



# TEST REPORT

Report Number : A-007-17-C

Date of Issue: 13 March 2018

FCC Rules and Regulations Part 15 Subpart E Unlicensed NII devices.

This test report is to certify that the device was tested according to the requirements of the above.  
The results of this report should not be construed to imply compliance of devices other than the sample tested.  
Without the laboratory approval by the documents, this report should not be copied in part.

## 1. Applicant

Company Name : Funai Electric Co., Ltd.  
Mailing Address : 7-1, 7-chome, Nakagaito, Daito, Osaka 574-0013, Japan

## 2. Identification of Tested Device

Type of Device : Transmitter  
FCC ID : ADTU9W33  
Device Name : WiFi Module  
Model Number : U9W33  
Serial Number : T377100003  
Trade Name : FUNAI  
Type of Test : ☐ Production ☒ Pre-production ☐ Prototype

## 3. Test Items

|                                   |                                          |                               |                                              |
|-----------------------------------|------------------------------------------|-------------------------------|----------------------------------------------|
| AC Power Line Conducted Emission  | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail | <input type="checkbox"/> N/A                 |
| Emission Bandwidth                | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail | <input type="checkbox"/> N/A                 |
| Maximum Conducted Output Power    | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail | <input type="checkbox"/> N/A                 |
| Peak Power Spectral Density       | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail | <input type="checkbox"/> N/A                 |
| Spurious Emission                 | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail | <input type="checkbox"/> N/A                 |
| Frequency Stability               | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail | <input type="checkbox"/> N/A                 |
| U-NII Detection Bandwidth         | <input type="checkbox"/> Pass            | <input type="checkbox"/> Fail | <input checked="" type="checkbox"/> N/A (*1) |
| Channel Availability Check Time   | <input type="checkbox"/> Pass            | <input type="checkbox"/> Fail | <input checked="" type="checkbox"/> N/A (*1) |
| Channel Closing Transmission Time | <input type="checkbox"/> Pass            | <input type="checkbox"/> Fail | <input checked="" type="checkbox"/> N/A (*1) |
| Channel Move Time                 | <input type="checkbox"/> Pass            | <input type="checkbox"/> Fail | <input checked="" type="checkbox"/> N/A (*1) |
| Non-Occupancy Period              | <input type="checkbox"/> Pass            | <input type="checkbox"/> Fail | <input checked="" type="checkbox"/> N/A (*1) |
| Statistical Performance Check     | <input type="checkbox"/> Pass            | <input type="checkbox"/> Fail | <input checked="" type="checkbox"/> N/A (*1) |

Refer the below reason(s) with respect to the decision and justification not to test.

(\*1) EUT Specifications (\*2) Request of Applicant (\*3) According to Test Plan

KEC Electronic Industry Development Center Testing Division  
3-2-2, Hikari-dai, Seika-cho, Soraku-gun, Kyoto 619-0237 Japan

## Test Engineer(s)

Naoki Norimoto



VLAC-005

Approved by

Ikuya Minematsu / Group Manager

Table of Contents

|                                                                                                           |           |
|-----------------------------------------------------------------------------------------------------------|-----------|
| <b>1. REVISION HISTORY .....</b>                                                                          | <b>3</b>  |
| <b>2. LABORATORY INFORMATION .....</b>                                                                    | <b>4</b>  |
| 2.1. Laboratory Accreditation .....                                                                       | 4         |
| 2.2. Test Facility .....                                                                                  | 4         |
| 2.3. Measurement Uncertainty .....                                                                        | 4         |
| <b>3. GENERAL INFORMATION .....</b>                                                                       | <b>5</b>  |
| 3.1. Product Description .....                                                                            | 5         |
| <b>4. TESTED SYSTEM .....</b>                                                                             | <b>8</b>  |
| 4.1. Reference Rule and Specification .....                                                               | 8         |
| 4.2. Date of Test .....                                                                                   | 8         |
| 4.3. Deviation of Standard .....                                                                          | 8         |
| 4.4. Test Mode .....                                                                                      | 9         |
| 4.5. Block Diagram of TEST System .....                                                                   | 10        |
| 4.6. List of Test System .....                                                                            | 10        |
| 4.7. List of Cables .....                                                                                 | 10        |
| <b>5. AC POWER LINE CONDUCTED EMISSION MEASUREMENT .....</b>                                              | <b>11</b> |
| 5.1. Test Procedure .....                                                                                 | 11        |
| 5.2. Test Software List .....                                                                             | 11        |
| 5.3. Test Results .....                                                                                   | 12        |
| <b>6. EMISSION BANDWIDTH .....</b>                                                                        | <b>14</b> |
| 6.1. Test Procedure .....                                                                                 | 14        |
| 6.2. Test Results of 26dB Emission Bandwidth .....                                                        | 15        |
| 6.3. Test Results of 6dB Emission Bandwidth .....                                                         | 22        |
| <b>7. MAXIMUM PEAK OUTPUT POWER .....</b>                                                                 | <b>27</b> |
| 7.1. Test Procedure .....                                                                                 | 27        |
| 7.2. Test Results .....                                                                                   | 27        |
| <b>8. POWER SPECTRAL DENSITY .....</b>                                                                    | <b>34</b> |
| 8.1. Test Procedure .....                                                                                 | 34        |
| 8.2. Test Results .....                                                                                   | 35        |
| <b>9. SPURIOUS EMISSION .....</b>                                                                         | <b>51</b> |
| 9.1. Test Procedure .....                                                                                 | 51        |
| 9.2. Test Software List .....                                                                             | 51        |
| 9.3. Test Results .....                                                                                   | 52        |
| <b>10.FREQUENCY STABILITY .....</b>                                                                       | <b>88</b> |
| 10.1. Test Procedure .....                                                                                | 88        |
| 10.2. Test Results .....                                                                                  | 89        |
| <b>11.TEST EQUIPMENT .....</b>                                                                            | <b>92</b> |
| <b>APPENDIX A (DECLARATION OF COMPLIANCE TO MAXIMUM PERMISSIBLE EXPOSURE<br/>LIMITS FOR HUMANS) .....</b> | <b>94</b> |
| <b>APPENDIX B Photographs of EUT System Configuration .....</b>                                           | <b>95</b> |



## 1. REVISION HISTORY

| Report Version | Page | Description             | Date of Issue    | Status |
|----------------|------|-------------------------|------------------|--------|
| A              | -    | Initial issue of report | 14 December 2017 | VOID   |
| B              | 63   | Clerical error          | 14 December 2017 | VOID   |
| C              | 76   | Clerical error          | 5 March 2018     | VOID   |
| D              | 63   | Clerical error          | 13 March 2018    |        |
|                |      |                         |                  |        |

Note: The previous version listed above as “VOID” is invalid.

## 2. LABORATORY INFORMATION

### 2.1. Laboratory Accreditation

The KEC has been accredited by the following organizations based on their criteria for testing laboratory (ISO/IEC 17025).

(1) Voluntary EMC Laboratory Accreditation Center Inc. (VLAC) : Accreditation Number: VLAC-005

### 2.2. Test Facility

All tests described in this report were performed by:

Name: KEC Electronic Industry Development Center  
Testing Division

Address: 3-2-2, Hikari-dai, Seika-cho, Soraku-gun, Kyoto 619-0237 Japan

Anechoic Chamber : ☐ No.1 ☐ No.2 ☐ No.3 ☐ No.6 ☐ No.7 ☐ No.8  
☐ No.9 ☐ No.10 ☒ No.11 ☒ No.12 ☐ No.13 ☒ No.14  
 Shielded Room : ☐ No.1 ☐ No.7 ☐ No.8 ☒ No.9 ☐ No.10  
 Harmonic Current Meas. Room : ☐

### 2.3. Measurement Uncertainty

The result of a measurement is only an approximation or estimate of the value of a specific quantity. And thus the measurand is complete only when a statement of uncertainty is given.

KEC quotes Measurement Uncertainty (U) as follows.

|                                                                                              |                          |
|----------------------------------------------------------------------------------------------|--------------------------|
| Frequency Range Measurement (Frequency Band measurement)                                     | +/- 3.0 %                |
| Time Base Measurement (Hopping dwell time)                                                   | +/- 2. 4%                |
| Carrier Frequency Measurement (Frequency measurement)<br>EN300 328, EM301 893, FCC Part 15 C | +/- 2.0×10 <sup>-7</sup> |
| Carrier Frequency Measurement (Frequency measurement) EN300 330                              | +/- 1.5×10 <sup>-7</sup> |
| Power Density Measurement (Spectrum Analyzer Method)                                         | +/- 0.6 dB               |
| RF Output Power (e.i.r.p) Measurement (Power Meter Method)                                   | +/- 1.1 dB               |
| Conducted Spurious Measurement (9kHz–26.5GHz)                                                | +/- 0.9 dB               |
| Conducted Spurious Measurement (26.5GHz–40GHz)                                               | +/- 1.2 dB               |
| Effective Radiated Power Measurement (30–200MHz)                                             | +/- 3.9 dB               |
| Effective Radiated Power Measurement (200–1000MHz)                                           | +/- 3.9 dB               |
| Effective Radiated Power Measurement (1–12.75GHz)                                            | +/- 4.2 dB               |
| Effective Radiated Power Measurement (12.75–18.0GHz)                                         | +/- 4.7 dB               |
| Effective Radiated Power Measurement (18.0–40.0GHz)                                          | +/- 4.6 dB               |
| Temperature control on thermostatic chamber test                                             | +/- 1.4 °C               |

Expiration Date : 2018/9/30

The above values are calculated as Expanded Uncertainty (k=2 [Approximately 95%]).

