

## ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

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

OF

**Product Name:** Mobile Phone

**Brand Name:** FUJITSU

**Model No.:** F-03K

**Model Difference:** N/A

**FCC ID:** VQK-F03K

**Report No.:** ER/2017/B0018

**Issue Date:** Dec. 08, 2017

**FCC Rule Part:** §15.407

**Prepared for:** Fujitsu Limited  
1-1, Kamikodanaka 4-chome, Nakahara-ku,  
Kawasaki 211-8588, Japan

**Prepared by:** SGS Taiwan Ltd.  
Electronics & Communication Laboratory  
No.134, Wu Kung Road, New Taipei Industrial  
Park, Wuku District, New Taipei City, Taiwan  
24803



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## VERIFICATION OF COMPLIANCE

**Applicant:** Fujitsu Limited  
1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki 211-8588,  
Japan

**Product Name:** Mobile Phone

**Brand Name:** FUJITSU

**Model No.:** F-03K

**Model Difference:** N/A

**FCC ID:** VQK-F03K

**File Number:** ER/2017/B0018

**Date of Test:** Nov. 01, 2017 ~ Dec. 08, 2017

**Date of EUT Received:** Nov. 01, 2017

**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 com-  
pliance with conducted and radiated emission limits.

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

**Test By:**

**Date:**

Dec. 08, 2017

*Marcus Tseng / Engineer*

**Prepared By:**

**Date:**

Dec. 08, 2017

*Yuri Tsai / Clerk*

**Approved By:**

**Date:**

Dec. 08, 2017

*Jim Chang / Asst. Manager*

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## Revision History

Report Number	Revision	Description	Issue Date
ER/2017/B0018	Rev.00	Initial creation of document	Dec. 08, 2017

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## 1. GENERAL INFORMATION

### 1.1 Product Description

General:

Product Name:	Mobile Phone
Brand Name:	FUJITSU
Model No.:	F-03K
Model Difference:	N/A
Hardware Version:	V2.1.0
Software Version:	V00R014Ne
Cradle:	Model No.: F46, Supplier: FUJITSU LIMITED
Power Supply:	3.8Vdc from Rechargeable Li-ion Battery or 5Vdc from AC/DC Adapter / Cradle
	Battery: Model No.: F35, Supplier: FUJITSU CONNECTED TECHNOLOGIES LIMITED
	Adapter: Model No.: FMV-AC346, Supplier: FUJITSU LIMITED

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## WLAN 5GHz:

Wi-Fi	Frequency Range	Channels	Rated Power (Avg.)	Modulation Technology
11a	5150~5250	4	12.21 dBm (Avg.)	OFDM
	5250~5350	4	12.26 dBm (Avg.)	
	5470~5725	12	12.31 dBm (Avg.)	
11n / ac_20M	HT / VHT20 5150~5250	4	HT: 12.19 dBm (Avg.) (Worst Case)	OFDM
	HT / VHT20 5250~5350	4	HT: 12.32 dBm (Avg.) (Worst Case)	
	HT / VHT20 5470~5725	11	HT: 12.35 dBm (Avg.) (Worst Case)	
11n / ac_40M	HT / VHT40 5150~5250	2	HT: 12.87 dBm (Avg.) (Worst Case)	OFDM
	HT / VHT40 5250~5350	2	HT: 13.01 dBm (Avg.) (Worst Case)	
	HT / VHT40 5470~5725	5	HT: 13.05 dBm (Avg.) (Worst Case)	
11ac_80M	VHT80 5150~5250	1	14.86 dBm (Avg.)	OFDM
	VHT80 5250~5350	1	15.01 dBm (Avg.)	
	VHT80 5470~5725	2	14.78 dBm (Avg.)	

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Antenna Designation	/4 Monopole Antenna, 5GHz Gain: -4.6dBi (5150MHz-5250MHz) 5GHz Gain: -4.6dBi (5250MHz-5350MHz) 5GHz Gain: -4.6dBi (5470MHz-5725MHz)
Modulation type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 802.11ac only
Transition Rate:	802.11 a: 6/9/12/18/24/36/48/54 Mbps; 802.11 n_20 / ac VHT20MHz: 6.5 – 65Mbps 802.11 n_40 / ac VHT40MHz: 13.5 – 135Mbps 802.11 ac_80MHz: 29.3 – 292.5Mbps

## 1.2 Product Feature of Equipment Under Test

The equipment under Test (Hereafter Called: EUT) is supporting below features.

Product Feature	
GSM Operating Band(s)	GSM 850/1900MHz
GPRS Multi Slot Class	GPRS Class 11
WCDMA Operating Band(s)	FDD Band V
WCDMA Rel. Version	Rel.9
Bluetooth Version	V4.2 dual mode
Wi-Fi- Specification	802.11a/b/g/n/ac
NFC Specification	NFC

**Note:** The above EUT information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

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### 1.3 Test Methodology of Applied Standards

FCC Part 15, Subpart E §15.407

FCC KDB 789033 D02 General UNII Test Procedures New Rules

FCC KDB 644545 D03 Guidance for IEEE 802.11ac v01

ANSI C63.10:2013

Note:

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

### 1.4 Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803 (TAF code 0513)

FCC Registration Numbers are: 509634 / TW0001

### 1.5 Special Accessories

There are no special accessories used while test was conducted.

### 1.6 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 30MHz,. 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 hand-held 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.

### 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 with cable loss 0.7dB, and 10dB attenuator.  
$$\text{offset} = \text{RF cable loss (dB)} + \text{attenuation factor(dB)} = 10.7(\text{dB})$$

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## 2.5 Configuration of Tested System

Fig. 2-1 Radiated Emission Emission

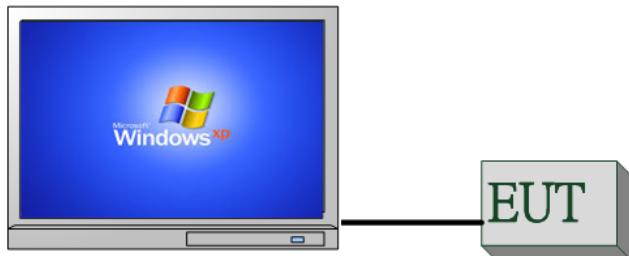


Fig. 2-2 Conducted Emission Configuration

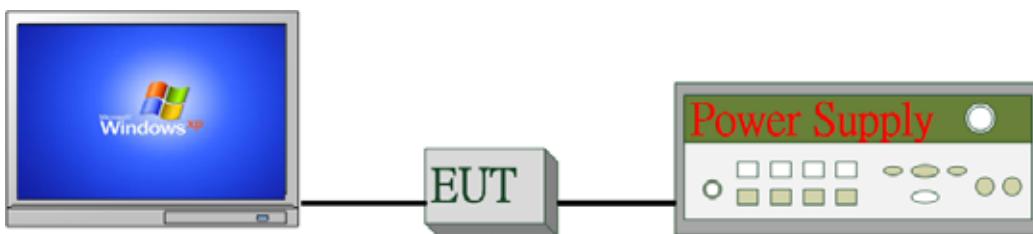
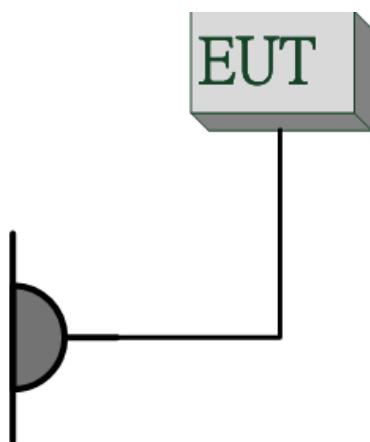


Fig. 2-3 Configuration of Conducted Tested System



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**Table 2-1 Equipment Used in Tested System**

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1.	WLAN Test Software	N/A	N/A	N/A	N/A	N/A
2.	Notebook	Lenovo	L430	N/A	Shielded	Unshielded
3.	DC Power Supply	Agilent	E3640A	KR93300208	N/A	Unshielded

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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) §15.407(e)	26 dB & 6dB 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 §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:

4 channels are provided for 802.11a, 802.11n\_HT20, 802.11ac\_VHT20

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

2 channels are provided for 802.11n\_HT40, 802.11ac\_VHT40

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac\_VHT80

CHANNEL	FREQUENCY
42	5210 MHz

Operated band in 5250 MHz ~5350 MHz:

4 channels are provided for 802.11a, 802.11n\_HT20, 802.11ac\_VHT20

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
52	5260 MHz	60	5300 MHz
56	5280 MHz	64	5320 MHz

2 channels are provided for 802.11n\_HT40, 802.11ac\_VHT40

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac\_VHT80

CHANNEL	FREQUENCY
58	5290 MHz

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Operated band in 5470 MHz ~5725 MHz:

11 channels are provided for 802.11a, 802.11n\_HT20, 802.11ac\_VHT20

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
100	5500 MHz	124	5620 MHz
104	5520 MHz	128	5640 MHz
108	5540 MHz	132	5660 MHz
112	5560 MHz	136	5680 MHz
116	5580 MHz	140	5700 MHz
120	5600 MHz		

5 channels are provided for 802.11n\_HT40, 802.11ac\_VHT40

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
102	5510 MHz	126	5630 MHz
110	5550 MHz	134	5670 MHz
118	5590 MHz		

2 channels are provided for 802.11ac\_VHT80

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
106	5530 MHz	122	5610 MHz

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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.
4. The given UE is pre-scanned among 802.11n and ac modes, and 802.11n yields the highest reading that generates the highest emission. Therefore, 802.11n as the mode of test configuration is chosen to carry out the relevantly mandatory test items.

### 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	MAIN
802.11ac_VHT80	5210	42	42	OFDM	MCS0	MAIN
802.11a	5260~5320	52 to 64	52,60,64	OFDM	6	MAIN
802.11ac_VHT80	5290	58	58	OFDM	MCS0	MAIN
802.11a	5500~5720	100 to 140	100,116,140	OFDM	6	MAIN
802.11ac_VHT80	5530~5690	106 to 138	106,122,138	OFDM	MCS0	MAIN
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	MAIN
802.11n_HT20				OFDM	MCS0	MAIN
802.11n_HT40	5190~5230	38 to 46	38,46	OFDM	MCS0	MAIN
802.11ac_VHT80	5210	42	42	OFDM	MCS0	MAIN
802.11a	5260~5320	52 to 64	52,60,64	OFDM	6	MAIN
802.11n_HT20				OFDM	MCS0	MAIN
802.11n_HT40	5270~5310	54 to 62	54,62	OFDM	MCS0	MAIN
802.11ac_VHT80	5290	58	58	OFDM	MCS0	MAIN

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MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11a	5500~5720	100 to 144	100,116,140	OFDM	6	MAIN
802.11n_HT20				OFDM	MCS0	MAIN
802.11n_HT40	5510~5710	102 to 142	102,110,134	OFDM	MCS0	MAIN
802.11ac_VHT80	5530~5610	106 to 122	106,122	OFDM	MCS0	MAIN

**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	MAIN
802.11n_HT20				OFDM	MCS0	MAIN
802.11n_HT40	5190~5230	38 to 46	38,46	OFDM	MCS0	MAIN
802.11ac_VHT80	5210	42	42	OFDM	MCS0	MAIN
802.11a	5260~5320	52 to 64	52,60,64	OFDM	6	MAIN
802.11n_HT20				OFDM	MCS0	MAIN
802.11n_HT40	5270~5310	54 to 62	54,62	OFDM	MCS0	MAIN
802.11ac_VHT80	5290	58	58	OFDM	MCS0	MAIN
802.11a	5500~5700	100 to 140	100,116,140	OFDM	6	MAIN
802.11n_HT20				OFDM	MCS0	MAIN
802.11n_HT40	5510~5670	102 to 134	102,110,134	OFDM	MCS0	MAIN
802.11ac_VHT80	5530~5610	106 to 122	106,122	OFDM	MCS0	MAIN

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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 (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 (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 MHz	Limits dB(uV)	
	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.
EMI Test Receiver	R&S	ESCI7	100760	05/11/2017	05/10/2018
LISN	SCHWARZBECK	NSLK 8127	8127-649	05/22/2017	05/21/2018
LISN	MESS TEC	FCC-LISN-50/250 -25-2-01	4034	03/19/2017	03/18/2018
Coaxial Cables	N/A	WK CE Cable	N/A	11/26/2017	11/25/2018

### 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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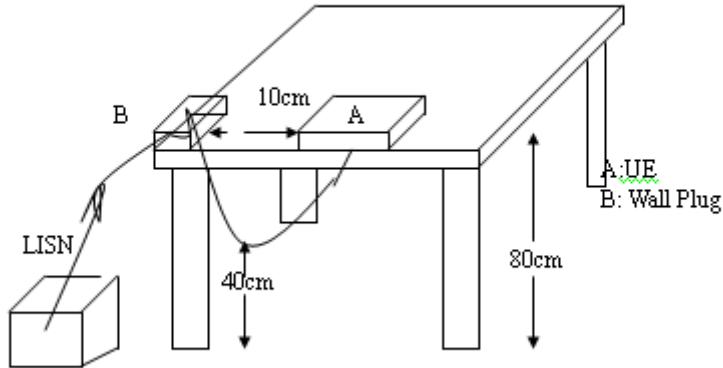
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## 6.4. Test SET-UP



## 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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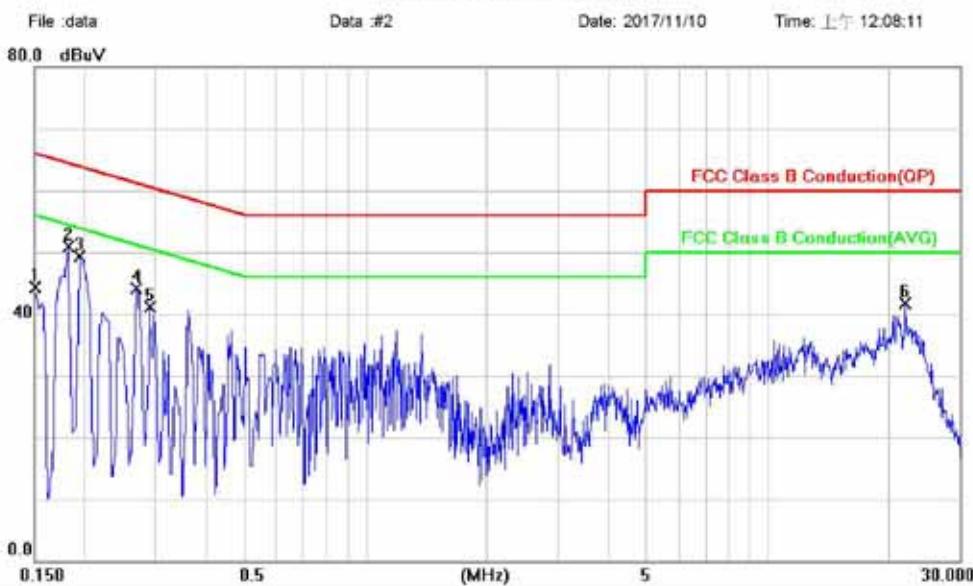
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**AC POWER LINE CONDUCTED EMISSION TEST DATA**

Operation Mode:	Operation mode	Test By:	Tin
-----------------	----------------	----------	-----

Site Conduction Room Phase: **L1** Temperature: 20 °C  
Limit: FCC Class B Conduction(QP) Power: AC 120V/60Hz Humidity: 58 %  
Mode: Operation  
Note: Adapter:FMW-AC346

**Conducted Emission**

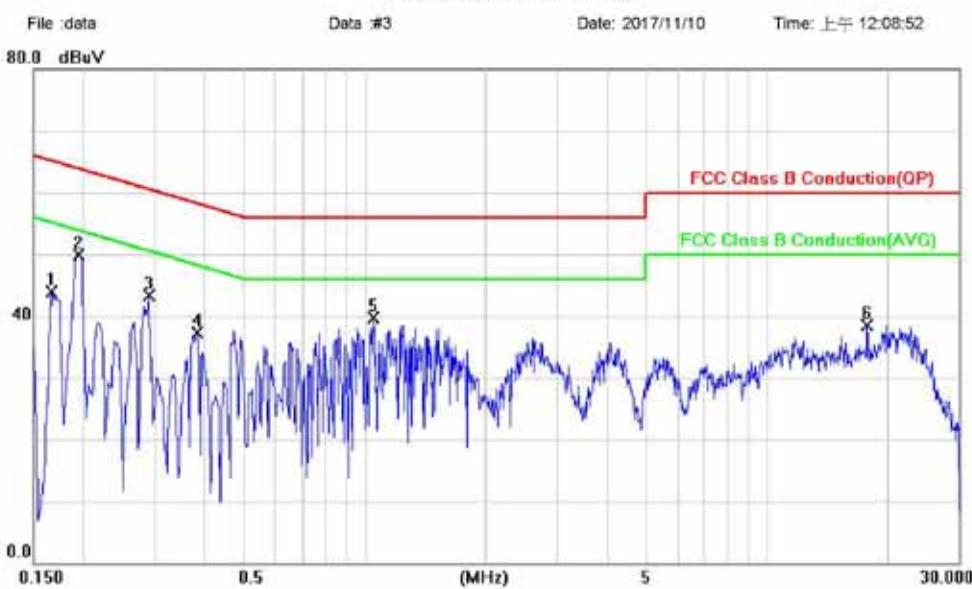
No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Detector	Comment
			Level	Factor	ment				
1		0.1500	44.14	0.07	44.21	66.00	-21.79	peak	
2 *		0.1820	50.74	0.07	50.81	64.39	-13.58	peak	
3		0.1940	49.31	0.07	49.38	63.86	-14.48	peak	
4		0.2700	44.00	0.07	44.07	61.12	-17.05	peak	
5		0.2900	41.13	0.07	41.20	60.52	-19.32	peak	
6		21.9660	41.10	0.53	41.63	60.00	-18.37	peak	

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Site: Conduction Room Phase: **N** Temperature: 20 °C  
Limit: FCC Class B Conduction(QP) Power: AC 120V/60Hz Humidity: 58 %  
Mode: Operation  
Note: Adapter:FMW-AC346

**Conducted Emission**

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector Comment
1		0.1660	43.84	0.07	43.91	65.16	-21.25	peak
2	*	0.1940	49.93	0.07	50.00	63.86	-13.86	peak
3		0.2900	43.22	0.07	43.29	60.52	-17.23	peak
4		0.3820	37.29	0.08	37.37	58.24	-20.87	peak
5		1.0540	39.61	0.09	39.70	56.00	-16.30	peak
6		17.8380	38.00	0.47	38.47	60.00	-21.53	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) $=10 \log (1/\text{Duty Cycle})$
802.11a	87.24	0.59
802.11n_20	86.58	0.63
802.11n_40	76.21	1.18
802.11ac_80	55.19	2.58

$$\text{Duty Cycle Factor: } 10 * \log(1/0.8724) = 0.59$$

$$\text{Duty Cycle Factor: } 10 * \log(1/0.8658) = 0.63$$

$$\text{Duty Cycle Factor: } 10 * \log(1/0.7621) = 1.18$$

$$\text{Duty Cycle Factor: } 10 * \log(1/0.5519) = 2.58$$

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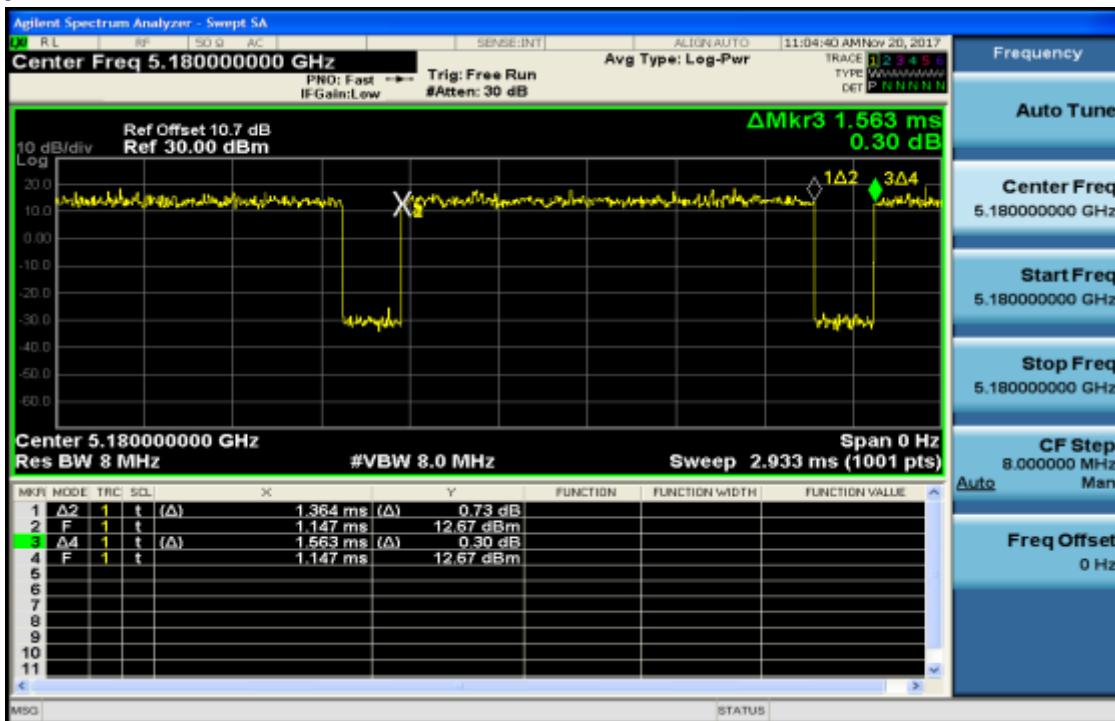
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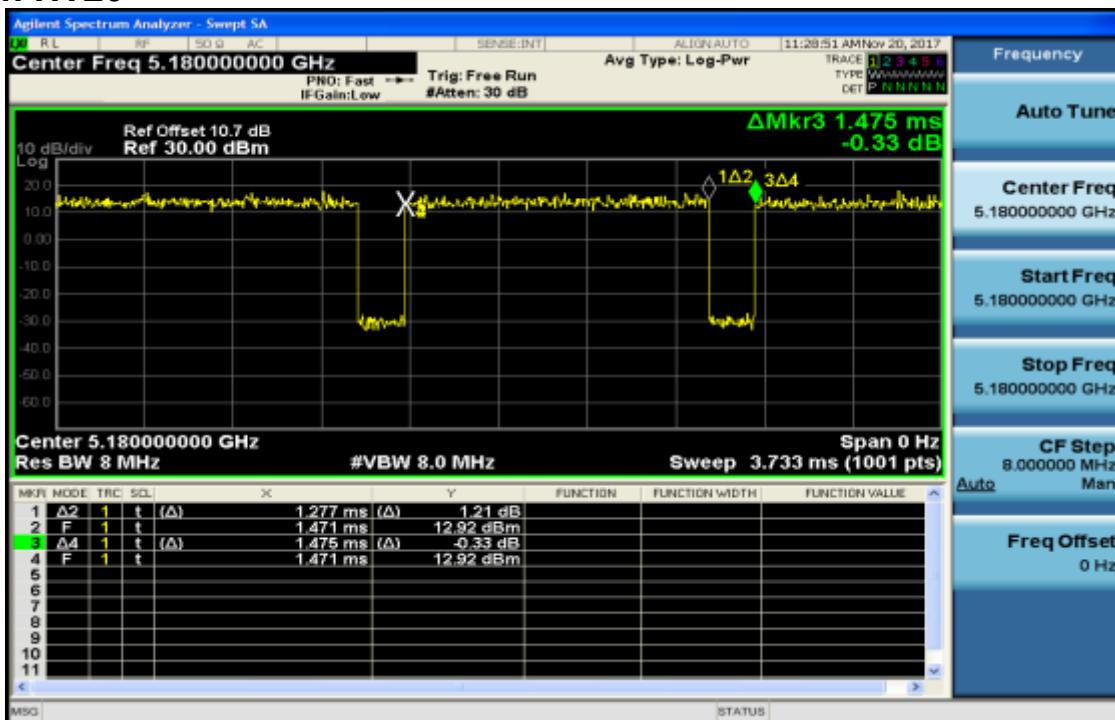
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## DUTY CYCLE TEST SIGNAL Measurement Result

### 802.11a



### 802.11n HT20



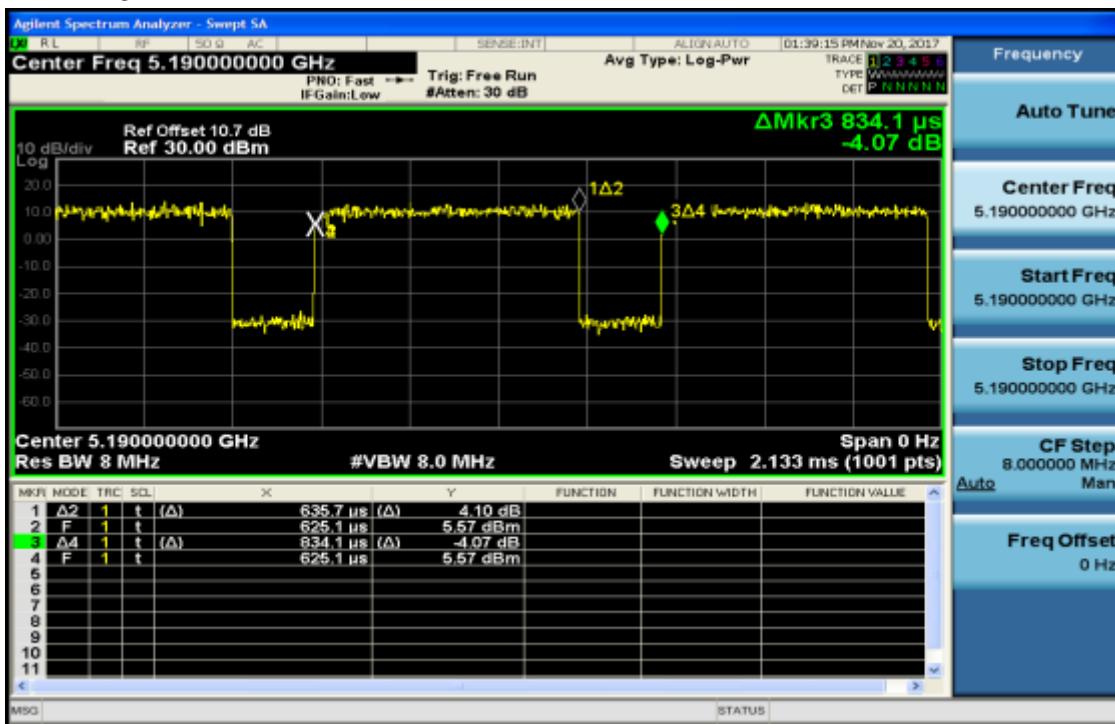
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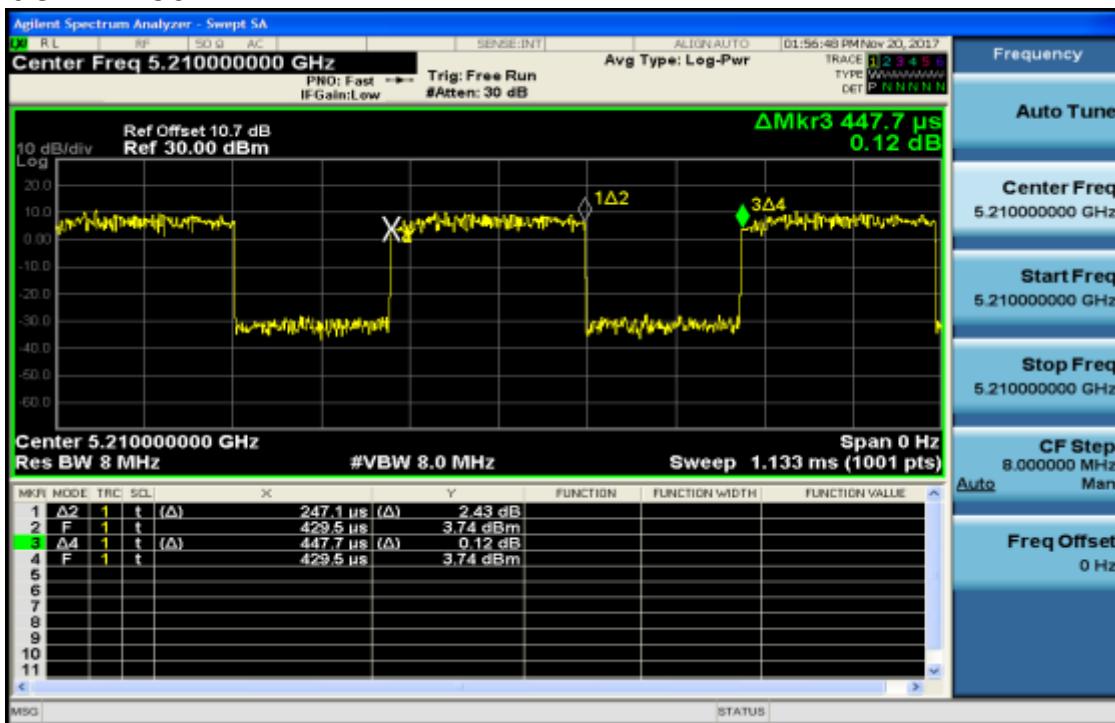
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## 802.11n HT 40



## 802.11 ac VHT 80



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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. Repeat above procedures until all test default channel measured were complete.

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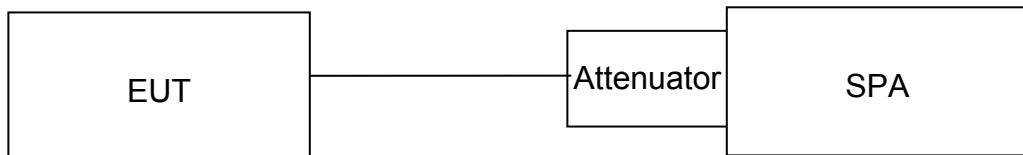
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### 8.3 Measurement Equipment Used

SGS Conducted Room					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Power Meter	Anritsu	ML2495A	1005007	12/15/2016	12/14/2017
Power Sensor	Anritsu	MA2411B	917032	12/15/2016	12/14/2017
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	03/21/2017	03/20/2018
DC Block	Mini-Circuits	BLK-18-S+	1	01/05/2017	01/04/2018
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/05/2017	01/04/2018
Attenuator	Mini-Circuit	BW-S10W2+	2	01/05/2017	01/04/2018
Splitter	Agilent	11636B	N/A	01/05/2017	01/04/2018
DC Power Supply	Agilent	E3640A	MY52410006	11/21/2017	11/20/2018
Temperature Chamber	TERCHY	MHG-120LF	911009	05/19/2017	05/18/2018

### 8.4 Test Set-up



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## 8.5 Measurement Result

### 26dB Bandwidth

**802.11a\_Main**

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	22.29	13.482
5220	21.48	13.321
5240	22.04	13.433
5260	22.41	13.504
5300	21.94	13.412
5320	21.79	13.383
5500	21.70	13.365
5580	21.97	13.418
5700	21.49	13.323

**802.11n\_HT20\_Main**

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	22.50	13.521
5220	22.35	13.492
5240	22.21	13.466
5260	22.36	13.495
5300	22.34	13.491
5320	22.02	13.429
5500	22.56	13.534
5580	22.25	13.473
5700	22.45	13.511

**802.11n\_HT40\_Main**

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5190	42.68	16.302
5230	43.22	16.357
5270	42.90	16.324
5310	42.93	16.327
5510	42.97	16.331
5550	43.81	16.415
5670	43.83	16.417

**802.11ac\_VHT80\_Main**

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5210	83.66	19.225
5290	84.19	19.253
5530	84.31	19.259
5610	83.69	19.227

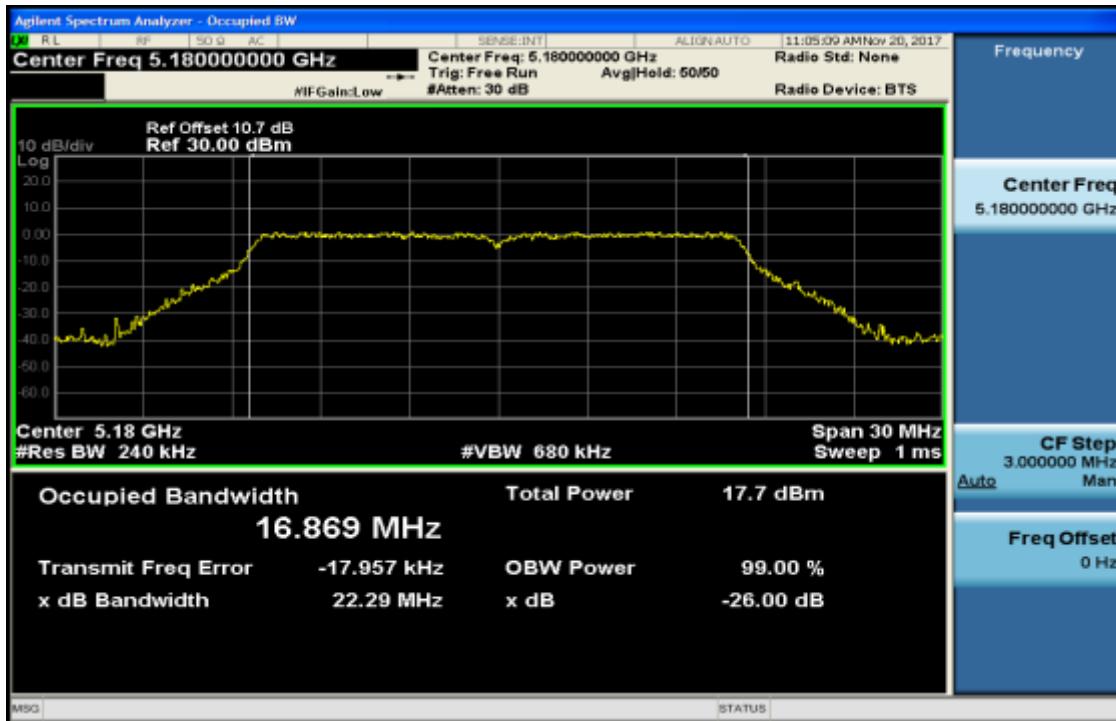
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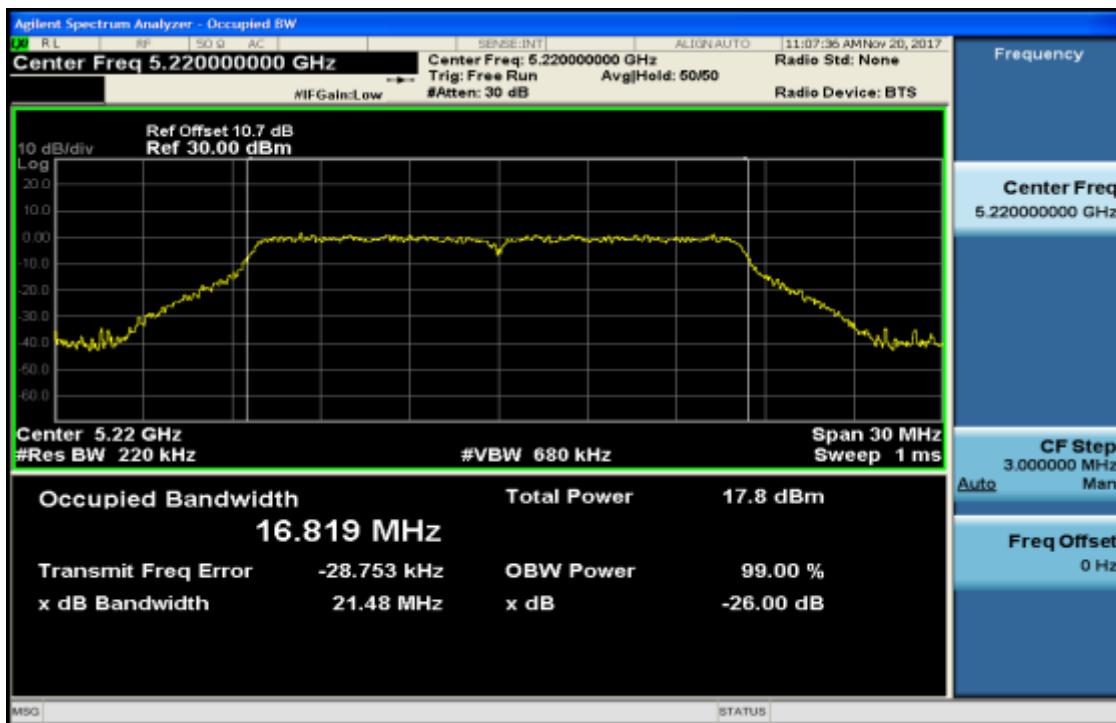
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## 802.11a, 5150~5250 MHz (Main) 26dB Band Width Test Data CH-Low (5180MHz)



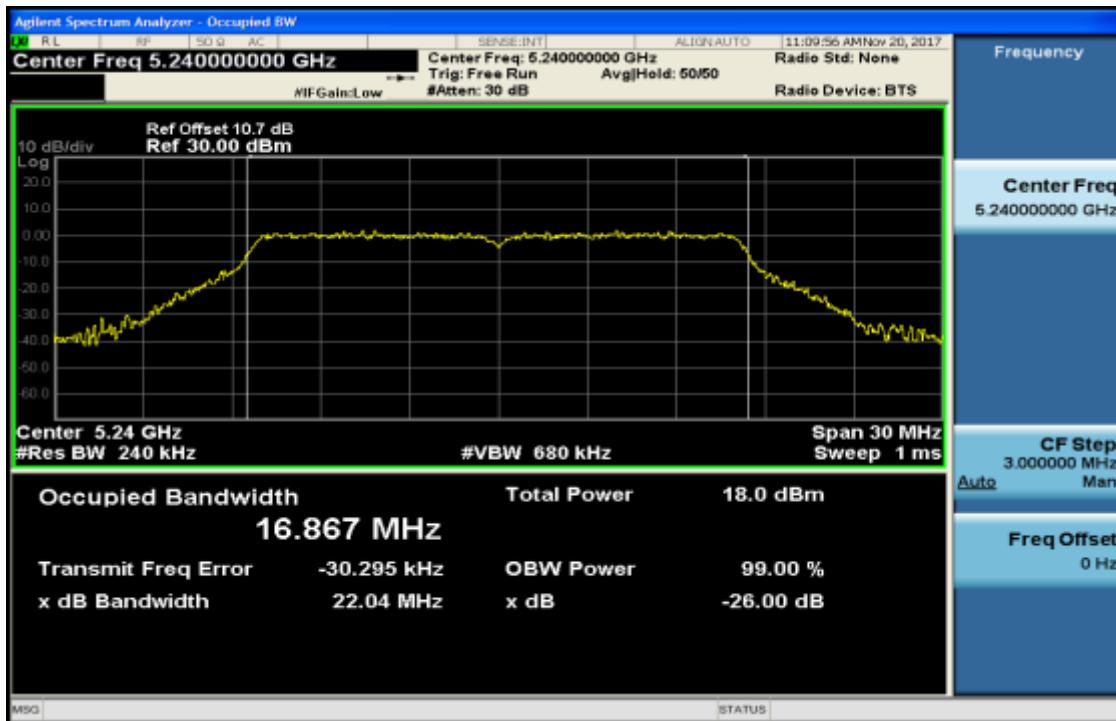
## 26dB Band Width Test Data CH-Mid (5220MHz)



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

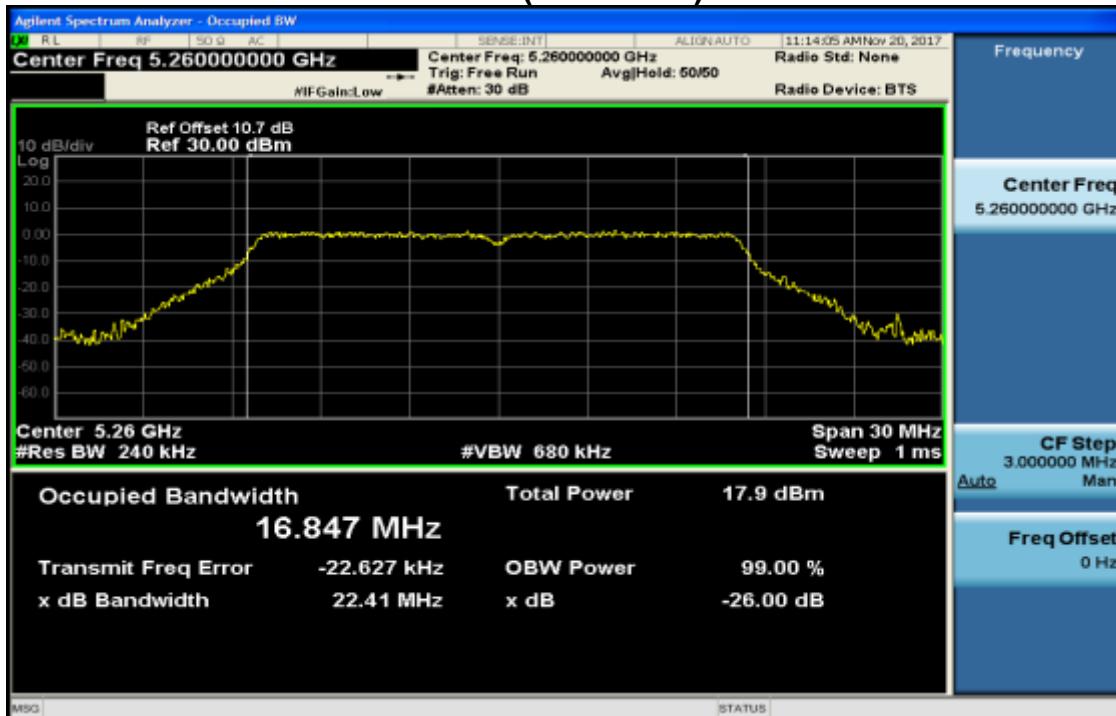
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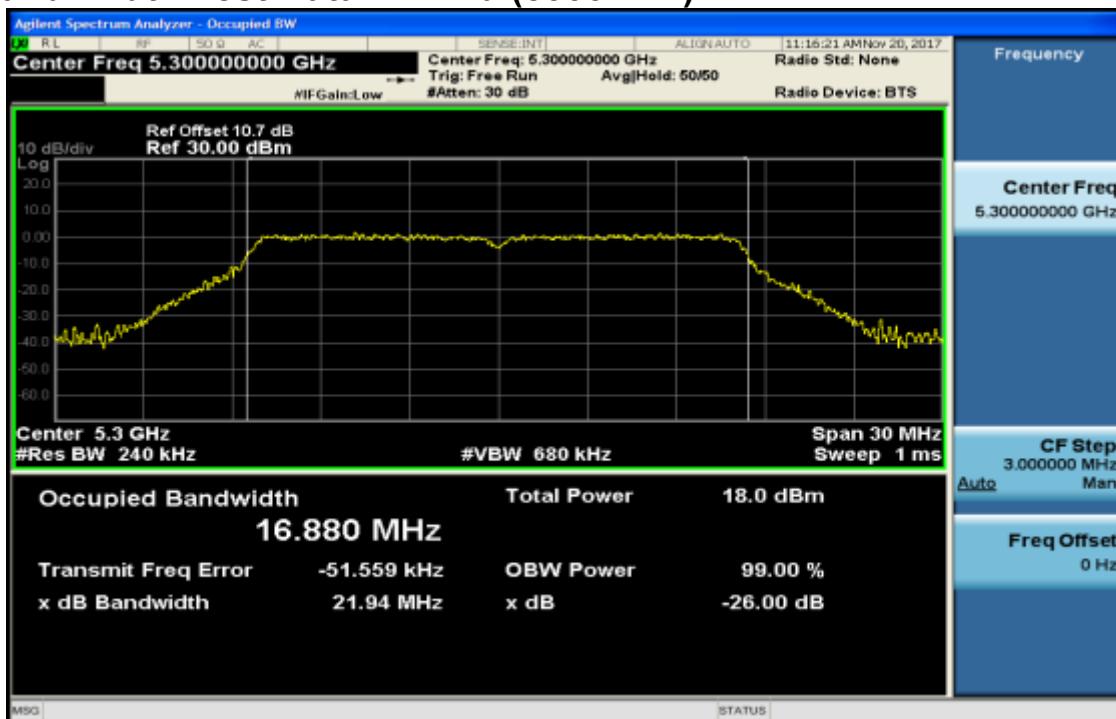
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## 802.11a, 5250~5350 MHz (Main) 26dB Band Width Test Data CH-Low (5260MHz)



## 26dB Band Width Test Data CH-Mid (5300MHz)

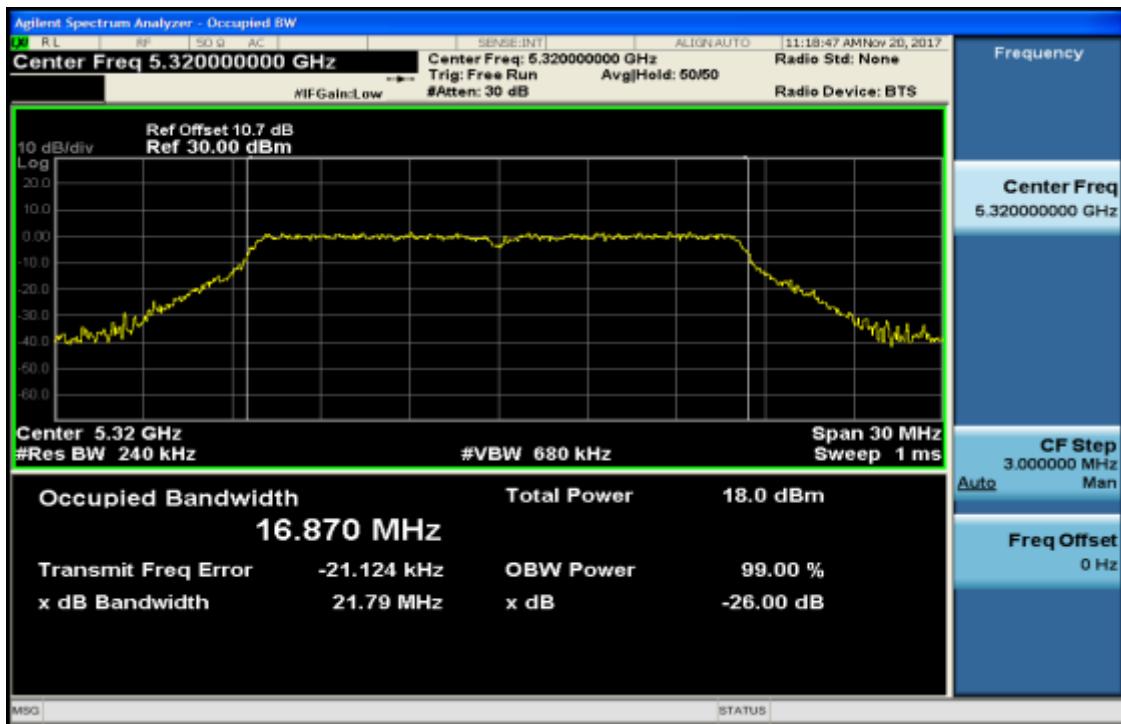


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## 26dB Band Width Test Data CH-High (5320MHz)



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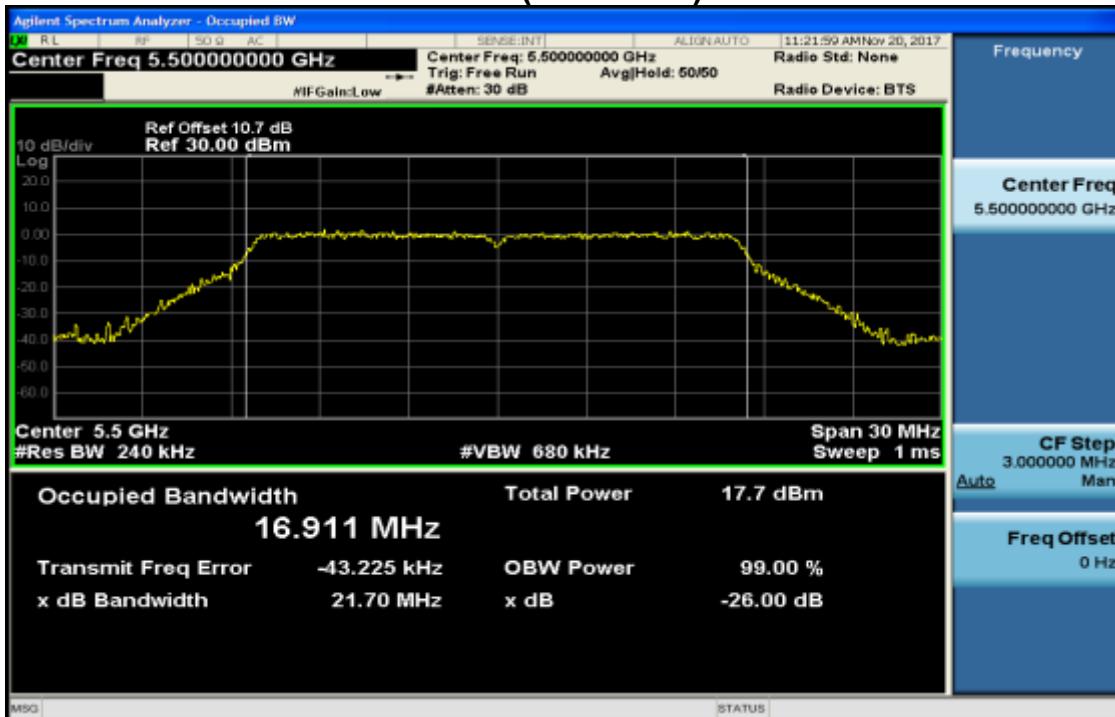
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f (886-2) 2298-0488

