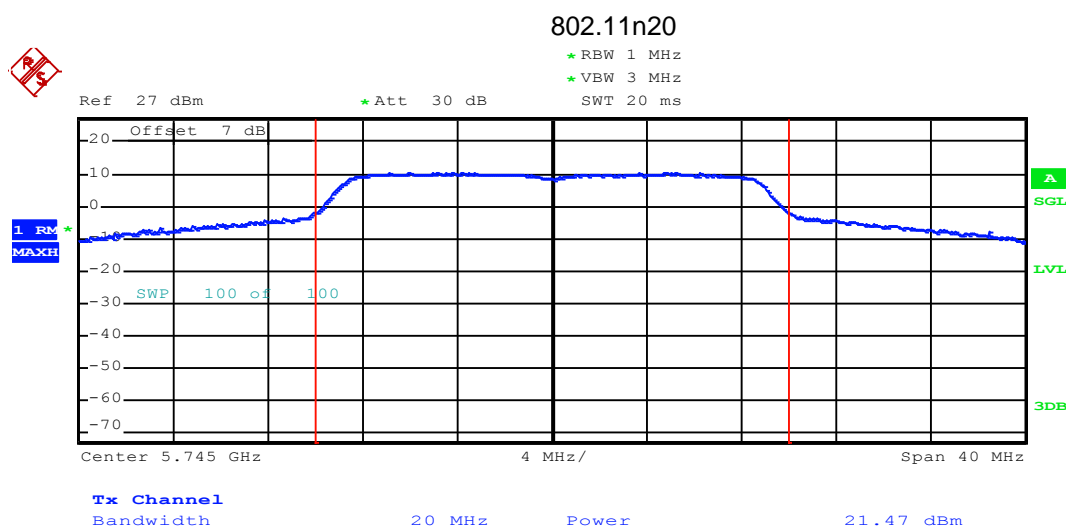
Lowest channel



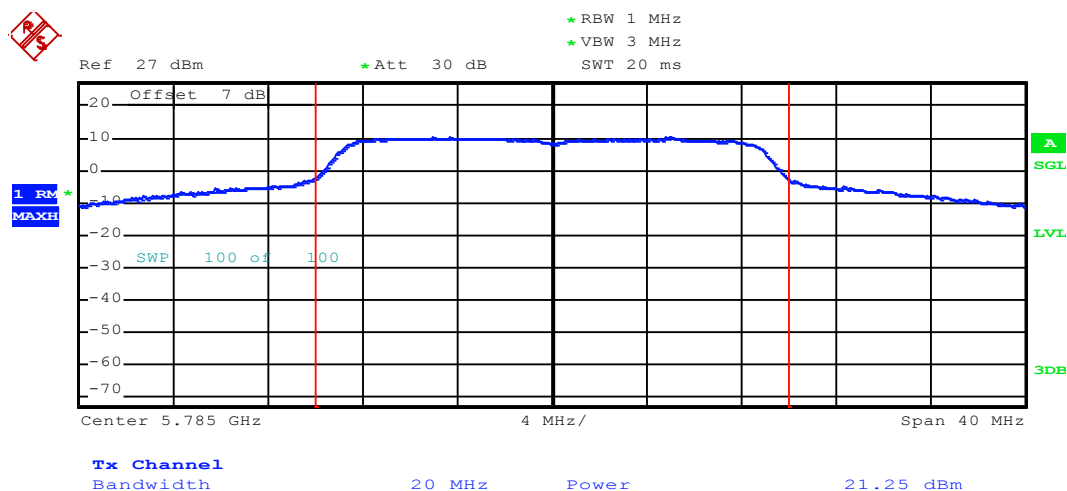
Middle channel



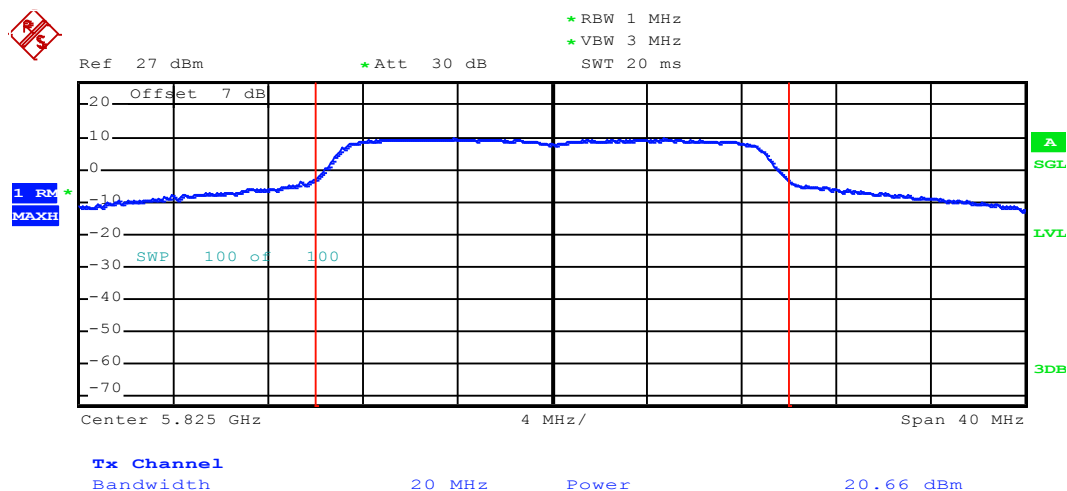
Highest channel



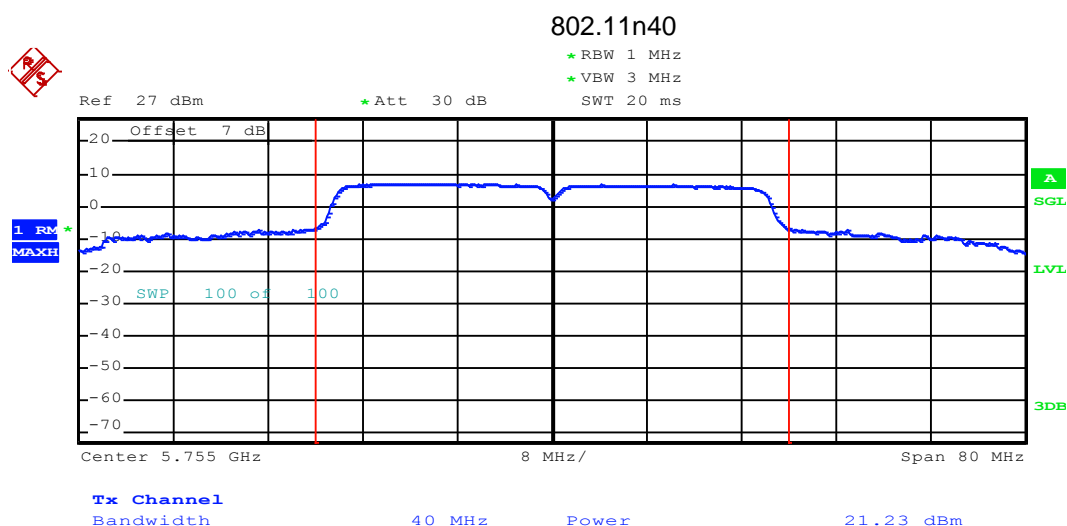
Lowest channel



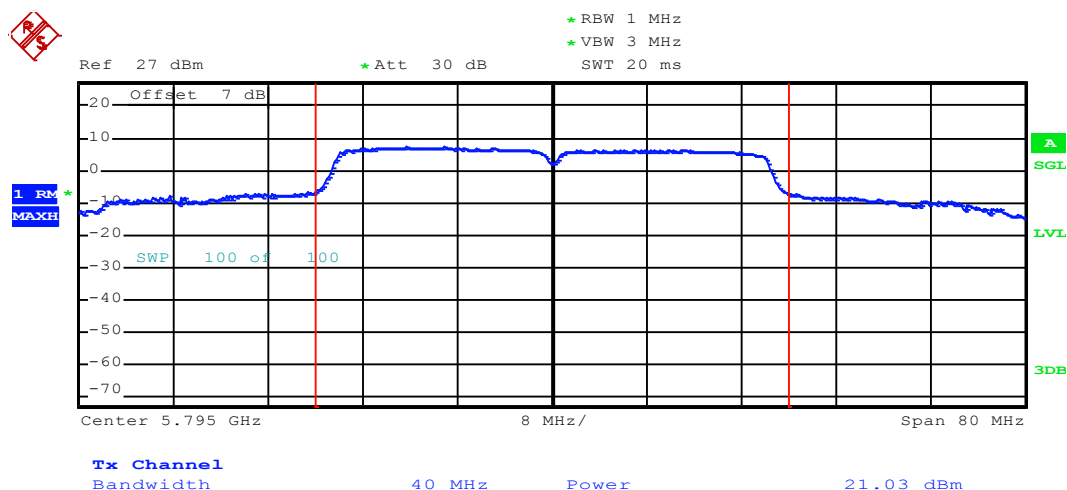
Middle channel



Highest channel



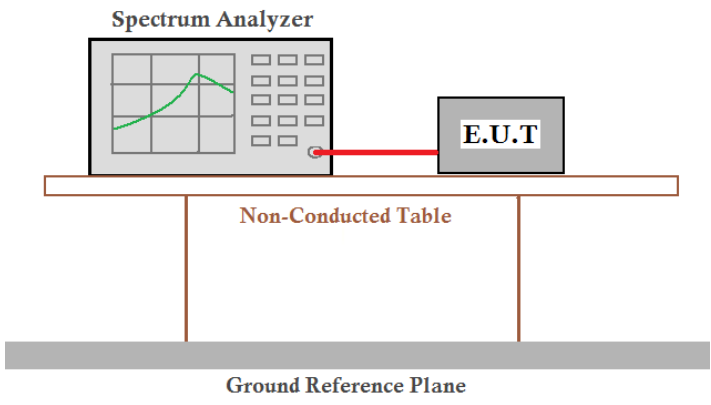
## Lowest channel



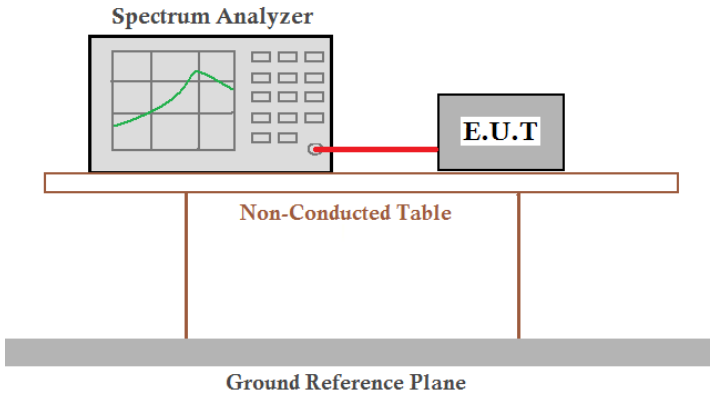
## Highest channel



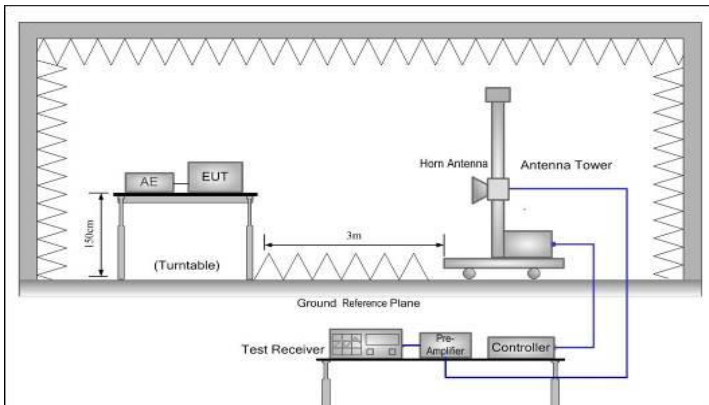
## 6.4 Occupy Bandwidth

|                   |   |
|-------------------|---|
| Test Requirement: | FCC Part15 E Section 15.407 (a) (5) and Section 15.407 (e)  |
| Test Method:      | ANSI C63.10:2013 and KDB 789033   |
| Limit:            | Band 1: N/A(26dB Emission Bandwidth and 99% Occupy Bandwidth)<br>Band 4: N/A(26dB Emission Bandwidth and 99% Occupy Bandwidth)<br>Band 4: >500kHz(6dB Bandwidth)  |
| Test setup:       |  <p>The diagram illustrates the test setup. A Spectrum Analyzer, shown with a grid and a green trace, is connected to an E.U.T (Equipment Under Test) box by a red cable. Both the Spectrum Analyzer and the E.U.T are positioned on a 'Non-Conducted Table', which is depicted as a horizontal surface supported by two vertical legs. Below this table is a 'Ground Reference Plane', represented by a thick grey horizontal bar.</p> |
| Test Instruments: | Refer to section 5.8 for details  |
| Test mode:        | Refer to section 5.3 for details  |
| Test results:     | Refer to FCC ID:Z9W-RMB   |

## 6.5 Power Spectral Density

|                   |  |
|-------------------|--|
| Test Requirement: | FCC Part15 E Section 15.407 (a) (1) (ii) &(a) (3)  |
| Test Method:      | ANSI C63.10:2013, KDB 789033   |
| Limit:            | <p><b>Band 1:</b> 17 dBm/MHz (The maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.);</p> <p><b>Band 4:</b> 30dBm/500kHz (The maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.)</p> |
| Test setup:       |  <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.</p>   |
| Test Instruments: | Refer to section 5.8 for details   |
| Test mode:        | Refer to section 5.3 for details   |
| Test results:     | Refer to FCC ID:Z9W-RMB  |

## 6.6 Band Edge

|                   |  |                    |        |                  |
|-------------------|--|--------------------|--------|------------------|
| Test Requirement: | FCC Part15 E Section 15.407 (b)  |                    |        |                  |
| Test Method:      | ANSI C63.10:2013 , KDB 789033  |                    |        |                  |
| Receiver setup:   | Detector   | RBW                | VBW    | Remark           |
|                   | Quasi-peak   | 120kHz             | 300kHz | Quasi-peak Value |
|                   | RMS  | 1MHz               | 3MHz   | Average Value    |
| Limit:            | Band   | Limit (dBuV/m @3m) |        | Remark           |
|                   | Band 1   | 68.20              |        | Peak Value       |
|                   |  | 54.00              |        | Average Value    |
|                   | Band 4   | 78.20              |        | Peak Value       |
|                   |  | 54.00              |        | Average Value    |
|                   | Remark:<br>1. Band 1 limit:<br>$E[\text{dB}\mu\text{V}/\text{m}] = \text{EIRP}[\text{dBm}] + 95.2=68.2 \text{ dB}\mu\text{V}/\text{m}$ , for $\text{EIPR}[\text{dBm}]=-27\text{dBm}$ .<br>2. Band 4 limit:<br>$E[\text{dB}\mu\text{V}/\text{m}] = \text{EIRP}[\text{dBm}] + 95.2=78.2 \text{ dB}\mu\text{V}/\text{m}$ , for $\text{EIPR}[\text{dBm}]=-17\text{dBm}$ .  |                    |        |                  |
