

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

## INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART E REQUIREMENT

OF

**Applicant:** Hong Kong AMobile Intelligent Corp. Limited Taiwan Branch  
8F.-1, No.700, Zhongzheng Rd., Zhonghe Dist., New Taipei City 235, Taiwan

**Product Name:** GT78-V Rugged Android Tablet

**Brand Name:** AMobile

**Model No.:** GT78-V8, GT78-V7

**Model Difference:** Difference in screen size and position of light sensor

**FCC ID:** 2AQ5W-GT78V8

**Report Number:** E2/2018/80021

**FCC Rule Part:** §15.407, Cat: NII

**Issue Date:** Jan. 16, 2019

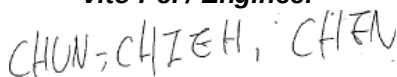
**Date of Test:** Aug. 02, 2018 ~ Sep. 26, 2018

**Date of EUT Received:** Aug. 02, 2018

**We hereby certify that:**

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10: 2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits.

The test results of this report relate only to the tested sample identified in this report.

**Tested By:****Vito Pei / Engineer****Approved By:****Chun Chieh Chen / Sr. Engineer**

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## Revision History

| Report Number | Revision | Description                                           | Effected Page | Issue Date    | Revised By          |
|---------------|----------|-------------------------------------------------------|---------------|---------------|---------------------|
| E2/2018/80021 | Rev.00   | Initial creation of document                          | All           | Nov. 23, 2018 | Stefanie Yu / Clerk |
| E2/2018/80021 | Rev.01   | Update information for antenna info. and section 11.2 | 4, 39         | Jan. 16, 2019 | Stefanie Yu / Clerk |

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## 1 GENERAL INFORMATION

### 1.1 Product Description

#### General:

|                        |                                                        |                                           |
|------------------------|--------------------------------------------------------|-------------------------------------------|
| Product Name:          | GT78-V Rugged Android Tablet                           |                                           |
| Brand Name:            | AMobile                                                |                                           |
| Model No.:             | GT78-V8, GT78-V7                                       |                                           |
| Model Difference:      | Difference in screen size and position of light sensor |                                           |
| Product SW/HW version: | N/A / N/A                                              |                                           |
| USB Cable              | Model No.: N/A, Supplier: N/A                          |                                           |
| Power Supply:          | 3.8Vdc from Rechargeable Li-polymer Battery            |                                           |
|                        | Battery:                                               | Model No.: DPR999-00<br>Supplier: AMobile |

#### WLAN 5GHz:

| Wi-Fi 802.11     | Frequency Range | Channels                                                                                                 | Rated Power (Avg.) (dBm) | Modulation Technology |
|------------------|-----------------|----------------------------------------------------------------------------------------------------------|--------------------------|-----------------------|
| a                | 5150~5250       | 4                                                                                                        | 8.31                     | OFDM                  |
|                  | 5725-5850       | 5                                                                                                        | 9.08                     |                       |
| n_HT 20M         | 5150~5250       | 4                                                                                                        | HT: 8.28 (Worst Case)    | OFDM                  |
|                  | 5725-5850       | 5                                                                                                        | HT: 8.12 (Worst Case)    |                       |
| n_HT 40M         | 5150~5250       | 2                                                                                                        | HT: 7.37 (Worst Case)    | OFDM                  |
|                  | 5725-5850       | 2                                                                                                        | HT: 8.25 (Worst Case)    |                       |
| Modulation type  |                 | 64QAM, 16QAM, QPSK, BPSK for OFDM<br>256QAM for OFDM in 802.11ac only                                    |                          |                       |
| Transition Rate: |                 | 802.11 a: 6/9/12/18/24/36/48/54 Mbps<br>802.11 n_20MHz: 6.5 – 72.2Mbps<br>802.11 n_40MHz: 13.5 – 150Mbps |                          |                       |

| Vendor    | Ant. Type | Part No.            | Freq.(MHz) | Peak Gain (dBi) |
|-----------|-----------|---------------------|------------|-----------------|
| ARISTOTLE | CBL       | RFA-25-AP532-70B-45 | 5150~5250  | 5.63            |
|           | CBL       | RFA-25-AP532-70B-45 | 5725~5850  | 7.18            |

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## 1.2 Test Methodology of Applied Standards

FCC Part 15, Subpart E §15.407

FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01

ANSI C63.10:2013

Note:

1. All test items have been performed and record as per the above standards.

## 1.3 Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory No.2, Keji 1st Rd.,  
Guishan District, Taoyuan City, Taiwan 333 (TAF code 0513)

FCC Registration Number and Designation are: 735305 / TW0002

## 1.4 Special Accessories

There are no special accessories used while test was conducted.

## 1.5 Equipment Modifications

There was no modification incorporated into the EUT.

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## 2 SYSTEM TEST CONFIGURATION

### 2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 2.2 EUT Exercise

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

### 2.3 Test Procedure

#### 2.3.1 Conducted Emissions

The EUT is placed on a turn table which is 0.8 m above ground plane. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz. The CISPR Quasi-Peak and Average detector mode is employed according to §15.207. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

#### 2.3.2 Radiated Emissions

The EUT is placed on a turn table. For emissions testing at or below 1 GHz, the table height shall be 0.8 m above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

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## 2.4 Measurement Results Explanation Example

### For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

### Note:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor. Following shows an offset computation example.

## 2.5 Configuration of Tested System

Fig. 2-1 Radiated Emission & Conducted (Antenna Port)



Fig. 2-2 Conduction (AC Power Line)



Table 2-1 Equipment Used in Tested System

| Item | Equipment          | Mfr/Brand | Model/Type No. | Series No. | Data Cable | Power Cord |
|------|--------------------|-----------|----------------|------------|------------|------------|
| 1.   | Notebook           | Lenovo    | L430           | R9-WR6X4   | Shielded   | Unshielded |
| 2.   | WLAN Test Software | N/A       | N/A            | N/A        | N/A        | N/A        |

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### 3 SUMMARY OF TEST RESULT

| FCC Rules                | Description Of Test                            | Result    |
|--------------------------|------------------------------------------------|-----------|
| §15.207                  | AC Power Line Conducted Emission               | Compliant |
| §15.403(i)<br>§15.407(e) | 26 dB & 6dB & 99% Emission Bandwidth           | Compliant |
| §15.407(a)               | Maximum Conducted Output Power                 | Compliant |
| §15.407(a)               | Power Spectral Density                         | Compliant |
| §15.407(b)               | Undesirable Radiated Emissions                 | Compliant |
| §15.407(c)               | Transmission in case of Absence of Information | Compliant |
| §15.407(g)               | Frequency Stability                            | Compliant |
| §15.203<br>§15.407(a)    | Antenna Requirement                            | Compliant |

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## 4 DESCRIPTION OF TEST MODES

### 4.1 Operated in U-NII Bands

#### Operated band in 5150 MHz ~5250 MHz:

| 802.11a / n HT20 Mode, |           |
|------------------------|-----------|
| Channel                | Frequency |
| 36                     | 5180      |
| 40                     | 5200      |
| 44                     | 5220      |
| 48                     | 5240      |

| 802.11 n HT40 Mode, |           |
|---------------------|-----------|
| channel             | Frequency |
| 38                  | 5190      |
| 46                  | 5230      |

#### Operated band in 5745 MHz ~5850 MHz:

| 802.11a / n HT20 Mode, |           |
|------------------------|-----------|
| Channel                | Frequency |
| 149                    | 5745      |
| 153                    | 5765      |
| 157                    | 5785      |
| 161                    | 5805      |
| 165                    | 5825      |

| 802.11 n HT40 Mode, |           |
|---------------------|-----------|
| channel             | Frequency |
| 151                 | 5755      |
| 159                 | 5795      |

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## 4.2 The Worst Test Modes and Channel Details

1. The EUT has been tested under operating condition.
2. Test program used to control the EUT for staying in continuous transmitting mode is programmed.
3. Investigation has been done on all the possible configurations for searching the worst case.

### RADIATED EMISSION TEST:

| RADIATED EMISSION TEST (BELOW 1 GHz) |                      |                   |                |            |                  |              |
|--------------------------------------|----------------------|-------------------|----------------|------------|------------------|--------------|
| MODE                                 | FREQUENCY BAND (MHz) | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION | DATA RATE (Mbps) | ANTENNA PORT |
| 802.11a                              | 5180~5240            | 36 to 48          | 36,44,48       | OFDM       | 6                | Ch0          |
| 802.11a                              | 5745~5825            | 149 to 165        | 149,157,165    | OFDM       | 6                | Ch0          |
| RADIATED EMISSION TEST (ABOVE 1 GHz) |                      |                   |                |            |                  |              |
| MODE                                 | FREQUENCY BAND (MHz) | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION | DATA RATE (Mbps) | ANTENNA PORT |
| 802.11a                              | 5180~5240            | 36 to 48          | 36,44,48       | OFDM       | 6                | Ch0          |
| 802.11n_HT20                         |                      |                   |                | OFDM       | MCS0             | Ch0          |
| 802.11n_HT40                         | 5190~5230            | 38 to 46          | 38,46          | OFDM       | MCS0             | Ch0          |

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| MODE         | FREQUENCY BAND (MHz) | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION | DATA RATE (Mbps) | ANTENNA PORT |
|--------------|----------------------|-------------------|----------------|------------|------------------|--------------|
| 802.11a      | 5745~5825            | 149 to 165        | 149,157,165    | OFDM       | 6                | Ch0          |
| 802.11n_HT20 |                      |                   |                | OFDM       | MCS0             | Ch0          |
| 802.11n_HT40 | 5755~5795            | 151 to 159        | 151,159        | OFDM       | MCS0             | Ch0          |

**Note:**

The field strength of radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for 802.11a/n/ac WLAN Transmitter for channel Low, Mid and High, the worst case E1 position was reported.

**ANTENNA PORT CONDUCTED MEASUREMENT:**

| CONDUCTED TEST |                      |                   |                |            |                  |              |
|----------------|----------------------|-------------------|----------------|------------|------------------|--------------|
| MODE           | FREQUENCY BAND (MHz) | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION | DATA RATE (Mbps) | ANTENNA PORT |
| 802.11a        | 5180~5240            | 36 to 48          | 36,44,48       | OFDM       | 6                | Ch0          |
| 802.11n_HT20   |                      |                   |                | OFDM       | MCS0             | Ch0          |
| 802.11n_HT40   | 5190~5230            | 38 to 46          | 38,46          | OFDM       | MCS0             | Ch0          |
| 802.11a        | 5745~5825            | 149 to 165        | 149,157,165    | OFDM       | 6                | Ch0          |
| 802.11n_HT20   |                      |                   |                | OFDM       | MCS0             | Ch0          |
| 802.11n_HT40   | 5755~5795            | 151 to 159        | 151,159        | OFDM       | MCS0             | Ch0          |

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## 5 MEASUREMENT UNCERTAINTY

| Test Items                              | Uncertainty                |
|-----------------------------------------|----------------------------|
| AC Power Line Conducted Emission        | +/- 2.586 dB               |
| 26dB & 6dB Emission Bandwidth           | +/- 123.36 Hz              |
| The Maximum Output Power Measurement    | +/- 0.96 dB                |
| Peak Power Spectral Density Measurement | +/- 1.67 dB                |
| Frequency Stability                     | +/- 123.36 Hz              |
| Temperature                             | +/- 0.65 °C                |
| Humidity                                | +/- 4.6 %                  |
| DC / AC Power Source                    | DC= +/- 0.13%, AC=+/- 0.2% |

### Radiated Spurious Emission:

|                                                              |                            |
|--------------------------------------------------------------|----------------------------|
| Measurement uncertainty<br>(Polarization : <b>Vertical</b> ) | 9kHz-30MHz: +/-2.87dB      |
|                                                              | 30MHz - 180MHz: +/- 3.37dB |
|                                                              | 180MHz -417MHz: +/- 3.19dB |
|                                                              | 0.417GHz-1GHz: +/- 3.19dB  |
|                                                              | 1GHz - 18GHz: +/- 4.04dB   |
|                                                              | 18GHz - 40GHz: +/- 4.04dB  |

|                                                                |                            |
|----------------------------------------------------------------|----------------------------|
| Measurement uncertainty<br>(Polarization : <b>Horizontal</b> ) | 9kHz-30MHz: +/-2.87dB      |
|                                                                | 30MHz - 167MHz: +/- 4.22dB |
|                                                                | 167MHz -500MHz: +/- 3.44dB |
|                                                                | 0.5GHz-1GHz: +/- 3.39dB    |
|                                                                | 1GHz - 18GHz: +/- 4.08dB   |
|                                                                | 18GHz - 40GHz: +/- 4.08dB  |

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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## 6 CONDUCTED EMISSION TEST

### 6.1 Standard Applicable

Frequency range within 150 kHz to 30 MHz shall not exceed the Limit table as below.

| Frequency range<br>MHz | Limits<br>dB(μV) |          |
|------------------------|------------------|----------|
|                        | Quasi-peak       | Average  |
| 0.15 to 0.50           | 66 to 56         | 56 to 46 |
| 0.50 to 5              | 56               | 46       |
| 5 to 30                | 60               | 50       |

Note

- 1.The lower limit shall apply at the transition frequencies
- 2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

### 6.2 Measurement Equipment Used

| Conducted Emission Test Site |        |              |               |            |           |
|------------------------------|--------|--------------|---------------|------------|-----------|
| EQUIPMENT TYPE               | MFR    | MODEL NUMBER | SERIAL NUMBER | LAST CAL.  | CAL DUE.  |
| LISN                         | TESEQ  | NNB 51       | 36076         | 2018/02/14 | 2019/2/13 |
| EMI Test Receiver            | R&S    | ESCI         | 101300        | 2017/11/02 | 2018/11/1 |
| Notebook                     | Lenovo | L420         | S0012467      | N/A        | N/A       |

### 6.3 EUT Setup

1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.10:2013.
2. The AC/DC Power adaptor of EUT was plug-in LISN. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
3. The LISN was connected with 120Vac/60Hz power source.

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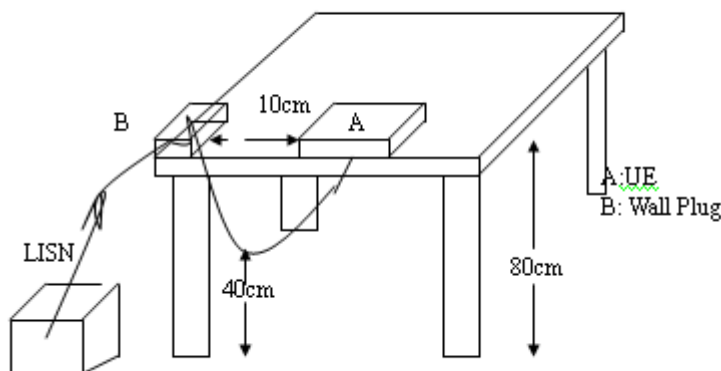
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## 6.4 Test SET-UP



## 6.5 Measurement Procedure

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all phases of power being supplied by given UE are completed.

## 6.6 Measurement Result

Note: Refer to next page for measurement data and plots.

Note2: The \* reveals the worst-case results that closet to the limit

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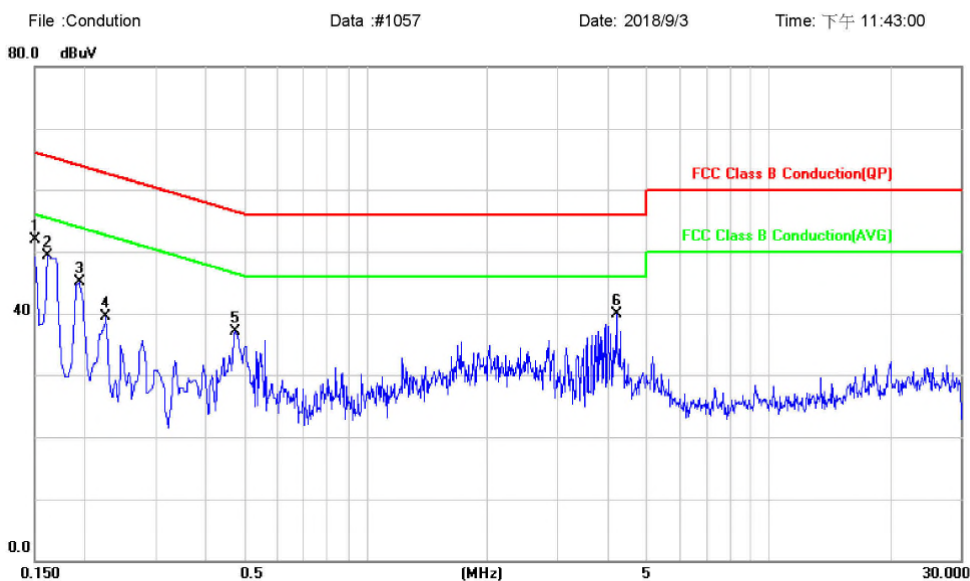
## AC POWER LINE CONDUCTED EMISSION TEST DATA

Site : Conduction Room  
Limit: FCC Class B Conduction(QP)  
Mode:  
Note:

Phase: L1  
Power: AC 120V/60Hz

Temperature: 22 °C  
Humidity: 64 %

## Conducted Emission



| No. | Mk. | Freq.  | Reading Level | Correct Factor | Measurement | Limit | Over   | Detector | Comment |
|-----|-----|--------|---------------|----------------|-------------|-------|--------|----------|---------|
|     |     | MHz    | dBuV          | dB             | dBuV        | dBuV  | dB     |          |         |
| 1   | *   | 0.1500 | 32.18         | 19.65          | 51.83       | 66.00 | -14.17 | peak     |         |
| 2   |     | 0.1620 | 29.56         | 19.67          | 49.23       | 65.36 | -16.13 | peak     |         |
| 3   |     | 0.1940 | 25.46         | 19.73          | 45.19       | 63.86 | -18.67 | peak     |         |
| 4   |     | 0.2260 | 19.72         | 19.78          | 39.50       | 62.60 | -23.10 | peak     |         |
| 5   |     | 0.4740 | 16.89         | 20.19          | 37.08       | 56.44 | -19.36 | peak     |         |
| 6   |     | 4.1900 | 19.85         | 20.14          | 39.99       | 56.00 | -16.01 | peak     |         |

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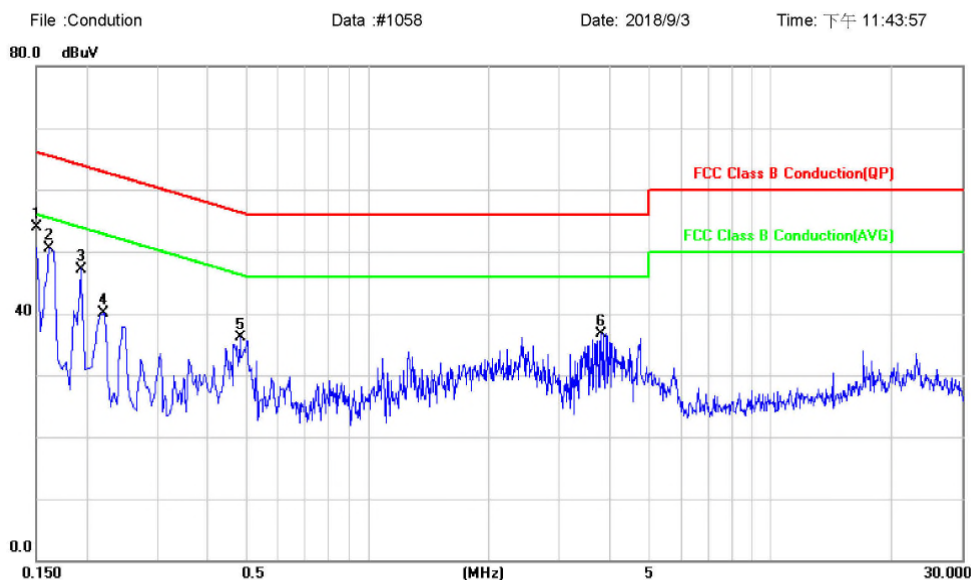
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Site : Conduction Room  
 Limit: FCC Class B Conduction(QP)  
 Mode:  
 Note:

Phase: **N**  
 Power: AC 120V/60Hz

Temperature: 22 °C  
 Humidity: 64 %

### Conducted Emission



| No. | Mk. | Freq.  | Reading Level | Correct Factor | Measurement | Limit | Over   | Detector | Comment |
|-----|-----|--------|---------------|----------------|-------------|-------|--------|----------|---------|
|     |     | MHz    | dBuV          | dB             | dBuV        | dBuV  | dB     |          |         |
| 1   | *   | 0.1500 | 34.33         | 19.64          | 53.97       | 66.00 | -12.03 | peak     |         |
| 2   |     | 0.1620 | 30.79         | 19.66          | 50.45       | 65.36 | -14.91 | peak     |         |
| 3   |     | 0.1940 | 27.49         | 19.71          | 47.20       | 63.86 | -16.66 | peak     |         |
| 4   |     | 0.2220 | 20.36         | 19.76          | 40.12       | 62.74 | -22.62 | peak     |         |
| 5   |     | 0.4820 | 15.99         | 20.19          | 36.18       | 56.30 | -20.12 | peak     |         |
| 6   |     | 3.8180 | 16.59         | 20.20          | 36.79       | 56.00 | -19.21 | peak     |         |

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## 7 DUTY CYCLE TEST SIGNAL

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle.

All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

### Formula:

$$\text{Duty Cycle} = \text{Ton} / (\text{Ton} + \text{Toff})$$

### Measurement Procedure:

1. Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

### Duty Cycle:

| Mode       | Duty Cycle (%) | Duty Factor (dB)<br>=10*log ( 1/Duty Cycle ) | 1/T (kHz) | VBW setting (kHz) |
|------------|----------------|----------------------------------------------|-----------|-------------------|
| 802.11a    | 100.00         | 0.00                                         | 0.00      | 0.01              |
| 802.11n_20 | 100.00         | 0.00                                         | 0.00      | 0.01              |
| 802.11n_40 | 100.00         | 0.00                                         | 0.00      | 0.01              |

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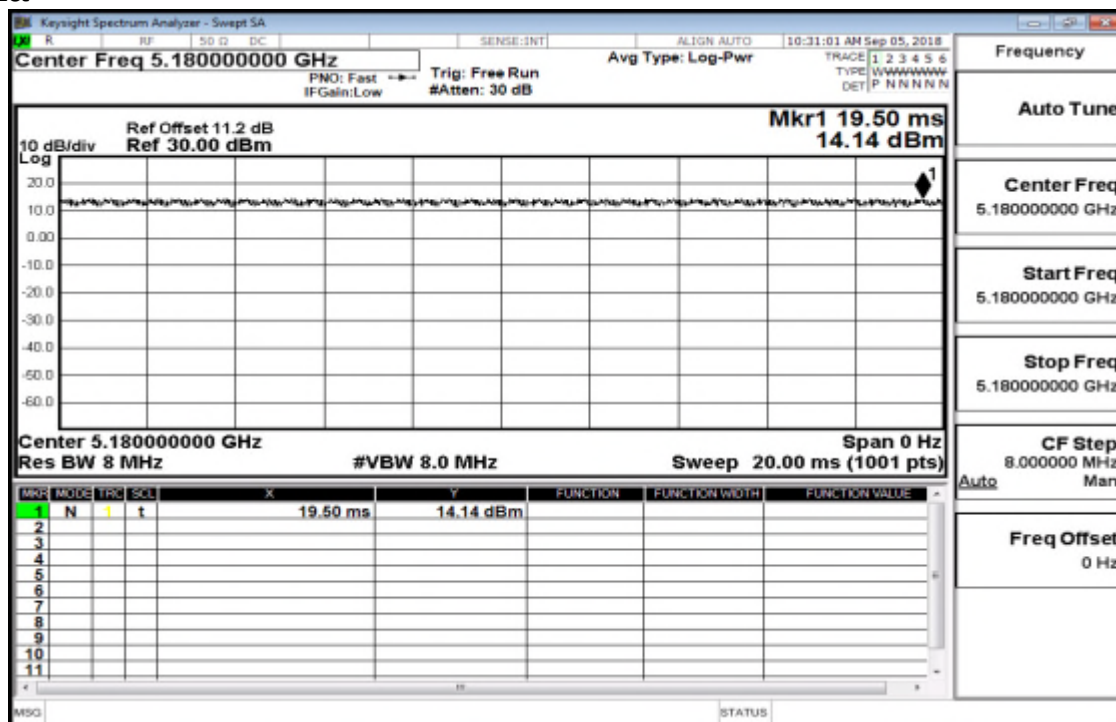
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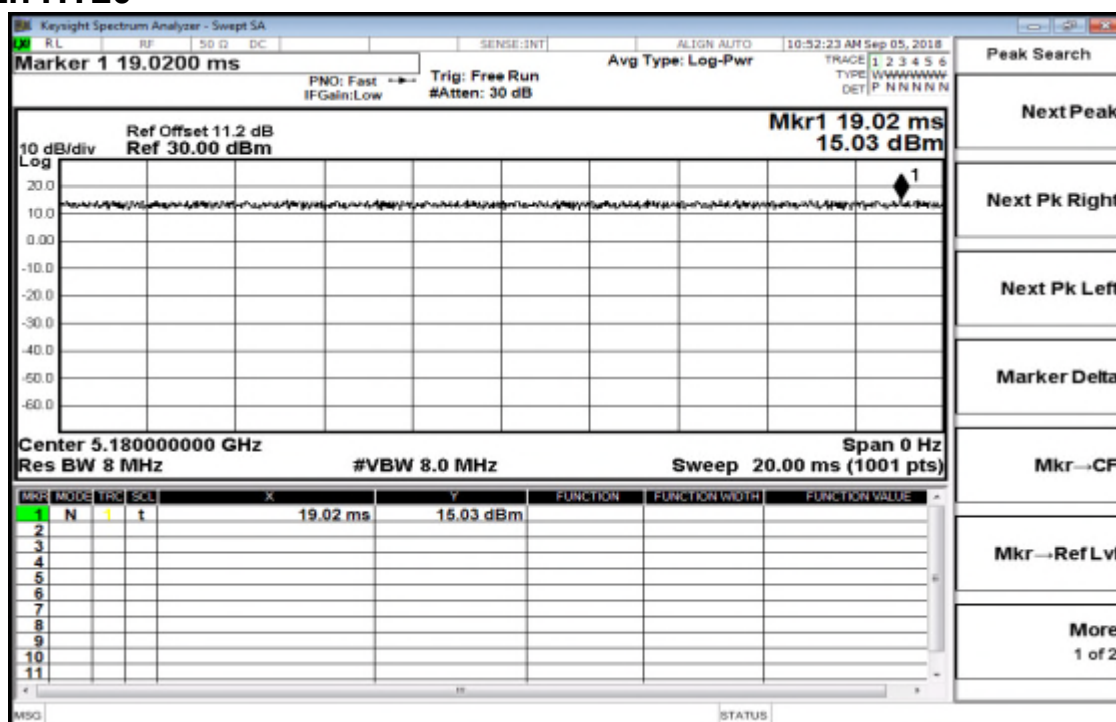
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## DUTY CYCLE TEST SIGNAL MEASUREMENT RESULT

### 802.11a



### 802.11n HT20



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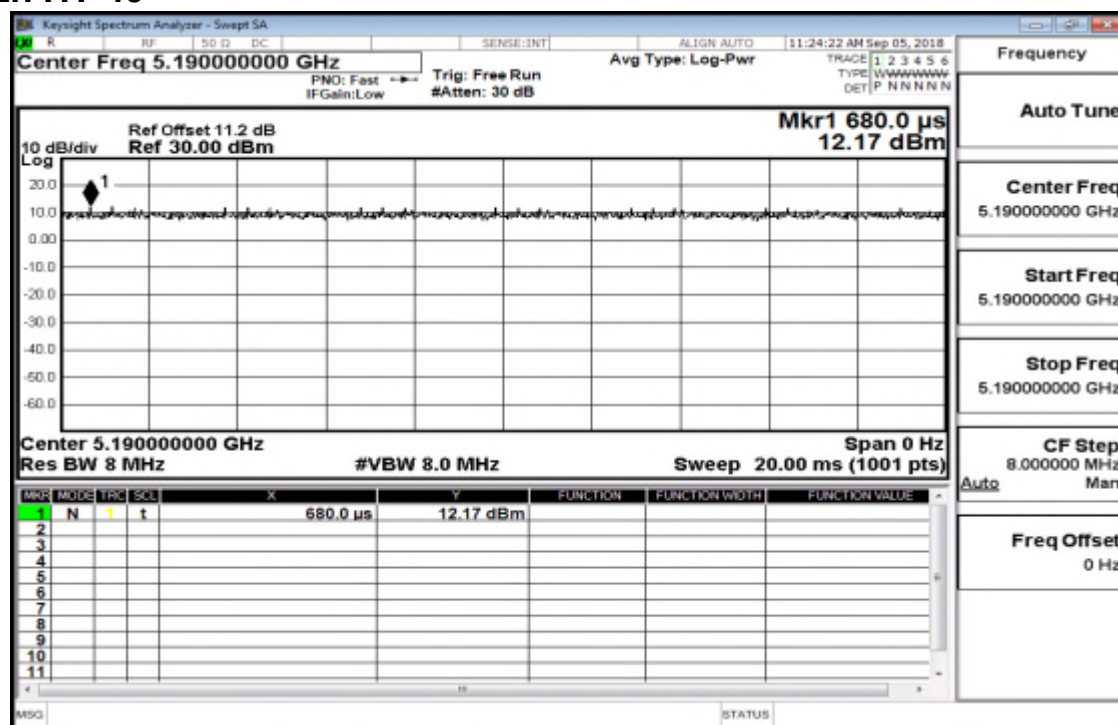
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## 802.11n HT 40



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## 8 26DB & 6DB EMISSION BANDWIDTH MEASUREMENT

### 8.1 Standard Applicable

There is no limit bandwidth for U-NII-1, U-NII-2-A and U-NII-2-C.  
The minimum of 6dB Bandwidth measurement is 0.5 MHz for U-NII-3

### 8.2 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules.
3. Remove the antenna from the EUT and then connect a low loss RF cable from the Antenna port to the spectrum analyzer.
  - a. 26dB Band width Measurement: Set the spectrum analyzer as 1% of emission BW Sweep=auto, Detector = Peak, Trace Mode = Max Hold, Manually readjust RBW until the RBW/EBW ratio is 1% based on EBW as observed on the result of pre-sequence measurement.
  - b. Mark the peak frequency and -26dB (upper and lower) frequency.
4. Repeat the procedures as list above until all test default channels (low, middle, and high) are completed.
5. Minimum Emission Bandwidth for the band 5.725-5.850GHz.
  - a. Set the spectrum analyzer as RBW = 100 kHz, VBW = 3\*RBW, Span = 30M/50MHz, Detector=Peak, Sweep=auto
  - b. Mark the peak frequency and -6dB (upper and lower) frequency.
6. For 99% Bandwidth:  
Set the spectrum analyzer as RBW=1%, VBW = 3\*RBW, Span = 30M/50MHz, Detector=Sample, Sweep=auto.
7. Turn on the 99% bandwidth function, max reading.
8. Repeat above procedures until all frequency of interest measured was complete.

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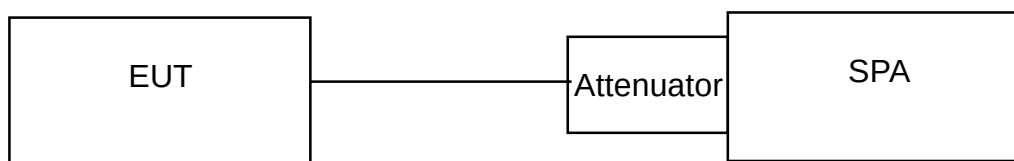
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### 8.3 Measurement Equipment Used

| SGS Conducted Room |              |            |               |                  |                 |
|--------------------|--------------|------------|---------------|------------------|-----------------|
| Name of Equipment  | Manufacturer | Model      | Serial Number | Calibration Date | Calibration Due |
| Spectrum Analyzer  | Agilent      | N9010A     | MY53400256    | 2017/10/30       | 2018/10/29      |
| Attenuator         | Marvelous    | MVE2213-10 | RF30          | 2017/12/26       | 2018/12/25      |
| DC Block           | PASTERNAK    | PE8210     | RF29          | 2017/12/26       | 2018/12/25      |

### 8.4 Test Set-up



### 8.5 Measurement Result

#### 26dB Bandwidth

802.11a\_Ch0

| Frequency (MHz) | 26dB BW (MHz) | 10 Log (B) (dB) |
|-----------------|---------------|-----------------|
| 5180            | 18.73         | 12.725          |
| 5220            | 22.37         | 13.497          |
| 5240            | 20.76         | 13.171          |

802.11n\_HT20\_Ch0

| Frequency (MHz) | 26dB BW (MHz) | 10 Log (B) (dB) |
|-----------------|---------------|-----------------|
| 5180            | 20.03         | 13.017          |
| 5220            | 20.78         | 13.176          |
| 5240            | 21.88         | 13.401          |

802.11n\_HT40\_Ch0

| Frequency (MHz) | 26dB BW (MHz) | 10 Log (B) (dB) |
|-----------------|---------------|-----------------|
| 5190            | 40.36         | 16.059          |
| 5230            | 43.04         | 16.338          |

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## 6dB Bandwidth (5725 MHz~ 5850 MHz) measure with Peak detector for FCC

802.11a\_Ch0

| Frequency (MHz) | 6dB BW (MHz) | 10 Log (B) (dB) |
|-----------------|--------------|-----------------|
| 5745            | 16.38        | 12.143          |
| 5785            | 16.38        | 12.143          |
| 5825            | 16.39        | 12.145          |

802.11n\_HT20\_Ch0

| Frequency (MHz) | 6dB BW (MHz) | 10 Log (B) (dB) |
|-----------------|--------------|-----------------|
| 5745            | 17.62        | 12.460          |
| 5785            | 17.63        | 12.463          |
| 5825            | 17.62        | 12.460          |

802.11n\_HT40\_Ch0

| Frequency (MHz) | 6dB BW (MHz) | 10 Log (B) (dB) |
|-----------------|--------------|-----------------|
| 5755            | 36.35        | 15.605          |
| 5795            | 36.36        | 15.606          |

## 99% BW verification for DFS Function

802.11a\_Ch0

| Frequency (MHz) | Measured Frequency (MHz) | Limit (MHz) |
|-----------------|--------------------------|-------------|
| 5240            | 5248.25                  | < 5250      |
| 5745            | 5736.78                  | > 5725      |

802.11n\_HT20\_Ch0

| Frequency (MHz) | Measured Frequency (MHz) | Limit (MHz) |
|-----------------|--------------------------|-------------|
| 5240            | 5248.91                  | < 5250      |
| 5745            | 5736.09                  | > 5725      |

802.11n\_HT40\_Ch0

| Frequency (MHz) | Measured Frequency (MHz) | Limit (MHz) |
|-----------------|--------------------------|-------------|
| 5230            | 5248.05                  | < 5250      |
| 5755            | 5737.05                  | > 5725      |

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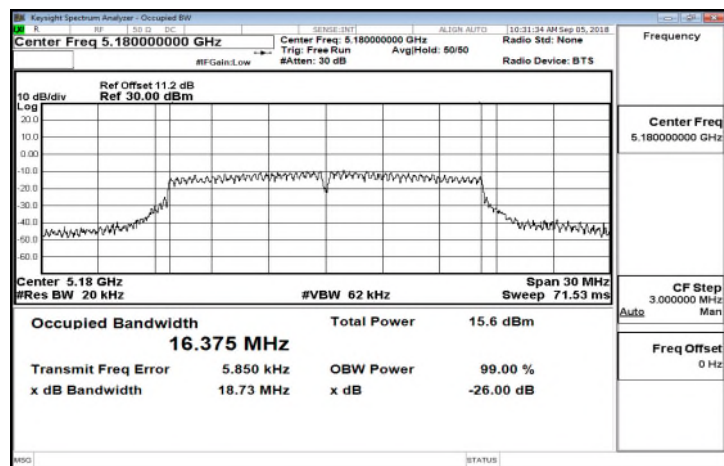
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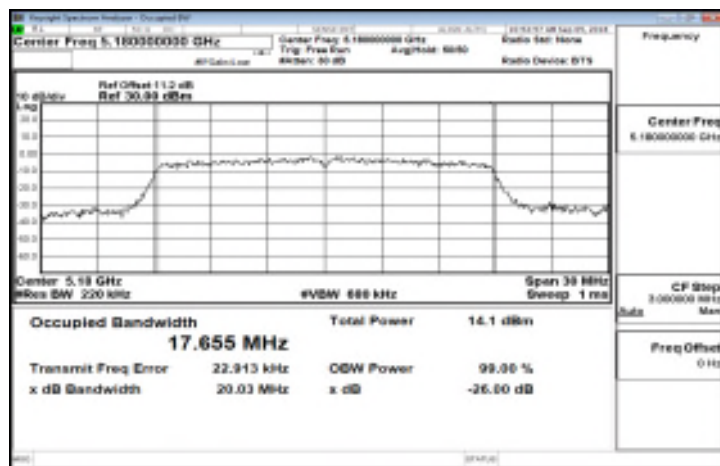
## 802.11a, 5150~5250 MHz