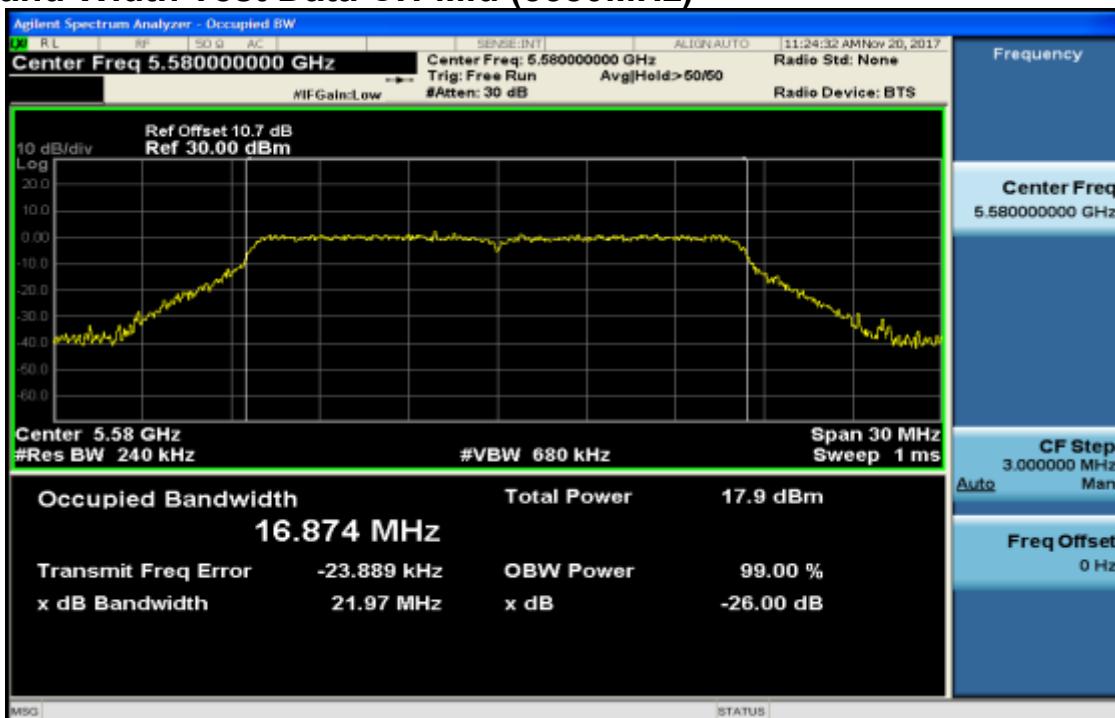
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## 802.11a, 5470~5725 MHz (Main) 26dB Band Width Test Data CH-Low (5500MHz)



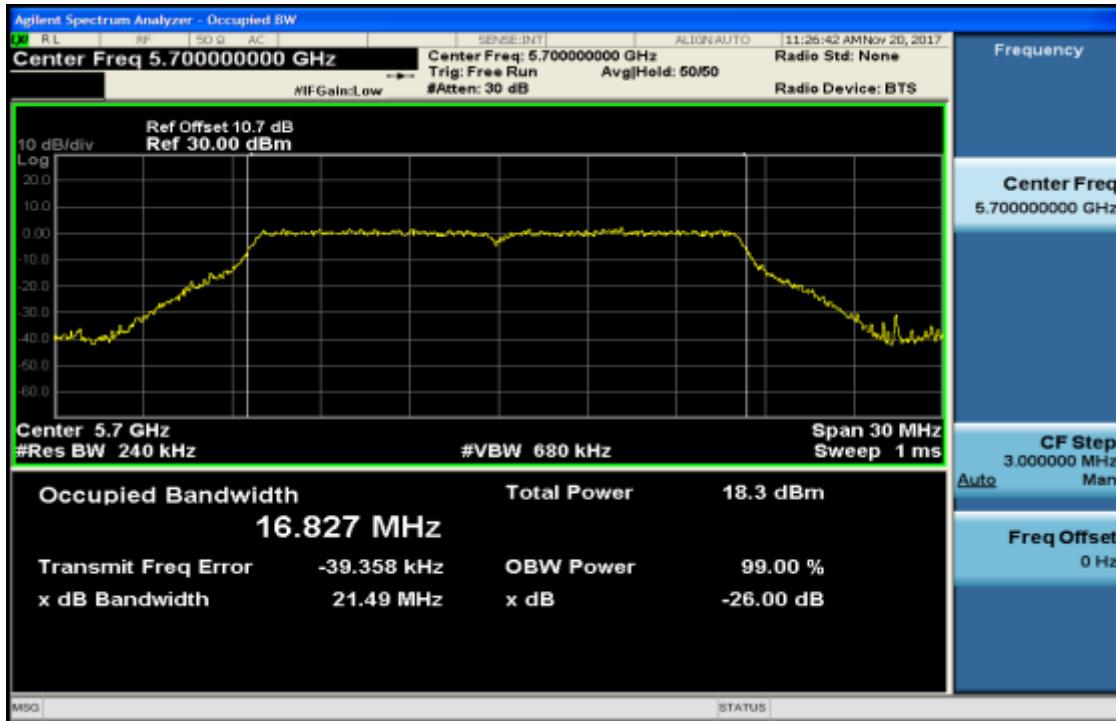
## 26dB Band Width Test Data CH-Mid (5580MHz)



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**26dB Band Width Test Data CH-High (5700MHz)**

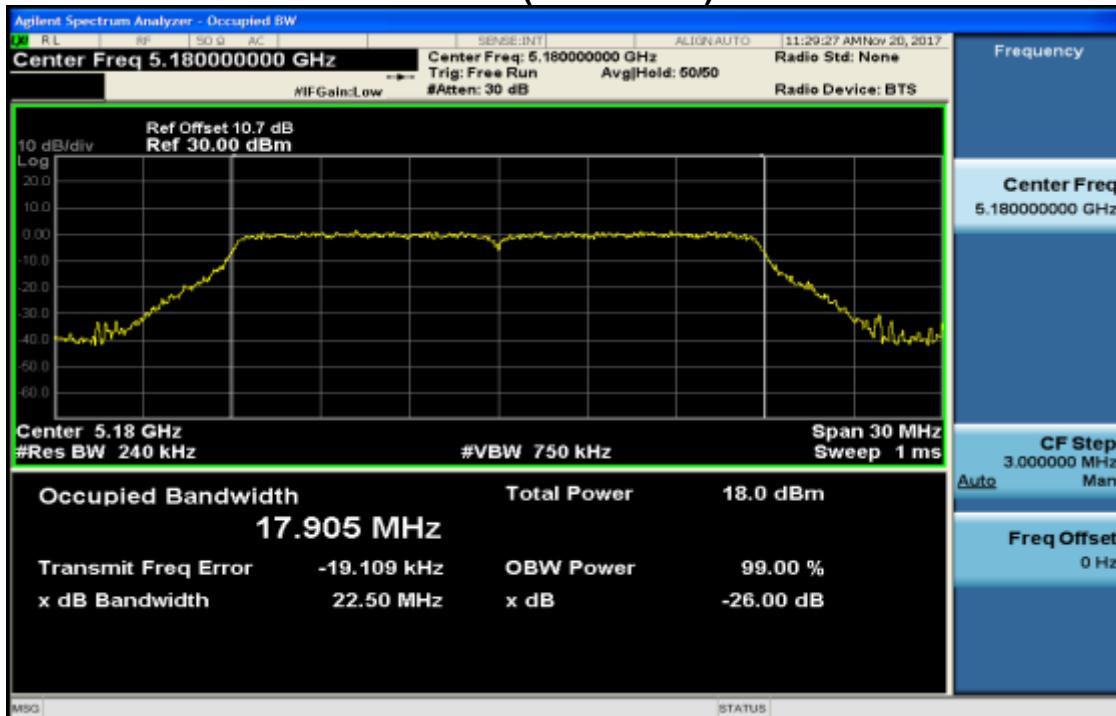
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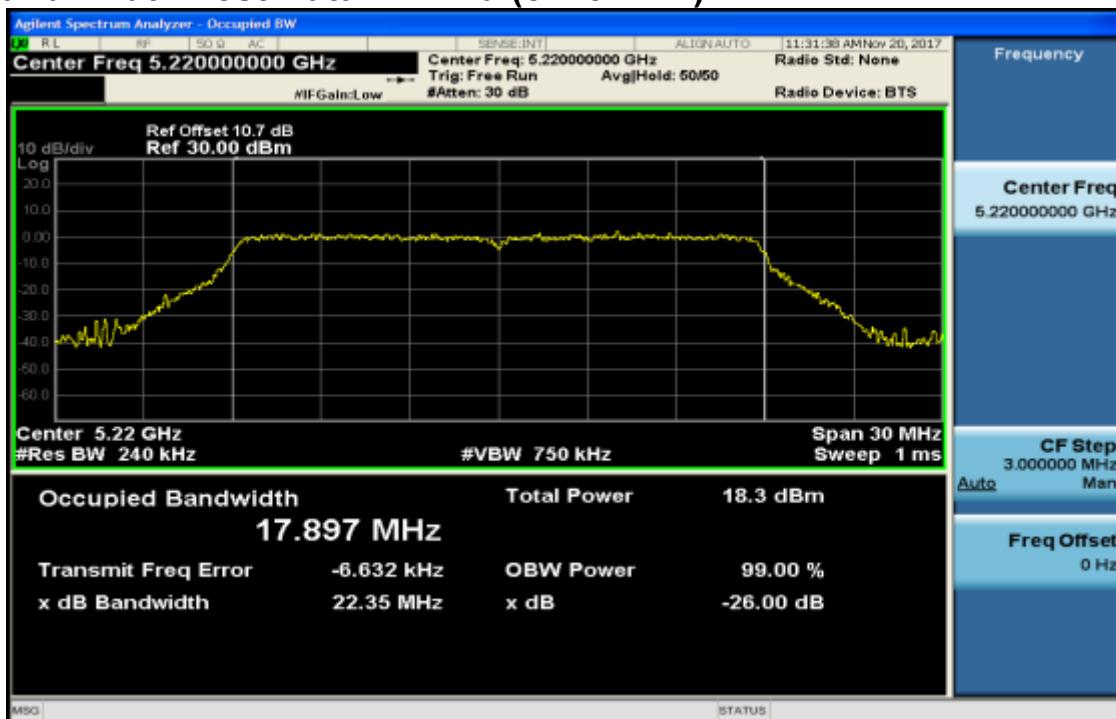
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## 802.11n HT20, 5150~5250 MHz (Main) 26dB Band Width Test Data CH-Low (5180 MHz)



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

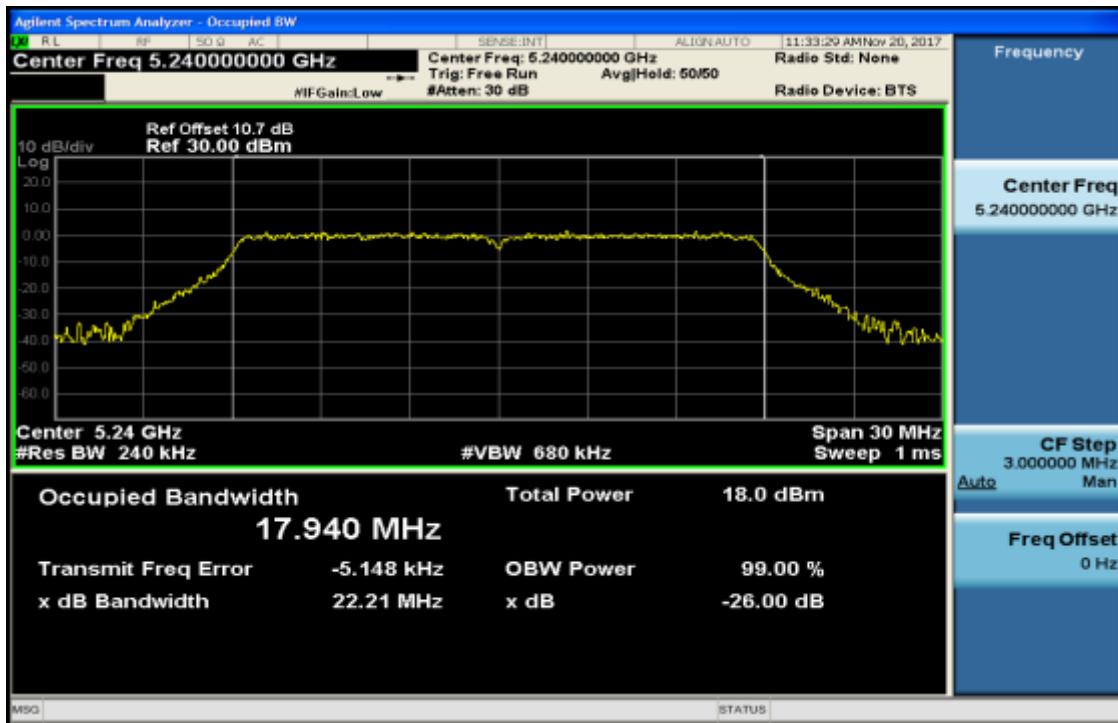


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**26dB Band Width Test Data CH-High (5240 MHz)**

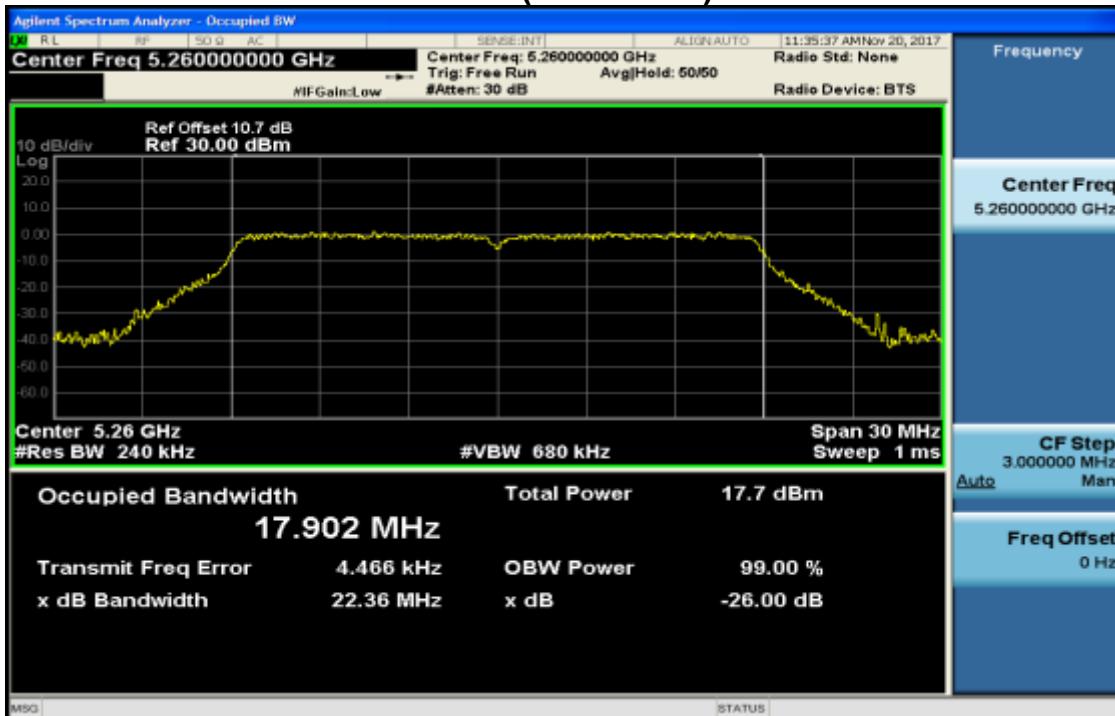
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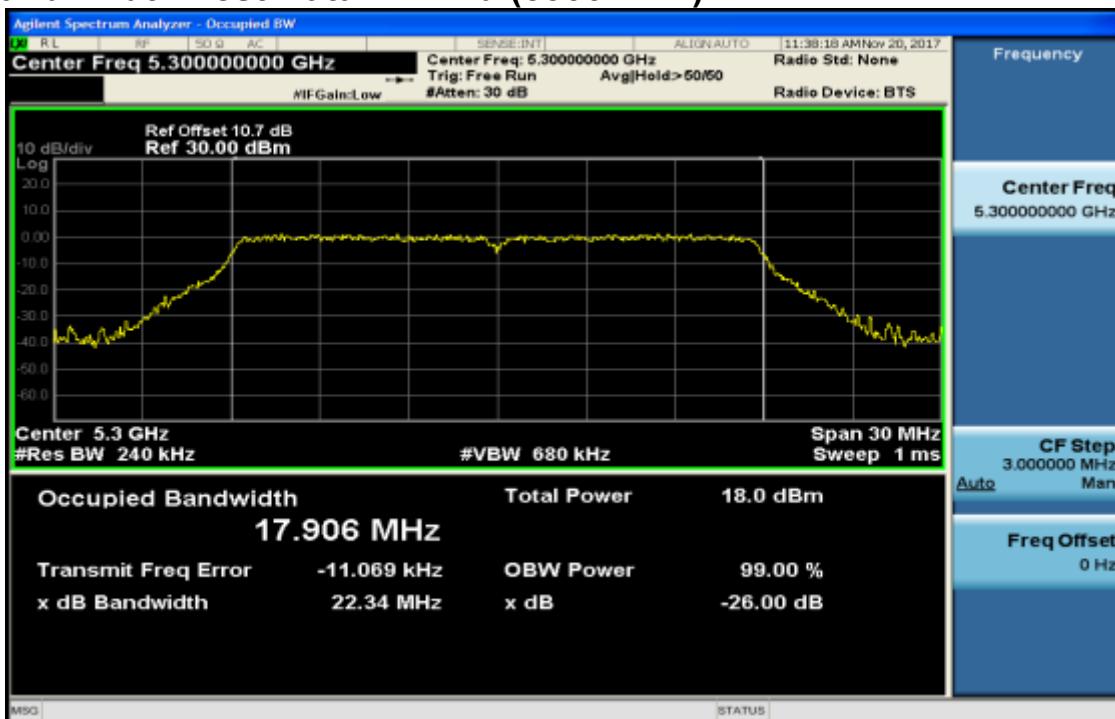
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## 802.11n HT20, 5250~5350 MHz (Main) 26dB Band Width Test Data CH-Low (5260 MHz)



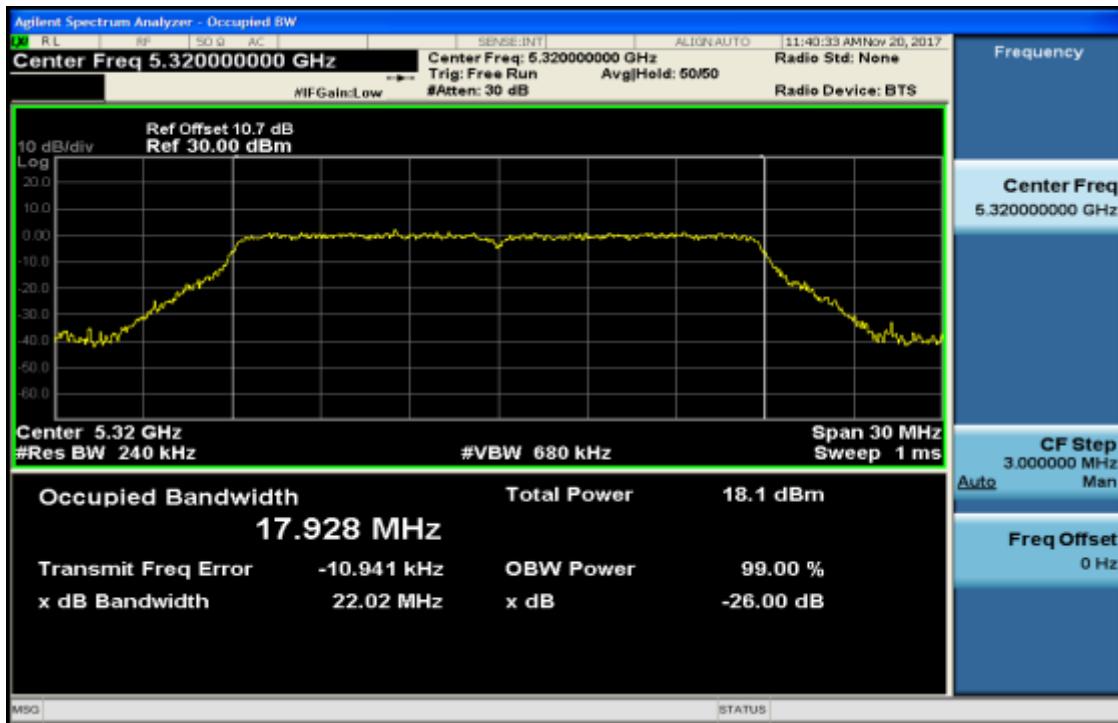
## 26dB Band Width Test Data CH-Mid (5300 MHz)



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**26dB Band Width Test Data CH-High (5320 MHz)**

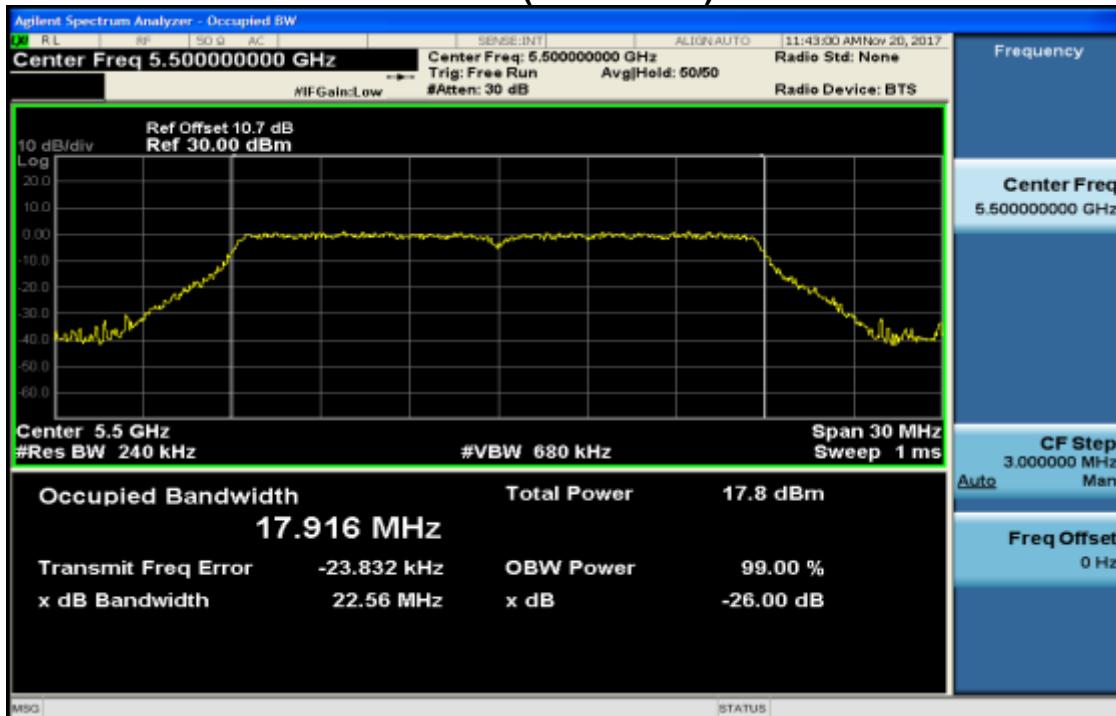
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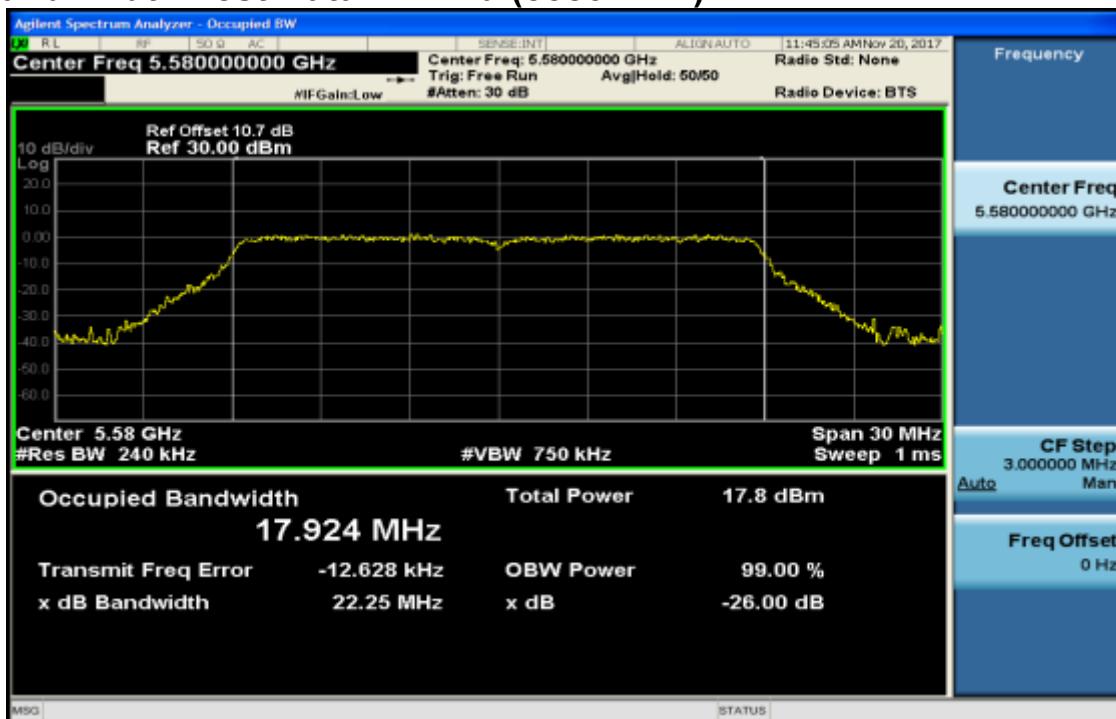
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## 802.11n HT20, 5470~5725 MHz (Main) 26dB Band Width Test Data CH-Low (5500 MHz)



## 26dB Band Width Test Data CH-Mid (5580 MHz)

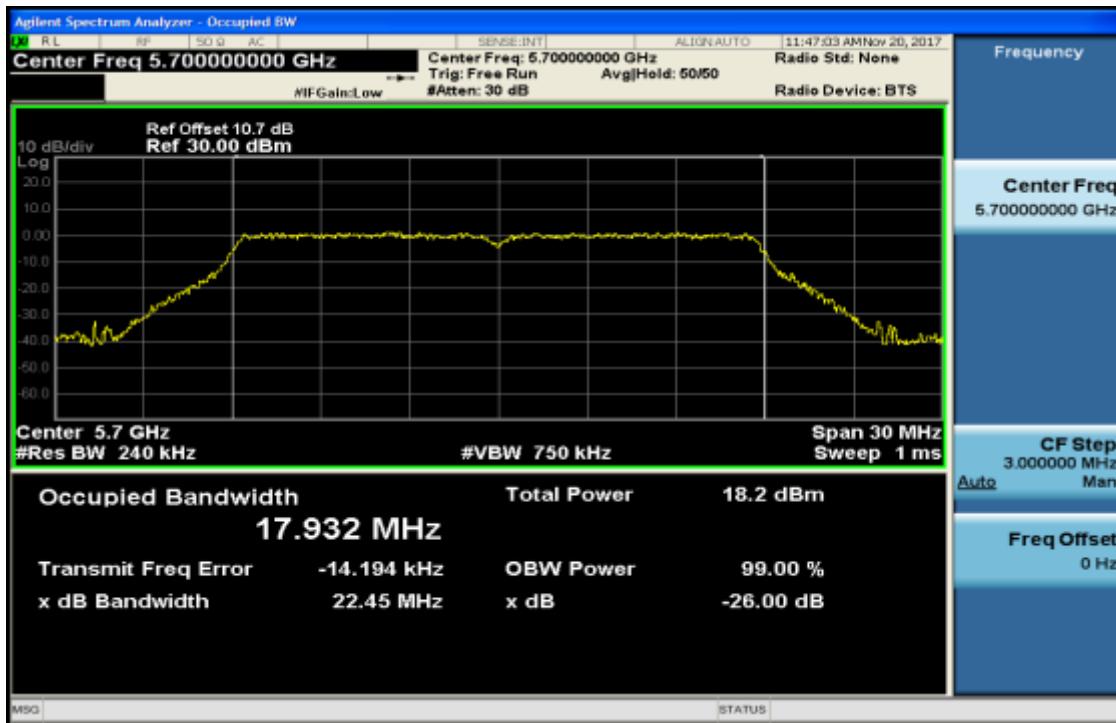


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**26dB Band Width Test Data CH-High (5700 MHz)**

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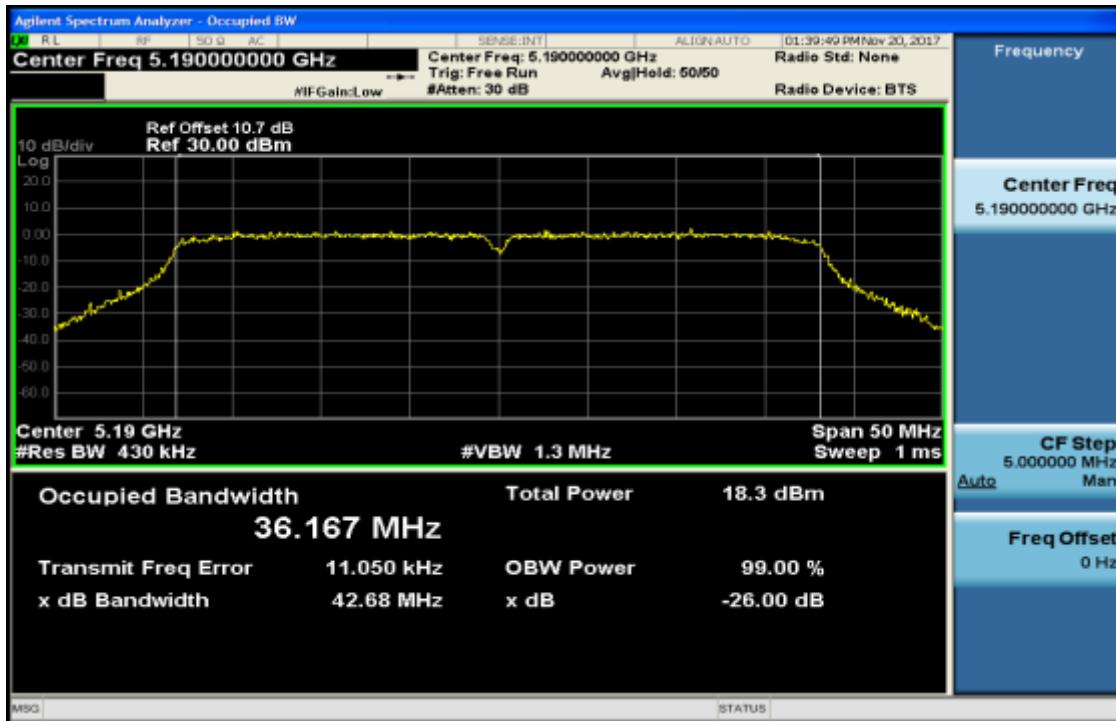
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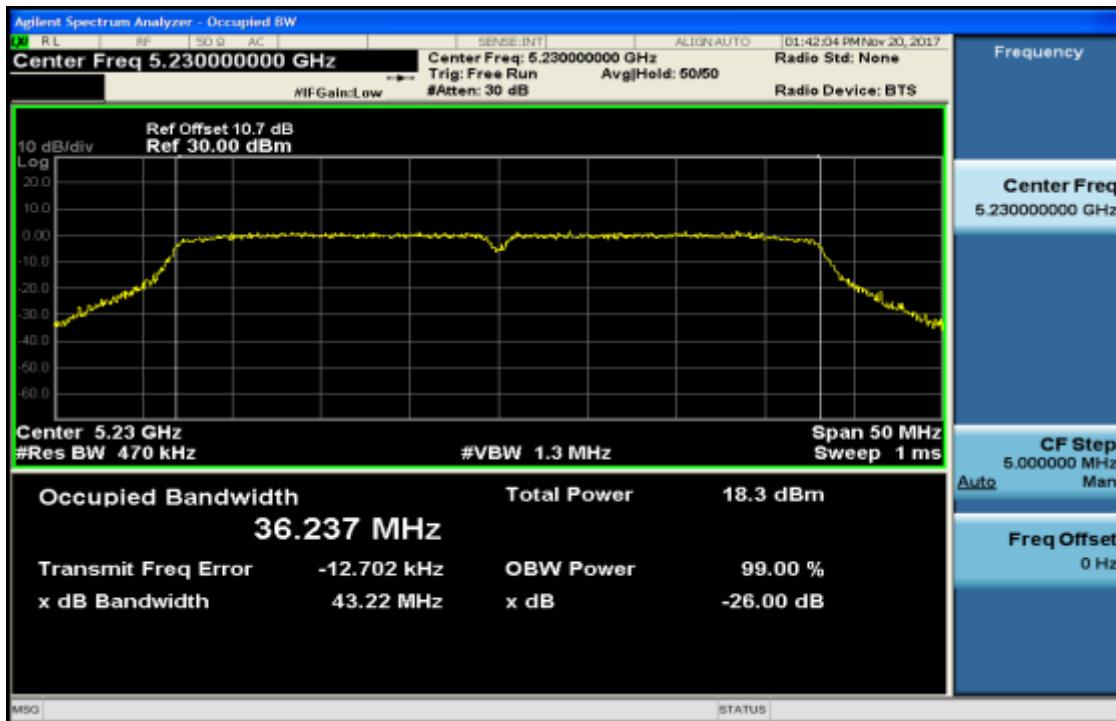
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## 802.11n HT40, 5150~5250 MHz (Main) 26dB Band Width Test Data CH-Low (5190 MHz)



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

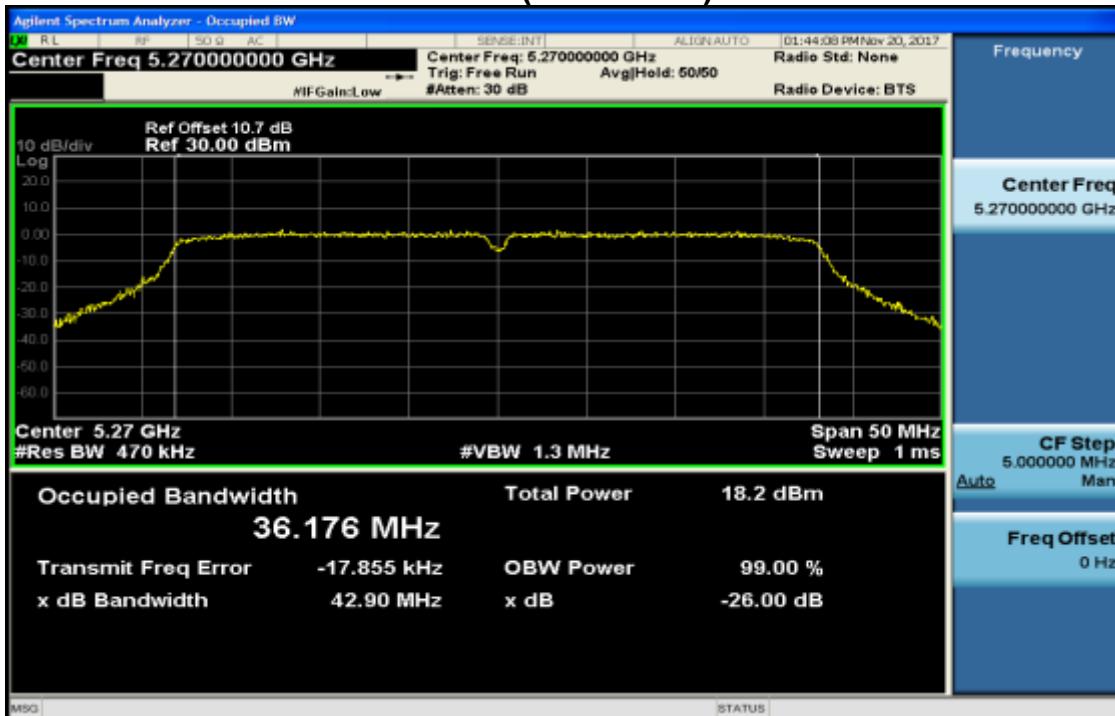


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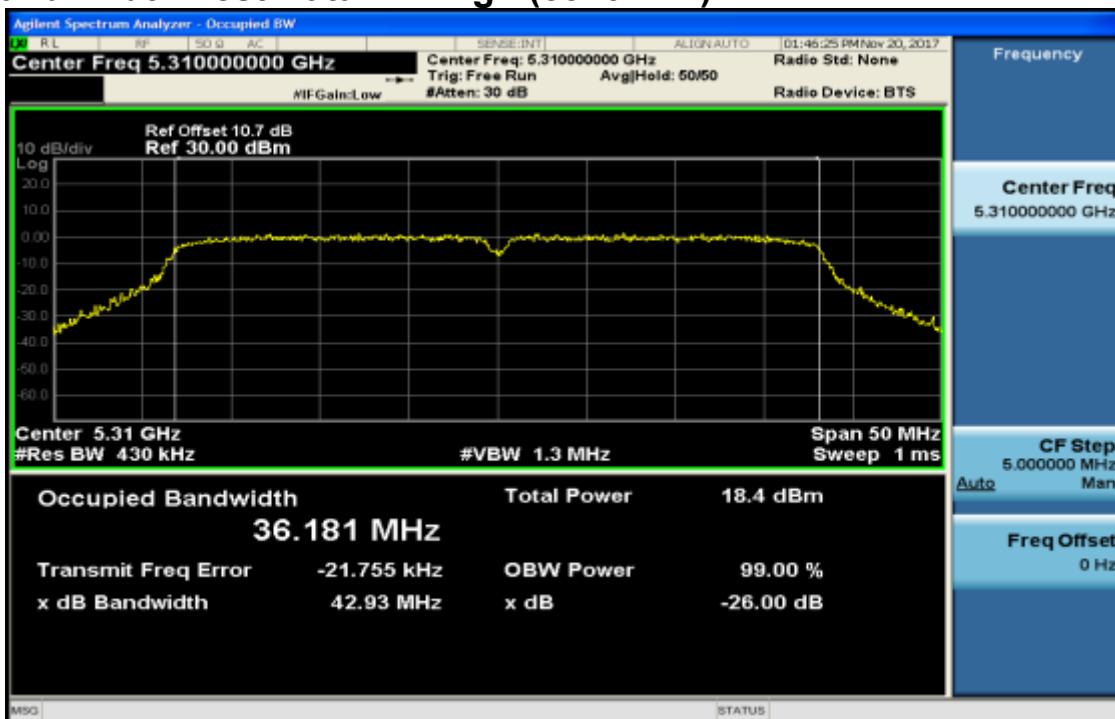
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## 802.11n HT40, 5250~5350 MHz (Main) 26dB Band Width Test Data CH-Low (5270 MHz)



## 26dB Band Width Test Data CH-High (5310MHz)

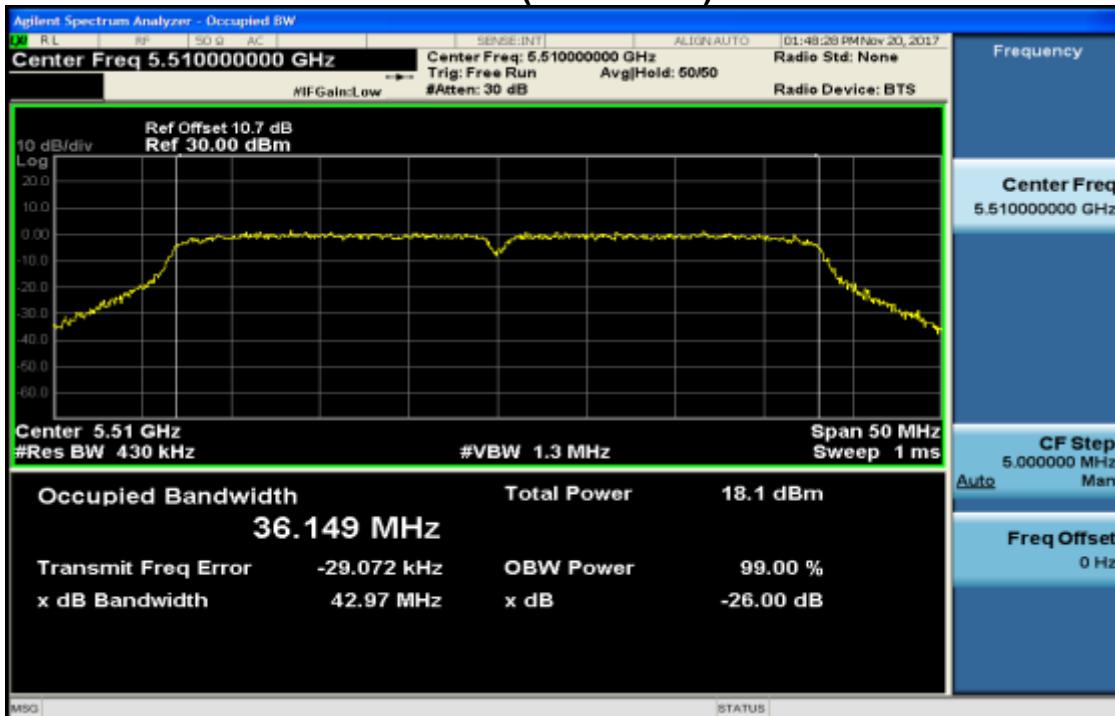


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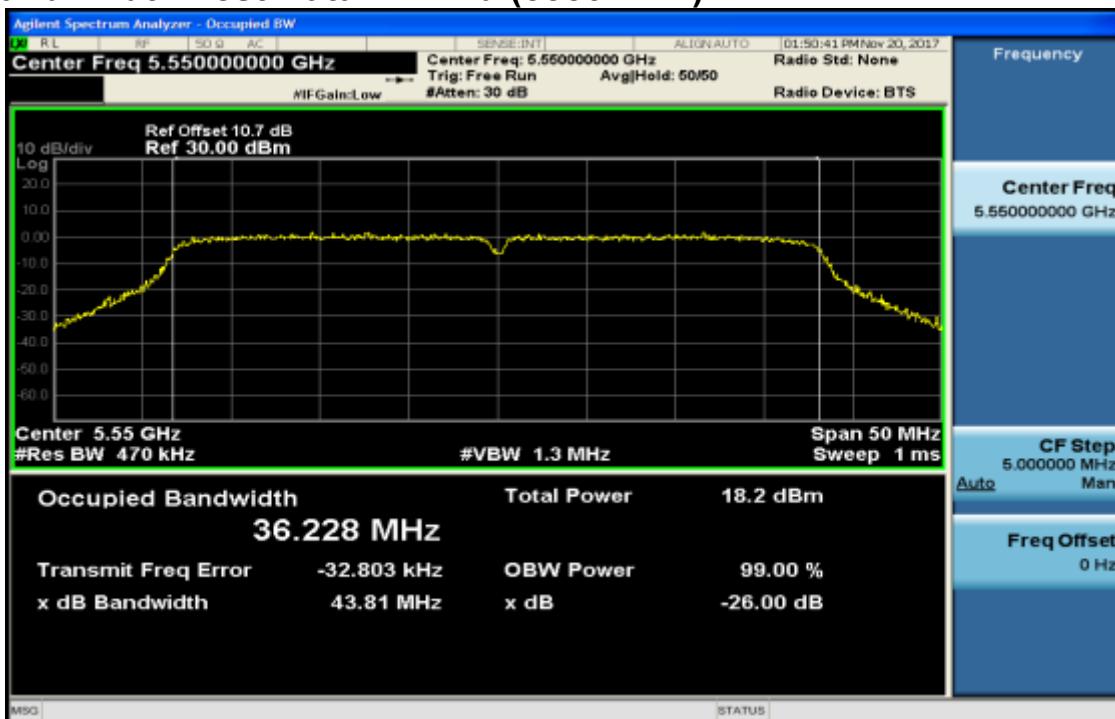
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## 802.11n HT40, 5470~5725 MHz (Main) 26dB Band Width Test Data CH-Low (5510 MHz)



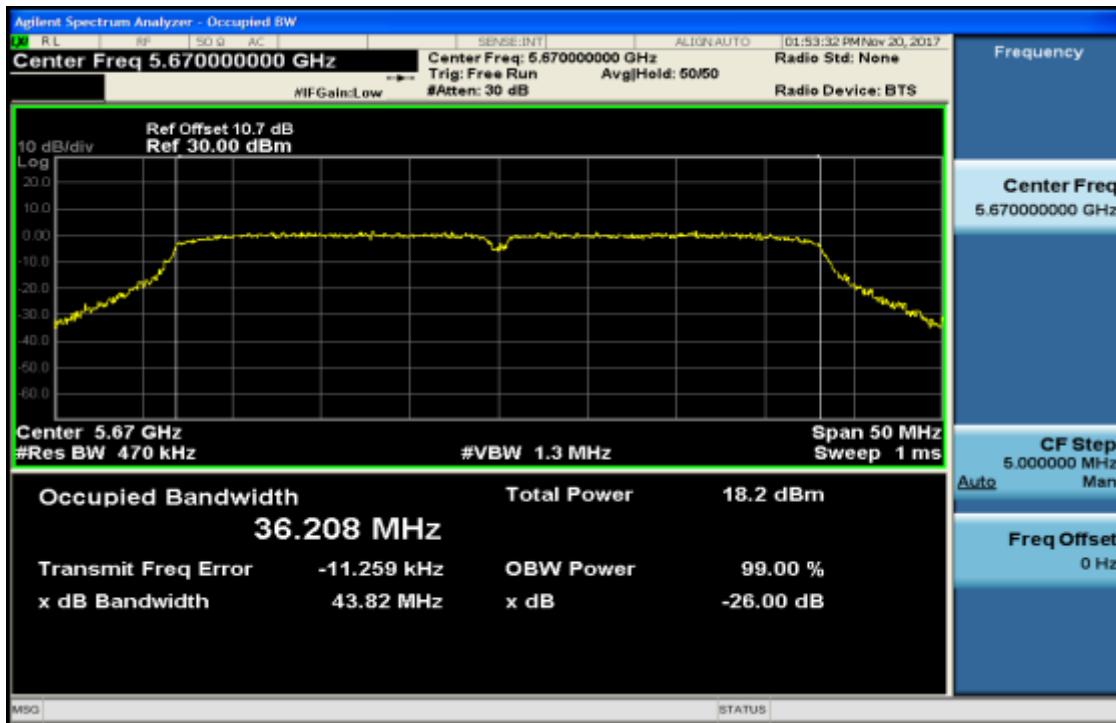
## 26dB Band Width Test Data CH-Mid (5550 MHz)



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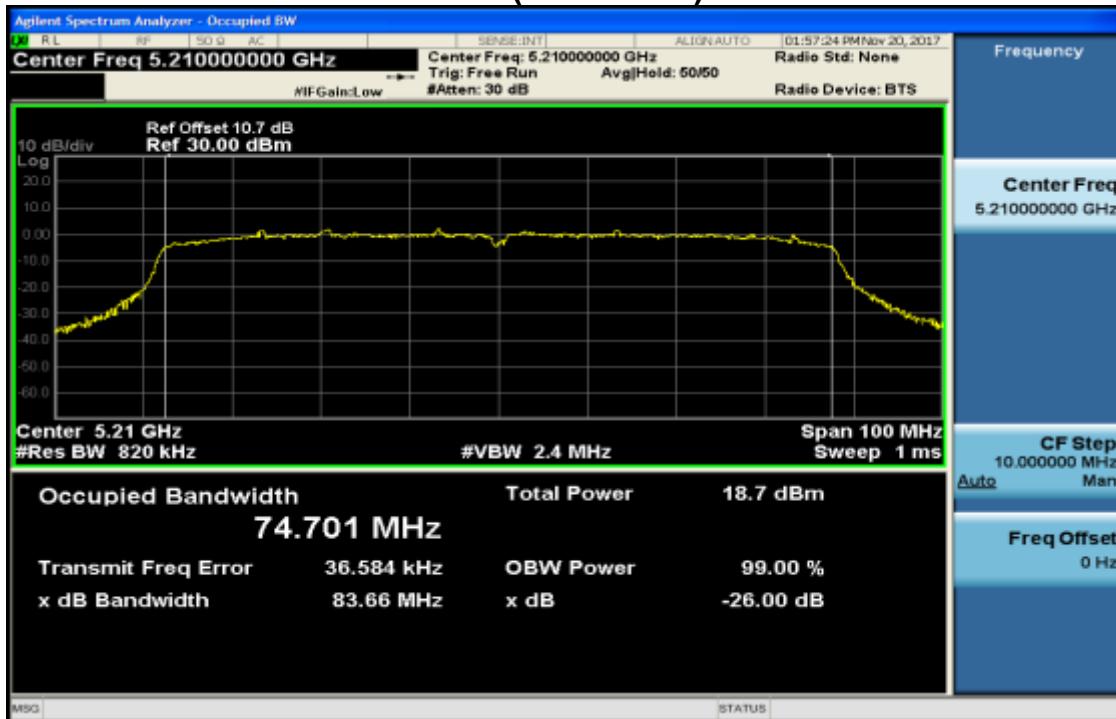
**26dB Band Width Test Data CH-High (5670 MHz)**