| Test Procedure:   | <div>1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.</div> <div>2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</div> <div>3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</div> <div>4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotating table was turned from 0 degrees to 360 degrees to find the maximum reading.</div> <div>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</div> <div>6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</div> |                    |        |                  |
| Test setup:       |    |                    |        |                  |
| Test Instruments: | Refer to section 5.8 for details   |                    |        |                  |
| Test mode:        | Refer to section 5.3 for details   |                    |        |                  |
| Test results:     | Passed   |                    |        |                  |

## MIMO TX mode

## Band 1:

| 802.11a         |                     |                     |                 |                    |                |                     |                 |              |
|-----------------|---------------------|---------------------|-----------------|--------------------|----------------|---------------------|-----------------|--------------|
| Test channel    |                     | Lowest              |                 |                    | Level          |                     | Peak            |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5150.00         | 42.25               | 36.23               | 7.05            | 41.93              | 43.60          | 68.20               | -24.60          | Horizontal   |
| 5150.00         | 41.78               | 36.23               | 7.05            | 41.93              | 43.13          | 68.20               | -25.07          | Vertical     |
| 802.11a         |                     |                     |                 |                    |                |                     |                 |              |
| Test channel    |                     | Lowest              |                 |                    | Level          |                     | Average         |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5150.00         | 32.95               | 36.23               | 7.05            | 41.93              | 34.30          | 54.00               | -19.70          | Horizontal   |
| 5150.00         | 31.47               | 36.23               | 7.05            | 41.93              | 32.82          | 54.00               | -21.18          | Vertical     |
| 802.11a         |                     |                     |                 |                    |                |                     |                 |              |
| Test channel    |                     | Highest             |                 |                    | Level          |                     | Peak            |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5350.00         | 42.05               | 35.37               | 7.11            | 41.89              | 42.64          | 68.20               | -25.56          | Horizontal   |
| 5350.00         | 42.61               | 35.37               | 7.11            | 41.89              | 43.20          | 68.20               | -25.00          | Vertical     |
| 802.11a         |                     |                     |                 |                    |                |                     |                 |              |
| Test channel    |                     | Highest             |                 |                    | Level          |                     | Average         |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5350.00         | 32.03               | 35.37               | 7.11            | 41.89              | 32.62          | 54.00               | -21.38          | Horizontal   |
| 5350.00         | 32.31               | 35.37               | 7.11            | 41.89              | 32.90          | 54.00               | -21.10          | Vertical     |