[Note]

If the measured result is below the specification limit and a margin is less than the above measurement uncertainty, it is impossible to determine compliance at a level of confidence of approximately 95%. However, the measured result indicates high probability that the tested device complies with the specification limit.

### 3. GENERAL INFORMATION

#### 3.1. Product Description

##### (1) Technical Specifications

##### (a) Wireless-LAN 2.4GHz

|                        |                                                                                                                                                |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Type of Radio          | IEEE802.11b<br>IEEE802.11g<br>IEEE802.11n HT20, HT40                                                                                           |
| Frequency of Operation | IEEE802.11b: 2412MHz - 2462MHz<br>IEEE802.11g: 2412MHz - 2462MHz<br>IEEE802.11n HT20: 2412MHz - 2462MHz<br>IEEE802.11n HT40: 2422MHz - 2452MHz |
| Output Power           | IEEE802.11b: 15dBm<br>IEEE802.11g: 12dBm<br>IEEE802.11n HT20: 13dBm<br>IEEE802.11n HT40: 11dBm                                                 |
| Antenna Gain           | Ant A: 1.08 dBi max<br>Ant B: 2.08 dBi max                                                                                                     |
| Antenna Type           | 1/4 lambda monopole antenna                                                                                                                    |
| Antenna Impedance      | 50ohm                                                                                                                                          |
| Modulation / Spreading | DSSS, OFDM                                                                                                                                     |
| Type of Modulation     | IEEE802.11b(DSSS): BPSK, QPSK, CCK<br>IEEE802.11g/n(OFDM): BPSK, QPSK, 16QAM, 64QAM                                                            |
| Nominal Bandwidth      | 20MHz, 40MHz                                                                                                                                   |
| Transmit Chains        | IEEE802.11b/g: 1<br>IEEE802.11n: 2                                                                                                             |

[Note]

11b/g : used only Ant A

11n : used only MIMO



## (b) Wireless-LAN 5GHz

|                            |                                                                                                               |                                         |
|----------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| Type of Radio              | IEEE802.11a<br>IEEE802.11n HT20, HT40<br>IEEE802.11ac HT20, HT40, HT 80                                       |                                         |
| Frequency of Operation     | IEEE802. 11a /<br>IEEE802.11n HT20 /<br>IEEE802.11ac HT20                                                     | 5180MHz - 5240MHz,<br>5745MHz - 5825MHz |
|                            | IEEE802. 11n HT40 /<br>IEEE802.11ac HT40                                                                      | 5190MHz - 5230MHz,<br>5755MHz - 5795MHz |
|                            | IEEE802. 11ac HT80                                                                                            | 5210MHz,<br>5775MHz                     |
| Output Power               | IEEE802.11a: 14dBm<br>IEEE 802.11n/ac HT20: 13dBm<br>IEEE 802.11n/ac HT40: 13dBm<br>IEEE 802.11ac HT80: 11dBm |                                         |
| Antenna Gain               | Ant A: -1.73 dBi max<br>Ant B: -0.68 dBi max                                                                  |                                         |
| Antenna Type               | 1/4 lambda monopole antenna                                                                                   |                                         |
| Antenna Impedance          | 50ohm                                                                                                         |                                         |
| Modulation                 | OFDM                                                                                                          |                                         |
| Type of Modulation         | IEEE 802.11a/n/ac(OFDM): BPSK, QPSK, 16QAM, 64QAM, 256QAM                                                     |                                         |
| Nominal Bandwidth          | 20MHz, 40MHz, 80MHz                                                                                           |                                         |
| Transmit Chains            | IEEE 802.11a:1<br>IEEE 802.11n/ac:2                                                                           |                                         |
| DFS Related Operating Mode | Client without radar detection                                                                                |                                         |

[Note]

11a : used only Ant A

11n/ac : used only MIMO



- (2) Maximum Oscillators Frequency
- Maximum local frequency : 3883.33MHz
  - Maximum generation frequency : 5825MHz
- (3) Software Version
- MT7662UQA.exe : Ver. 1.0.3.24
  - MT62UQ.sys (USB Driver) : v1.0.7.8
- (4) Firmware Version : None
- (5) Interface and Provide Terminal
- USB : USB 2.0 (voltage: 3.3V)
  - WiFi RF Antenna connector for TEST : MHF type (50 ohm)
- (6) Rated Power Supply : DC 3.3V  $\pm$ 5%  
(Test for AC 120V,60Hz (AC Adapter supply))
- (7) Power Setting
- IEEE802.11b (2.4GHz) : 15 dBm
  - IEEE802.11g (2.4GHz) : 12 dBm
  - IEEE802.11n HT20 (2.4GHz) : 13 dBm
  - IEEE802.11n HT40 (2.4GHz) : 11 dBm
  - IEEE802.11a (5GHz) : 14 dBm
  - IEEE802.11n/ac HT20 (5GHz) : 13 dBm
  - IEEE802.11n/ac HT40 (5GHz) : 13 dBm
  - IEEE802.11ac HT80 (5GHz) : 11 dBm
- (8) Antenna Type : Integral Antenna (undetachable)
- (9) Operating Temperature : 0 deg C to 60 deg C

#### 4. TESTED SYSTEM

##### 4.1. Reference Rule and Specification

|                                   |                                                                                                   |
|-----------------------------------|---------------------------------------------------------------------------------------------------|
| (1) Reference Rule and Regulation | : FCC Rule Part 15 Subpart E, Unlicensed National Information Infrastructure Devices              |
|                                   | <input checked="" type="checkbox"/> Section 15.205                                                |
|                                   | <input checked="" type="checkbox"/> Section 15.207                                                |
|                                   | <input checked="" type="checkbox"/> Section 15.209                                                |
|                                   | <input checked="" type="checkbox"/> Section 15.407 (a)(1)                                         |
|                                   | <input type="checkbox"/> Section 15.407 (a)(2)                                                    |
|                                   | <input checked="" type="checkbox"/> Section 15.407 (a)(3)                                         |
|                                   | <input checked="" type="checkbox"/> Section 15.407 (b)(1)                                         |
|                                   | <input type="checkbox"/> Section 15.407 (b)(2)                                                    |
|                                   | <input type="checkbox"/> Section 15.407 (b)(3)                                                    |
|                                   | <input checked="" type="checkbox"/> Section 15.407 (b)(4)                                         |
|                                   | <input checked="" type="checkbox"/> Section 15.407 (e)                                            |
|                                   | <input checked="" type="checkbox"/> Section 15.407 (g)                                            |
|                                   | <input type="checkbox"/> Section 15.407 (h)(1)                                                    |
|                                   | <input type="checkbox"/> Section 15.407 (h)(2)                                                    |
| (2) Test Procedure                | : ANSI C63.10-2013<br>KDB Publication No.789033 D02 General UNII Test Procedures<br>New Rules v02 |

##### 4.2. Date of Test

Receipt of Test Sample : 12 October 2017  
Condition of Test Sample : ☒ Damage is not found on the set.  
☐ Damage is found on the set. (Details are described in this report)

Test Completed on : 29 November 2017  
Condition of Test Sample : ☒ Damage is not found on the set.  
☐ Damage is found on the set. (Details are described in this report)

##### 4.3. Deviation of Standard

☒ without deviation, ☐ with deviation (details are found inside of this report)