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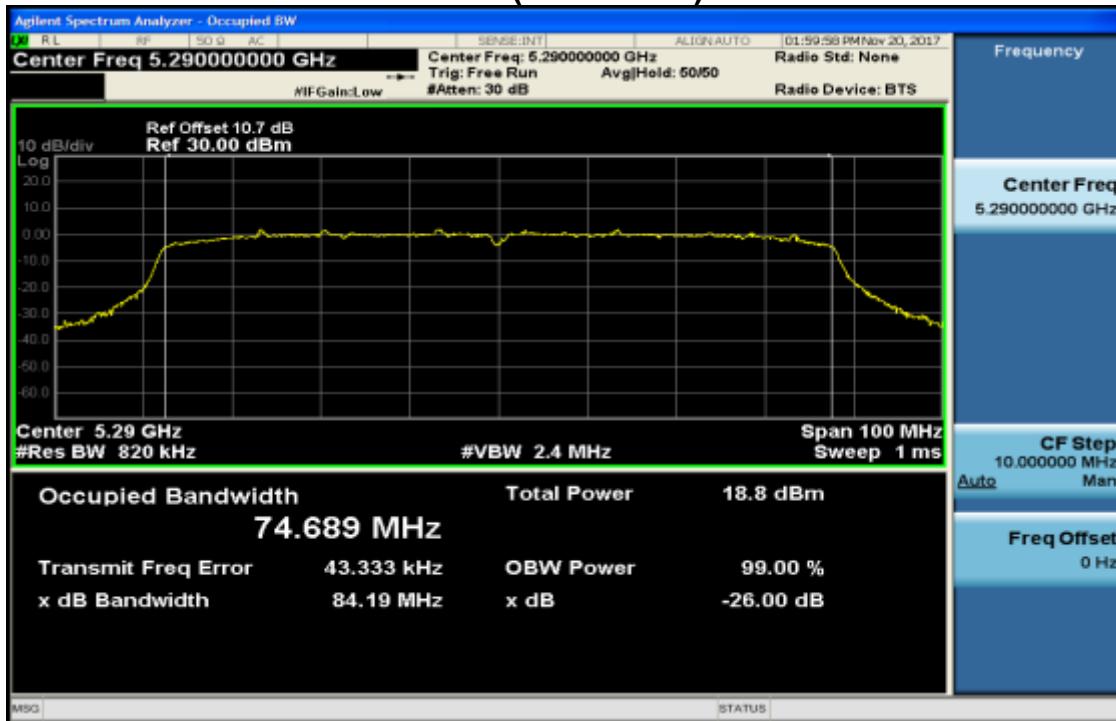
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## 802.11ac VHT80, 5150~5250 MHz (Main) 26dB Band Width Test Data CH-Mid (5210 MHz)



## 802.11ac VHT80, 5250~5350 MHz 26dB Band Width Test Data CH-Mid (5290 MHz)



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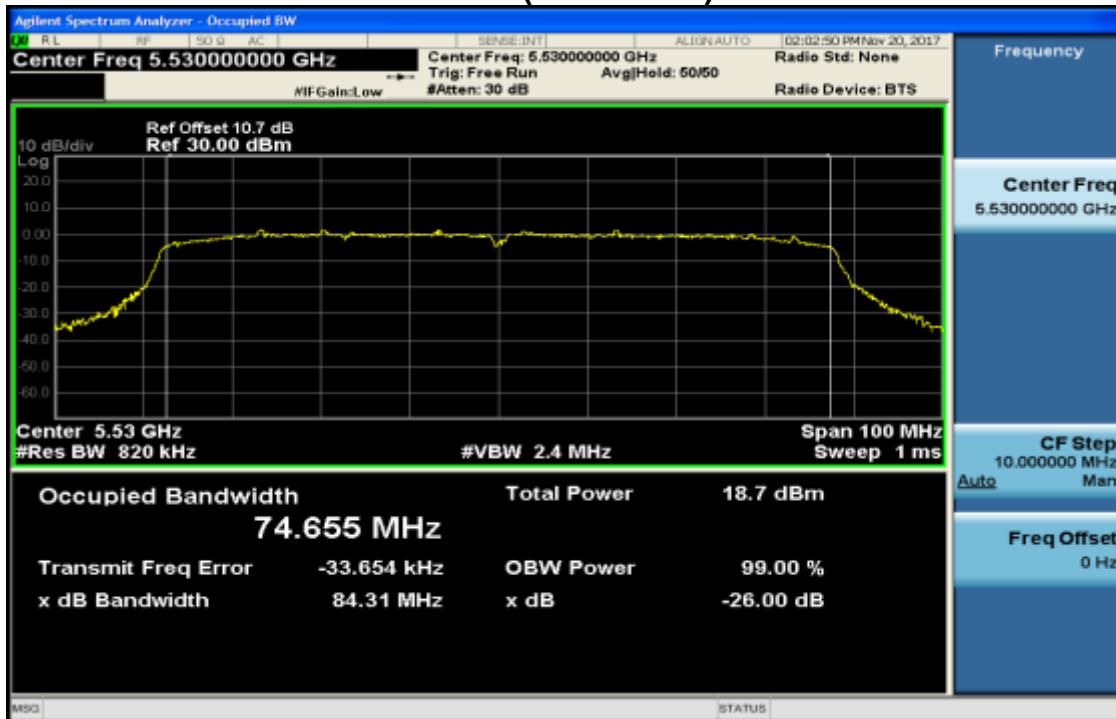
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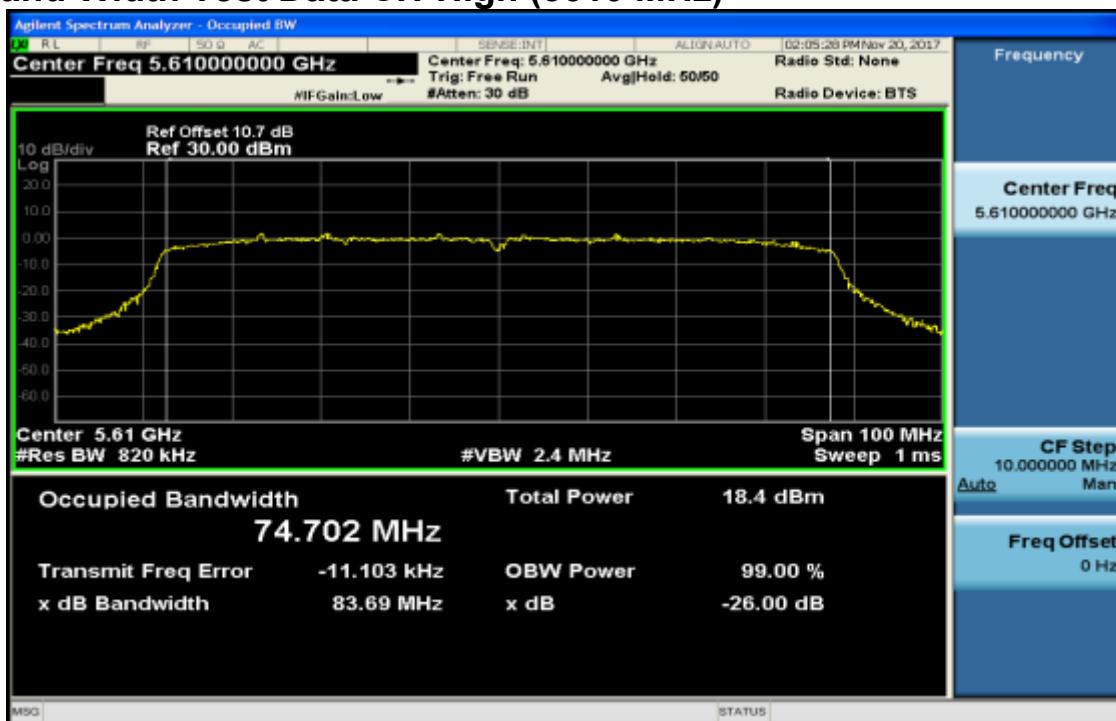
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## 802.11ac VHT80, 5470~5725 MHz (Main) 26dB Band Width Test Data CH-Low (5530 MHz)



## 802.11ac VHT80, 5470~5725 MHz (Main) 26dB Band Width Test Data CH-High (5610 MHz)



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## 9. MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

### 9.1 Standard Applicable

FCC

OPERZTION Band	EUT CATEGORY		LIMIT
U-NII-1		Access Point (Mater device )	1 Watt(30dBm)
		Fixed point-to-point Acess Ponit	1 Watt(30dBm)
	✓	Mobile and portable clinet 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, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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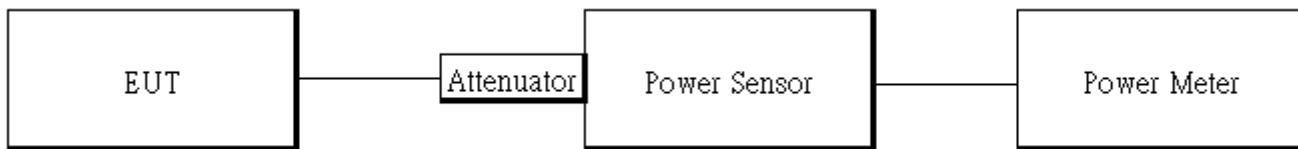
## 9.2 Measurement Procedure

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	ML2495A	1005007	12/15/2016	12/14/2017
Power Sensor	Anritsu	MA2411B	917032	12/15/2016	12/14/2017
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	03/21/2017	03/20/2018
DC Block	Mini-Circuits	BLK-18-S+	1	01/05/2017	01/04/2018
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/05/2017	01/04/2018
Attenuator	Mini-Circuit	BW-S10W2+	2	01/05/2017	01/04/2018
Splitter	Agilent	11636B	N/A	01/05/2017	01/04/2018
DC Power Supply	Agilent	E3640A	MY52410006	11/21/2017	11/20/2018
Temperature Chamber	TERCHY	MHG-120LF	911009	05/19/2017	05/18/2018

## 9.4 Test Set-up



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## 9.5 Measurement Result

### Conducted output power

#### 802.11a\_Main

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	6	12.12	16.304	30	PASS
44	5220	6	12.21	16.645	30	PASS
48	5240	6	12.16	16.435	30	PASS
52	5260	6	12.22	16.683	23.98 or $11+10\log(B) = 24.50$	PASS
60	5300	6	12.15	16.397	23.98 or $11+10\log(B) = 24.41$	PASS
64	5320	6	12.26	16.818	23.98 or $11+10\log(B) = 24.38$	PASS
100	5500	6	12.31	17.033	23.98 or $11+10\log(B) = 24.36$	PASS
116	5580	6	11.91	15.534	23.98 or $11+10\log(B) = 24.42$	PASS
140	5700	6	12.22	16.683	23.98 or $11+10\log(B) = 24.32$	PASS

#### 802.11n\_HT20\_Main

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	MCS0	12.10	16.203	30	PASS
44	5220	MCS0	12.05	16.017	30	PASS
48	5240	MCS0	12.19	16.564	30	PASS
52	5260	MCS0	12.14	16.352	23.98 or $11+10\log(B) = 24.49$	PASS
60	5300	MCS0	12.15	16.412	23.98 or $11+10\log(B) = 24.49$	PASS
64	5320	MCS0	12.32	17.044	23.98 or $11+10\log(B) = 24.43$	PASS
100	5500	MCS0	12.31	17.028	23.98 or $11+10\log(B) = 24.53$	PASS
116	5580	MCS0	12.35	17.163	23.98 or $11+10\log(B) = 24.47$	PASS
140	5700	MCS0	12.28	16.911	23.98 or $11+10\log(B) = 24.51$	PASS

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### 802.11ac VHT20 Main

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
36	5180	MCS0	11.97	15.725	30		PASS
44	5220	MCS0	11.99	15.797	30		PASS
48	5240	MCS0	12.17	16.466	30		PASS
52	5260	MCS0	12.08	16.128	23.98 or 11+10log(B) = 24.49		PASS
60	5300	MCS0	12.12	16.277	23.98 or 11+10log(B) = 24.49		PASS
64	5320	MCS0	<b>12.20</b>	16.580	23.98 or 11+10log(B) = 24.43		PASS
100	5500	MCS0	12.21	16.618	23.98 or 11+10log(B) = 24.53		PASS
116	5580	MCS0	12.15	16.390	23.98 or 11+10log(B) = 24.47		PASS
140	5700	MCS0	<b>12.23</b>	16.695	23.98 or 11+10log(B) = 24.51		PASS

### 802.11n HT40 Main

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
38	5190	MCS0	12.70	18.620	30		PASS
46	5230	MCS0	12.87	19.364	30		PASS
54	5270	MCS0	12.82	19.145	23.98 or 11+10log(B) = 27.32		PASS
62	5310	MCS0	13.01	19.998	23.98 or 11+10log(B) = 27.33		PASS
102	5510	MCS0	12.65	18.410	23.98 or 11+10log(B) = 27.33		PASS
110	5550	MCS0	13.05	20.183	23.98 or 11+10log(B) = 27.42		PASS
134	5670	MCS0	12.63	18.323	23.98 or 11+10log(B) = 27.42		PASS

### 802.11ac VHT40 Main

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
38	5190	MCS0	12.64	18.365	30		PASS
46	5230	MCS0	12.81	19.098	30		PASS
54	5270	MCS0	12.76	18.879	23.98 or 11+10log(B) = 27.32		PASS
62	5310	MCS0	<b>12.93</b>	19.633	23.98 or 11+10log(B) = 27.33		PASS
102	5510	MCS0	12.59	18.155	23.98 or 11+10log(B) = 27.33		PASS
110	5550	MCS0	<b>12.90</b>	19.498	23.98 or 11+10log(B) = 27.42		PASS
134	5670	MCS0	12.55	17.988	23.98 or 11+10log(B) = 27.42		PASS

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## 802.11ac VHT80 Main

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
42	5210	MCS0	14.86	30.604	30	PASS
58	5290	MCS0	15.01	31.679	23.98 or 11+10log(B) = 30.25	PASS
106	5530	MCS0	14.78	30.045	23.98 or 11+10log(B) = 30.26	PASS
122	5610	MCS0	14.68	29.361	23.98 or 11+10log(B) = 30.23	PASS

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## 10. PEAK POWER SPECTRAL DENSITY

### 10.1 Standard Applicable

FCC

OPERZTION Band	EUT CATEGORY		LIMIT
U-NII-1	Access Point (Mater device )		17dBm/ MHz
	Fixed point-to-point Acess Ponit		
	✓	Mobile and portable clinet 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, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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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:

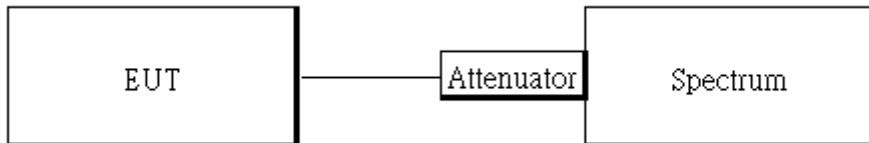
Set RBW=500 kHz, VBW $\geq$  3RBW, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)

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
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	03/21/2017	03/20/2018
DC Block	Mini-Circuits	BLK-18-S+	1	01/05/2017	01/04/2018
Attenuator	Mini-Circuit	BW-S10W2+	2	01/05/2017	01/04/2018

## 10.4 Test Set-up



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## 10.5 Measurement Result

POWER DENSITY 802.11a MODE					
Frequency (MHz)	PPSD W/O Duty Factor (dBm)	Duty Factor	PPSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5180	-7.27	0.59	-6.68	17	-23.68
5220	-5.97	0.59	-5.38	17	-22.38
5240	-7.08	0.59	-6.49	17	-23.49
5260	-6.00	0.59	-5.41	11	-16.41
5300	-8.65	0.59	-8.06	11	-19.06
5320	-8.04	0.59	-7.45	11	-18.45
5500	-6.23	0.59	-5.64	11	-16.64
5580	-6.69	0.59	-6.10	11	-17.10
5700	-6.35	0.59	-5.76	11	-16.76

POWER DENSITY 802.11n HT20 MODE					
Frequency (MHz)	PPSD W/O Duty Factor (dBm)	Duty Factor	PPSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5180	-5.66	0.63	-5.03	17	-22.03
5220	-5.03	0.63	-4.40	17	-21.40
5240	-6.05	0.63	-5.42	17	-22.42
5260	-6.10	0.63	-5.47	11	-16.47
5300	-6.24	0.63	-5.61	11	-16.61
5320	-5.58	0.63	-4.95	11	-15.95
5500	-5.62	0.63	-4.99	11	-15.99
5580	-5.99	0.63	-5.36	11	-16.36
5700	-6.59	0.63	-5.96	11	-16.96

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POWER DENSITY 802.11n HT40 MODE					
Frequency (MHz)	PPSD W/O Duty Factor (dBm)	Duty Factor	PPSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5190	-14.81	1.18	-13.63	17	-30.63
5230	-13.57	1.18	-12.39	17	-29.39
5270	-13.76	1.18	-12.58	11	-23.58
5310	-13.1	1.18	-11.92	11	-22.92
5510	-14.05	1.18	-12.87	11	-23.87
5550	-13.93	1.18	-12.75	11	-23.75
5670	-14.58	1.18	-13.40	11	-24.40

POWER DENSITY 802.11ac VHT80 MODE					
Frequency (MHz)	PPSD W/O Duty Factor (dBm)	Duty Factor	PPSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5210	-24.63	2.58	-22.05	17	-39.05
5290	-24.02	2.58	-21.44	11	-32.44
5530	-22.96	2.58	-20.38	11	-31.38
5610	-23.70	2.58	-21.12	11	-32.12

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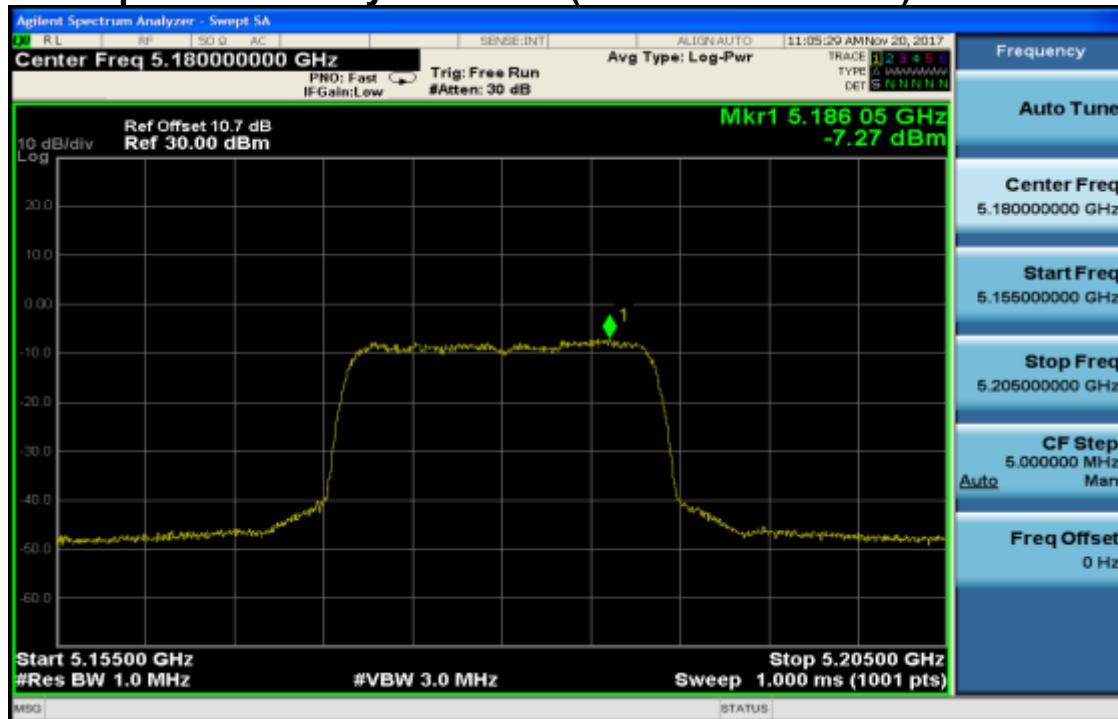
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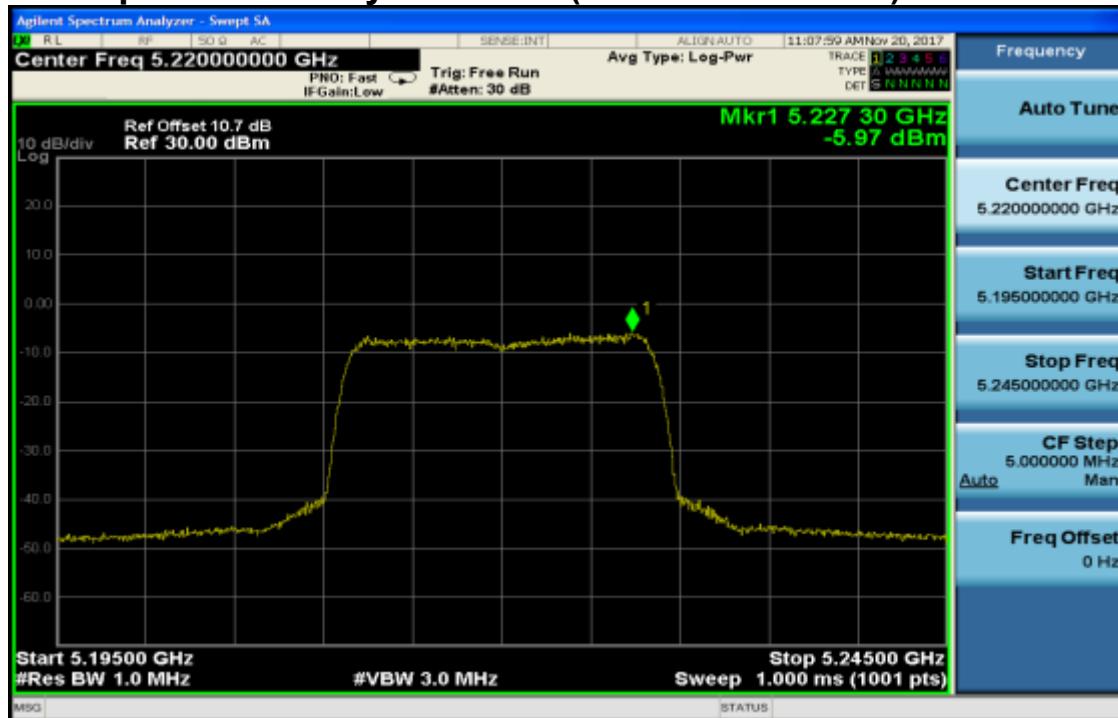
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## 802.11a 5150~5250 MHz

### Peak Power Spectral Density Data Plot (CH Low 5180 MHz)



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



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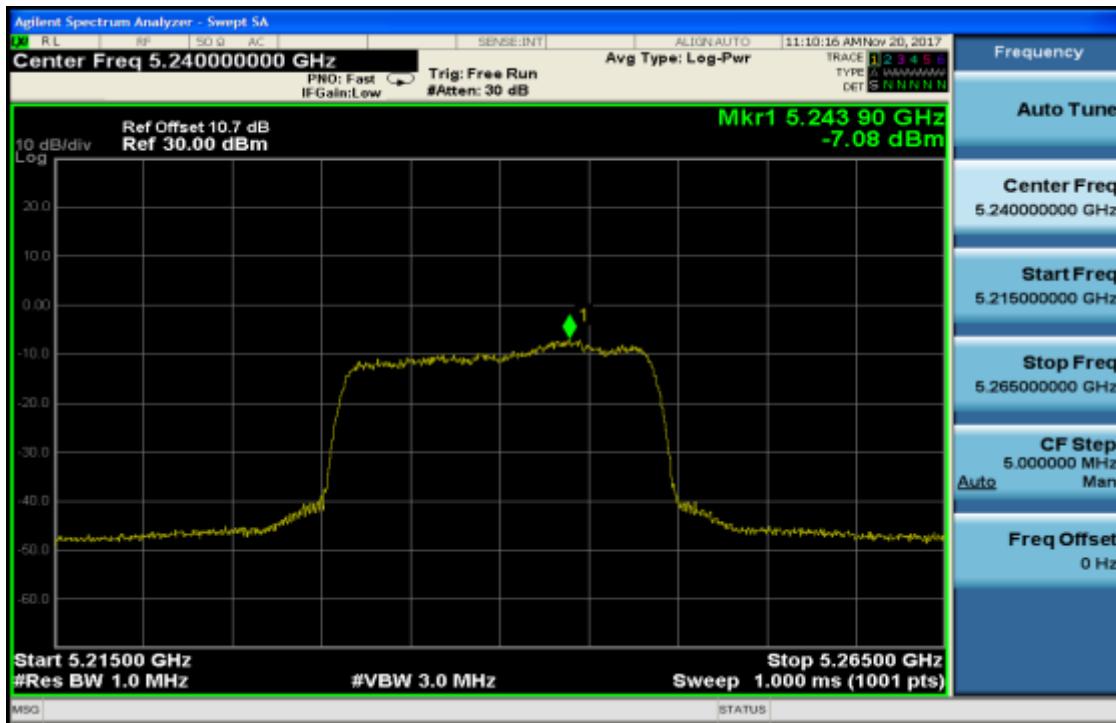
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## Peak Power Spectral Density Data Plot (CH High 5240 MHz)



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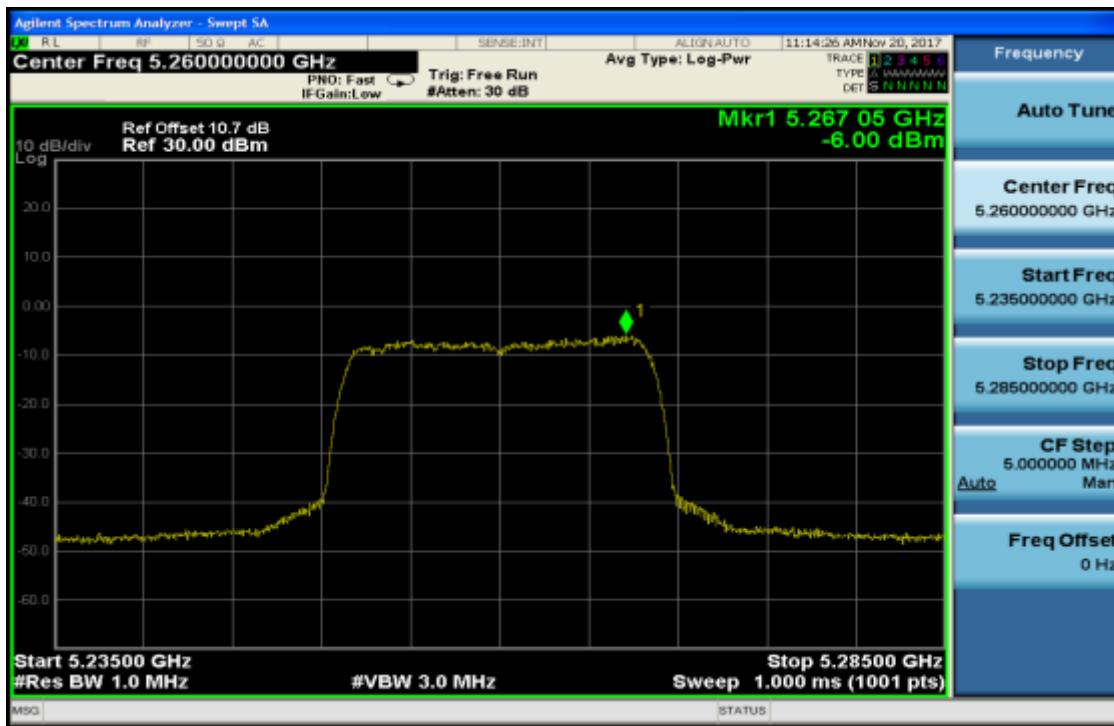
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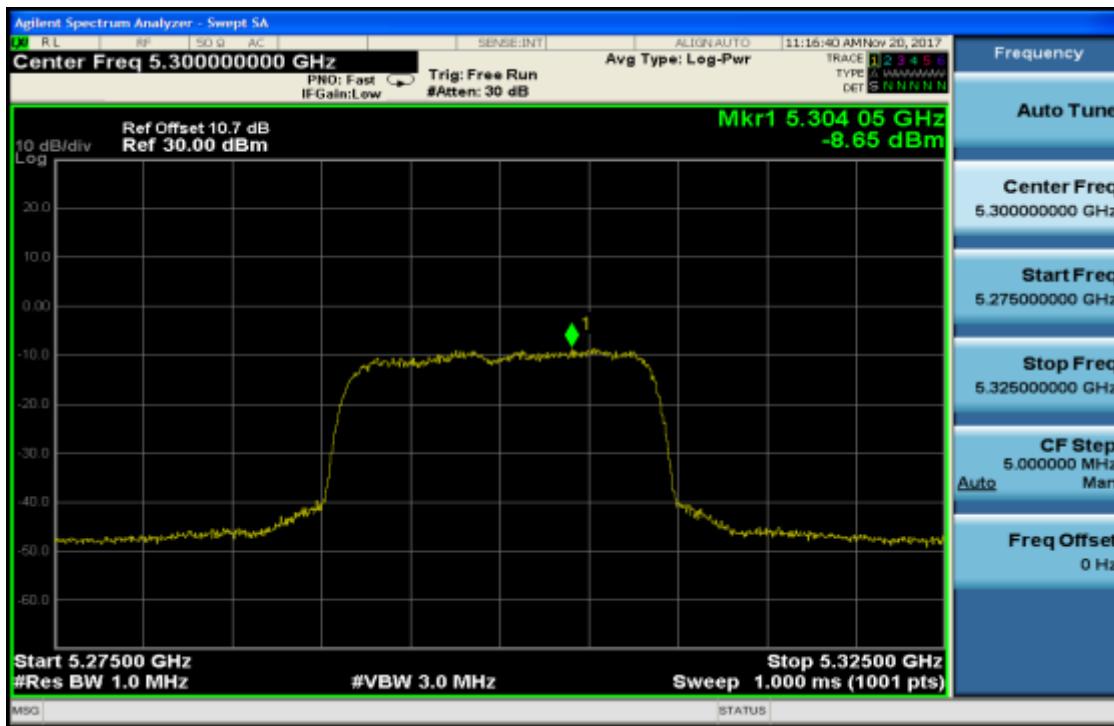
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## 802.11a 5250~5350 MHz

### Peak Power Spectral Density Data Plot (CH Low 5260 MHz)



### Peak Power Spectral Density Data Plot (CH Mid 5300 MHz)



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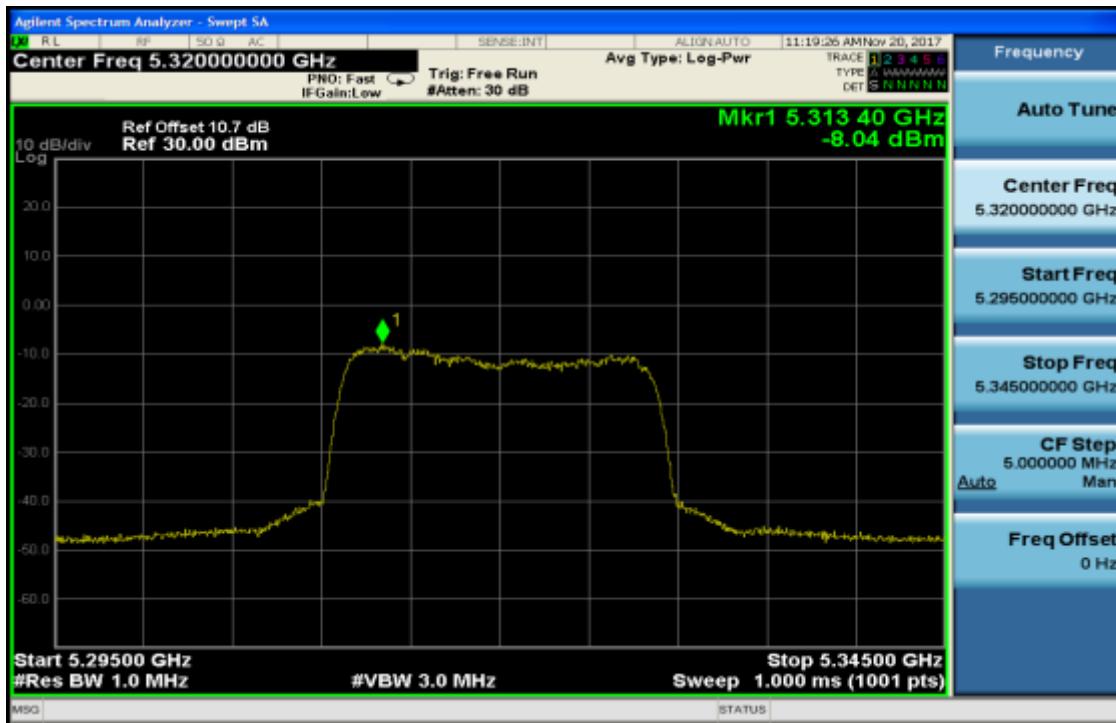
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## Peak Power Spectral Density Data Plot (CH High 5320 MHz)



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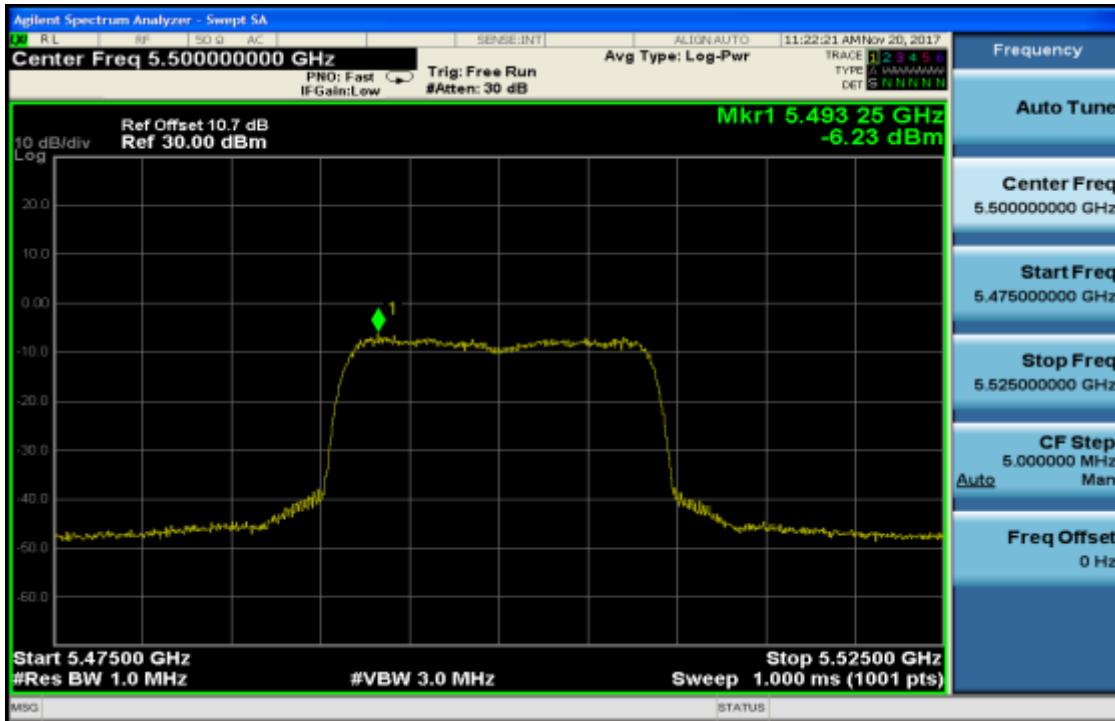
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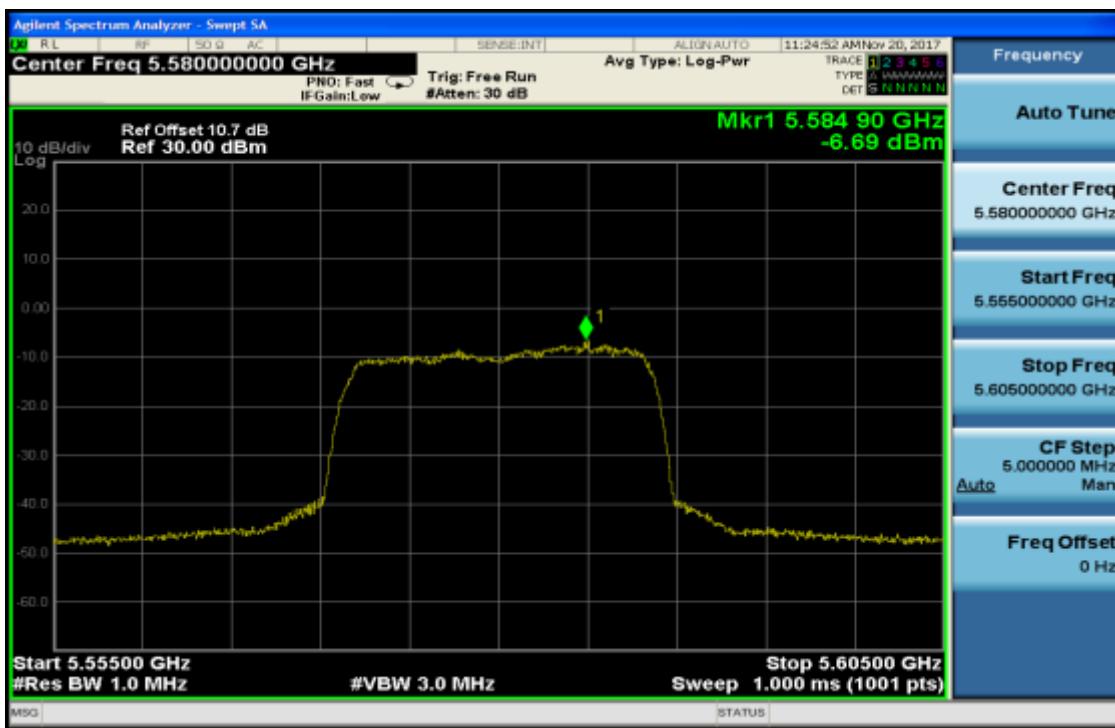
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## 802.11a 5470~5725 MHz

### Peak Power Spectral Density Data Plot (CH Low 5500 MHz)



### Peak Power Spectral Density Data Plot (CH Mid 5580 MHz)



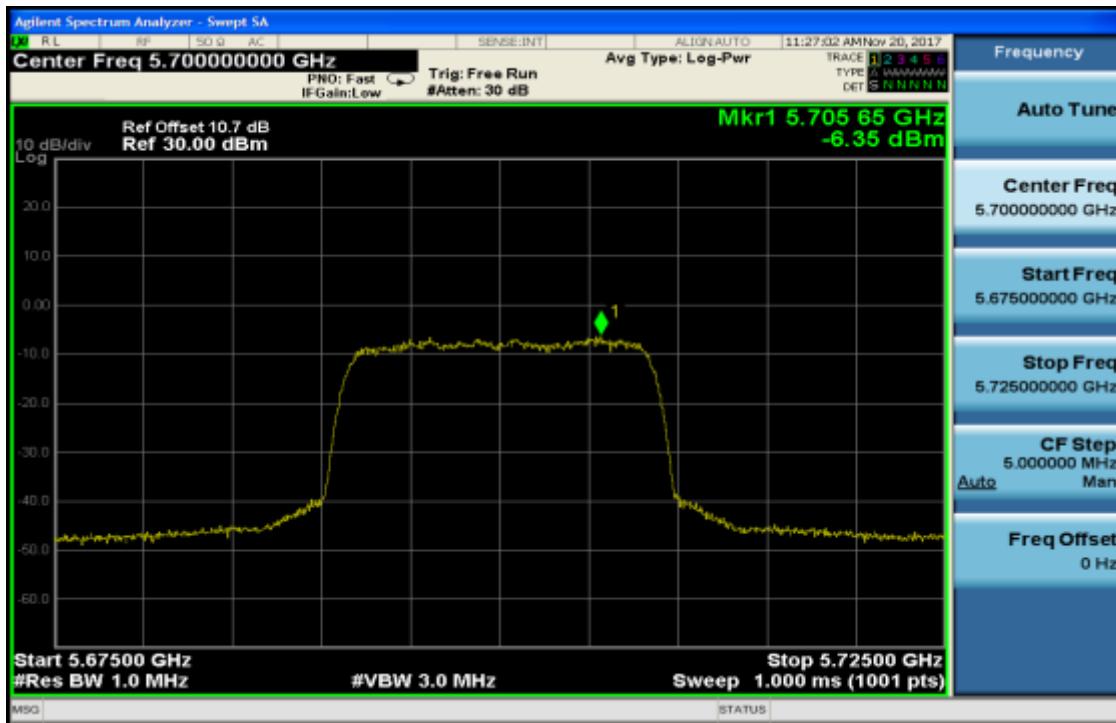
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## Peak Power Spectral Density Data Plot (CH High 5700 MHz)



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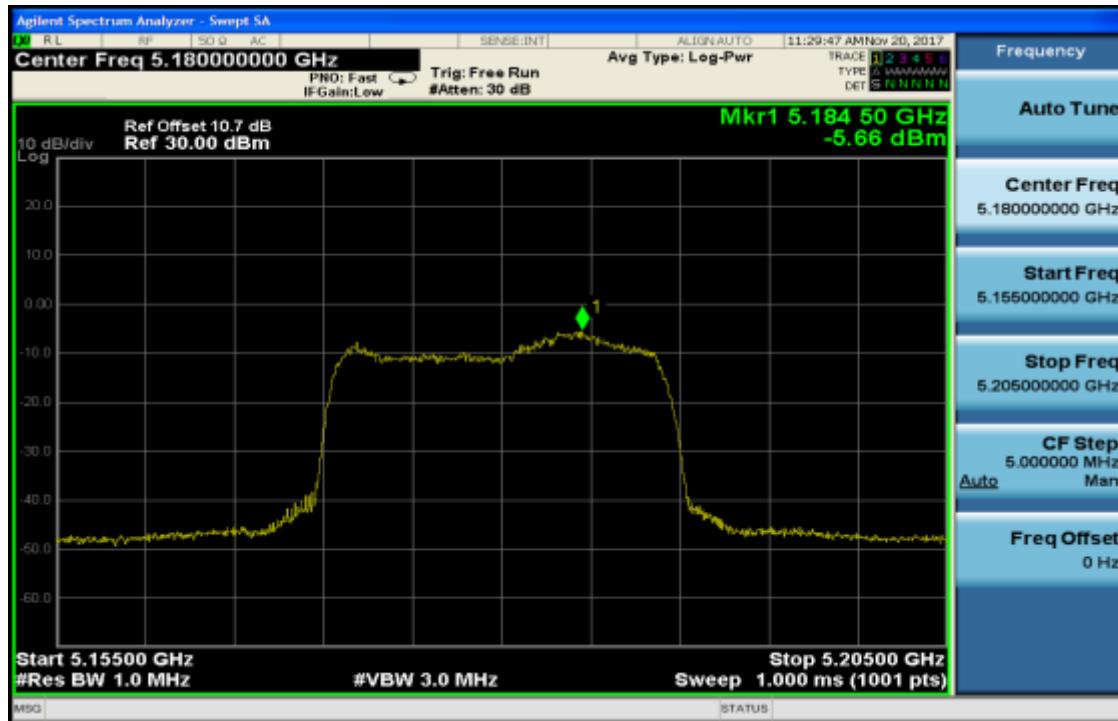
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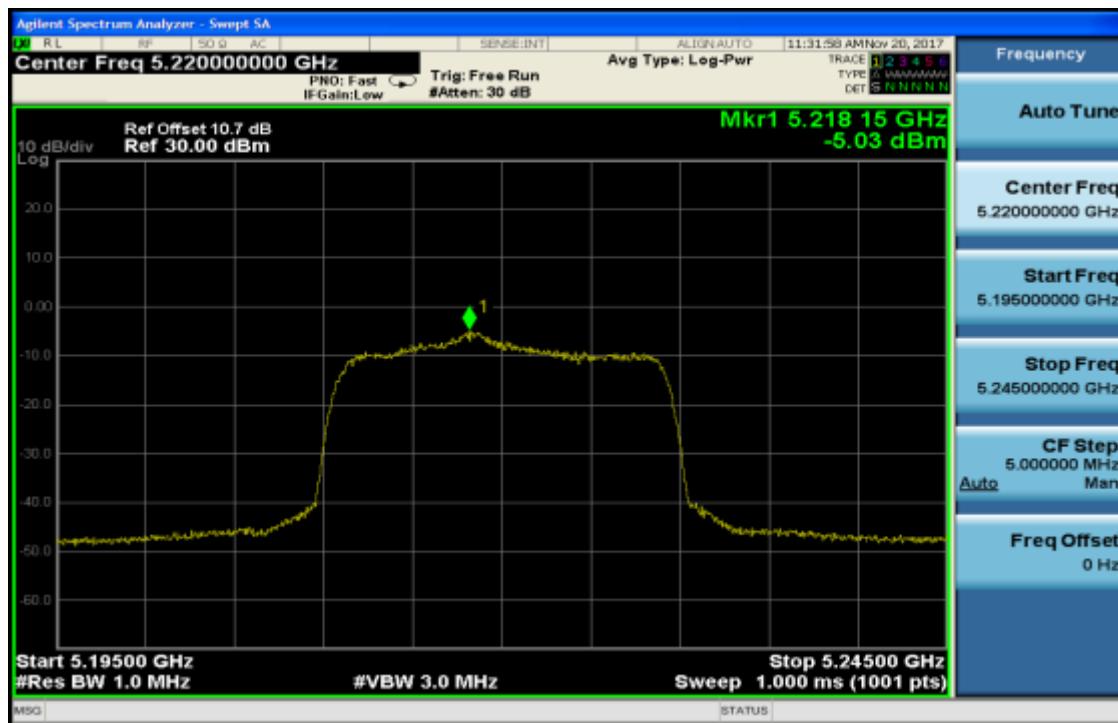
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## 802.11n HT20, 5150~5250 MHz

### Peak Power Spectral Density Data Plot (CH Low 5180 MHz)



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

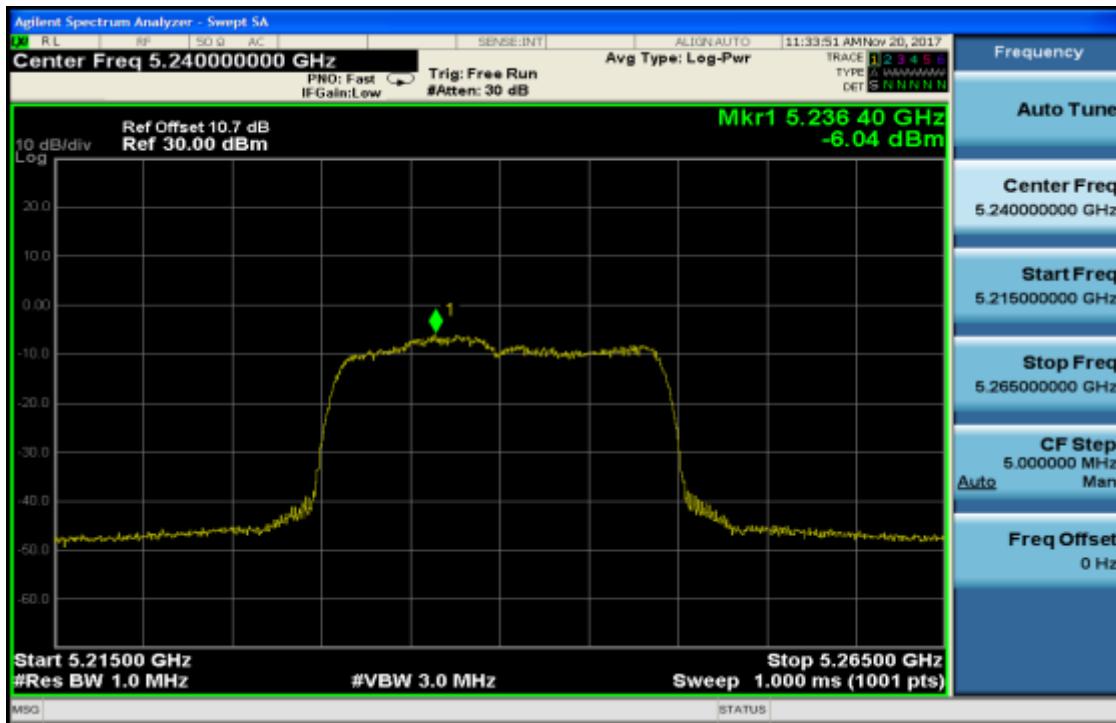


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## Peak Power Spectral Density Data Plot (CH High 5240 MHz)