### 26dB Band Width Test Data CH-Low (5180MHz)

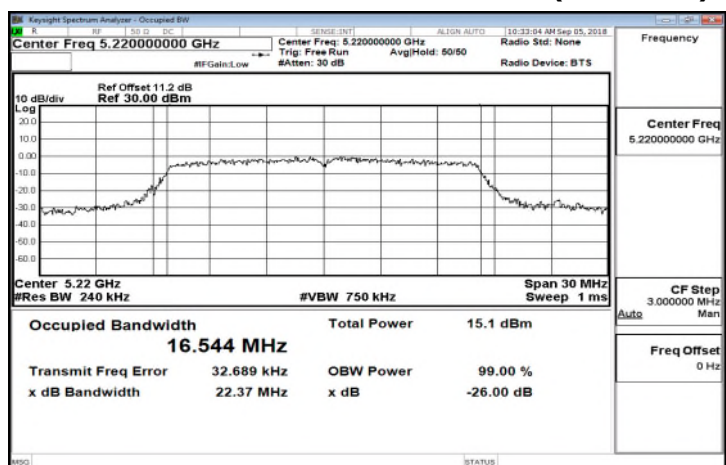


## 802.11n HT20, 5150~5250 MHz

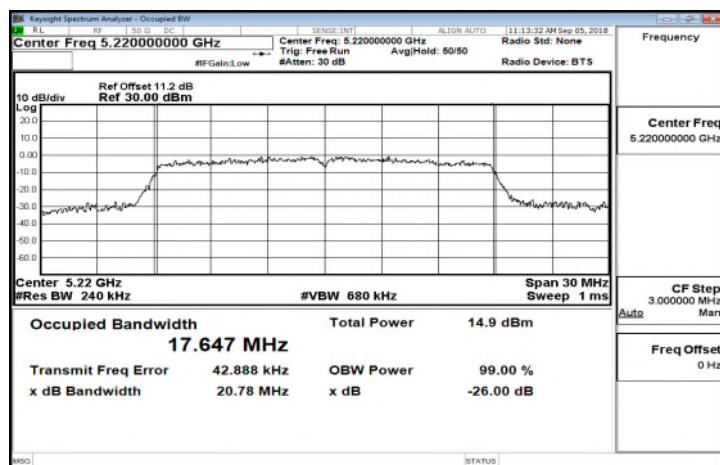
### 26dB Band Width Test Data CH-Low (5180 MHz)



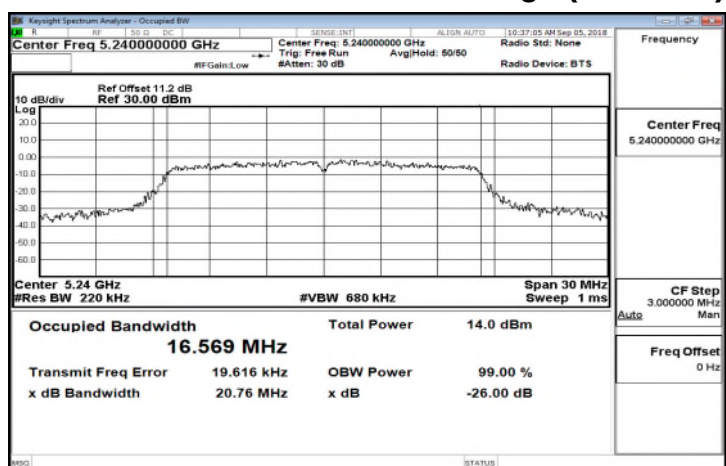
### 26dB Band Width Test Data CH-Mid (5220MHz)



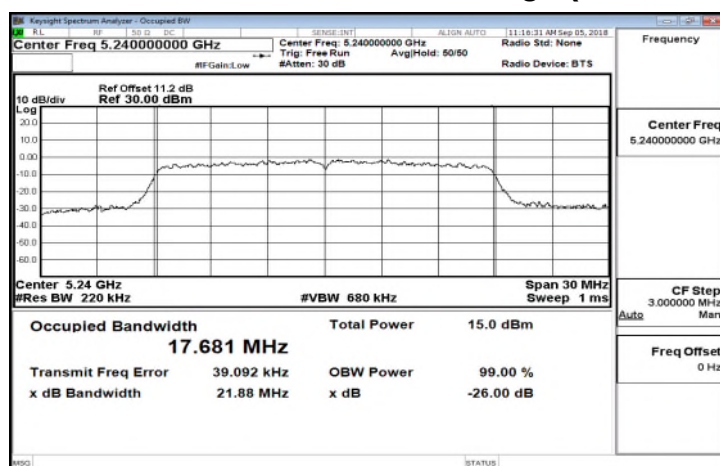
### 26dB Band Width Test Data CH-Mid (5220 MHz)



### 26dB Band Width Test Data CH-High (5240MHz)



### 26dB Band Width Test Data CH-High (5240 MHz)



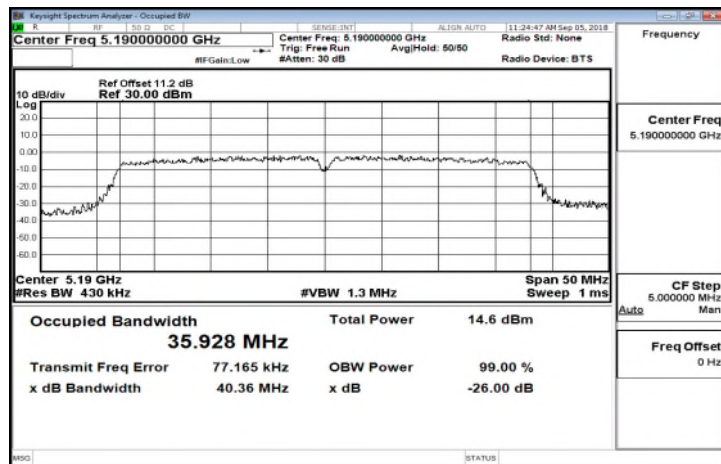
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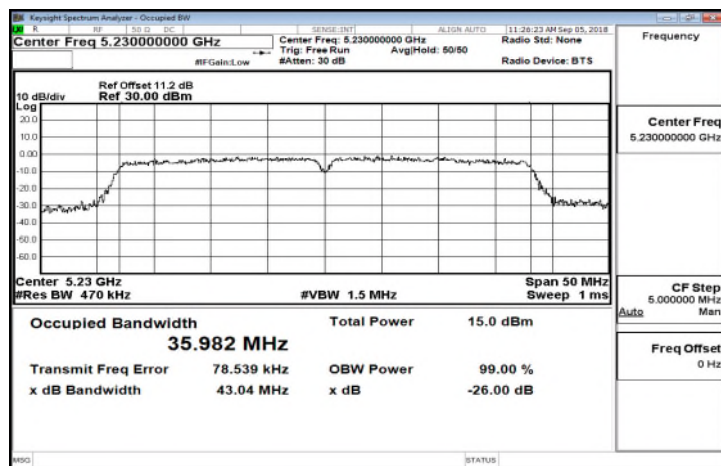
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## 802.11n HT40, 5150~5250 MHz

## 26dB Band Width Test Data CH-Low (5190 MHz)



## 26dB Band Width Test Data CH-High (5230 MHz)



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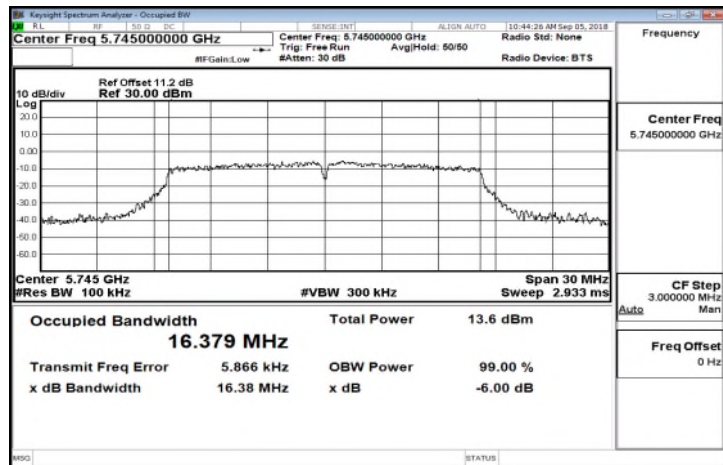
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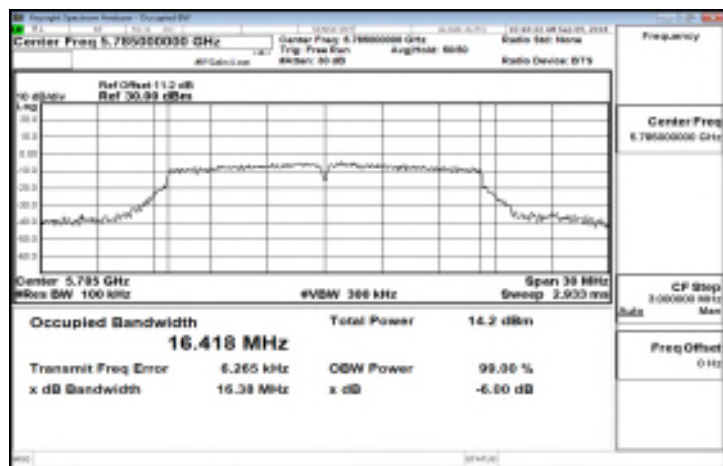
## 6dB Band Width measure with Peak detector for FCC

802.11a, 5725~5850 MHz

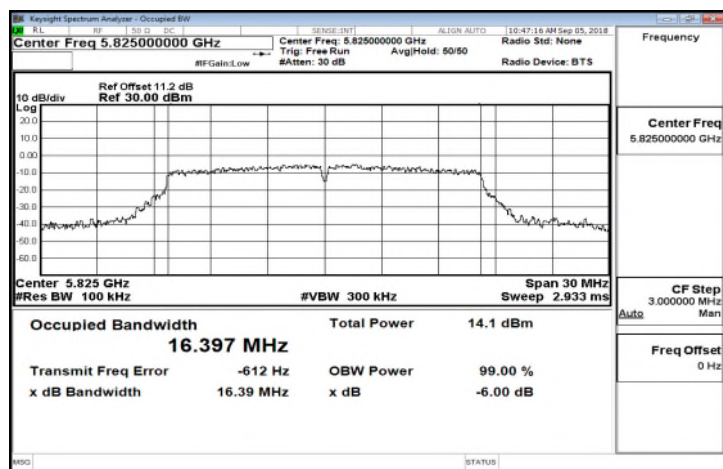
6dB Band Width Test Data CH-Low (5745 MHz)



6dB Band Width Test Data CH-Mid (5785 MHz)

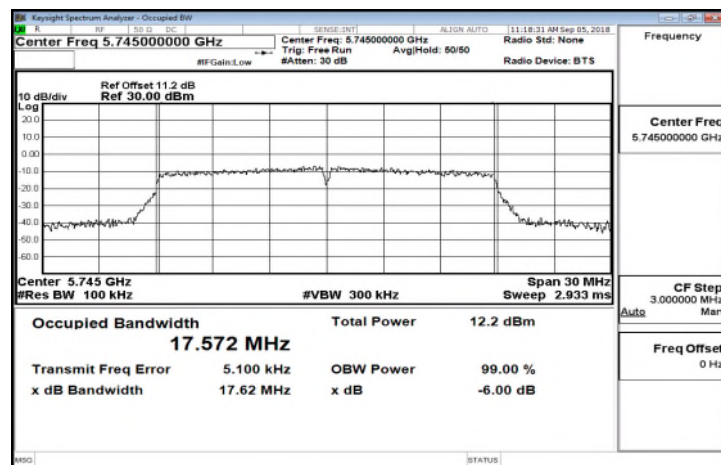


6dB Band Width Test Data CH-High (5825 MHz)

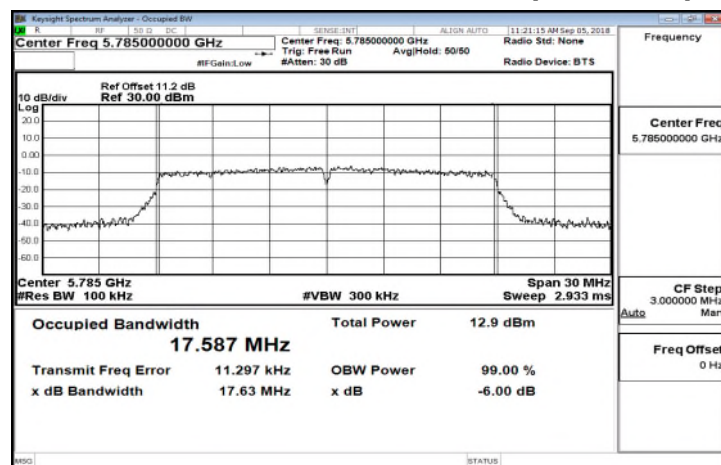


802.11n\_HT20, 5725~5850 MHz

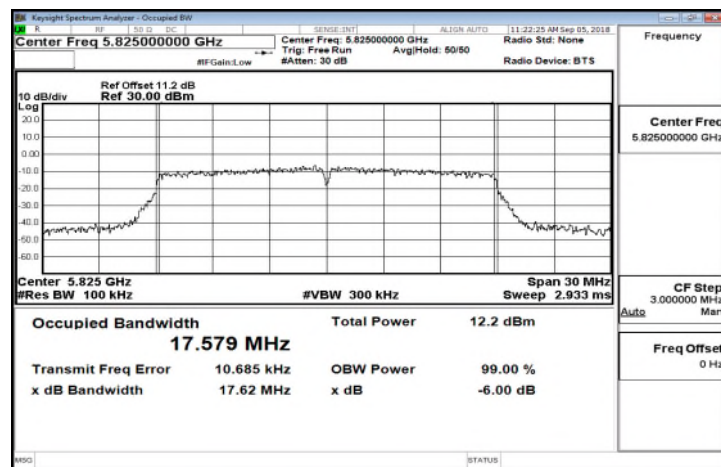
6dB Band Width Test Data CH-Low (5745 MHz)



6dB Band Width Test Data CH-Mid (5785 MHz)



6dB Band Width Test Data CH-High (5825 MHz)



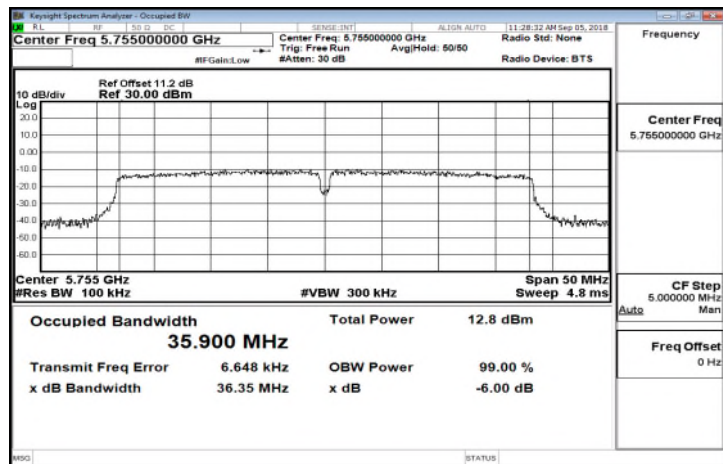
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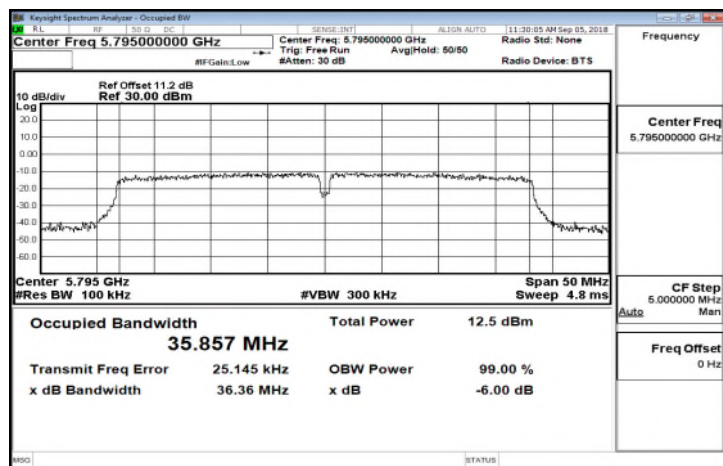
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## 802.11n\_HT40, 5725~5850 MHz

## 6dB Band Width Test Data CH-Low (5755 MHz)



## 6dB Band Width Test Data CH-Mid (5795 MHz)

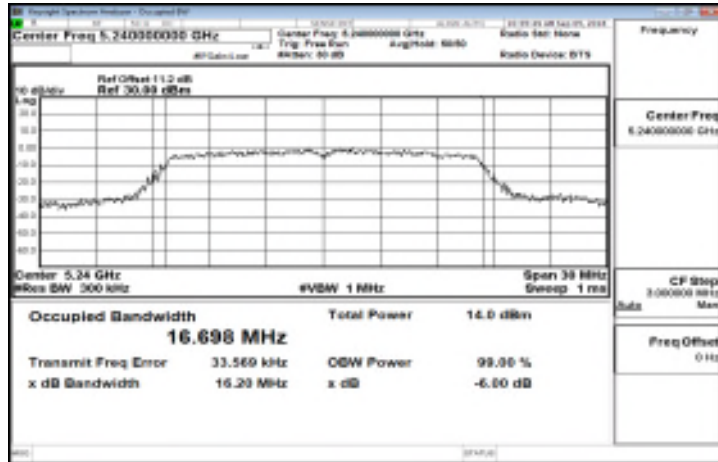


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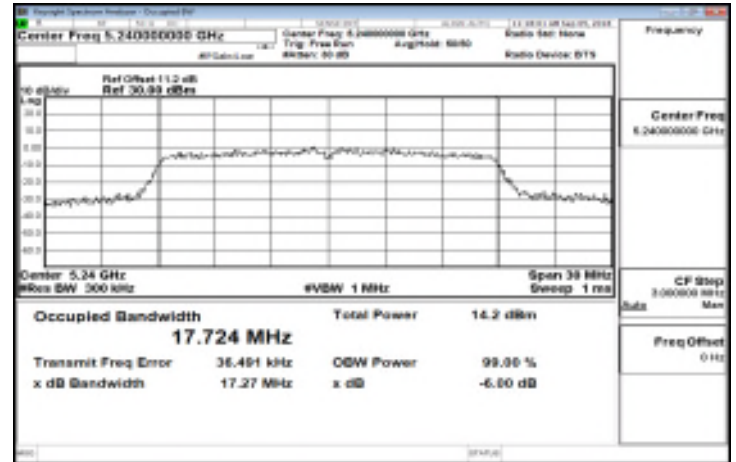
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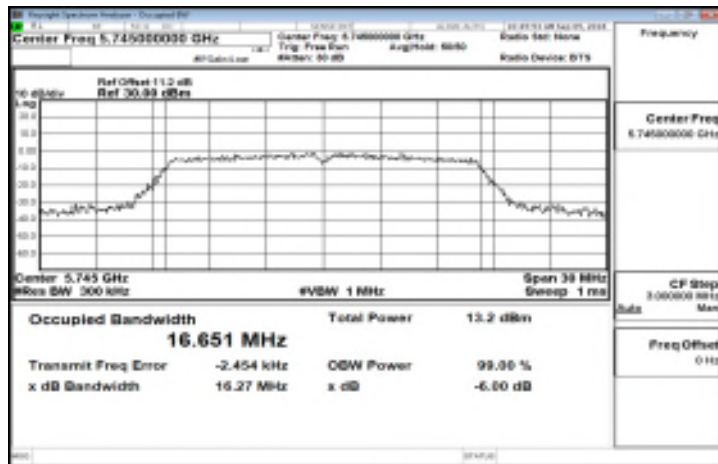
### 99% BW verification for DFS Function 802.11a\_5240MHz



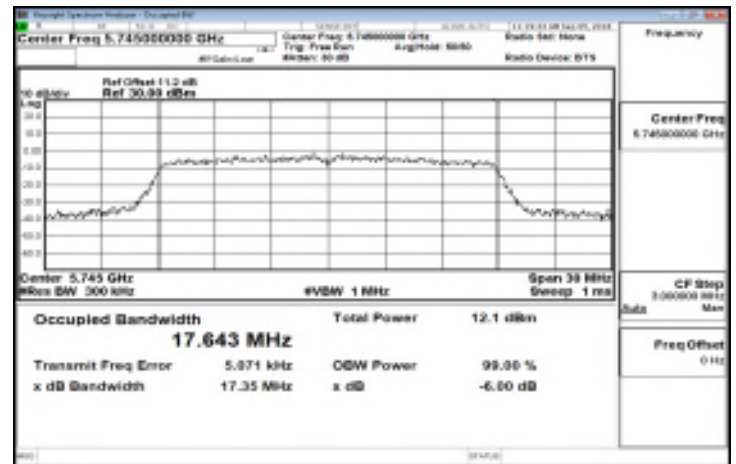
### 802.11n\_20MHz\_5240MHz



### 802.11a\_5745MHz



### 802.11n\_20MHz\_5745MHz



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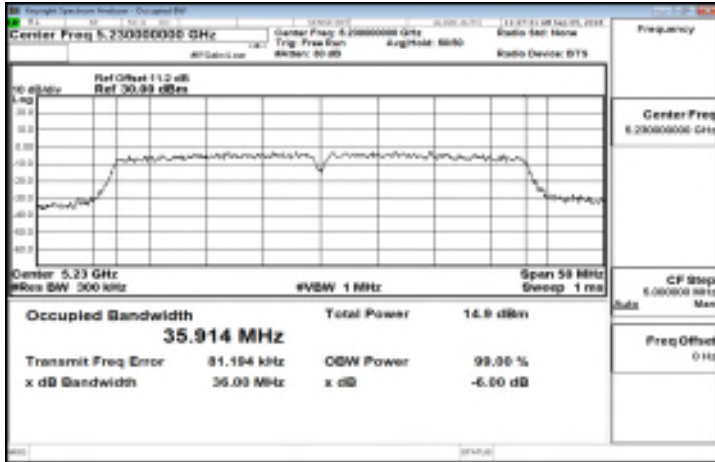
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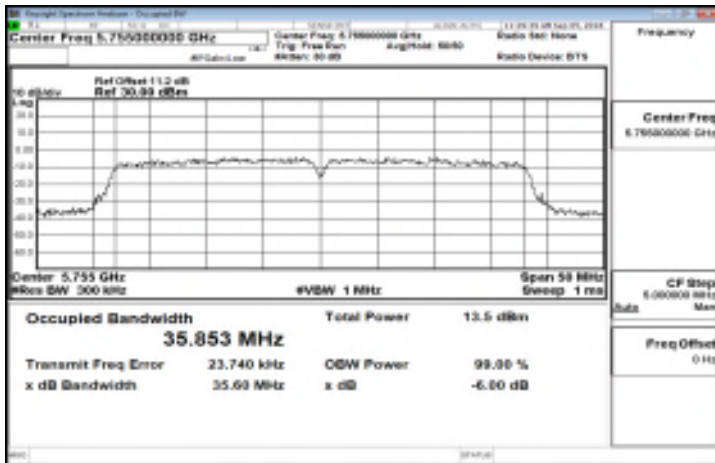
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## 802.11n\_40MHz\_5230MHz



## 802.11n\_40MHz\_5755MHz



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## 9 MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

### 9.1 Standard Applicable

| OPERZTION Band                                                                                                                                                                                     | EUT CATEGORY |                                   | LIMIT                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------------------------|-----------------------------------|
| U-NII-1                                                                                                                                                                                            |              | Access Point (Master device )     | 1 Watt(30dBm)                     |
|                                                                                                                                                                                                    |              | Fixed point-to-point Access Ponit | 1 Watt(30dBm)                     |
|                                                                                                                                                                                                    | √            | Mobile and portable client device | 250mW(23.98dBm)                   |
| U-NII-2A                                                                                                                                                                                           |              |                                   | 250mW(23.98dBm) or 11dBm+10 log B |
| U-NII-2C                                                                                                                                                                                           |              |                                   | 250mW(23.98dBm) or 11dBm+10 log B |
| U-NII-3                                                                                                                                                                                            | √            |                                   | 1 Watt(30dBm)                     |
| If transmitting antennas of directional gain greater than 6 dBi are used, the Maximum transmit power shall be reduced by the amount in dB that the direction-al gain of the antenna exceeds 6 dBi. |              |                                   |                                   |

The antenna gain is not grater than 6 dBi. Therefore, reduction of power is not required.

|               | Effective Legacy Gain (dBi) | Conducted Power Limit (dBm) |
|---------------|-----------------------------|-----------------------------|
| <b>UNII-1</b> | 5.63                        | 23.98                       |

The antenna gain is grater than 6 dBi , therefore the limit needs to be reduced as below:

|                | Effective Legacy Gain (dBi) | Conducted Power Limit (dBm) |
|----------------|-----------------------------|-----------------------------|
| <b>U-NII-3</b> | 7.18                        | 28.82                       |

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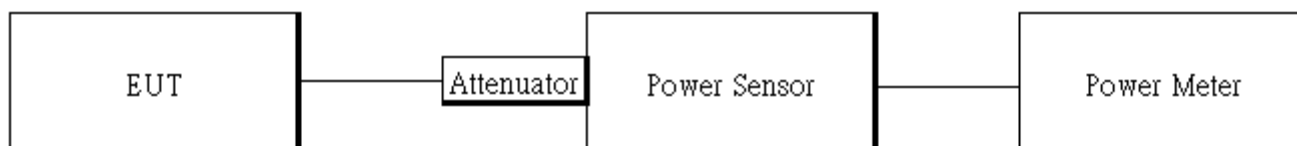
## 9.2 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter
4. Power Meter is used as the auxiliary test equipment to conduct the output power measurement.
5. Record the max. reading and add  $10 \log(1/\text{duty cycle})$ .
6. Repeat above procedures until all frequency (low, middle, and high channel) measured were complete.

## 9.3 Measurement Equipment Used

| SGS Conducted Room |              |            |               |                  |                 |
|--------------------|--------------|------------|---------------|------------------|-----------------|
| Name of Equipment  | Manufacturer | Model      | Serial Number | Calibration Date | Calibration Due |
| Power Meter        | Anritsu      | ML2496A    | 1326001       | 2018/08/09       | 2019/08/02      |
| Power Sensor       | Anritsu      | MA2411B    | 1315048       | 2018/08/09       | 2019/08/02      |
| Power Sensor       | Anritsu      | MA2411B    | 1315049       | 2018/08/09       | 2019/08/02      |
| Attenuator         | Marvelous    | MVE2213-10 | RF30          | 2017/12/26       | 2018/12/25      |
| Attenuator         | Marvelous    | MVE2213-10 | RF31          | 2017/12/26       | 2018/12/25      |

## 9.4 Test Set-up



## 9.5 Measurement Result

### Conducted output power (FCC)

#### 802.11a\_Ch0

| CH  | Frequency (MHz) | Data Rate | TOTAL POWER (dBm) | TOTAL POWER (mW) | REQUIRED LIMIT (dBm) | RESULT |
|-----|-----------------|-----------|-------------------|------------------|----------------------|--------|
| 36  | 5180            | 6         | 7.83              | 6.067            | 23.98                | PASS   |
| 44  | 5220            | 6         | <b>8.31</b>       | 6.776            | 23.98                | PASS   |
| 48  | 5240            | 6         | 8.26              | 6.699            | 23.98                | PASS   |
| 149 | 5745            | 6         | 9.02              | 7.980            | 28.82                | PASS   |
| 157 | 5785            | 6         | 9.01              | 7.962            | 28.82                | PASS   |
| 165 | 5825            | 6         | <b>9.08</b>       | 8.091            | 28.82                | PASS   |

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## 802.11n\_HT20\_Ch0

| CH  | Frequency (MHz) | Data Rate | TOTAL POWER (dBm) | TOTAL POWER (mW) | REQUIRED LIMIT (dBm) | RESULT |
|-----|-----------------|-----------|-------------------|------------------|----------------------|--------|
| 36  | 5180            | MCS0      | 7.93              | 6.209            | 23.98                | PASS   |
| 44  | 5220            | MCS0      | <b>8.28</b>       | 6.730            | 23.98                | PASS   |
| 48  | 5240            | MCS0      | 8.19              | 6.592            | 23.98                | PASS   |
| 149 | 5745            | MCS0      | 7.71              | 5.902            | 28.82                | PASS   |
| 157 | 5785            | MCS0      | 8.03              | 6.353            | 28.82                | PASS   |
| 165 | 5825            | MCS0      | <b>8.12</b>       | 6.486            | 28.82                | PASS   |

## 802.11n\_HT40\_Ch0

| CH  | Frequency (MHz) | Data Rate | TOTAL POWER (dBm) | TOTAL POWER (mW) | REQUIRED LIMIT (dBm) | RESULT |
|-----|-----------------|-----------|-------------------|------------------|----------------------|--------|
| 38  | 5190            | MCS0      | 7.11              | 5.140            | 23.98                | PASS   |
| 46  | 5230            | MCS0      | <b>7.37</b>       | 5.458            | 23.98                | PASS   |
| 151 | 5755            | MCS0      | <b>8.25</b>       | 6.683            | 28.82                | PASS   |
| 159 | 5795            | MCS0      | 7.88              | 6.138            | 28.82                | PASS   |

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## 10 MAXIMUM POWER SPECTRAL DENSITY

### 10.1 Standard Applicable

| OPERZTION Band                                                                                                                                                                                            | EUT CATEGORY |                                   | LIMIT         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------------------------|---------------|
| U-NII-1                                                                                                                                                                                                   |              | Access Point (Master device )     | 17dBm/ MHz    |
|                                                                                                                                                                                                           |              | Fixed point-to-point Access Ponit |               |
|                                                                                                                                                                                                           | √            | Mobile and portable client device | 11dBm/ MHz    |
| U-NII-2A                                                                                                                                                                                                  |              |                                   | 11dBm/ MHz    |
| U-NII-2C                                                                                                                                                                                                  |              |                                   | 11dBm/ MHz    |
| U-NII-3                                                                                                                                                                                                   | √            |                                   | 30dBm/ 500kHz |
| 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. |              |                                   |               |

The antenna gain is not grater than 6 dBi. Therefore, reduction of power is not required.

|               | Effective Legacy Gain (dBi) | PSD Limit |         |
|---------------|-----------------------------|-----------|---------|
| <b>UNII-1</b> | 5.63                        | 11.00     | dBm/MHz |

The antenna gain is grater than 6 dBi , therefore the limit needs to be reduced as below:

|                | Effective Legacy Gain (dBi) | PSD Limit |             |
|----------------|-----------------------------|-----------|-------------|
| <b>U-NII-3</b> | 7.18                        | 28.82     | dBm/500 kHz |

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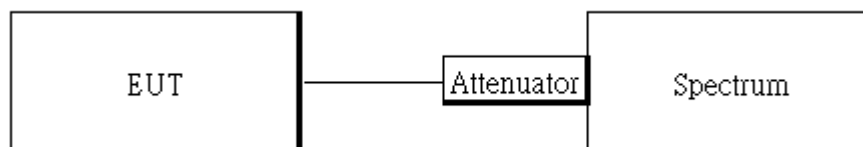
## 10.2 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Spectrum.
4. **For U-NII1, U-NII-2A, U-NII-2C Band:**  
Set RBW=1MHz, VBW=3MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)  
**For U-NII-3 Band:**  
Set RBW=500 kHz, VBW $\geq$  3RBW, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)
5. User the cursor on spectrum to peak search the highest level of trace
6. Record the max. reading and add 10 log(1/duty cycle).
7. Repeat above procedures until all default test channel (low, middle, and high) was complete.

## 10.3 Measurement Equipment Used

| SGS Conducted Room |              |            |               |                  |                 |
|--------------------|--------------|------------|---------------|------------------|-----------------|
| Name of Equipment  | Manufacturer | Model      | Serial Number | Calibration Date | Calibration Due |
| Spectrum Analyzer  | Agilent      | N9010A     | MY53400256    | 2017/10/30       | 2018/10/29      |
| Attenuator         | Marvelous    | MVE2213-10 | RF30          | 2017/12/26       | 2018/12/25      |
| DC Block           | PASTERNAK    | PE8210     | RF29          | 2017/12/26       | 2018/12/25      |

## 10.4 Test Set-up



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## 10.5 Measurement Result

| POWER DENSITY 802.11a MODE      |                           |        |             |                             |             |             |
|---------------------------------|---------------------------|--------|-------------|-----------------------------|-------------|-------------|
| Frequency (MHz)                 | PSD W/O Duty Factor (dBm) | Offset | Duty Factor | PPSD With Duty Factor (dBm) | Limit (dBm) | Margin (dB) |
| 5180                            | -1.90                     | 11.20  | 0.00        | -1.90                       | 11          | -12.90      |
| 5220                            | -1.36                     | 11.20  | 0.00        | -1.36                       | 11          | -12.36      |
| 5240                            | -2.45                     | 11.20  | 0.00        | -2.45                       | 11          | -13.45      |
| 5745                            | 1.33                      | 11.20  | 0.00        | 1.33                        | 28.82       | -27.49      |
| 5785                            | 2.39                      | 11.20  | 0.00        | 2.39                        | 28.82       | -26.43      |
| 5825                            | 2.53                      | 11.20  | 0.00        | 2.53                        | 28.82       | -26.29      |
| POWER DENSITY 802.11n HT20 MODE |                           |        |             |                             |             |             |
| Frequency (MHz)                 | PSD W/O Duty Factor (dBm) | Offset | Duty Factor | PPSD With Duty Factor (dBm) | Limit (dBm) | Margin (dB) |
| 5180                            | -1.88                     | 11.20  | 0.00        | -1.88                       | 11          | -12.88      |
| 5220                            | -1.38                     | 11.20  | 0.00        | -1.38                       | 11          | -12.38      |
| 5240                            | -2.45                     | 11.20  | 0.00        | -2.45                       | 11          | -13.45      |
| 5745                            | 1.40                      | 11.20  | 0.00        | 1.40                        | 28.82       | -27.42      |
| 5785                            | 1.54                      | 11.20  | 0.00        | 1.54                        | 28.82       | -27.28      |
| 5825                            | 0.56                      | 11.20  | 0.00        | 0.56                        | 28.82       | -28.26      |
| POWER DENSITY 802.11n HT40 MODE |                           |        |             |                             |             |             |
| Frequency (MHz)                 | PSD W/O Duty Factor (dBm) | Offset | Duty Factor | PSD With Duty Factor (dBm)  | Limit (dBm) | Margin (dB) |
| 5190                            | -5.97                     | 11.20  | 0.00        | -5.97                       | 11          | -16.97      |
| 5230                            | -5.5                      | 11.20  | 0.00        | -5.50                       | 11          | -16.50      |
| 5755                            | -2.15                     | 11.20  | 0.00        | -2.15                       | 28.82       | -30.97      |
| 5795                            | -2.68                     | 11.20  | 0.00        | -2.68                       | 28.82       | -31.50      |

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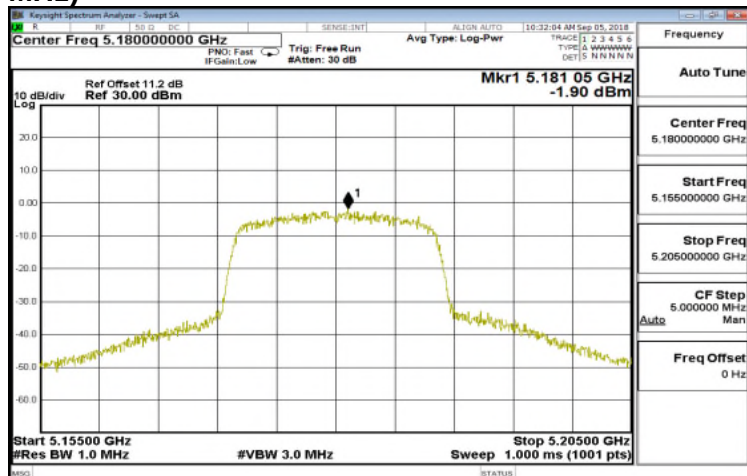
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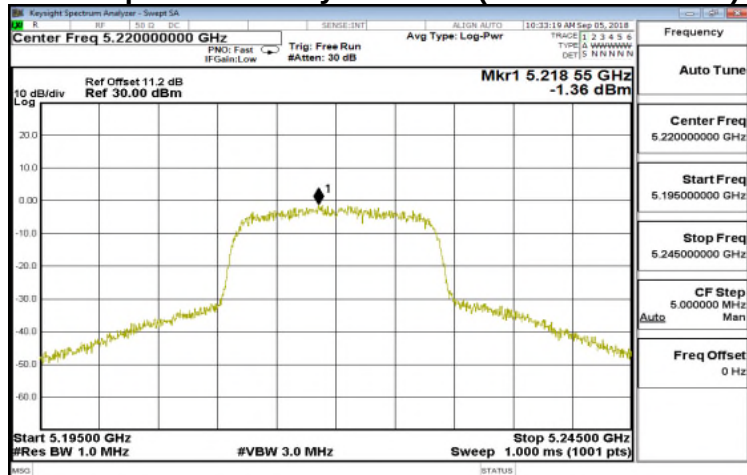
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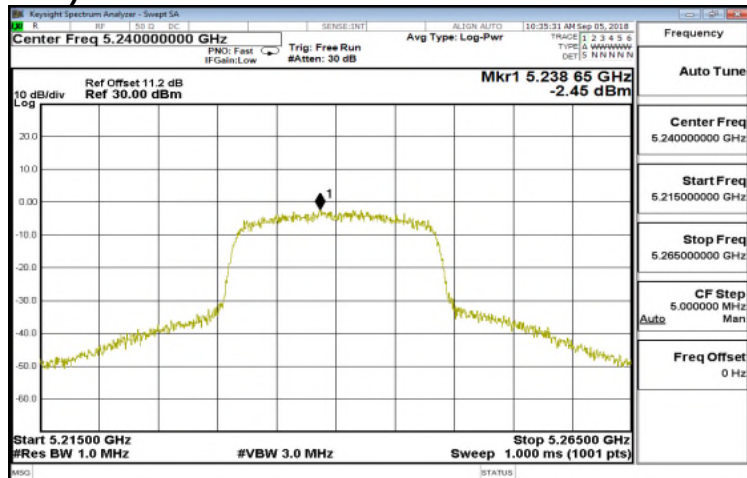
## 802.11a 5150~5250 MHz Power Spectral Density Data Plot (CH Low 5180 MHz)



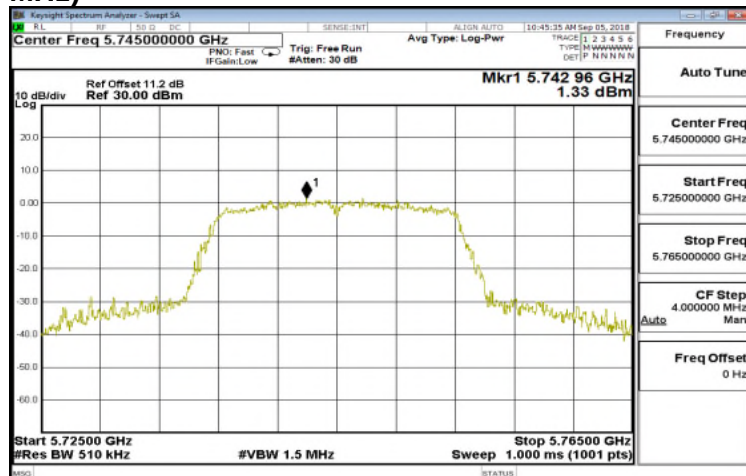
## Power Spectral Density Data Plot (CH Mid 5220 MHz)