#### 4.4. Test Mode

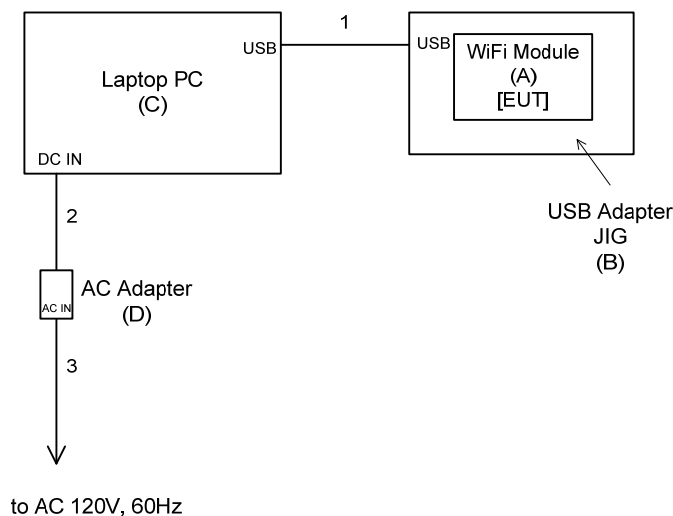
| Test Item                                                                 | Operating Mode         | Test Frequency                                             |
|---------------------------------------------------------------------------|------------------------|------------------------------------------------------------|
| AC Power Line Conducted Emission (*1)                                     | 11n-HT40               | 5755MHz                                                    |
| 6dB, 26dB Emission Bandwidth                                              | 11a/11n-HT20/11ac-HT20 | 5180MHz / 5220MHz / 5240MHz<br>5745MHz / 5785MHz / 5825MHz |
|                                                                           | 11n-HT40/11ac-HT40     | 5190MHz / 5230MHz<br>5755MHz / 5795MHz                     |
|                                                                           | 11ac-HT80              | 5210MHz / 5775MHz                                          |
| Maximum Conducted Output Power                                            | 11a/11n-HT20/11ac-HT20 | 5180MHz / 5220MHz / 5240MHz<br>5745MHz / 5785MHz / 5825MHz |
|                                                                           | 11n-HT40/11ac-HT40     | 5190MHz / 5230MHz<br>5755MHz / 5795MHz                     |
|                                                                           | 11ac-HT80              | 5210MHz / 5775MHz                                          |
| Peak Power Spectral Density                                               | 11a/11n-HT20/11ac-HT20 | 5180MHz / 5220MHz / 5240MHz<br>5745MHz / 5785MHz / 5825MHz |
|                                                                           | 11n-HT40/11ac-HT40     | 5190MHz / 5230MHz<br>5755MHz / 5795MHz                     |
|                                                                           | 11ac-HT80              | 5210MHz / 5775MHz                                          |
| Spurious Emissions / Restricted Band Edges<br>(Radiated / Conducted) (*1) | 11a/11n-HT20/11ac-HT20 | 5180MHz / 5220MHz / 5240MHz<br>5745MHz / 5785MHz / 5825MHz |
|                                                                           | 11n-HT40/11ac-HT40     | 5190MHz / 5230MHz<br>5755MHz / 5795MHz                     |
|                                                                           | 11ac-HT80              | 5210MHz / 5775MHz                                          |
| Frequency Stability                                                       | 11a/11n-HT20/11ac-HT20 | 5180MHz / 5220MHz / 5240MHz<br>5745MHz / 5785MHz / 5825MHz |
|                                                                           | 11n-HT40/11ac-HT40     | 5190MHz / 5230MHz<br>5755MHz / 5795MHz                     |
|                                                                           | 11ac-HT80              | 5210MHz / 5775MHz                                          |

| Worst Data Rate/MCS |               |                     |
|---------------------|---------------|---------------------|
| Operating Mode      | Data Rate/MCS | Worst Data Rate/MCS |
| 11a ANT A           | 6-54 Mbps     | 18 Mbps             |
| 11n-HT20 MIMO       | MCS 8-15      | MCS 11              |
| 11n-HT40 MIMO       | MCS 8-15      | MCS 8               |
| 11ac-HT20 MIMO      | MCS 0-8       | MCS 1               |
| 11ac-HT40 MIMO      | MCS 0-9       | MCS 5               |
| 11ac-HT80 MIMO      | MCS 0-9       | MCS 2               |

[Note]

- (1) The test program was prepared by the applicant.
  - (2) The power setting was determined by the applicant. (See page 7)
  - (3) The spurious emissions data of the each modes were checked in three orthogonal axes, and the data of the producing the maximum emissions were reported at each frequency.
  - (4) AC Power Line Conducted Emission and Spurious Emissions of 30MHz to 1000MHz performed in worst mode of Maximum Conducted Output Power.
- (\*1) Radiated measurement : above 30MHz, Conducted measurement : below 30MHz

#### 4.5. Block Diagram of TEST System



#### 4.6. List of Test System

| No. | Device Name     | Model Number       | Serial Number    | Trade Name | Note |
|-----|-----------------|--------------------|------------------|------------|------|
| A   | WiFi Module     | U9W33              | T377100003       | FUNAI      | EUT  |
| B   | USB Adapter JIG | U9W30XT/U9W40XT-2L | -                | -          |      |
| C   | Laptop PC       | CF-19DC1AXS        | 7GKSA56169       | Panasonic  |      |
| D   | AC Adapter      | CF-AA1632A M1      | 1632AM107508920C | Panasonic  |      |

[Note]

(1) Option of EUT

#### 4.7. List of Cables

| No. | Cable Name    | Shielded (Y/N) | Length (m) | Note                          |
|-----|---------------|----------------|------------|-------------------------------|
| 1   | USB Cable     | Y              | 1.0        |                               |
| 2   | DC Power Cord | N              | 1.3        | with one ferrite core(1-turn) |
| 3   | AC Power Cord | N              | 0.8        |                               |

[Note]

(1) Undetachable cable type

(2) Accessories cable of EUT

(3) 3-wires type, earth plug is grounded.

(4) 2-wires type

## 5. AC POWER LINE CONDUCTED EMISSION MEASUREMENT

### 5.1. Test Procedure

- (1) The EUT is placed in accordance with ANSI C63.10.
- (2) The EUT is activated as to simulate a worst data rate.
- (3) Connect the EUT's AC power cord to one Line Impedance Stabilization Network (LISN).
- (4) Any other power cord of other equipment is connected to a LISN different from the LISN used for the EUT.
- (5) Connect the spectrum analyzer (\*1) to the measuring port of the LISN for the EUT, using a calibrated coaxial cable.
- (6) To find out the maximum emission of the configuration of the EUT System, the operation mode and the position of the cables are changed, then preliminary conducted measurement are performed.
- (7) The spectrums are scanned from 150kHz to 30MHz and collect the six highest emissions minimum on the spectrum analyzer relative to the limits in the whole range.
- (8) The test receiver (\*2) is connected to the LISN for the EUT, and the six highest emissions minimum recorded above are measured.

[Note]

(\*1) Spectrum Analyzer Set Up Conditions

|                      |                         |
|----------------------|-------------------------|
| Frequency range      | : 150kHz – 30MHz        |
| Resolution bandwidth | : 10kHz (6dB Bandwidth) |
| Video bandwidth      | : 1MHz                  |
| Detector             | : Peak                  |

(\*2) Test Receiver Set Up Conditions

|                   |                                         |
|-------------------|-----------------------------------------|
| Detector function | : Quasi – Peak / Average (if necessary) |
| IF bandwidth      | : 10kHz (6dB Bandwidth)                 |

### 5.2. Test Software List

| KEC No. | Software Name                                  | Version  | Manufacture |
|---------|------------------------------------------------|----------|-------------|
| TF-088  | TEPTO Conducted emission automatic measurement | 2.6.0164 | TSJ         |
| TF-110  | Junction sheet                                 | 1.6J     | KEC         |

### 5.3. Test Results

11n-HT40 5755MHz

| Measured Frequency<br>(MHz) | Correction Factor<br>(dB) | Meter Reading |              |              |              | Maximum RF Voltage |                   | Limit            |                   | Margin for Limit |                 |
|-----------------------------|---------------------------|---------------|--------------|--------------|--------------|--------------------|-------------------|------------------|-------------------|------------------|-----------------|
|                             |                           | Q-Peak        |              | Average      |              | Q-Peak<br>(dBμV)   | Average<br>(dBμV) | Q-Peak<br>(dBμV) | Average<br>(dBμV) | Q-Peak<br>(dB)   | Average<br>(dB) |
|                             |                           | Va<br>(dBμV)  | Vb<br>(dBμV) | Va<br>(dBμV) | Vb<br>(dBμV) |                    |                   |                  |                   |                  |                 |
| 0.150                       | 10.4                      | 39.1          | 39.3         | 9.7          | 9.9          | 49.7               | 20.3              | 66.0             | 56.0              | 16.3             | 35.7            |
| 0.185                       | 10.4                      | 37.6          | 38.4         | 22.7         | 24.0         | 48.8               | 34.4              | 64.3             | 54.3              | 15.5             | 19.9            |
| 0.249                       | 10.3                      | 29.5          | 30.6         | 16.3         | 17.9         | 40.9               | 28.2              | 61.8             | 51.8              | 20.9             | 23.6            |
| 0.311                       | 10.3                      | 24.7          | 25.5         | 12.8         | 13.5         | 35.8               | 23.8              | 59.9             | 49.9              | 24.1             | 26.1            |
| 0.559                       | 10.3                      | 17.8          | 20.2         | 13.0         | 16.0         | 30.5               | 26.3              | 56.0             | 46.0              | 25.5             | 19.7            |
| 3.239                       | 10.4                      | 18.0          | 19.0         | 13.2         | 13.6         | 29.4               | 24.0              | 56.0             | 46.0              | 26.6             | 22.0            |
| 6.484                       | 10.6                      | 19.4          | 19.5         | 8.5          | 10.5         | 30.1               | 21.1              | 60.0             | 50.0              | 29.9             | 28.9            |

[Note]

- (1) Correction Factor includes the LISN Factor, cable loss and attenuator loss.
- (2) The EUT is powered by the PC via the USB. Therefore AC Power Line Conducted Emission measured on the PC Power Line.