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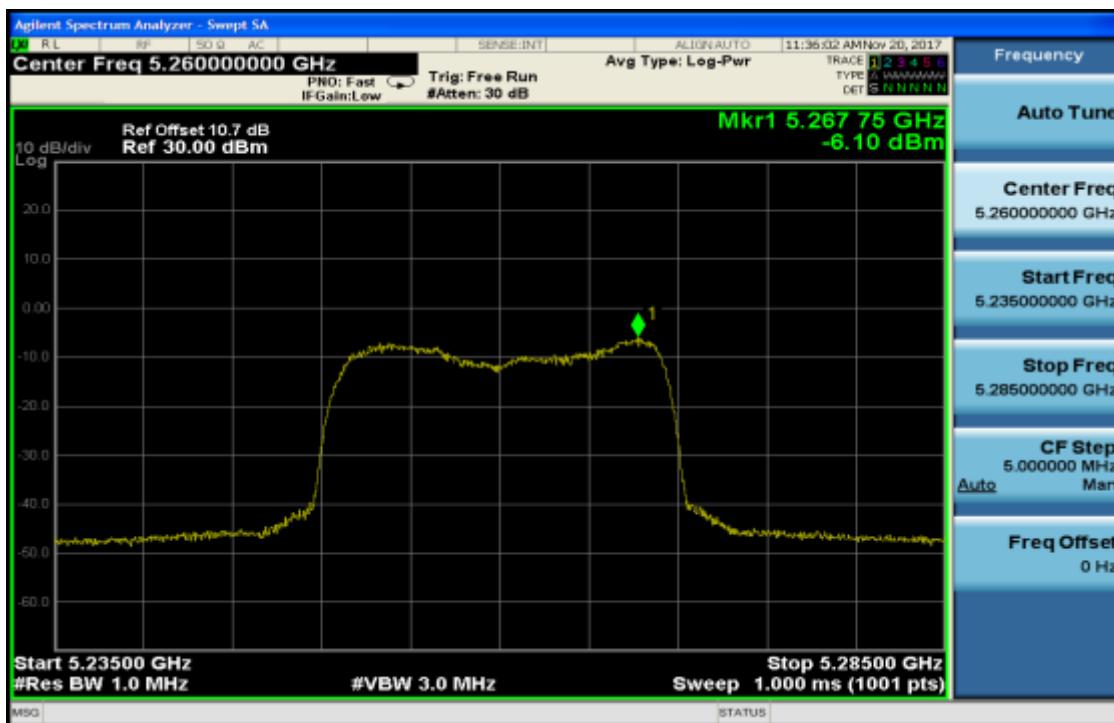
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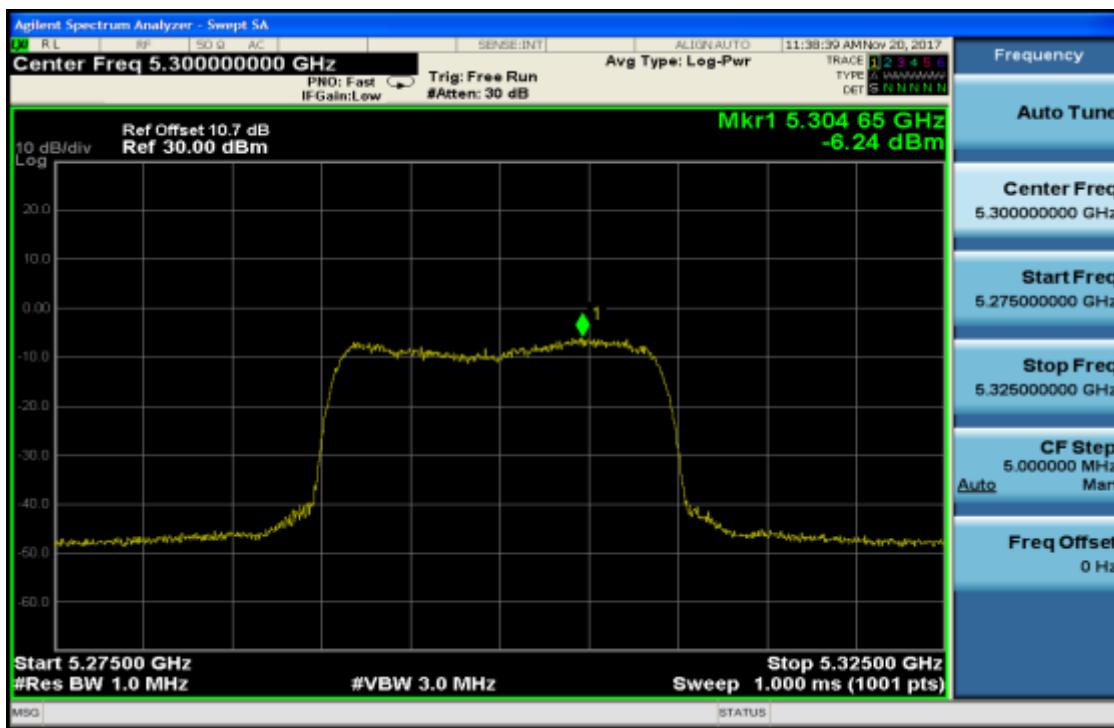
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## 802.11n HT20, 5250~5350 MHz Peak Power Spectral Density Data Plot (CH Low 5260MHz)



## Peak Power Spectral Density Data Plot (CH Mid 5300 MHz)



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## Peak Power Spectral Density Data Plot (CH High 5320 MHz)



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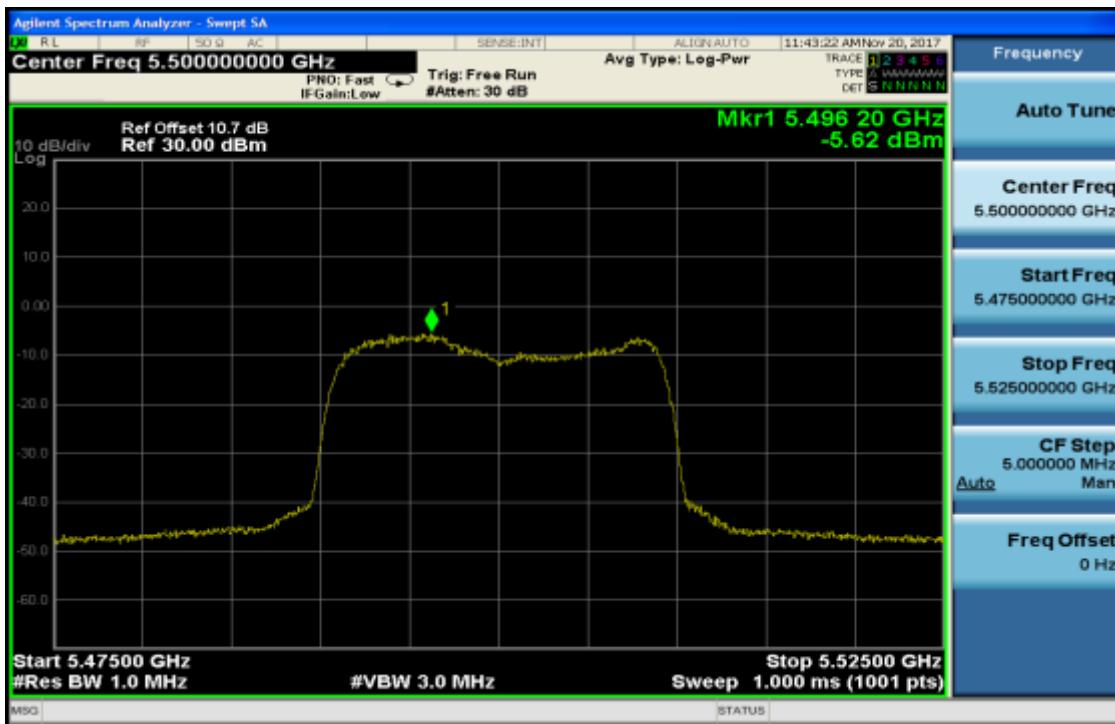
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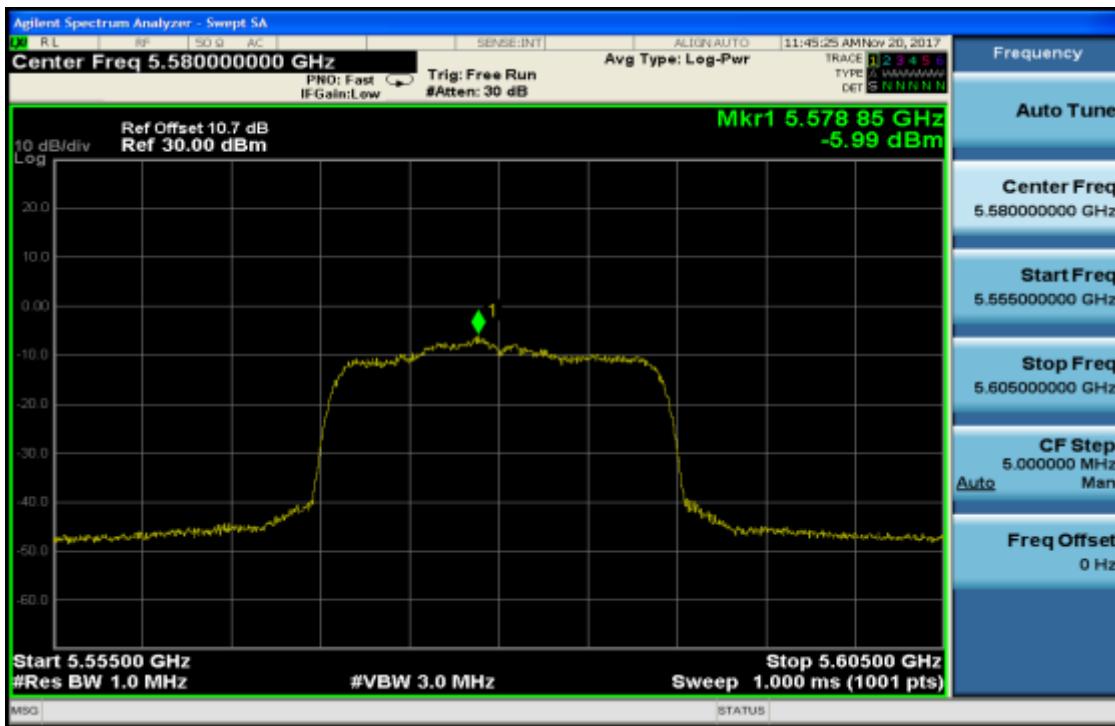
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## 802.11n HT20, 5470~5725 MHz Peak Power Spectral Density Data Plot (CH Low 5500 MHz)



## Peak Power Spectral Density Data Plot (CH Mid 5580MHz)



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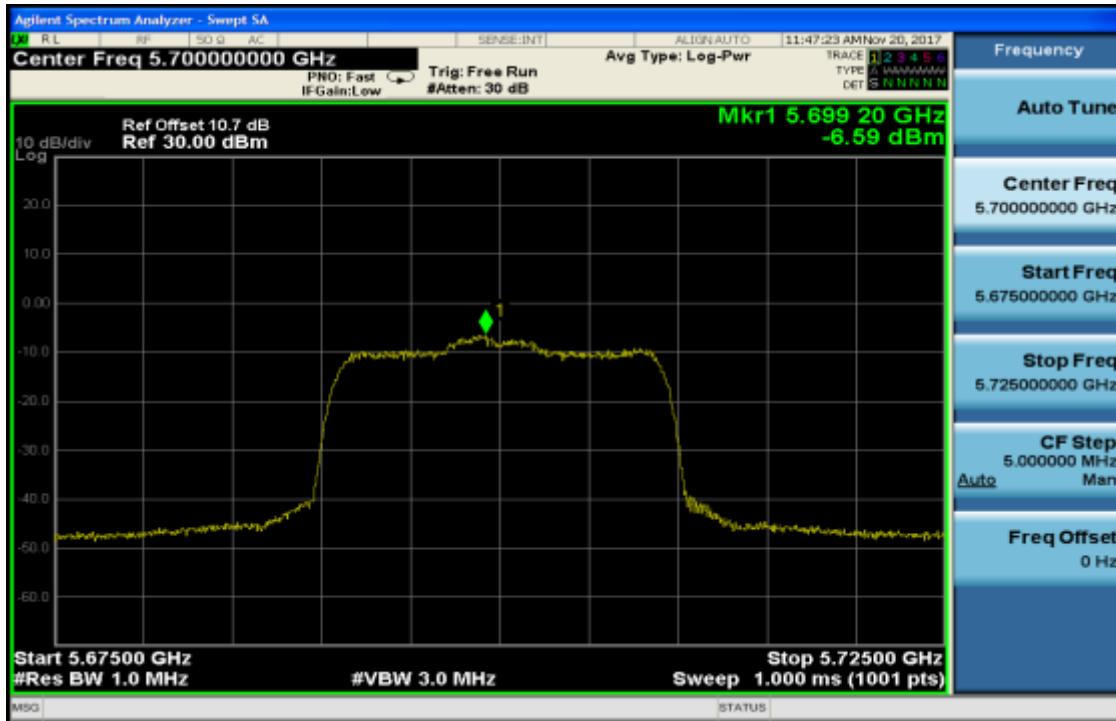
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## Peak Power Spectral Density Data Plot (CH High 5700 MHz)



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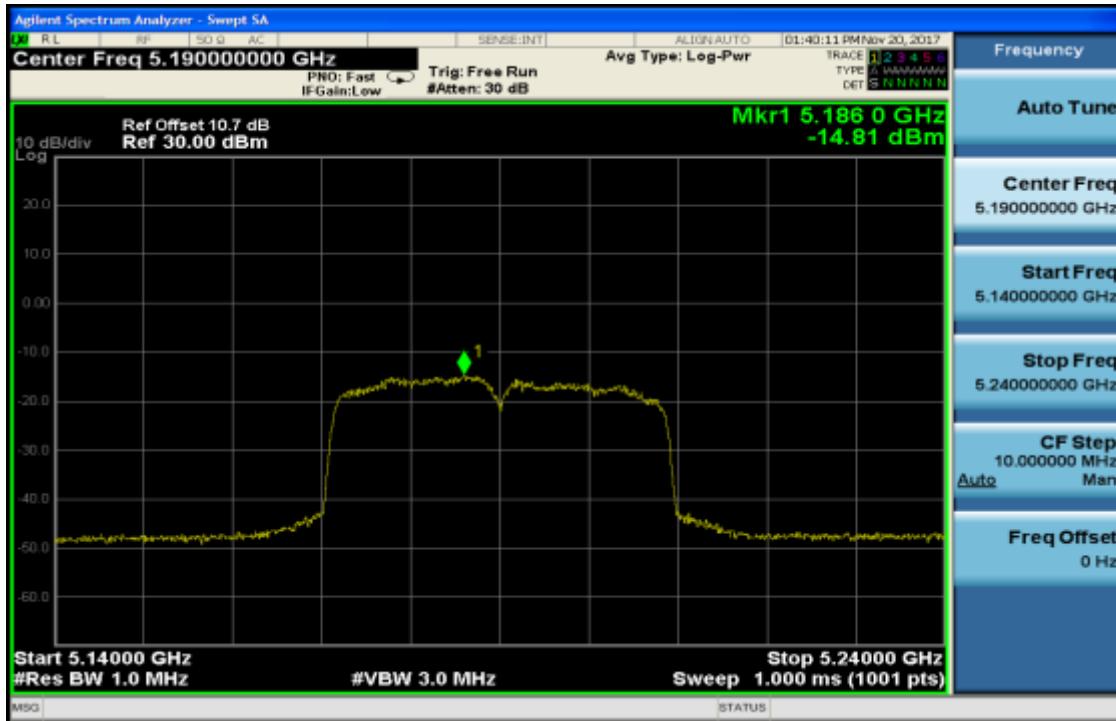
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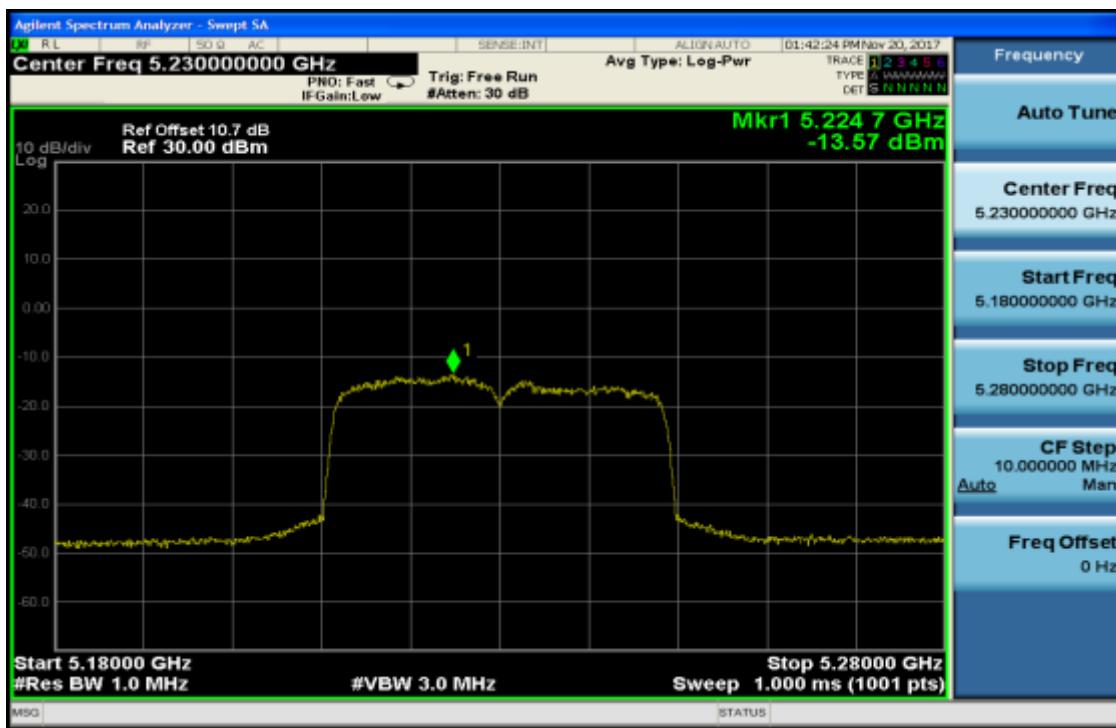
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## 802.11n HT40, 5150~5250 MHz

### Peak Power Spectral Density Data Plot (CH Low 5190 MHz)



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



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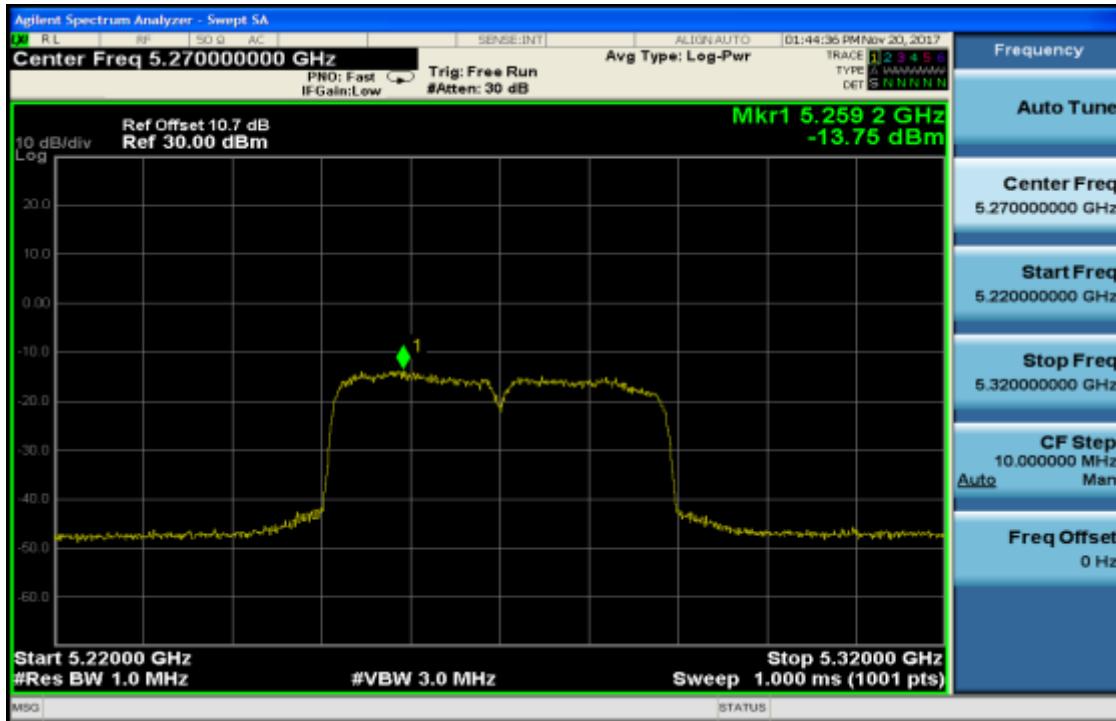
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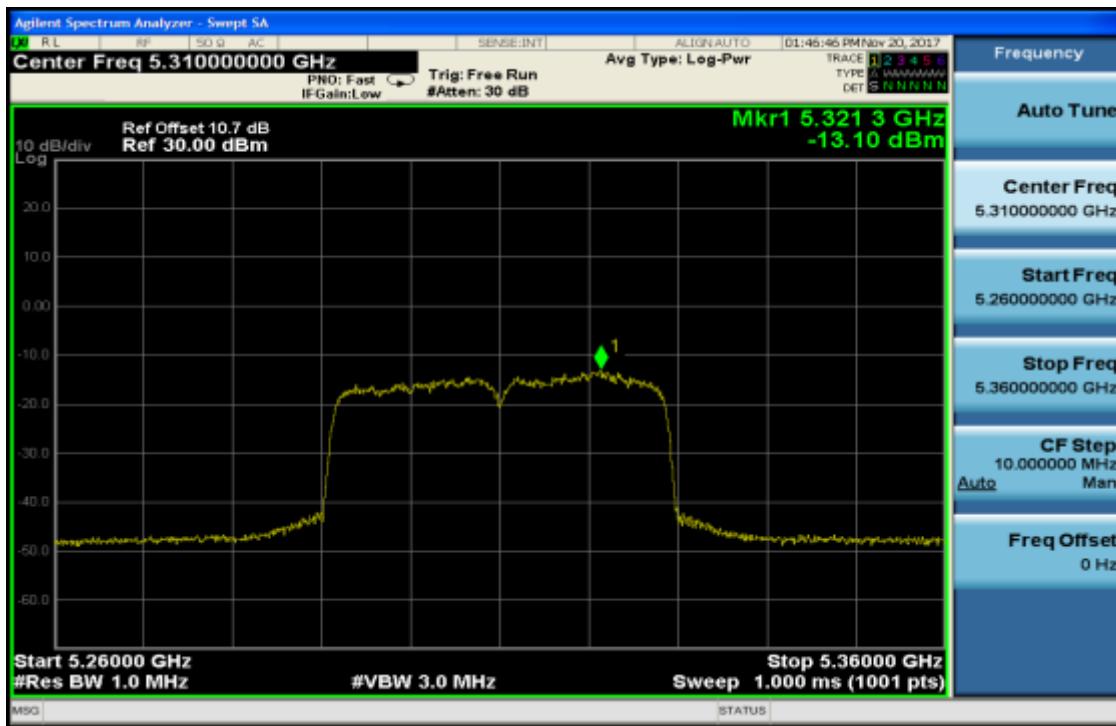
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## 802.11n HT40, 5250~5350 MHz

### Peak Power Spectral Density Data Plot (CH Low 5270 MHz)



### Peak Power Spectral Density Data Plot (CH High 5310 MHz)



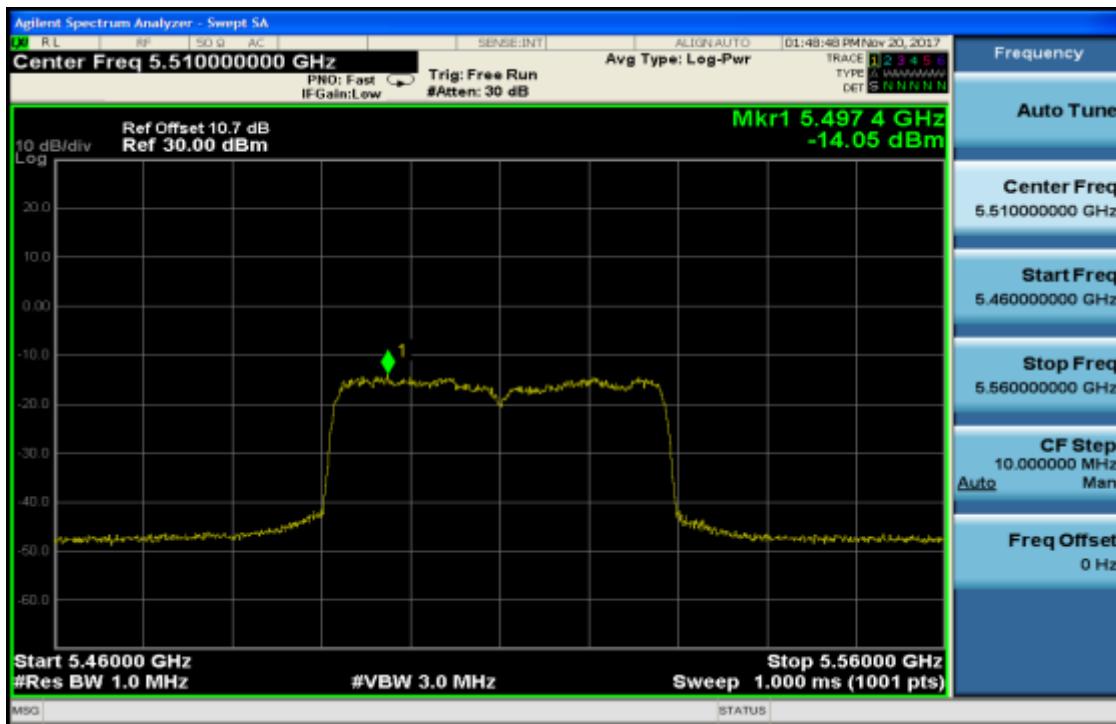
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## 802.11n HT40, 5470~5725 MHz Peak Power Spectral Density Data Plot (CH Low 5510 MHz)



## Peak Power Spectral Density Data Plot (CH Mid 5550 MHz)



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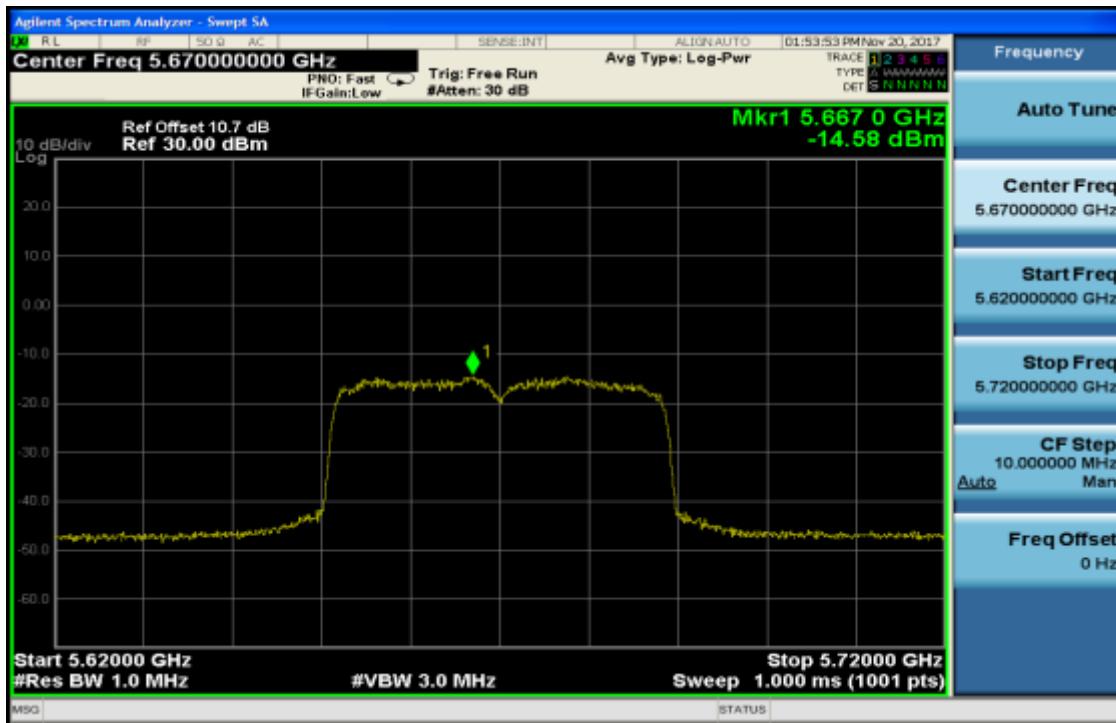
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## Peak Power Spectral Density Data Plot (CH High 5670 MHz)



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## 802.11ac VHT80, 5150~5250 MHz Peak Power Spectral Density Data Plot (CH Mid 5210 MHz)



## 802.11ac VHT80, 5250~5350 MHz Peak Power Spectral Density Data Plot (CH Mid 5290 MHz)



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## 802.11ac VHT80, 5470~5725 MHz Peak Power Spectral Density Data Plot (CH Low 5530 MHz)



## 802.11ac VHT80, 5470~5725 MHz Peak Power Spectral Density Data Plot (CH Low 5610 MHz)



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## 11. UNDESIRABLE RADIATED EMISSION MEASUREMENT1

### 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 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
3. For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
4. For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of -27 dBm/MHz.

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APPLICABLE TO	LIMIT	
FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r01	FIELD STRENGTH AT 3m	
	PK: 74 (dB $\mu$ V/m)	AV 54 (dB $\mu$ V/m)
APPLICABLE TO	EIRP LIMIT	FIELD STRENGTH AT 3m
15.407(b)(1)	RSS-247 §6.2.1 (2)	
15.407(b)(2)	RSS-247 §6.2.2 (2)	PK: -27 (dBm/MHz)
15.407(b)(3)	RSS-247 §6.2.3 (2)	PK: 68.3 (dB $\mu$ V/m)
15.407(b)(4)	RSS-247 §6.2.4 (4)	PK: -27 (dBm/MHz) PK: -17 (dBm/MHz)
15.407(b)(4)(i)	PK:-27 (dBm/MHz) *1 PK:10 (dBm/MHz) *2 PK:15.6 (dBm/MHz) *3 PK:27 (dBm/MHz) *4	PK: 68.2(dB $\mu$ V/m) *1 PK:105.2 (dB $\mu$ V/m) *2 PK: 110.8(dB $\mu$ V/m) *3 PK:122.2 (dB $\mu$ V/m) *4

\*1 beyond 75 MHz or more above of the bandedge.  
 \*2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.  
 \*3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.  
 \*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\*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 ( $\text{dB}\mu\text{V}/\text{m}$ ) =  $20 \log \text{Emission level } (\text{dB}\mu\text{V}/\text{m})$

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## 11.2 Measurement Equipment Used

SGS SAC-III					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
EMI Test Receiver	R&S	ESCI7	100760	05/11/2017	05/10/2018
Spectrum Analyzer	Agilent	E4446A	MY51100003	04/25/2017	04/24/2018
Loop Antenna	ETS-Lindgren	6502	148045	09/20/2017	09/19/2018
Bilog Antenna	SCHWAZBECK	VULB9168	378	12/19/2016	12/18/2017
Horn Antenna	Schwarzbeck	BBHA9120D	1441	08/04/2017	08/03/2018
Pre-Amplifier	Agilent	8447D	2944A07676	01/03/2017	01/02/2018
Pre-Amplifier	EMC Instruments Corp.	EMC0126530	980038	01/03/2017	01/02/2018
Turn Table	HD	DT420	N/A	N.C.R	N.C.R
Antenna Tower	ChamPro	AM-BS-4500-B	060776-ABS	N.C.R	N.C.R
Controller	ChamPro	EM1000	60776	N.C.R	N.C.R
Low Loss Cable	Huber Suhner	966_RX	9	01/05/2017	01/04/2018
3m Site NSA	SGS	966 chamber	N/A	07/01/2017	06/30/2018
Low Loss Cable	Huber Suhner	966 TX	1	01/05/2017	01/04/2018
Horn Antenna	Schwarzbeck	BBHA9170	184	12/12/2016	12/11/2017
Pre-Amplifier	EMC Instruments Corp.	EMC184045	980135	01/05/2017	01/04/2018

Note: N.C.R refers to Not Calibrated Required.

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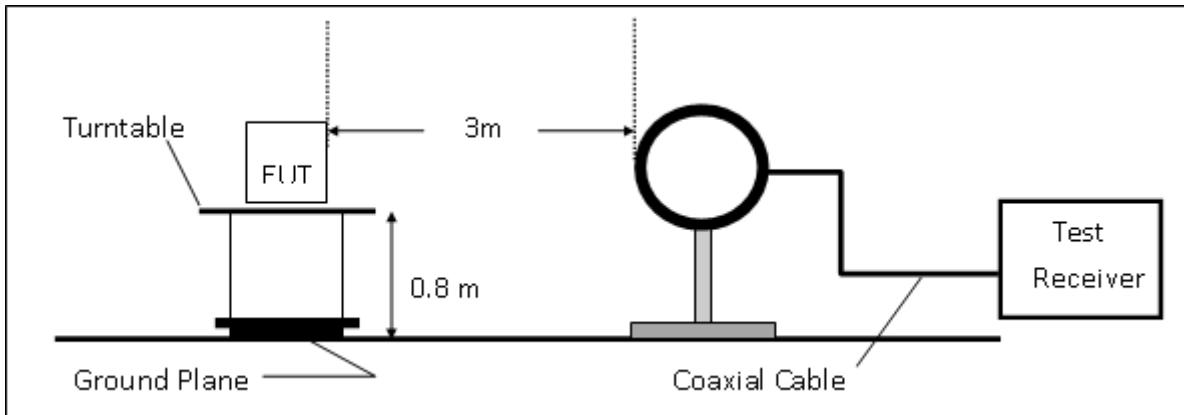
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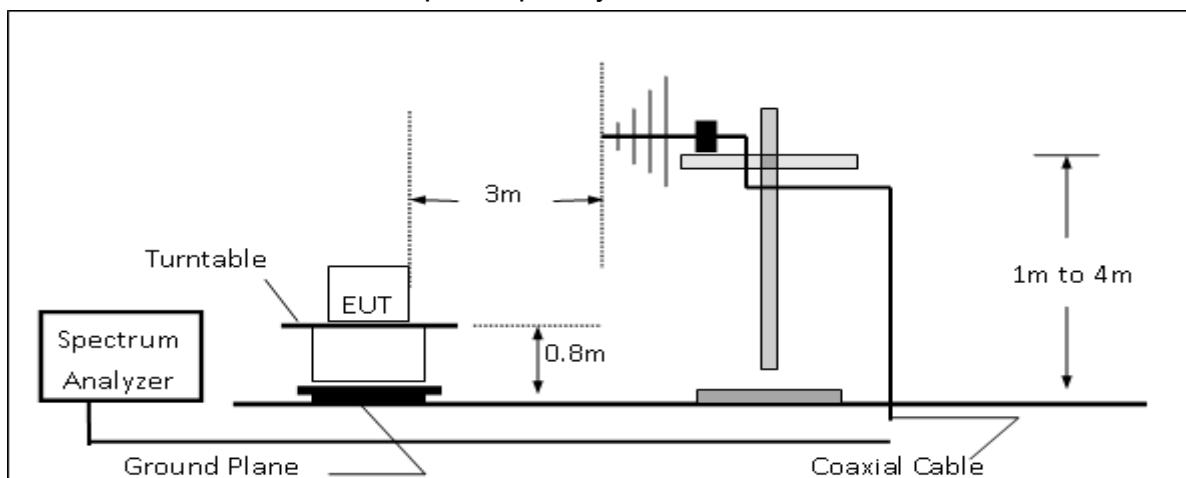
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### 11.3 Test SET-UP

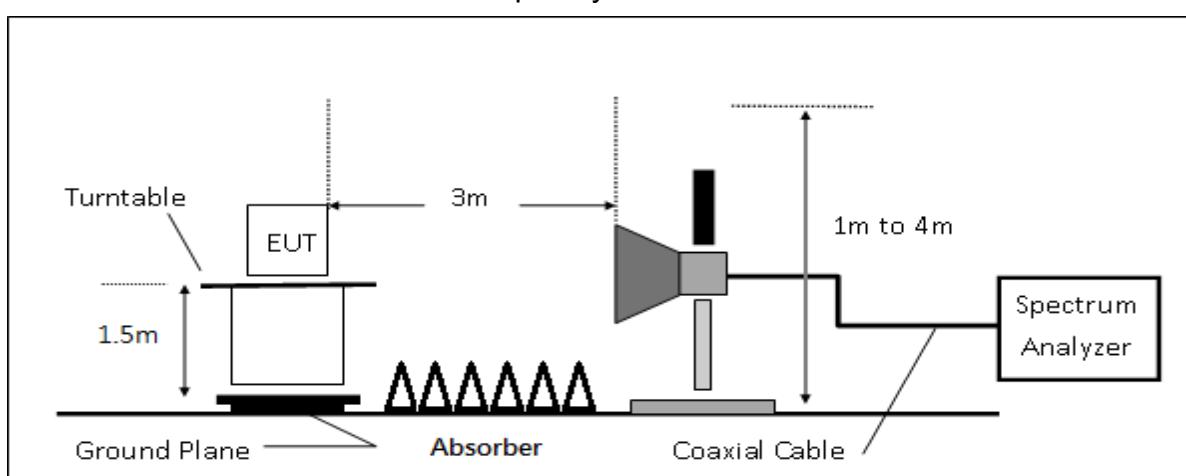
#### (A) Radiated Emission Test Set-UP Frequency Below 30MHz.



#### (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:

$$\text{FS} = \text{RA} + \text{AF} - \text{AG}$$

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

Actual FS(dB $\mu$ V/m) = SPA. Reading level(dB $\mu$ V) + Factor(dB)

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

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台灣檢驗科技股份有限公司

t (886-2) 2299-3279

f (886-2) 2298-0488

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**Note :**

“F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

## 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

Note: Refer to next page spectrum analyzer data chart and tabular data sheets.

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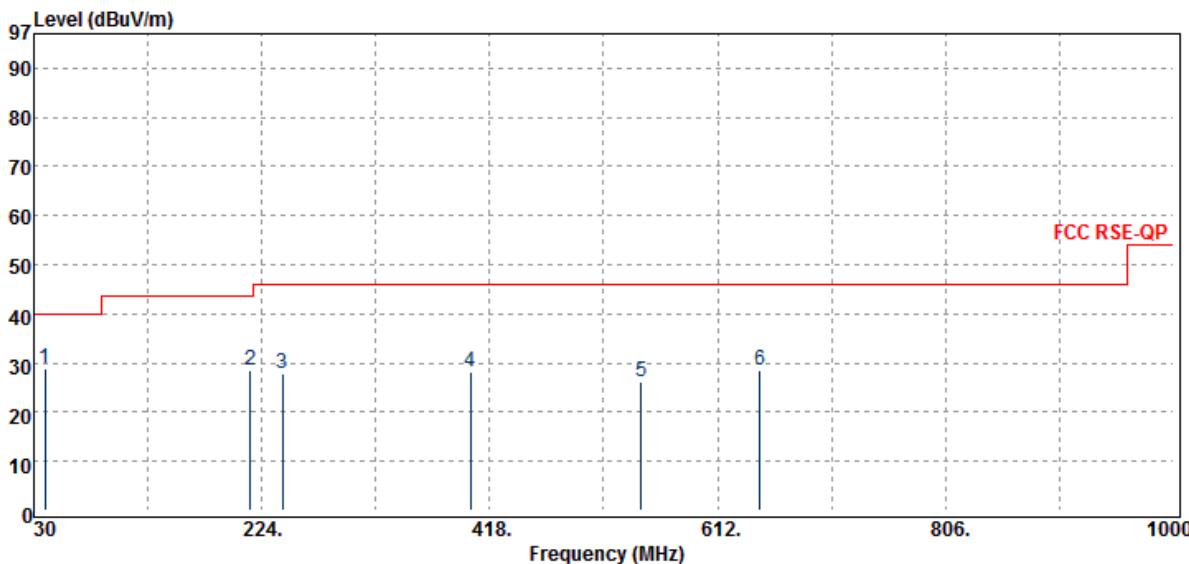
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**Radiated Spurious Emission Measurement Result****Below 1GHz Worst-Case Data:****802.11a 5150~5250 MHz**

Operation Band	:802.11aB1	Test Date	:2017-11-10
Fundamental Frequency	:5220 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Tin
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
			Level dB $\mu$ V				
39.70	S	Peak	37.45	-8.56	28.89	40.00	-11.11
214.30	S	Peak	38.03	-9.55	28.48	43.50	-15.02
241.46	S	Peak	35.75	-8.02	27.73	46.00	-18.27
401.51	S	Peak	32.21	-3.95	28.26	46.00	-17.74
547.01	S	Peak	27.90	-1.68	26.22	46.00	-19.78
647.89	S	Peak	28.16	0.42	28.58	46.00	-17.42

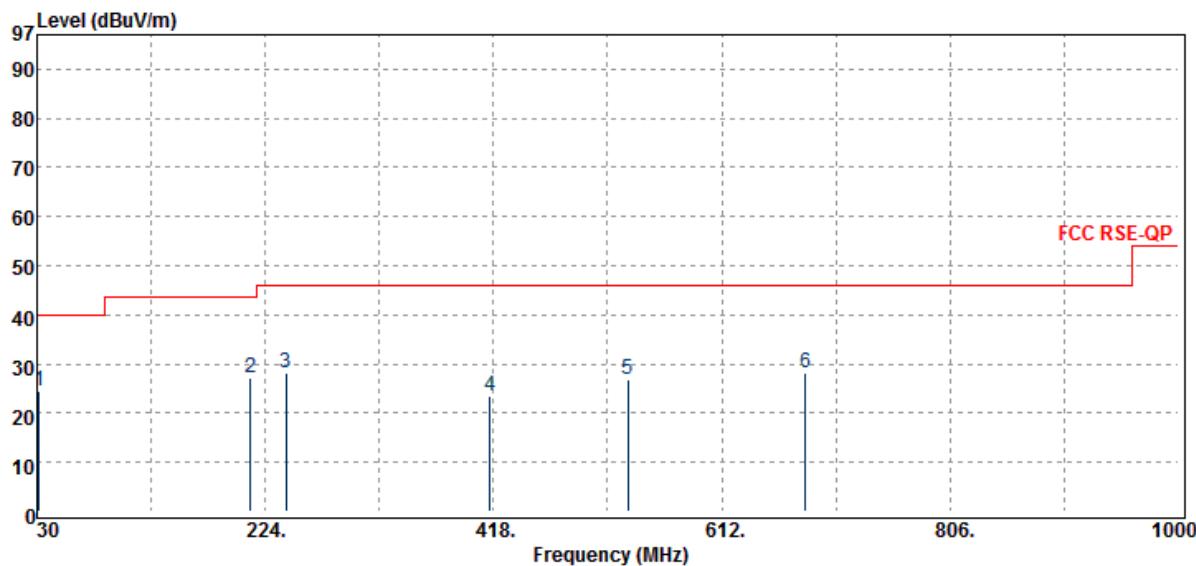
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Operation Band :802.11aB1  
Fundamental Frequency :5220 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E1 Plane

Test Date :2017-11-10  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum		Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
			Reading	Level dB $\mu$ V				
31.94	S	Peak	33.47	-9.11	24.36	40.00	-15.64	
211.39	S	Peak	36.87	-9.70	27.17	43.50	-16.33	
241.46	S	Peak	36.09	-8.02	28.07	46.00	-17.93	
415.09	S	Peak	26.83	-3.21	23.62	46.00	-22.38	
532.46	S	Peak	28.44	-1.68	26.76	46.00	-19.24	
682.81	S	Peak	27.15	1.10	28.25	46.00	-17.75	

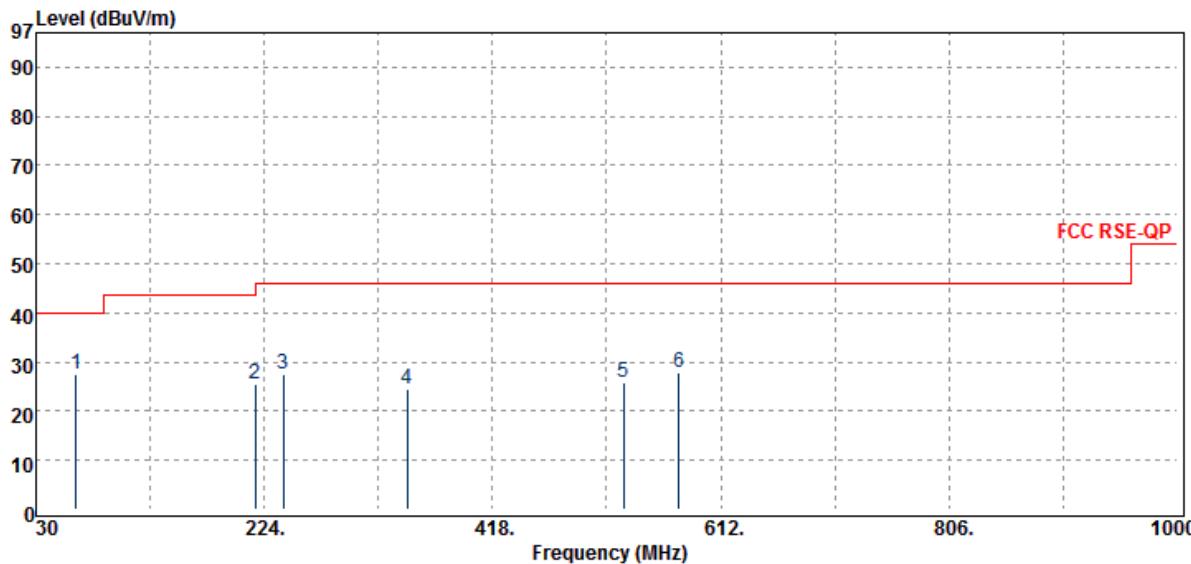
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**802.11a 5250~5350 MHz**

Operation Band	:802.11aB2	Test Date	:2017-11-10
Fundamental Frequency	:5300 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Tin
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum		Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
			Reading	Level dB $\mu$ V				
63.95	S	Peak	36.60	-8.93	27.67	40.00	-12.33	
216.24	S	Peak	35.10	-9.43	25.67	46.00	-20.33	
240.49	S	Peak	35.63	-8.04	27.59	46.00	-18.41	
345.25	S	Peak	29.58	-5.10	24.48	46.00	-21.52	
529.55	S	Peak	27.03	-1.25	25.78	46.00	-20.22	
576.11	S	Peak	28.42	-0.64	27.78	46.00	-18.22	

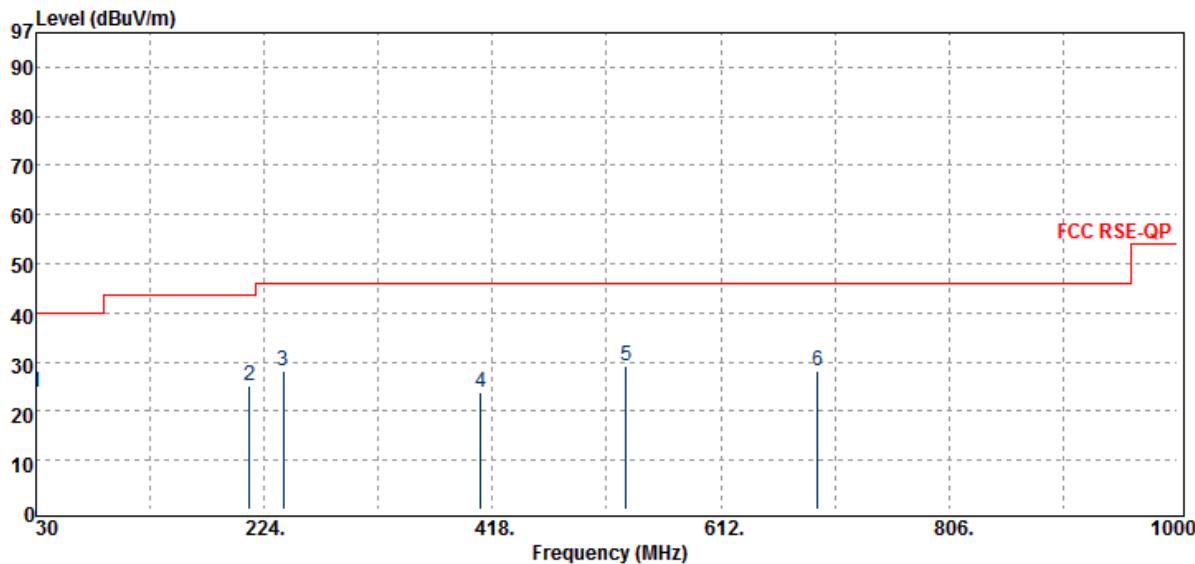
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Operation Band	:802.11aB2	Test Date	:2017-11-10
Fundamental Frequency	:5300 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Tin
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
			Level dB $\mu$ V				
30.00	S	Peak	32.91	-9.19	23.72	40.00	-16.28
211.39	S	Peak	34.83	-9.70	25.13	43.50	-18.37
240.49	S	Peak	36.34	-8.04	28.30	46.00	-17.70
408.30	S	Peak	27.35	-3.53	23.82	46.00	-22.18
531.49	S	Peak	30.66	-1.57	29.09	46.00	-16.91
694.45	S	Peak	26.84	1.36	28.20	46.00	-17.80