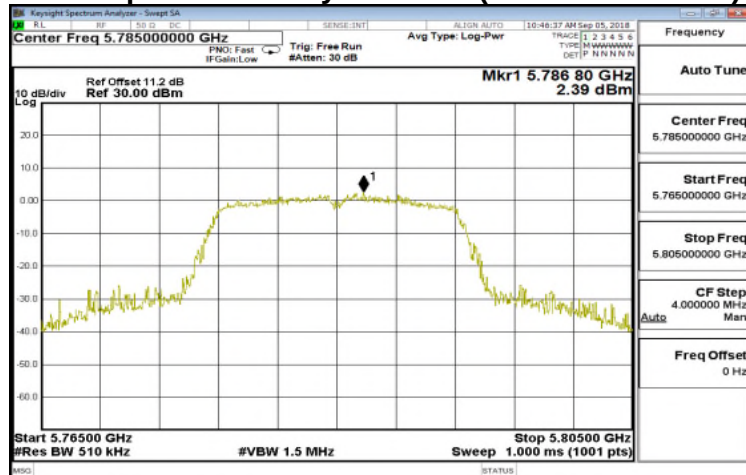
## Power Spectral Density Data Plot (CH High 5240 MHz)



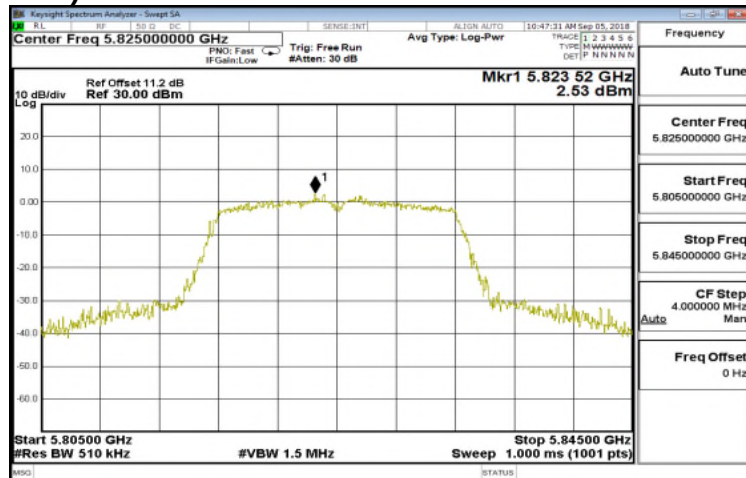
## 802.11a 5725~5850 MHz Power Spectral Density Data Plot (CH Low 5745 MHz)



## Power Spectral Density Data Plot (CH Mid 5785 MHz)



## Power Spectral Density Data Plot (CH High 5825 MHz)

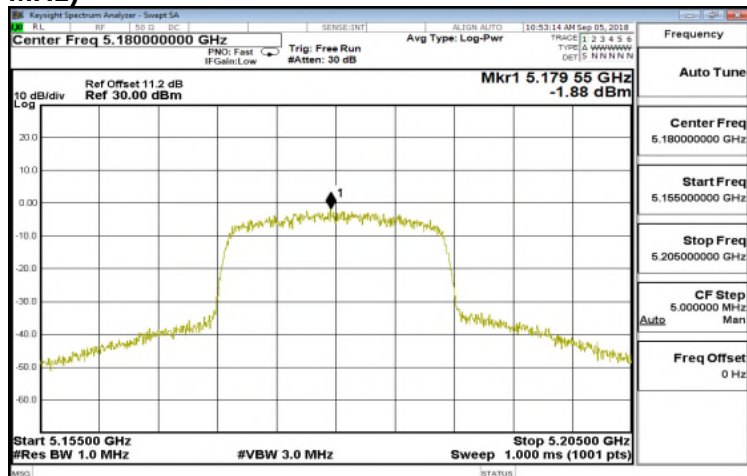


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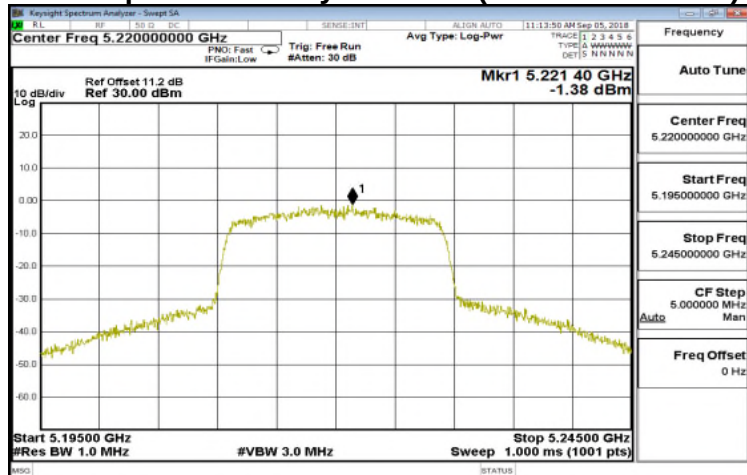
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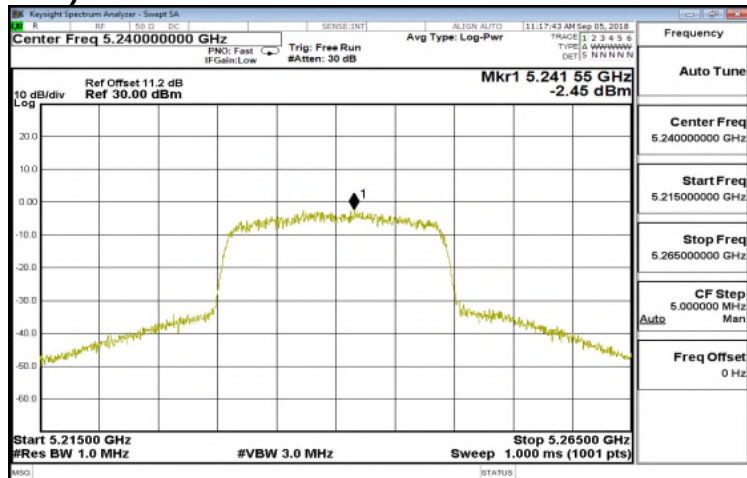
### 802.11n HT20, 5150~5250 MHz Power Spectral Density Data Plot (CH Low 5180 MHz)



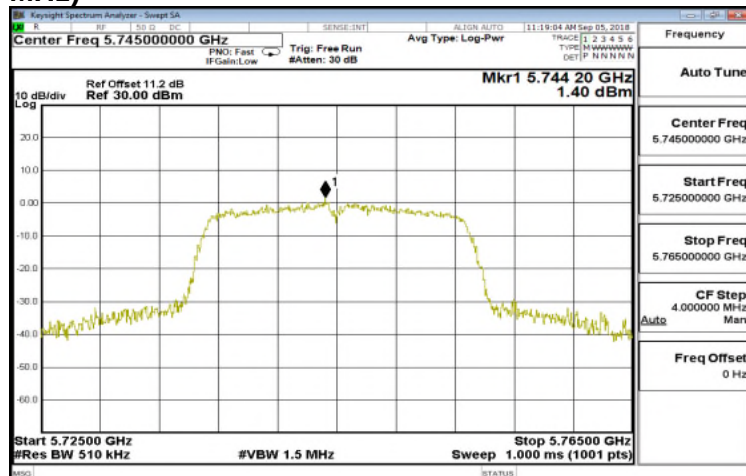
### Power Spectral Density Data Plot (CH Mid 5220 MHz)



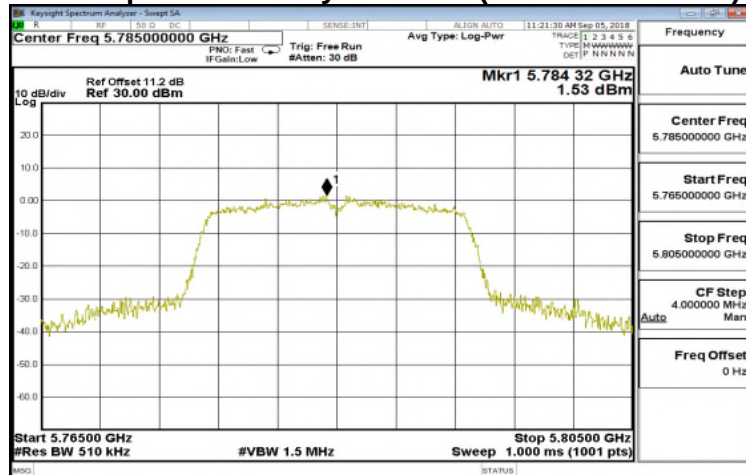
### Power Spectral Density Data Plot (CH High 5240 MHz)



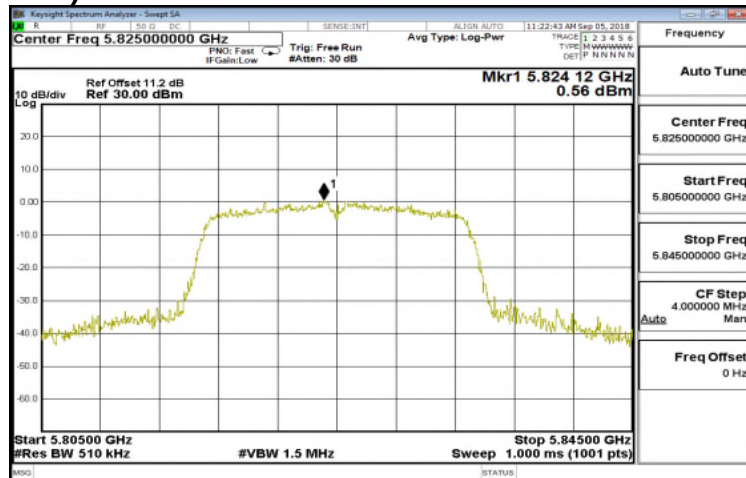
### 802.11n HT20, 5725~5850 MHz Power Spectral Density Data Plot (CH Low 5745 MHz)



### Power Spectral Density Data Plot (CH Mid 5785 MHz)



### Power Spectral Density Data Plot (CH High 5825 MHz)

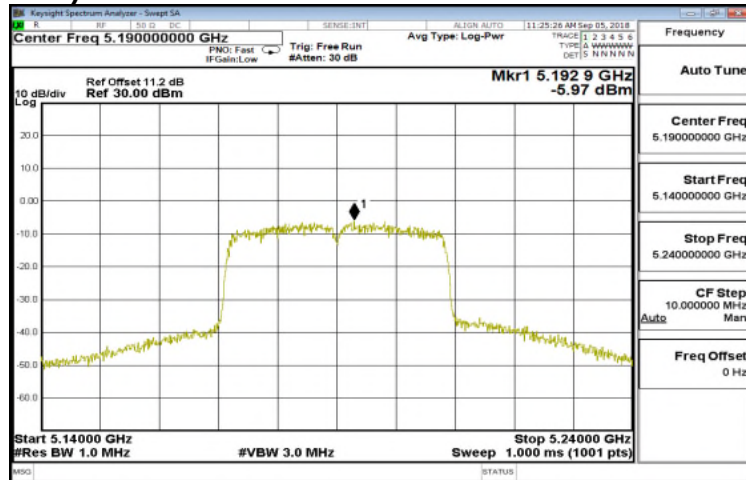


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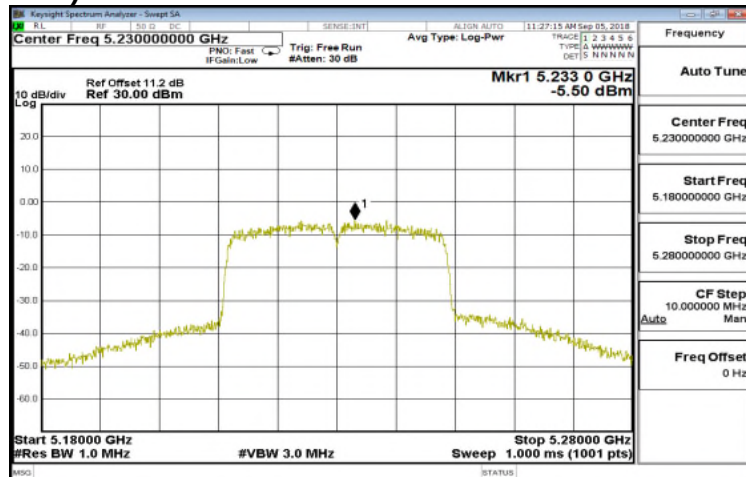
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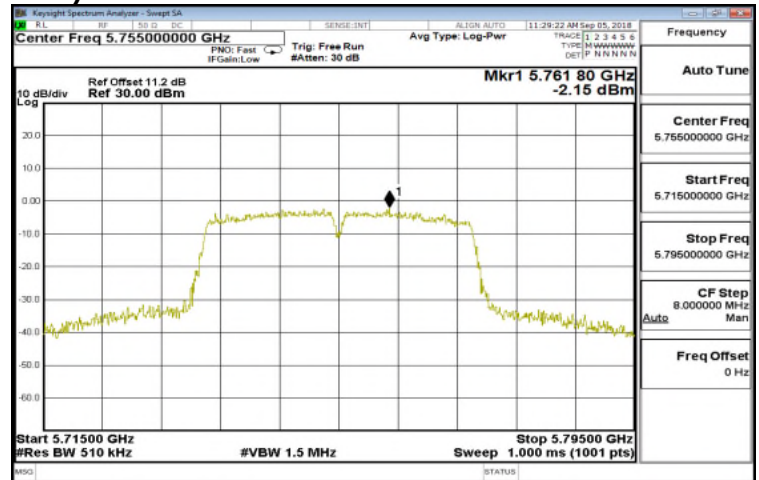
## 802.11n HT40, 5150~5250 MHz Power Spectral Density Data Plot (CH Low 5190 MHz)



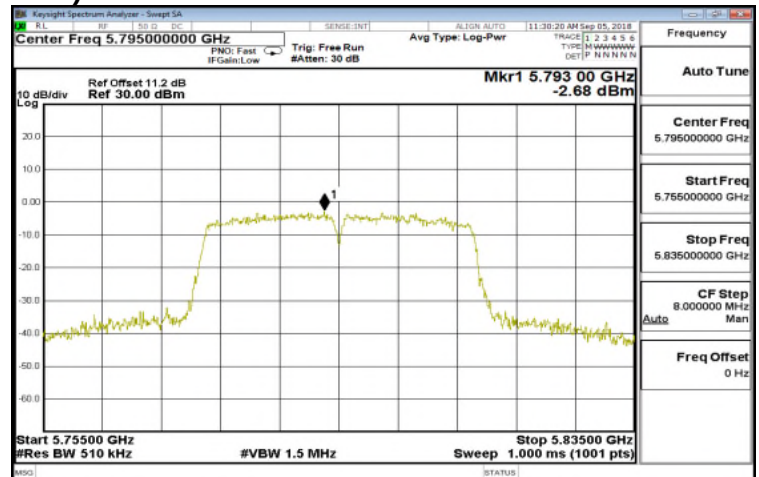
## Power Spectral Density Data Plot (CH High 5230 MHz)



## 802.11n HT40, 5725~5850 MHz Power Spectral Density Data Plot (CH Low 5755 MHz)



## Power Spectral Density Data Plot (CH High 5795 MHz)



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## 11 UNDESIRABLE RADIATED EMISSION MEASUREMENT

### 11.1 Standard Applicable

The maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

1. For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
2. For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

| APPLICABLE TO                                                                                                                                                                                                                                                                                                                      | LIMIT                                                                                   |                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| FCC KDB 789033 D02 General<br>UNII Test Procedures New Rules                                                                                                                                                                                                                                                                       | FIELD STRENGTH AT 3m                                                                    |                                                                                             |
|                                                                                                                                                                                                                                                                                                                                    | PK: 74 (dBμV/m)                                                                         | AV 54 (dBμV/m)                                                                              |
| APPLICABLE TO                                                                                                                                                                                                                                                                                                                      | EIRP LIMIT                                                                              | FIELD STRENGTH AT 3m                                                                        |
| 15.407(b)(1)                                                                                                                                                                                                                                                                                                                       | PK: -27 (dBm/MHz)                                                                       | PK: 68.3 (dBμV/m)                                                                           |
| 15.407(b)(2)                                                                                                                                                                                                                                                                                                                       |                                                                                         |                                                                                             |
| 15.407(b)(3)                                                                                                                                                                                                                                                                                                                       |                                                                                         |                                                                                             |
| 15.407(b)(4)(i)                                                                                                                                                                                                                                                                                                                    | PK:-27 (dBm/MHz) *1<br>PK:10 (dBm/MHz) *2<br>PK:15.6 (dBm/MHz) *3<br>PK:27 (dBm/MHz) *4 | PK: 68.2(dBμV/m) *1<br>PK:105.2 (dBμV/m) *2<br>PK: 110.8(dBμV/m) *3<br>PK:122.2 (dBμV/m) *4 |
| *1 beyond 75 MHz or more above of the bandedge.<br>*2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.<br>*3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.<br>*4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge. |                                                                                         |                                                                                             |

EIRP =  $(E \cdot d)^2 / 30$ , where E is the field in V/m, d is the measurement distance (3m), EIRP is the equivalent isotropically radiated power in Watts.

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Unwanted spurious emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table:

| Frequency (MHz) | Field strength (microvolts/meter) | Distance (meters) |
|-----------------|-----------------------------------|-------------------|
| 0.009-0.490     | 2400/F(KHz)                       | 300               |
| 0.490-1.705     | 24000/F(KHz)                      | 30                |
| 1.705-30        | 30                                | 30                |
| 30-88           | 100                               | 3                 |
| 88-216          | 150                               | 3                 |
| 216-960         | 200                               | 3                 |
| Above 960       | 500                               | 3                 |

**Note:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBμV/m) = 20 log Emission level (dBμV/m)

## 11.2 Measurement Equipment Used

| SGS SAC-III           |                 |                   |               |                  |                 |
|-----------------------|-----------------|-------------------|---------------|------------------|-----------------|
| Name of Equipment     | Manufacturer    | Model             | Serial Number | Calibration Date | Calibration Due |
| Horn Antenna          | Schwarzbeck     | BBHA9120D         | 1341          | 2018/06/07       | 2019/06/06      |
| 3m Site NSA           | SGS             | 966 chamber D     | N/A           | 2018/07/06       | 2019/07/05      |
| Spectrum Analyzer     | Agilent         | N9010A            | MY53400256    | 2017/10/30       | 2018/10/29      |
| Pre-Amplifier         | EMC Instruments | EMC184045B        | 980135        | 2017/10/27       | 2018/10/26      |
| Pre-Amplifier         | EMC Instruments | EMC12630SE        | 980271        | 2017/12/26       | 2018/12/25      |
| Attenuator            | Marvelous       | WATT-218FS-10     | RF246         | 2017/12/26       | 2018/12/25      |
| DC Block              | PASTERNAK       | PE8210            | RF81          | 2017/12/26       | 2018/12/25      |
| Band Rejection Filter | Micro-Tronics   | G015              | RF100         | 2017/12/26       | 2018/12/25      |
| Coaxial Cable         | Huber Suhner    | EMC106-SM-SM-7200 | 150703        | 2017/12/26       | 2018/12/25      |
| Notebook              | Lenovo          | L420              | S0012467      | N/A              | N/A             |
| Broadband Antenna     | SCHWAZBECK      | VULB 9168         | 9168-617      | 2018/10/30       | 2019/10/29      |

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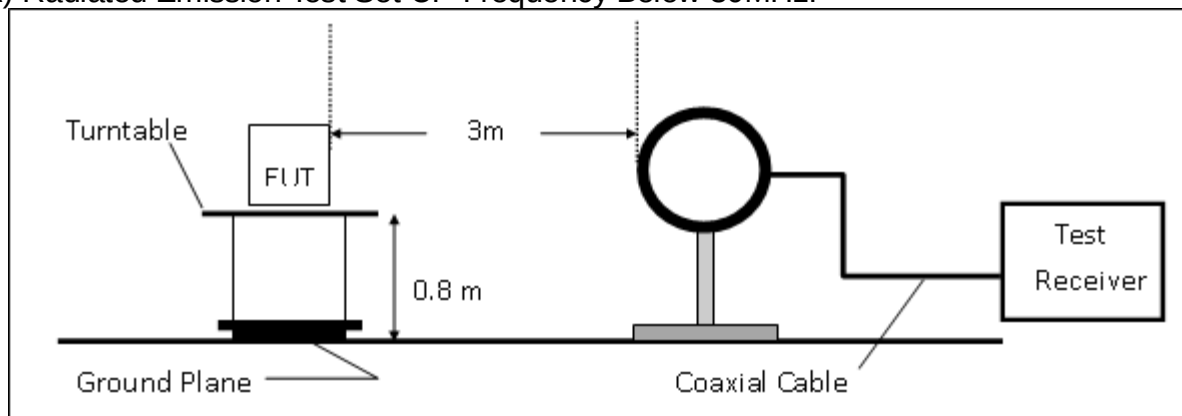
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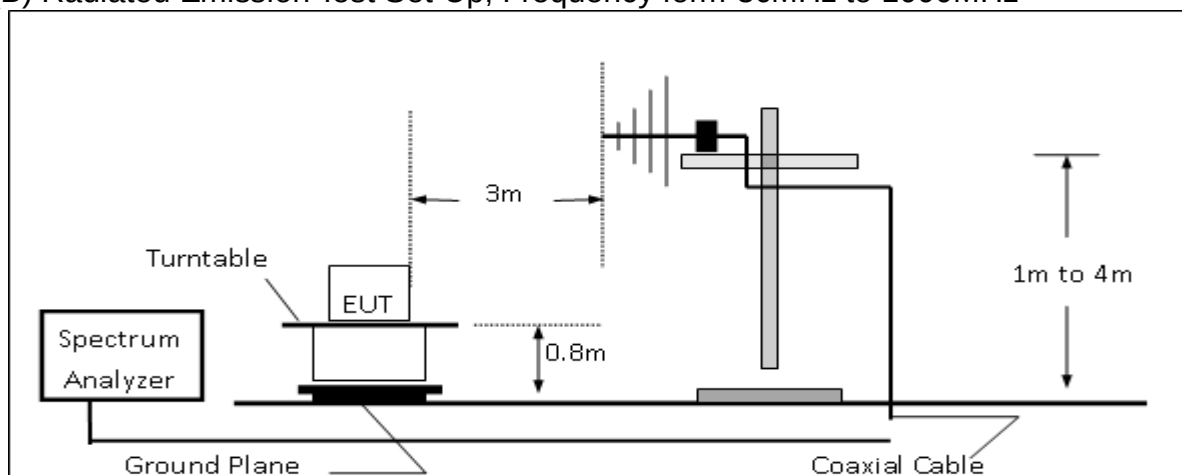
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## 11.3 Test SET-UP

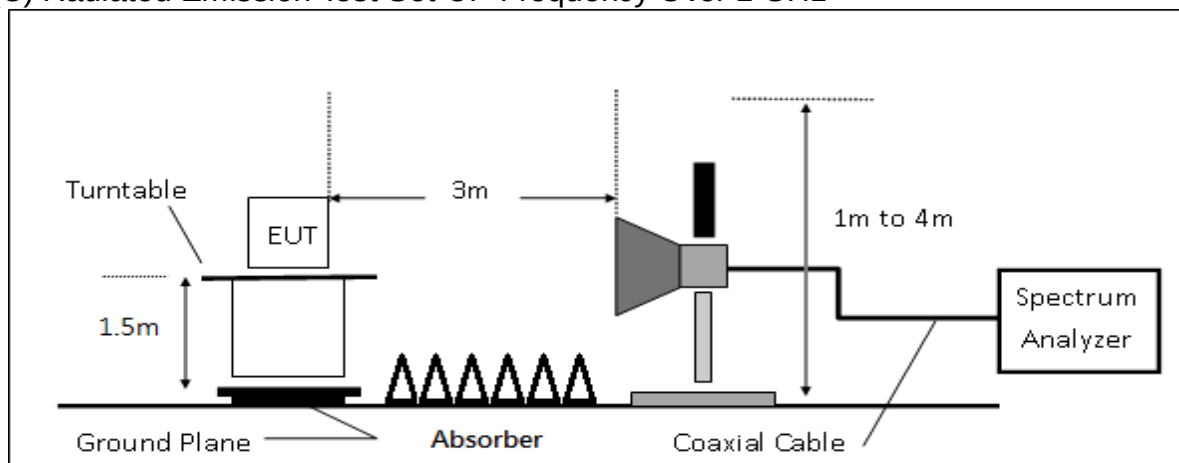
### (A) Radiated Emission Test Set-UP Frequency Below 30MHz.



### (B) Radiated Emission Test Set-UP, Frequency form 30MHz to 1000MHz



### (C) Radiated Emission Test Set-UP Frequency Over 1 GHz



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## 11.4 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
3. The EUT was placed on a turn table with 0.8m for frequency< 1GHz and 1.5m for frequency> 1GHz above ground plane.
4. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
5. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
6. Set the spectrum analyzer as RBW=120 kHz and VBW=300 kHz for Peak Detector (PK) and Quasi-peak (QP) at frequency below 1 GHz.
7. Set the spectrum analyzer as RBW=1 MHz, VBW=3 MHz for Peak Detector at frequency above 1 GHz.
8. Set the spectrum analyzer as RBW=1 MHz, VBW=10 Hz (Duty cycle > 98%) or VBW ≥ 1/T (Duty cycle < 98%) for Average Detector at frequency above 1 GHz.
9. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
10. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
11. Repeat above procedures until all frequency measured were complete.

## 11.5 Field Strength Calculation

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

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

|       |                        |                                            |
|-------|------------------------|--------------------------------------------|
| Where | FS = Field Strength    | CL = Cable Attenuation Factor (Cable Loss) |
|       | RA = Reading Amplitude | AG = Amplifier Gain                        |
|       | AF = Antenna Factor    |                                            |

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)

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### 11.6 Test Results of Radiated Spurious Emissions form 9 KHz to 30 MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit per 15.31(o) was not reported.

### 11.7 Measurement Result

Refer to attach tabular data sheets.

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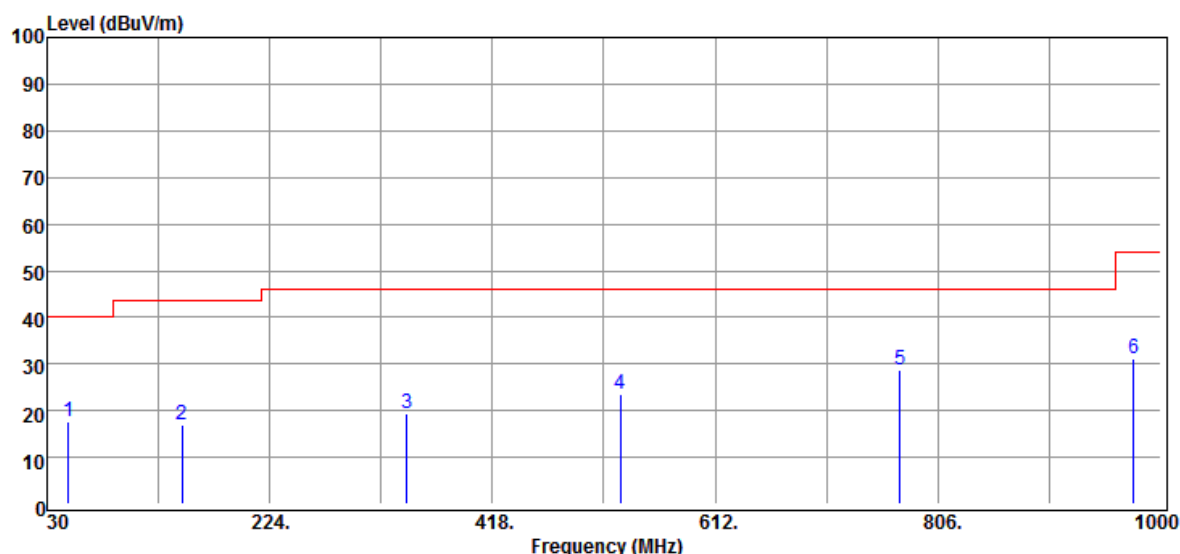
# Radiated Spurious Emission Measurement Result

## Below 1GHz Worst-Case Data:

### 802.11a 5150~5250 MHz

Operation Mode :802.11a / Band1  
Test Mode :Tx CH Mid  
EUT Pol :E1 Plan  
Test Channel :5220 MHz

Test Date :2018-09-03  
Temp./Humi. :25/60  
Antenna Pol. :VERTICAL  
Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 48.43        | Peak                         | 34.63                             | -16.93       | 17.70                  | 40.00                  | -22.30       |
| 147.37       | Peak                         | 33.28                             | -16.24       | 17.04                  | 43.50                  | -26.46       |
| 343.31       | Peak                         | 33.62                             | -14.21       | 19.41                  | 46.00                  | -26.59       |
| 529.55       | Peak                         | 33.69                             | -10.05       | 23.64                  | 46.00                  | -22.36       |
| 773.02       | Peak                         | 35.55                             | -6.97        | 28.58                  | 46.00                  | -17.42       |
| 976.72       | Peak                         | 34.45                             | -3.42        | 31.03                  | 54.00                  | -22.97       |

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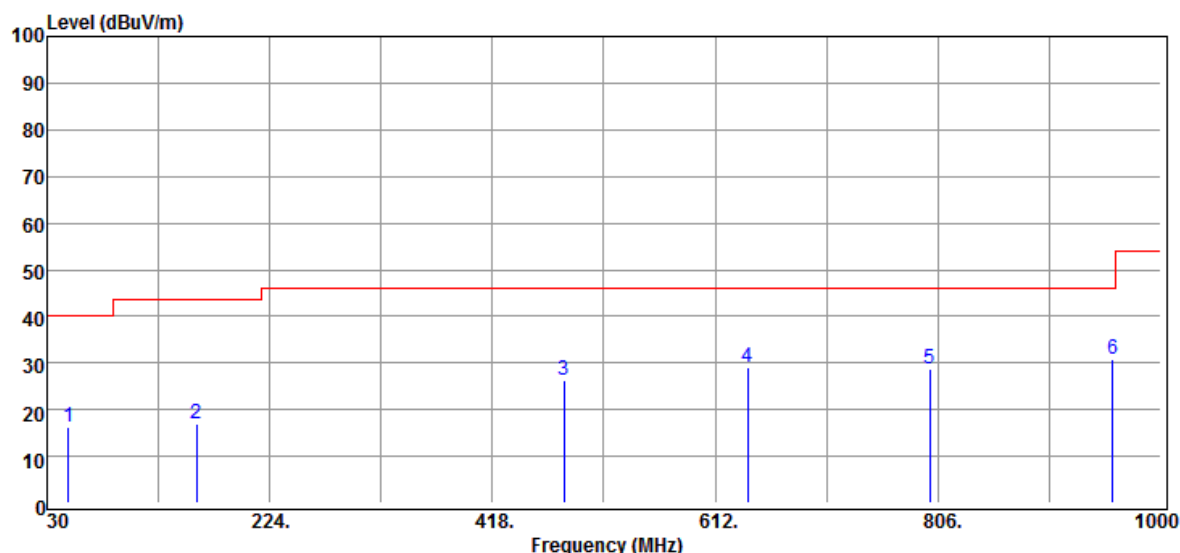
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Operation Mode :802.11a / Band1  
 Test Mode :Tx CH Mid  
 EUT Pol :E1 Plan  
 Test Channel :5220 MHz

Test Date :2018-09-03  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 48.43        | Peak                         | 33.31                             | -16.93       | 16.38                  | 40.00                  | -23.62       |
| 159.98       | Peak                         | 33.05                             | -16.19       | 16.86                  | 43.50                  | -26.64       |
| 480.08       | Peak                         | 37.21                             | -11.04       | 26.17                  | 46.00                  | -19.83       |
| 640.13       | Peak                         | 37.34                             | -8.14        | 29.20                  | 46.00                  | -16.80       |
| 799.21       | Peak                         | 35.13                             | -6.49        | 28.64                  | 46.00                  | -17.36       |
| 958.29       | Peak                         | 34.94                             | -4.19        | 30.75                  | 46.00                  | -15.25       |

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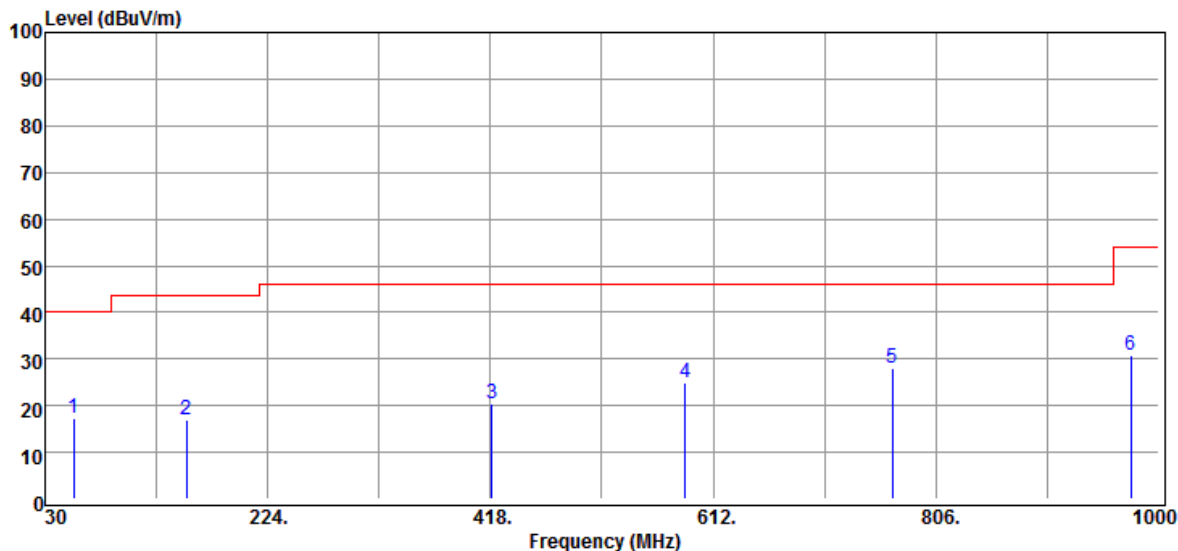
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# 802.11a, 5725~5850 MHz

Operation Mode :802.11a / Band4  
Test Mode :Tx CH Mid  
EUT Pol :E1 Plan  
Test Channel :5785 MHz

Test Date :2018-09-03  
Temp./Humi. :25/60  
Antenna Pol. :VERTICAL  
Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 55.22        | Peak                         | 34.68                             | -17.26       | 17.42                  | 40.00                  | -22.58       |
| 153.19       | Peak                         | 33.23                             | -16.17       | 17.06                  | 43.50                  | -26.44       |
| 418.97       | Peak                         | 32.83                             | -12.26       | 20.57                  | 46.00                  | -25.43       |
| 587.75       | Peak                         | 33.80                             | -8.77        | 25.03                  | 46.00                  | -20.97       |
| 768.17       | Peak                         | 34.79                             | -6.87        | 27.92                  | 46.00                  | -18.08       |
| 975.75       | Peak                         | 34.36                             | -3.40        | 30.96                  | 54.00                  | -23.04       |

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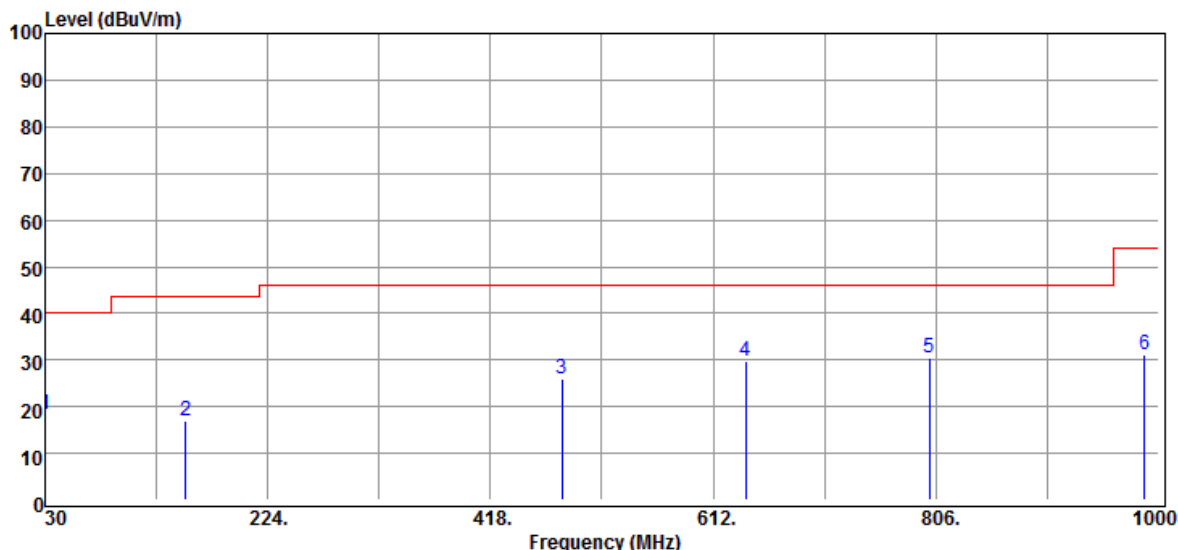
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Operation Mode :802.11a / Band4  
 Test Mode :Tx CH Mid  
 EUT Pol :E1 Plan  
 Test Channel :5785 MHz

Test Date :2018-09-03  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 30.00        | Peak                         | 35.28                             | -17.05       | 18.23                  | 40.00                  | -21.77       |
| 152.22       | Peak                         | 33.01                             | -16.16       | 16.85                  | 43.50                  | -26.65       |
| 480.08       | Peak                         | 37.02                             | -11.04       | 25.98                  | 46.00                  | -20.02       |
| 640.13       | Peak                         | 37.88                             | -8.14        | 29.74                  | 46.00                  | -16.26       |
| 800.18       | Peak                         | 36.92                             | -6.44        | 30.48                  | 46.00                  | -15.52       |
| 987.39       | Peak                         | 34.97                             | -3.78        | 31.19                  | 54.00                  | -22.81       |