| 802.11n-HT20    |                     |                     |                 |                    |                |                     |                 |              |
|-----------------|---------------------|---------------------|-----------------|--------------------|----------------|---------------------|-----------------|--------------|
| Test channel    |                     | Lowest              |                 |                    | Level          |                     | Peak            |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5150.00         | 42.75               | 36.23               | 7.05            | 41.93              | 44.10          | 68.20               | -24.10          | Horizontal   |
| 5150.00         | 41.16               | 36.23               | 7.05            | 41.93              | 42.51          | 68.20               | -25.69          | Vertical     |
| 802.11n-HT20    |                     |                     |                 |                    |                |                     |                 |              |
| Test channel    |                     | Lowest              |                 |                    | Level          |                     | Average         |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5150.00         | 32.86               | 36.23               | 7.05            | 41.93              | 34.21          | 54.00               | -19.79          | Horizontal   |
| 5150.00         | 31.95               | 36.23               | 7.05            | 41.93              | 33.30          | 54.00               | -20.70          | Vertical     |
| 802.11n-HT20    |                     |                     |                 |                    |                |                     |                 |              |
| Test channel    |                     | Highest             |                 |                    | Level          |                     | Peak            |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5350.00         | 42.72               | 35.37               | 7.11            | 41.89              | 43.31          | 68.20               | -24.89          | Horizontal   |
| 5350.00         | 42.03               | 35.37               | 7.11            | 41.89              | 42.62          | 68.20               | -25.58          | Vertical     |
| 802.11n-HT20    |                     |                     |                 |                    |                |                     |                 |              |
| Test channel    |                     | Highest             |                 |                    | Level          |                     | Average         |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5350.00         | 32.65               | 35.37               | 7.11            | 41.89              | 33.24          | 54.00               | -20.76          | Horizontal   |
| 5350.00         | 33.04               | 35.37               | 7.11            | 41.89              | 33.63          | 54.00               | -20.37          | Vertical     |

## Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

| 802.11n-HT40    |                     |                     |                 |                          |                |                     |                 |              |
|-----------------|---------------------|---------------------|-----------------|--------------------------|----------------|---------------------|-----------------|--------------|
| Test channel    |                     | Lowest              |                 |                          | Level          |                     | Peak            |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5150.00         | 42.16               | 36.23               | 7.05            | 41.93                    | 43.51          | 68.20               | -24.69          | Horizontal   |
| 5150.00         | 43.35               | 36.23               | 7.05            | 41.93                    | 44.70          | 68.20               | -23.50          | Vertical     |
| 802.11n-HT40    |                     |                     |                 |                          |                |                     |                 |              |
| Test channel    |                     | Lowest              |                 |                          | Level          |                     | Average         |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5150.00         | 32.57               | 36.23               | 7.05            | 41.93                    | 33.92          | 54.00               | -20.08          | Horizontal   |
| 5150.00         | 33.69               | 36.23               | 7.05            | 41.93                    | 35.04          | 54.00               | -18.96          | Vertical     |
| 802.11n-HT40    |                     |                     |                 |                          |                |                     |                 |              |
| Test channel    |                     | Highest             |                 |                          | Level          |                     | Peak            |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5350.00         | 42.28               | 35.37               | 35.37           | 7.11                     | 41.89          | 68.20               | -26.31          | Horizontal   |
| 5350.00         | 42.69               | 35.37               | 35.37           | 7.11                     | 41.89          | 68.20               | -26.31          | Vertical     |
| 802.11n-HT40    |                     |                     |                 |                          |                |                     |                 |              |
| Test channel    |                     | Highest             |                 |                          | Level          |                     | Average         |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5350.00         | 32.15               | 35.37               | 7.11            | 41.89                    | 32.74          | 54.00               | -21.26          | Horizontal   |
| 5350.00         | 33.14               | 35.37               | 7.11            | 41.89                    | 33.73          | 54.00               | -20.27          | Vertical     |

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

## Band 4:

| 802.11a         |                     |                     |                 |                    |                |                     |                 |              |
|-----------------|---------------------|---------------------|-----------------|--------------------|----------------|---------------------|-----------------|--------------|
| Test channel    |                     | Lowest              |                 |                    | Level          |                     | Peak            |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5725.00         | 41.56               | 34.65               | 7.69            | 41.94              | 41.96          | 78.20               | -36.24          | Horizontal   |
| 5725.00         | 42.95               | 34.65               | 7.69            | 41.94              | 43.35          | 78.20               | -34.85          | Vertical     |
| 802.11a         |                     |                     |                 |                    |                |                     |                 |              |
| Test channel    |                     | Lowest              |                 |                    | Level          |                     | Average         |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5725.00         | 31.45               | 34.65               | 7.69            | 41.94              | 31.85          | 54.00               | -22.15          | Horizontal   |
| 5725.00         | 32.59               | 34.65               | 7.69            | 41.94              | 32.99          | 54.00               | -21.01          | Vertical     |
| 802.11a         |                     |                     |                 |                    |                |                     |                 |              |
| Test channel    |                     | Highest             |                 |                    | Level          |                     | Peak            |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5850.00         | 41.72               | 34.63               | 7.90            | 42.03              | 42.22          | 78.20               | -35.98          | Horizontal   |
| 5850.00         | 40.69               | 34.63               | 7.90            | 42.03              | 41.19          | 78.20               | -37.01          | Vertical     |
| 802.11a         |                     |                     |                 |                    |                |                     |                 |              |
| Test channel    |                     | Highest             |                 |                    | Level          |                     | Average         |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5850.00         | 31.69               | 34.63               | 7.90            | 42.03              | 32.19          | 54.00               | -21.81          | Horizontal   |
| 5850.00         | 30.25               | 34.63               | 7.90            | 42.03              | 30.75          | 54.00               | -23.25          | Vertical     |

| 802.11n-HT20    |                     |                     |                 |                    |                |                     |                 |              |
|-----------------|---------------------|---------------------|-----------------|--------------------|----------------|---------------------|-----------------|--------------|
| Test channel    |                     | Lowest              |                 |                    | Level          |                     | Peak            |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5725.00         | 42.69               | 34.65               | 7.69            | 41.94              | 43.09          | 78.20               | -35.11          | Horizontal   |
| 5725.00         | 41.51               | 34.65               | 7.69            | 41.94              | 41.91          | 78.20               | -36.29          | Vertical     |
| 802.11n-HT20    |                     |                     |                 |                    |                |                     |                 |              |
| Test channel    |                     | Lowest              |                 |                    | Level          |                     | Average         |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5725.00         | 32.64               | 34.65               | 7.69            | 41.94              | 33.04          | 54.00               | -20.96          | Horizontal   |
| 5725.00         | 31.21               | 34.65               | 7.69            | 41.94              | 31.61          | 54.00               | -22.39          | Vertical     |
| 802.11n-HT20    |                     |                     |                 |                    |                |                     |                 |              |
| Test channel    |                     | Highest             |                 |                    | Level          |                     | Peak            |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5850.00         | 42.74               | 34.63               | 7.90            | 42.03              | 43.24          | 78.20               | -34.96          | Horizontal   |
| 5850.00         | 41.28               | 34.63               | 7.90            | 42.03              | 41.78          | 78.20               | -36.42          | Vertical     |
| 802.11n-HT20    |                     |                     |                 |                    |                |                     |                 |              |
| Test channel    |                     | Highest             |                 |                    | Level          |                     | Average         |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5850.00         | 32.06               | 34.63               | 7.90            | 42.03              | 32.56          | 54.00               | -21.44          | Horizontal   |
| 5850.00         | 31.79               | 34.63               | 7.90            | 42.03              | 32.29          | 54.00               | -21.71          | Vertical     |

## Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

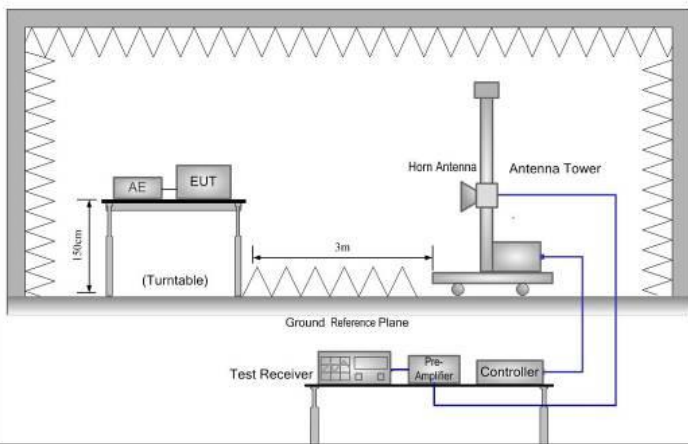
| 802.11n-HT40    |                     |                     |                 |                          |                |                     |                 |              |
|-----------------|---------------------|---------------------|-----------------|--------------------------|----------------|---------------------|-----------------|--------------|
| Test channel    |                     | Lowest              |                 |                          | Level          |                     | Peak            |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5725.00         | 41.71               | 34.65               | 7.69            | 41.94                    | 42.11          | 78.20               | -36.09          | Horizontal   |
| 5725.00         | 42.03               | 34.65               | 7.69            | 41.94                    | 42.43          | 78.20               | -35.77          | Vertical     |
| 802.11n-HT40    |                     |                     |                 |                          |                |                     |                 |              |
| Test channel    |                     | Lowest              |                 |                          | Level          |                     | Average         |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5725.00         | 32.77               | 34.65               | 7.69            | 41.94                    | 33.17          | 54.00               | -20.83          | Horizontal   |
| 5725.00         | 31.64               | 34.65               | 7.69            | 41.94                    | 32.04          | 54.00               | -21.96          | Vertical     |
| 802.11n-HT40    |                     |                     |                 |                          |                |                     |                 |              |
| Test channel    |                     | Highest             |                 |                          | Level          |                     | Peak            |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5850.00         | 41.68               | 34.63               | 7.90            | 42.03                    | 42.18          | 78.20               | -36.02          | Horizontal   |
| 5850.00         | 40.13               | 34.63               | 7.90            | 42.03                    | 40.63          | 78.20               | -37.57          | Vertical     |
| 802.11n-HT40    |                     |                     |                 |                          |                |                     |                 |              |
| Test channel    |                     | Highest             |                 |                          | Level          |                     | Average         |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5850.00         | 31.77               | 34.63               | 7.90            | 42.03                    | 32.27          | 54.00               | -21.73          | Horizontal   |
| 5850.00         | 30.65               | 34.63               | 7.90            | 42.03                    | 31.15          | 54.00               | -22.85          | Vertical     |