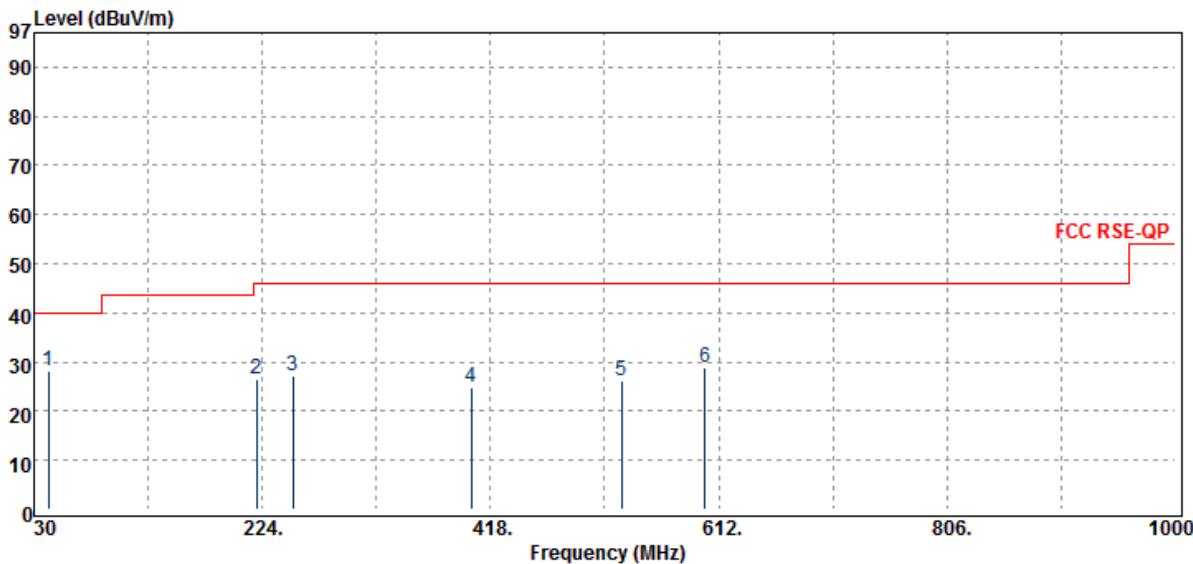
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## 802.11a, 5470~5725 MHz

Operation Band	:802.11aB3	Test Date	:2017-11-10
Fundamental Frequency	:5580 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Tin
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
			PK/QP/AV	Reading Level dB $\mu$ V				
42.61	S	Peak	36.40	-8.29	28.11	40.00	-11.89	
219.15	S	Peak	35.89	-9.28	26.61	46.00	-19.39	
250.19	S	Peak	35.25	-7.93	27.32	46.00	-18.68	
401.51	S	Peak	28.65	-3.95	24.70	46.00	-21.30	
529.55	S	Peak	27.38	-1.25	26.13	46.00	-19.87	
600.36	S	Peak	29.02	-0.14	28.88	46.00	-17.12	

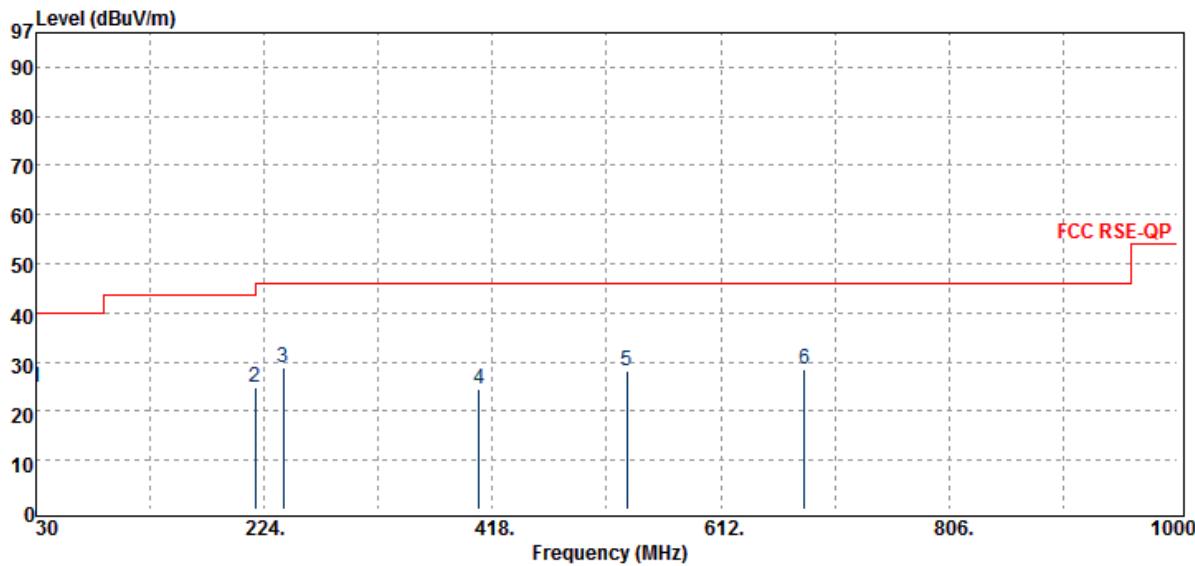
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Operation Band :802.11aB3  
Fundamental Frequency :5580 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E1 Plane

Test Date :2017-11-10  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum		Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
			Reading	Level dB $\mu$ V				
30.00	S	Peak	34.05	-9.19	24.86	40.00	-15.14	
216.24	S	Peak	34.20	-9.43	24.77	46.00	-21.23	
240.49	S	Peak	36.95	-8.04	28.91	46.00	-17.09	
406.36	S	Peak	28.11	-3.59	24.52	46.00	-21.48	
532.46	S	Peak	29.71	-1.68	28.03	46.00	-17.97	
682.81	S	Peak	27.42	1.10	28.52	46.00	-17.48	

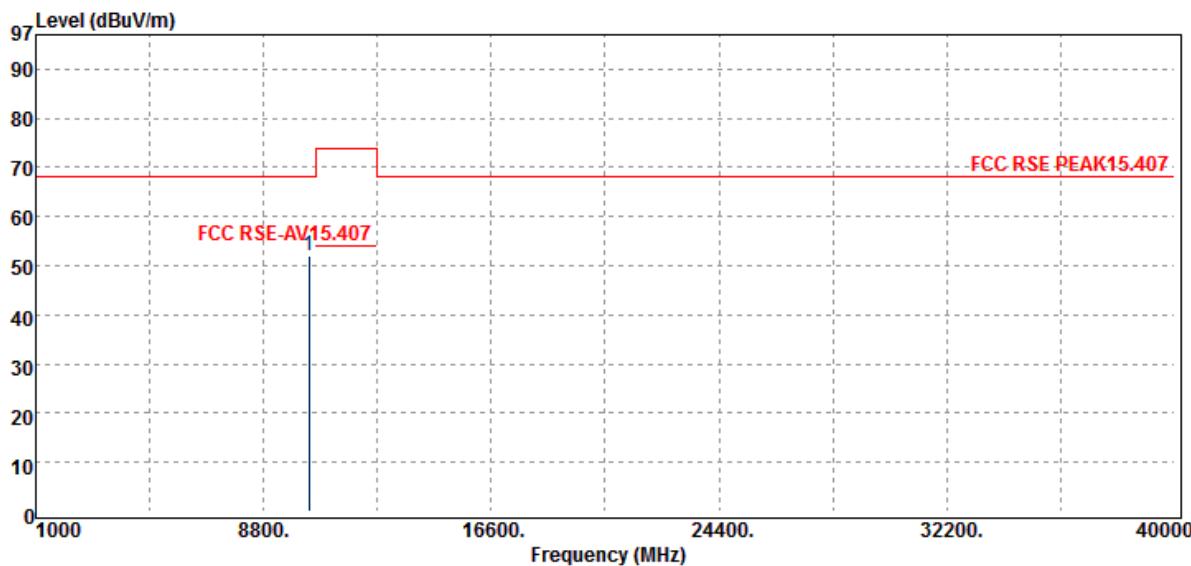
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**Above 1GHz Worst-Case Data:****Radiated Spurious Emission Measurement Result 802.11a, 5150~5250 MHz**

Operation Band	:802.11aB1	Test Date	:2017-11-16
Fundamental Frequency	:5180 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH LOW	Engineer	:Tin
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
			Reading Level dB $\mu$ V				
10360.00	H	Peak	33.79	18.29	52.08	68.30	-16.22

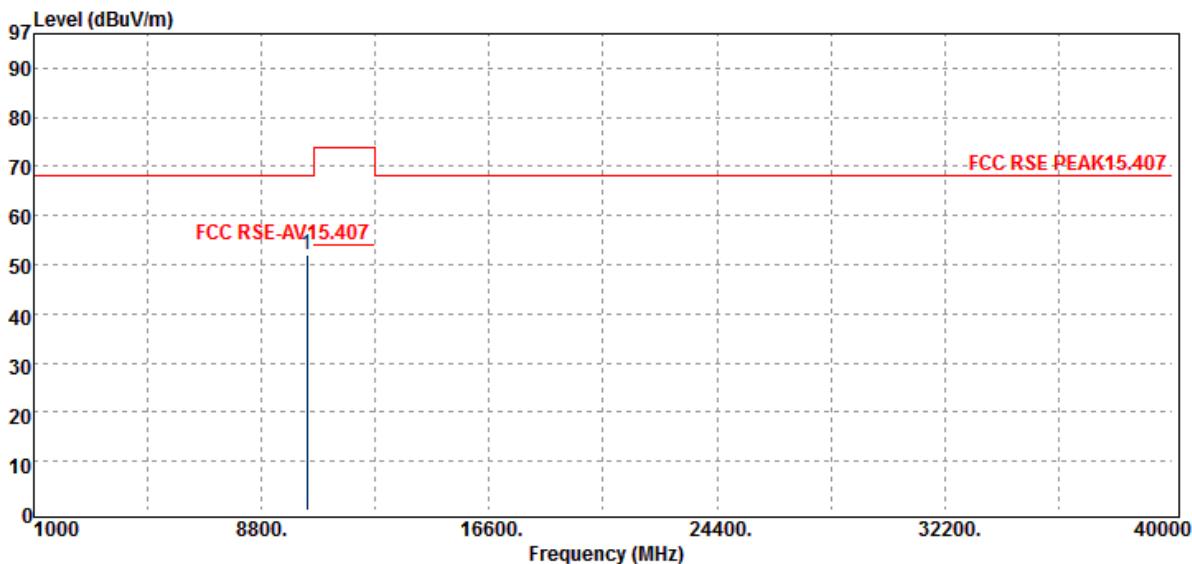
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Operation Band :802.11aB1  
Fundamental Frequency :5180 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
F/H/E/S		PK/QP/AV					
10360.00	H	Peak	33.73	18.29	52.02	68.30	-16.28

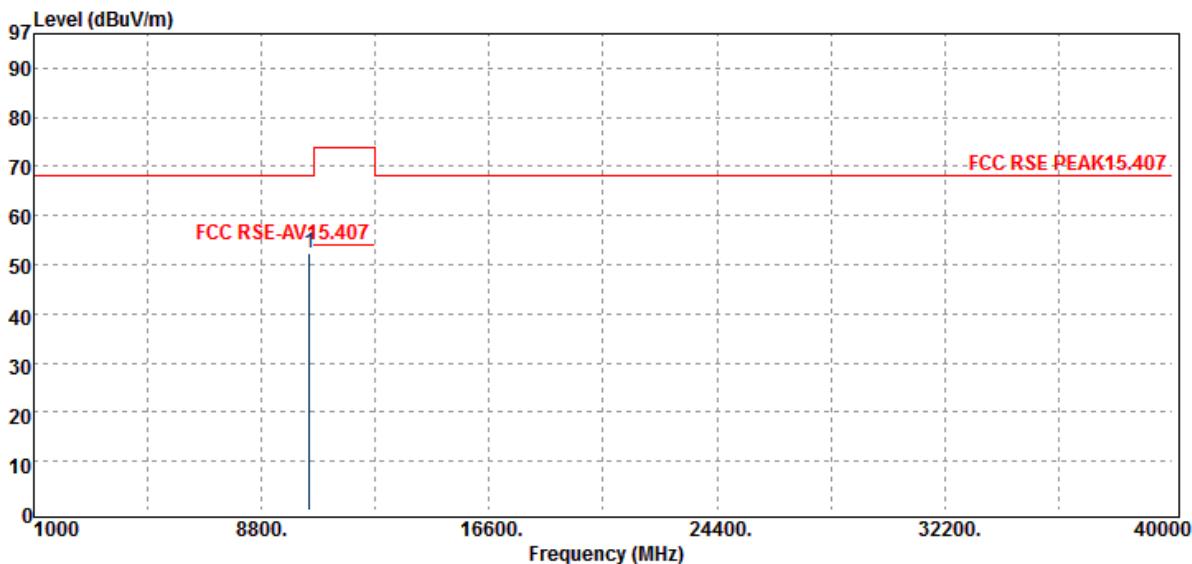
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Operation Band :802.11aB1  
Fundamental Frequency :5220 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
10440.00	H	Peak	33.80	18.69	52.49	68.30	-15.81

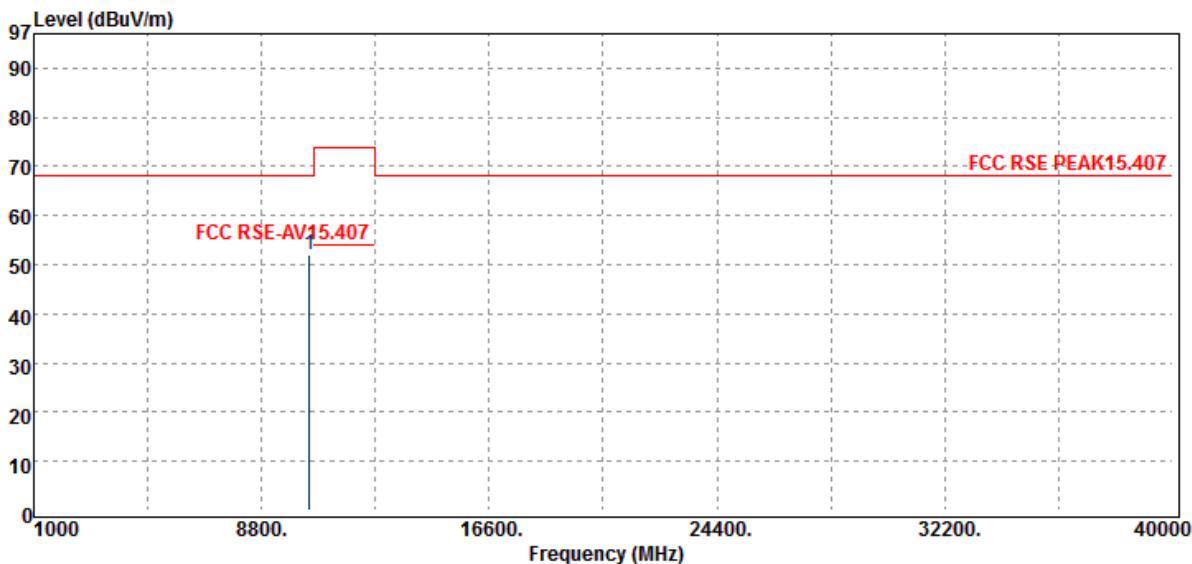
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Operation Band :802.11aB1  
Fundamental Frequency :5220 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
10440.00	H	Peak	33.42	18.69	52.11	68.30	-16.19

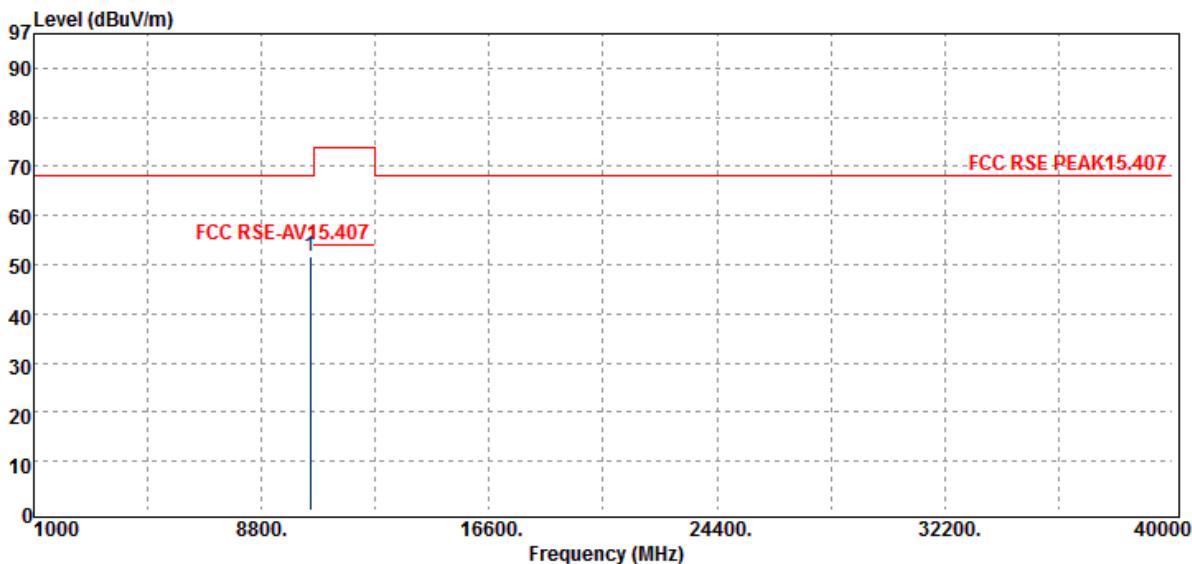
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Operation Band :802.11aB1  
Fundamental Frequency :5240 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
10480.00	H	Peak	33.24	18.30	51.54	68.30	-16.76

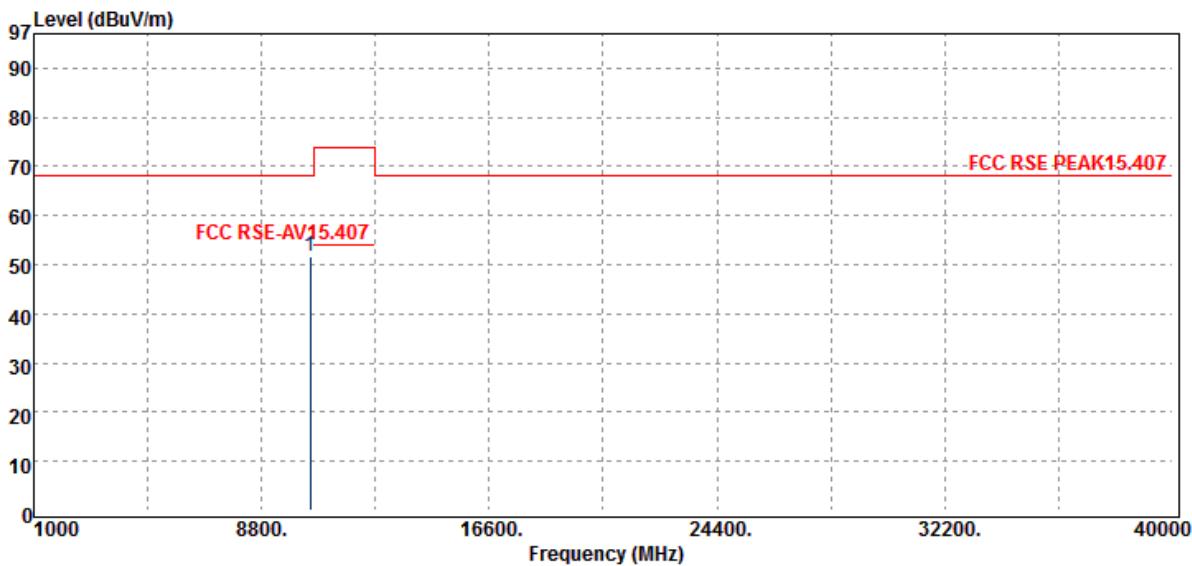
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Operation Band :802.11aB1  
Fundamental Frequency :5240 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
10480.00	H	Peak	33.29	18.30	51.59	68.30	-16.71

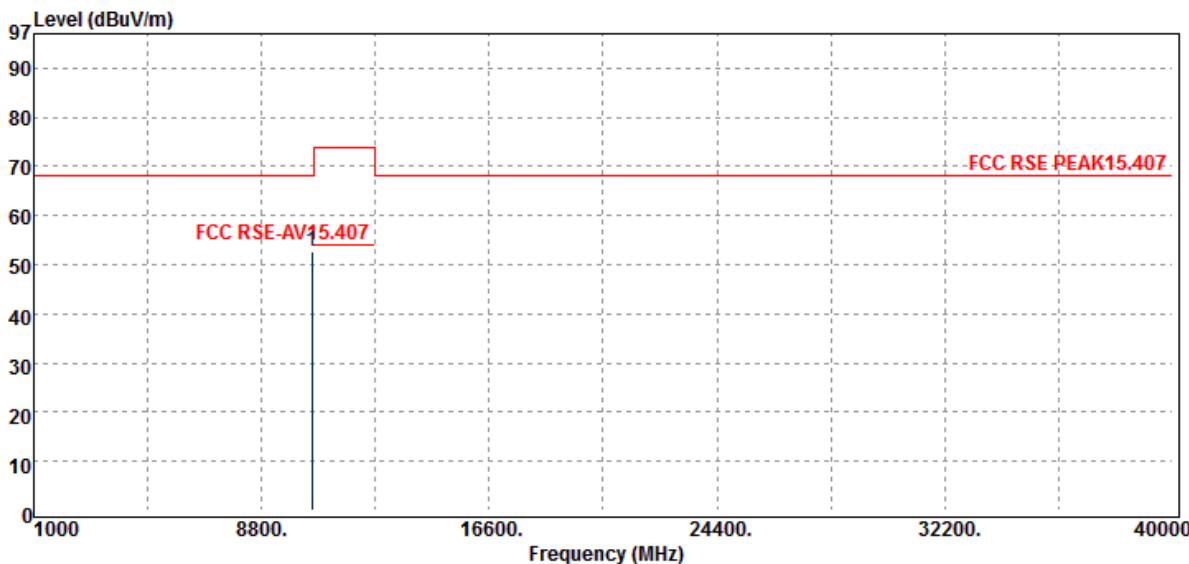
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**Radiated Spurious Emission Measurement Result 802.11a, 5250MHz-5350MHz**

Operation Band :802.11aB2 Test Date :2017-11-16  
Fundamental Frequency :5260 MHz Temp./Humi. :21 deg\_C / 62 RH  
Operation Mode :Tx CH LOW Engineer :Tin  
EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
10520.00	H	Peak	33.21	19.38	52.59	68.30	-15.71

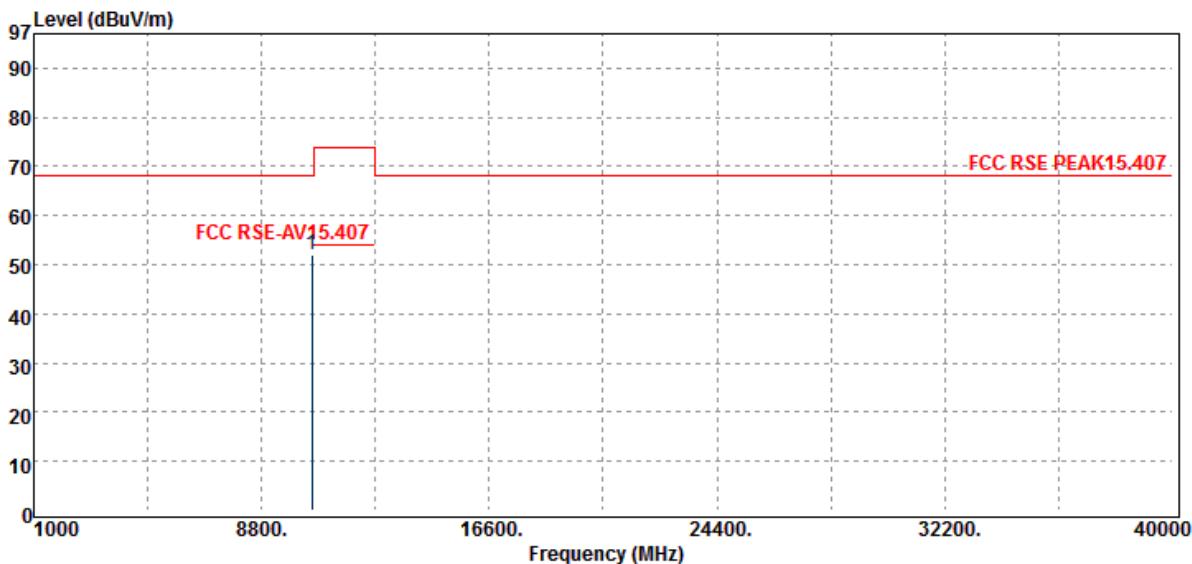
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Operation Band :802.11aB2  
Fundamental Frequency :5260 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



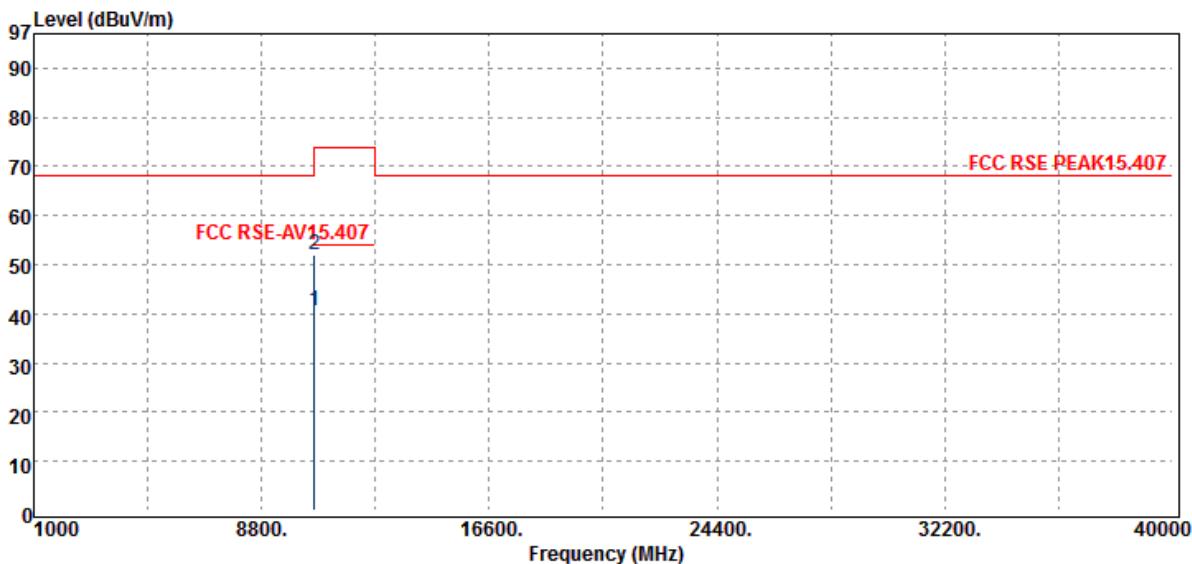
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
10520.00	H	Peak	32.75	19.38	52.13	68.30	-16.17

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Operation Band	:802.11aB2	Test Date	:2017-11-16
Fundamental Frequency	:5300 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Tin
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:VERTICAL



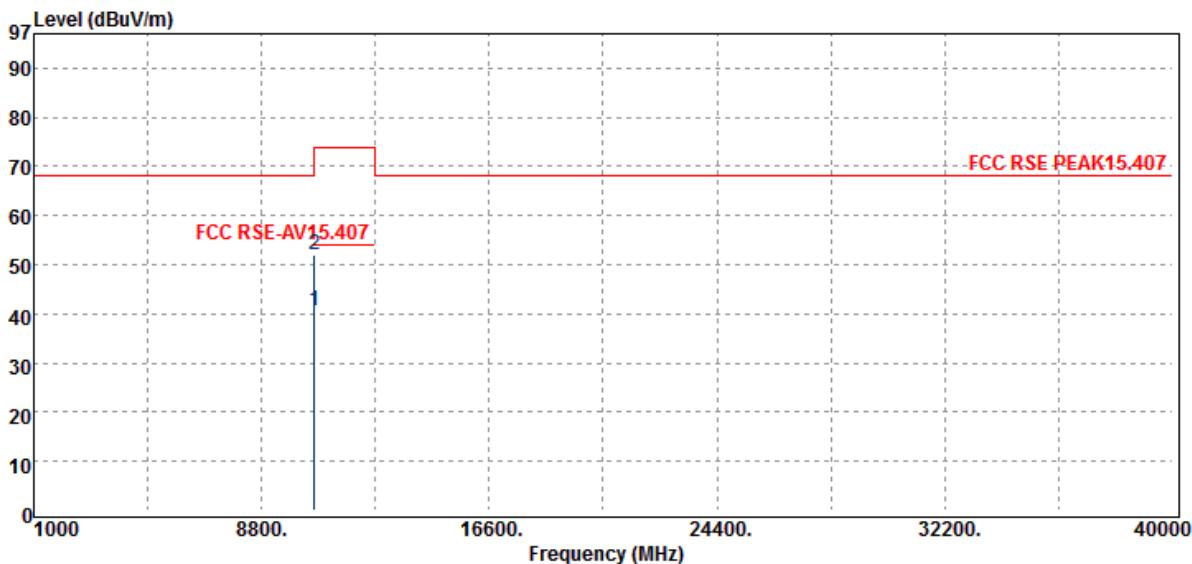
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Safe Margin
			Reading Level dB $\mu$ V			dB $\mu$ V/m	dB
10600.00	H	Average	21.60	18.91	40.51	54.00	-13.49
10600.00	H	Peak	33.11	18.91	52.02	74.00	-21.98

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Operation Band	:802.11aB2	Test Date	:2017-11-16
Fundamental Frequency	:5300 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Tin
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Safe Margin
			Reading Level dB $\mu$ V			dB $\mu$ V/m	dB
10600.00	H	Average	21.84	18.91	40.75	54.00	-13.25
10600.00	H	Peak	33.02	18.91	51.93	74.00	-22.07

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台灣檢驗科技股份有限公司

t (886-2) 2299-3279

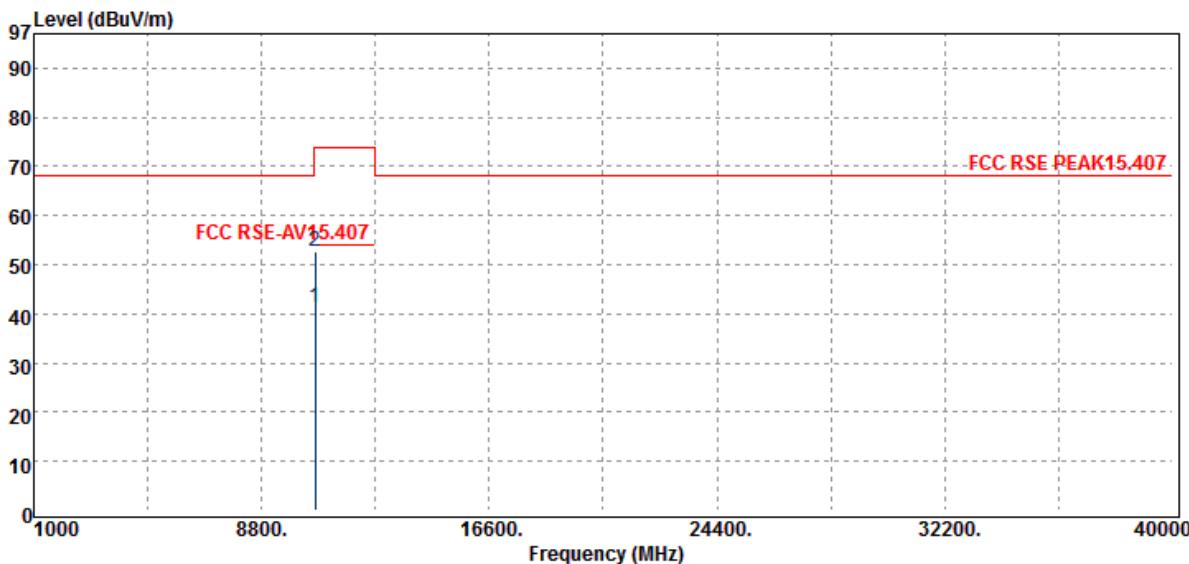
f (886-2) 2298-0488

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Member of SGS Group

Operation Band :802.11aB2  
Fundamental Frequency :5320 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



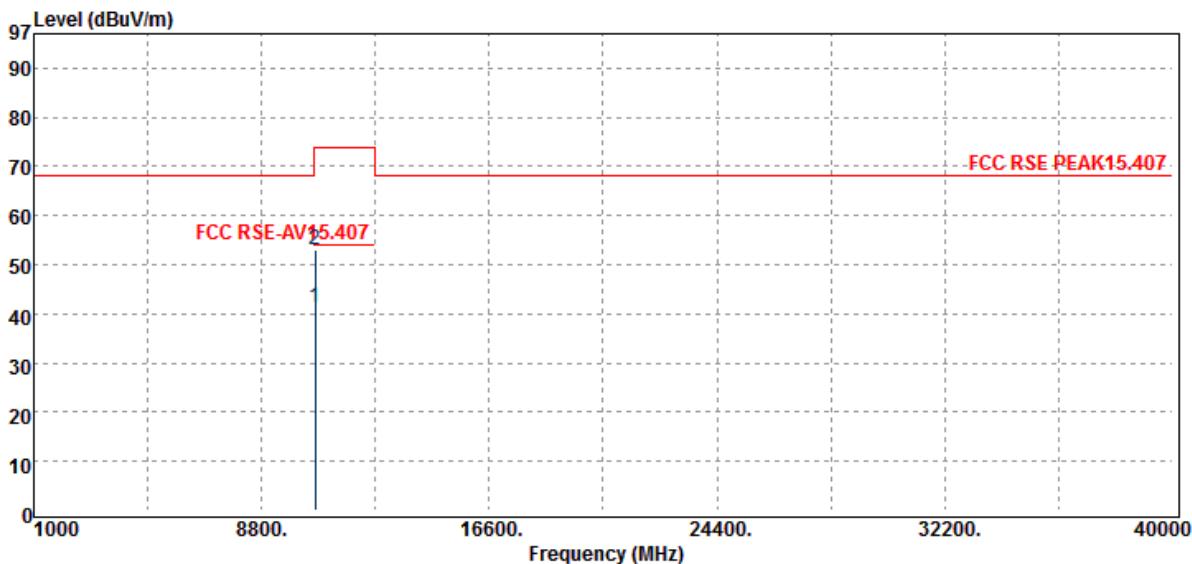
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Safe Margin
			Reading Level dB $\mu$ V				
10640.00	H	Average	22.02	19.19	41.21	54.00	-12.79
10640.00	H	Peak	33.67	19.19	52.86	74.00	-21.14

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Operation Band	:802.11aB2	Test Date	:2017-11-16
Fundamental Frequency	:5320 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Tin
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Safe Margin
			Reading Level dB $\mu$ V				
10640.00	H	Average	22.15	19.19	41.34	54.00	-12.66
10640.00	H	Peak	33.90	19.19	53.09	74.00	-20.91

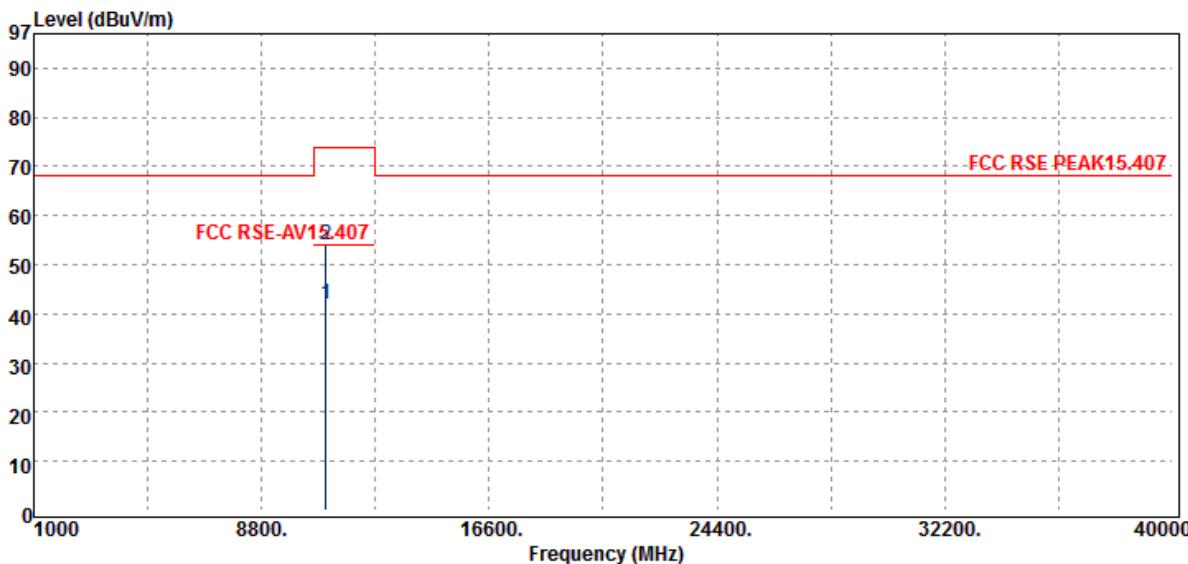
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**Radiated Spurious Emission Measurement Result 802.11a, 5470~5725 MHz**

Operation Band :802.11aB3 Test Date :2017-11-16  
Fundamental Frequency :5500 MHz Temp./Humi. :21 deg\_C / 62 RH  
Operation Mode :Tx CH LOW Engineer :Tin  
EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
11000.00	H	Average	21.85	20.16	42.01	54.00	-11.99
11000.00	H	Peak	33.76	20.16	53.92	74.00	-20.08

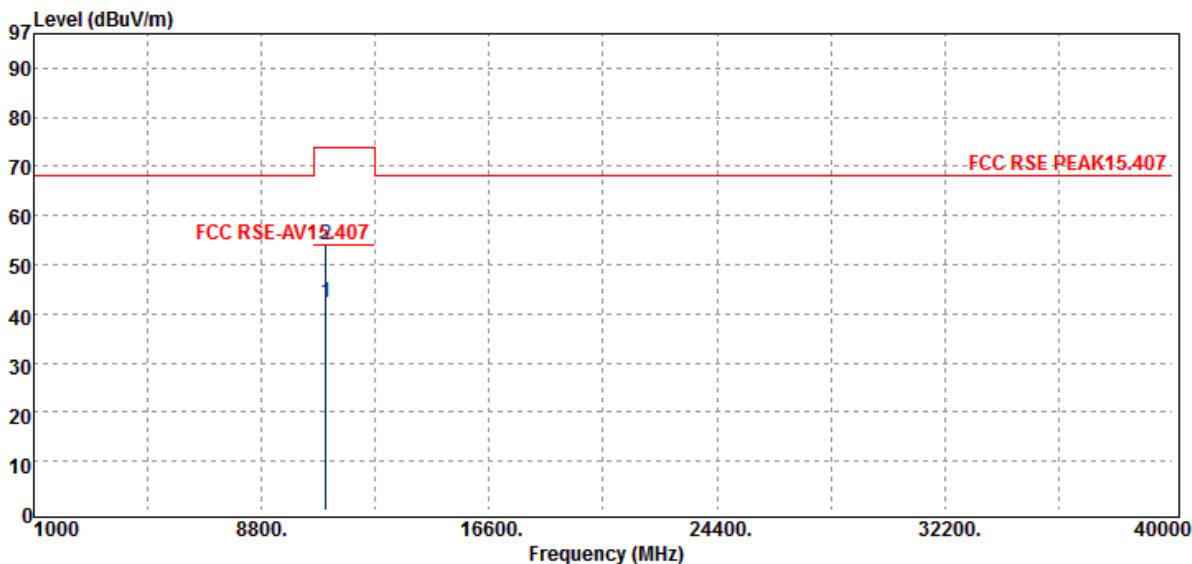
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Operation Band :802.11aB3  
Fundamental Frequency :5500 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Safe Margin
			Reading Level dB $\mu$ V				
11000.00	H	Average	22.09	20.16	42.25	54.00	-11.75
11000.00	H	Peak	33.79	20.16	53.95	74.00	-20.05

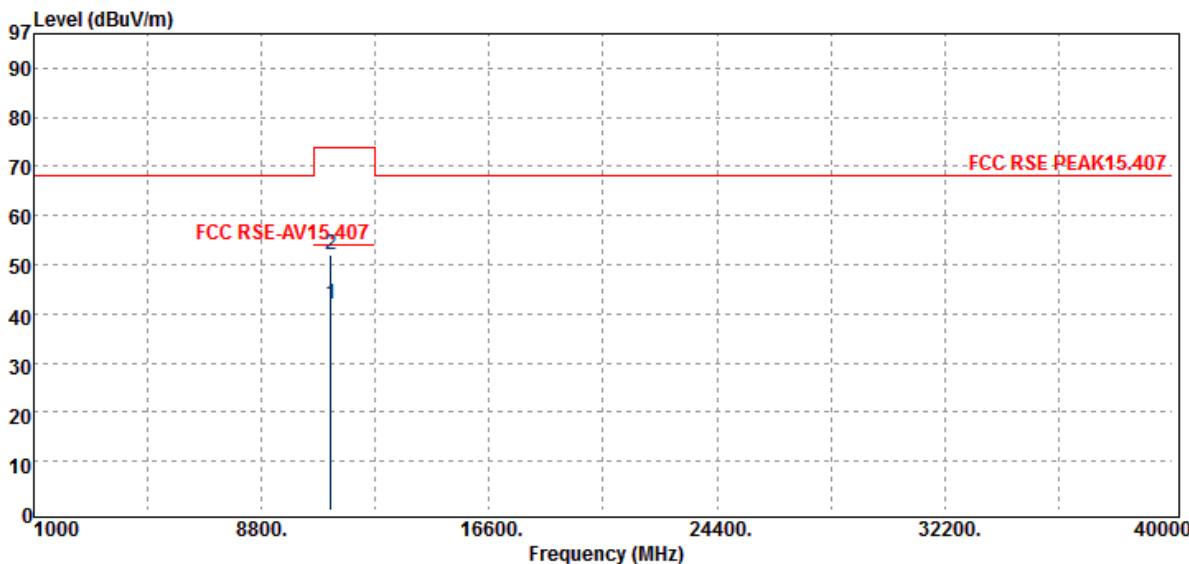
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Operation Band :802.11aB3  
Fundamental Frequency :5580 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Safe Margin
			Reading Level dB $\mu$ V				
11160.00	H	Average	21.66	20.44	42.10	54.00	-11.90
11160.00	H	Peak	31.64	20.44	52.08	74.00	-21.92

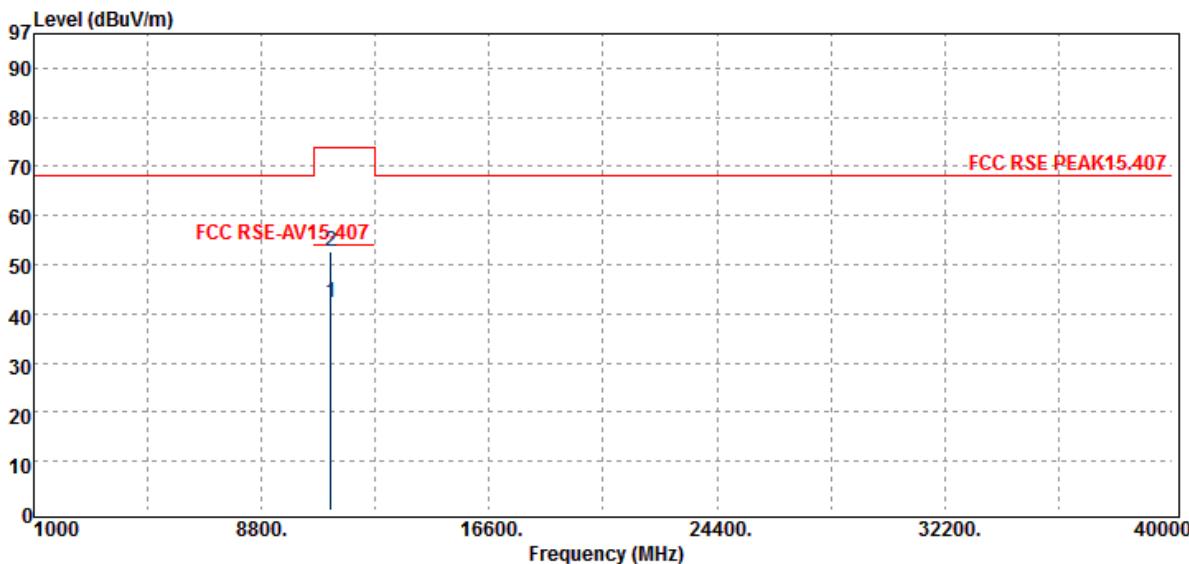
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Operation Band :802.11aB3  
Fundamental Frequency :5580 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Safe Margin
			Reading Level dB $\mu$ V				
11160.00	H	Average	21.97	20.44	42.41	54.00	-11.59
11160.00	H	Peak	32.35	20.44	52.79	74.00	-21.21

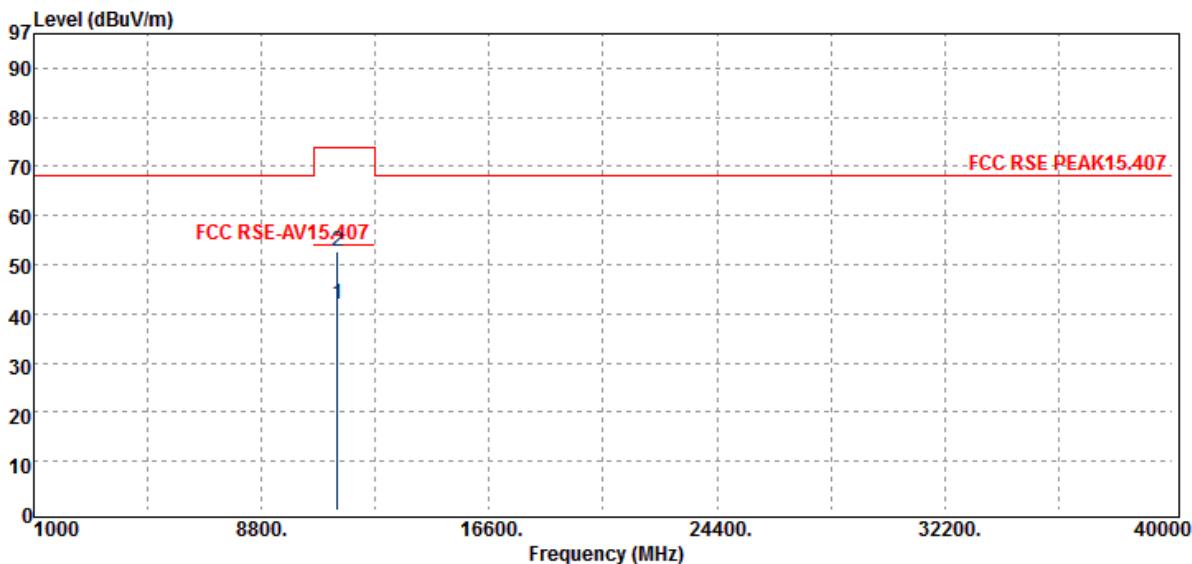
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Operation Band :802.11aB3  
Fundamental Frequency :5700 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



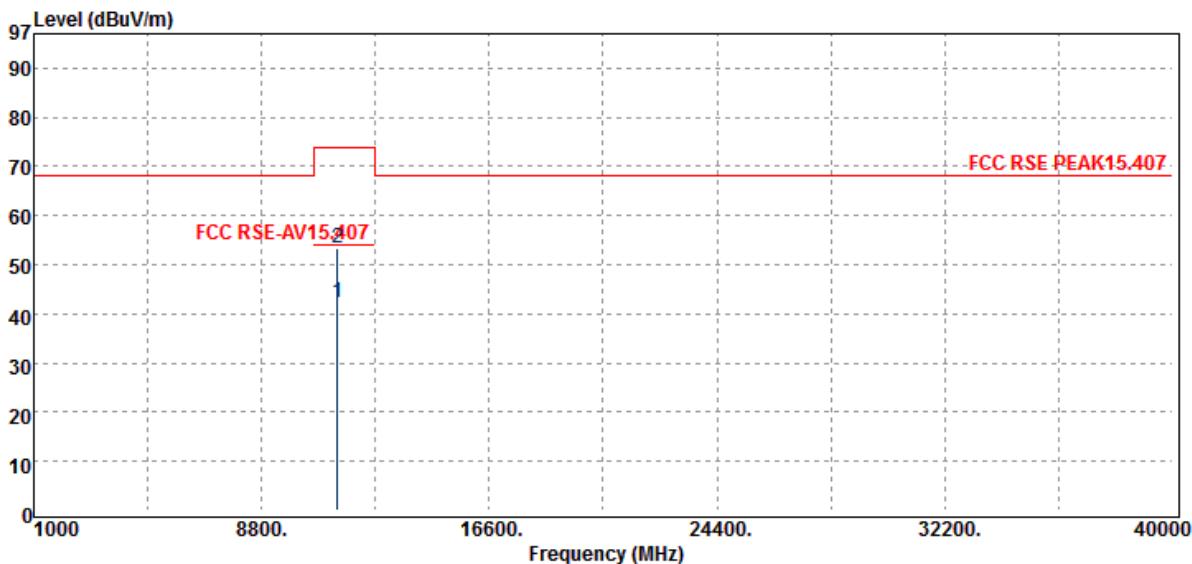
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Safe Margin
			Reading Level dB $\mu$ V				
11400.00	H	Average	21.56	20.56	42.12	54.00	-11.88
11400.00	H	Peak	31.98	20.56	52.54	74.00	-21.46