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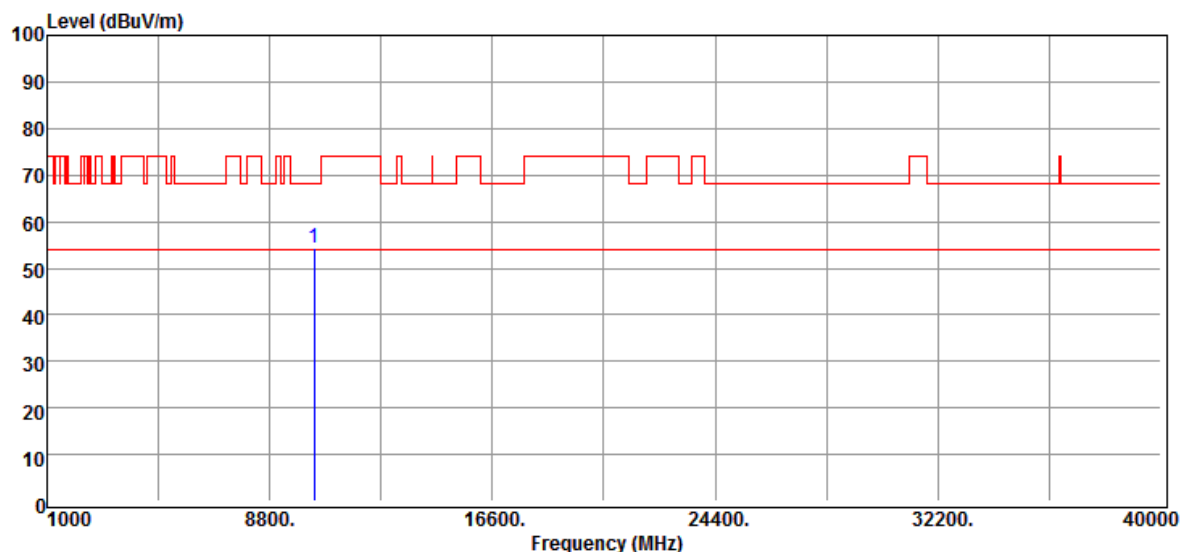
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## Above 1GHz Worst-Case Data:

### Radiated Spurious Emission Measurement Result 802.11a, 5150~5250 MHz

|                |                  |              |             |
|----------------|------------------|--------------|-------------|
| Operation Mode | :802.11a / Band1 | Test Date    | :2018-09-01 |
| Test Mode      | :Tx CH Low       | Temp./Humi.  | :25/60      |
| EUT Pol        | :E1 Plan         | Antenna Pol. | :VERTICAL   |
| Test Channel   | :5180 MHz        | Engineer     | :Jerry      |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10360.00     | Peak                         | 41.95                             | 12.41        | 54.36                  | 68.20                  | -13.84       |

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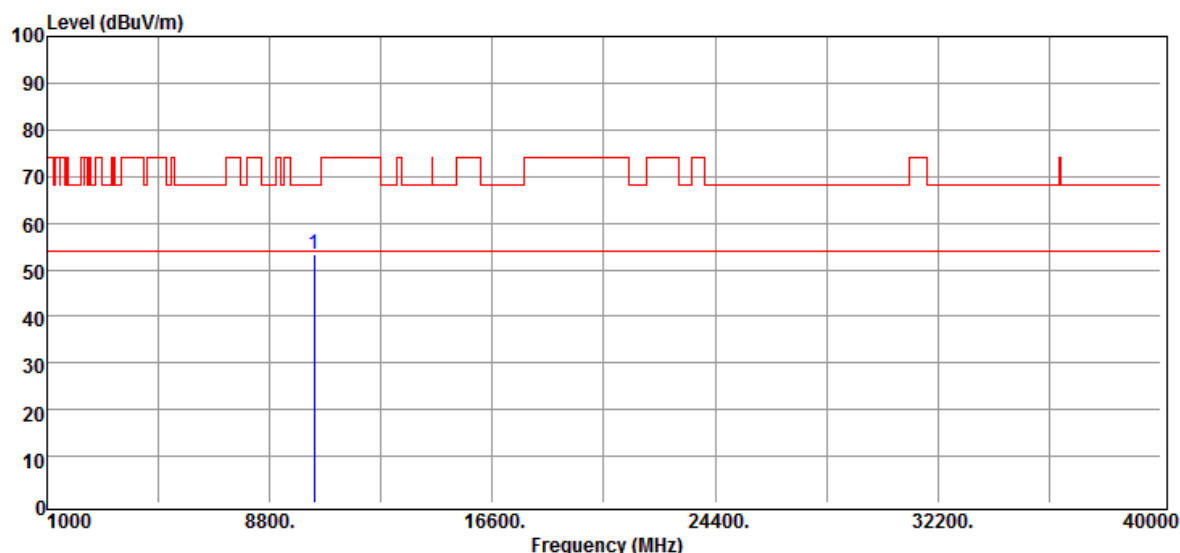
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Operation Mode :802.11a / Band1  
 Test Mode :Tx CH Low  
 EUT Pol :E1 Plan  
 Test Channel :5180 MHz

Test Date :2018-09-01  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10360.00     | Peak                         | 40.86                             | 12.41        | 53.27                  | 68.20                  | -14.93       |

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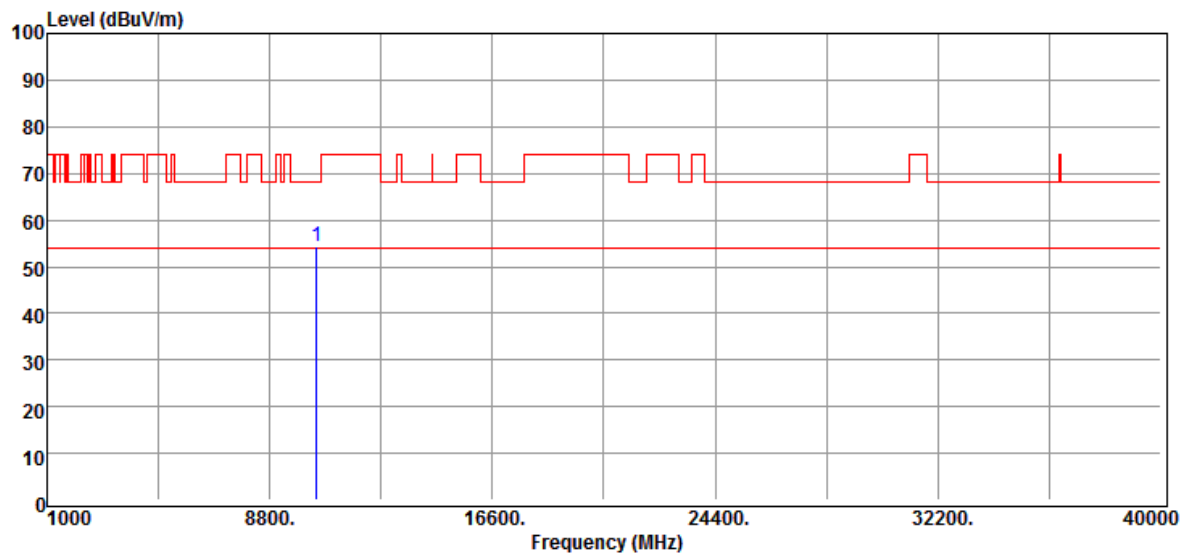
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Operation Mode :802.11a / Band1  
 Test Mode :Tx CH Mid  
 EUT Pol :E1 Plan  
 Test Channel :5220 MHz

Test Date :2018-09-01  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10440.00     | Peak                         | 41.96                             | 12.52        | 54.48                  | 68.20                  | -13.72       |

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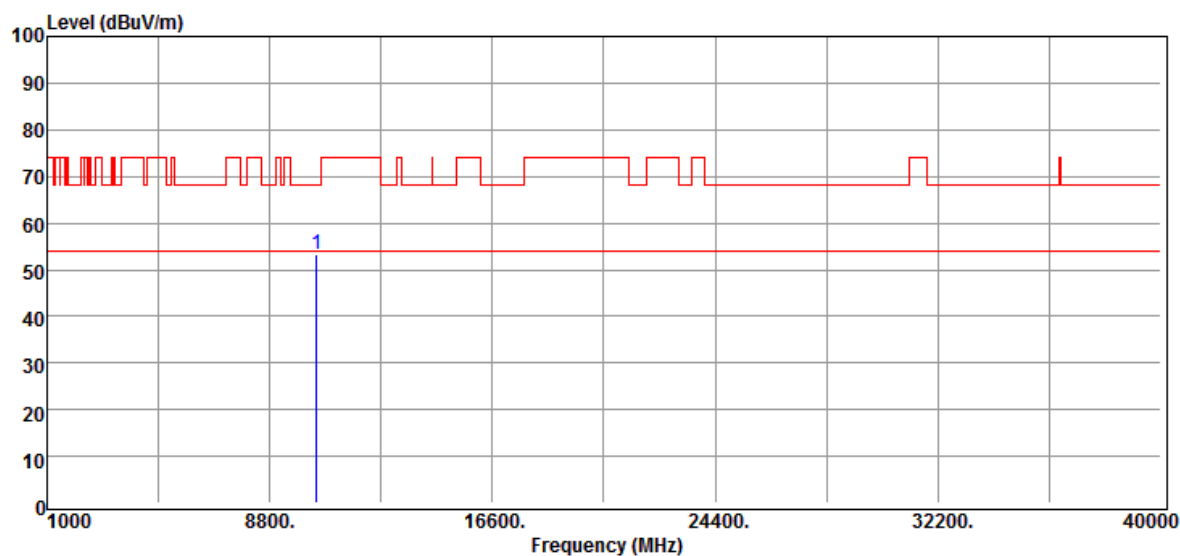
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Operation Mode :802.11a / Band1  
 Test Mode :Tx CH Mid  
 EUT Pol :E1 Plan  
 Test Channel :5220 MHz

Test Date :2018-09-01  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10440.00     | Peak                         | 40.80                             | 12.52        | 53.32                  | 68.20                  | -14.88       |

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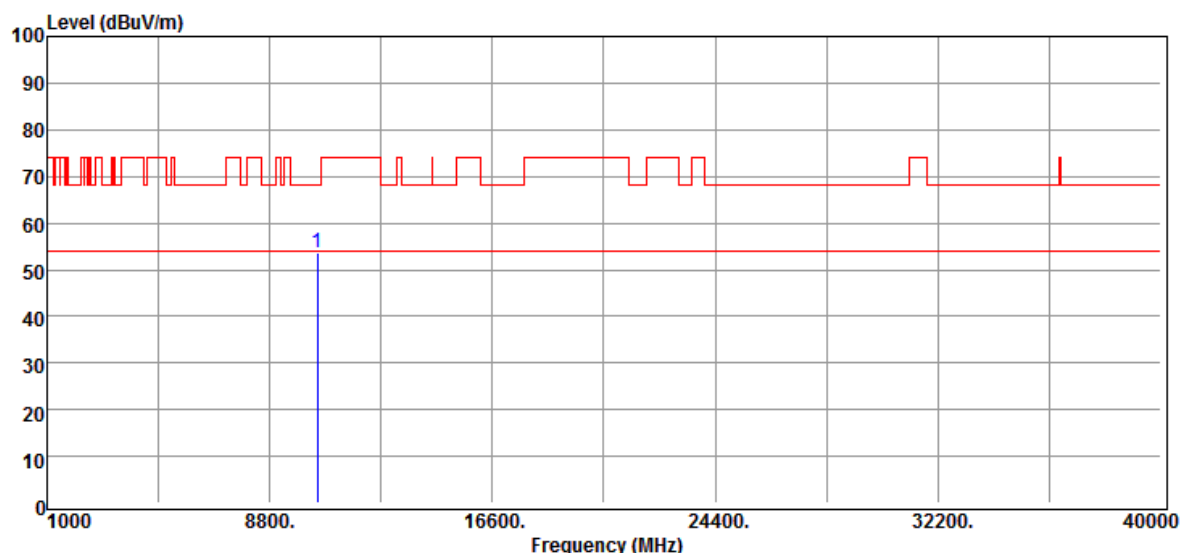
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Operation Mode :802.11a / Band1  
 Test Mode :Tx CH High  
 EUT Pol :E1 Plan  
 Test Channel :5240 MHz

Test Date :2018-09-01  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10480.00     | Peak                         | 41.12                             | 12.58        | 53.70                  | 68.20                  | -14.50       |

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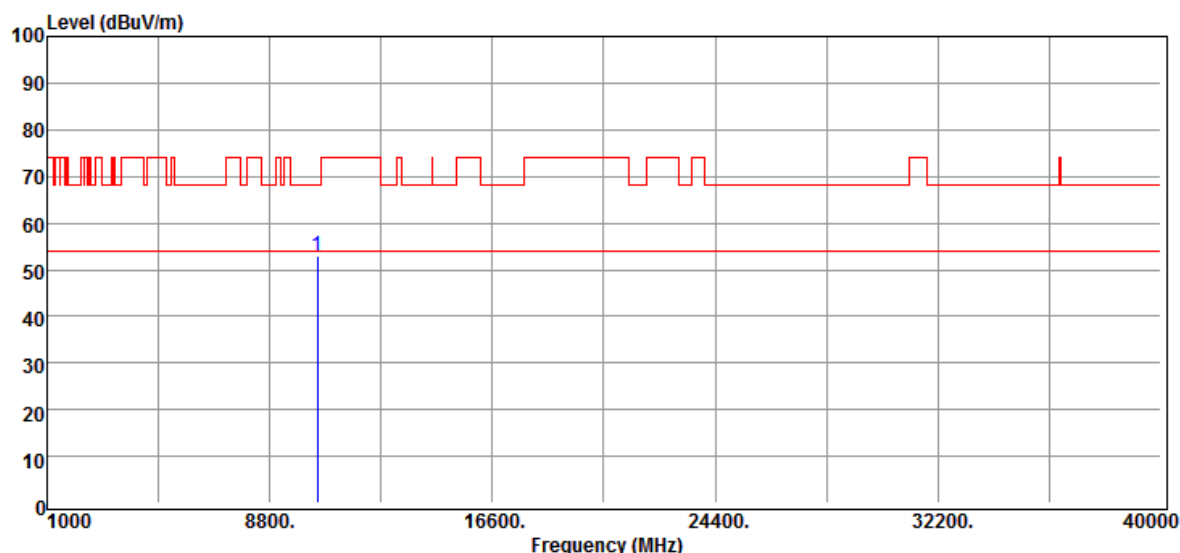
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Operation Mode :802.11a / Band1  
 Test Mode :Tx CH High  
 EUT Pol :E1 Plan  
 Test Channel :5240 MHz

Test Date :2018-09-01  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10480.00     | Peak                         | 40.51                             | 12.58        | 53.09                  | 68.20                  | -15.11       |

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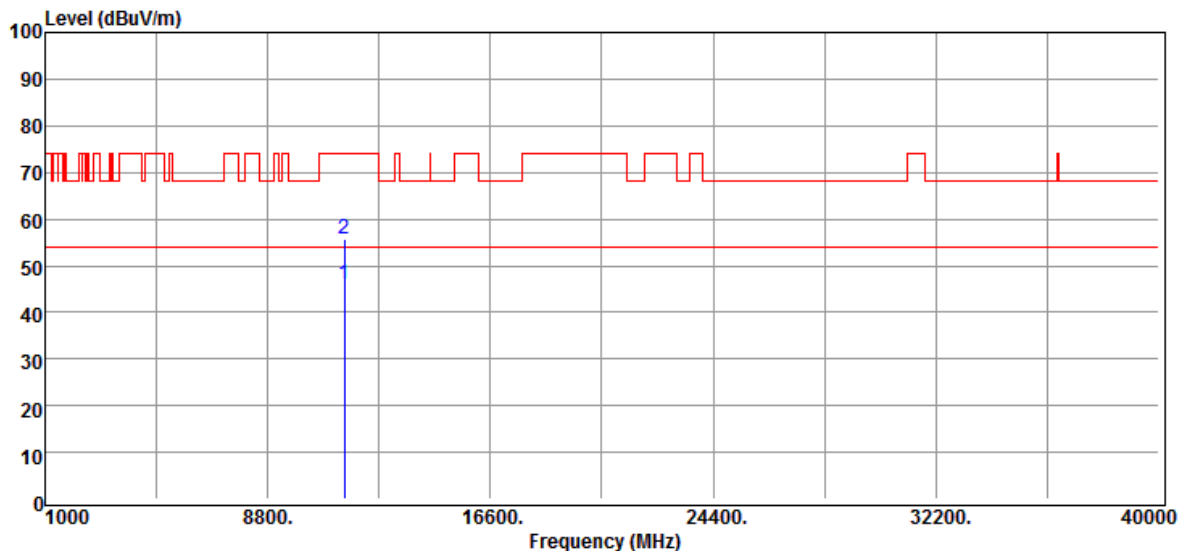
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# Radiated Spurious Emission Measurement Result 802.11a, 5725~5850 MHz

|                |                  |              |             |
|----------------|------------------|--------------|-------------|
| Operation Mode | :802.11a / Band4 | Test Date    | :2018-09-01 |
| Test Mode      | :Tx CH Low       | Temp./Humi.  | :25/60      |
| EUT Pol        | :E1 Plan         | Antenna Pol. | :VERTICAL   |
| Test Channel   | :5745 MHz        | Engineer     | :Jerry      |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11490.00     | Average                      | 32.83                             | 13.32        | 46.15                  | 54.00                  | -7.85        |
| 11490.00     | Peak                         | 42.33                             | 13.32        | 55.65                  | 74.00                  | -18.35       |

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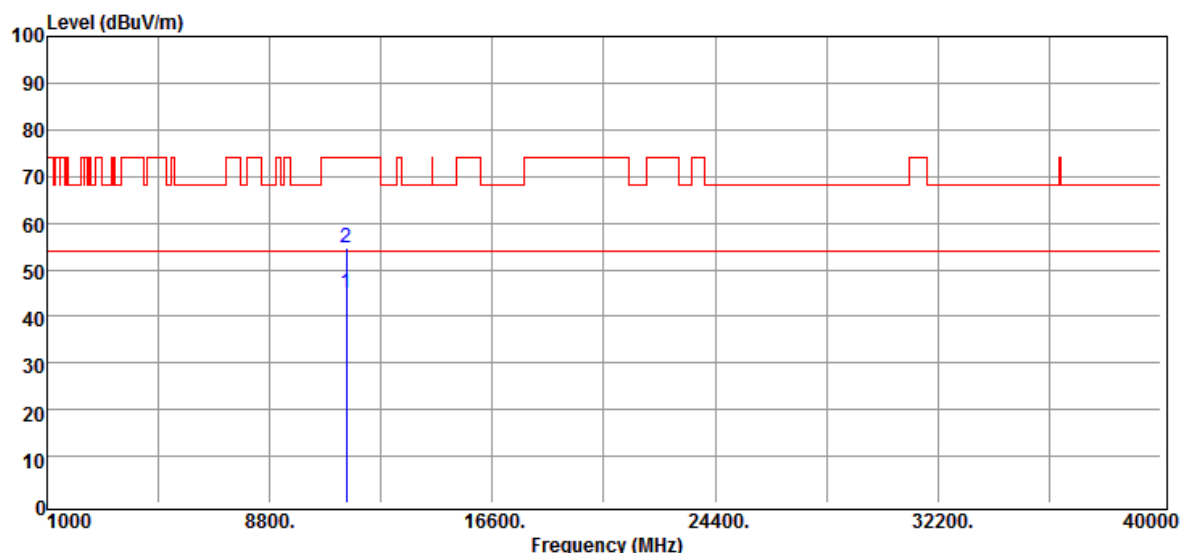
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Operation Mode :802.11a / Band4  
 Test Mode :Tx CH Low  
 EUT Pol :E1 Plan  
 Test Channel :5745 MHz

Test Date :2018-09-01  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11490.00     | Average                      | 31.57                             | 13.32        | 44.89                  | 54.00                  | -9.11        |
| 11490.00     | Peak                         | 41.36                             | 13.32        | 54.68                  | 74.00                  | -19.32       |

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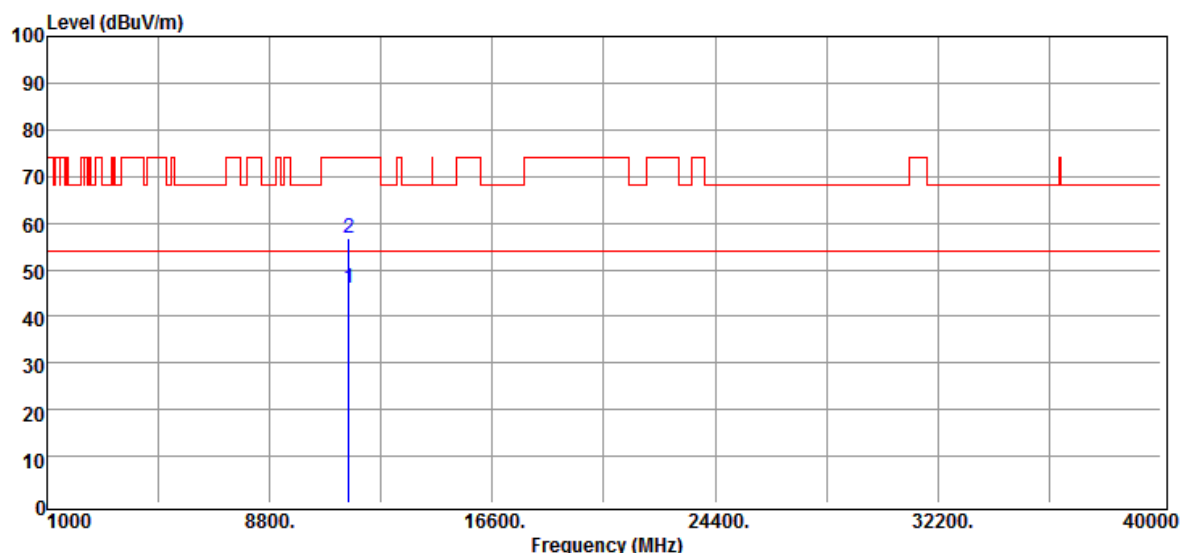
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Operation Mode :802.11a / Band4  
 Test Mode :Tx CH Mid  
 EUT Pol :E1 Plan  
 Test Channel :5785 MHz

Test Date :2018-09-01  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11570.00     | Average                      | 33.11                             | 13.01        | 46.12                  | 54.00                  | -7.88        |
| 11570.00     | Peak                         | 43.87                             | 13.01        | 56.88                  | 74.00                  | -17.12       |

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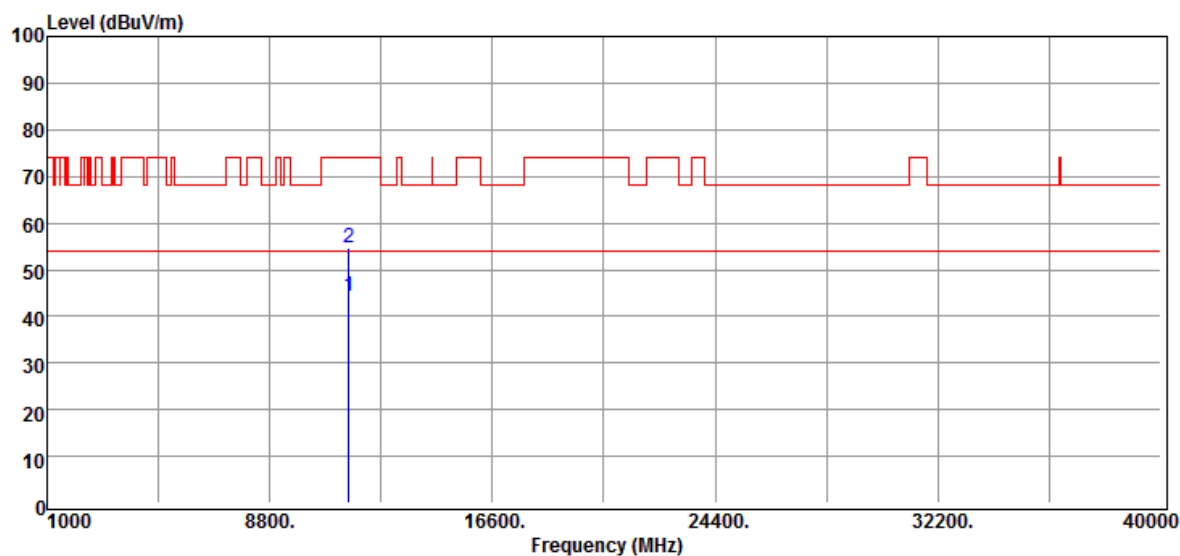
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Operation Mode :802.11a / Band4  
 Test Mode :Tx CH Mid  
 EUT Pol :E1 Plan  
 Test Channel :5785 MHz

Test Date :2018-09-01  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11570.00     | Average                      | 31.27                             | 13.01        | 44.28                  | 54.00                  | -9.72        |
| 11570.00     | Peak                         | 41.57                             | 13.01        | 54.58                  | 74.00                  | -19.42       |

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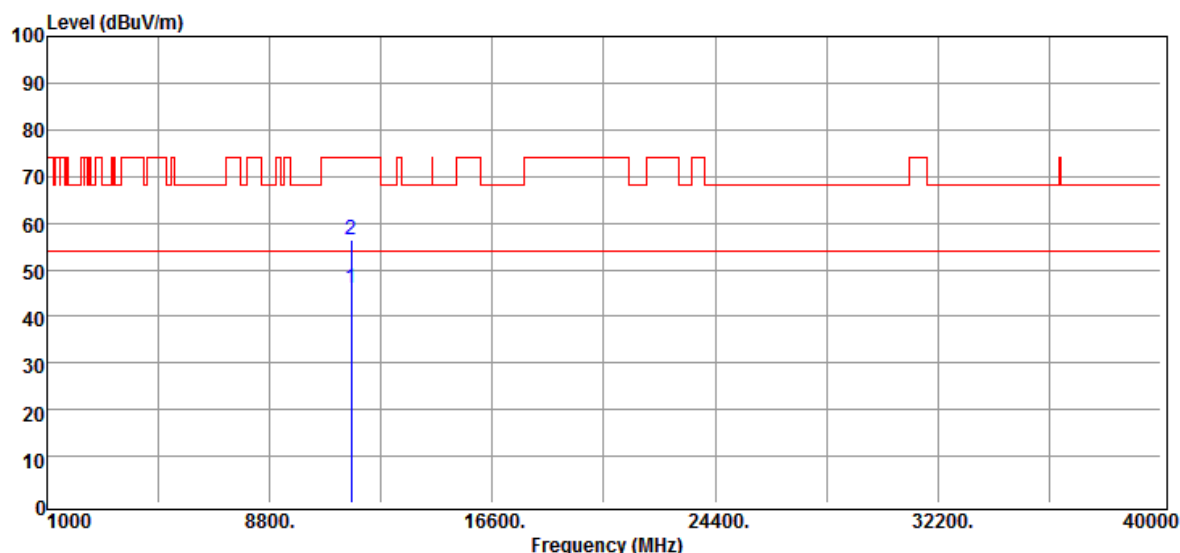
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Operation Mode :802.11a / Band4  
 Test Mode :Tx CH High  
 EUT Pol :E1 Plan  
 Test Channel :5825 MHz

Test Date :2018-09-01  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11650.00     | Average                      | 32.96                             | 12.95        | 45.91                  | 54.00                  | -8.09        |
| 11650.00     | Peak                         | 43.29                             | 12.95        | 56.24                  | 74.00                  | -17.76       |

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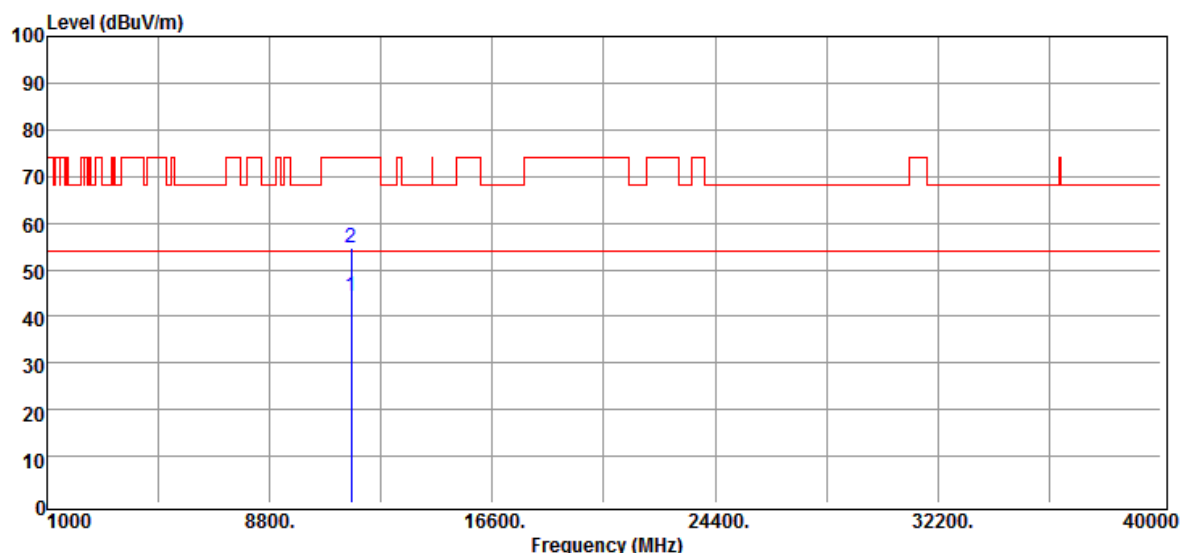
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Operation Mode :802.11a / Band4  
 Test Mode :Tx CH High  
 EUT Pol :E1 Plan  
 Test Channel :5825 MHz

Test Date :2018-09-01  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11650.00     | Average                      | 31.29                             | 12.95        | 44.24                  | 54.00                  | -9.76        |
| 11650.00     | Peak                         | 41.66                             | 12.95        | 54.61                  | 74.00                  | -19.39       |

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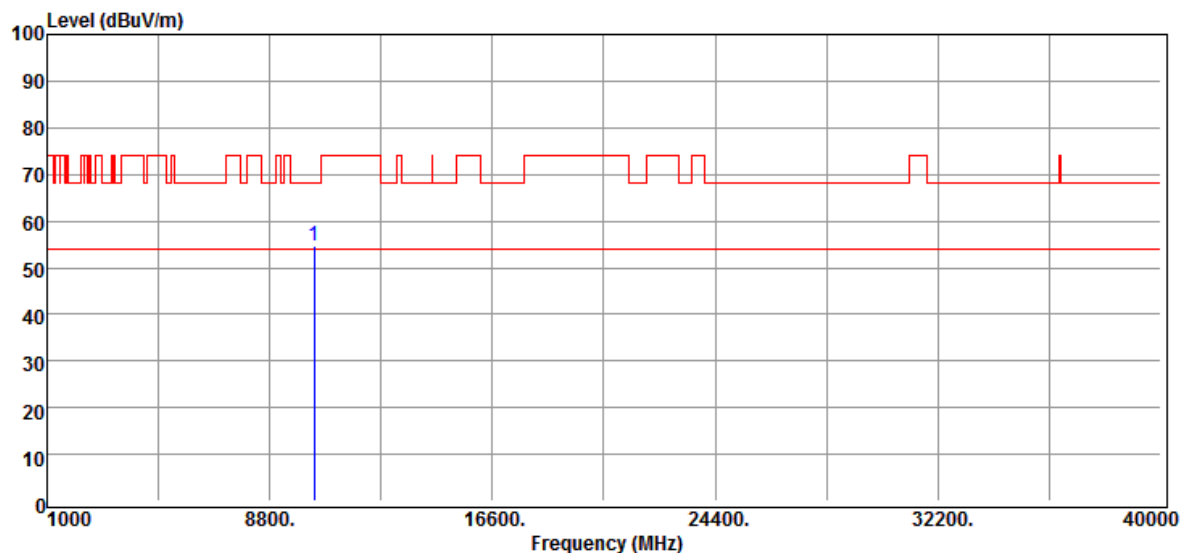
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## Radiated Spurious Emission Measurement Result 802.11n HT20, 5150~5250 MHz

|                |                    |              |             |
|----------------|--------------------|--------------|-------------|
| Operation Mode | :802.11n20 / Band1 | Test Date    | :2018-09-01 |
| Test Mode      | :Tx CH Low         | Temp./Humi.  | :25/60      |
| EUT Pol        | :E1 Plan           | Antenna Pol. | :VERTICAL   |
| Test Channel   | :5180 MHz          | Engineer     | :Jerry      |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10360.00     | Peak                         | 42.11                             | 12.41        | 54.52                  | 68.20                  | -13.68       |

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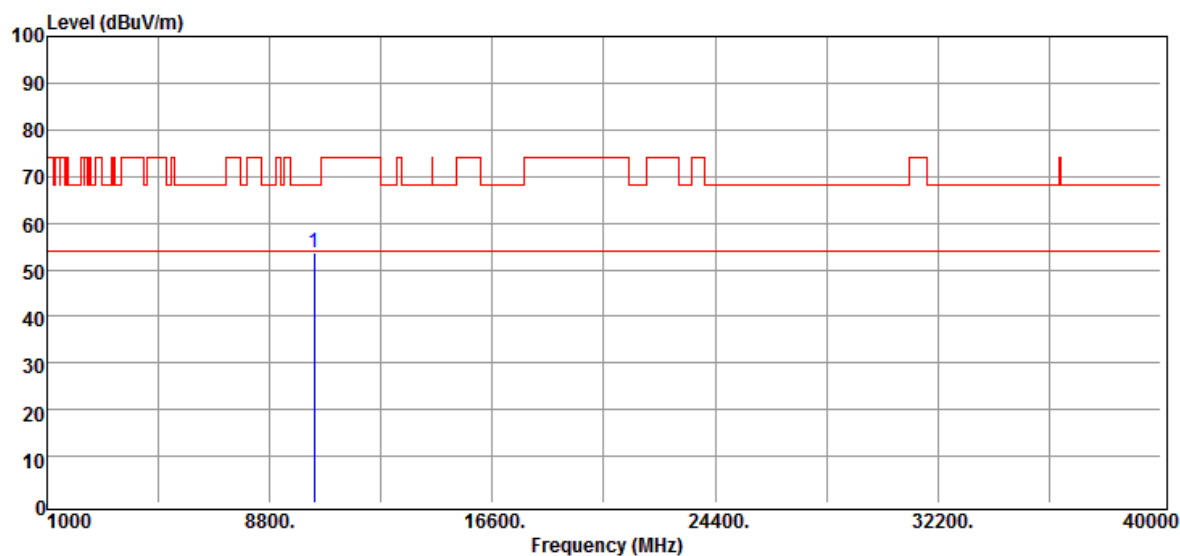
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Operation Mode :802.11n20 / Band1  
 Test Mode :Tx CH Low  
 EUT Pol :E1 Plan  
 Test Channel :5180 MHz

Test Date :2018-09-01  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10360.00     | Peak                         | 41.39                             | 12.41        | 53.80                  | 68.20                  | -14.40       |

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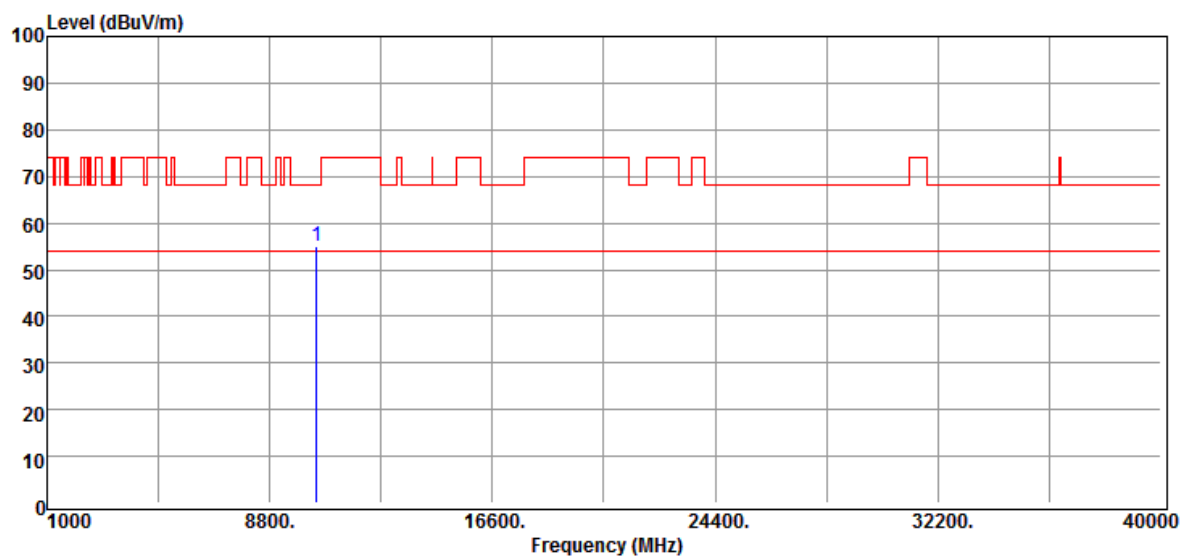
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Operation Mode :802.11n20 / Band1  
 Test Mode :Tx CH Mid  
 EUT Pol :E1 Plan  
 Test Channel :5220 MHz

Test Date :2018-09-01  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10440.00     | Peak                         | 42.39                             | 12.52        | 54.91                  | 68.20                  | -13.29       |