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

## 6.7 Spurious Emission

### 6.7.1 Restricted Band

|                     |   |                    |      |      |               |
|---------------------|---|--------------------|------|------|---------------|
| Test Requirement:   | FCC Part15 E Section 15.407(b)  |                    |      |      |               |
| Test Method:        | ANSI C63.10: 2013   |                    |      |      |               |
| TestFrequencyRange: | Band 1: 4.5 GHz to 5.15 GHz and 5.35GHz to 5.46GHz<br>Band 4: 5.35 GHz to 5.46 GHz  |                    |      |      |               |
| Test site:          | Measurement Distance: 3m  |                    |      |      |               |
| Receiver setup:     | Frequency   | Detector           | RBW  | VBW  | Remark        |
|                     | Above 1GHz  | Peak               | 1MHz | 3MHz | Peak Value    |
|                     |   | RMS                | 1MHz | 3MHz | Average Value |
| Limit:              | Frequency   | Limit (dBuV/m @3m) |      |      | Remark        |
|                     | Above 1GHz  | 68.20              |      |      | Peak Value    |
|                     |   | 54.00              |      |      | Average Value |
|                     | Remark:<br>1. Above 1GHz limit:<br>$E[dBuV/m] = EIRP[dBm] + 95.2=68.2 \text{ dBuV/m,for } EIPR[dBm]=-27dBm$   |                    |      |      |               |
| Test Procedure:     | <ol style="list-style-type: none"><li>1. The EUT was placed on the top of a rotating table 1.5 meters above the groundat a 3 meter camber. The table was rotated 360 degrees todetermine the position of the highest radiation.</li><li>2. The EUT was set 3 meters away from the interference-receiving antenna, whichwas mounted on the top of a variable-height antenna tower.</li><li>3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</li><li>4. For each suspected emission, the EUT was arranged to its worst case and thenthe antenna was tuned to heights from 1 meter to 4 meters and the rotatablewas turned from 0 degrees to 360 degrees to find the maximum reading.</li><li>5. The test-receiver system was set to Peak Detect Function and SpecifiedBandwidth with Maximum Hold Mode.</li><li>6. If the emission level of the EUT in peak mode was 10dB lower than the limitspecified, then testing could be stopped and the peak values of the EUT wouldbe reported. Otherwise the emissions that did not have 10dB margin would bere-tested one by one using peak, quasi-peak or average method as specified andthen reported in a data sheet.</li></ol> |                    |      |      |               |
| Test setup:         |   |                    |      |      |               |
| Test Instruments:   | Refer to section 5.8 for details  |                    |      |      |               |
| Test mode:          | Refer to section 5.3 for details  |                    |      |      |               |
| Test results:       | Passed  |                    |      |      |               |



### MIMO TX mode

#### Band 1:

#### 802.11a

| Test channel    |                     | Lowest              |                 |                    | Level          |                     | Peak            |              |
|-----------------|---------------------|---------------------|-----------------|--------------------|----------------|---------------------|-----------------|--------------|
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 4500.00         | 43.35               | 34.50               | 6.80            | 42.05              | 42.60          | 74.00               | -31.40          | Horizontal   |
| 4500.00         | 42.27               | 34.50               | 6.80            | 42.05              | 41.52          | 74.00               | -32.48          | Vertical     |
| Test channel    |                     | Lowest              |                 |                    | Level          |                     | Average         |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 4500.00         | 32.63               | 34.50               | 6.80            | 42.05              | 31.88          | 54.00               | -22.12          | Horizontal   |
| 4500.00         | 31.12               | 34.50               | 6.80            | 42.05              | 30.37          | 54.00               | -23.63          | Vertical     |
| Test channel    |                     | Highest             |                 |                    | Level          |                     | Peak            |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5460.00         | 41.41               | 34.90               | 7.18            | 41.85              | 41.64          | 74.00               | -32.36          | Horizontal   |
| 5460.00         | 42.69               | 34.90               | 7.18            | 41.85              | 42.92          | 74.00               | -31.08          | Vertical     |
| Test channel    |                     | Highest             |                 |                    | Level          |                     | Average         |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5460.00         | 32.03               | 34.90               | 7.18            | 41.85              | 32.26          | 54.00               | -21.74          | Horizontal   |
| 5460.00         | 32.42               | 34.90               | 7.18            | 41.85              | 32.65          | 54.00               | -21.35          | Vertical     |

#### 802.11n-HT20

| Test channel    |                     | Lowest              |                 |                    | Level          |                     | Peak            |              |
|-----------------|---------------------|---------------------|-----------------|--------------------|----------------|---------------------|-----------------|--------------|
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 4500.00         | 41.85               | 34.50               | 6.80            | 42.05              | 41.10          | 74.00               | -32.90          | Horizontal   |
| 4500.00         | 42.17               | 34.50               | 6.80            | 42.05              | 41.42          | 74.00               | -32.58          | Vertical     |
| Test channel    |                     | Lowest              |                 |                    | Level          |                     | Average         |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 4500.00         | 32.26               | 34.50               | 6.80            | 42.05              | 31.51          | 54.00               | -22.49          | Horizontal   |
| 4500.00         | 32.15               | 34.50               | 6.80            | 42.05              | 31.40          | 54.00               | -22.60          | Vertical     |
| Test channel    |                     | Highest             |                 |                    | Level          |                     | Peak            |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5460.00         | 41.72               | 34.90               | 7.18            | 41.85              | 41.95          | 74.00               | -32.05          | Horizontal   |
| 5460.00         | 42.13               | 34.90               | 7.18            | 41.85              | 42.36          | 74.00               | -31.64          | Vertical     |
| Test channel    |                     | Highest             |                 |                    | Level          |                     | Average         |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5460.00         | 32.03               | 34.90               | 7.18            | 41.85              | 32.26          | 54.00               | -21.74          | Horizontal   |
| 5460.00         | 32.59               | 34.90               | 7.18            | 41.85              | 32.82          | 54.00               | -21.18          | Vertical     |

#### Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

### 802.11n-HT40

| Test channel    |                     | Lowest              |                 |                    | Level          |                     | Peak            |              |
|-----------------|---------------------|---------------------|-----------------|--------------------|----------------|---------------------|-----------------|--------------|
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 4500.00         | 42.69               | 34.50               | 6.80            | 42.05              | 41.94          | 74.00               | -32.06          | Horizontal   |
| 4500.00         | 41.41               | 34.50               | 6.80            | 42.05              | 40.66          | 74.00               | -33.34          | Vertical     |
| Test channel    |                     | Lowest              |                 |                    | Level          |                     | Average         |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 4500.00         | 32.58               | 34.50               | 6.80            | 42.05              | 31.83          | 54.00               | -22.17          | Horizontal   |
| 4500.00         | 31.74               | 34.50               | 6.80            | 42.05              | 30.99          | 54.00               | -23.01          | Vertical     |
| Test channel    |                     | Highest             |                 |                    | Level          |                     | Peak            |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5460.00         | 41.36               | 34.90               | 7.18            | 41.85              | 41.59          | 74.00               | -32.41          | Horizontal   |
| 5460.00         | 42.08               | 34.90               | 7.18            | 41.85              | 42.31          | 74.00               | -31.69          | Vertical     |
| Test channel    |                     | Highest             |                 |                    | Level          |                     | Average         |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5460.00         | 31.48               | 34.90               | 7.18            | 41.85              | 31.71          | 54.00               | -22.29          | Horizontal   |
| 5460.00         | 33.17               | 34.90               | 7.18            | 41.85              | 33.40          | 54.00               | -20.60          | Vertical     |

#### Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

## Band 4:

## 802.11a

| Test channel    |                     | Lowest              |                 |                          | Level          |                     | Peak            |              |
|-----------------|---------------------|---------------------|-----------------|--------------------------|----------------|---------------------|-----------------|--------------|
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5350.00         | 42.43               | 35.37               | 7.11            | 41.89                    | 43.02          | 74.00               | -30.98          | Horizontal   |
| 5350.00         | 41.85               | 35.37               | 7.11            | 41.89                    | 42.44          | 74.00               | -31.56          | Vertical     |
| Test channel    |                     | Lowest              |                 |                          | Level          |                     | Average         |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5350.00         | 32.12               | 35.37               | 7.11            | 41.89                    | 32.71          | 54.00               | -21.29          | Horizontal   |
| 5350.00         | 31.49               | 35.37               | 7.11            | 41.89                    | 32.08          | 54.00               | -21.92          | Vertical     |
| Test channel    |                     | Lowest              |                 |                          | Level          |                     | Peak            |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5460.00         | 42.89               | 34.90               | 7.18            | 41.85                    | 43.12          | 74.00               | -30.88          | Horizontal   |
| 5460.00         | 41.21               | 34.90               | 7.18            | 41.85                    | 41.44          | 74.00               | -32.56          | Vertical     |
| Test channel    |                     | Lowest              |                 |                          | Level          |                     | Average         |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5460.00         | 33.08               | 34.90               | 7.18            | 41.85                    | 33.31          | 54.00               | -20.69          | Horizontal   |
| 5460.00         | 32.14               | 34.90               | 7.18            | 41.85                    | 32.37          | 54.00               | -21.63          | Vertical     |

## 802.11n-HT20

| Test channel    |                     | Lowest              |                 |                          | Level          |                     | Peak            |              |
|-----------------|---------------------|---------------------|-----------------|--------------------------|----------------|---------------------|-----------------|--------------|
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5350.00         | 42.86               | 35.37               | 7.11            | 41.89                    | 43.45          | 74.00               | -30.55          | Horizontal   |
| 5350.00         | 41.65               | 35.37               | 7.11            | 41.89                    | 42.24          | 74.00               | -31.76          | Vertical     |
| Test channel    |                     | Lowest              |                 |                          | Level          |                     | Average         |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5350.00         | 32.71               | 35.37               | 7.11            | 41.89                    | 33.30          | 54.00               | -20.70          | Horizontal   |
| 5350.00         | 31.34               | 35.37               | 7.11            | 41.89                    | 31.93          | 54.00               | -22.07          | Vertical     |
| Test channel    |                     | Lowest              |                 |                          | Level          |                     | Peak            |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5460.00         | 42.25               | 34.90               | 7.18            | 41.85                    | 42.48          | 74.00               | -31.52          | Horizontal   |
| 5460.00         | 43.31               | 34.90               | 7.18            | 41.85                    | 43.54          | 74.00               | -30.46          | Vertical     |
| Test channel    |                     | Lowest              |                 |                          | Level          |                     | Average         |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5460.00         | 32.14               | 34.90               | 7.18            | 41.85                    | 32.37          | 54.00               | -21.63          | Horizontal   |
| 5460.00         | 32.28               | 34.90               | 7.18            | 41.85                    | 32.51          | 54.00               | -21.49          | Vertical     |

## Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

### 802.11n-HT40

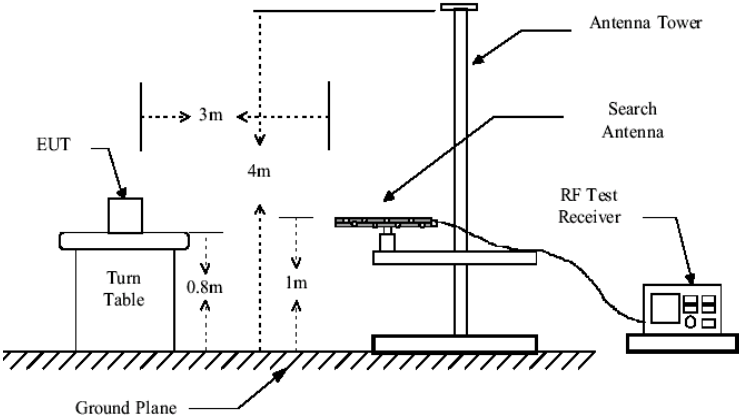
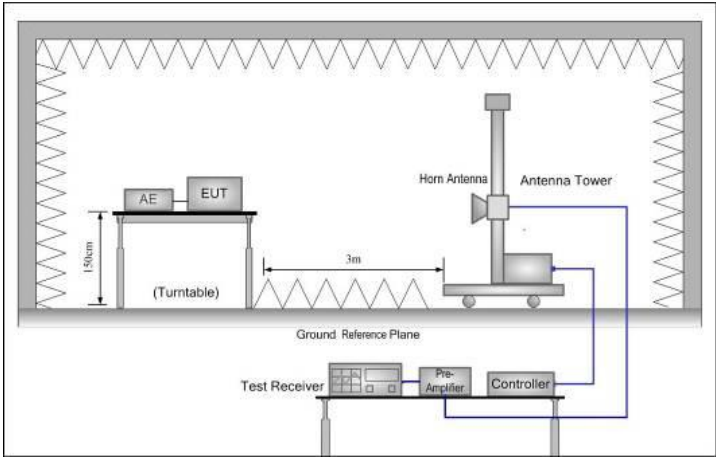
| Test channel    |                     | Lowest              |                 |                          | Level          |                     | Peak            |              |
|-----------------|---------------------|---------------------|-----------------|--------------------------|----------------|---------------------|-----------------|--------------|
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5350.00         | 42.17               | 35.37               | 7.11            | 41.89                    | 42.76          | 74.00               | -31.24          | Horizontal   |
| 5350.00         | 43.02               | 35.37               | 7.11            | 41.89                    | 43.61          | 74.00               | -30.39          | Vertical     |
| Test channel    |                     | Lowest              |                 |                          | Level          |                     | Average         |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5350.00         | 32.67               | 35.37               | 7.11            | 41.89                    | 33.26          | 54.00               | -20.74          | Horizontal   |
| 5350.00         | 33.12               | 35.37               | 7.11            | 41.89                    | 33.71          | 54.00               | -20.29          | Vertical     |
| Test channel    |                     | Lowest              |                 |                          | Level          |                     | Peak            |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5460.00         | 42.28               | 34.90               | 7.18            | 41.85                    | 42.51          | 74.00               | -31.49          | Horizontal   |
| 5460.00         | 41.23               | 34.90               | 7.18            | 41.85                    | 41.46          | 74.00               | -32.54          | Vertical     |
| Test channel    |                     | Lowest              |                 |                          | Level          |                     | Average         |              |
| Frequency (MHz) | Read Level (dBuV/m) | Antenna Factor (dB) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 5460.00         | 32.10               | 34.90               | 7.18            | 41.85                    | 32.33          | 54.00               | -21.67          | Horizontal   |
| 5460.00         | 31.27               | 34.90               | 7.18            | 41.85                    | 31.50          | 54.00               | -22.50          | Vertical     |

#### Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

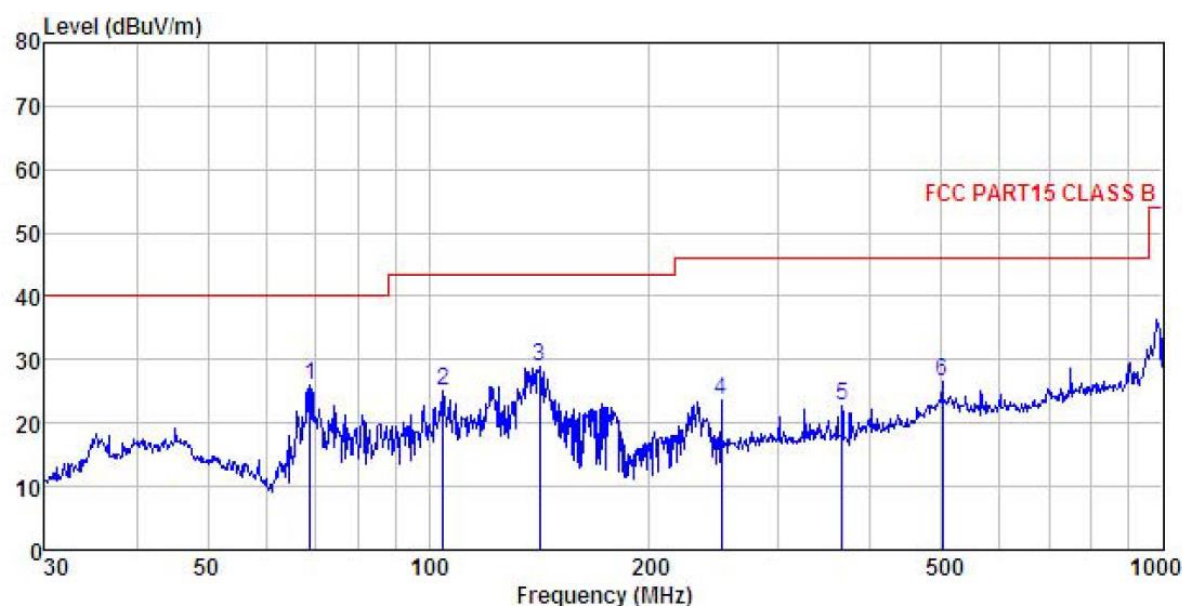
## 6.7.2 Unwanted Emissions out of the Restricted Bands