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Operation Band	:802.11aB3	Test Date	:2017-11-16
Fundamental Frequency	:5700 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Tin
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Safe Margin
			Reading Level dB $\mu$ V				
11400.00	H	Average	21.86	20.56	42.42	54.00	-11.58
11400.00	H	Peak	32.70	20.56	53.26	74.00	-20.74

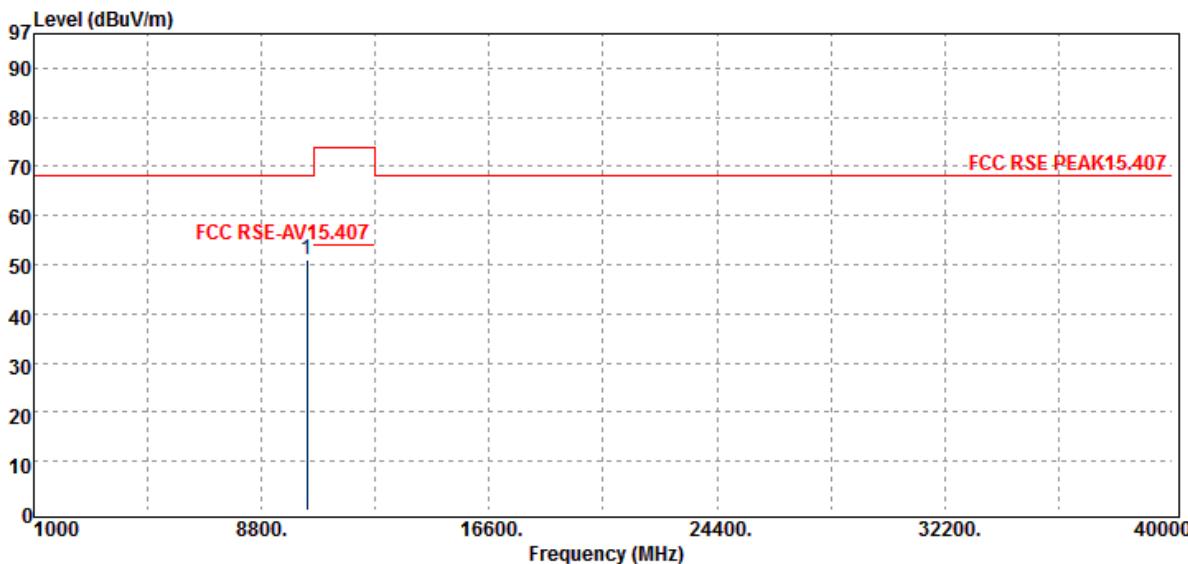
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**Radiated Spurious Emission Measurement Result 802.11n HT20, 5150~5250 MHz**

Operation Band :802.11n20B1 Test Date :2017-11-16  
Fundamental Frequency :5180 MHz Temp./Humi. :21 deg\_C / 62 RH  
Operation Mode :Tx CH LOW Engineer :Tin  
EUT Pol. :E1 Plane Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
10360.00	H	Peak	32.85	18.29	51.14	68.30	-17.16

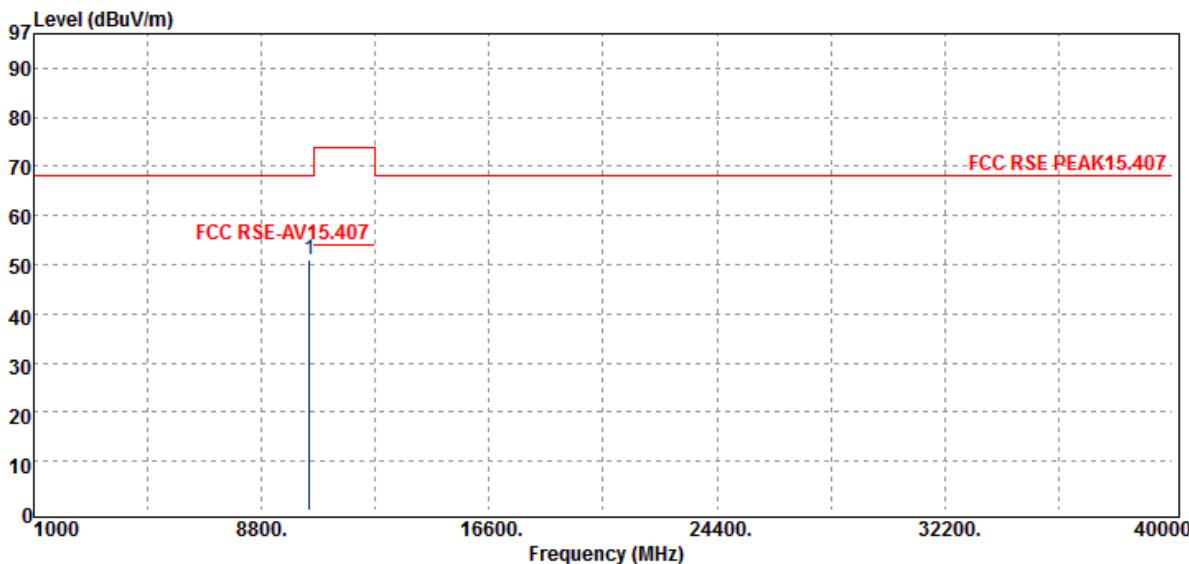
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Operation Band :802.11n20B1  
Fundamental Frequency :5220 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note	Detector Mode	Spectrum Reading Level	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
F/H/E/S	PK/QP/AV	dB $\mu$ V					
10440.00	H	Peak	32.37	18.69	51.06	68.30	-17.24

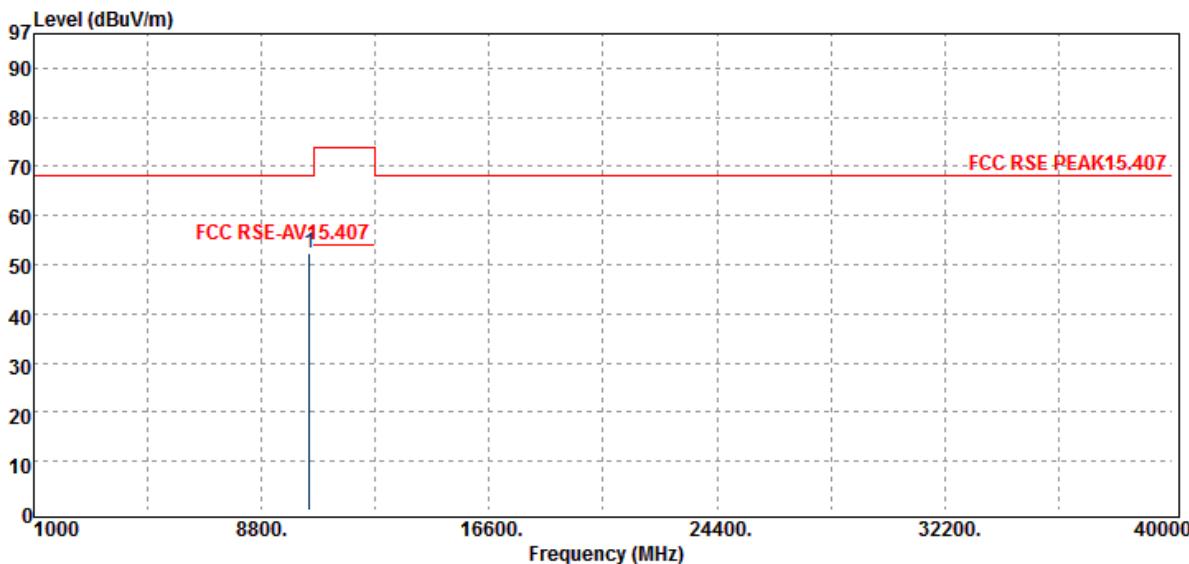
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Operation Band :802.11n20B1  
Fundamental Frequency :5220 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
10440.00	H	Peak	33.69	18.69	52.38	68.30	-15.92

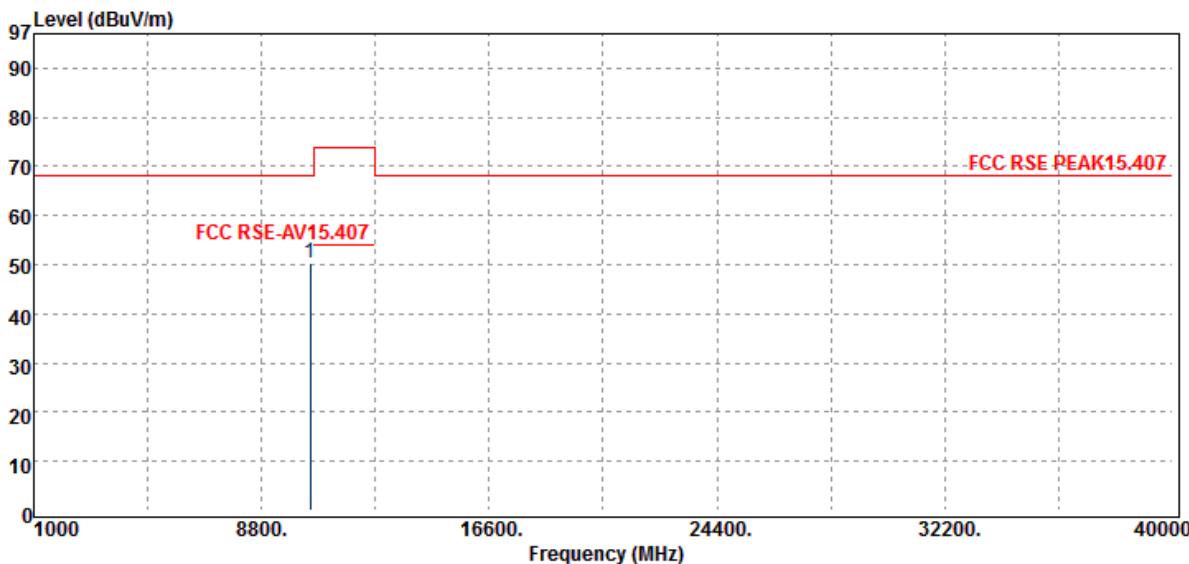
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Operation Band :802.11n20B1  
Fundamental Frequency :5240 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
10480.00	H	Peak	32.13	18.30	50.43	68.30	-17.87

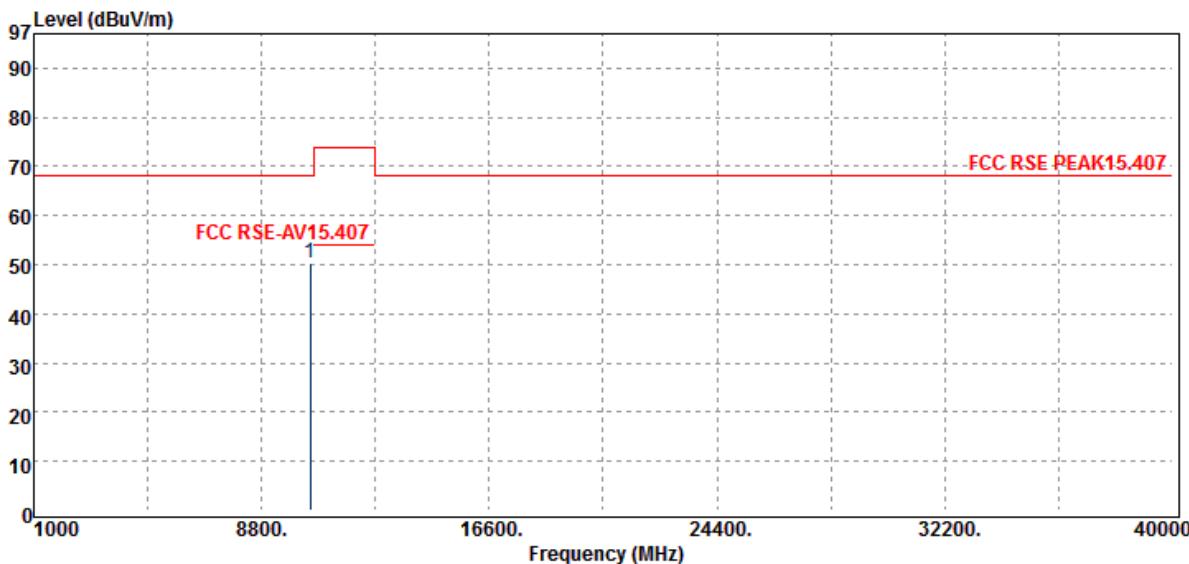
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Operation Band :802.11n20B1  
Fundamental Frequency :5240 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
10480.00	H	Peak	32.21	18.30	50.51	68.30	-17.79

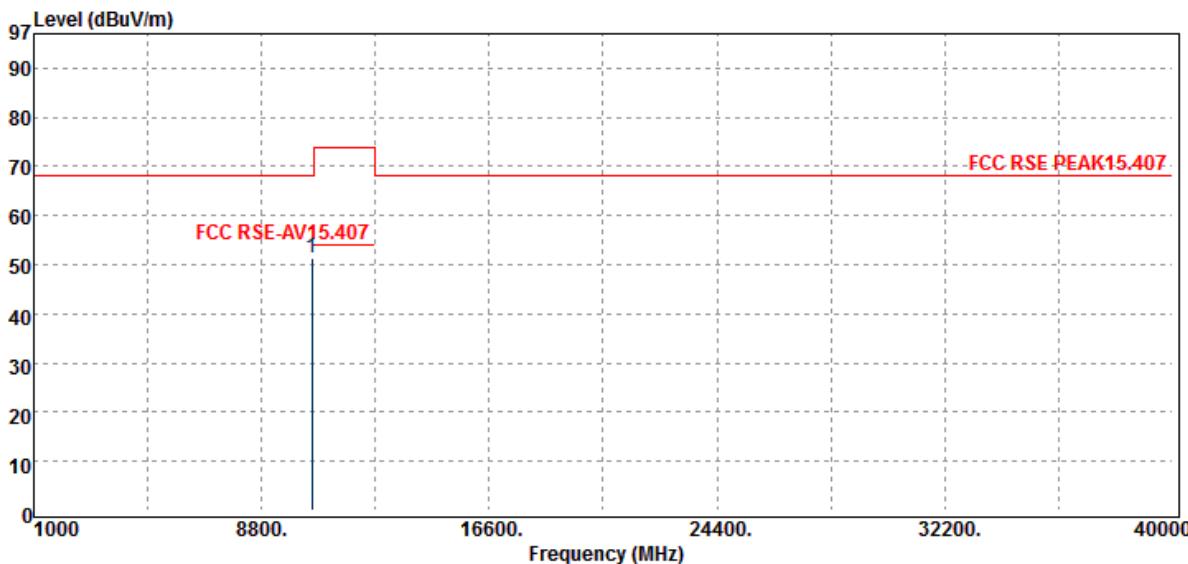
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**Radiated Spurious Emission Measurement Result 802.11n HT20, 5250~5350 MHz**

Operation Band :802.11n20B2 Test Date :2017-11-16  
Fundamental Frequency :5260 MHz Temp./Humi. :21 deg\_C / 62 RH  
Operation Mode :Tx CH LOW Engineer :Tin  
EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
10520.00	H	Peak	32.02	19.38	51.40	68.30	-16.90

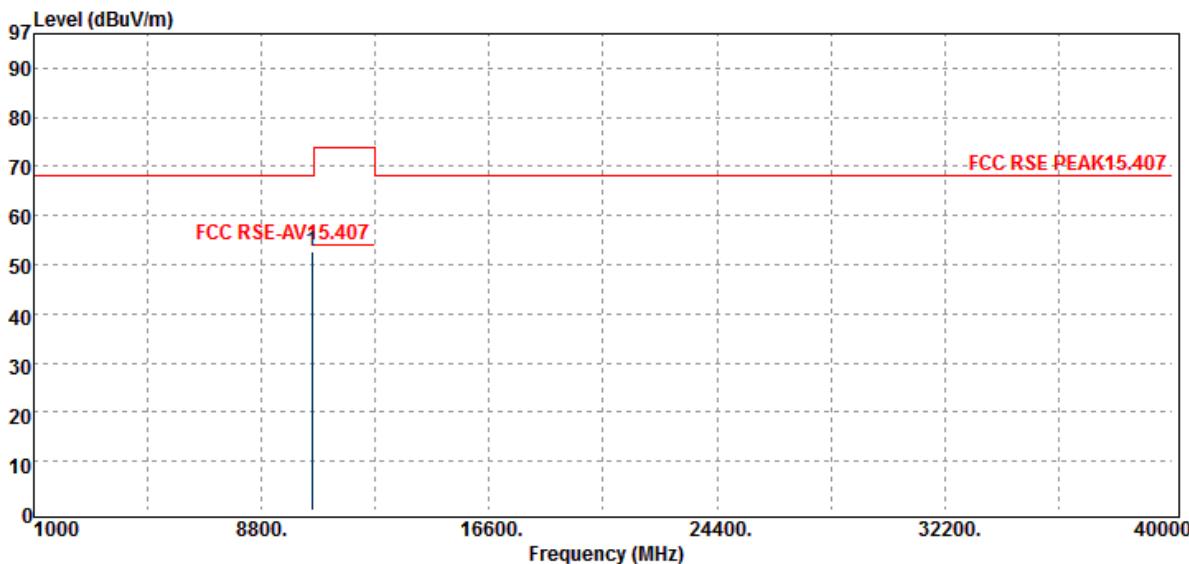
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Operation Band :802.11n20B2  
Fundamental Frequency :5260 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
10520.00	H	Peak	33.26	19.38	52.64	68.30	-15.66

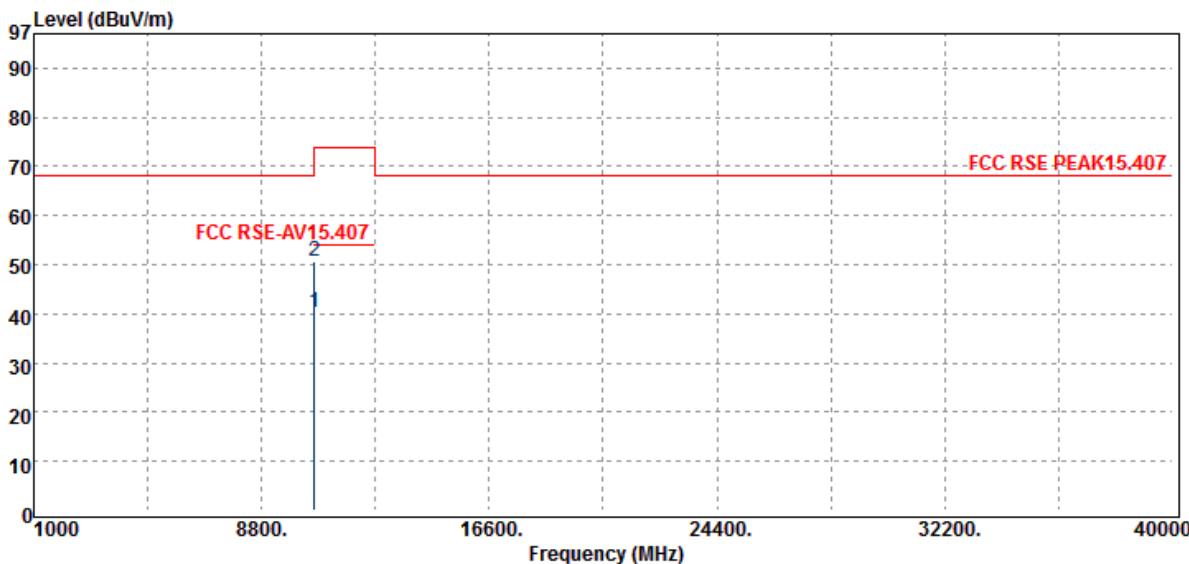
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Operation Band :802.11n20B2  
Fundamental Frequency :5300 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level dBrV	Factor dB	Actual FS dBrV/m	Limit @3m dBrV/m	Safe Margin dB
10600.00	H	Average	21.33	18.91	40.24	54.00	-13.76
10600.00	H	Peak	31.81	18.91	50.72	74.00	-23.28

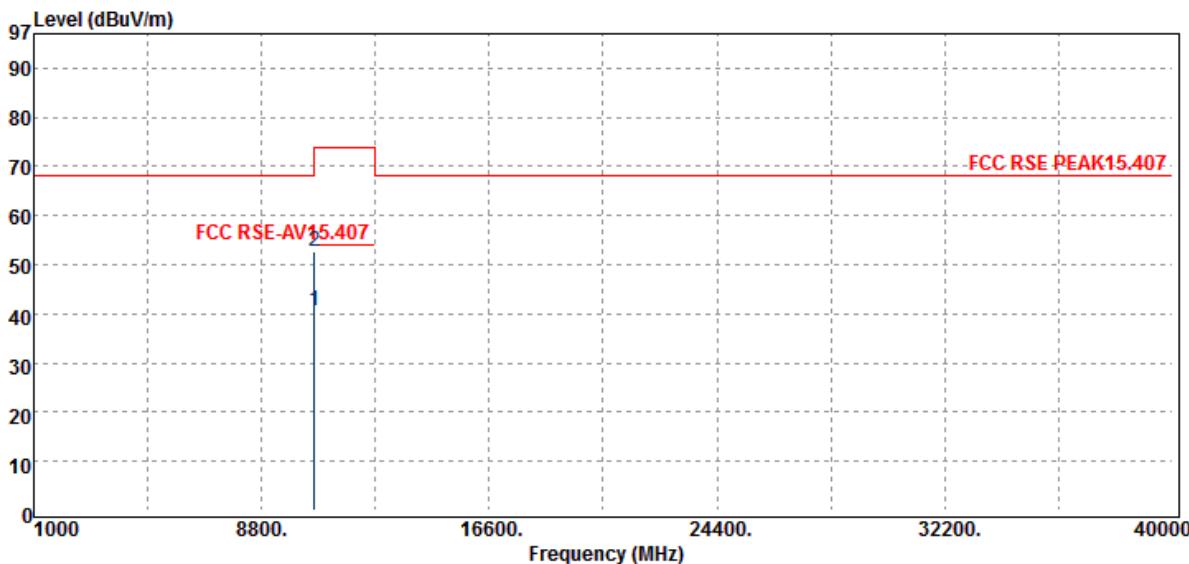
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Operation Band :802.11n20B2  
Fundamental Frequency :5300 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Safe Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
10600.00	H	Average	21.79	18.91	40.70	54.00	-13.30
10600.00	H	Peak	33.73	18.91	52.64	74.00	-21.36

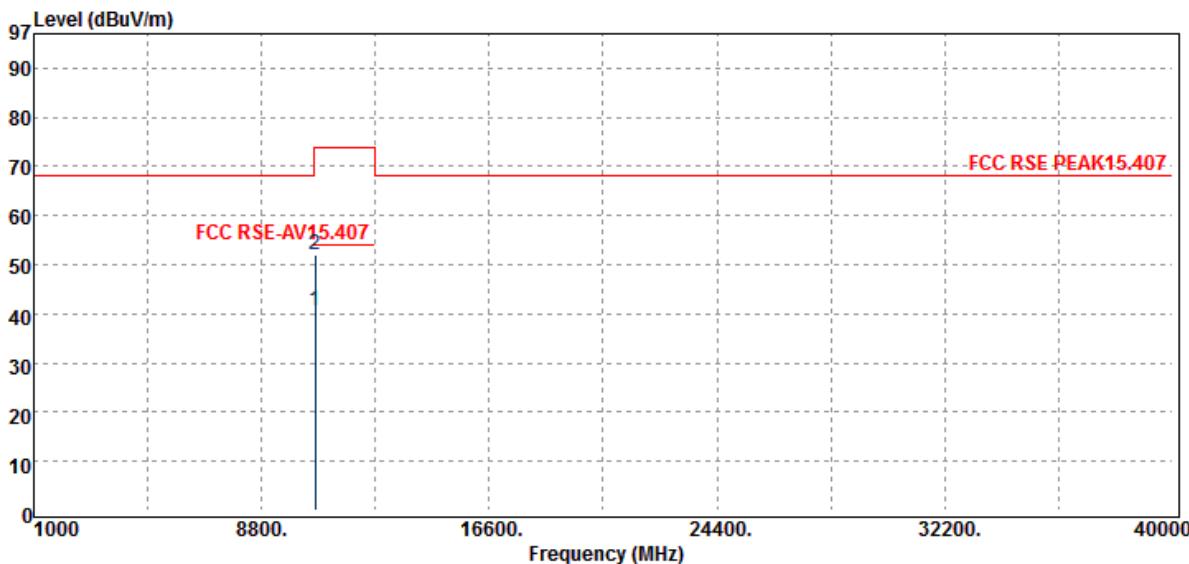
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Operation Band :802.11n20B2  
Fundamental Frequency :5320 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Safe Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
10640.00	H	Average	21.45	19.19	40.64	54.00	-13.36
10640.00	H	Peak	32.75	19.19	51.94	74.00	-22.06

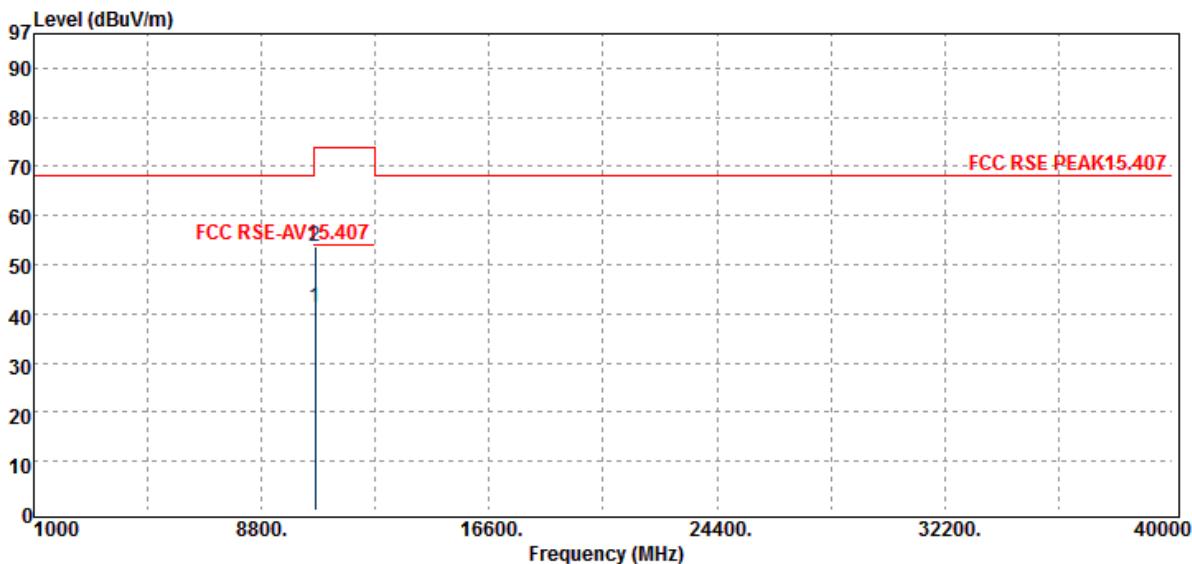
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Operation Band :802.11n20B2  
Fundamental Frequency :5320 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Safe Margin
			Reading Level dB $\mu$ V				
10640.00	H	Average	21.94	19.19	41.13	54.00	-12.87
10640.00	H	Peak	34.60	19.19	53.79	74.00	-20.21

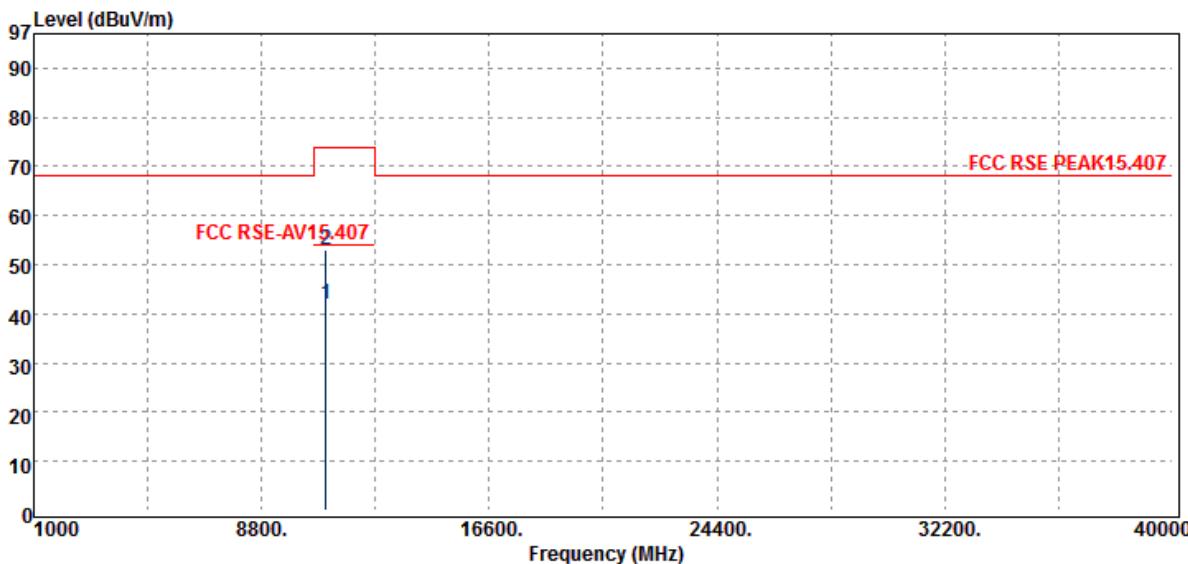
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**Radiated Spurious Emission Measurement Result 802.11n HT20, 5470~5725 MHz**

Operation Band :802.11n20B3 Test Date :2017-11-16  
Fundamental Frequency :5500 MHz Temp./Humi. :21 deg\_C / 62 RH  
Operation Mode :Tx CH LOW Engineer :Tin  
EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Safe Margin
			Reading Level dB $\mu$ V				
11000.00	H	Average	21.74	20.16	41.90	54.00	-12.10
11000.00	H	Peak	32.89	20.16	53.05	74.00	-20.95

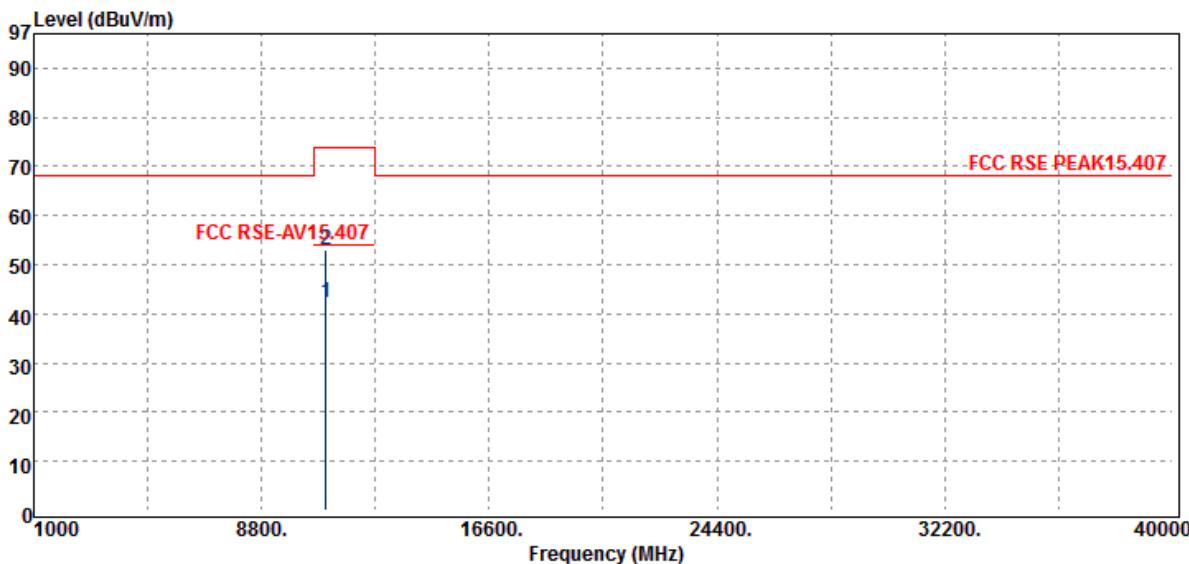
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Operation Band :802.11n20B3  
Fundamental Frequency :5500 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



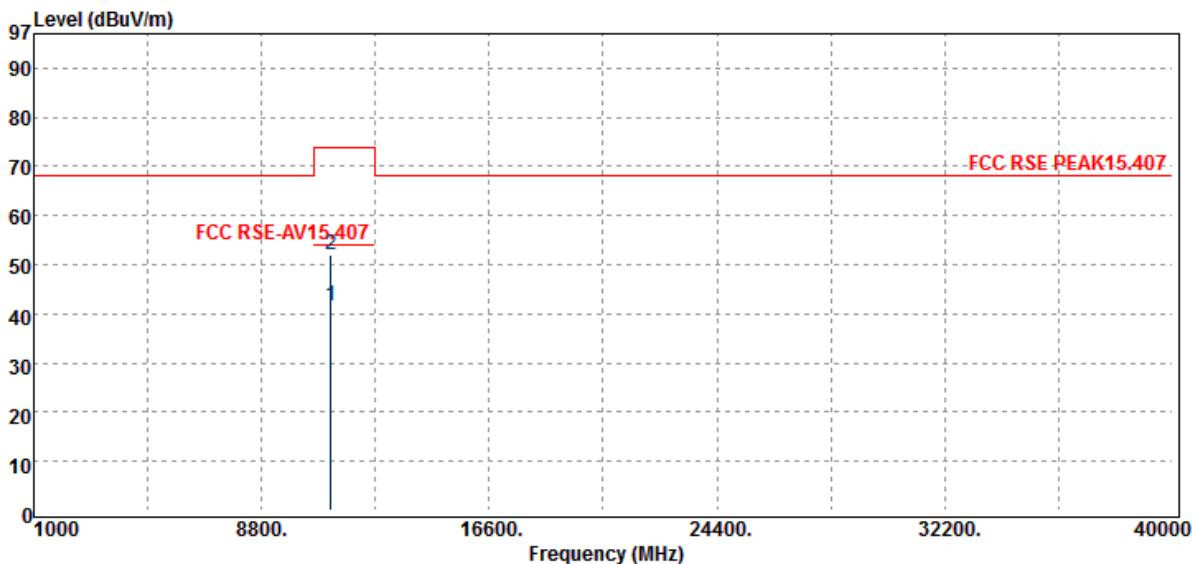
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
11000.00	H	Average	22.12	20.16	42.28	54.00	-11.72
11000.00	H	Peak	32.91	20.16	53.07	74.00	-20.93

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Operation Band	:802.11n20B3	Test Date	:2017-11-16
Fundamental Frequency	:5580 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Tin
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Safe Margin
			Reading Level dBμV				
11160.00	H	Average	21.30	20.44	41.74	54.00	-12.26
11160.00	H	Peak	31.55	20.44	51.99	74.00	-22.01

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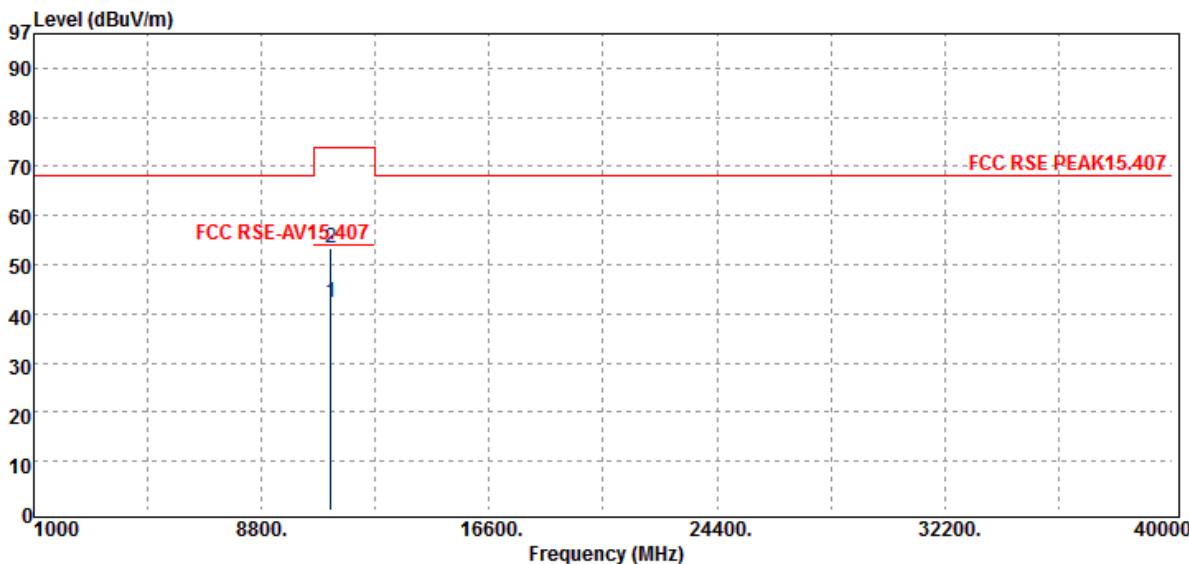
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Operation Band :802.11n20B3  
Fundamental Frequency :5580 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Safe Margin
			Reading Level dB $\mu$ V				
11160.00	H	Average	21.70	20.44	42.14	54.00	-11.86
11160.00	H	Peak	32.97	20.44	53.41	74.00	-20.59

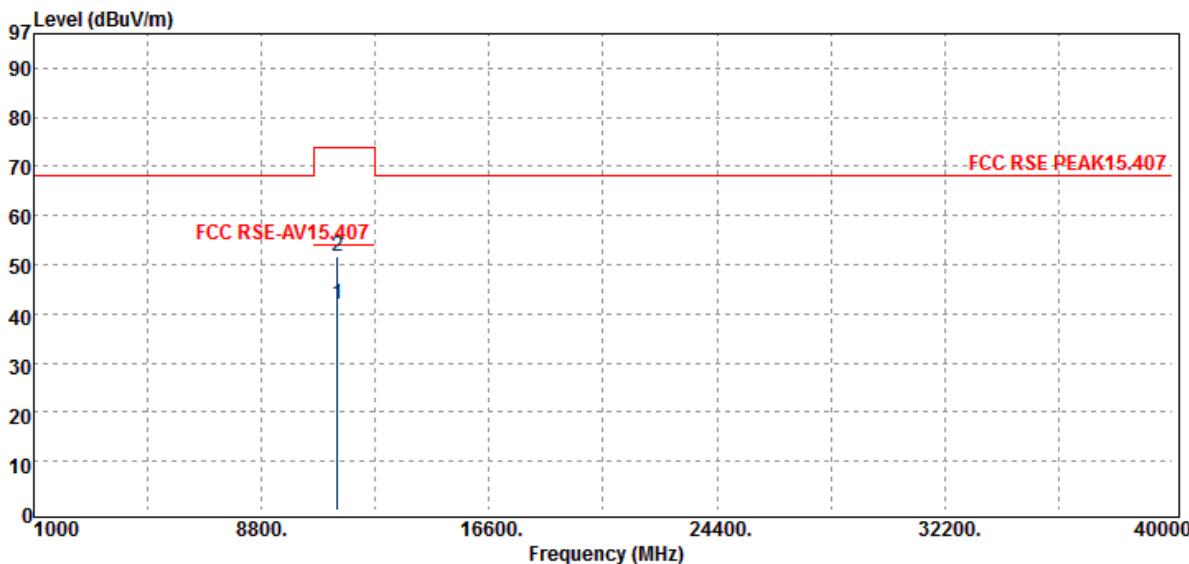
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Operation Band :802.11n20B3  
Fundamental Frequency :5700 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Safe Margin
			Reading Level dB $\mu$ V				
11400.00	H	Average	21.27	20.56	41.83	54.00	-12.17
11400.00	H	Peak	31.27	20.56	51.83	74.00	-22.17

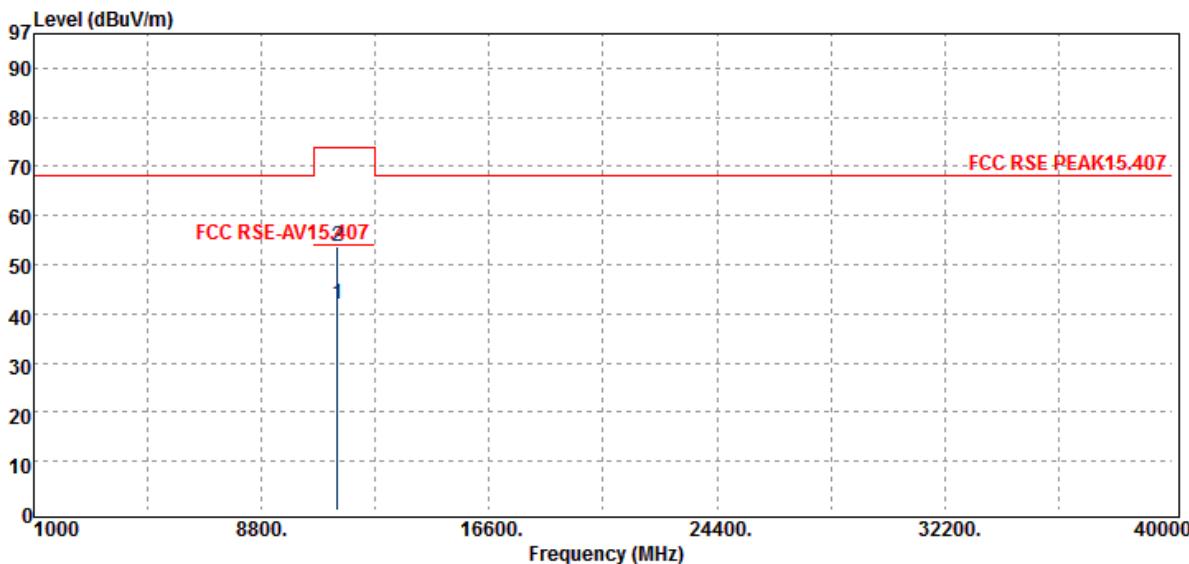
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Operation Band :802.11n20B3  
Fundamental Frequency :5700 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
11400.00	H	Average	21.55	20.56	42.11	54.00	-11.89
11400.00	H	Peak	33.00	20.56	53.56	74.00	-20.44

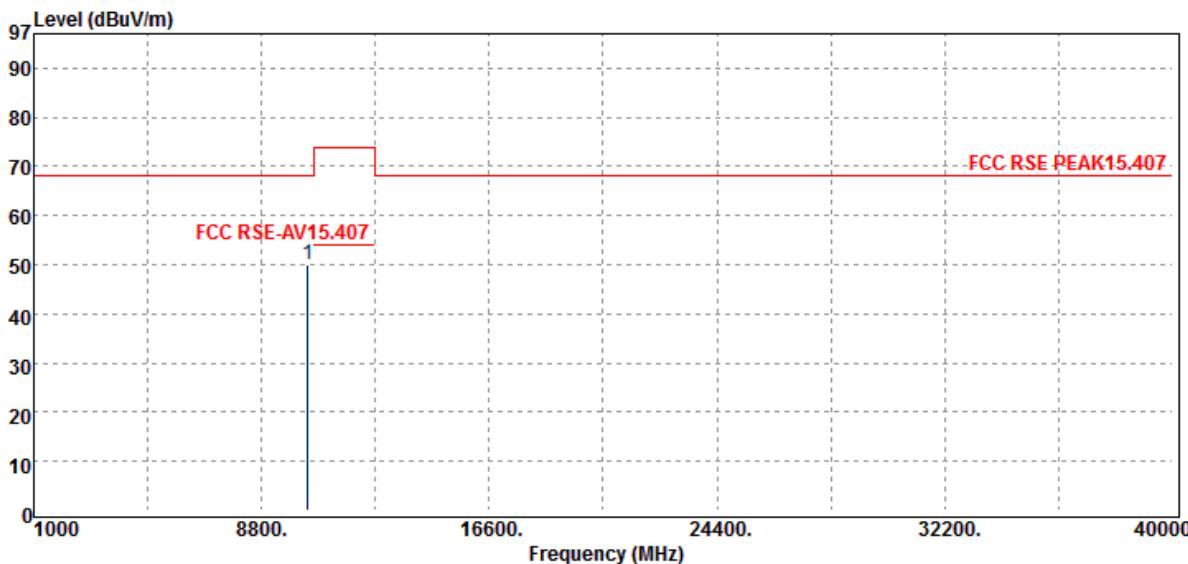
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**Radiated Spurious Emission Measurement Result 802.11n HT40, 5150~5250 MHz**

Operation Band :802.11n40B1 Test Date :2017-11-16  
Fundamental Frequency :5190 MHz Temp./Humi. :21 deg\_C / 62 RH  
Operation Mode :Tx CH LOW Engineer :Tin  
EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
10380.00	H	Peak	31.97	18.12	50.09	68.30	-18.21

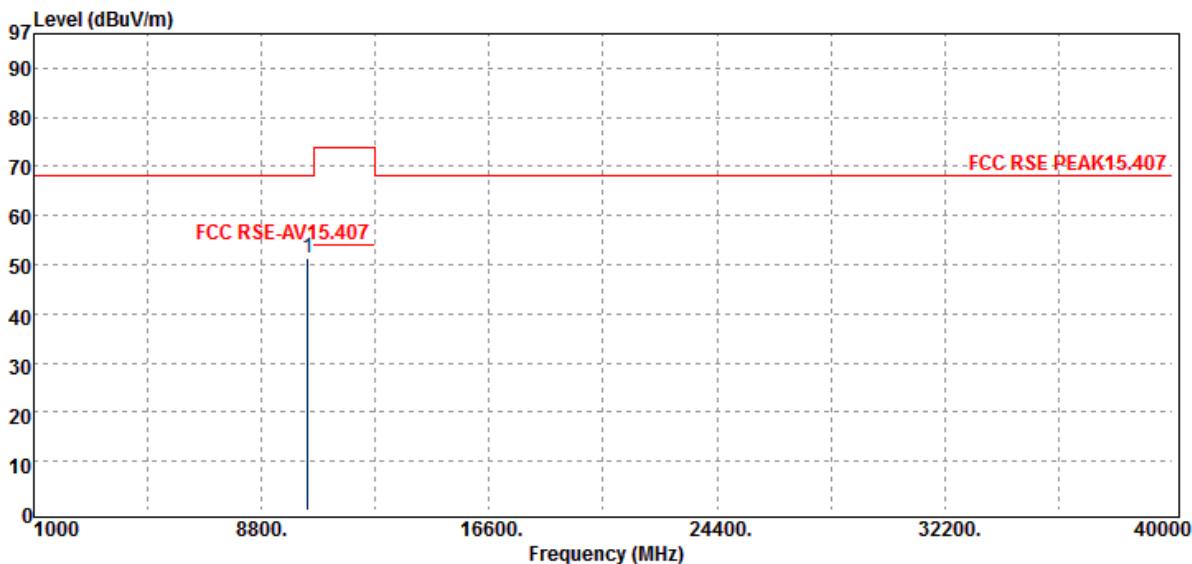
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Operation Band :802.11n40B1  
Fundamental Frequency :5190 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
F/H/E/S		PK/QP/AV					
10380.00	H	Peak	33.25	18.12	51.37	68.30	-16.93

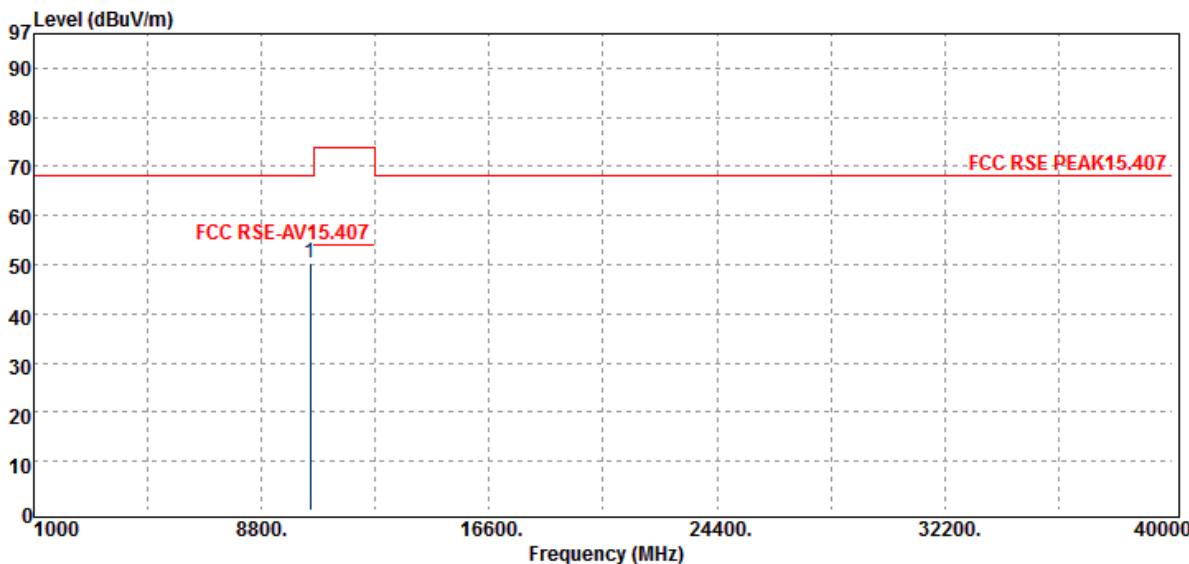
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Operation Band :802.11n40B1  
Fundamental Frequency :5230 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
10460.00	H	Peak	31.88	18.55	50.43	68.30	-17.87