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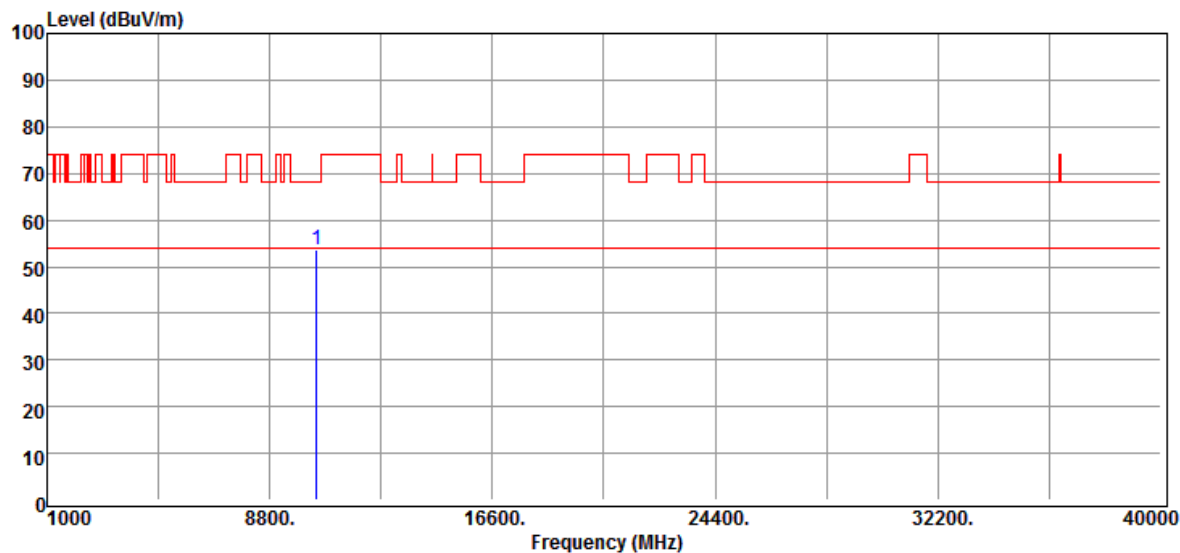
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Operation Mode :802.11n20 / Band1  
 Test Mode :Tx CH Mid  
 EUT Pol :E1 Plan  
 Test Channel :5220 MHz

Test Date :2018-09-01  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10440.00     | Peak                         | 41.20                             | 12.52        | 53.72                  | 68.20                  | -14.48       |

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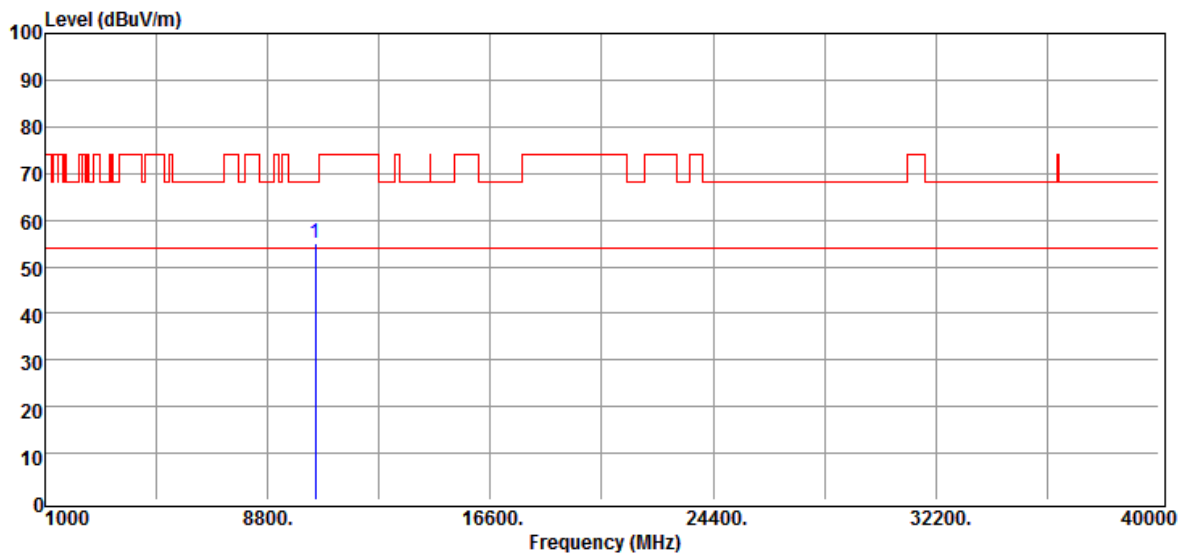
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Operation Mode :802.11n20 / Band1  
 Test Mode :Tx CH High  
 EUT Pol :E1 Plan  
 Test Channel :5240 MHz

Test Date :2018-09-01  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10480.00     | Peak                         | 42.57                             | 12.58        | 55.15                  | 68.20                  | -13.05       |

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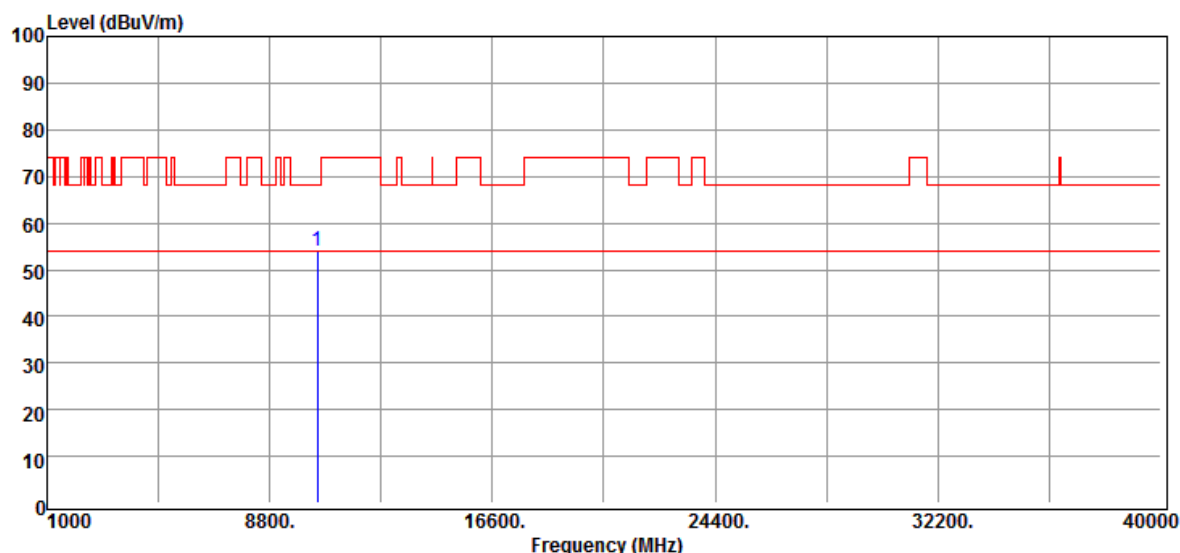
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Operation Mode :802.11n20 / Band1  
 Test Mode :Tx CH High  
 EUT Pol :E1 Plan  
 Test Channel :5240 MHz

Test Date :2018-09-01  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10480.00     | Peak                         | 41.39                             | 12.58        | 53.97                  | 68.20                  | -14.23       |

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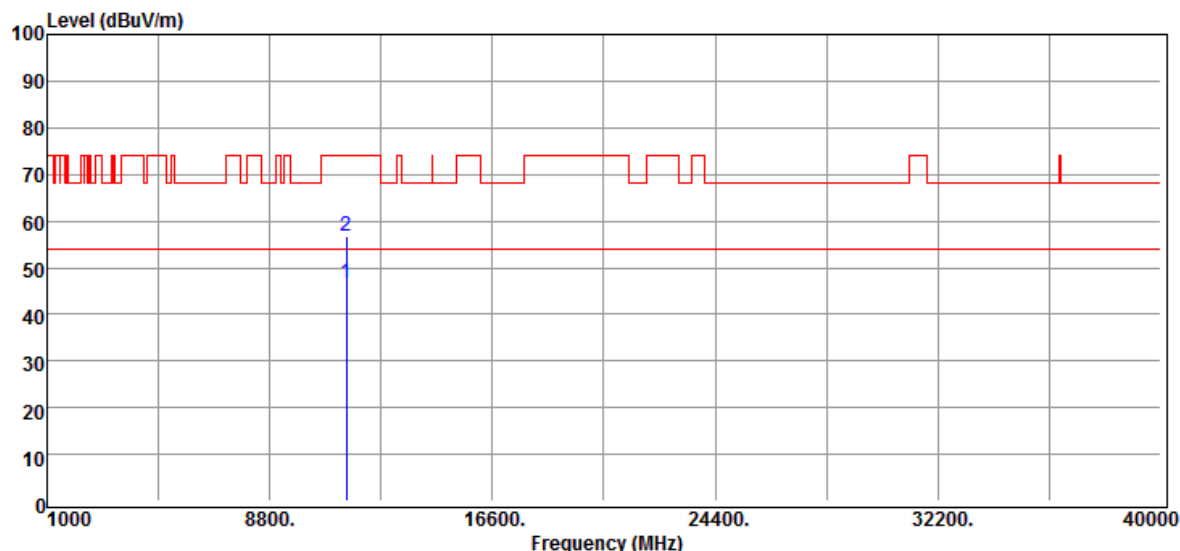
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# Radiated Spurious Emission Measurement Result 802.11n HT20, 5725~5850 MHz

|                |                    |              |             |
|----------------|--------------------|--------------|-------------|
| Operation Mode | :802.11n20 / Band4 | Test Date    | :2018-09-01 |
| Test Mode      | :Tx CH Low         | Temp./Humi.  | :25/60      |
| EUT Pol        | :E1 Plan           | Antenna Pol. | :VERTICAL   |
| Test Channel   | :5745 MHz          | Engineer     | :Jerry      |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11490.00     | Average                      | 33.27                             | 13.32        | 46.59                  | 54.00                  | -7.41        |
| 11490.00     | Peak                         | 43.57                             | 13.32        | 56.89                  | 74.00                  | -17.11       |

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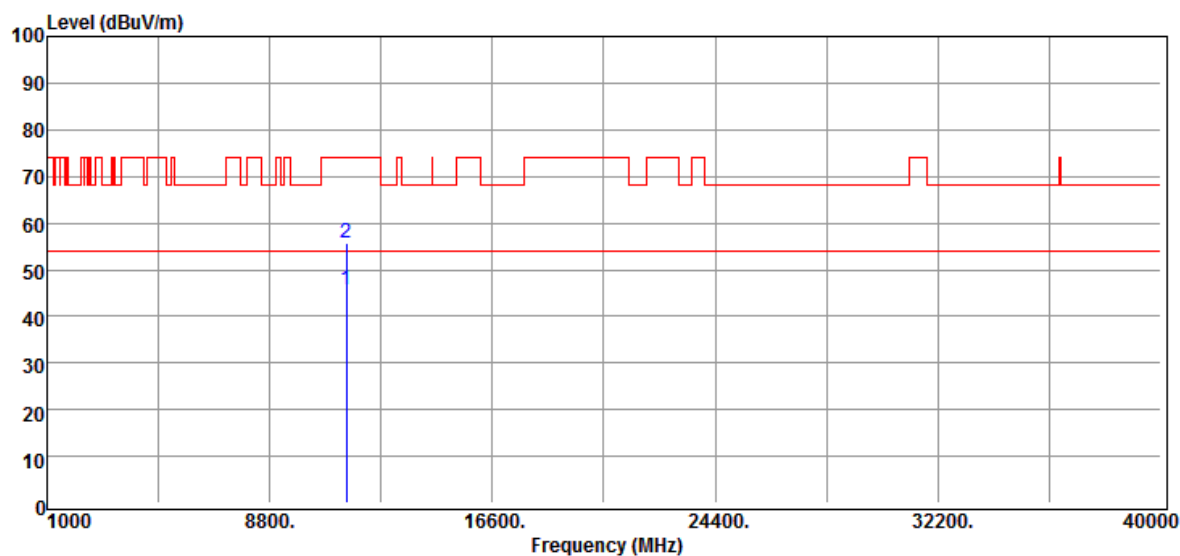
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Operation Mode :802.11n20 / Band4  
 Test Mode :Tx CH Low  
 EUT Pol :E1 Plan  
 Test Channel :5745 MHz

Test Date :2018-09-01  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11490.00     | Average                      | 32.28                             | 13.32        | 45.60                  | 54.00                  | -8.40        |
| 11490.00     | Peak                         | 42.39                             | 13.32        | 55.71                  | 74.00                  | -18.29       |

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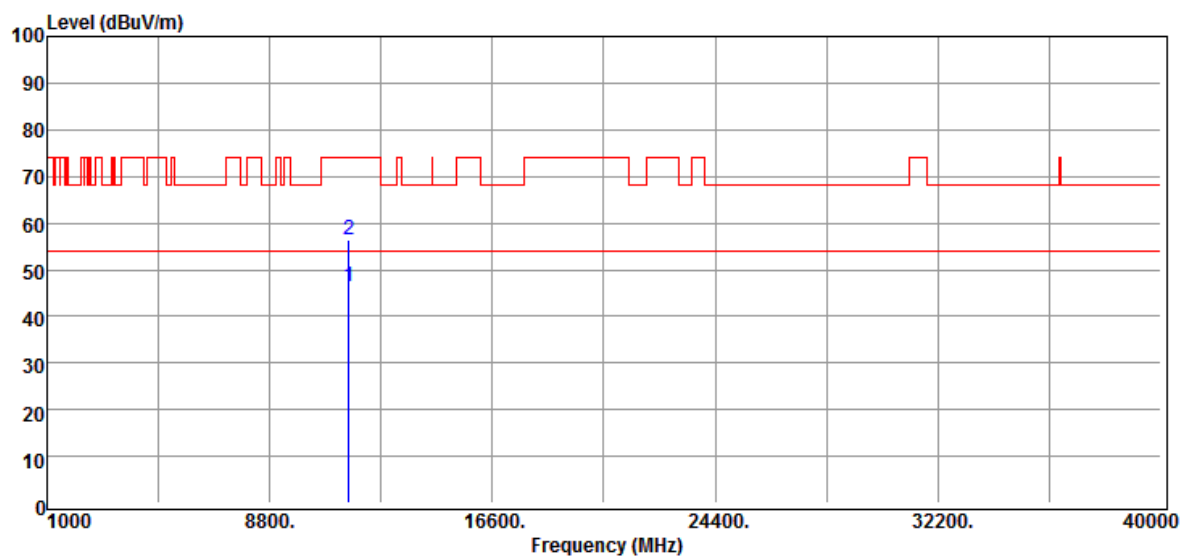
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Operation Mode :802.11n20 / Band4  
Test Mode :Tx CH Mid  
EUT Pol :E1 Plan  
Test Channel :5785 MHz

Test Date :2018-09-01  
Temp./Humi. :25/60  
Antenna Pol. :VERTICAL  
Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11570.00     | Average                      | 33.40                             | 13.01        | 46.41                  | 54.00                  | -7.59        |
| 11570.00     | Peak                         | 43.56                             | 13.01        | 56.57                  | 74.00                  | -17.43       |

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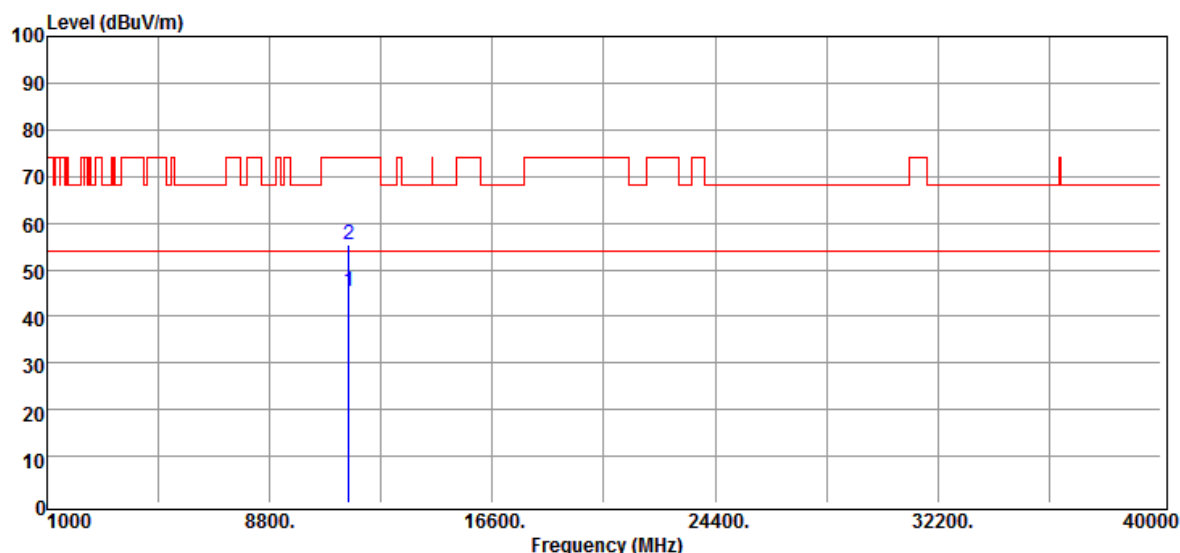
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Operation Mode :802.11n20 / Band4  
 Test Mode :Tx CH Mid  
 EUT Pol :E1 Plan  
 Test Channel :5785 MHz

Test Date :2018-09-01  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11570.00     | Average                      | 32.16                             | 13.01        | 45.17                  | 54.00                  | -8.83        |
| 11570.00     | Peak                         | 42.30                             | 13.01        | 55.31                  | 74.00                  | -18.69       |

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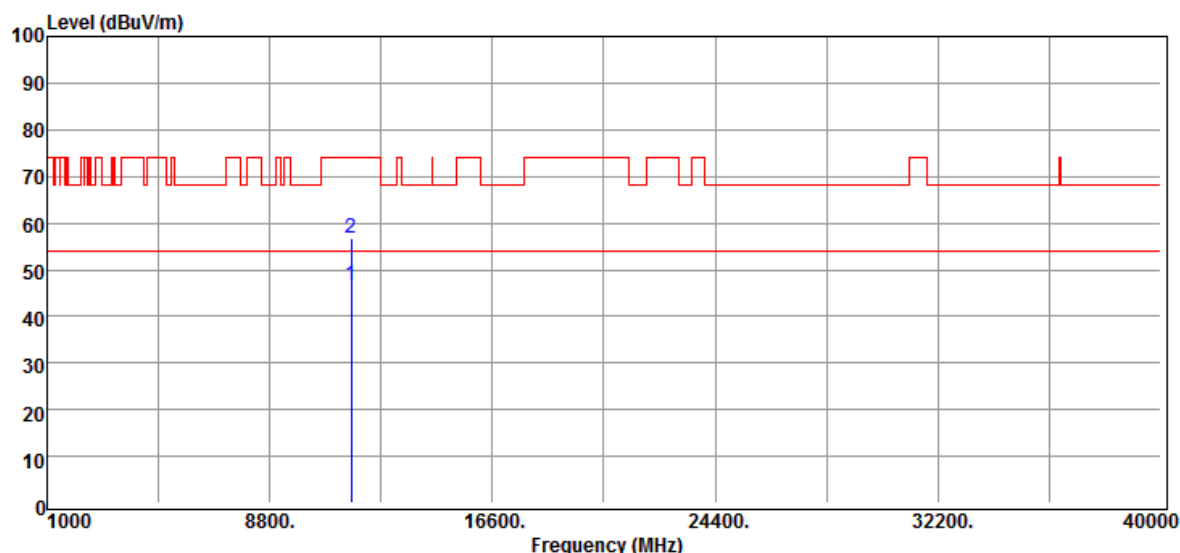
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Operation Mode :802.11n20 / Band4  
 Test Mode :Tx CH High  
 EUT Pol :E1 Plan  
 Test Channel :5825 MHz

Test Date :2018-09-01  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11650.00     | Average                      | 33.68                             | 12.95        | 46.63                  | 54.00                  | -7.37        |
| 11650.00     | Peak                         | 43.88                             | 12.95        | 56.83                  | 74.00                  | -17.17       |

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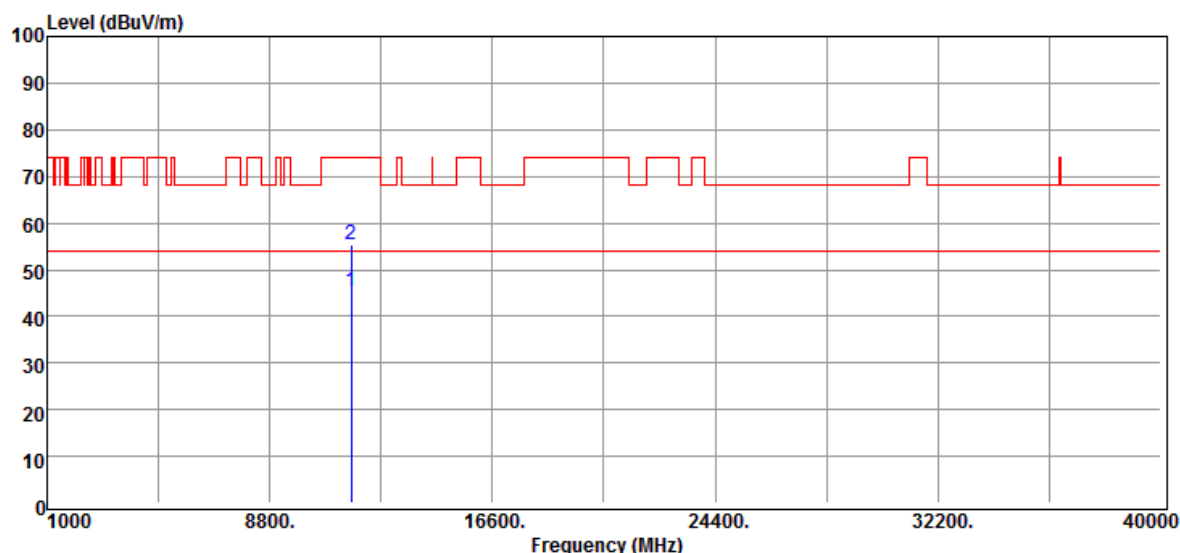
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Operation Mode :802.11n20 / Band4  
 Test Mode :Tx CH High  
 EUT Pol :E1 Plan  
 Test Channel :5825 MHz

Test Date :2018-09-01  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11650.00     | Average                      | 32.31                             | 12.95        | 45.26                  | 54.00                  | -8.74        |
| 11650.00     | Peak                         | 42.36                             | 12.95        | 55.31                  | 74.00                  | -18.69       |

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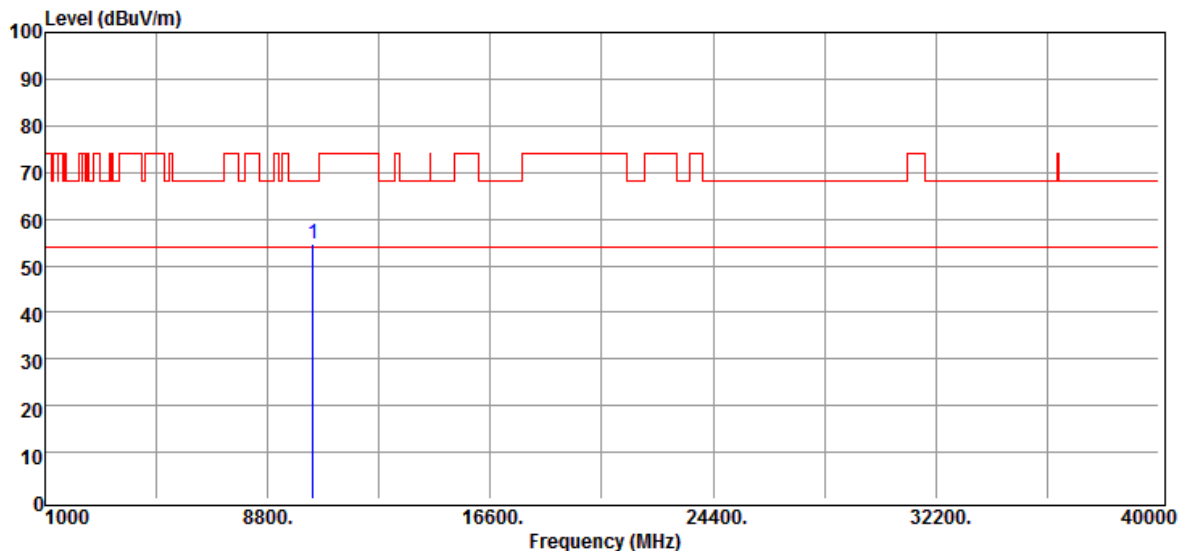
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## Radiated Spurious Emission Measurement Result 802.11n HT40, 5150~5250 MHz

|                |                    |              |             |
|----------------|--------------------|--------------|-------------|
| Operation Mode | :802.11n40 / Band1 | Test Date    | :2018-09-01 |
| Test Mode      | :Tx CH Low         | Temp./Humi.  | :25/60      |
| EUT Pol        | :E1 Plan           | Antenna Pol. | :VERTICAL   |
| Test Channel   | :5190 MHz          | Engineer     | :Jerry      |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10380.00     | Peak                         | 42.11                             | 12.44        | 54.55                  | 68.20                  | -13.65       |

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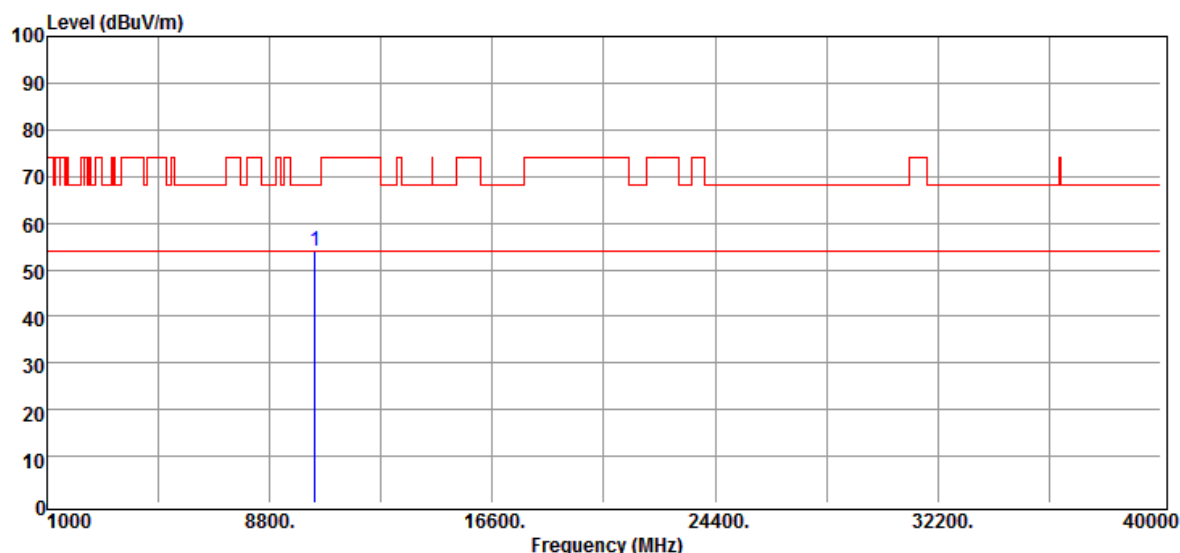
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Operation Mode :802.11n40 / Band1  
 Test Mode :Tx CH Low  
 EUT Pol :E1 Plan  
 Test Channel :5190 MHz

Test Date :2018-09-01  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10380.00     | Peak                         | 41.38                             | 12.44        | 53.82                  | 68.20                  | -14.38       |

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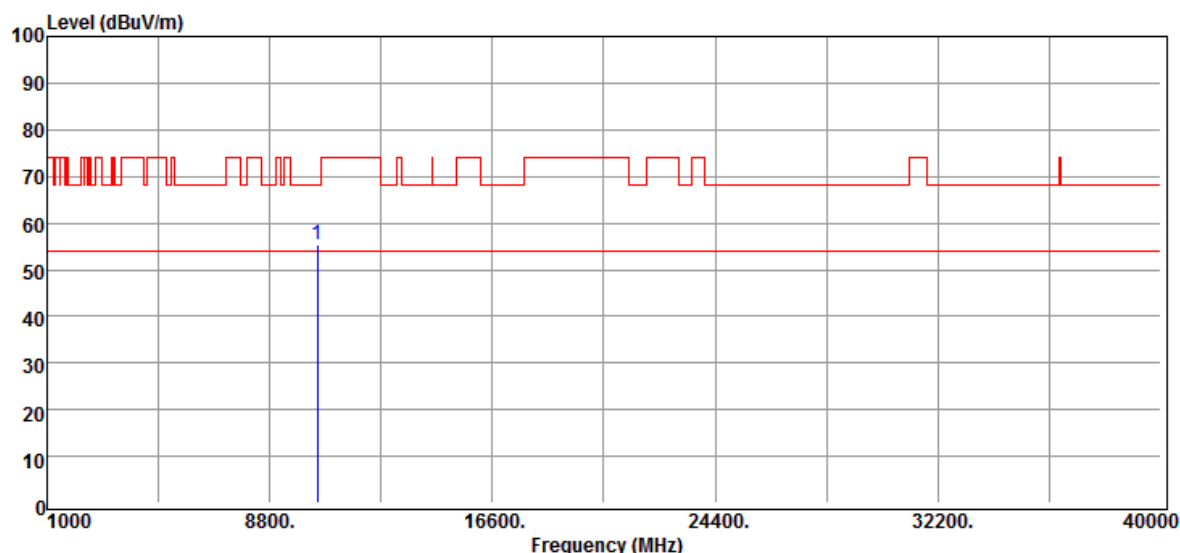
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Operation Mode :802.11n40 / Band1  
 Test Mode :Tx CH High  
 EUT Pol :E1 Plan  
 Test Channel :5230 MHz

Test Date :2018-09-01  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10460.00     | Peak                         | 42.86                             | 12.55        | 55.41                  | 68.20                  | -12.79       |

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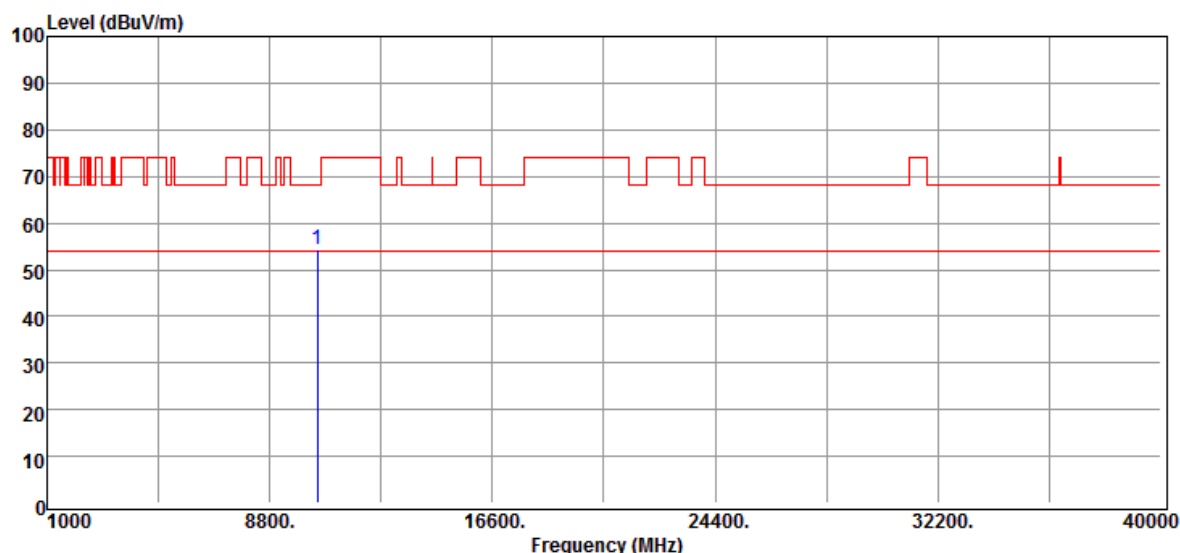
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Operation Mode :802.11n40 / Band1  
 Test Mode :Tx CH High  
 EUT Pol :E1 Plan  
 Test Channel :5230 MHz

Test Date :2018-09-01  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10460.00     | Peak                         | 41.66                             | 12.55        | 54.21                  | 68.20                  | -13.99       |

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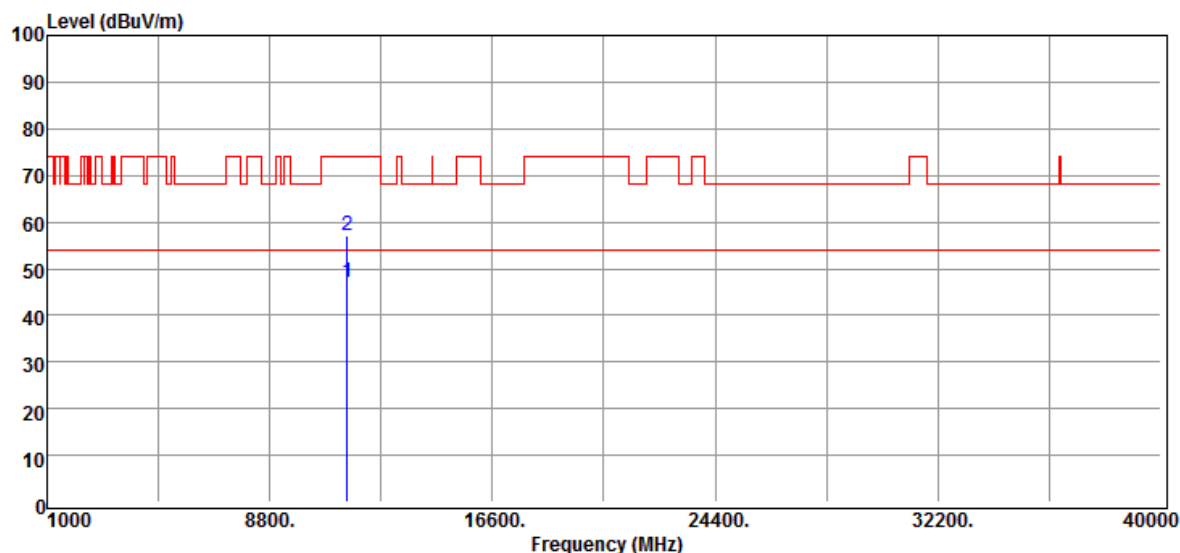
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# Radiated Spurious Emission Measurement Result 802.11n HT40, 5725~5850 MHz

|                |                    |              |             |
|----------------|--------------------|--------------|-------------|
| Operation Mode | :802.11n40 / Band4 | Test Date    | :2018-09-01 |
| Test Mode      | :Tx CH Low         | Temp./Humi.  | :25/60      |
| EUT Pol        | :E1 Plan           | Antenna Pol. | :VERTICAL   |
| Test Channel   | :5755 MHz          | Engineer     | :Jerry      |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11510.00     | Average                      | 33.65                             | 13.31        | 46.96                  | 54.00                  | -7.04        |
| 11510.00     | Peak                         | 43.87                             | 13.31        | 57.18                  | 74.00                  | -16.82       |

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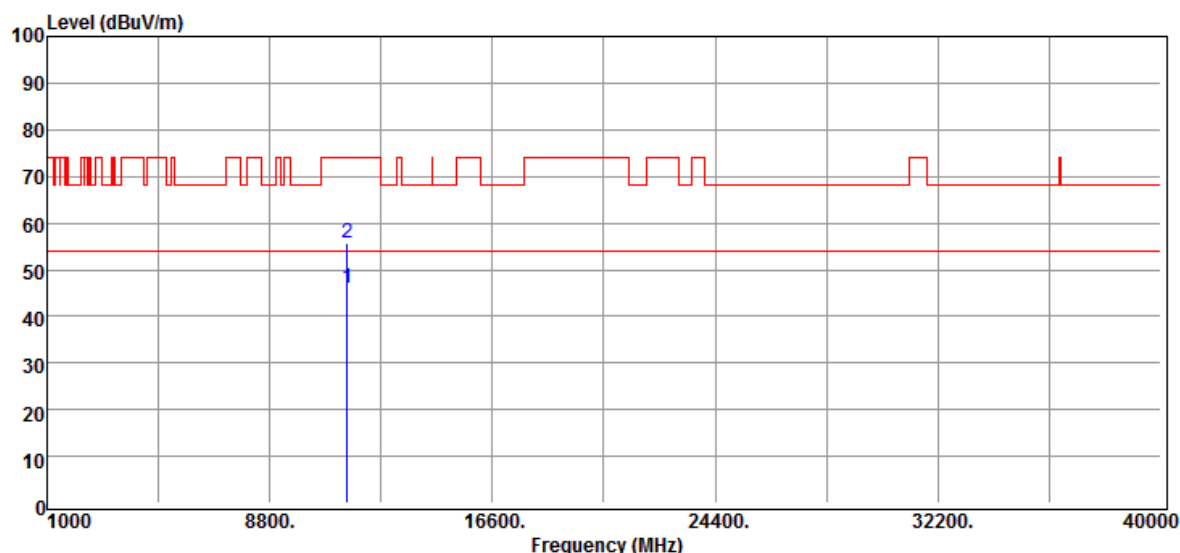
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Operation Mode :802.11n40 / Band4  
Test Mode :Tx CH Low  
EUT Pol :E1 Plan  
Test Channel :5755 MHz

Test Date :2018-09-01  
Temp./Humi. :25/60  
Antenna Pol. :HORIZONTAL  
Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11510.00     | Average                      | 32.63                             | 13.31        | 45.94                  | 54.00                  | -8.06        |
| 11510.00     | Peak                         | 42.51                             | 13.31        | 55.82                  | 74.00                  | -18.18       |