[Calculation method]

Maximum RF Voltage (dBμV)

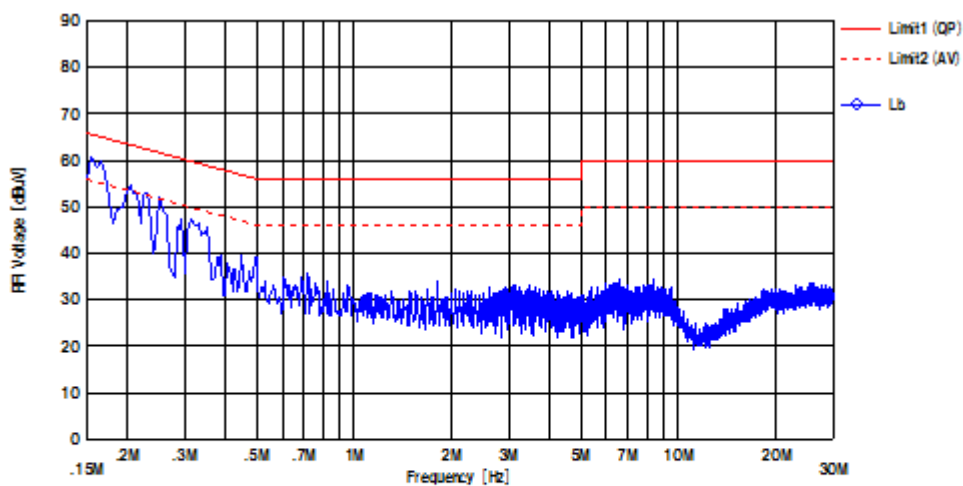
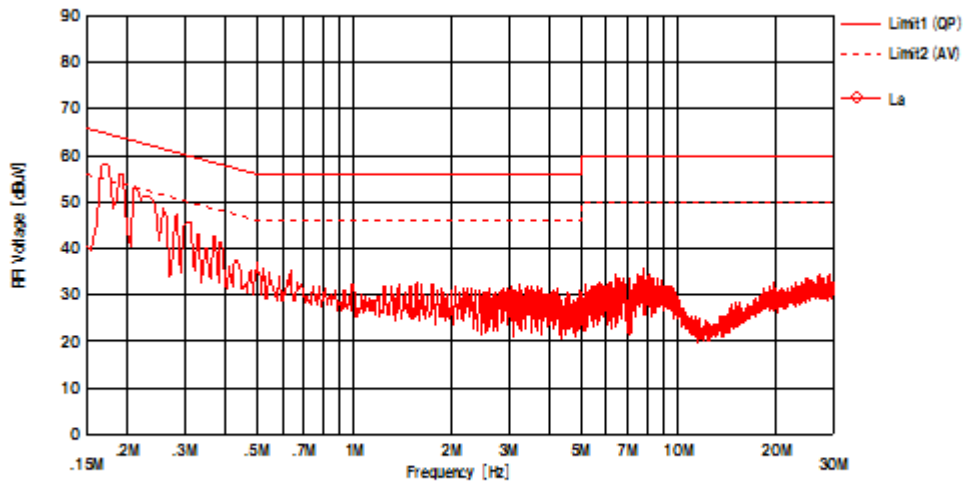
= Meter Reading (at maximum level of Va or Vb) (dBμV) + Correction Factor (dB)

At the next page, the result of exploratory conducted emission measurement by using the spectrum analyzer is shown by the spectrum chart.

| Tested Date      | Environment |          |
|------------------|-------------|----------|
|                  | Temperature | Humidity |
| 20 November 2017 | 24 °C       | 30 %     |

## Test Results in Graph

11n-HT40 5755MHz



## 6. EMISSION BANDWIDTH

### 6.1. Test Procedure

- (1) Connect the EUT RF output port to spectrum analyzer (\*1) via calibrated coaxial cable and suitable attenuator (if necessary).
- (2) Activates the EUT System and execute the software prepared for test, if necessary.
- (3) To find out the worst condition, the transmitting data rate of EUT is changed.
- (4) 26dB and 6dB Bandwidth is measured using the function of spectrum analyzer.

#### [Note]

##### (\*1) Spectrum Analyzer Set Up Conditions (26dB Bandwidth)

Resolution bandwidth : approximately 1% of the emission bandwidth  
Video bandwidth : >RBW  
Detector function : Peak  
x dB : -26dB

##### Spectrum Analyzer Set Up Conditions (6dB Bandwidth)

Resolution bandwidth : 100kHz  
Video bandwidth :  $\geq 3 \times \text{RBW}$   
Detector function : Peak  
x dB : -6dB



## 6.2. Test Results of 26dB Emission Bandwidth

11a

| Measured Frequency ( MHz ) | 26dB Bandwidth ( MHz ) | 99% OBW Bandwidth ( MHz ) |
|----------------------------|------------------------|---------------------------|
| 5180                       | 19.10                  | 16.45                     |
| 5220                       | 19.46                  | 16.50                     |
| 5240                       | 19.53                  | 16.50                     |
| 5745                       | 19.44                  | 16.53                     |
| 5785                       | 19.14                  | 16.48                     |
| 5825                       | 18.95                  | 16.47                     |

11n-HT20

| Measured Frequency ( MHz ) | 26dB Bandwidth ( MHz ) | 99% OBW Bandwidth ( MHz ) |
|----------------------------|------------------------|---------------------------|
| 5180                       | 19.67                  | 17.58                     |
| 5220                       | 19.61                  | 17.61                     |
| 5240                       | 19.78                  | 17.58                     |
| 5745                       | 19.53                  | 17.60                     |
| 5785                       | 19.87                  | 17.61                     |
| 5825                       | 19.67                  | 17.63                     |

11n-HT40

| Measured Frequency ( MHz ) | 26dB Bandwidth ( MHz ) | 99% OBW Bandwidth ( MHz ) |
|----------------------------|------------------------|---------------------------|
| 5190                       | 40.11                  | 36.03                     |
| 5230                       | 40.19                  | 36.07                     |
| 5755                       | 40.32                  | 36.03                     |
| 5795                       | 40.33                  | 36.07                     |



## 11ac-HT20

| Measured Frequency<br>( MHz ) | 26dB Bandwidth<br>( MHz ) | 99% OBW Bandwidth<br>( MHz ) |
|-------------------------------|---------------------------|------------------------------|
| 5180                          | 19.61                     | 17.53                        |
| 5220                          | 19.77                     | 17.58                        |
| 5240                          | 19.66                     | 17.55                        |
| 5745                          | 19.66                     | 17.57                        |
| 5785                          | 19.84                     | 17.61                        |
| 5825                          | 19.85                     | 17.61                        |

## 11ac-HT40

| Measured Frequency<br>( MHz ) | 26dB Bandwidth<br>( MHz ) | 99% OBW Bandwidth<br>( MHz ) |
|-------------------------------|---------------------------|------------------------------|
| 5190                          | 39.60                     | 36.07                        |
| 5230                          | 39.62                     | 36.14                        |
| 5755                          | 39.81                     | 36.12                        |
| 5795                          | 40.11                     | 36.10                        |

## 11ac-HT80

| Measured Frequency<br>( MHz ) | 26dB Bandwidth<br>( MHz ) | 99% OBW Bandwidth<br>( MHz ) |
|-------------------------------|---------------------------|------------------------------|
| 5210                          | 79.98                     | 74.90                        |
| 5775                          | 80.30                     | 75.16                        |

[Note]

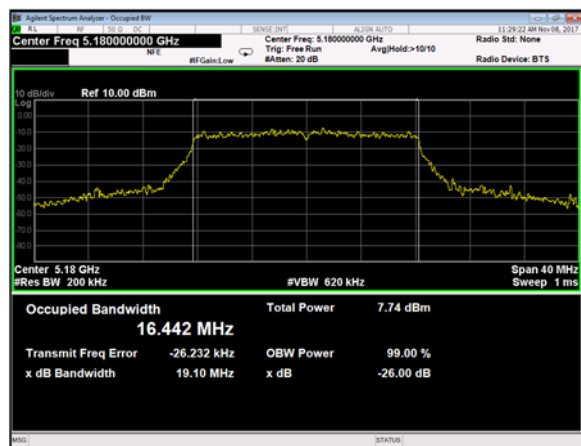
See next page figure.