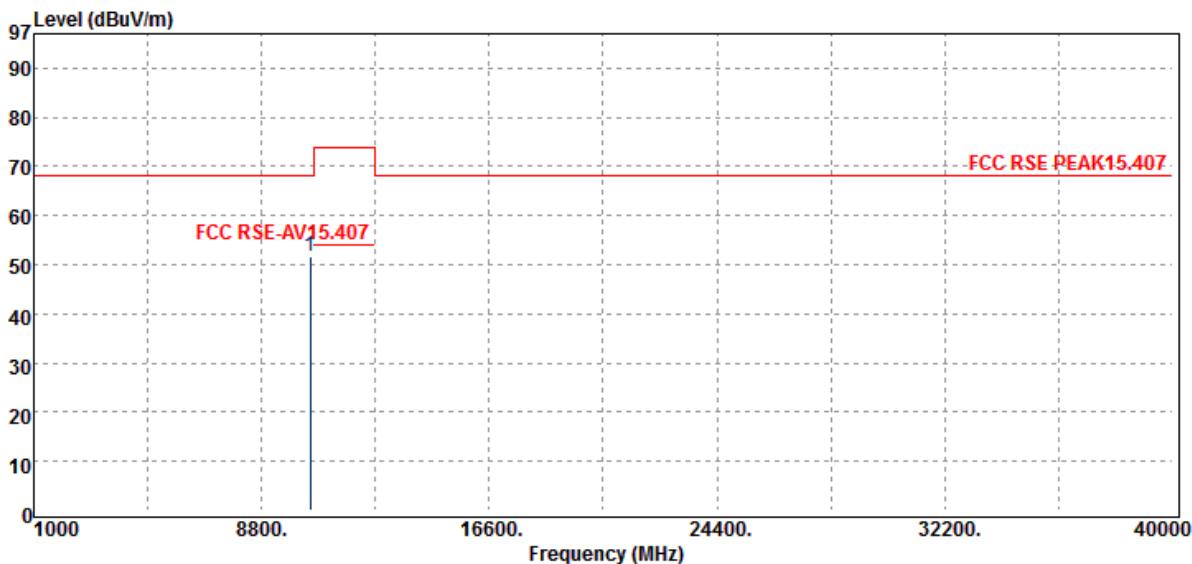
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Operation Band :802.11n40B1  
Fundamental Frequency :5230 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
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10460.00	H	Peak	33.11	18.55	51.66	68.30	-16.64
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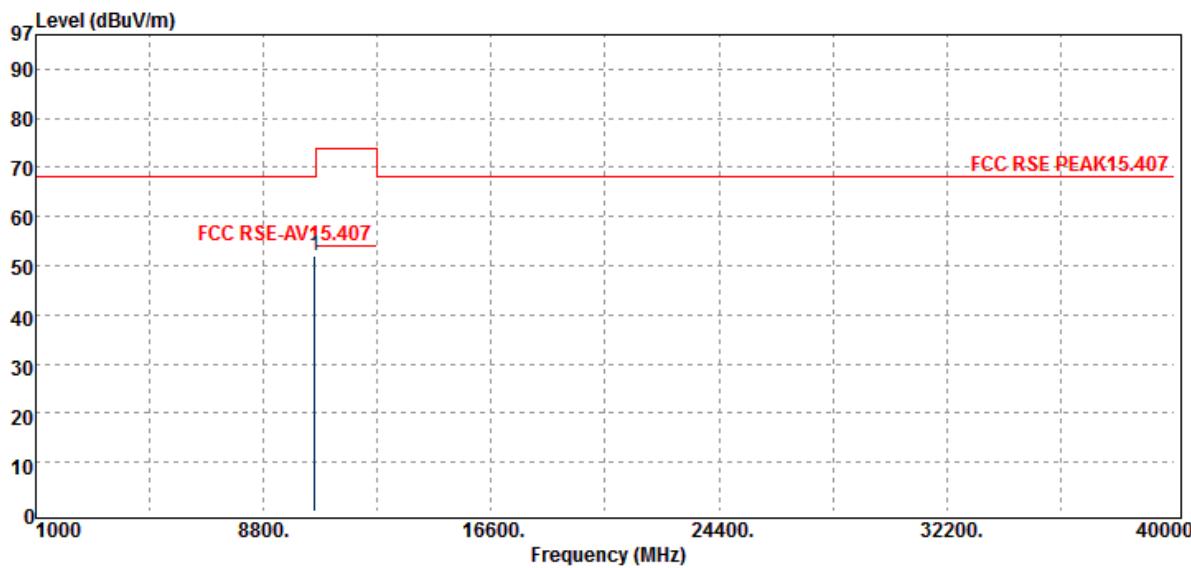
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**Radiated Spurious Emission Measurement Result 802.11n HT40, 5250~5350 MHz**

Operation Band	:802.11n40B2	Test Date	:2017-11-16
Fundamental Frequency	:5270 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH LOW	Engineer	:Tin
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
			PK/QP/AV				
10540.00	H	Peak	32.77	19.17	51.94	68.30	-16.36

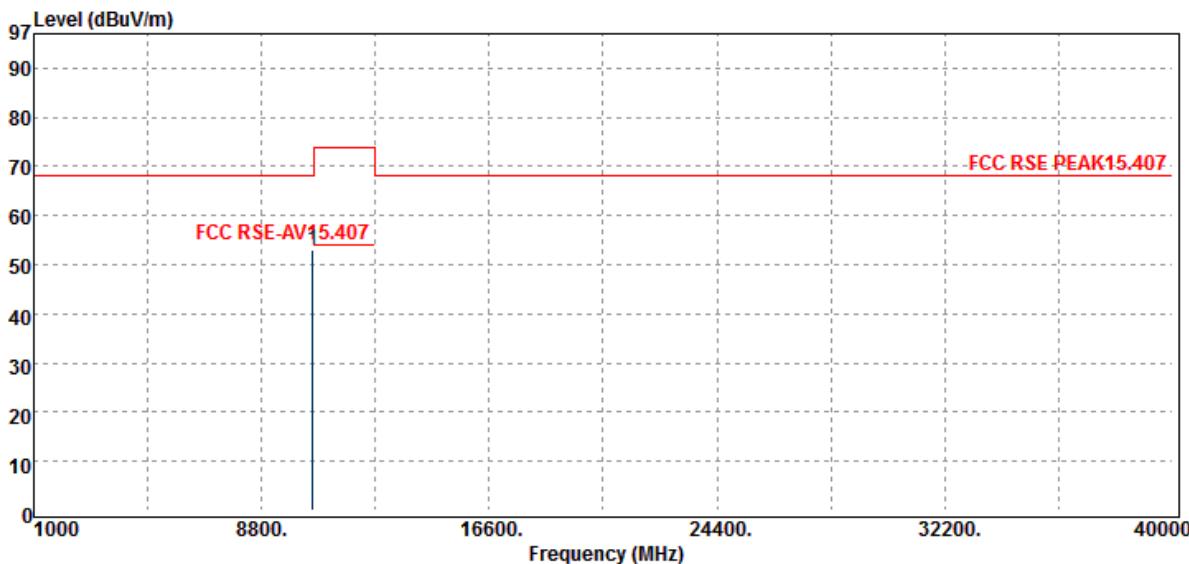
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Operation Band :802.11n40B2  
Fundamental Frequency :5270 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
10540.00	H	Peak	33.95	19.17	53.12	68.30	-15.18

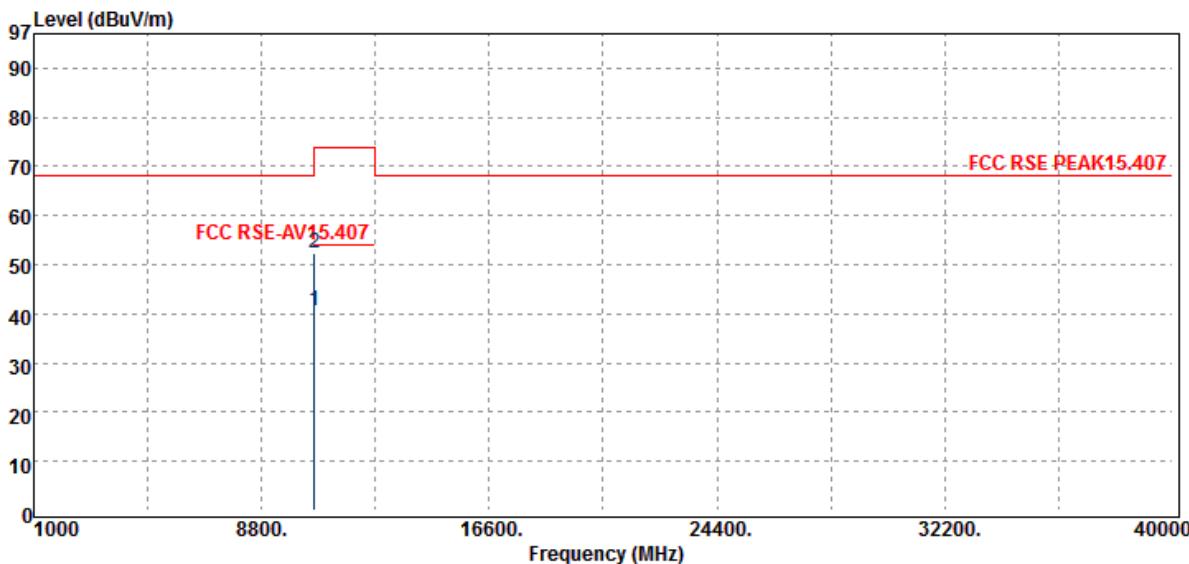
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Operation Band :802.11n40B2  
Fundamental Frequency :5310 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



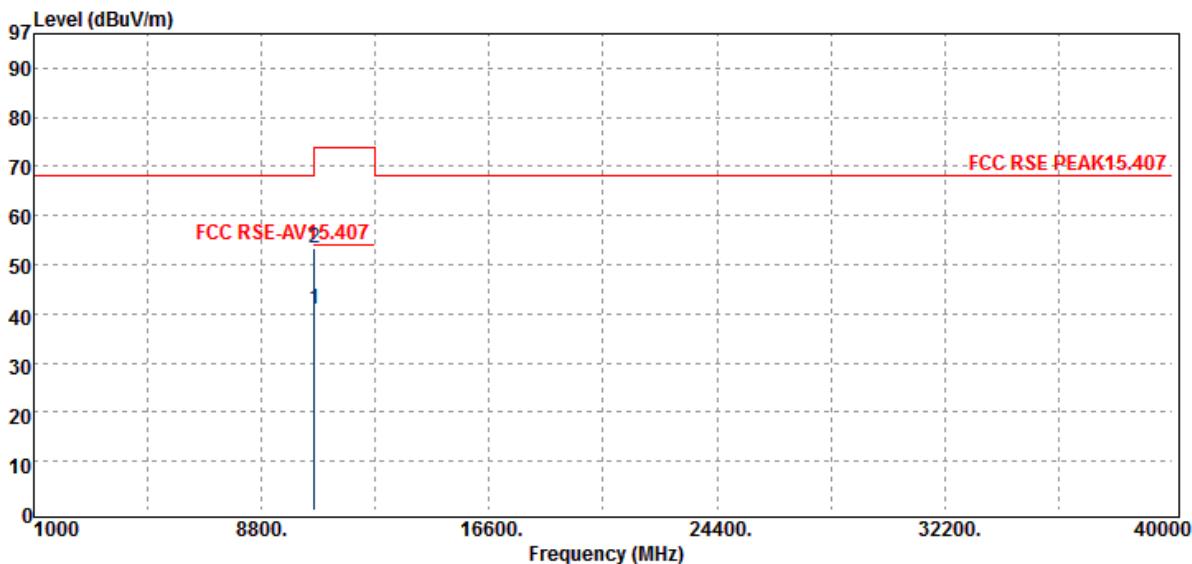
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Safe Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
10620.00	H	Average	21.63	19.11	40.74	54.00	-13.26
10620.00	H	Peak	33.34	19.11	52.45	74.00	-21.55

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Operation Band	:802.11n40B2	Test Date	:2017-11-16
Fundamental Frequency	:5310 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Tin
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit	Safe
			Reading			@3m	Margin
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
10620.00	H	Average	21.88	19.11	40.99	54.00	-13.01
10620.00	H	Peak	34.17	19.11	53.28	74.00	-20.72

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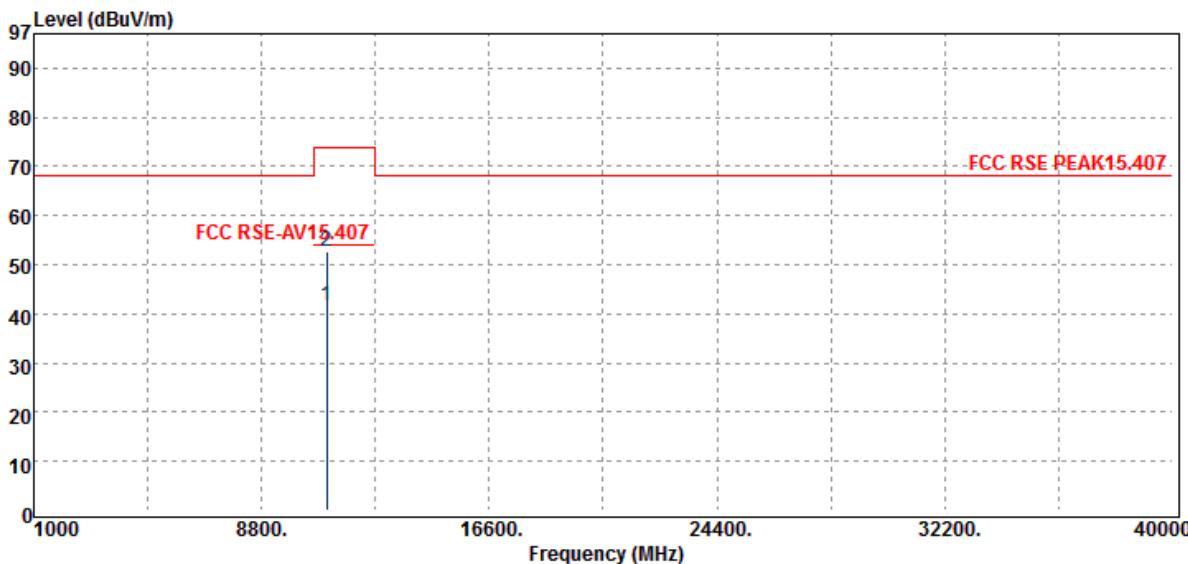
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**Radiated Spurious Emission Measurement Result 802.11n HT40, 5470~5725 MHz**

Operation Band :802.11n40B3 Test Date :2017-11-16  
Fundamental Frequency :5510 MHz Temp./Humi. :21 deg\_C / 62 RH  
Operation Mode :Tx CH LOW Engineer :Tin  
EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Safe Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
11020.00	H	Average	21.32	20.16	41.48	54.00	-12.52
11020.00	H	Peak	32.61	20.16	52.77	74.00	-21.23

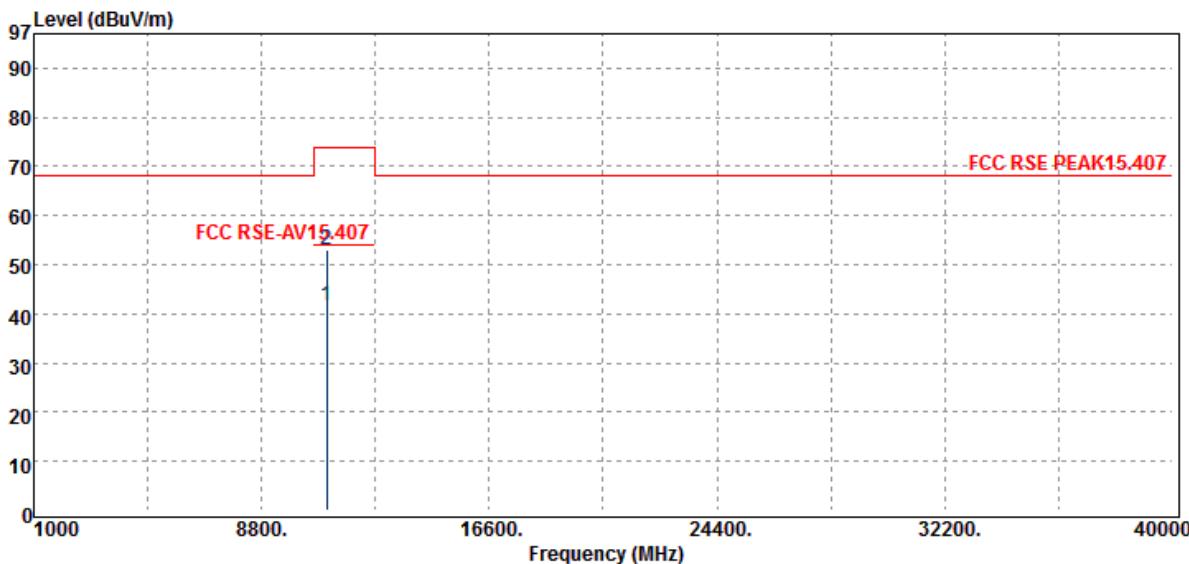
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Operation Band :802.11n40B3  
Fundamental Frequency :5510 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Safe Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
11020.00	H	Average	21.56	20.16	41.72	54.00	-12.28
11020.00	H	Peak	32.91	20.16	53.07	74.00	-20.93

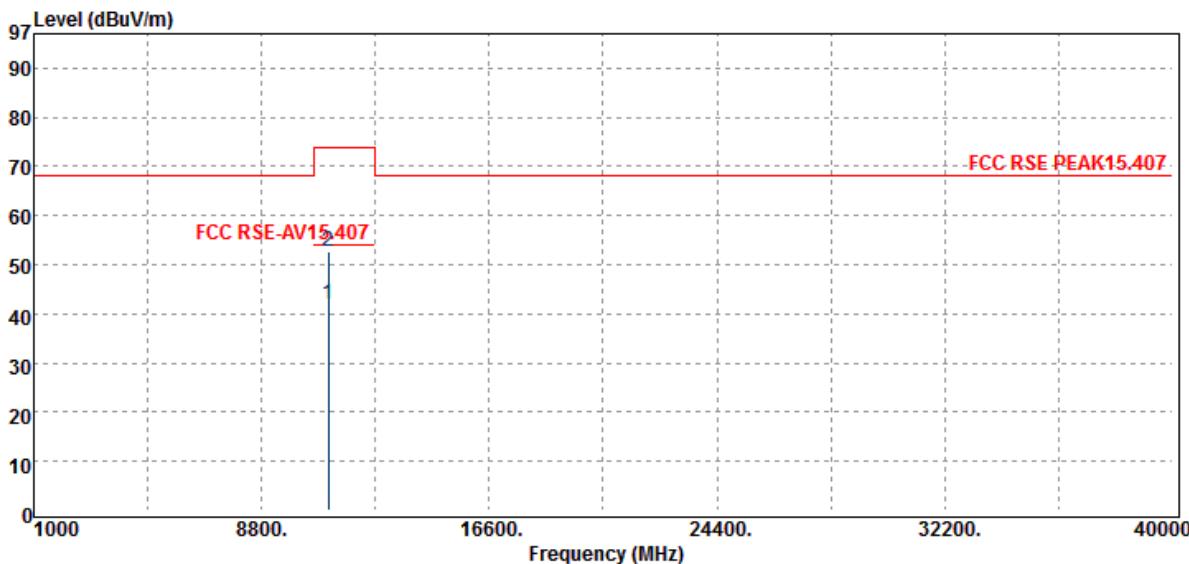
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Operation Band :802.11n40B3  
Fundamental Frequency :5550 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



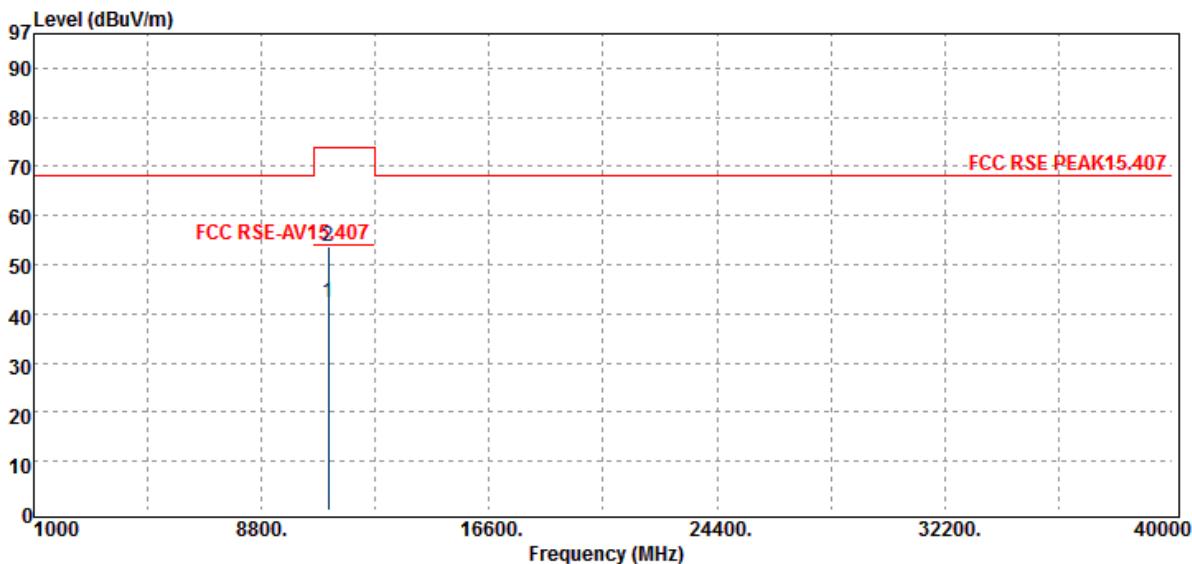
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Safe Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
11100.00	H	Average	21.49	20.32	41.81	54.00	-12.19
11100.00	H	Peak	32.24	20.32	52.56	74.00	-21.44

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Operation Band	:802.11n40B3	Test Date	:2017-11-16
Fundamental Frequency	:5550 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Tin
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Safe Margin
			Reading Level dB $\mu$ V				
11100.00	H	Average	21.82	20.32	42.14	54.00	-11.86
11100.00	H	Peak	33.23	20.32	53.55	74.00	-20.45

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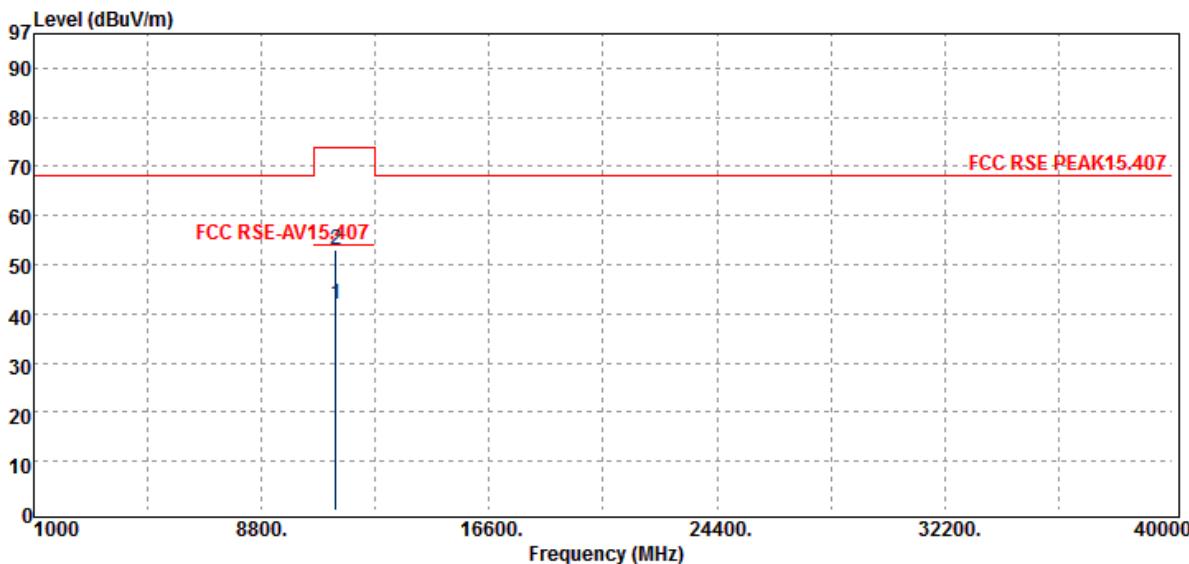
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Operation Band	:802.11n40B3	Test Date	:2017-11-16
Fundamental Frequency	:5670 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Tin
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:VERTICAL



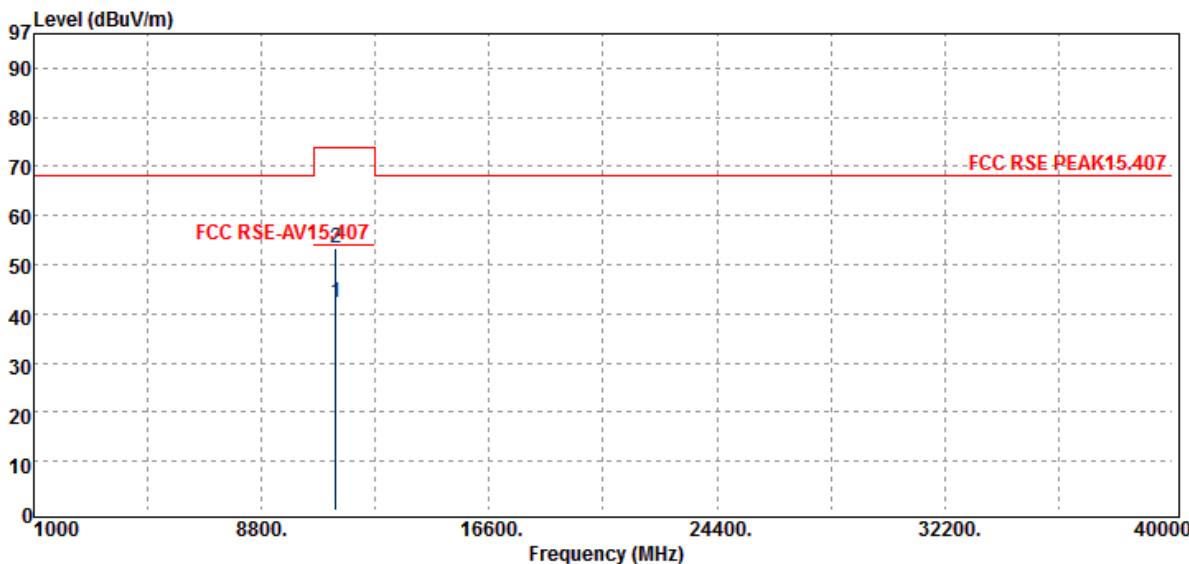
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit	Safe
			Reading Level dB $\mu$ V			@3m dB $\mu$ V/m	Margin dB
11340.00	H	Average	21.47	20.38	41.85	54.00	-12.15
11340.00	H	Peak	32.78	20.38	53.16	74.00	-20.84

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Operation Band	:802.11n40B3	Test Date	:2017-11-16
Fundamental Frequency	:5670 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Tin
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit	Safe
			Reading Level dB $\mu$ V			@3m dB $\mu$ V/m	Margin dB
11340.00	H	Average	21.85	20.38	42.23	54.00	-11.77
11340.00	H	Peak	32.84	20.38	53.22	74.00	-20.78

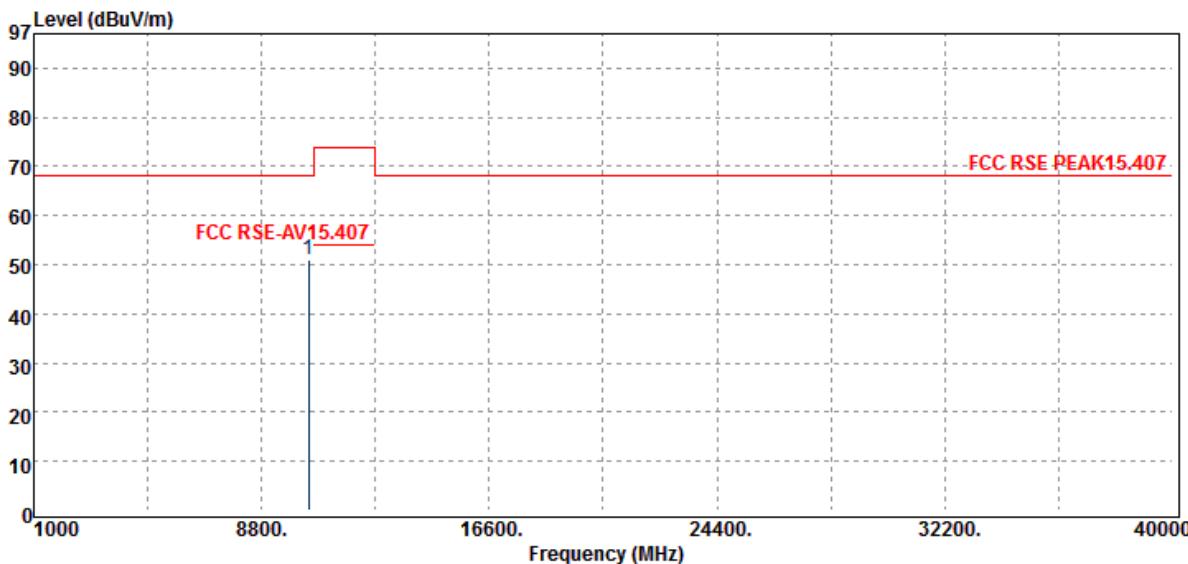
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**Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5150~5250 MHz**

Operation Band :802.11ac80B1 Test Date :2017-11-16  
Fundamental Frequency :5210 MHz Temp./Humi. :21 deg\_C / 62 RH  
Operation Mode :Tx CH LOW Engineer :Tin  
EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
MHz	F/H/E/S	Mode	Reading Level	FS	@3m	Margin	
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
10420.00	H	Peak	32.25	18.71	50.96	68.30	-17.34

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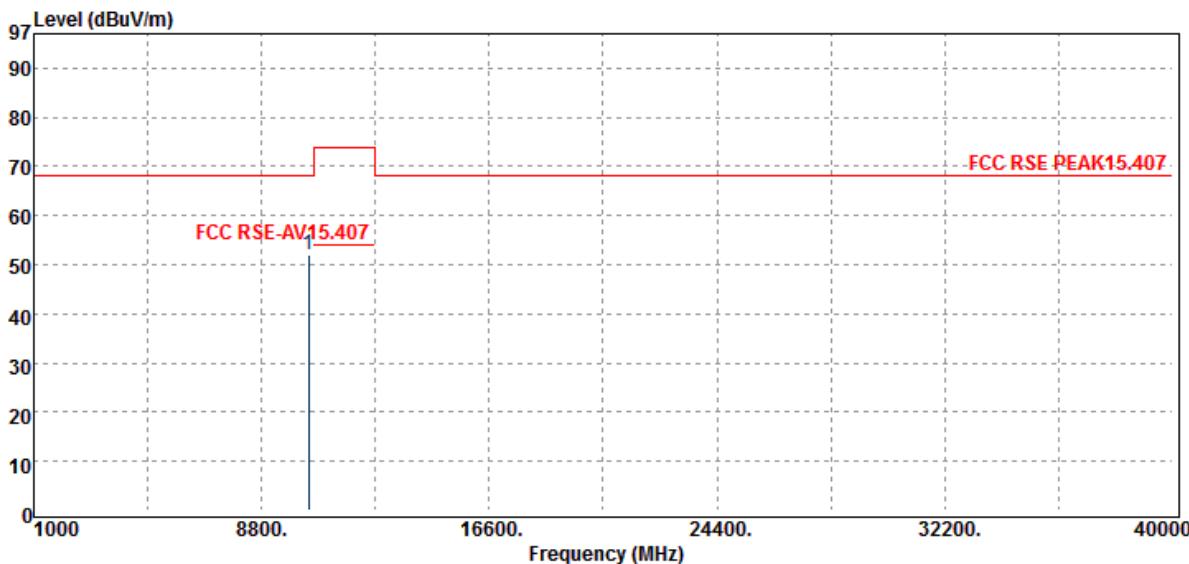
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Operation Band :802.11ac80B1  
Fundamental Frequency :5210 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
10420.00	H	Peak	33.18	18.71	51.89	68.30	-16.41

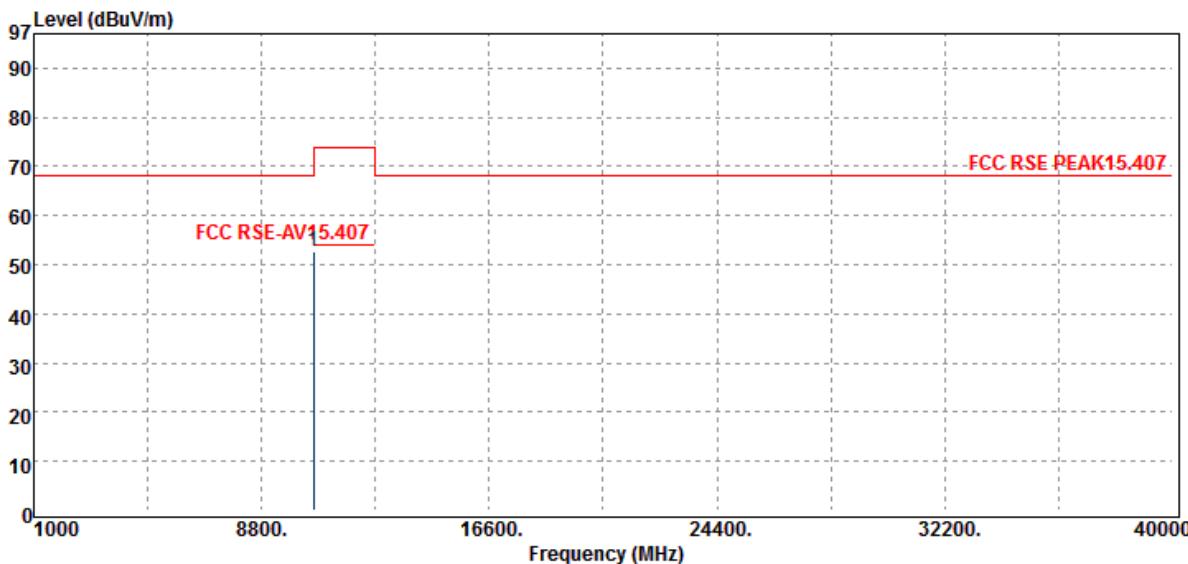
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**Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5250~5350 MHz**

Operation Band :802.11ac80B2 Test Date :2017-11-16  
Fundamental Frequency :5290 MHz Temp./Humi. :21 deg\_C / 62 RH  
Operation Mode :Tx CH HIGH Engineer :Tin  
EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
10580.00	H	Peak	33.73	18.88	52.61	68.30	-15.69

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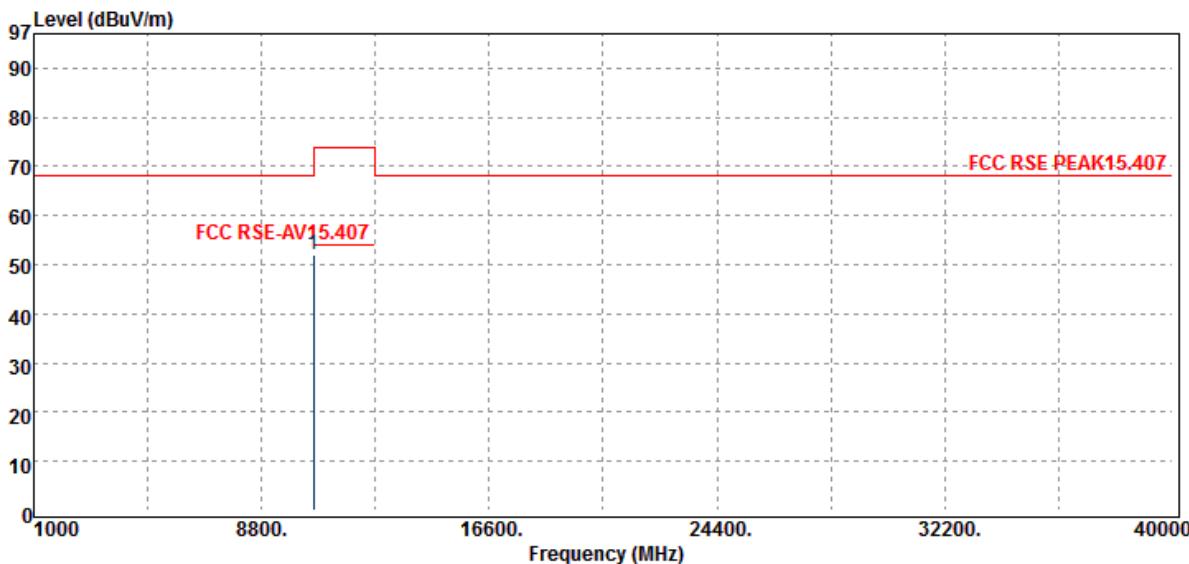
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Operation Band :802.11ac80B2  
Fundamental Frequency :5290 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
10580.00	H	Peak	33.12	18.88	52.00	68.30	-16.30

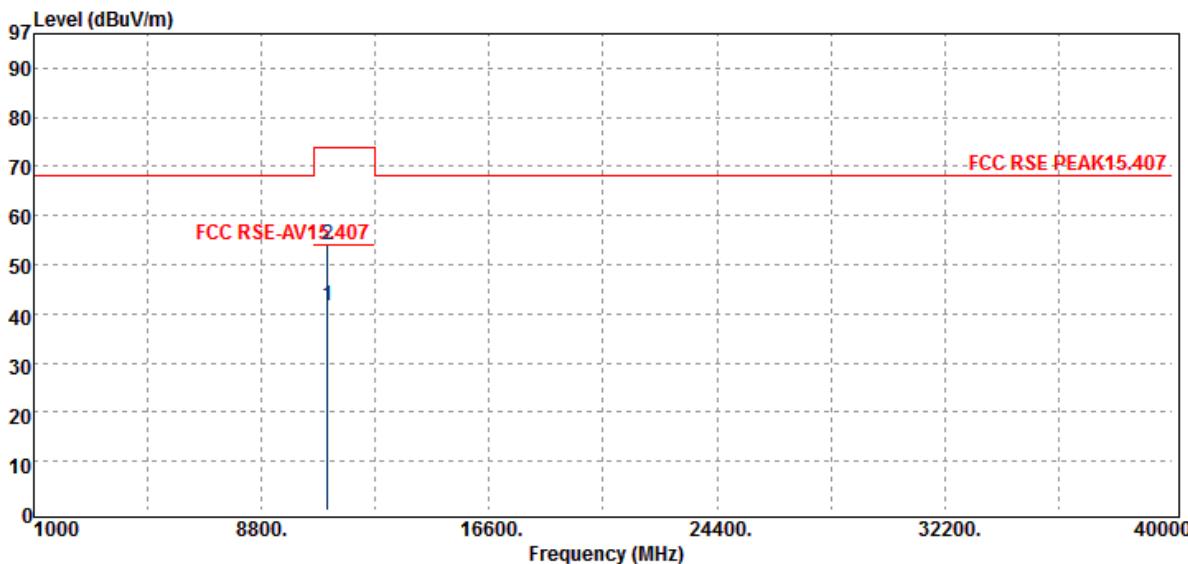
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**Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5470~5725 MHz**

Operation Band :802.11ac80B3 Test Date :2017-11-16  
Fundamental Frequency :5530 MHz Temp./Humi. :21 deg\_C / 62 RH  
Operation Mode :Tx CH LOW Engineer :Tin  
EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Safe Margin
			Reading Level dB $\mu$ V				
11060.00	H	Average	21.28	20.27	41.55	54.00	-12.45
11060.00	H	Peak	33.62	20.27	53.89	74.00	-20.11

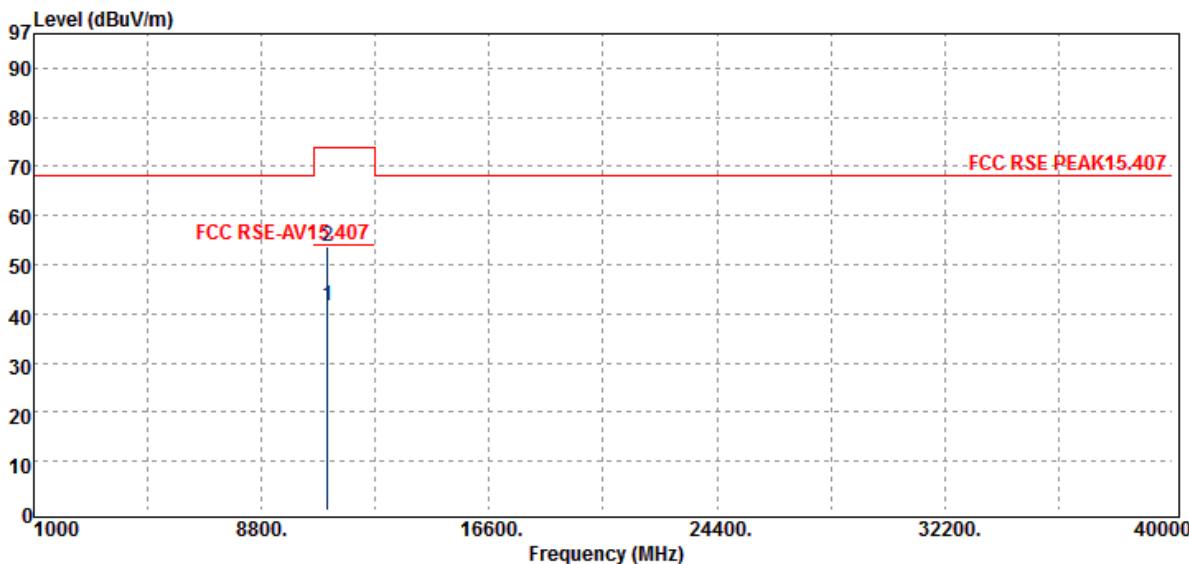
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Operation Band :802.11ac80B3  
Fundamental Frequency :5530 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Safe Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
11060.00	H	Average	21.48	20.27	41.75	54.00	-12.25
11060.00	H	Peak	33.53	20.27	53.80	74.00	-20.20

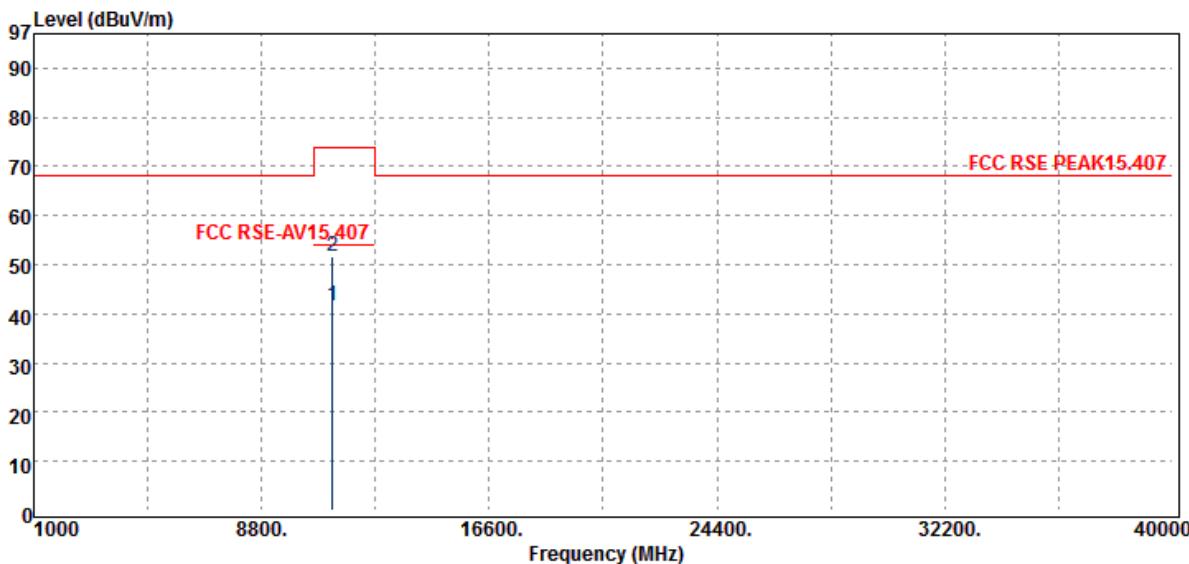
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Operation Band :802.11ac80B3  
Fundamental Frequency :5610 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-17  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
11220.00	H	Average	21.23	20.47	41.70	54.00	-12.30
11220.00	H	Peak	31.09	20.47	51.56	74.00	-22.44

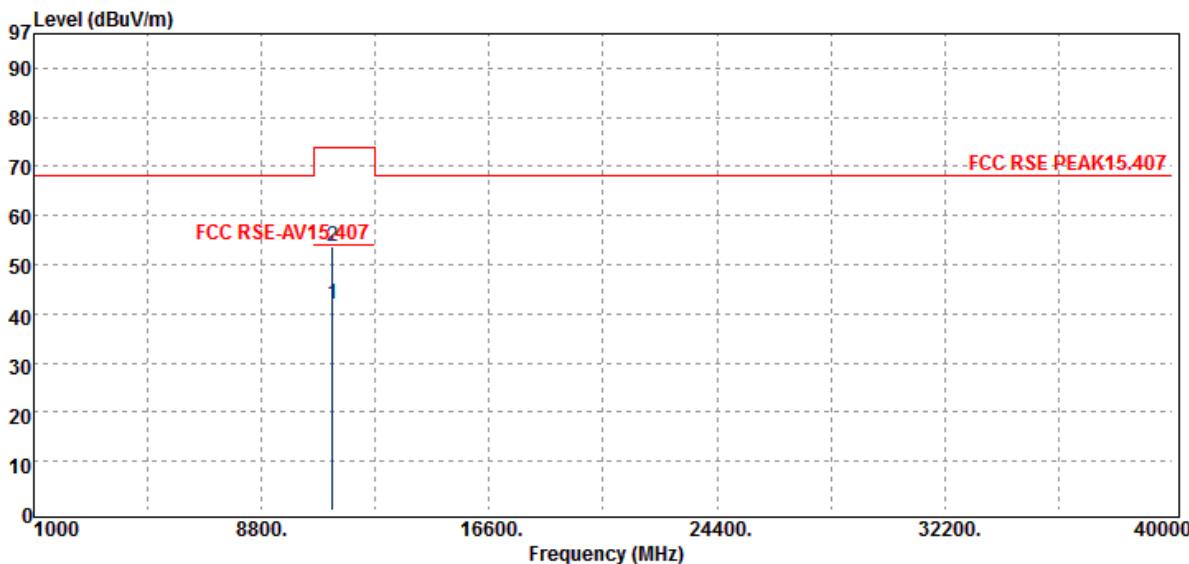
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Operation Band :802.11ac80B3  
Fundamental Frequency :5610 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-17  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
11220.00	H	Average	21.53	20.47	42.00	54.00	-12.00
11220.00	H	Peak	33.15	20.47	53.62	74.00	-20.38

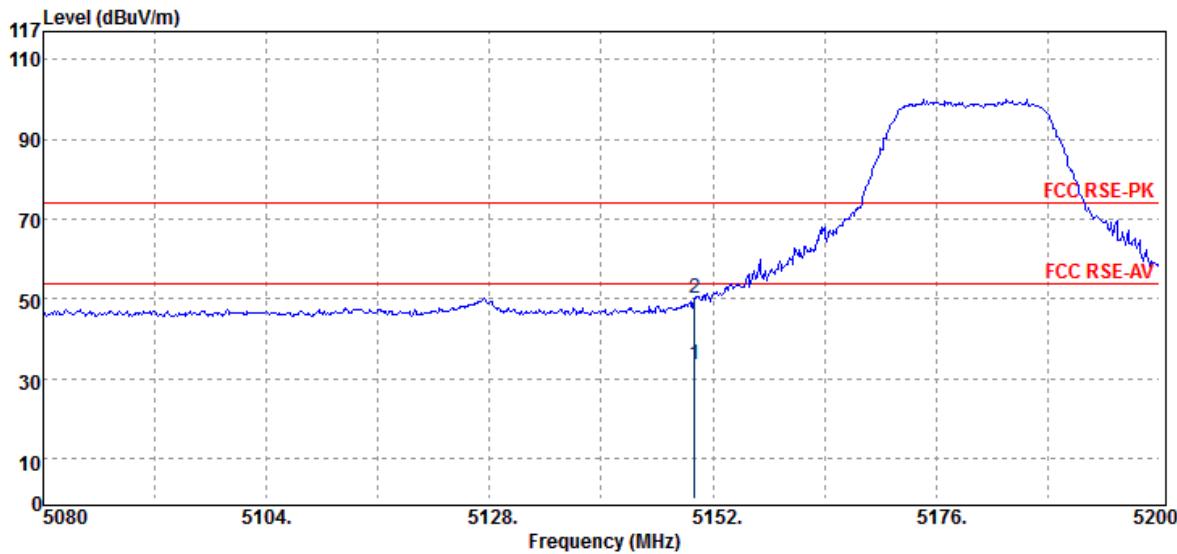
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**Band edge falling to restricted band****802.11a mode**