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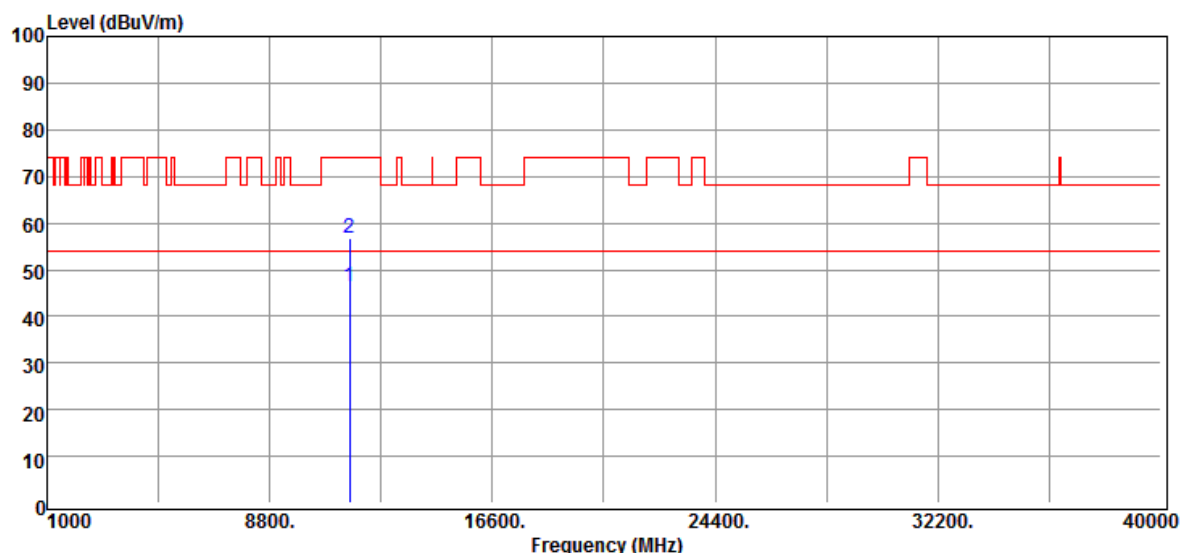
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Operation Mode :802.11n40 / Band4  
 Test Mode :Tx CH High  
 EUT Pol :E1 Plan  
 Test Channel :5795 MHz

Test Date :2018-09-01  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11590.00     | Average                      | 33.57                             | 12.92        | 46.49                  | 54.00                  | -7.51        |
| 11590.00     | Peak                         | 43.66                             | 12.92        | 56.58                  | 74.00                  | -17.42       |

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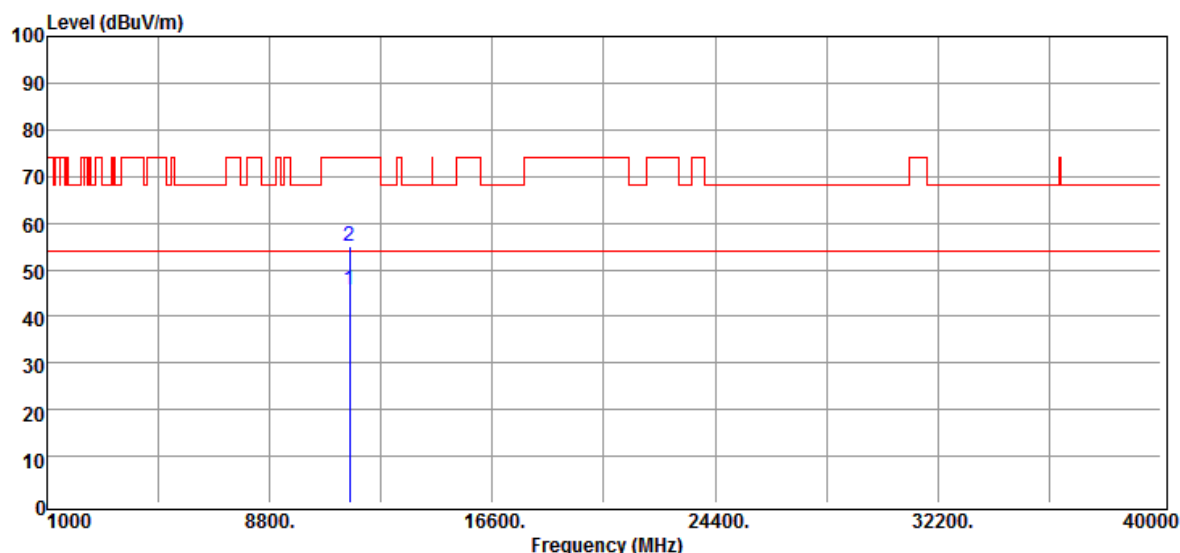
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Operation Mode :802.11n40 / Band4  
 Test Mode :Tx CH High  
 EUT Pol :E1 Plan  
 Test Channel :5795 MHz

Test Date :2018-09-01  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11590.00     | Average                      | 32.68                             | 12.92        | 45.60                  | 54.00                  | -8.40        |
| 11590.00     | Peak                         | 42.18                             | 12.92        | 55.10                  | 74.00                  | -18.90       |

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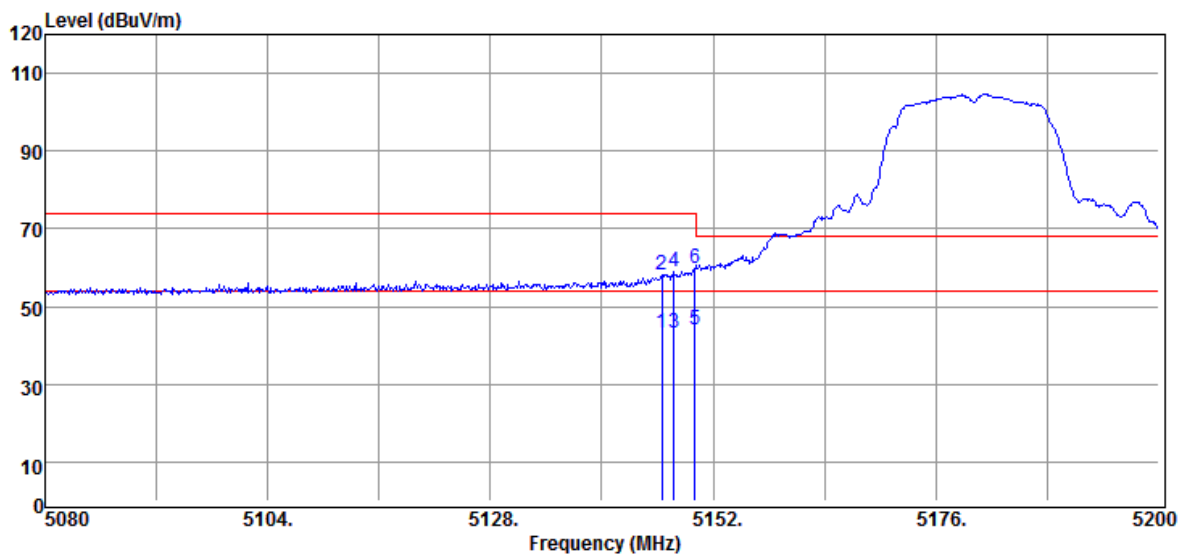
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## Band edge falling to restricted band 802.11a mode

Operation Mode :802.11a / Band1  
Test Mode :BE CH Low  
EUT Pol :E1 Plan  
Test Channel :5180 MHz

Test Date :2018-08-31  
Temp./Humi. :25/60  
Antenna Pol. :VERTICAL  
Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 5146.48      | Average                      | 41.34                             | 1.83         | 43.17                  | 54.00                  | -10.83       |
| 5146.48      | Peak                         | 56.25                             | 1.83         | 58.08                  | 74.00                  | -15.92       |
| 5147.80      | Average                      | 41.54                             | 1.84         | 43.38                  | 54.00                  | -10.62       |
| 5147.80      | Peak                         | 57.16                             | 1.84         | 59.00                  | 74.00                  | -15.00       |
| 5150.00      | Average                      | 42.08                             | 1.84         | 43.92                  | 54.00                  | -10.08       |
| 5150.00      | Peak                         | 57.96                             | 1.84         | 59.80                  | 74.00                  | -14.20       |

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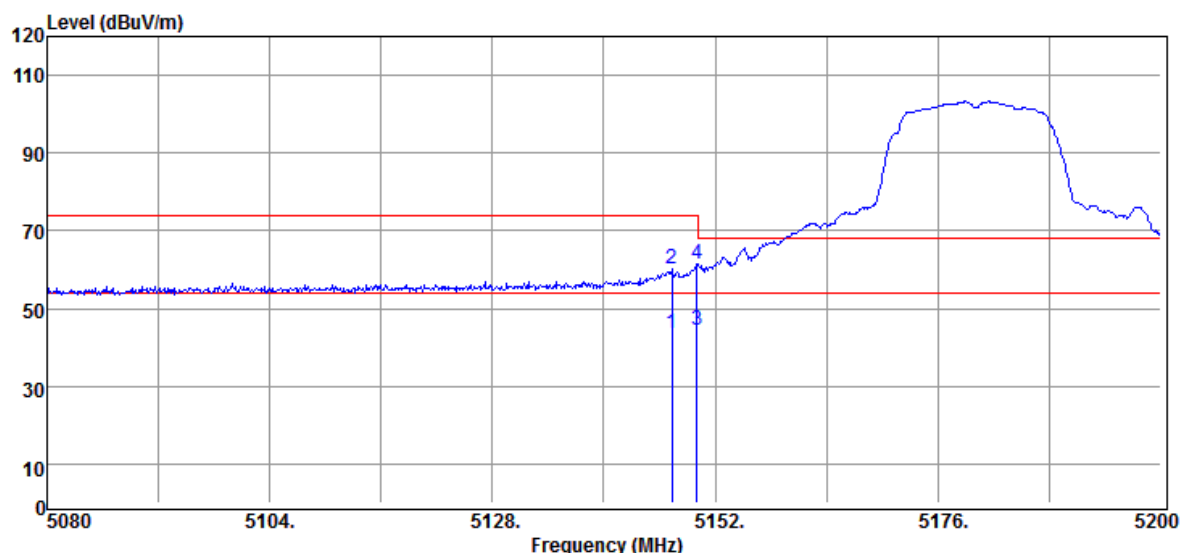
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Operation Mode :802.11a / Band1  
 Test Mode :BE CH Low  
 EUT Pol :E1 Plan  
 Test Channel :5180 MHz

Test Date :2018-08-31  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 5147.32      | Average                      | 41.92                             | 1.84         | 43.76                  | 54.00                  | -10.24       |
| 5147.32      | Peak                         | 58.22                             | 1.84         | 60.06                  | 74.00                  | -13.94       |
| 5150.00      | Average                      | 42.40                             | 1.84         | 44.24                  | 54.00                  | -9.76        |
| 5150.00      | Peak                         | 59.62                             | 1.84         | 61.46                  | 74.00                  | -12.54       |

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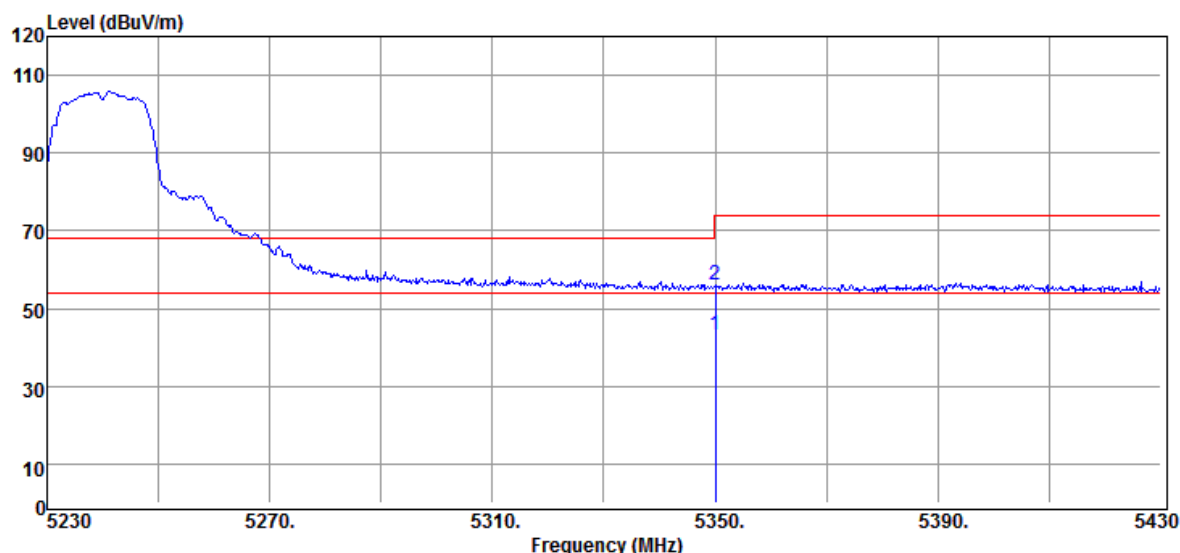
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Operation Mode :802.11a / Band1  
 Test Mode :BE CH High  
 EUT Pol :E1 Plan  
 Test Channel :5240 MHz

Test Date :2018-08-31  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 5350.00      | Average                      | 40.81                             | 2.24         | 43.05                  | 54.00                  | -10.95       |
| 5350.00      | Peak                         | 53.70                             | 2.24         | 55.94                  | 74.00                  | -18.06       |

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t (886-2) 2299-3279

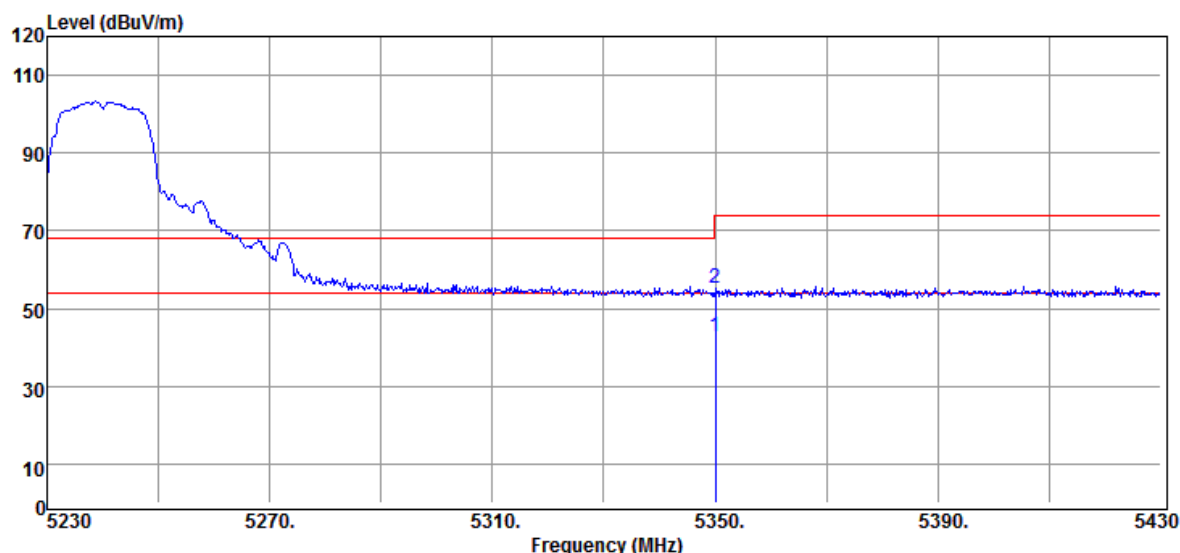
f (886-2) 2298-0488

[www.tw.sgs.com](http://www.tw.sgs.com)

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Operation Mode :802.11a / Band1  
 Test Mode :BE CH High  
 EUT Pol :E1 Plan  
 Test Channel :5240 MHz

Test Date :2018-08-31  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 5350.00      | Average                      | 40.66                             | 2.24         | 42.90                  | 54.00                  | -11.10       |
| 5350.00      | Peak                         | 52.89                             | 2.24         | 55.13                  | 74.00                  | -18.87       |

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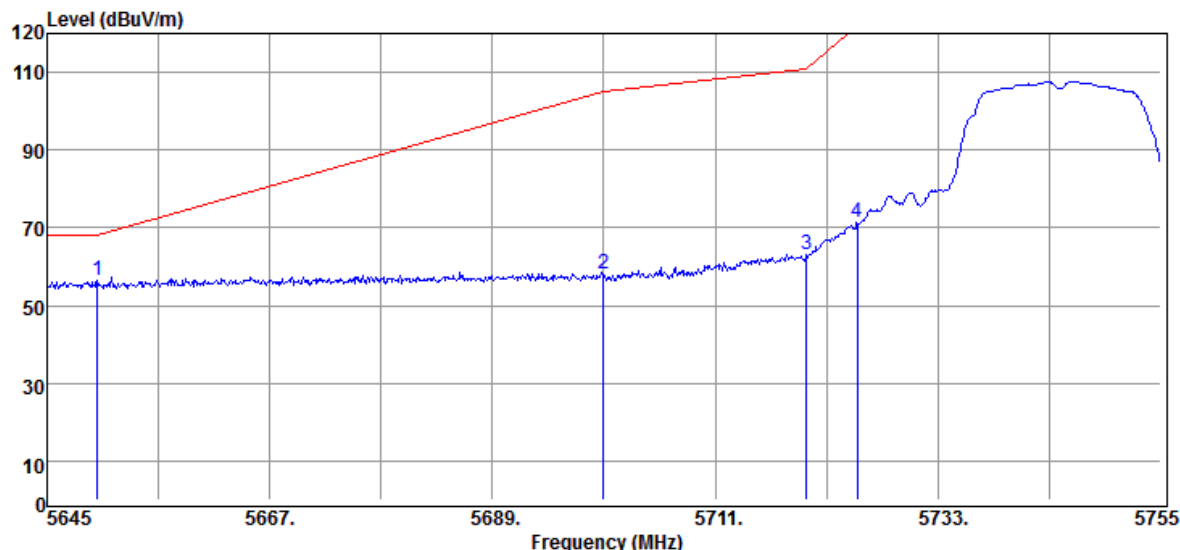
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Member of SGS Group

Operation Mode :802.11a / Band4  
 Test Mode :BE CH Low  
 EUT Pol :E1 Plan  
 Test Channel :5745 MHz

Test Date :2018-08-31  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 5650.00      | Peak                         | 54.42                             | 2.25         | 56.67                  | 68.20                  | -11.53       |
| 5700.00      | Peak                         | 55.86                             | 2.42         | 58.28                  | 105.20                 | -46.92       |
| 5720.00      | Peak                         | 60.87                             | 2.32         | 63.19                  | 110.80                 | -47.61       |
| 5725.00      | Peak                         | 69.01                             | 2.28         | 71.29                  | 122.20                 | -50.91       |

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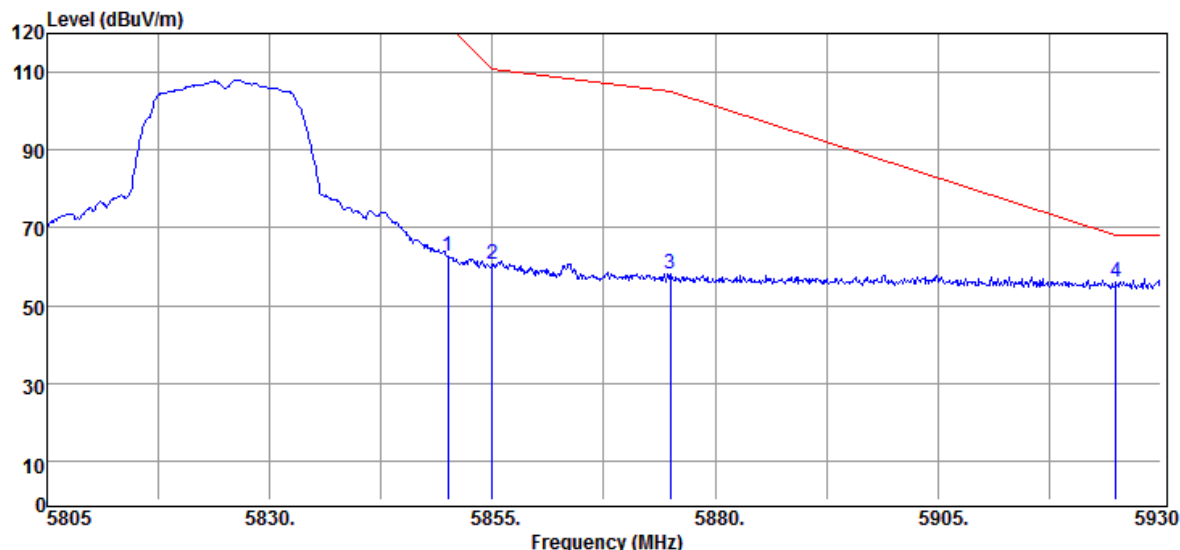
f (886-2) 2298-0488

www.tw.sgs.com

Member of SGS Group

Operation Mode :802.11a / Band4  
 Test Mode :BE CH High  
 EUT Pol :E1 Plan  
 Test Channel :5825 MHz

Test Date :2018-08-31  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 5850.00      | Peak                         | 60.96                             | 1.88         | 62.84                  | 122.20                 | -59.36       |
| 5855.00      | Peak                         | 58.87                             | 1.89         | 60.76                  | 110.80                 | -50.04       |
| 5875.00      | Peak                         | 56.36                             | 1.90         | 58.26                  | 105.20                 | -46.94       |
| 5925.00      | Peak                         | 53.94                             | 2.16         | 56.10                  | 68.20                  | -12.10       |

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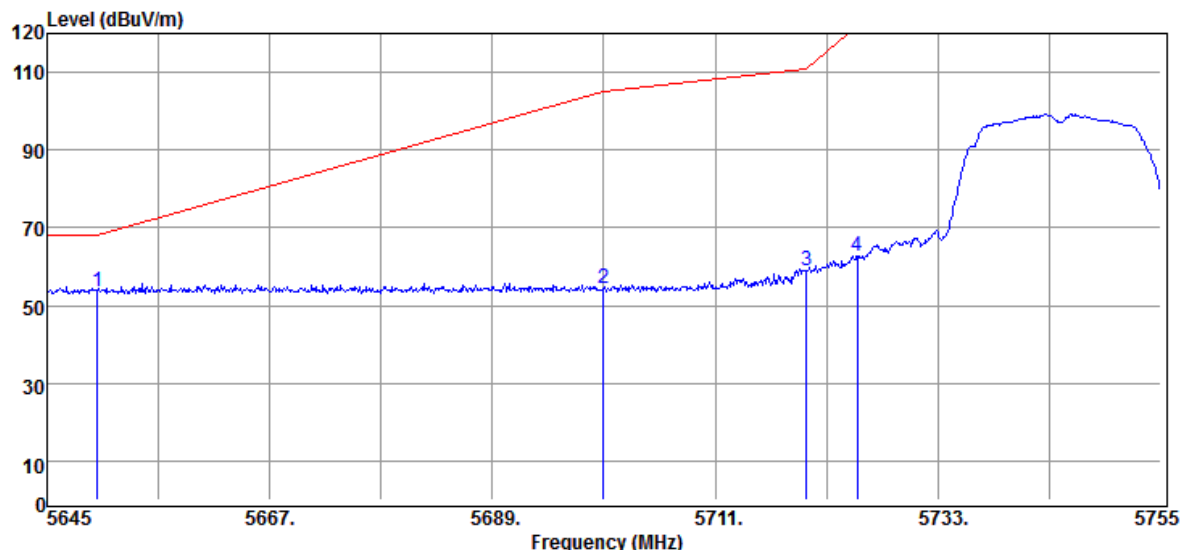
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Operation Mode :802.11a / Band4  
 Test Mode :BE CH Low  
 EUT Pol :E1 Plan  
 Test Channel :5745 MHz

Test Date :2018-08-31  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 5650.00      | Peak                         | 51.34                             | 2.25         | 53.59                  | 68.20                  | -14.61       |
| 5700.00      | Peak                         | 52.10                             | 2.42         | 54.52                  | 105.20                 | -50.68       |
| 5720.00      | Peak                         | 56.82                             | 2.32         | 59.14                  | 110.80                 | -51.66       |
| 5725.00      | Peak                         | 60.51                             | 2.28         | 62.79                  | 122.20                 | -59.41       |

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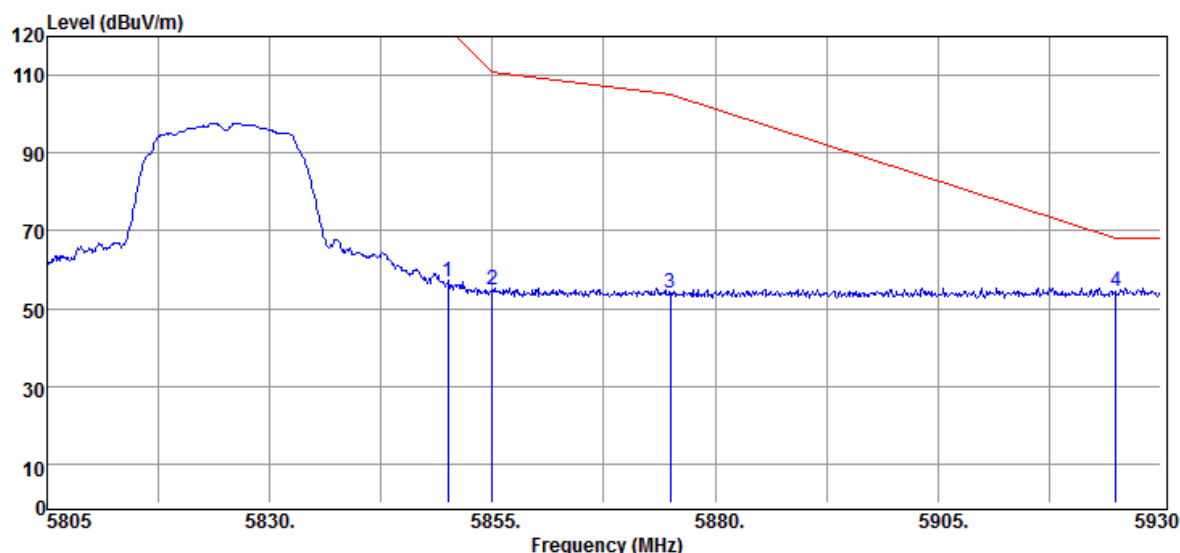
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Operation Mode :802.11a / Band4  
 Test Mode :BE CH High  
 EUT Pol :E1 Plan  
 Test Channel :5825 MHz

Test Date :2018-08-31  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 5850.00      | Peak                         | 55.10                             | 1.88         | 56.98                  | 122.20                 | -65.22       |
| 5855.00      | Peak                         | 52.88                             | 1.89         | 54.77                  | 110.80                 | -56.03       |
| 5875.00      | Peak                         | 51.95                             | 1.90         | 53.85                  | 105.20                 | -51.35       |
| 5925.00      | Peak                         | 52.19                             | 2.16         | 54.35                  | 68.20                  | -13.85       |

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f (886-2) 2298-0488

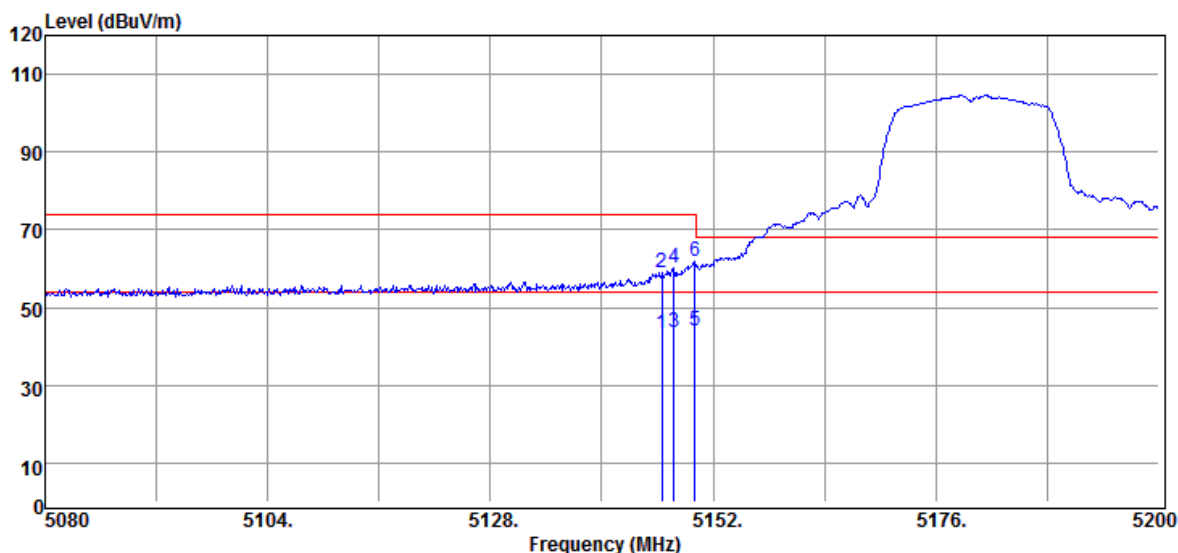
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## 802.11n20 HT mode

Operation Mode :802.11n20 / Band1  
Test Mode :BE CH Low  
EUT Pol :E1 Plan  
Test Channel :5180 MHz

Test Date :2018-08-31  
Temp./Humi. :25/60  
Antenna Pol. :VERTICAL  
Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 5146.48      | Average                      | 41.49                             | 1.83         | 43.32                  | 54.00                  | -10.68       |
| 5146.48      | Peak                         | 57.17                             | 1.83         | 59.00                  | 74.00                  | -15.00       |
| 5147.80      | Average                      | 41.75                             | 1.84         | 43.59                  | 54.00                  | -10.41       |
| 5147.80      | Peak                         | 58.40                             | 1.84         | 60.24                  | 74.00                  | -13.76       |
| 5150.00      | Average                      | 42.16                             | 1.84         | 44.00                  | 54.00                  | -10.00       |
| 5150.00      | Peak                         | 59.91                             | 1.84         | 61.75                  | 74.00                  | -12.25       |

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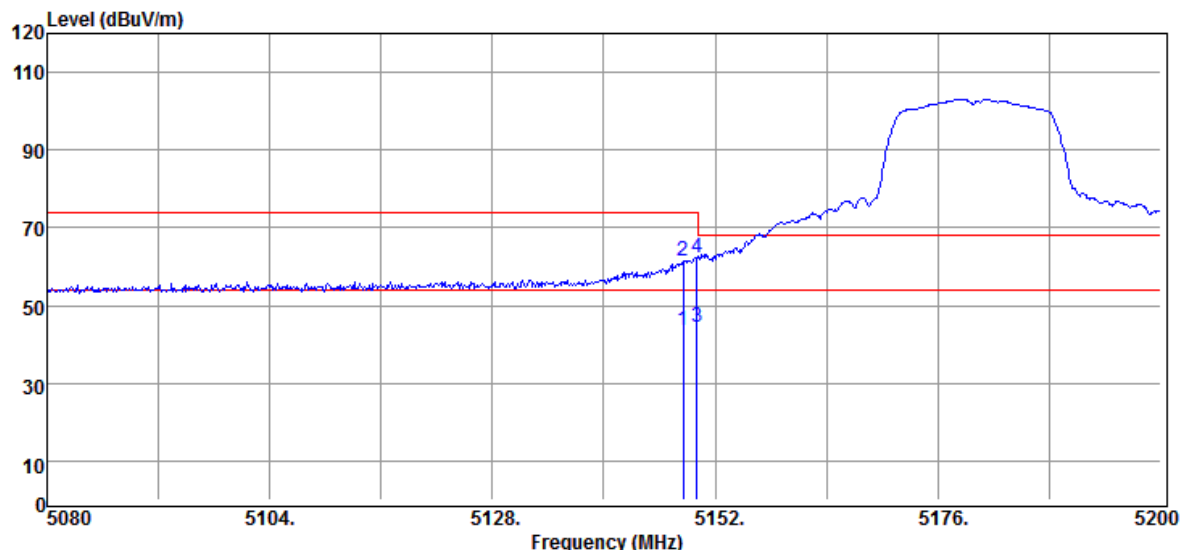
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Operation Mode :802.11n20 / Band1  
 Test Mode :BE CH Low  
 EUT Pol :E1 Plan  
 Test Channel :5180 MHz

Test Date :2018-08-31  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 5148.52      | Average                      | 41.55                             | 1.84         | 43.39                  | 54.00                  | -10.61       |
| 5148.52      | Peak                         | 59.63                             | 1.84         | 61.47                  | 74.00                  | -12.53       |
| 5150.00      | Average                      | 42.59                             | 1.84         | 44.43                  | 54.00                  | -9.57        |
| 5150.00      | Peak                         | 60.61                             | 1.84         | 62.45                  | 74.00                  | -11.55       |

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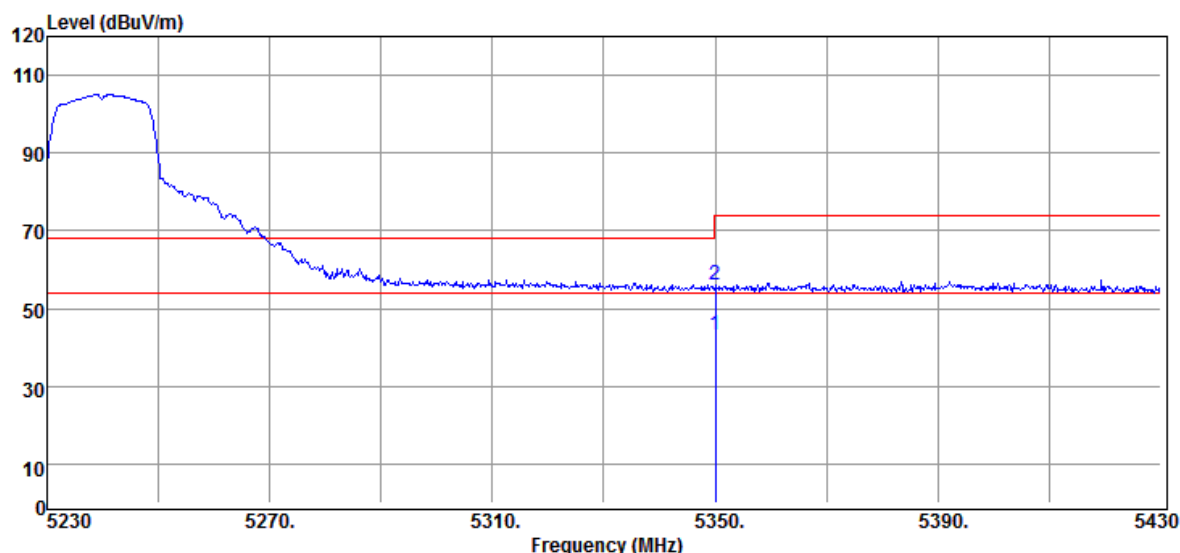
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Operation Mode :802.11n20 / Band1  
 Test Mode :BE CH High  
 EUT Pol :E1 Plan  
 Test Channel :5240 MHz

Test Date :2018-08-31  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 5350.00      | Average                      | 40.87                             | 2.24         | 43.11                  | 54.00                  | -10.89       |
| 5350.00      | Peak                         | 53.74                             | 2.24         | 55.98                  | 74.00                  | -18.02       |

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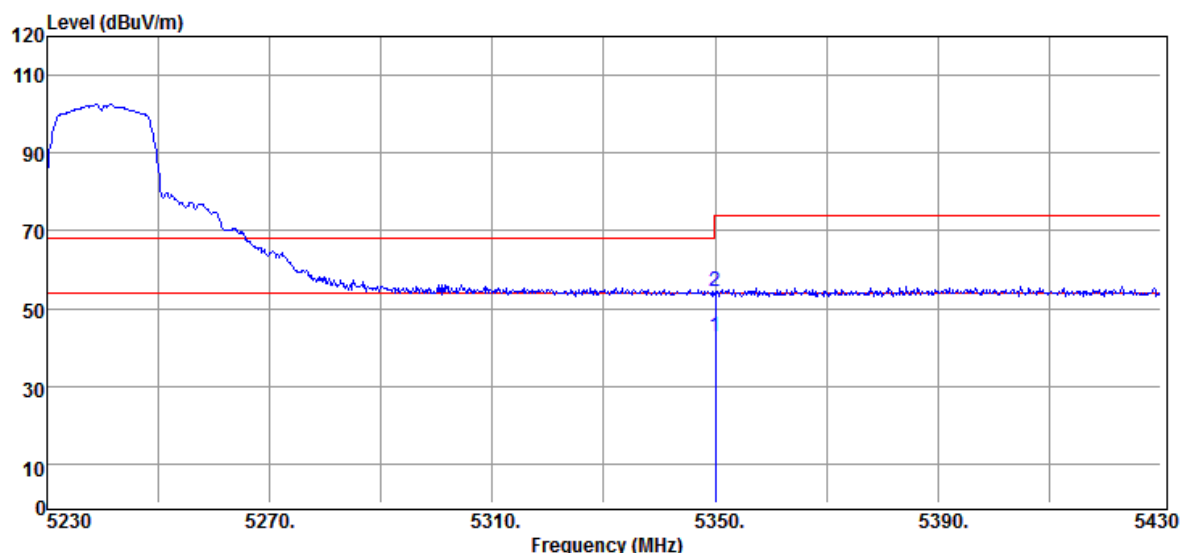
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Operation Mode :802.11n20 / Band1  
 Test Mode :BE CH High  
 EUT Pol :E1 Plan  
 Test Channel :5240 MHz

Test Date :2018-08-31  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 5350.00      | Average                      | 40.73                             | 2.24         | 42.97                  | 54.00                  | -11.03       |
| 5350.00      | Peak                         | 52.35                             | 2.24         | 54.59                  | 74.00                  | -19.41       |

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t (886-2) 2299-3279

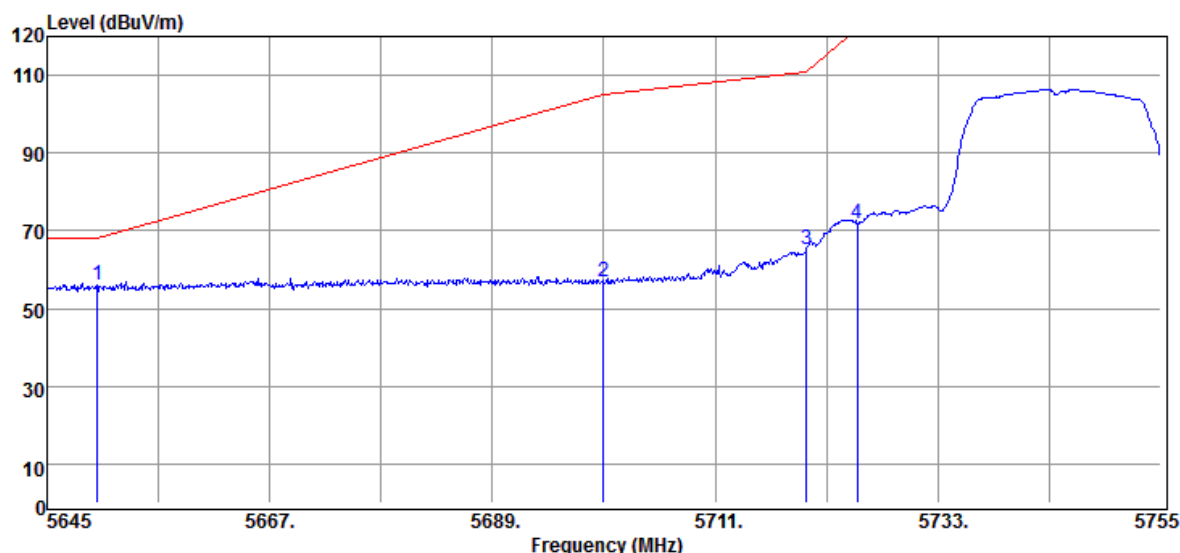
f (886-2) 2298-0488

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Operation Mode :802.11n20 / Band4  
 Test Mode :BE CH Low  
 EUT Pol :E1 Plan  
 Test Channel :5745 MHz