| Tested Date      | Environment |          |
|------------------|-------------|----------|
|                  | Temperature | Humidity |
| 29 November 2017 | 20 °C       | 45 %     |

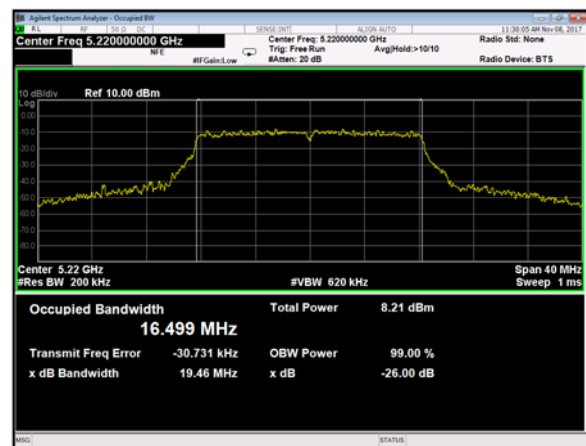


11a

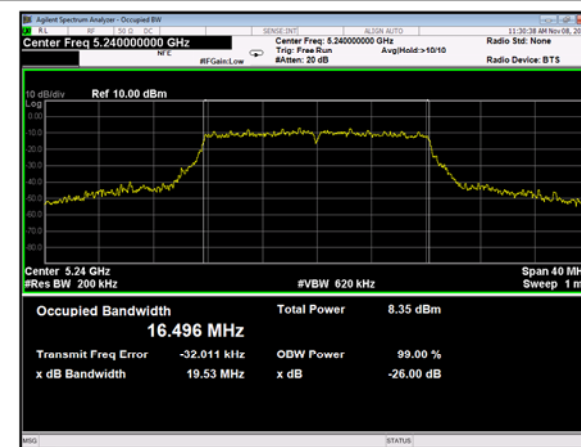
5180MHz



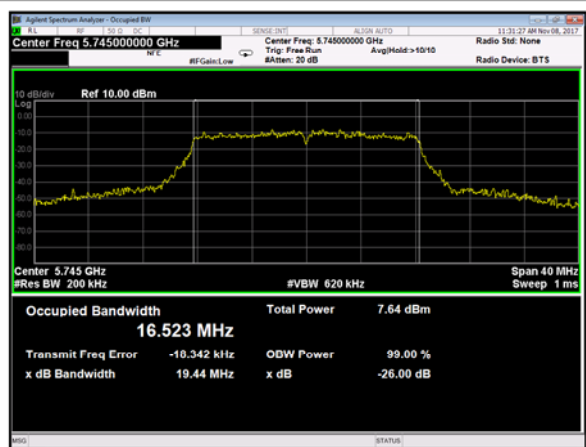
5220MHz



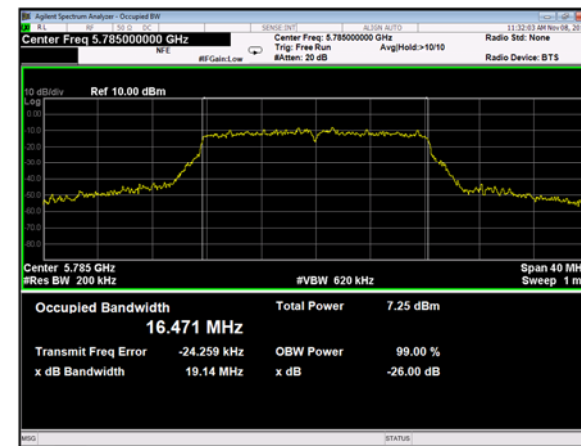
5240MHz



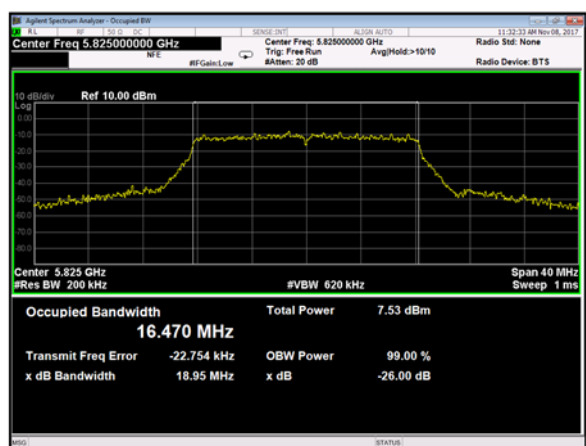
5745MHz



5785MHz



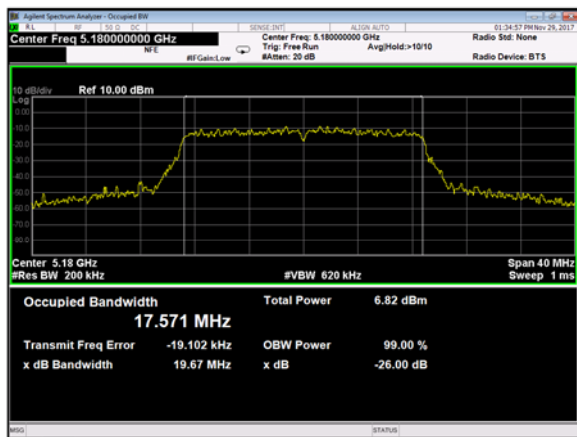
5825MHz



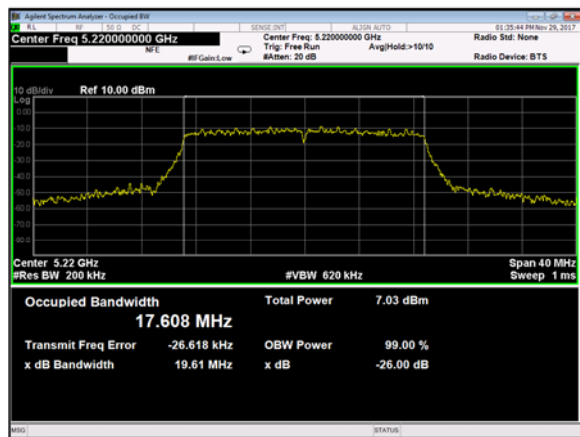


## 11n-HT20

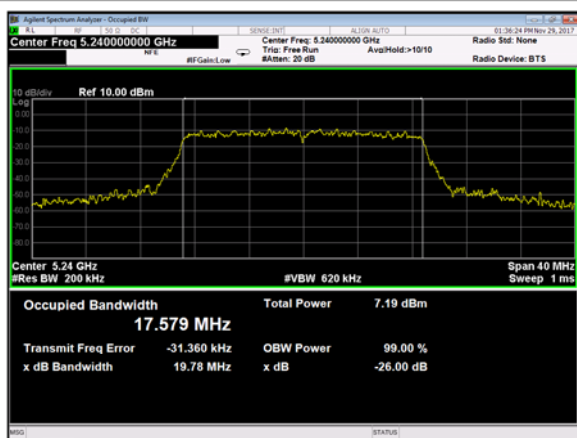
## 5180MHz



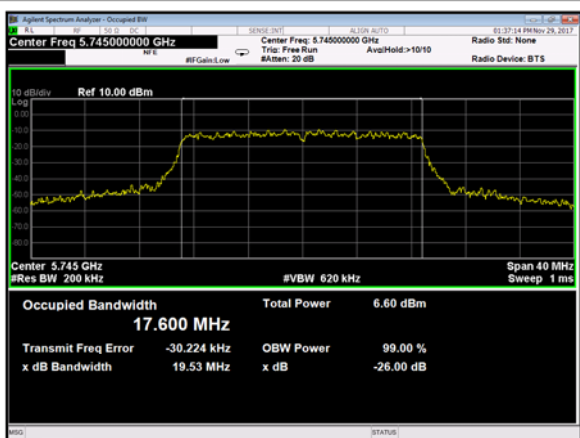
## 5220MHz



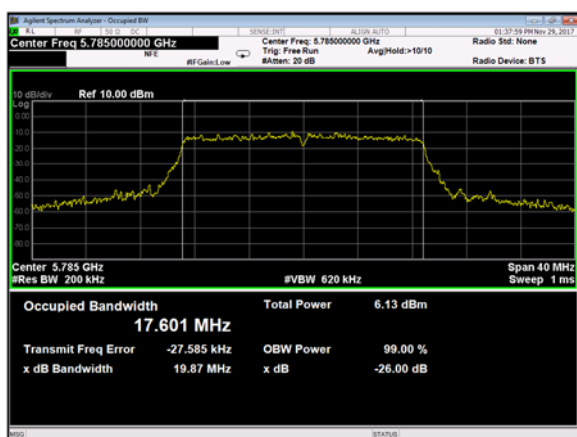
## 5240MHz



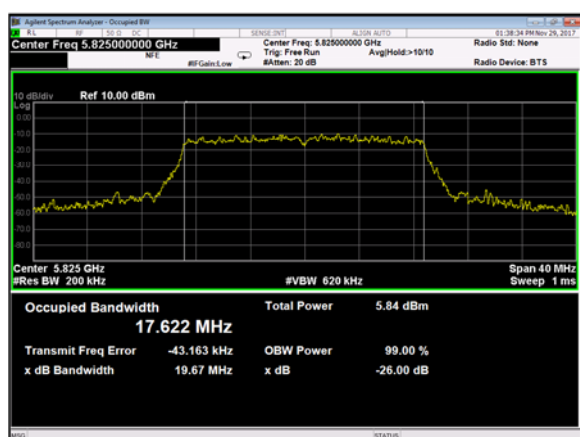
## 5745MHz

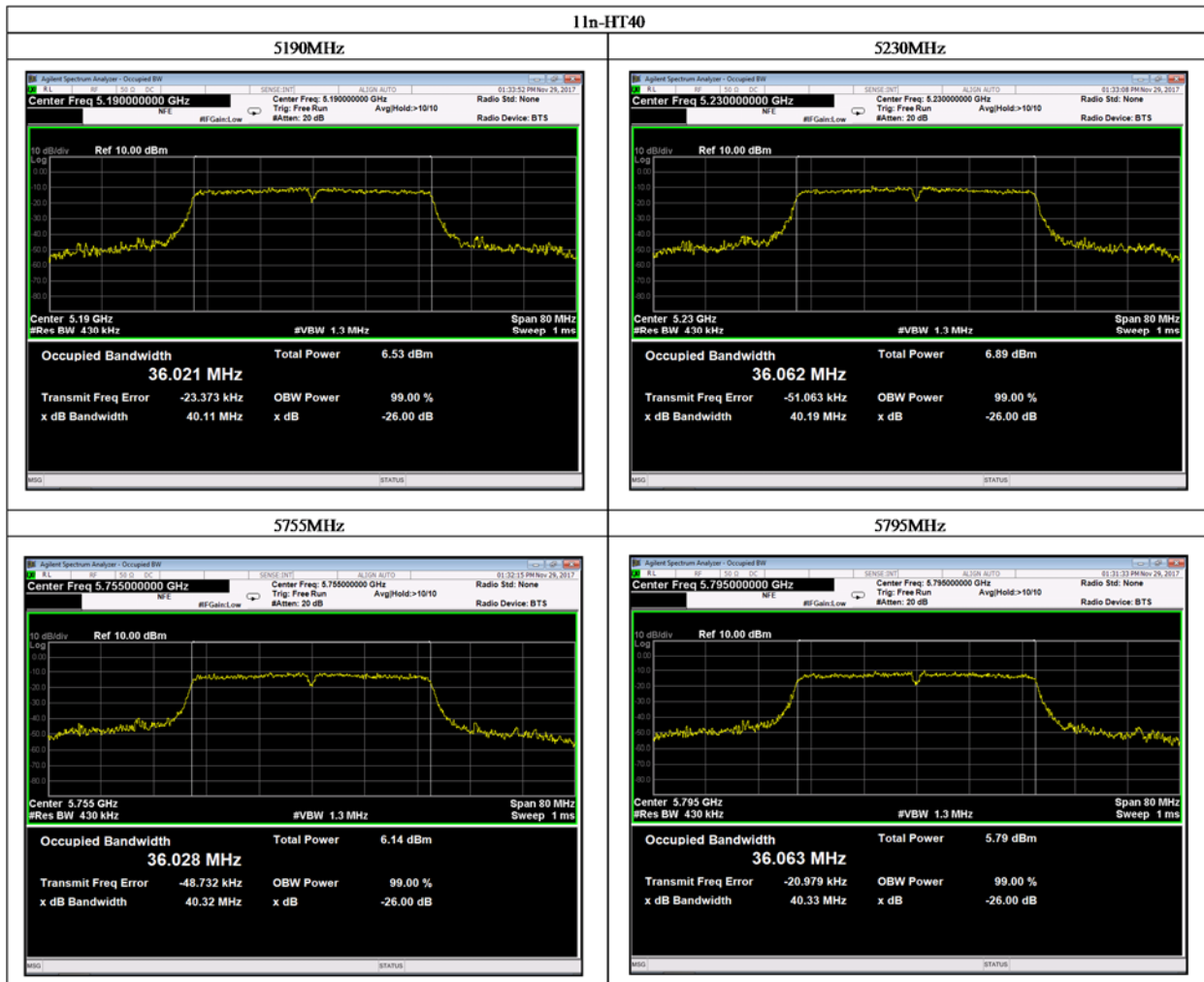


## 5785MHz



## 5825MHz

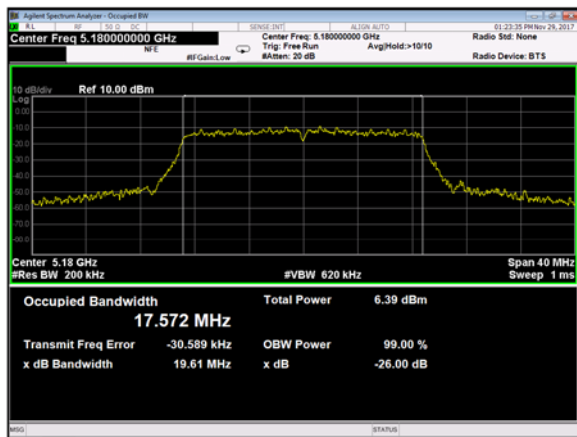




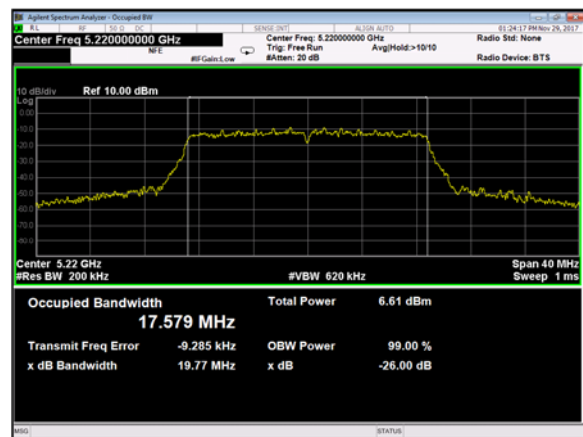


## 11ac-HT20

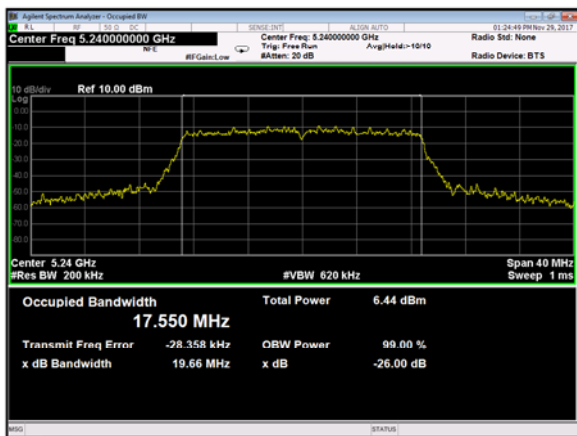
5180MHz



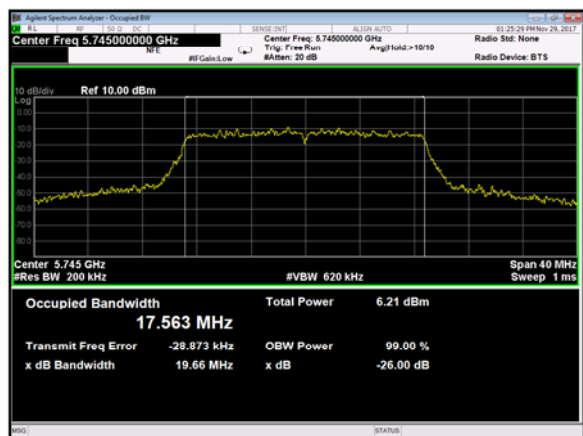
5220MHz



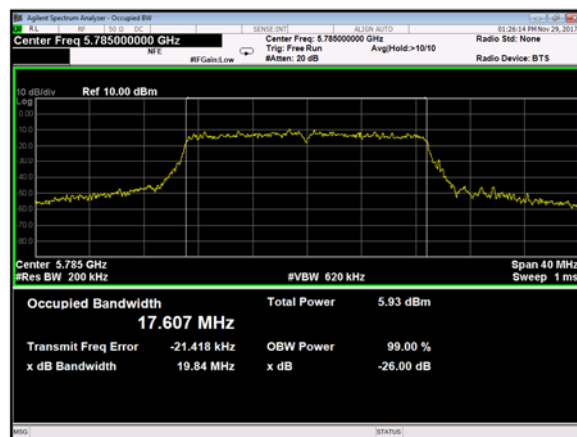
5240MHz



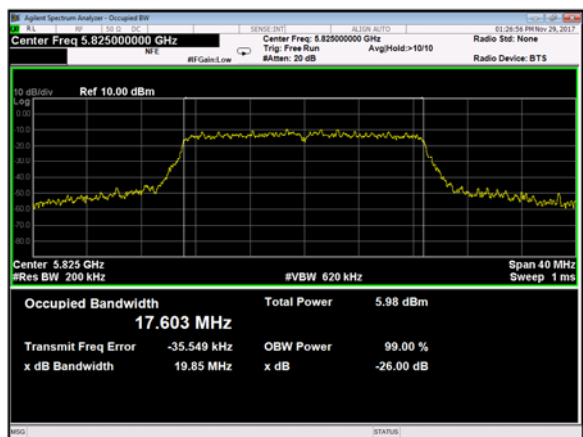
5745MHz



5785MHz