|                       |  |            |                    |        |                  |
|-----------------------|--|------------|--------------------|--------|------------------|
| Test Requirement:     | FCC Part15 C Section 15.209 and 15.205   |            |                    |        |                  |
| Test Method:          | ANSI C63.10:2013   |            |                    |        |                  |
| Test Frequency Range: | 30MHz to 40GHz   |            |                    |        |                  |
| Test site:            | Measurement Distance: 3m   |            |                    |        |                  |
| Receiver setup:       | Frequency  | Detector   | RBW                | VBW    | Remark           |
|                       | 30MHz-1GHz   | Quasi-peak | 100kHz             | 300kHz | Quasi-peak Value |
|                       | Above 1GHz   | Peak       | 1MHz               | 3MHz   | Peak Value       |
| Limit:                | Frequency  |            | Limit (dBuV/m @3m) |        | Remark           |
|                       | 30MHz-88MHz  |            | 40.0               |        | Quasi-peak Value |
|                       | 88MHz-216MHz   |            | 43.5               |        | Quasi-peak Value |
|                       | 216MHz-960MHz  |            | 46.0               |        | Quasi-peak Value |
|                       | 960MHz-1GHz  |            | 54.0               |        | Quasi-peak Value |
|                       | Frequency  |            | Limit (dBm/MHz)    |        | Remark           |
|                       | Above 1GHz   |            | 68.20              |        | Peak Value       |
|                       |  |            | 54.00              |        | Average Value    |
|                       | Remark:  |            |                    |        |                  |
|                       | 1. Above 1GHz limit:<br>E[dBuV/m] = EIRP[dBm] + 95.2=68.2 dBuV/m,for EIPR[dBm]=-27dBm.   |            |                    |        |                  |
| Test Procedure:       | <div>1. The EUT was placed on the top of a rotating table 0.8m (below 1GHz) /1.5m (above 1GHz) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.</div> <div>2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</div> <div>3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</div> <div>4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading.</div> <div>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</div> <div>6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified andthen reported in a data sheet.</div> |            |                    |        |                  |

|                          |  |
|--------------------------|--|
| <p>Test setup:</p>       | <p>Below 1GHz</p>  <p>Above 1GHz</p>  |
| <p>Test Instruments:</p> | <p>Refer to section 5.8 for details</p>  |
| <p>Test mode:</p>        | <p>Refer to section 5.3 for details</p>  |
| <p>Test results:</p>     | <p>Passed</p>  |

**MIMO TX mode****Below 1GHz**

Horizontal:

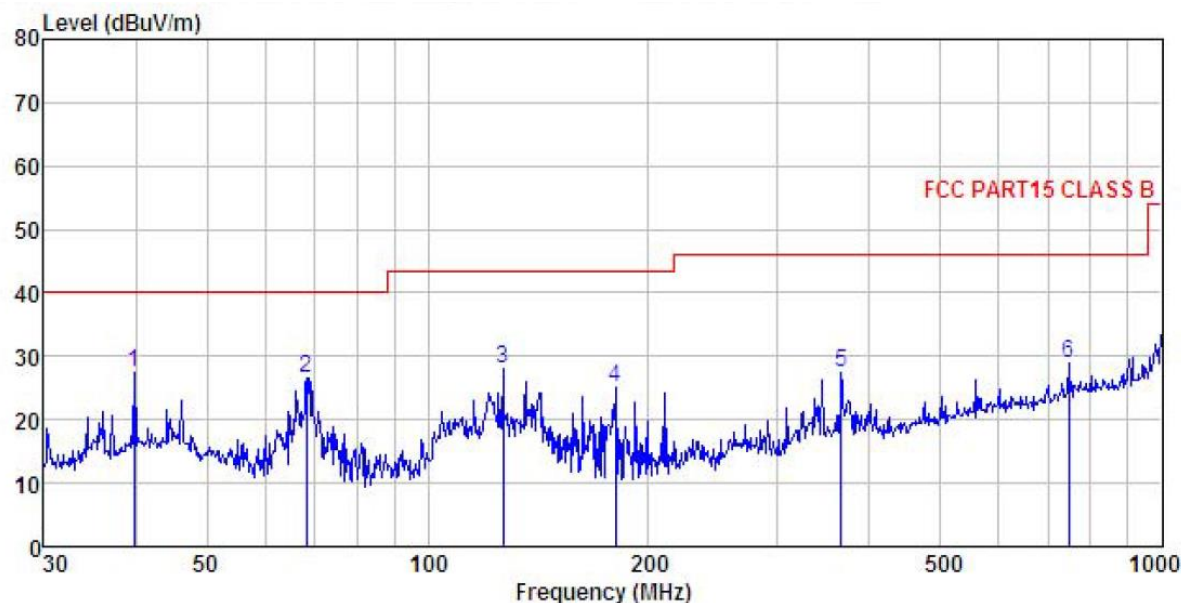


Site : 3m chamber  
 Condition : FCC PART15 CLASS B 3m VULB9163(30M3G) HORIZONTAL  
 Pro :  
 EUT : Broadband Digital Transmission System  
 Model : Rambutan-I  
 Test mode : TX mode  
 Power Rating : AC120V/60Hz  
 Environment : Temp:25.5°C Humi:55%  
 Test Engineer: MT  
 Remark : 5Gwifi(10 dBi ant)

|   | Freq    | ReadAntenna | Cable  | Preamp | Limit  | Over   |        |
|---|---------|-------------|--------|--------|--------|--------|--------|
|   |         | Level       | Factor | Loss   | Factor | Line   | Limit  |
|   | MHz     | dBuV        | dB/m   | dB     | dB     | dBuV/m | dBuV/m |
|   |         |             |        |        |        |        | dB     |
| 1 | 68.872  | 46.92       | 7.20   | 1.49   | 29.73  | 25.88  | 40.00  |
| 2 | 104.536 | 41.87       | 10.62  | 1.99   | 29.50  | 24.98  | 43.50  |
| 3 | 141.826 | 44.14       | 11.56  | 2.42   | 29.26  | 28.86  | 43.50  |
| 4 | 250.301 | 37.42       | 11.88  | 2.81   | 28.54  | 23.57  | 46.00  |
| 5 | 365.539 | 33.67       | 14.72  | 3.09   | 28.63  | 22.85  | 46.00  |
| 6 | 501.179 | 35.00       | 16.80  | 3.63   | 28.96  | 26.47  | 46.00  |



Vertical:



Site : 3m chamber  
 Condition : FCC PART15 CLASS B 3m VULB9163(30M3G) VERTICAL  
 Pro :  
 EUT : Broadband Digital Transmission System  
 Model : Rambutan-I  
 Test mode : TX mode  
 Power Rating : AC120V/60Hz  
 Environment : Temp:25.5°C Humi:55%  
 Test Engineer: MT  
 Remark : 5Gwifi(10 dBi ant)

|   | Freq    | ReadAntenna | Cable | Preamp | Limit | Over   |                 |
|---|---------|-------------|-------|--------|-------|--------|-----------------|
|   | Level   | Factor      | Loss  | Factor | Line  | Limit  | Remark          |
|   | MHz     | dBuV        | dB/m  | dB     | dB    | dBuV/m | dB              |
| 1 | 39.854  | 39.34       | 16.90 | 1.21   | 29.90 | 27.55  | 40.00 -12.45 QP |
| 2 | 68.391  | 47.61       | 7.30  | 1.46   | 29.73 | 26.64  | 40.00 -13.36 QP |
| 3 | 126.772 | 42.89       | 12.15 | 2.25   | 29.35 | 27.94  | 43.50 -15.56 QP |
| 4 | 180.017 | 42.05       | 9.20  | 2.73   | 28.97 | 25.01  | 43.50 -18.49 QP |
| 5 | 365.539 | 38.26       | 14.72 | 3.09   | 28.63 | 27.44  | 46.00 -18.56 QP |
| 6 | 747.483 | 32.80       | 20.32 | 4.35   | 28.49 | 28.98  | 46.00 -17.02 QP |