Test Date :2018-08-31  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 5650.00      | Peak                         | 53.95                             | 2.25         | 56.20                  | 68.20                  | -12.00       |
| 5700.00      | Peak                         | 54.56                             | 2.42         | 56.98                  | 105.20                 | -48.22       |
| 5720.00      | Peak                         | 62.72                             | 2.32         | 65.04                  | 110.80                 | -45.76       |
| 5725.00      | Peak                         | 69.72                             | 2.28         | 72.00                  | 122.20                 | -50.20       |

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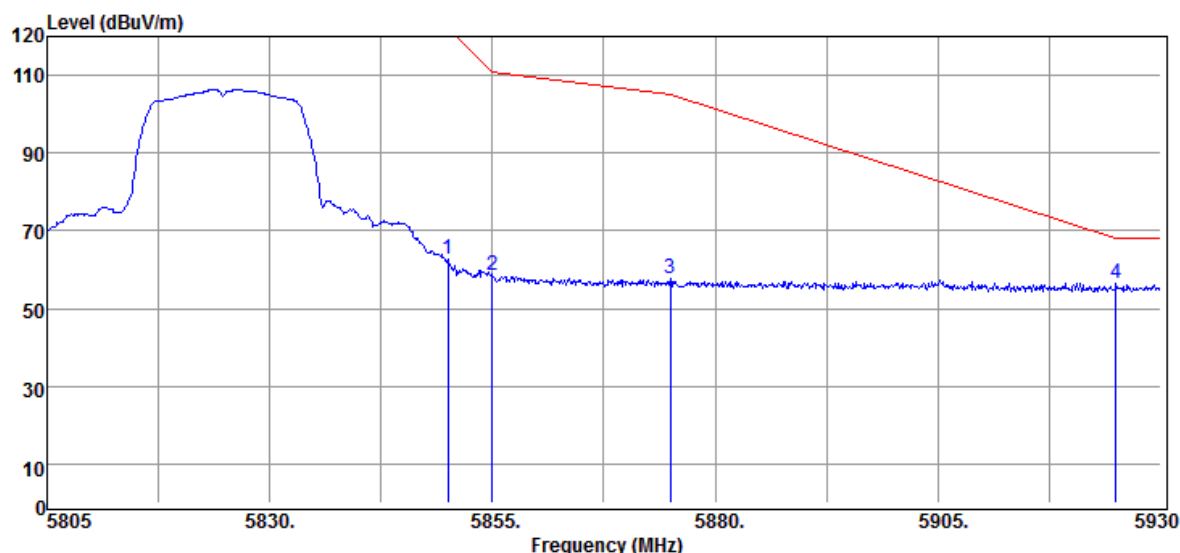
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Member of SGS Group

Operation Mode :802.11n20 / Band4  
 Test Mode :BE CH High  
 EUT Pol :E1 Plan  
 Test Channel :5825 MHz

Test Date :2018-08-31  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 5850.00      | Peak                         | 60.85                             | 1.88         | 62.73                  | 122.20                 | -59.47       |
| 5855.00      | Peak                         | 56.67                             | 1.89         | 58.56                  | 110.80                 | -52.24       |
| 5875.00      | Peak                         | 55.64                             | 1.90         | 57.54                  | 105.20                 | -47.66       |
| 5925.00      | Peak                         | 54.27                             | 2.16         | 56.43                  | 68.20                  | -11.77       |

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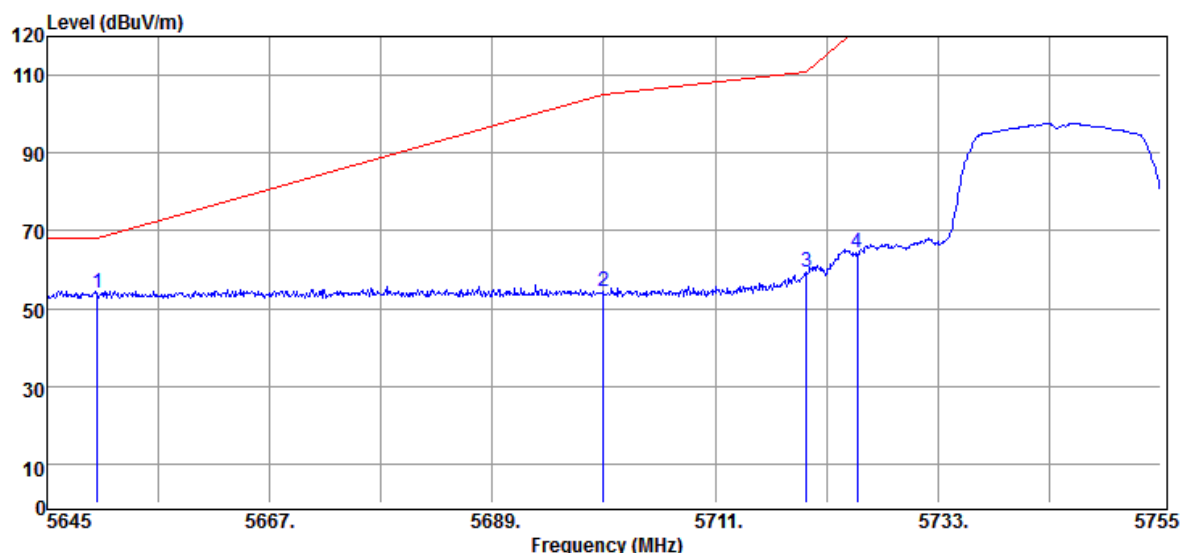
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Member of SGS Group

Operation Mode :802.11n20 / Band4  
 Test Mode :BE CH Low  
 EUT Pol :E1 Plan  
 Test Channel :5745 MHz

Test Date :2018-08-31  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 5650.00      | Peak                         | 51.88                             | 2.25         | 54.13                  | 68.20                  | -14.07       |
| 5700.00      | Peak                         | 51.99                             | 2.42         | 54.41                  | 105.20                 | -50.79       |
| 5720.00      | Peak                         | 56.88                             | 2.32         | 59.20                  | 110.80                 | -51.60       |
| 5725.00      | Peak                         | 61.93                             | 2.28         | 64.21                  | 122.20                 | -57.99       |

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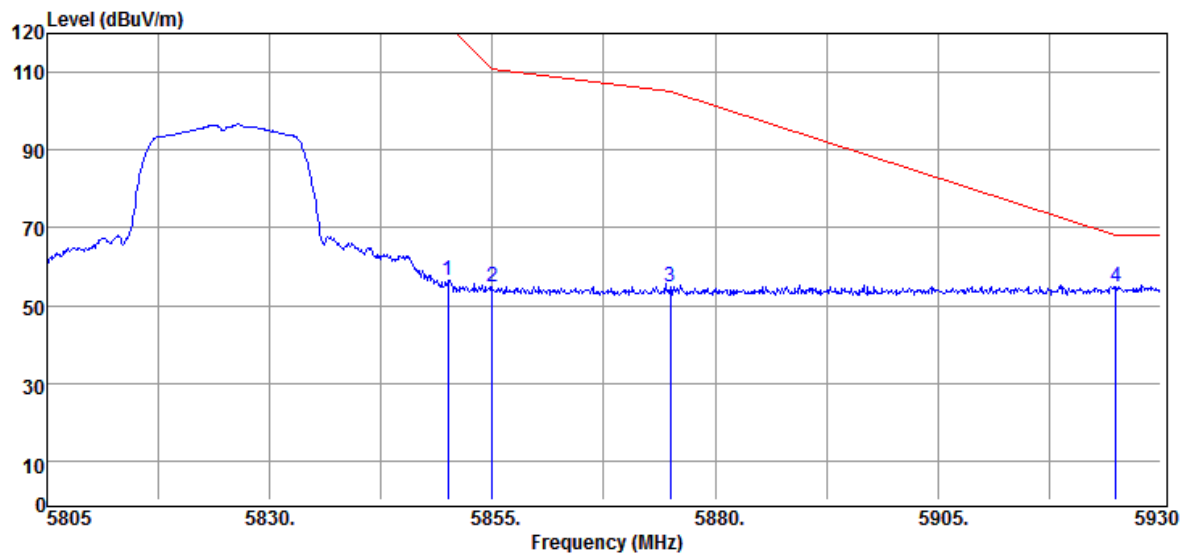
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Operation Mode :802.11n20 / Band4  
 Test Mode :BE CH High  
 EUT Pol :E1 Plan  
 Test Channel :5825 MHz

Test Date :2018-08-31  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 5850.00      | Peak                         | 54.57                             | 1.88         | 56.45                  | 122.20                 | -65.75       |
| 5855.00      | Peak                         | 52.76                             | 1.89         | 54.65                  | 110.80                 | -56.15       |
| 5875.00      | Peak                         | 53.04                             | 1.90         | 54.94                  | 105.20                 | -50.26       |
| 5925.00      | Peak                         | 52.74                             | 2.16         | 54.90                  | 68.20                  | -13.30       |

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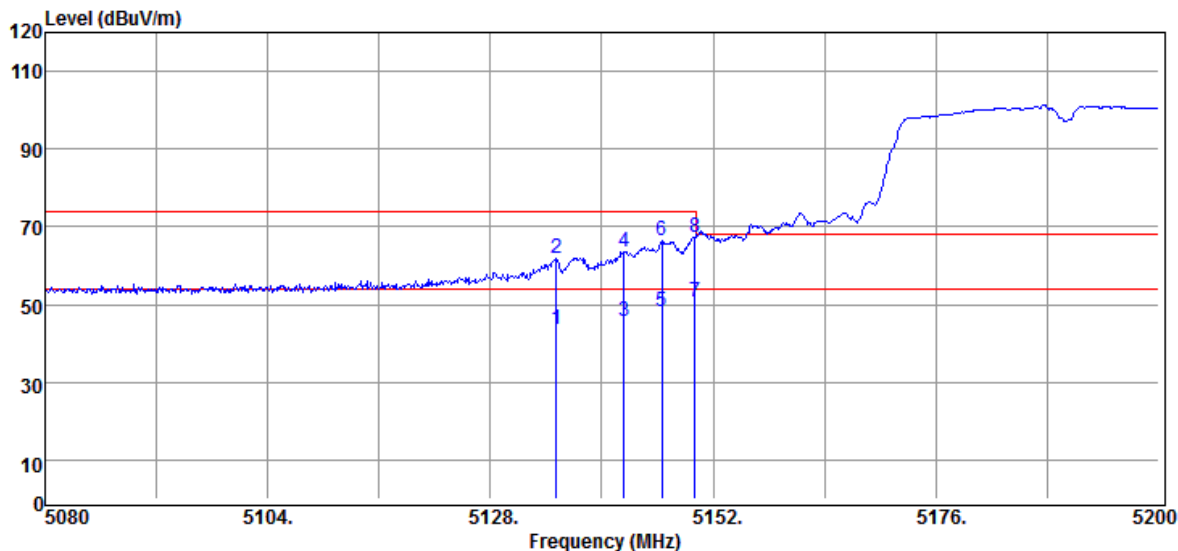
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## 802.11n40 HT mode

Operation Mode :802.11n40 / Band1  
Test Mode :BE CH Low  
EUT Pol :E1 Plan  
Test Channel :5190 MHz

Test Date :2018-08-31  
Temp./Humi. :25/60  
Antenna Pol. :VERTICAL  
Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 5135.08      | Average                      | 41.62                             | 1.80         | 43.42                  | 54.00                  | -10.58       |
| 5135.08      | Peak                         | 60.26                             | 1.80         | 62.06                  | 74.00                  | -11.94       |
| 5142.40      | Average                      | 43.88                             | 1.82         | 45.70                  | 54.00                  | -8.30        |
| 5142.40      | Peak                         | 61.89                             | 1.82         | 63.71                  | 74.00                  | -10.29       |
| 5146.48      | Average                      | 46.23                             | 1.83         | 48.06                  | 54.00                  | -5.94        |
| 5146.48      | Peak                         | 64.51                             | 1.83         | 66.34                  | 74.00                  | -7.66        |
| 5150.00      | Average                      | 48.62                             | 1.84         | 50.46                  | 54.00                  | -3.54        |
| 5150.00      | Peak                         | 65.54                             | 1.84         | 67.38                  | 74.00                  | -6.62        |

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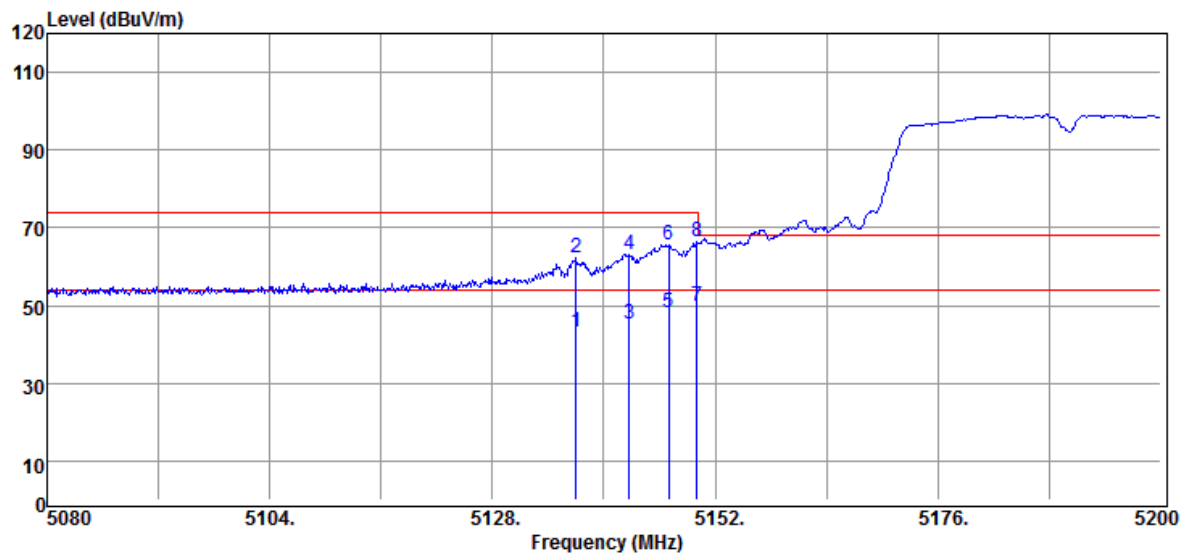
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Operation Mode :802.11n40 / Band1  
 Test Mode :BE CH Low  
 EUT Pol :E1 Plan  
 Test Channel :5190 MHz

Test Date :2018-08-31  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 5137.00      | Average                      | 41.39                             | 1.80         | 43.19                  | 54.00                  | -10.81       |
| 5137.00      | Peak                         | 60.42                             | 1.80         | 62.22                  | 74.00                  | -11.78       |
| 5142.76      | Average                      | 43.50                             | 1.83         | 45.33                  | 54.00                  | -8.67        |
| 5142.76      | Peak                         | 61.35                             | 1.83         | 63.18                  | 74.00                  | -10.82       |
| 5146.96      | Average                      | 46.14                             | 1.84         | 47.98                  | 54.00                  | -6.02        |
| 5146.96      | Peak                         | 63.76                             | 1.84         | 65.60                  | 74.00                  | -8.40        |
| 5150.00      | Average                      | 47.88                             | 1.84         | 49.72                  | 54.00                  | -4.28        |
| 5150.00      | Peak                         | 64.65                             | 1.84         | 66.49                  | 74.00                  | -7.51        |

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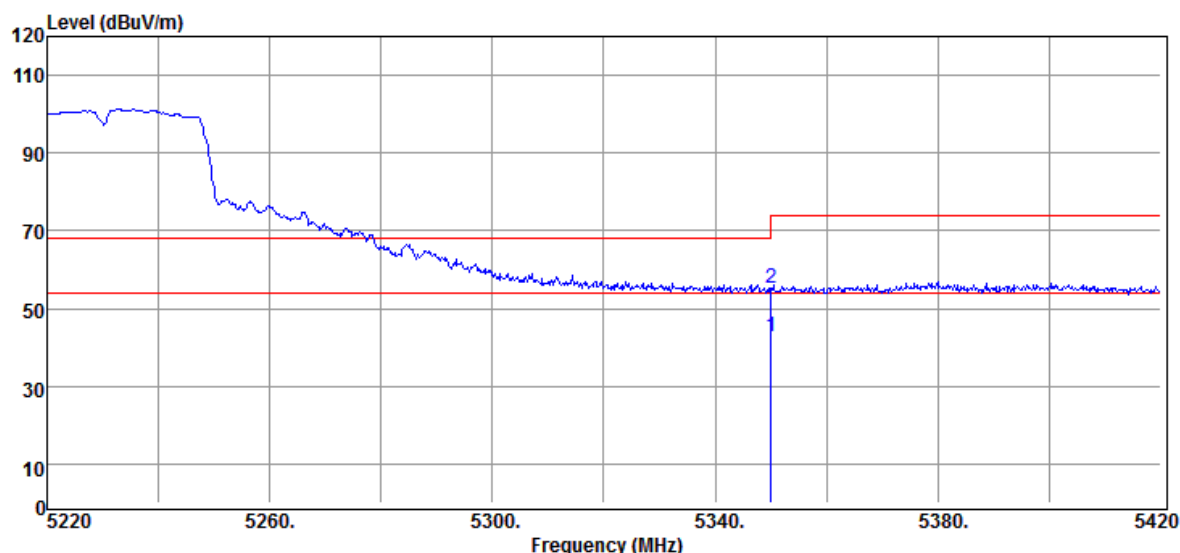
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Operation Mode :802.11n40 / Band1  
 Test Mode :BE CH High  
 EUT Pol :E1 Plan  
 Test Channel :5230 MHz

Test Date :2018-08-31  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 5350.00      | Average                      | 40.69                             | 2.24         | 42.93                  | 54.00                  | -11.07       |
| 5350.00      | Peak                         | 52.89                             | 2.24         | 55.13                  | 74.00                  | -18.87       |

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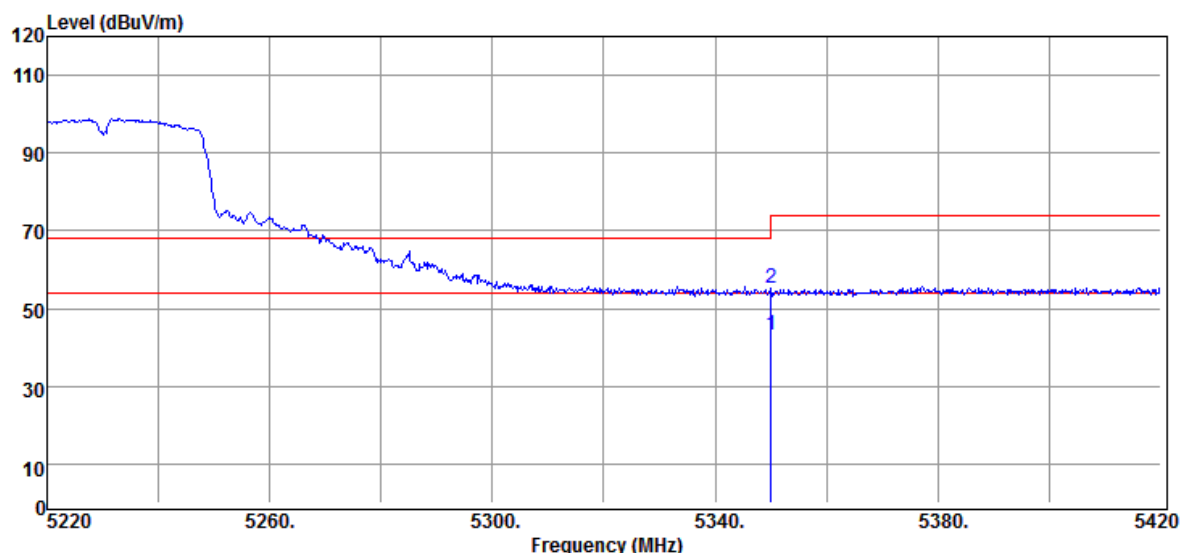
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Operation Mode :802.11n40 / Band1  
 Test Mode :BE CH High  
 EUT Pol :E1 Plan  
 Test Channel :5230 MHz

Test Date :2018-08-31  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 5350.00      | Average                      | 40.89                             | 2.24         | 43.13                  | 54.00                  | -10.87       |
| 5350.00      | Peak                         | 52.93                             | 2.24         | 55.17                  | 74.00                  | -18.83       |

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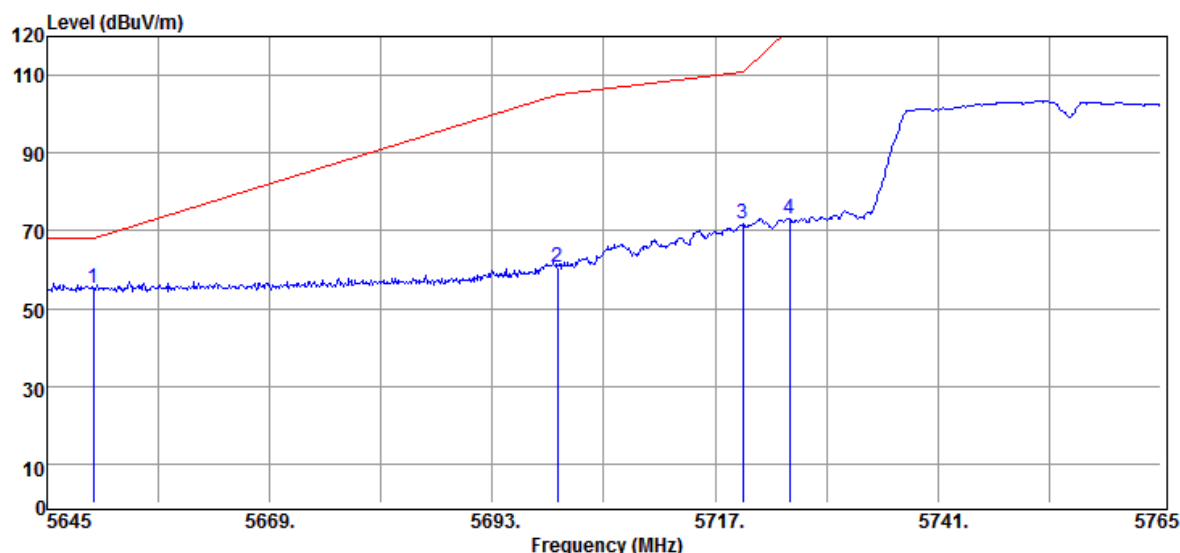
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Operation Mode :802.11n40 / Band4  
Test Mode :BE CH Low  
EUT Pol :E1 Plan  
Test Channel :5755 MHz

Test Date :2018-08-31  
Temp./Humi. :25/60  
Antenna Pol. :VERTICAL  
Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 5650.00      | Peak                         | 53.12                             | 2.25         | 55.37                  | 68.20                  | -12.83       |
| 5700.00      | Peak                         | 58.37                             | 2.42         | 60.79                  | 105.20                 | -44.41       |
| 5720.00      | Peak                         | 69.53                             | 2.32         | 71.85                  | 110.80                 | -38.95       |
| 5725.00      | Peak                         | 70.71                             | 2.28         | 72.99                  | 122.20                 | -49.21       |

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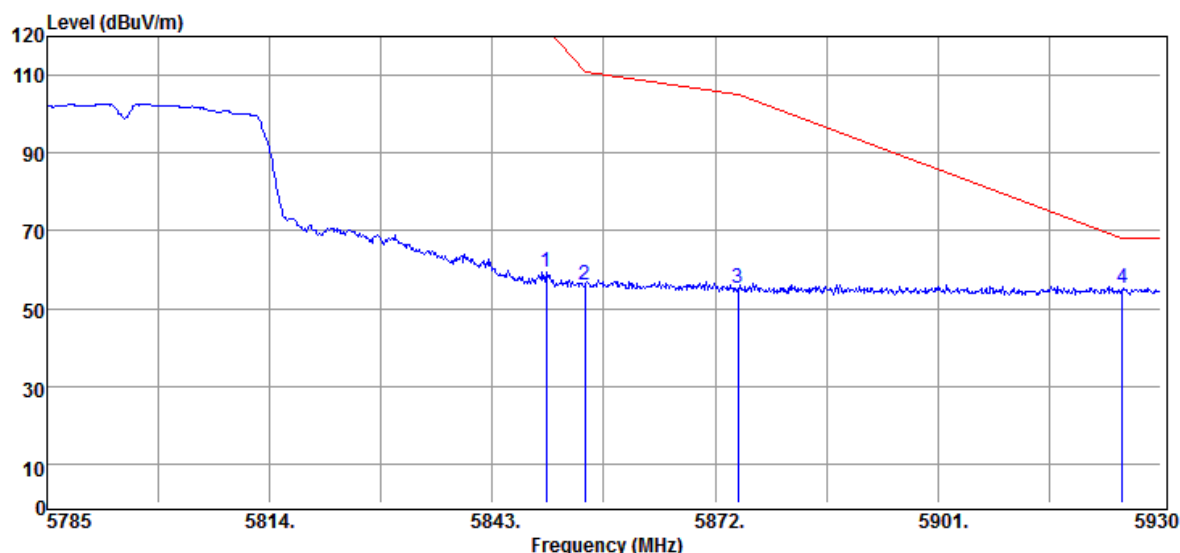
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Operation Mode :802.11n40 / Band4  
 Test Mode :BE CH High  
 EUT Pol :E1 Plan  
 Test Channel :5795 MHz

Test Date :2018-08-31  
 Temp./Humi. :25/60  
 Antenna Pol. :VERTICAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 5850.00      | Peak                         | 57.70                             | 1.88         | 59.58                  | 122.20                 | -62.62       |
| 5855.00      | Peak                         | 54.30                             | 1.89         | 56.19                  | 110.80                 | -54.61       |
| 5875.00      | Peak                         | 53.47                             | 1.90         | 55.37                  | 105.20                 | -49.83       |
| 5925.00      | Peak                         | 53.02                             | 2.16         | 55.18                  | 68.20                  | -13.02       |

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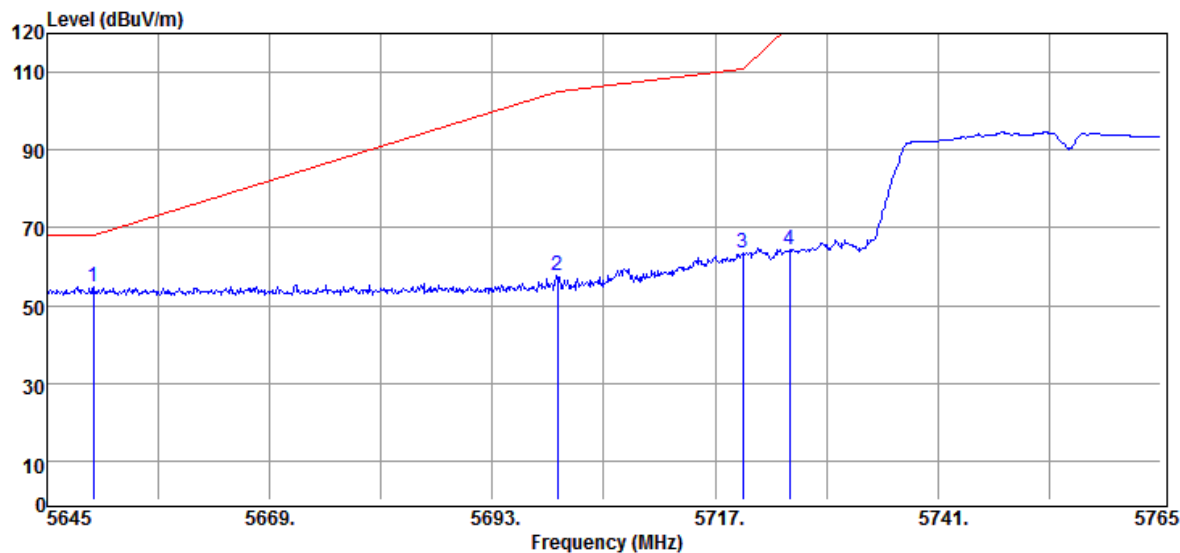
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Operation Mode :802.11n40 / Band4  
 Test Mode :BE CH Low  
 EUT Pol :E1 Plan  
 Test Channel :5755 MHz

Test Date :2018-08-31  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 5650.00      | Peak                         | 52.47                             | 2.25         | 54.72                  | 68.20                  | -13.48       |
| 5700.00      | Peak                         | 55.10                             | 2.42         | 57.52                  | 105.20                 | -47.68       |
| 5720.00      | Peak                         | 61.30                             | 2.32         | 63.62                  | 110.80                 | -47.18       |
| 5725.00      | Peak                         | 62.10                             | 2.28         | 64.38                  | 122.20                 | -57.82       |

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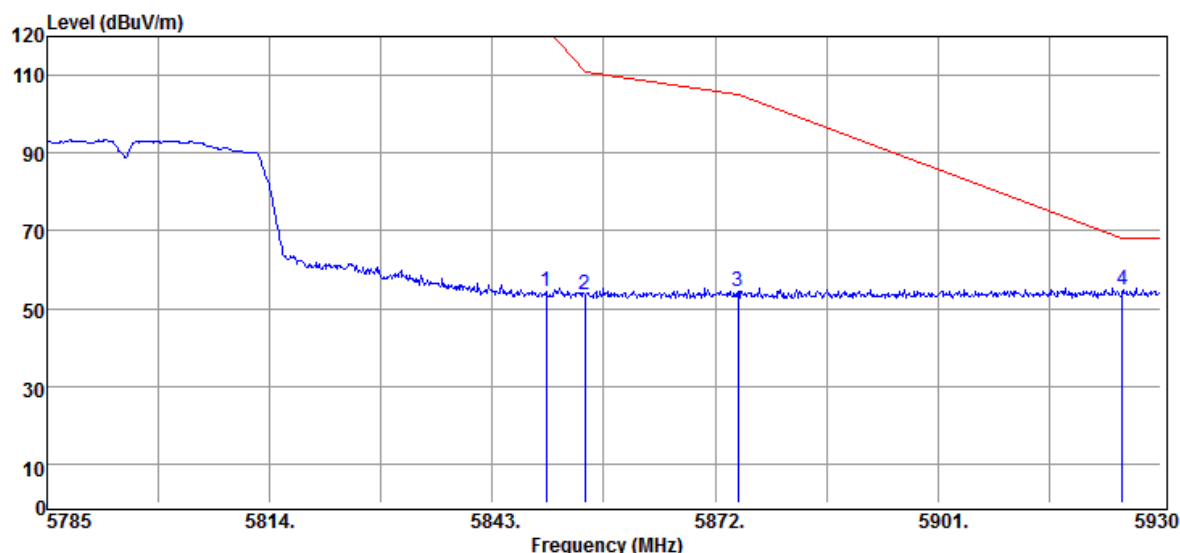
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Operation Mode :802.11n40 / Band4  
 Test Mode :BE CH High  
 EUT Pol :E1 Plan  
 Test Channel :5795 MHz

Test Date :2018-08-31  
 Temp./Humi. :25/60  
 Antenna Pol. :HORIZONTAL  
 Engineer :Jerry



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 5850.00      | Peak                         | 52.43                             | 1.88         | 54.31                  | 122.20                 | -67.89       |
| 5855.00      | Peak                         | 51.87                             | 1.89         | 53.76                  | 110.80                 | -57.04       |
| 5875.00      | Peak                         | 52.31                             | 1.90         | 54.21                  | 105.20                 | -50.99       |
| 5925.00      | Peak                         | 52.48                             | 2.16         | 54.64                  | 68.20                  | -13.56       |

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## 12 TRANSMISSION IN THE ABSENCE OF DATA

### 12.1 Standard Applicable

According to §15.407(c)

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

### 12.2 Result

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ASK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

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## 13 FREQUENCY STABILITY

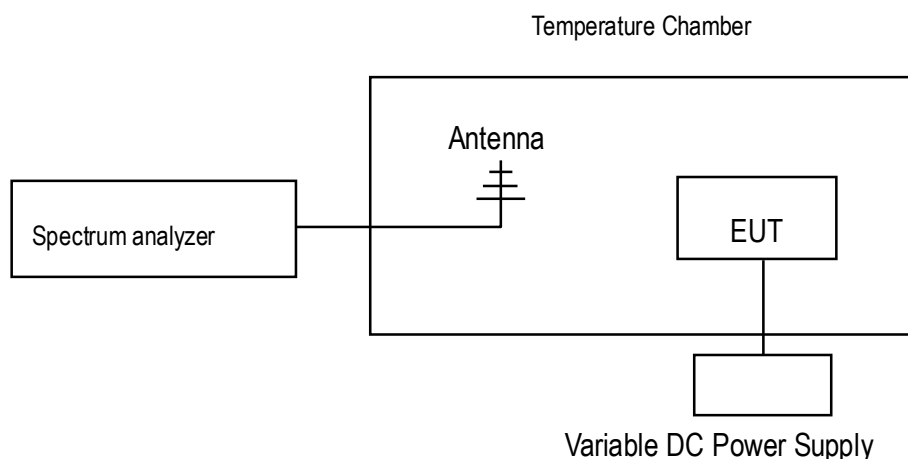
### 13.1 Standard Applicable

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.

### 13.2 Measurement Procedure

1. The EUT was placed inside temperature chamber and powered and powered by nominal DC voltage.
2. Set EUT as normal operation.
3. Turn the EUT on and couple its output to spectrum.
4. Turn the EUT off and set the chamber to the highest temperature specified.
5. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT and measure the operating frequency.
6. Repeat step with the temperature chamber set to the lowest temperature.