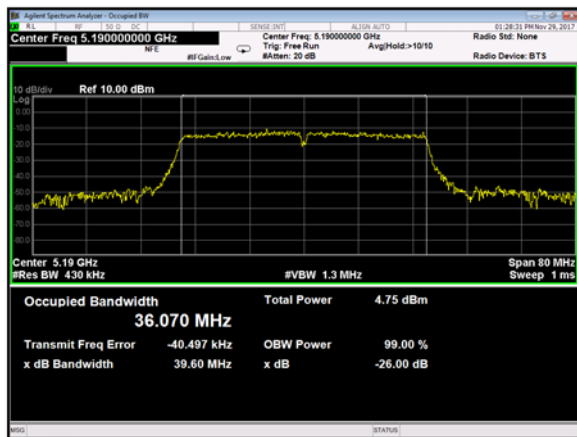
5825MHz



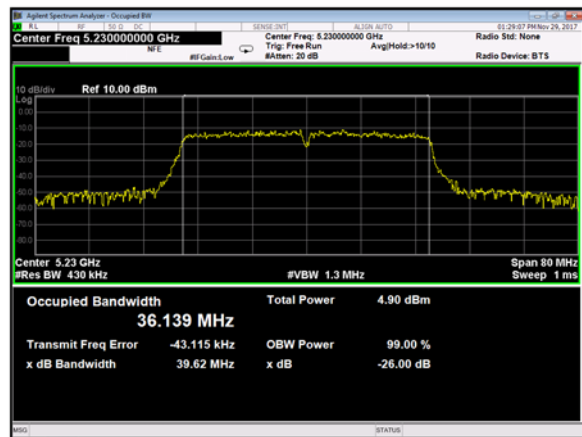


## 11ac-HT40

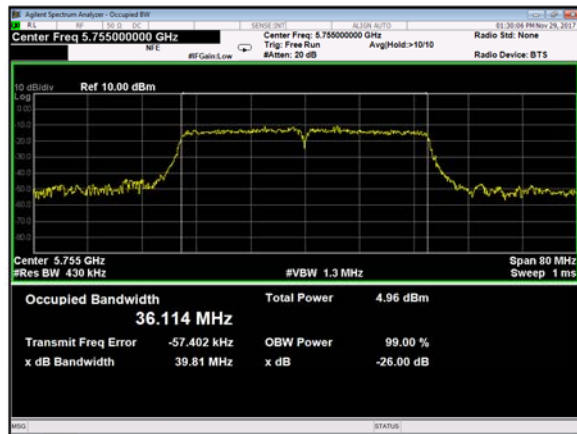
5190MHz



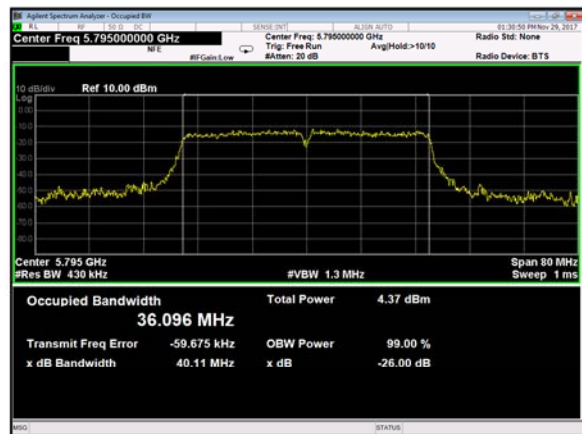
5230MHz



5755MHz

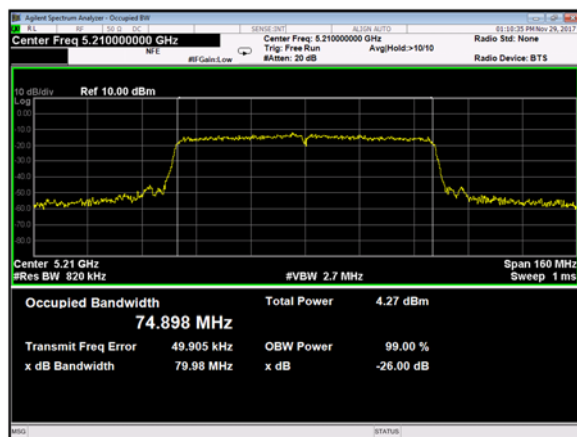


5795MHz

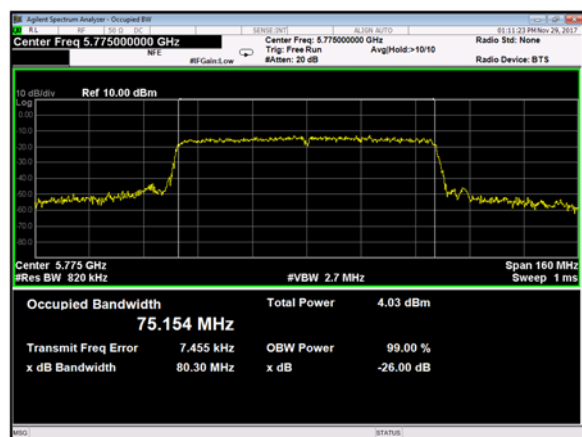


## 11ac-HT80

5210MHz



5775MHz



### 6.3. Test Results of 6dB Emission Bandwidth

11a

| Measured Frequency ( MHz ) | 6dB Bandwidth ( MHz ) | Limit ( MHz ) |
|----------------------------|-----------------------|---------------|
| 5745                       | 16.40                 | $\geq 0.50$   |
| 5785                       | 15.36                 | $\geq 0.50$   |
| 5825                       | 16.08                 | $\geq 0.50$   |

11n-HT20

| Measured Frequency ( MHz ) | 6dB Bandwidth ( MHz ) | Limit ( MHz ) |
|----------------------------|-----------------------|---------------|
| 5745                       | 17.24                 | $\geq 0.50$   |
| 5785                       | 17.47                 | $\geq 0.50$   |
| 5825                       | 17.31                 | $\geq 0.50$   |

11n-HT40

| Measured Frequency ( MHz ) | 6dB Bandwidth ( MHz ) | Limit ( MHz ) |
|----------------------------|-----------------------|---------------|
| 5755                       | 35.22                 | $\geq 0.50$   |
| 5795                       | 35.22                 | $\geq 0.50$   |

11ac-HT20

| Measured Frequency ( MHz ) | 6dB Bandwidth ( MHz ) | Limit ( MHz ) |
|----------------------------|-----------------------|---------------|
| 5745                       | 16.63                 | $\geq 0.50$   |
| 5785                       | 16.64                 | $\geq 0.50$   |
| 5825                       | 16.90                 | $\geq 0.50$   |

11ac-HT40

| Measured Frequency ( MHz ) | 6dB Bandwidth ( MHz ) | Limit ( MHz ) |
|----------------------------|-----------------------|---------------|
| 5755                       | 35.22                 | $\geq 0.50$   |
| 5795                       | 35.22                 | $\geq 0.50$   |

11ac-HT80

| Measured Frequency ( MHz ) | 6dB Bandwidth ( MHz ) | Limit ( MHz ) |
|----------------------------|-----------------------|---------------|
| 5775                       | 75.24                 | $\geq 0.50$   |

[Note]