## Above 1GHz

## Band 1:

| 802.11a mode Lowest channel (Peak Value)    |                   |                       |                 |                    |                |                     |                 |              |
|---|-------------------|-----------------------|-----------------|--------------------|----------------|---------------------|-----------------|--------------|
| Frequency (MHz)                             | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 10360.00                                    | 49.57             | 40.10                 | 9.82            | 41.97              | 57.52          | 68.20               | -10.68          | Vertical     |
| 10360.00                                    | 48.74             | 40.10                 | 9.82            | 41.97              | 56.69          | 68.20               | -11.51          | Horizontal   |
| 802.11a mode Lowest channel (AverageValue)  |                   |                       |                 |                    |                |                     |                 |              |
| Frequency (MHz)                             | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 10360.00                                    | 40.25             | 40.10                 | 9.82            | 41.97              | 48.20          | 54.00               | -5.80           | Vertical     |
| 10360.00                                    | 40.02             | 40.10                 | 9.82            | 41.97              | 47.97          | 54.00               | -6.03           | Horizontal   |
| 802.11a mode Middle channel (Peak Value)    |                   |                       |                 |                    |                |                     |                 |              |
| Frequency (MHz)                             | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 10400.00                                    | 50.12             | 40.00                 | 9.85            | 41.95              | 58.02          | 68.20               | -10.18          | Vertical     |
| 10400.00                                    | 50.03             | 40.00                 | 9.85            | 41.95              | 57.93          | 68.20               | -10.27          | Horizontal   |
| 802.11a mode Middle channel (AverageValue)  |                   |                       |                 |                    |                |                     |                 |              |
| Frequency (MHz)                             | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 10400.00                                    | 40.07             | 40.00                 | 9.85            | 41.95              | 47.97          | 54.00               | -6.03           | Vertical     |
| 10400.00                                    | 39.58             | 40.00                 | 9.85            | 41.95              | 47.48          | 54.00               | -6.52           | Horizontal   |
| 802.11a mode Highest channel (Peak Value)   |                   |                       |                 |                    |                |                     |                 |              |
| Frequency (MHz)                             | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 10480.00                                    | 50.17             | 39.70                 | 9.96            | 41.88              | 57.95          | 68.20               | -10.25          | Vertical     |
| 10480.00                                    | 49.76             | 39.70                 | 9.96            | 41.88              | 57.54          | 68.20               | -10.66          | Horizontal   |
| 802.11a mode Highest channel (AverageValue) |                   |                       |                 |                    |                |                     |                 |              |
| Frequency (MHz)                             | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 10480.00                                    | 40.23             | 39.70                 | 9.96            | 41.88              | 48.01          | 54.00               | -5.99           | Vertical     |
| 10480.00                                    | 40.18             | 39.70                 | 9.96            | 41.88              | 47.96          | 54.00               | -6.04           | Horizontal   |

## Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

| 802.11n20 mode Lowest channel (Peak Value)    |                   |                       |                 |                    |                |                     |                 |              |
|---|-------------------|-----------------------|-----------------|--------------------|----------------|---------------------|-----------------|--------------|
| Frequency (MHz)                               | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 10360.00                                      | 48.67             | 40.10                 | 9.82            | 41.97              | 56.62          | 68.20               | -11.58          | Vertical     |
| 10360.00                                      | 49.21             | 40.10                 | 9.82            | 41.97              | 57.16          | 68.20               | -11.04          | Horizontal   |
| 802.11n20 mode Lowest channel (AverageValue)  |                   |                       |                 |                    |                |                     |                 |              |
| Frequency (MHz)                               | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 10360.00                                      | 39.57             | 40.10                 | 9.82            | 41.97              | 47.52          | 54.00               | -6.48           | Vertical     |
| 10360.00                                      | 40.43             | 40.10                 | 9.82            | 41.97              | 48.38          | 54.00               | -5.62           | Horizontal   |
| 802.11n20 mode Middle channel (Peak Value)    |                   |                       |                 |                    |                |                     |                 |              |
| Frequency (MHz)                               | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 10400.00                                      | 50.02             | 40.00                 | 9.85            | 41.95              | 57.92          | 68.20               | -10.28          | Vertical     |
| 10400.00                                      | 49.78             | 40.00                 | 9.85            | 41.95              | 57.68          | 68.20               | -10.52          | Horizontal   |
| 802.11n20 mode Middle channel (AverageValue)  |                   |                       |                 |                    |                |                     |                 |              |
| Frequency (MHz)                               | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 10400.00                                      | 41.25             | 40.00                 | 9.85            | 41.95              | 49.15          | 54.00               | -4.85           | Vertical     |
| 10400.00                                      | 40.18             | 40.00                 | 9.85            | 41.95              | 48.08          | 54.00               | -5.92           | Horizontal   |
| 802.11n20 mode Highest channel (Peak Value)   |                   |                       |                 |                    |                |                     |                 |              |
| Frequency (MHz)                               | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 10480.00                                      | 50.11             | 39.70                 | 9.96            | 41.88              | 57.89          | 68.20               | -10.31          | Vertical     |
| 10480.00                                      | 50.06             | 39.70                 | 9.96            | 41.88              | 57.84          | 68.20               | -10.36          | Horizontal   |
| 802.11n20 mode Highest channel (AverageValue) |                   |                       |                 |                    |                |                     |                 |              |
| Frequency (MHz)                               | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 10480.00                                      | 41.12             | 39.70                 | 9.96            | 41.88              | 48.90          | 54.00               | -5.10           | Vertical     |
| 10480.00                                      | 40.27             | 39.70                 | 9.96            | 41.88              | 48.05          | 54.00               | -5.95           | Horizontal   |

**Remark:**

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

| 802.11n40 mode Lowest channel (Peak Value)    |                   |                       |                 |                    |                |                     |                 |              |
|---|-------------------|-----------------------|-----------------|--------------------|----------------|---------------------|-----------------|--------------|
| Frequency (MHz)                               | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 10380.00                                      | 48.96             | 40.00                 | 9.85            | 41.95              | 56.86          | 68.20               | -11.34          | Vertical     |
| 10380.00                                      | 48.52             | 40.00                 | 9.85            | 41.95              | 56.42          | 68.20               | -11.78          | Horizontal   |
| 802.11n40 mode Lowest channel (AverageValue)  |                   |                       |                 |                    |                |                     |                 |              |
| Frequency (MHz)                               | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 10380.00                                      | 39.75             | 40.00                 | 9.85            | 41.95              | 47.65          | 54.00               | -6.35           | Vertical     |
| 10380.00                                      | 38.87             | 40.00                 | 9.85            | 41.95              | 46.77          | 54.00               | -7.23           | Horizontal   |
| 802.11n40 mode Highest channel (Peak Value)   |                   |                       |                 |                    |                |                     |                 |              |
| Frequency (MHz)                               | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 10460.00                                      | 49.52             | 39.80                 | 9.92            | 41.90              | 57.34          | 68.20               | -10.86          | Vertical     |
| 10460.00                                      | 50.01             | 39.80                 | 9.92            | 41.90              | 57.83          | 68.20               | -10.37          | Horizontal   |
| 802.11n40 mode Highest channel (AverageValue) |                   |                       |                 |                    |                |                     |                 |              |
| Frequency (MHz)                               | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 10460.00                                      | 39.24             | 39.80                 | 9.92            | 41.90              | 47.06          | 54.00               | -6.94           | Vertical     |
| 10460.00                                      | 40.03             | 39.80                 | 9.92            | 41.90              | 47.85          | 54.00               | -6.15           | Horizontal   |

**Remark:**

1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

**Band 4:**

| 802.11a mode Lowest channel (Peak Value)     |                   |                       |                 |                          |                |                     |                 |              |
|--|-------------------|-----------------------|-----------------|--------------------------|----------------|---------------------|-----------------|--------------|
| Frequency (MHz)                              | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 11490.00                                     | 47.74             | 41.50                 | 10.81           | 42.29                    | 57.76          | 74.00               | -16.24          | Vertical     |
| 11490.00                                     | 46.58             | 41.50                 | 10.81           | 42.29                    | 56.60          | 74.00               | -17.40          | Horizontal   |
| 802.11a mode Lowest channel (Average Value)  |                   |                       |                 |                          |                |                     |                 |              |
| Frequency (MHz)                              | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 11490.00                                     | 36.24             | 41.50                 | 10.81           | 42.29                    | 46.26          | 54.00               | -7.74           | Vertical     |
| 11490.00                                     | 37.47             | 41.50                 | 10.81           | 42.29                    | 47.49          | 54.00               | -6.51           | Horizontal   |
| 802.11a mode Middle channel (Peak Value)     |                   |                       |                 |                          |                |                     |                 |              |
| Frequency (MHz)                              | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 11570.00                                     | 45.91             | 41.38                 | 10.78           | 42.27                    | 55.80          | 74.00               | -18.20          | Vertical     |
| 11570.00                                     | 46.45             | 41.38                 | 10.78           | 42.27                    | 56.34          | 74.00               | -17.66          | Horizontal   |
| 802.11a mode Middle channel (Average Value)  |                   |                       |                 |                          |                |                     |                 |              |
| Frequency (MHz)                              | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 11570.00                                     | 36.15             | 41.38                 | 10.78           | 42.27                    | 46.04          | 54.00               | -7.96           | Vertical     |
| 11570.00                                     | 35.71             | 41.38                 | 10.78           | 42.27                    | 45.60          | 54.00               | -8.40           | Horizontal   |
| 802.11a mode Highest channel (Peak Value)    |                   |                       |                 |                          |                |                     |                 |              |
| Frequency (MHz)                              | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 11650.00                                     | 46.23             | 41.26                 | 10.76           | 42.26                    | 55.99          | 74.00               | -18.01          | Vertical     |
| 11650.00                                     | 46.31             | 41.26                 | 10.76           | 42.26                    | 56.07          | 74.00               | -17.93          | Horizontal   |
| 802.11a mode Highest channel (Average Value) |                   |                       |                 |                          |                |                     |                 |              |
| Frequency (MHz)                              | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamplifier Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 11650.00                                     | 36.74             | 41.26                 | 10.76           | 42.26                    | 46.50          | 54.00               | -7.50           | Vertical     |
| 11650.00                                     | 35.78             | 41.26                 | 10.76           | 42.26                    | 45.54          | 54.00               | -8.46           | Horizontal   |