### 13.3 Test SET-UP



### 13.4 Measurement Equipment Used:

| SGS Conducted Room |              |            |               |                  |                 |
|--------------------|--------------|------------|---------------|------------------|-----------------|
| Name of Equipment  | Manufacturer | Model      | Serial Number | Calibration Date | Calibration Due |
| Spectrum Analyzer  | Agilent      | N9010A     | MY53400256    | 2017/10/30       | 2018/10/29      |
| Attenuator         | Marvelous    | MVE2213-10 | RF30          | 2017/12/26       | 2018/12/25      |
| DC Block           | PASTERNAK    | PE8210     | RF29          | 2017/12/26       | 2018/12/25      |

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### 13.5 Measurement Result

#### Startup:

|                |          |           |            |
|----------------|----------|-----------|------------|
| Operation Mode | 802.11 a | Test Date | 2018.09.05 |
| Temperature    | :24.5 °C | Test By   | Scott      |
| Humidity       | :65 %    |           |            |

| Test Temp. | Test Voltage | Channel | Measured Frequency (MHz) | Spectrum Frequency (MHz) | ΔFrequency (MHz) |
|------------|--------------|---------|--------------------------|--------------------------|------------------|
| -10 °C     | 4.18V        | 36      | 5180                     | 5,179.99391              | 0.00000118       |
|            |              | 44      | 5220                     | 5,219.93985              | 0.00001152       |
|            |              | 48      | 5240                     | 5,239.94593              | 0.00001032       |
|            |              | 52      | 5260                     | 5,259.97459              | 0.00000483       |
|            |              | 60      | 5300                     | 5,299.97360              | 0.00000498       |
|            |              | 64      | 5320                     | 5,319.90917              | 0.00001707       |
|            |              | 100     | 5500                     | 5,499.94330              | 0.00001031       |
|            |              | 116     | 5580                     | 5,579.90990              | 0.00001615       |
|            |              | 140     | 5700                     | 5,699.90215              | 0.00001717       |
|            |              | 144     | 5720                     | 5,719.97325              | 0.00000468       |
|            |              | 149     | 5745                     | 5,744.97486              | 0.00000438       |
|            |              | 157     | 5785                     | 5,784.99362              | 0.00000110       |
|            |              | 165     | 5825                     | 5,824.92782              | 0.00001239       |
|            | 3.42V        | 36      | 5180                     | 5,179.99294              | 0.00000136       |
|            |              | 44      | 5220                     | 5,219.96237              | 0.00000721       |
|            |              | 48      | 5240                     | 5,239.90434              | 0.00001826       |
|            |              | 52      | 5260                     | 5,259.91089              | 0.00001694       |
|            |              | 60      | 5300                     | 5,299.90605              | 0.00001773       |
|            |              | 64      | 5320                     | 5,319.93261              | 0.00001267       |
|            |              | 100     | 5500                     | 5,499.91350              | 0.00001573       |
|            |              | 116     | 5580                     | 5,579.98707              | 0.00000232       |
|            |              | 140     | 5700                     | 5,699.91302              | 0.00001526       |
|            |              | 144     | 5720                     | 5,719.94814              | 0.00000907       |
|            |              | 149     | 5745                     | 5,744.96440              | 0.00000620       |
|            |              | 157     | 5785                     | 5,784.99162              | 0.00000145       |
|            |              | 165     | 5825                     | 5,824.96727              | 0.00000562       |

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|       |       |     |      |             |            |
|-------|-------|-----|------|-------------|------------|
| 25 °C | 3.8V  | 36  | 5180 | 5,179.93415 | 0.00001271 |
|       |       | 44  | 5220 | 5,219.94151 | 0.00001120 |
|       |       | 48  | 5240 | 5,239.97406 | 0.00000495 |
|       |       | 52  | 5260 | 5,259.98977 | 0.00000194 |
|       |       | 60  | 5300 | 5,299.99814 | 0.00000035 |
|       |       | 64  | 5320 | 5,319.95261 | 0.00000891 |
|       |       | 100 | 5500 | 5,499.92149 | 0.00001427 |
|       |       | 116 | 5580 | 5,579.98296 | 0.00000305 |
|       |       | 140 | 5700 | 5,699.97599 | 0.00000421 |
|       |       | 144 | 5720 | 5,719.96151 | 0.00000673 |
|       |       | 149 | 5745 | 5,744.96835 | 0.00000551 |
|       |       | 157 | 5785 | 5,784.93271 | 0.00001163 |
|       |       | 165 | 5825 | 5,824.94459 | 0.00000951 |
| 55 °C | 4.18V | 36  | 5180 | 5,179.94824 | 0.00000999 |
|       |       | 44  | 5220 | 5,219.92215 | 0.00001491 |
|       |       | 48  | 5240 | 5,239.99573 | 0.00000081 |
|       |       | 52  | 5260 | 5,259.94009 | 0.00001139 |
|       |       | 60  | 5300 | 5,299.93158 | 0.00001291 |
|       |       | 64  | 5320 | 5,319.91700 | 0.00001560 |
|       |       | 100 | 5500 | 5,499.95558 | 0.00000808 |
|       |       | 116 | 5580 | 5,579.99886 | 0.00000020 |
|       |       | 140 | 5700 | 5,699.94625 | 0.00000943 |
|       |       | 144 | 5720 | 5,719.93614 | 0.00001116 |
|       |       | 149 | 5745 | 5,744.99045 | 0.00000166 |
|       |       | 157 | 5785 | 5,784.98825 | 0.00000203 |
|       |       | 165 | 5825 | 5,824.92040 | 0.00001367 |
|       | 3.42V | 36  | 5180 | 5,179.96301 | 0.00000714 |
|       |       | 44  | 5220 | 5,219.99807 | 0.00000037 |
|       |       | 48  | 5240 | 5,239.98028 | 0.00000376 |
|       |       | 52  | 5260 | 5,259.97131 | 0.00000545 |
|       |       | 60  | 5300 | 5,299.91257 | 0.00001650 |
|       |       | 64  | 5320 | 5,319.95598 | 0.00000827 |
|       |       | 100 | 5500 | 5,499.95916 | 0.00000743 |
|       |       | 116 | 5580 | 5,579.97249 | 0.00000493 |
|       |       | 140 | 5700 | 5,699.92100 | 0.00001386 |
|       |       | 144 | 5720 | 5,719.99737 | 0.00000046 |
|       |       | 149 | 5745 | 5,744.96851 | 0.00000548 |
|       |       | 157 | 5785 | 5,784.91598 | 0.00001452 |
|       |       | 165 | 5825 | 5,824.98750 | 0.00000215 |

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|                |               |           |            |
|----------------|---------------|-----------|------------|
| Operation Mode | 802.11 n_HT40 | Test Date | 2018.09.05 |
| Temperature    | :24.5 °C      | Test By   | Scott      |
| Humidity       | :65 %         |           |            |

| Test Temp. | Test Voltage | Channel | Measured Frequency (MHz) | Spectrum Frequency (MHz) | ΔFrequency (MHz) |
|------------|--------------|---------|--------------------------|--------------------------|------------------|
| -10 °C     | 4.18V        | 38      | 5190                     | 5,189.90382              | 0.00001853       |
|            |              | 46      | 5230                     | 5,229.94776              | 0.00000999       |
|            |              | 54      | 5270                     | 5,269.91336              | 0.00001644       |
|            |              | 62      | 5310                     | 5,309.92235              | 0.00001462       |
|            |              | 102     | 5510                     | 5,509.98791              | 0.00000219       |
|            |              | 110     | 5550                     | 5,549.95966              | 0.00000727       |
|            |              | 134     | 5670                     | 5,669.95319              | 0.00000826       |
|            |              | 142     | 5710                     | 5,709.99959              | 0.00000007       |
|            |              | 151     | 5755                     | 5,754.90729              | 0.00001611       |
|            |              | 159     | 5795                     | 5,794.96778              | 0.00000556       |
|            | 3.42V        | 38      | 5190                     | 5,189.90770              | 0.00001778       |
|            |              | 46      | 5230                     | 5,229.94043              | 0.00001139       |
|            |              | 54      | 5270                     | 5,269.96161              | 0.00000728       |
|            |              | 62      | 5310                     | 5,309.92373              | 0.00001436       |
|            |              | 102     | 5510                     | 5,509.98161              | 0.00000334       |
|            |              | 110     | 5550                     | 5,549.92846              | 0.00001289       |
|            |              | 134     | 5670                     | 5,669.92275              | 0.00001362       |
|            |              | 142     | 5710                     | 5,709.99287              | 0.00000125       |
|            |              | 151     | 5755                     | 5,754.96493              | 0.00000609       |
|            |              | 159     | 5795                     | 5,794.92732              | 0.00001254       |

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|       |       |     |      |             |            |
|-------|-------|-----|------|-------------|------------|
| 25 °C | 3.8V  | 38  | 5190 | 5,189.94742 | 0.00001013 |
|       |       | 46  | 5230 | 5,229.93076 | 0.00001324 |
|       |       | 54  | 5270 | 5,269.97818 | 0.00000414 |
|       |       | 62  | 5310 | 5,309.98010 | 0.00000375 |
|       |       | 102 | 5510 | 5,509.99505 | 0.00000090 |
|       |       | 110 | 5550 | 5,549.99032 | 0.00000174 |
|       |       | 134 | 5670 | 5,669.99404 | 0.00000105 |
|       |       | 142 | 5710 | 5,709.97983 | 0.00000353 |
|       |       | 151 | 5755 | 5,754.97267 | 0.00000475 |
|       |       | 159 | 5795 | 5,794.95911 | 0.00000706 |
| 55 °C | 4.18V | 38  | 5190 | 5,189.92817 | 0.00001384 |
|       |       | 46  | 5230 | 5,229.94746 | 0.00001005 |
|       |       | 54  | 5270 | 5,269.94509 | 0.00001042 |
|       |       | 62  | 5310 | 5,309.95321 | 0.00000881 |
|       |       | 102 | 5510 | 5,509.95633 | 0.00000793 |
|       |       | 110 | 5550 | 5,549.96415 | 0.00000646 |
|       |       | 134 | 5670 | 5,669.95634 | 0.00000770 |
|       |       | 142 | 5710 | 5,709.90930 | 0.00001588 |
|       |       | 151 | 5755 | 5,754.91075 | 0.00001551 |
|       |       | 159 | 5795 | 5,794.96478 | 0.00000608 |
|       | 3.42V | 38  | 5190 | 5,189.99603 | 0.00000076 |
|       |       | 46  | 5230 | 5,229.93591 | 0.00001225 |
|       |       | 54  | 5270 | 5,269.91566 | 0.00001600 |
|       |       | 62  | 5310 | 5,309.93164 | 0.00001287 |
|       |       | 102 | 5510 | 5,509.90324 | 0.00001756 |
|       |       | 110 | 5550 | 5,549.90190 | 0.00001768 |
|       |       | 134 | 5670 | 5,669.99040 | 0.00000169 |
|       |       | 142 | 5710 | 5,709.91969 | 0.00001406 |
|       |       | 151 | 5755 | 5,754.99417 | 0.00000101 |
|       |       | 159 | 5795 | 5,794.91914 | 0.00001395 |

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## 2 Minutes:

|                |          |           |            |
|----------------|----------|-----------|------------|
| Operation Mode | 802.11 a | Test Date | 2018.09.05 |
| Temperature    | :24.5 °C | Test By   | Scott      |
| Humidity       | :65 %    |           |            |

| Test Temp. | Test Voltage | Channel | Measured Frequency (MHz) | Spectrum Frequency (MHz) | ΔFrequency (MHz) |
|------------|--------------|---------|--------------------------|--------------------------|------------------|
| -10 °C     | 4.18V        | 36      | 5180                     | 5,179.90658              | 0.00001803       |
|            |              | 44      | 5220                     | 5,219.96113              | 0.00000745       |
|            |              | 48      | 5240                     | 5,239.97904              | 0.00000400       |
|            |              | 52      | 5260                     | 5,259.94040              | 0.00001133       |
|            |              | 60      | 5300                     | 5,299.90238              | 0.00001842       |
|            |              | 64      | 5320                     | 5,319.92958              | 0.00001324       |
|            |              | 100     | 5500                     | 5,499.97450              | 0.00000464       |
|            |              | 116     | 5580                     | 5,579.97422              | 0.00000462       |
|            |              | 140     | 5700                     | 5,699.94658              | 0.00000937       |
|            |              | 144     | 5720                     | 5,719.90568              | 0.00001649       |
|            |              | 149     | 5745                     | 5,744.98978              | 0.00000178       |
|            |              | 157     | 5785                     | 5,784.98705              | 0.00000224       |
|            |              | 165     | 5825                     | 5,824.95020              | 0.00000855       |
|            | 3.42V        | 36      | 5180                     | 5,179.97443              | 0.00000494       |
|            |              | 44      | 5220                     | 5,219.90447              | 0.00001830       |
|            |              | 48      | 5240                     | 5,239.93947              | 0.00001155       |
|            |              | 52      | 5260                     | 5,259.97927              | 0.00000394       |
|            |              | 60      | 5300                     | 5,299.94719              | 0.00000996       |
|            |              | 64      | 5320                     | 5,319.91001              | 0.00001692       |
|            |              | 100     | 5500                     | 5,499.90199              | 0.00001782       |
|            |              | 116     | 5580                     | 5,579.96072              | 0.00000704       |
|            |              | 140     | 5700                     | 5,699.98083              | 0.00000336       |
|            |              | 144     | 5720                     | 5,719.98987              | 0.00000177       |
|            |              | 149     | 5745                     | 5,744.90470              | 0.00001659       |
|            |              | 157     | 5785                     | 5,784.97554              | 0.00000423       |
|            |              | 165     | 5825                     | 5,824.93260              | 0.00001157       |

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|       |       |     |      |             |            |
|-------|-------|-----|------|-------------|------------|
| 25 °C | 3.8V  | 36  | 5180 | 5,179.91521 | 0.00001637 |
|       |       | 44  | 5220 | 5,219.90871 | 0.00001749 |
|       |       | 48  | 5240 | 5,239.90131 | 0.00001883 |
|       |       | 52  | 5260 | 5,259.90671 | 0.00001774 |
|       |       | 60  | 5300 | 5,299.96209 | 0.00000715 |
|       |       | 64  | 5320 | 5,319.92971 | 0.00001321 |
|       |       | 100 | 5500 | 5,499.96581 | 0.00000622 |
|       |       | 116 | 5580 | 5,579.90670 | 0.00001672 |
|       |       | 140 | 5700 | 5,699.96732 | 0.00000573 |
|       |       | 144 | 5720 | 5,719.96472 | 0.00000617 |
|       |       | 149 | 5745 | 5,744.90616 | 0.00001633 |
|       |       | 157 | 5785 | 5,784.99697 | 0.00000052 |
|       |       | 165 | 5825 | 5,824.92565 | 0.00001276 |
| 55 °C | 4.18V | 36  | 5180 | 5,179.93625 | 0.00001231 |
|       |       | 44  | 5220 | 5,219.90164 | 0.00001884 |
|       |       | 48  | 5240 | 5,239.91442 | 0.00001633 |
|       |       | 52  | 5260 | 5,259.98457 | 0.00000293 |
|       |       | 60  | 5300 | 5,299.95883 | 0.00000777 |
|       |       | 64  | 5320 | 5,319.91212 | 0.00001652 |
|       |       | 100 | 5500 | 5,499.91020 | 0.00001633 |
|       |       | 116 | 5580 | 5,579.90605 | 0.00001684 |
|       |       | 140 | 5700 | 5,699.93846 | 0.00001080 |
|       |       | 144 | 5720 | 5,719.98534 | 0.00000256 |
|       |       | 149 | 5745 | 5,744.91453 | 0.00001488 |
|       |       | 157 | 5785 | 5,784.93664 | 0.00001095 |
|       |       | 165 | 5825 | 5,824.92423 | 0.00001301 |
|       | 3.42V | 36  | 5180 | 5,179.98055 | 0.00000375 |
|       |       | 44  | 5220 | 5,219.91733 | 0.00001584 |
|       |       | 48  | 5240 | 5,239.92679 | 0.00001397 |
|       |       | 52  | 5260 | 5,259.94562 | 0.00001034 |
|       |       | 60  | 5300 | 5,299.90669 | 0.00001761 |
|       |       | 64  | 5320 | 5,319.93739 | 0.00001177 |
|       |       | 100 | 5500 | 5,499.94965 | 0.00000915 |
|       |       | 116 | 5580 | 5,579.99670 | 0.00000059 |
|       |       | 140 | 5700 | 5,699.94388 | 0.00000985 |
|       |       | 144 | 5720 | 5,719.92340 | 0.00001339 |
|       |       | 149 | 5745 | 5,744.92825 | 0.00001249 |
|       |       | 157 | 5785 | 5,784.90250 | 0.00001685 |
|       |       | 165 | 5825 | 5,824.90149 | 0.00001691 |

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|                |               |           |            |
|----------------|---------------|-----------|------------|
| Operation Mode | 802.11 n_HT40 | Test Date | 2018.09.05 |
| Temperature    | :24.5 °C      | Test By   | Scott      |
| Humidity       | :65 %         |           |            |

| Test Temp. | Test Voltage | Channel | Measured Frequency (MHz) | Spectrum Frequency (MHz) | ΔFrequency (MHz) |
|------------|--------------|---------|--------------------------|--------------------------|------------------|
| -10 °C     | 4.18V        | 38      | 5190                     | 5,189.90382              | 0.00001853       |
|            |              | 46      | 5230                     | 5,229.94776              | 0.00000999       |
|            |              | 54      | 5270                     | 5,269.91336              | 0.00001644       |
|            |              | 62      | 5310                     | 5,309.92235              | 0.00001462       |
|            |              | 102     | 5510                     | 5,509.98791              | 0.00000219       |
|            |              | 110     | 5550                     | 5,549.95966              | 0.00000727       |
|            |              | 134     | 5670                     | 5,669.95319              | 0.00000826       |
|            |              | 142     | 5710                     | 5,709.99959              | 0.00000007       |
|            |              | 151     | 5755                     | 5,754.90729              | 0.00001611       |
|            |              | 159     | 5795                     | 5,794.96778              | 0.00000556       |
|            | 3.42V        | 38      | 5190                     | 5,189.90382              | 0.00001853       |
|            |              | 46      | 5230                     | 5,229.94776              | 0.00000999       |
|            |              | 54      | 5270                     | 5,269.91336              | 0.00001644       |
|            |              | 62      | 5310                     | 5,309.92235              | 0.00001462       |
|            |              | 102     | 5510                     | 5,509.98791              | 0.00000219       |
|            |              | 110     | 5550                     | 5,549.95966              | 0.00000727       |
|            |              | 134     | 5670                     | 5,669.95319              | 0.00000826       |
|            |              | 142     | 5710                     | 5,709.99959              | 0.00000007       |
|            |              | 151     | 5755                     | 5,754.90729              | 0.00001611       |
|            |              | 159     | 5795                     | 5,794.96778              | 0.00000556       |

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|       |       |     |      |             |            |
|-------|-------|-----|------|-------------|------------|
| 25 °C | 3.8V  | 38  | 5190 | 5,189.90382 | 0.00001853 |
|       |       | 46  | 5230 | 5,229.94776 | 0.00000999 |
|       |       | 54  | 5270 | 5,269.91336 | 0.00001644 |
|       |       | 62  | 5310 | 5,309.92235 | 0.00001462 |
|       |       | 102 | 5510 | 5,509.98791 | 0.00000219 |
|       |       | 110 | 5550 | 5,549.95966 | 0.00000727 |
|       |       | 134 | 5670 | 5,669.95319 | 0.00000826 |
|       |       | 142 | 5710 | 5,709.99959 | 0.00000007 |
|       |       | 151 | 5755 | 5,754.90729 | 0.00001611 |
|       |       | 159 | 5795 | 5,794.96778 | 0.00000556 |
| 55 °C | 4.18V | 38  | 5190 | 5,189.90382 | 0.00001853 |
|       |       | 46  | 5230 | 5,229.94776 | 0.00000999 |
|       |       | 54  | 5270 | 5,269.91336 | 0.00001644 |
|       |       | 62  | 5310 | 5,309.92235 | 0.00001462 |
|       |       | 102 | 5510 | 5,509.98791 | 0.00000219 |
|       |       | 110 | 5550 | 5,549.95966 | 0.00000727 |
|       |       | 134 | 5670 | 5,669.95319 | 0.00000826 |
|       |       | 142 | 5710 | 5,709.99959 | 0.00000007 |
|       |       | 151 | 5755 | 5,754.90729 | 0.00001611 |
|       |       | 159 | 5795 | 5,794.96778 | 0.00000556 |
|       | 3.42V | 38  | 5190 | 5,189.90382 | 0.00001853 |
|       |       | 46  | 5230 | 5,229.94776 | 0.00000999 |
|       |       | 54  | 5270 | 5,269.91336 | 0.00001644 |
|       |       | 62  | 5310 | 5,309.92235 | 0.00001462 |
|       |       | 102 | 5510 | 5,509.98791 | 0.00000219 |
|       |       | 110 | 5550 | 5,549.95966 | 0.00000727 |
|       |       | 134 | 5670 | 5,669.95319 | 0.00000826 |
|       |       | 142 | 5710 | 5,709.99959 | 0.00000007 |
|       |       | 151 | 5755 | 5,754.90729 | 0.00001611 |
|       |       | 159 | 5795 | 5,794.96778 | 0.00000556 |

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## 5 Minutes:

|                |          |           |            |
|----------------|----------|-----------|------------|
| Operation Mode | 802.11 a | Test Date | 2018.09.05 |
| Temperature    | :24.5 °C | Test By   | Scott      |
| Humidity       | :65 %    |           |            |

| Test Temp. | Test Voltage | Channel | Measured Frequency (MHz) | Spectrum Frequency (MHz) | ΔFrequency (MHz) |
|------------|--------------|---------|--------------------------|--------------------------|------------------|
| -10 °C     | 4.18V        | 36      | 5180                     | 5,179.96910              | 0.00000597       |
|            |              | 44      | 5220                     | 5,219.95025              | 0.00000953       |
|            |              | 48      | 5240                     | 5,239.99360              | 0.00000122       |
|            |              | 52      | 5260                     | 5,259.99352              | 0.00000123       |
|            |              | 60      | 5300                     | 5,299.96819              | 0.00000600       |
|            |              | 64      | 5320                     | 5,319.90153              | 0.00001851       |
|            |              | 100     | 5500                     | 5,499.91671              | 0.00001514       |
|            |              | 116     | 5580                     | 5,579.98508              | 0.00000267       |
|            |              | 140     | 5700                     | 5,699.98209              | 0.00000314       |
|            |              | 144     | 5720                     | 5,719.93185              | 0.00001191       |
|            |              | 149     | 5745                     | 5,744.91504              | 0.00001479       |
|            |              | 157     | 5785                     | 5,784.99378              | 0.00000108       |
|            |              | 165     | 5825                     | 5,824.93474              | 0.00001120       |
|            | 3.42V        | 36      | 5180                     | 5,179.99504              | 0.00000096       |
|            |              | 44      | 5220                     | 5,219.96915              | 0.00000591       |
|            |              | 48      | 5240                     | 5,239.94593              | 0.00001032       |
|            |              | 52      | 5260                     | 5,259.90191              | 0.00001865       |
|            |              | 60      | 5300                     | 5,299.97723              | 0.00000430       |
|            |              | 64      | 5320                     | 5,319.94398              | 0.00001053       |
|            |              | 100     | 5500                     | 5,499.98166              | 0.00000333       |
|            |              | 116     | 5580                     | 5,579.90745              | 0.00001659       |
|            |              | 140     | 5700                     | 5,699.92738              | 0.00001274       |
|            |              | 144     | 5720                     | 5,719.96840              | 0.00000552       |
|            |              | 149     | 5745                     | 5,744.92263              | 0.00001347       |
|            |              | 157     | 5785                     | 5,784.94635              | 0.00000927       |
|            |              | 165     | 5825                     | 5,824.99509              | 0.00000084       |

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|       |       |     |      |             |            |
|-------|-------|-----|------|-------------|------------|
| 25 °C | 3.8V  | 36  | 5180 | 5,179.99207 | 0.00000153 |
|       |       | 44  | 5220 | 5,219.90651 | 0.00001791 |
|       |       | 48  | 5240 | 5,239.94897 | 0.00000974 |
|       |       | 52  | 5260 | 5,259.97170 | 0.00000538 |
|       |       | 60  | 5300 | 5,299.94950 | 0.00000953 |
|       |       | 64  | 5320 | 5,319.98382 | 0.00000304 |
|       |       | 100 | 5500 | 5,499.95613 | 0.00000798 |
|       |       | 116 | 5580 | 5,579.97444 | 0.00000458 |
|       |       | 140 | 5700 | 5,699.97283 | 0.00000477 |
|       |       | 144 | 5720 | 5,719.94976 | 0.00000878 |
|       |       | 149 | 5745 | 5,744.93989 | 0.00001046 |
|       |       | 157 | 5785 | 5,784.98464 | 0.00000266 |
|       |       | 165 | 5825 | 5,824.92709 | 0.00001252 |
| 55 °C | 4.18V | 36  | 5180 | 5,179.91344 | 0.00001671 |
|       |       | 44  | 5220 | 5,219.96632 | 0.00000645 |
|       |       | 48  | 5240 | 5,239.99101 | 0.00000172 |
|       |       | 52  | 5260 | 5,259.93955 | 0.00001149 |
|       |       | 60  | 5300 | 5,299.96782 | 0.00000607 |
|       |       | 64  | 5320 | 5,319.96029 | 0.00000746 |
|       |       | 100 | 5500 | 5,499.90137 | 0.00001793 |
|       |       | 116 | 5580 | 5,579.99857 | 0.00000026 |
|       |       | 140 | 5700 | 5,699.97169 | 0.00000497 |
|       |       | 144 | 5720 | 5,719.90151 | 0.00001722 |
|       |       | 149 | 5745 | 5,744.97646 | 0.00000410 |
|       |       | 157 | 5785 | 5,784.97973 | 0.00000350 |
|       |       | 165 | 5825 | 5,824.93266 | 0.00001156 |
|       | 3.42V | 36  | 5180 | 5,179.98894 | 0.00000214 |
|       |       | 44  | 5220 | 5,219.96601 | 0.00000651 |
|       |       | 48  | 5240 | 5,239.97543 | 0.00000469 |
|       |       | 52  | 5260 | 5,259.99549 | 0.00000086 |
|       |       | 60  | 5300 | 5,299.96705 | 0.00000622 |
|       |       | 64  | 5320 | 5,319.95048 | 0.00000931 |
|       |       | 100 | 5500 | 5,499.91629 | 0.00001522 |
|       |       | 116 | 5580 | 5,579.92125 | 0.00001411 |
|       |       | 140 | 5700 | 5,699.98804 | 0.00000210 |
|       |       | 144 | 5720 | 5,719.91293 | 0.00001522 |
|       |       | 149 | 5745 | 5,744.94077 | 0.00001031 |
|       |       | 157 | 5785 | 5,784.93849 | 0.00001063 |
|       |       | 165 | 5825 | 5,824.91521 | 0.00001456 |

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|                |               |           |            |
|----------------|---------------|-----------|------------|
| Operation Mode | 802.11 n_HT40 | Test Date | 2018.09.05 |
| Temperature    | :24.5 °C      | Test By   | Scott      |
| Humidity       | :65 %         |           |            |

| Test Temp. | Test Voltage | Channel | Measured Frequency (MHz) | Spectrum Frequency (MHz) | ΔFrequency (MHz) |
|------------|--------------|---------|--------------------------|--------------------------|------------------|
| -10 °C     | 4.18V        | 38      | 5190                     | 5,189.90382              | 0.00001853       |
|            |              | 46      | 5230                     | 5,229.94776              | 0.00000999       |
|            |              | 54      | 5270                     | 5,269.91336              | 0.00001644       |
|            |              | 62      | 5310                     | 5,309.92235              | 0.00001462       |
|            |              | 102     | 5510                     | 5,509.98791              | 0.00000219       |
|            |              | 110     | 5550                     | 5,549.95966              | 0.00000727       |
|            |              | 134     | 5670                     | 5,669.95319              | 0.00000826       |
|            |              | 142     | 5710                     | 5,709.99959              | 0.00000007       |
|            |              | 151     | 5755                     | 5,754.90729              | 0.00001611       |
|            |              | 159     | 5795                     | 5,794.96778              | 0.00000556       |
|            | 3.42V        | 38      | 5190                     | 5,189.90382              | 0.00001853       |
|            |              | 46      | 5230                     | 5,229.94776              | 0.00000999       |
|            |              | 54      | 5270                     | 5,269.91336              | 0.00001644       |
|            |              | 62      | 5310                     | 5,309.92235              | 0.00001462       |
|            |              | 102     | 5510                     | 5,509.98791              | 0.00000219       |
|            |              | 110     | 5550                     | 5,549.95966              | 0.00000727       |
|            |              | 134     | 5670                     | 5,669.95319              | 0.00000826       |
|            |              | 142     | 5710                     | 5,709.99959              | 0.00000007       |
|            |              | 151     | 5755                     | 5,754.90729              | 0.00001611       |
|            |              | 159     | 5795                     | 5,794.96778              | 0.00000556       |

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|       |       |     |      |             |            |
|-------|-------|-----|------|-------------|------------|
| 25 °C | 3.8V  | 38  | 5190 | 5,189.90382 | 0.00001853 |
|       |       | 46  | 5230 | 5,229.94776 | 0.00000999 |
|       |       | 54  | 5270 | 5,269.91336 | 0.00001644 |
|       |       | 62  | 5310 | 5,309.92235 | 0.00001462 |
|       |       | 102 | 5510 | 5,509.98791 | 0.00000219 |
|       |       | 110 | 5550 | 5,549.95966 | 0.00000727 |
|       |       | 134 | 5670 | 5,669.95319 | 0.00000826 |
|       |       | 142 | 5710 | 5,709.99959 | 0.00000007 |
|       |       | 151 | 5755 | 5,754.90729 | 0.00001611 |
|       |       | 159 | 5795 | 5,794.96778 | 0.00000556 |
| 55 °C | 4.18V | 38  | 5190 | 5,189.90382 | 0.00001853 |
|       |       | 46  | 5230 | 5,229.94776 | 0.00000999 |
|       |       | 54  | 5270 | 5,269.91336 | 0.00001644 |
|       |       | 62  | 5310 | 5,309.92235 | 0.00001462 |
|       |       | 102 | 5510 | 5,509.98791 | 0.00000219 |
|       |       | 110 | 5550 | 5,549.95966 | 0.00000727 |
|       |       | 134 | 5670 | 5,669.95319 | 0.00000826 |
|       |       | 142 | 5710 | 5,709.99959 | 0.00000007 |
|       |       | 151 | 5755 | 5,754.90729 | 0.00001611 |
|       |       | 159 | 5795 | 5,794.96778 | 0.00000556 |
|       | 3.42V | 38  | 5190 | 5,189.90382 | 0.00001853 |
|       |       | 46  | 5230 | 5,229.94776 | 0.00000999 |
|       |       | 54  | 5270 | 5,269.91336 | 0.00001644 |
|       |       | 62  | 5310 | 5,309.92235 | 0.00001462 |
|       |       | 102 | 5510 | 5,509.98791 | 0.00000219 |
|       |       | 110 | 5550 | 5,549.95966 | 0.00000727 |
|       |       | 134 | 5670 | 5,669.95319 | 0.00000826 |
|       |       | 142 | 5710 | 5,709.99959 | 0.00000007 |
|       |       | 151 | 5755 | 5,754.90729 | 0.00001611 |
|       |       | 159 | 5795 | 5,794.96778 | 0.00000556 |

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# 10 Minutes:

|                |          |           |            |
|----------------|----------|-----------|------------|
| Operation Mode | 802.11 a | Test Date | 2018.09.05 |
| Temperature    | :24.5 °C | Test By   | Scott      |
| Humidity       | :65 %    |           |            |

| Test Temp. | Test Voltage | Channel | Measured Frequency (MHz) | Spectrum Frequency (MHz) | ΔFrequency (MHz) |
|------------|--------------|---------|--------------------------|--------------------------|------------------|
| -10 °C     | 4.18V        | 36      | 5180                     | 5,179.90778              | 0.00001780       |
|            |              | 44      | 5220                     | 5,219.97494              | 0.00000480       |
|            |              | 48      | 5240                     | 5,239.98638              | 0.00000260       |
|            |              | 52      | 5260                     | 5,259.92997              | 0.00001331       |
|            |              | 60      | 5300                     | 5,299.90552              | 0.00001783       |
|            |              | 64      | 5320                     | 5,319.99511              | 0.00000092       |
|            |              | 100     | 5500                     | 5,499.91635              | 0.00001521       |
|            |              | 116     | 5580                     | 5,579.95664              | 0.00000777       |
|            |              | 140     | 5700                     | 5,699.94275              | 0.00001004       |
|            |              | 144     | 5720                     | 5,719.94753              | 0.00000917       |
|            |              | 149     | 5745                     | 5,744.95868              | 0.00000719       |
|            |              | 157     | 5785                     | 5,784.98291              | 0.00000295       |
|            |              | 165     | 5825                     | 5,824.97455              | 0.00000437       |
|            | 3.42V        | 36      | 5180                     | 5,179.90207              | 0.00001891       |
|            |              | 44      | 5220                     | 5,219.98323              | 0.00000321       |
|            |              | 48      | 5240                     | 5,239.95497              | 0.00000859       |
|            |              | 52      | 5260                     | 5,259.95709              | 0.00000816       |
|            |              | 60      | 5300                     | 5,299.93825              | 0.00001165       |
|            |              | 64      | 5320                     | 5,319.92980              | 0.00001320       |
|            |              | 100     | 5500                     | 5,499.91399              | 0.00001564       |
|            |              | 116     | 5580                     | 5,579.96323              | 0.00000659       |
|            |              | 140     | 5700                     | 5,699.98515              | 0.00000261       |
|            |              | 144     | 5720                     | 5,719.98237              | 0.00000308       |
|            |              | 149     | 5745                     | 5,744.92866              | 0.00001242       |
|            |              | 157     | 5785                     | 5,784.93120              | 0.00001189       |
|            |              | 165     | 5825                     | 5,824.96609              | 0.00000582       |

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|       |       |     |      |             |            |
|-------|-------|-----|------|-------------|------------|
| 25 °C | 3.8V  | 36  | 5180 | 5,179.97158 | 0.00000549 |
|       |       | 44  | 5220 | 5,219.97043 | 0.00000566 |
|       |       | 48  | 5240 | 5,239.91733 | 0.00001578 |
|       |       | 52  | 5260 | 5,259.93850 | 0.00001169 |
|       |       | 60  | 5300 | 5,299.95096 | 0.00000925 |
|       |       | 64  | 5320 | 5,319.99208 | 0.00000149 |
|       |       | 100 | 5500 | 5,499.99587 | 0.00000075 |
|       |       | 116 | 5580 | 5,579.91442 | 0.00001534 |
|       |       | 140 | 5700 | 5,699.95114 | 0.00000857 |
|       |       | 144 | 5720 | 5,719.90306 | 0.00001695 |
|       |       | 149 | 5745 | 5,744.99100 | 0.00000157 |
|       |       | 157 | 5785 | 5,784.91694 | 0.00001436 |
|       |       | 165 | 5825 | 5,824.99818 | 0.00000031 |
| 55 °C | 4.18V | 36  | 5180 | 5,179.90192 | 0.00001893 |
|       |       | 44  | 5220 | 5,219.98517 | 0.00000284 |
|       |       | 48  | 5240 | 5,239.98632 | 0.00000261 |
|       |       | 52  | 5260 | 5,259.92620 | 0.00001403 |
|       |       | 60  | 5300 | 5,299.90329 | 0.00001825 |
|       |       | 64  | 5320 | 5,319.96353 | 0.00000686 |
|       |       | 100 | 5500 | 5,499.94902 | 0.00000927 |
|       |       | 116 | 5580 | 5,579.92572 | 0.00001331 |
|       |       | 140 | 5700 | 5,699.96132 | 0.00000679 |
|       |       | 144 | 5720 | 5,719.96592 | 0.00000596 |
|       |       | 149 | 5745 | 5,744.92444 | 0.00001315 |
|       |       | 157 | 5785 | 5,784.98764 | 0.00000214 |
|       |       | 165 | 5825 | 5,824.93108 | 0.00001183 |
|       | 3.42V | 36  | 5180 | 5,179.90405 | 0.00001852 |
|       |       | 44  | 5220 | 5,219.90429 | 0.00001834 |
|       |       | 48  | 5240 | 5,239.92355 | 0.00001459 |
|       |       | 52  | 5260 | 5,259.98349 | 0.00000314 |
|       |       | 60  | 5300 | 5,299.90269 | 0.00001836 |
|       |       | 64  | 5320 | 5,319.93734 | 0.00001178 |
|       |       | 100 | 5500 | 5,499.90495 | 0.00001728 |
|       |       | 116 | 5580 | 5,579.98874 | 0.00000202 |
|       |       | 140 | 5700 | 5,699.97644 | 0.00000413 |
|       |       | 144 | 5720 | 5,719.92020 | 0.00001395 |
|       |       | 149 | 5745 | 5,744.90516 | 0.00001651 |
|       |       | 157 | 5785 | 5,784.97815 | 0.00000378 |
|       |       | 165 | 5825 | 5,824.99977 | 0.00000004 |

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|                |               |           |            |
|----------------|---------------|-----------|------------|
| Operation Mode | 802.11 n_HT40 | Test Date | 2018.09.05 |
| Temperature    | :24.5 °C      | Test By   | Scott      |
| Humidity       | :65 %         |           |            |

| Test Temp. | Test Voltage | Channel | Measured Frequency (MHz) | Spectrum Frequency (MHz) | ΔFrequency (MHz) |
|------------|--------------|---------|--------------------------|--------------------------|------------------|
| -10 °C     | 4.18V        | 38      | 5190                     | 5,189.90382              | 0.00001853       |
|            |              | 46      | 5230                     | 5,229.94776              | 0.00000999       |
|            |              | 54      | 5270                     | 5,269.91336              | 0.00001644       |
|            |              | 62      | 5310                     | 5,309.92235              | 0.00001462       |
|            |              | 102     | 5510                     | 5,509.98791              | 0.00000219       |
|            |              | 110     | 5550                     | 5,549.95966              | 0.00000727       |
|            |              | 134     | 5670                     | 5,669.95319              | 0.00000826       |
|            |              | 142     | 5710                     | 5,709.99959              | 0.00000007       |
|            |              | 151     | 5755                     | 5,754.90729              | 0.00001611       |
|            |              | 159     | 5795                     | 5,794.96778              | 0.00000556       |
|            | 3.42V        | 38      | 5190                     | 5,189.90382              | 0.00001853       |
|            |              | 46      | 5230                     | 5,229.94776              | 0.00000999       |
|            |              | 54      | 5270                     | 5,269.91336              | 0.00001644       |
|            |              | 62      | 5310                     | 5,309.92235              | 0.00001462       |
|            |              | 102     | 5510                     | 5,509.98791              | 0.00000219       |
|            |              | 110     | 5550                     | 5,549.95966              | 0.00000727       |
|            |              | 134     | 5670                     | 5,669.95319              | 0.00000826       |
|            |              | 142     | 5710                     | 5,709.99959              | 0.00000007       |
|            |              | 151     | 5755                     | 5,754.90729              | 0.00001611       |
|            |              | 159     | 5795                     | 5,794.96778              | 0.00000556       |

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|       |       |     |      |             |            |
|-------|-------|-----|------|-------------|------------|
| 25 °C | 3.8V  | 38  | 5190 | 5,189.90382 | 0.00001853 |
|       |       | 46  | 5230 | 5,229.94776 | 0.00000999 |
|       |       | 54  | 5270 | 5,269.91336 | 0.00001644 |
|       |       | 62  | 5310 | 5,309.92235 | 0.00001462 |
|       |       | 102 | 5510 | 5,509.98791 | 0.00000219 |
|       |       | 110 | 5550 | 5,549.95966 | 0.00000727 |
|       |       | 134 | 5670 | 5,669.95319 | 0.00000826 |
|       |       | 142 | 5710 | 5,709.99959 | 0.00000007 |
|       |       | 151 | 5755 | 5,754.90729 | 0.00001611 |
|       |       | 159 | 5795 | 5,794.96778 | 0.00000556 |
| 55 °C | 4.18V | 38  | 5190 | 5,189.90382 | 0.00001853 |
|       |       | 46  | 5230 | 5,229.94776 | 0.00000999 |
|       |       | 54  | 5270 | 5,269.91336 | 0.00001644 |
|       |       | 62  | 5310 | 5,309.92235 | 0.00001462 |
|       |       | 102 | 5510 | 5,509.98791 | 0.00000219 |
|       |       | 110 | 5550 | 5,549.95966 | 0.00000727 |
|       |       | 134 | 5670 | 5,669.95319 | 0.00000826 |
|       |       | 142 | 5710 | 5,709.99959 | 0.00000007 |
|       |       | 151 | 5755 | 5,754.90729 | 0.00001611 |
|       |       | 159 | 5795 | 5,794.96778 | 0.00000556 |
|       | 3.42V | 38  | 5190 | 5,189.90382 | 0.00001853 |
|       |       | 46  | 5230 | 5,229.94776 | 0.00000999 |
|       |       | 54  | 5270 | 5,269.91336 | 0.00001644 |
|       |       | 62  | 5310 | 5,309.92235 | 0.00001462 |
|       |       | 102 | 5510 | 5,509.98791 | 0.00000219 |
|       |       | 110 | 5550 | 5,549.95966 | 0.00000727 |
|       |       | 134 | 5670 | 5,669.95319 | 0.00000826 |
|       |       | 142 | 5710 | 5,709.99959 | 0.00000007 |
|       |       | 151 | 5755 | 5,754.90729 | 0.00001611 |
|       |       | 159 | 5795 | 5,794.96778 | 0.00000556 |

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## 14 ANTENNA REQUIREMENT

### 14.1 Standard Applicable

According to §15.203, an intentional radiator shall be designed to ensure that no antenna other than furnished by the responsible party shall be used with the device.

According to §15.407, 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.

### 14.2 Antenna Connected Construction

The antenna is designed with unique RF connector and no consideration of replacement. Please see EUT photo for details.

*~ End of Report ~*

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