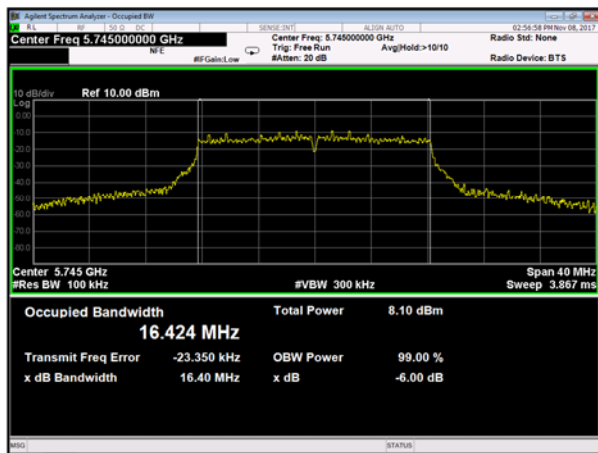
See next page figure.

| Tested Date      | Environment |          |
|------------------|-------------|----------|
|                  | Temperature | Humidity |
| 29 November 2017 | 22 °C       | 35 %     |

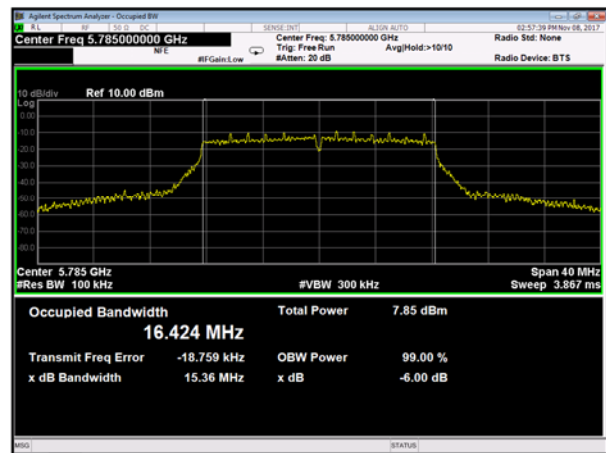


11a

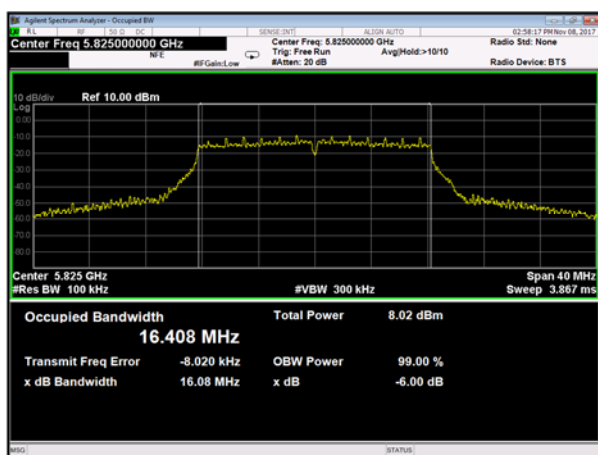
5745MHz



5785MHz



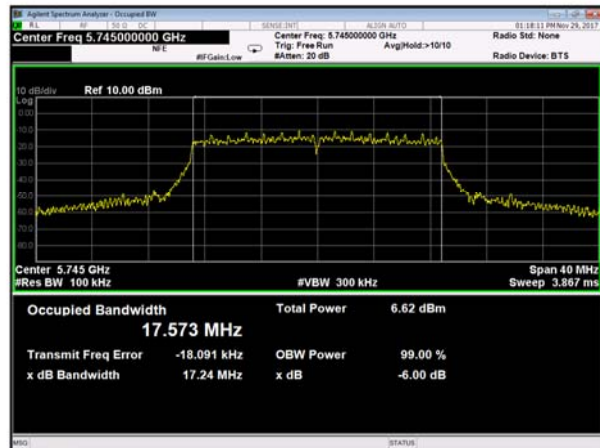
5825MHz



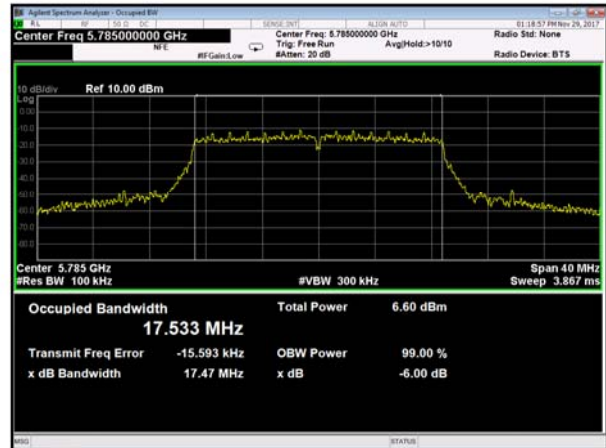


## 11n-HT20

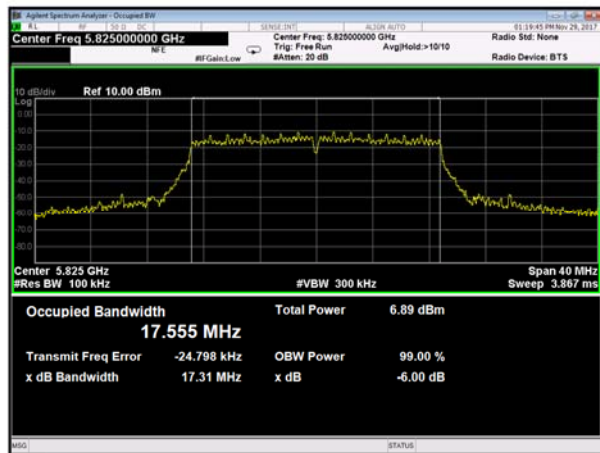
5745MHz



5785MHz



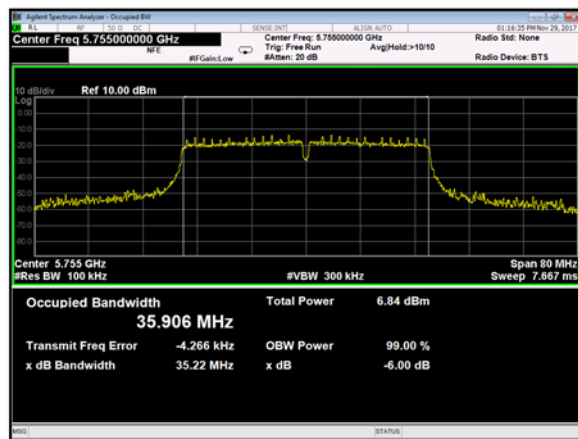
5825MHz



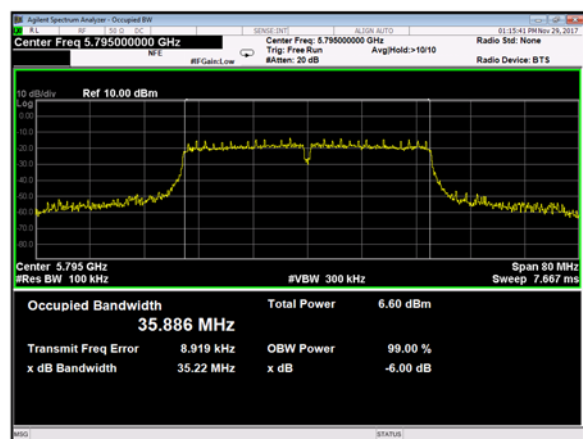


## 11n-HT40

5755MHz

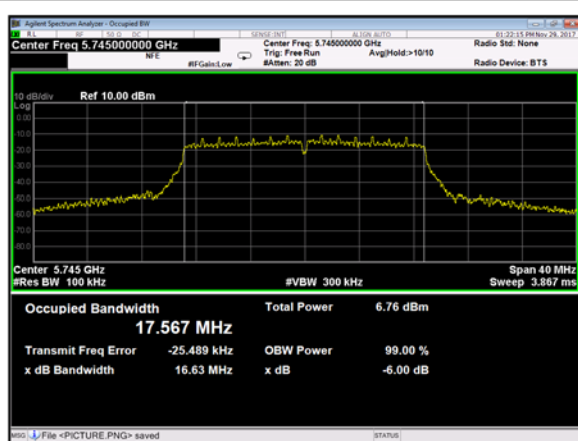


5795MHz

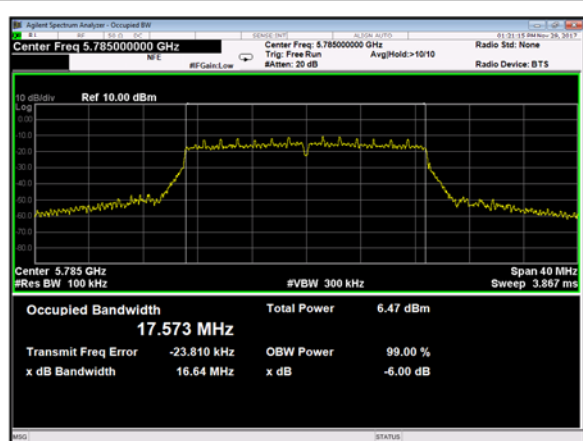


## 11ac-HT20

5745MHz



5785MHz



5825MHz