**Remark:**

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

| 802.11n20 mode Lowest channel (Peak Value)     |                   |                       |                 |                    |                |                     |                 |              |
|--|-------------------|-----------------------|-----------------|--------------------|----------------|---------------------|-----------------|--------------|
| Frequency (MHz)                                | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 11490.00                                       | 47.26             | 41.50                 | 10.81           | 42.29              | 57.28          | 74.00               | -16.72          | Vertical     |
| 11490.00                                       | 47.11             | 41.50                 | 10.81           | 42.29              | 57.13          | 74.00               | -16.87          | Horizontal   |
| 802.11n20 mode Lowest channel (Average Value)  |                   |                       |                 |                    |                |                     |                 |              |
| Frequency (MHz)                                | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 11490.00                                       | 36.64             | 41.50                 | 10.81           | 42.29              | 46.66          | 54.00               | -7.34           | Vertical     |
| 11490.00                                       | 37.59             | 41.50                 | 10.81           | 42.29              | 47.61          | 54.00               | -6.39           | Horizontal   |
| 802.11n20 mode Middle channel (Peak Value)     |                   |                       |                 |                    |                |                     |                 |              |
| Frequency (MHz)                                | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 11570.00                                       | 45.25             | 41.38                 | 10.78           | 42.27              | 55.14          | 74.00               | -18.86          | Vertical     |
| 11570.00                                       | 46.81             | 41.38                 | 10.78           | 42.27              | 56.70          | 74.00               | -17.30          | Horizontal   |
| 802.11n20 mode Middle channel (Average Value)  |                   |                       |                 |                    |                |                     |                 |              |
| Frequency (MHz)                                | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 11570.00                                       | 36.07             | 41.38                 | 10.78           | 42.27              | 45.96          | 54.00               | -8.04           | Vertical     |
| 11570.00                                       | 35.42             | 41.38                 | 10.78           | 42.27              | 45.31          | 54.00               | -8.69           | Horizontal   |
| 802.11n20 mode Highest channel (Peak Value)    |                   |                       |                 |                    |                |                     |                 |              |
| Frequency (MHz)                                | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 11650.00                                       | 46.46             | 41.26                 | 10.76           | 42.26              | 56.22          | 74.00               | -17.78          | Vertical     |
| 11650.00                                       | 46.71             | 41.26                 | 10.76           | 42.26              | 56.47          | 74.00               | -17.53          | Horizontal   |
| 802.11n20 mode Highest channel (Average Value) |                   |                       |                 |                    |                |                     |                 |              |
| Frequency (MHz)                                | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 11650.00                                       | 37.15             | 41.26                 | 10.76           | 42.26              | 46.91          | 54.00               | -7.09           | Vertical     |
| 11650.00                                       | 36.26             | 41.26                 | 10.76           | 42.26              | 46.02          | 54.00               | -7.98           | Horizontal   |

## Remark:

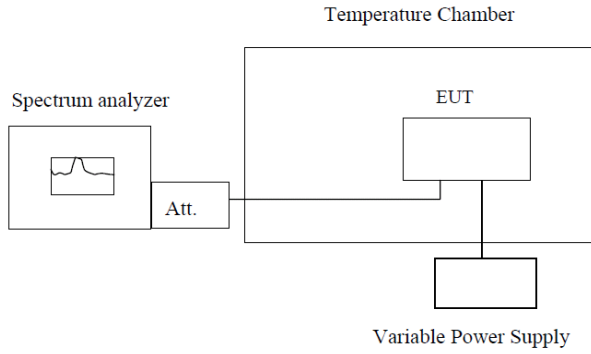
1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamp Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

| 802.11n40 mode Lowest channel (Peak Value)     |                   |                       |                 |                    |                |                     |                 |              |
|--|-------------------|-----------------------|-----------------|--------------------|----------------|---------------------|-----------------|--------------|
| Frequency (MHz)                                | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 11510.00                                       | 45.78             | 41.50                 | 10.81           | 42.29              | 55.80          | 74.00               | -18.20          | Vertical     |
| 11510.00                                       | 46.51             | 41.50                 | 10.81           | 42.29              | 56.53          | 74.00               | -17.47          | Horizontal   |
| 802.11n40 mode Lowest channel (Average Value)  |                   |                       |                 |                    |                |                     |                 |              |
| Frequency (MHz)                                | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 11510.00                                       | 35.60             | 41.50                 | 10.81           | 42.29              | 45.62          | 54.00               | -8.38           | Vertical     |
| 11510.00                                       | 35.39             | 41.50                 | 10.81           | 42.29              | 45.41          | 54.00               | -8.59           | Horizontal   |
| 802.11n40 mode Highest channel (Peak Value)    |                   |                       |                 |                    |                |                     |                 |              |
| Frequency (MHz)                                | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 11590.00                                       | 46.74             | 41.32                 | 10.77           | 42.27              | 56.56          | 74.00               | -17.44          | Vertical     |
| 11590.00                                       | 45.31             | 41.32                 | 10.77           | 42.27              | 55.13          | 74.00               | -18.87          | Horizontal   |
| 802.11n40 mode Highest channel (Average Value) |                   |                       |                 |                    |                |                     |                 |              |
| Frequency (MHz)                                | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
| 11590.00                                       | 35.52             | 41.32                 | 10.77           | 42.27              | 45.34          | 54.00               | -8.66           | Vertical     |
| 11590.00                                       | 36.11             | 41.32                 | 10.77           | 42.27              | 45.93          | 54.00               | -8.07           | Horizontal   |

## Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

## 6.8 Frequency stability

|                   |   |
|-------------------|---|
| Test Requirement: | FCC Part15 E Section 15.407 (g)   |
| Limit:            | Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.  |
| Test setup:       |  <p><b>Note :</b> Measurement setup for testing on Antenna connector</p>  |
| Test procedure:   | <ol style="list-style-type: none"> <li>1. The EUT is installed in an environment test chamber with external power source.</li> <li>2. Set the chamber to operate at 50 centigrade and external power source to output at nominal voltage of EUT.</li> <li>3. A sufficient stabilization period at each temperature is used prior to each frequency measurement.</li> <li>4. When temperature is stabled, measure the frequency stability.</li> <li>5. The test shall be performed under -30 to 50 centigrade and 85 to 115 percent of the nominal voltage. Change setting of chamber and external power source to complete all conditions.</li> </ol> |
| Test Instruments: | Refer to section 5.8 for details  |
| Test mode:        | Refer to section 5.3 for details, and all channels have been tested, only shows the worst channel data in this report.  |
| Test results:     | Passed  |

Measurement Data (the worst channel):

**Band 1:**

**Voltage vs. Frequency Stability (Lowest channel=5180MHz)**

| Test conditions |             | Frequency(MHz) | Max. Deviation (ppm) |
|-----------------|-------------|----------------|----------------------|
| Temp(°C)        | Voltage(dc) |                |                      |
| 20              | 5.75V       | 5179.963759    | 7.00                 |
|                 | 5.00V       | 5179.974590    | 4.91                 |
|                 | 4.25V       | 5179.966329    | 6.50                 |

**Temperature vs. Frequency Stability (Lowest channel=5180MHz)**

| Test conditions |          | Frequency(MHz) | Max. Deviation (ppm) |
|-----------------|----------|----------------|----------------------|
| Voltage(dc)     | Temp(°C) |                |                      |
| 5V              | -20      | 5179.979520    | 3.95                 |
|                 | -10      | 5179.974950    | 4.84                 |
|                 | 0        | 5179.986301    | 2.64                 |
|                 | 10       | 5179.963974    | 6.95                 |
|                 | 20       | 5179.952890    | 9.09                 |
|                 | 30       | 5179.947810    | 10.08                |
|                 | 40       | 5179.969520    | 5.88                 |
|                 | 50       | 5179.974852    | 4.85                 |

**Band 4:**

**Voltage vs. Frequency Stability (Lowest channel=5745MHz)**

| Test conditions |                   | Frequency(MHz) | Max. Deviation (ppm) |
|-----------------|-------------------|----------------|----------------------|
| Temp(°C)        | Voltage(AC /60Hz) |                |                      |
| 20              | 5.75V             | 5744.974960    | 4.36                 |
|                 | 5.00V             | 5744.976985    | 4.01                 |
|                 | 4.25V             | 5744.974855    | 4.38                 |

**Temperature vs. Frequency Stability (Lowest channel=5745MHz)**

| Test conditions   |          | Frequency(MHz) | Max. Deviation (ppm) |
|-------------------|----------|----------------|----------------------|
| Voltage(AC /60Hz) | Temp(°C) |                |                      |
| 5V                | -20      | 5744.969524    | 5.30                 |
|                   | -10      | 5744.974855    | 4.38                 |
|                   | 0        | 5744.979584    | 3.55                 |
|                   | 10       | 5744.985970    | 2.44                 |
|                   | 20       | 5744.987451    | 2.18                 |
|                   | 30       | 5744.979881    | 3.50                 |
|                   | 40       | 5744.979633    | 3.55                 |
|                   | 50       | 5744.989650    | 1.80                 |