Operation Band	:802.11aB1	Test Date	:2017-11-15
Fundamental Frequency	:5180 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Bandedge CH LOW	Engineer	:Tin
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level		Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
			PK/QP/AV	dB $\mu$ V				
5150.00	E	Average	27.75	5.88	33.63	54.00	-20.37	
5150.00	E	Peak	44.17	5.88	50.05	74.00	-23.95	

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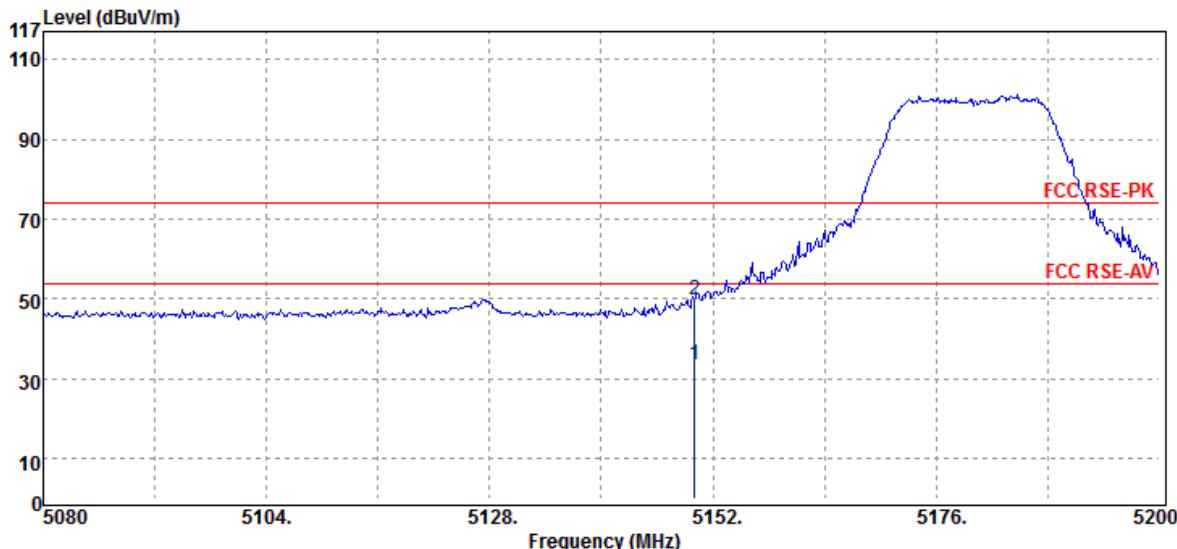
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Operation Band :802.11aB1  
Fundamental Frequency :5180 MHz  
Operation Mode :Bandedge CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-15  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
5150.00	E	Average	27.87	5.88	33.75	54.00	-20.25
5150.00	E	Peak	43.97	5.88	49.85	74.00	-24.15

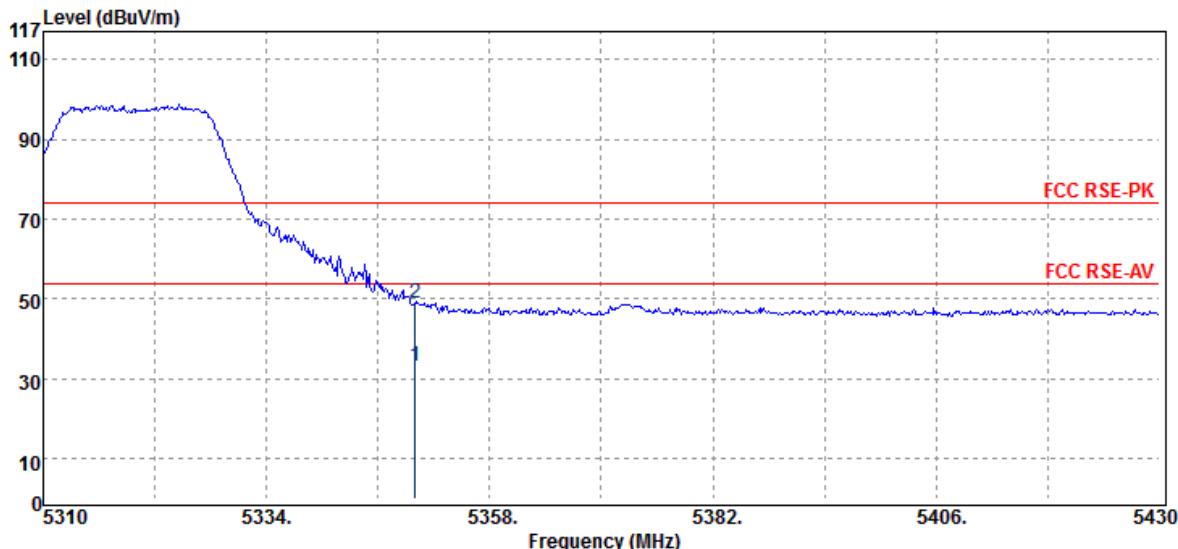
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Operation Band :802.11aB2  
Fundamental Frequency :5320 MHz  
Operation Mode :Bandedge CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-15  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



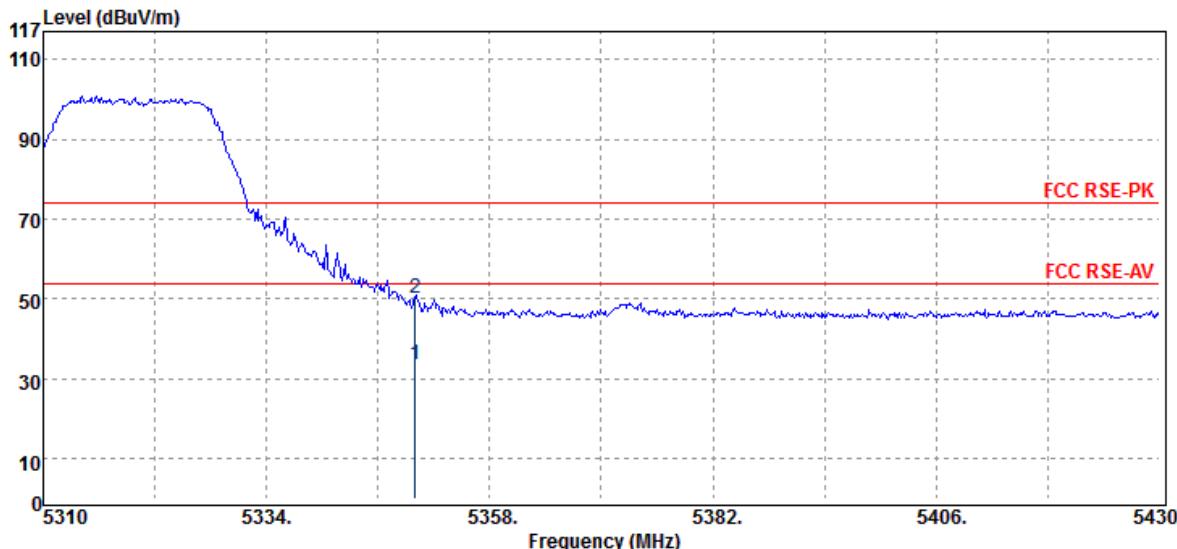
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5350.00	E	Average	27.17	6.16	33.33	54.00	-20.67
5350.00	E	Peak	42.91	6.16	49.07	74.00	-24.93

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Operation Band	:802.11aB2	Test Date	:2017-11-15
Fundamental Frequency	:5320 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Bandedge CH HIGH	Engineer	:Tin
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
5350.00	E	Average	27.34	6.16	33.50	54.00	-20.50
5350.00	E	Peak	43.95	6.16	50.11	74.00	-23.89

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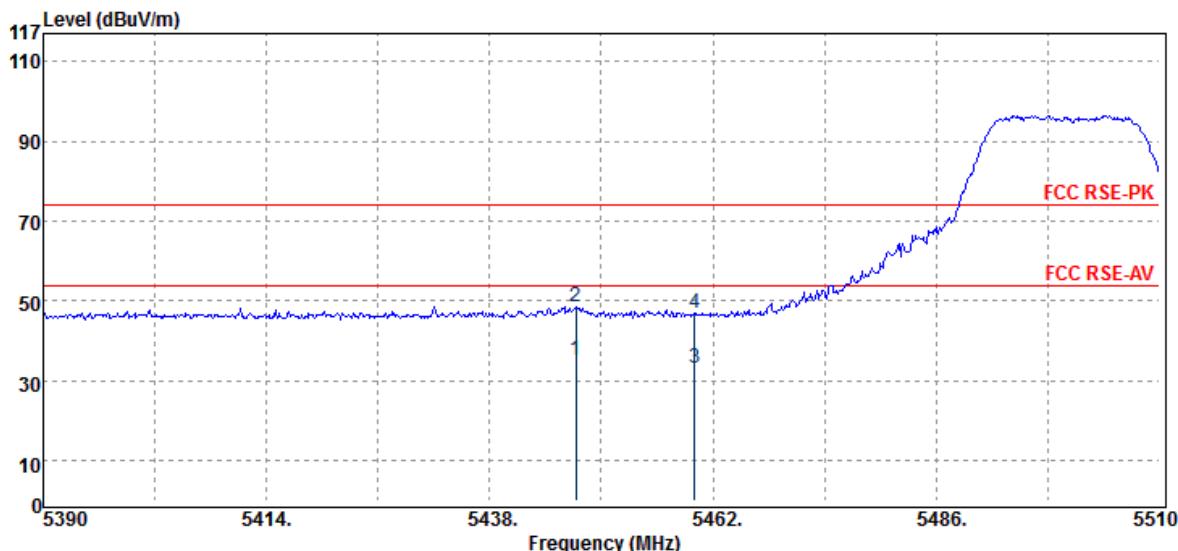
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Operation Band :802.11aB3  
Fundamental Frequency :5500 MHz  
Operation Mode :Bandedge CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-15  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
			dB $\mu$ V				
5447.24	S	Average	28.92	6.19	35.11	54.00	-18.89
5447.24	S	Peak	42.32	6.19	48.51	74.00	-25.49
5460.00	E	Average	27.00	6.23	33.23	54.00	-20.77
5460.00	E	Peak	40.62	6.23	46.85	74.00	-27.15

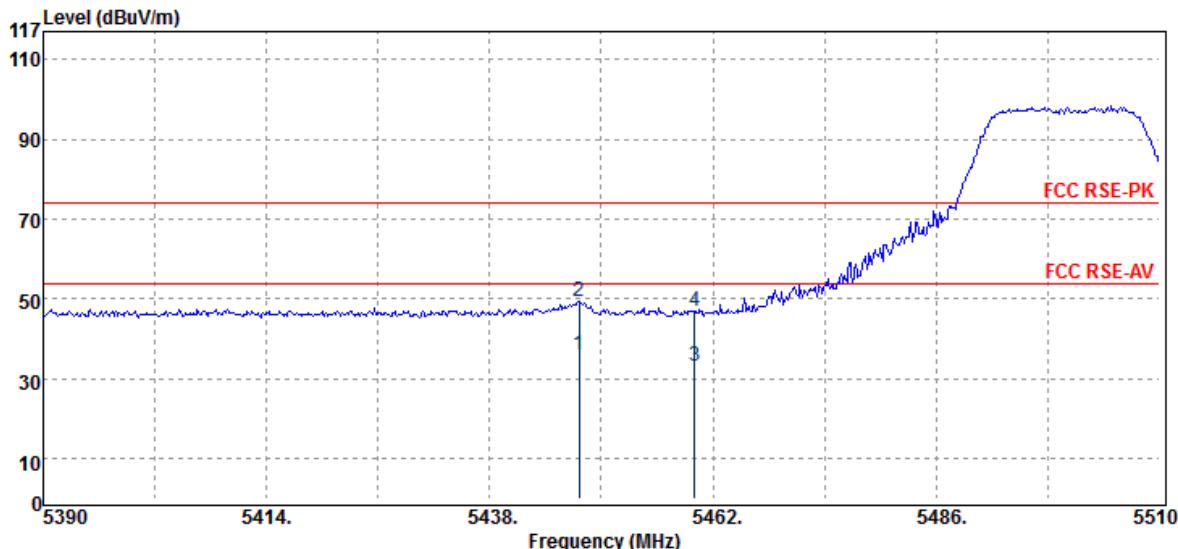
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Operation Band :802.11aB3  
Fundamental Frequency :5500 MHz  
Operation Mode :Bandedge CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-15  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB		
5447.60	S	Average	29.78	6.19	35.97	54.00	-18.03
5447.60	S	Peak	43.36	6.19	49.55	74.00	-24.45
5460.00	E	Average	27.06	6.23	33.29	54.00	-20.71
5460.00	E	Peak	40.84	6.23	47.07	74.00	-26.93

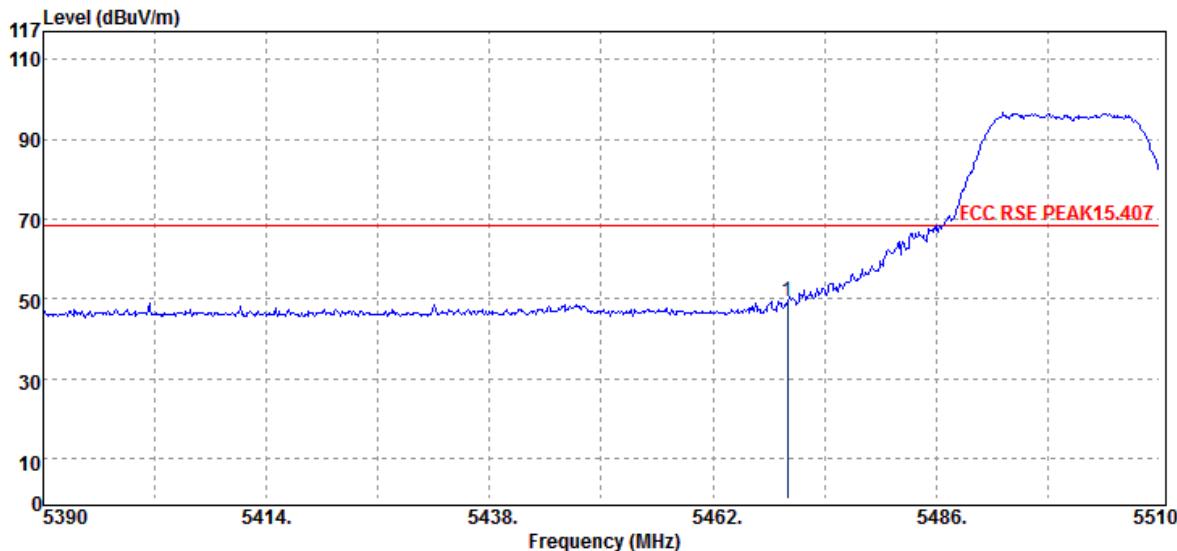
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Operation Band :802.11aB3  
Fundamental Frequency :5500 MHz  
Operation Mode :Bandedge CH LOW RSE  
EUT Pol. :E1 Plane

Test Date :2017-11-15  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
PK/QP/AV	Peak	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB $\mu$ V/m	dB
5470.00	E	Peak	43.20	6.26	49.46	68.30	-18.84

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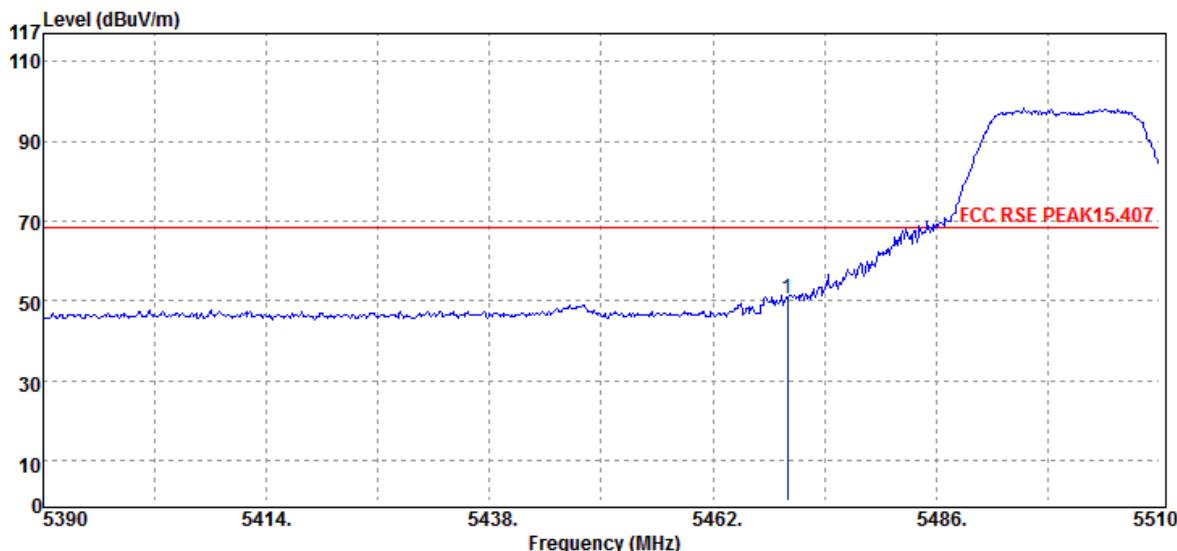
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Operation Band :802.11aB3  
 Fundamental Frequency :5500 MHz  
 Operation Mode :Bandedge CH LOW  
 EUT Pol. :E1 Plane

Test Date :2017-11-15  
 Temp./Humi. :21 deg\_C / 62 RH  
 Engineer :Tin  
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
		PK/QP/AV	Level dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5470.00	E	Peak	44.30	6.26	50.56	68.30	-17.74

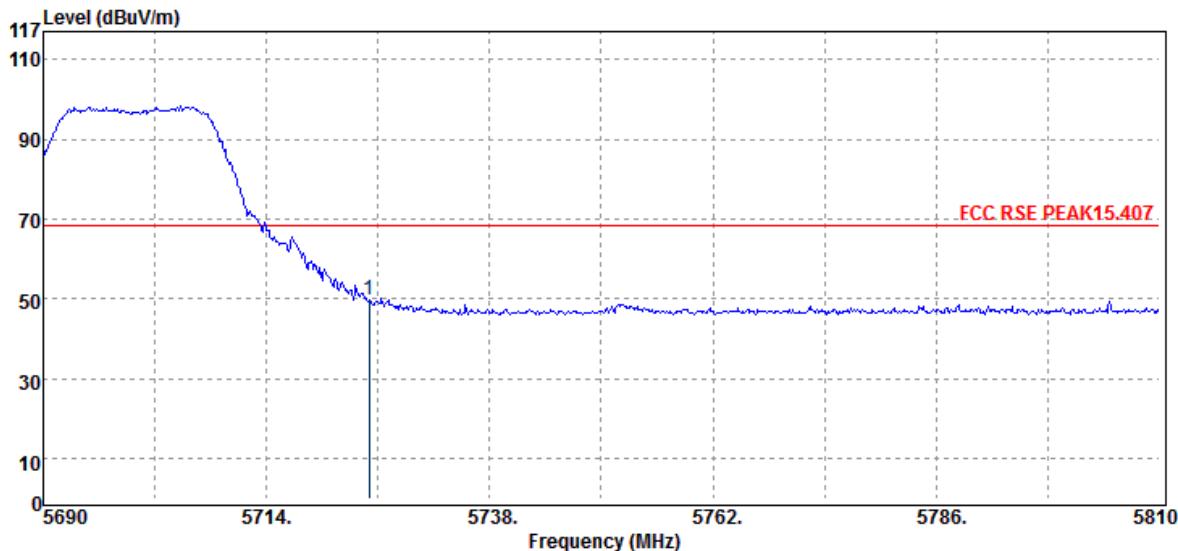
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Operation Band :802.11aB3  
Fundamental Frequency :5700 MHz  
Operation Mode :Bandedge CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-15  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
5725.00	E	Peak	43.37	6.59	49.96	68.30	-18.34

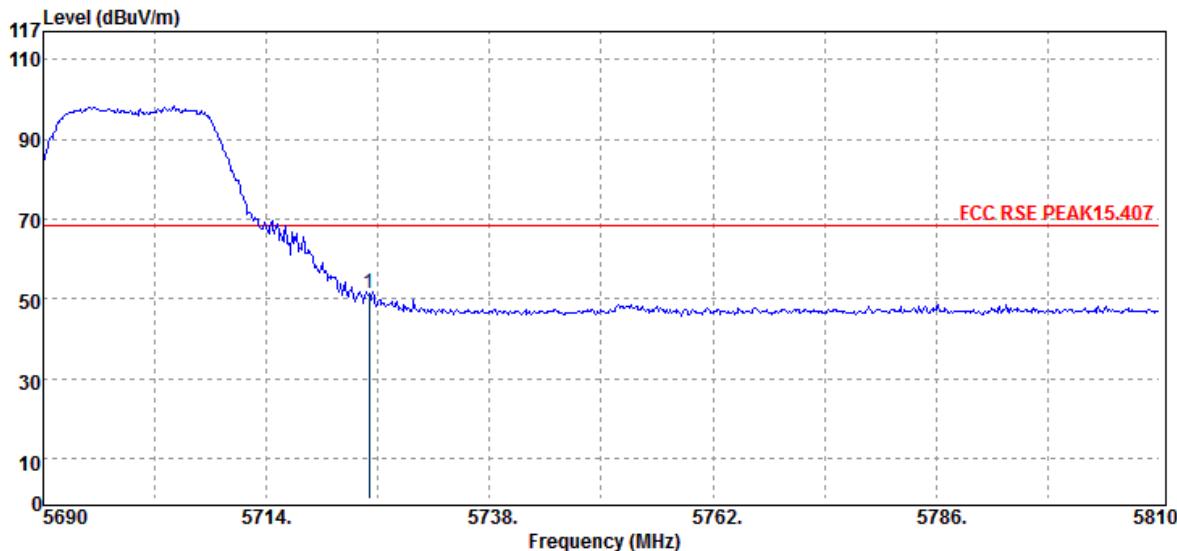
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Operation Band :802.11aB3  
Fundamental Frequency :5700 MHz  
Operation Mode :Bandedge CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-15  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor Reading Level	Actual FS	Limit @3m	Margin
			PK/QP/AV				
5725.00	E	Peak	44.84	6.59	51.43	68.30	-16.87

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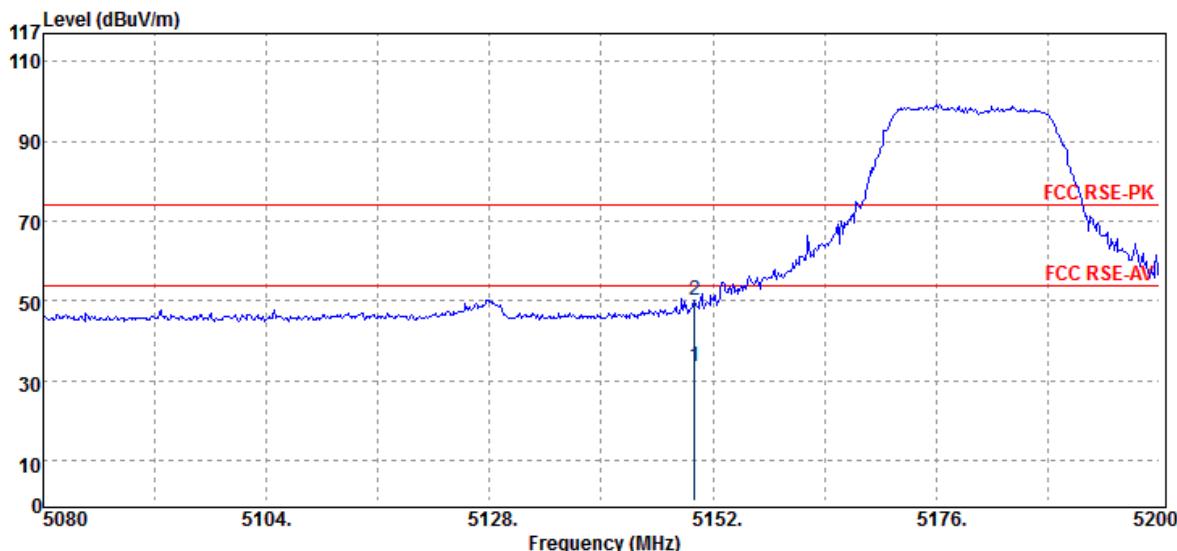
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**802.11n20 HT mode**

Operation Band :802.11n20B1 Test Date :2017-11-15  
Fundamental Frequency :5180 MHz Temp./Humi. :21 deg\_C / 62 RH  
Operation Mode :Bandedge CH LOW Engineer :Tin  
EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5150.00	E	Average	27.90	5.88	33.78	54.00	-20.22
5150.00	E	Peak	44.46	5.88	50.34	74.00	-23.66

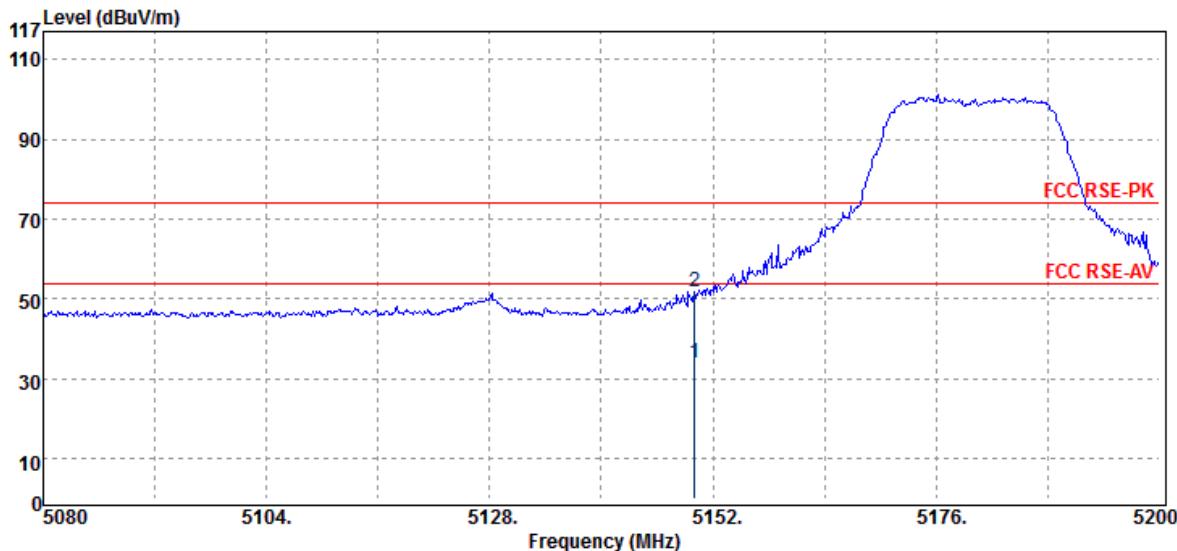
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Operation Band :802.11n20B1  
Fundamental Frequency :5180 MHz  
Operation Mode :Bandedge CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-15  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



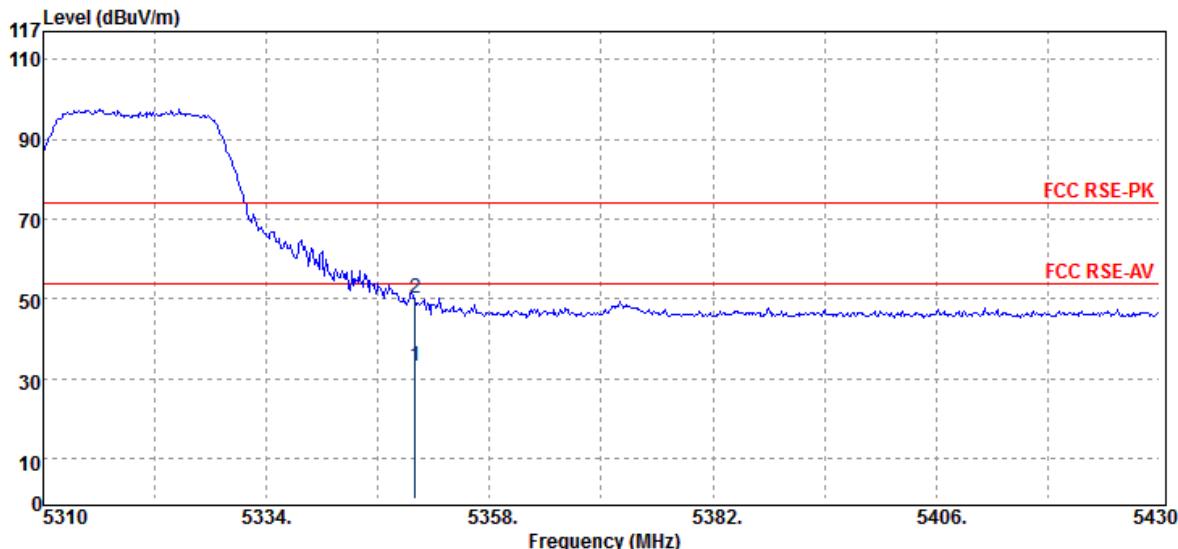
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5150.00	E	Average	28.04	5.88	33.92	54.00	-20.08
5150.00	E	Peak	46.01	5.88	51.89	74.00	-22.11

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Operation Band	:802.11n20B2	Test Date	:2017-11-15
Fundamental Frequency	:5320 MHz	Temp./Humi.	:21 deg_C / 62 RH
Operation Mode	:Bandedge CH HIGH	Engineer	:Tin
EUT Pol.	:E1 Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
MHz	PK/QP/AV	PK/QP/AV	Level dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5350.00	E	Average	27.16	6.16	33.32	54.00	-20.68
5350.00	E	Peak	43.88	6.16	50.04	74.00	-23.96

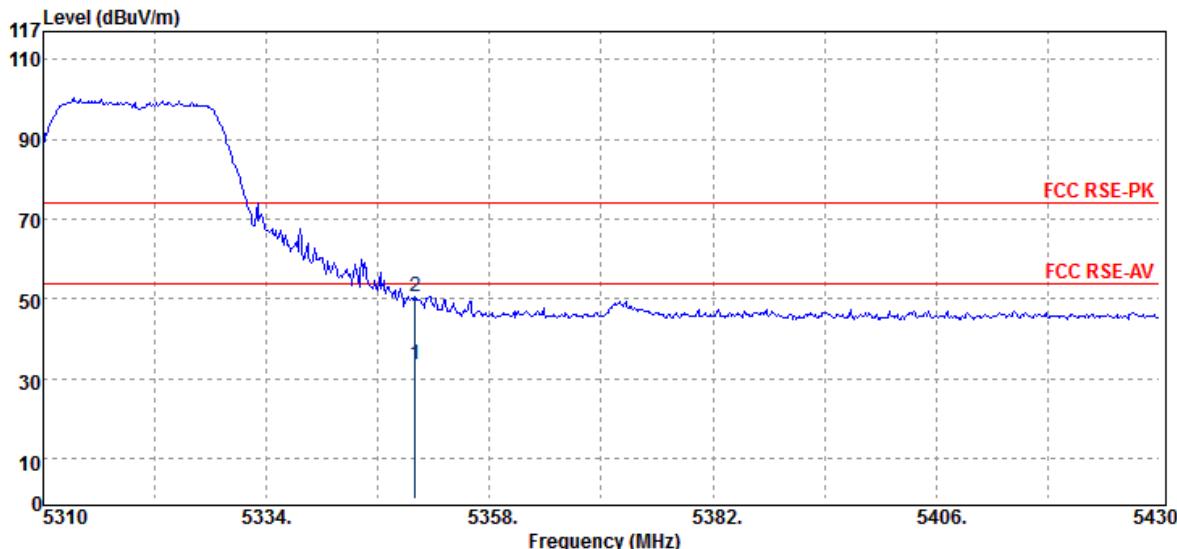
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Operation Band :802.11n20B2  
Fundamental Frequency :5320 MHz  
Operation Mode :Bandedge CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-15  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5350.00	E	Average	27.39	6.16	33.55	54.00	-20.45
5350.00	E	Peak	44.35	6.16	50.51	74.00	-23.49

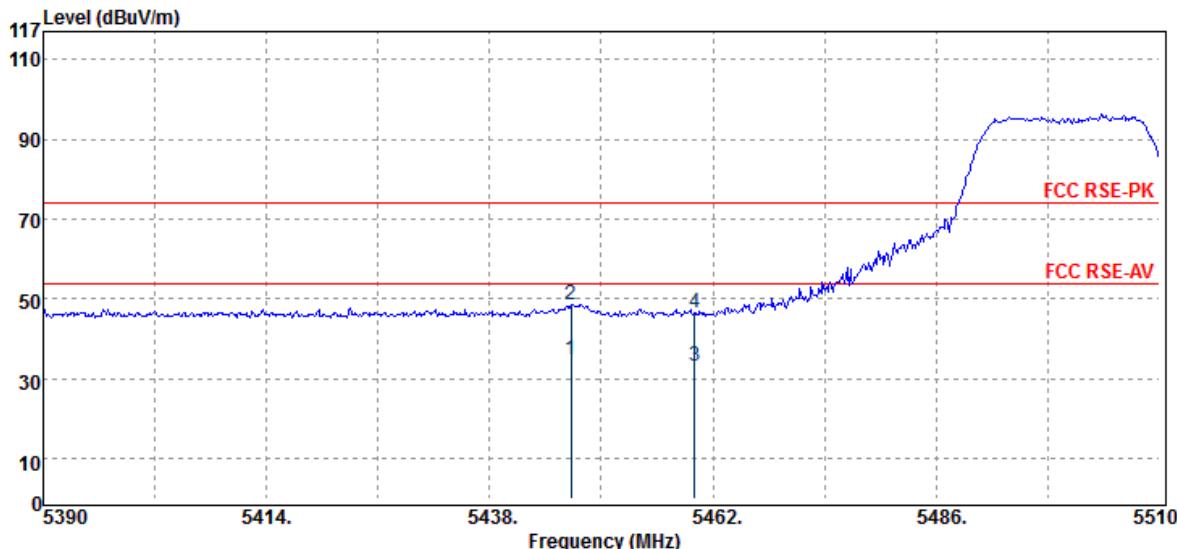
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Operation Band :802.11n20B3  
Fundamental Frequency :5500 MHz  
Operation Mode :Bandedge CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-15  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading	Factor	Actual FS	Limit @3m	Margin
			Level dB $\mu$ V				
5446.76	S	Average	28.45	6.19	34.64	54.00	-19.36
5446.76	S	Peak	42.49	6.19	48.68	74.00	-25.32
5460.00	E	Average	27.03	6.23	33.26	54.00	-20.74
5460.00	E	Peak	40.42	6.23	46.65	74.00	-27.35

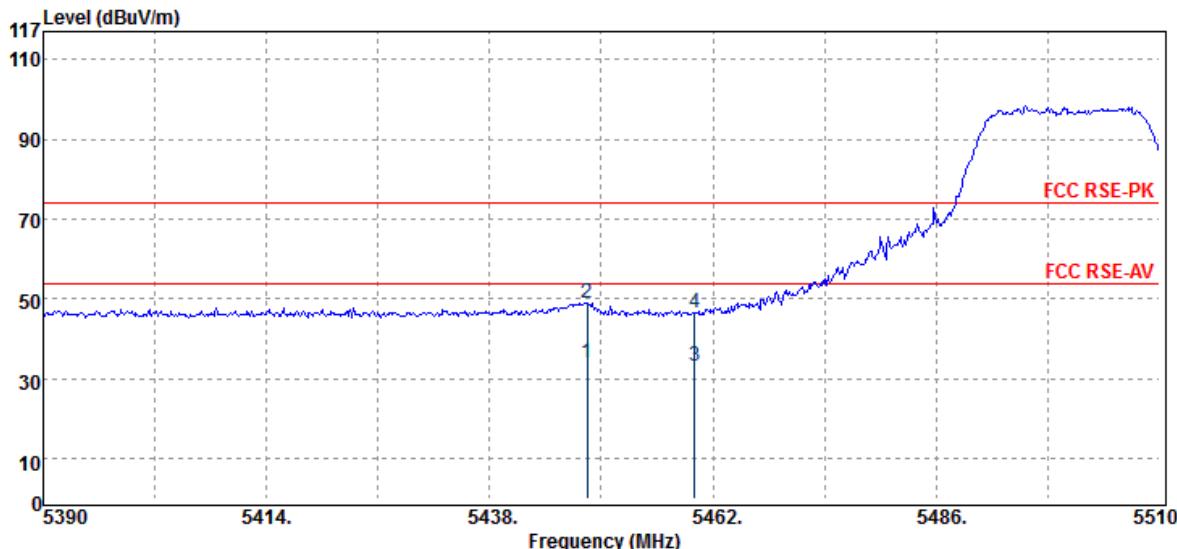
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Operation Band :802.11n20B3  
Fundamental Frequency :5500 MHz  
Operation Mode :Bandedge CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-15  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading	Factor	Actual FS	Limit @3m	Margin
			Level dB $\mu$ V				
5448.44	S	Average	27.90	6.20	34.10	54.00	-19.90
5448.44	S	Peak	42.72	6.20	48.92	74.00	-25.08
5460.00	E	Average	27.06	6.23	33.29	54.00	-20.71
5460.00	E	Peak	40.29	6.23	46.52	74.00	-27.48

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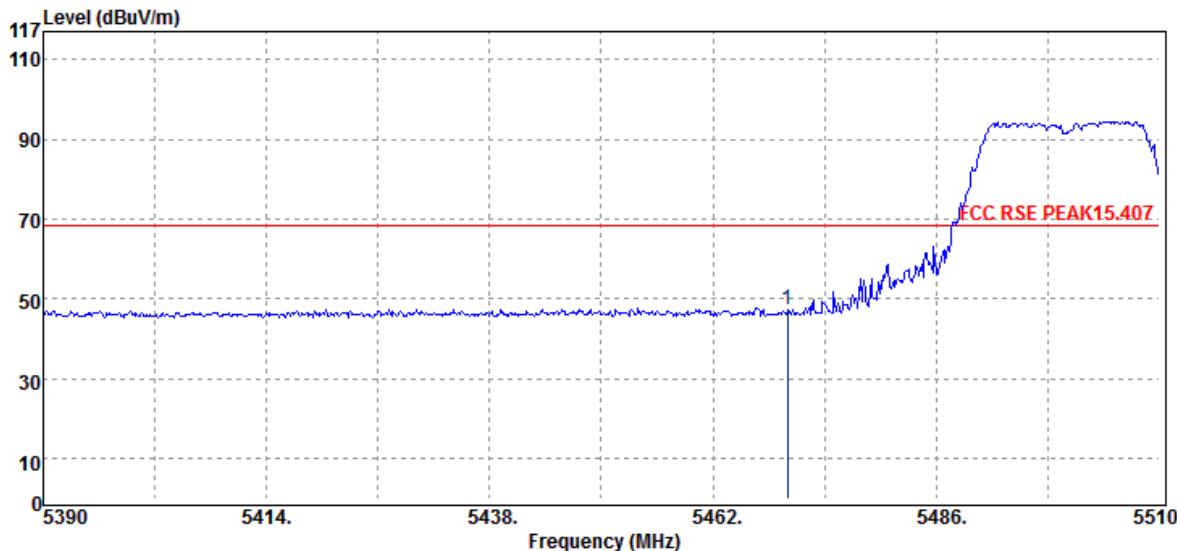
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Operation Band :802.11n20B3  
Fundamental Frequency :5500 MHz  
Operation Mode :Bandedge CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-15  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading	Factor	Actual FS	Limit	Margin
						dB $\mu$ V/m	dB $\mu$ V/m
5470.00	E	Peak	41.16	6.26	47.42	68.30	-20.88

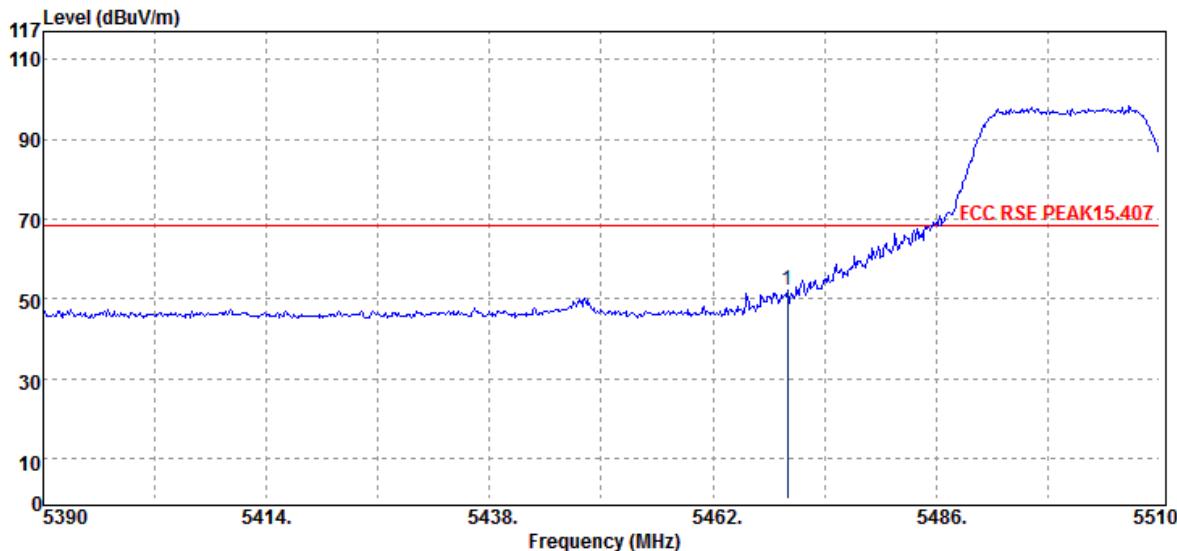
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Operation Band :802.11n20B3  
Fundamental Frequency :5500 MHz  
Operation Mode :Bandedge CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-15  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
			Reading Level dB $\mu$ V				
5470.00	E	Peak	45.88	6.26	52.14	68.30	-16.16

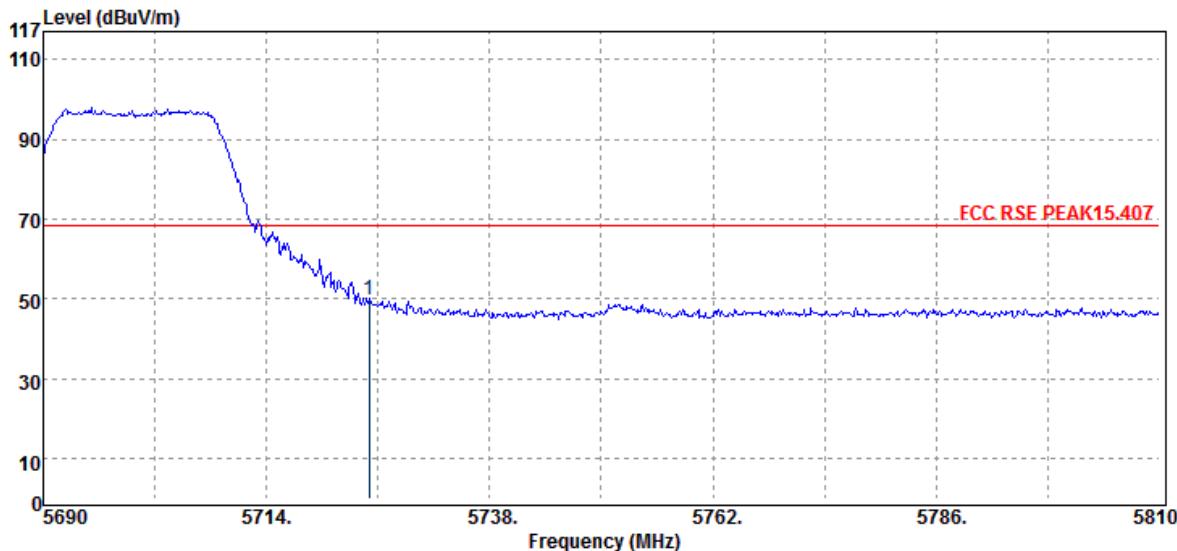
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Operation Band :802.11n20B3  
Fundamental Frequency :5700 MHz  
Operation Mode :Bandedge CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-17  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
			Reading				
PK/QP/AV	Peak	dB $\mu$ V	43.34	6.59	49.93	68.30	-18.37

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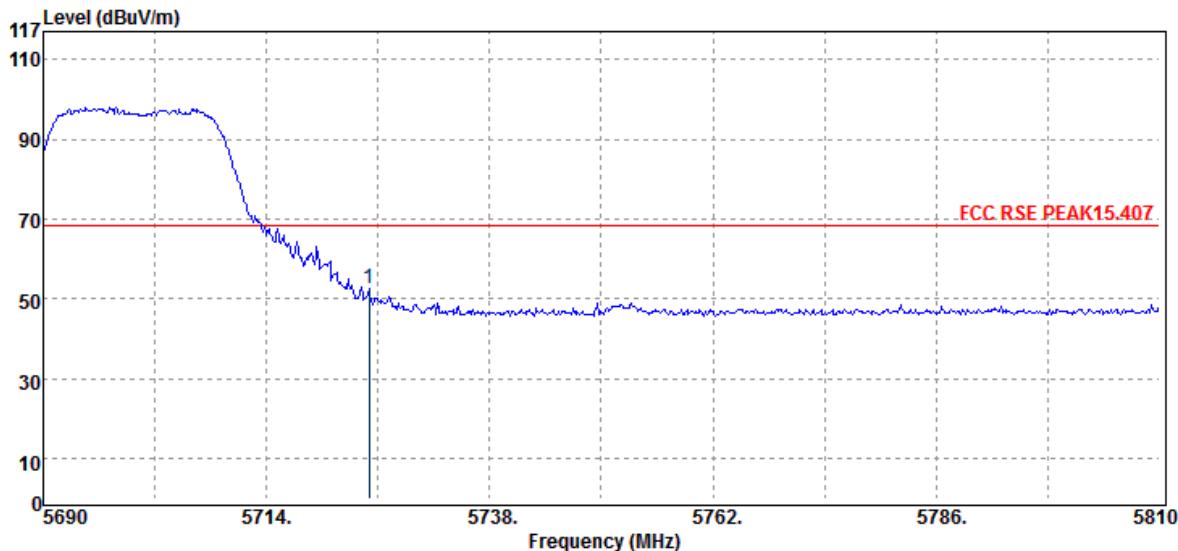
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Operation Band :802.11n20B3  
Fundamental Frequency :5700 MHz  
Operation Mode :Bandedge CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-17  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
			Reading				
PK/QP/AV	Peak	dB $\mu$ V	45.89	6.59	52.48	68.30	-15.82

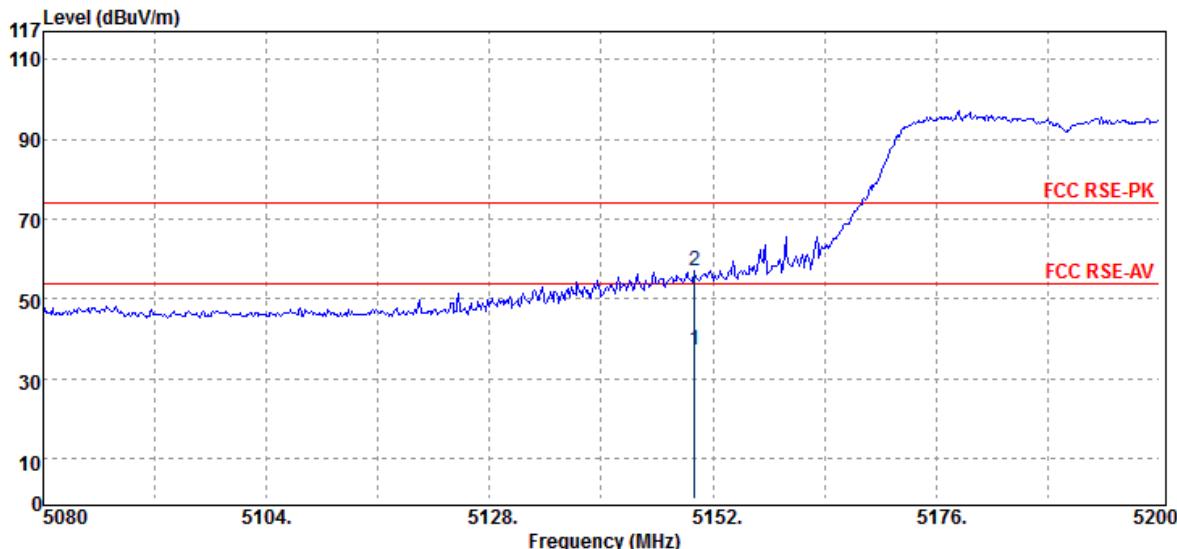
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**802.11n40 HT mode**

Operation Band :802.11n40B1 Test Date :2017-11-15  
Fundamental Frequency :5190 MHz Temp./Humi. :21 deg\_C / 62 RH  
Operation Mode :Bandedge CH LOW Engineer :Tin  
EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
		PK/QP/AV	Level dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5150.00	E	Average	31.27	5.88	37.15	54.00	-16.85
5150.00	E	Peak	51.14	5.88	57.02	74.00	-16.98

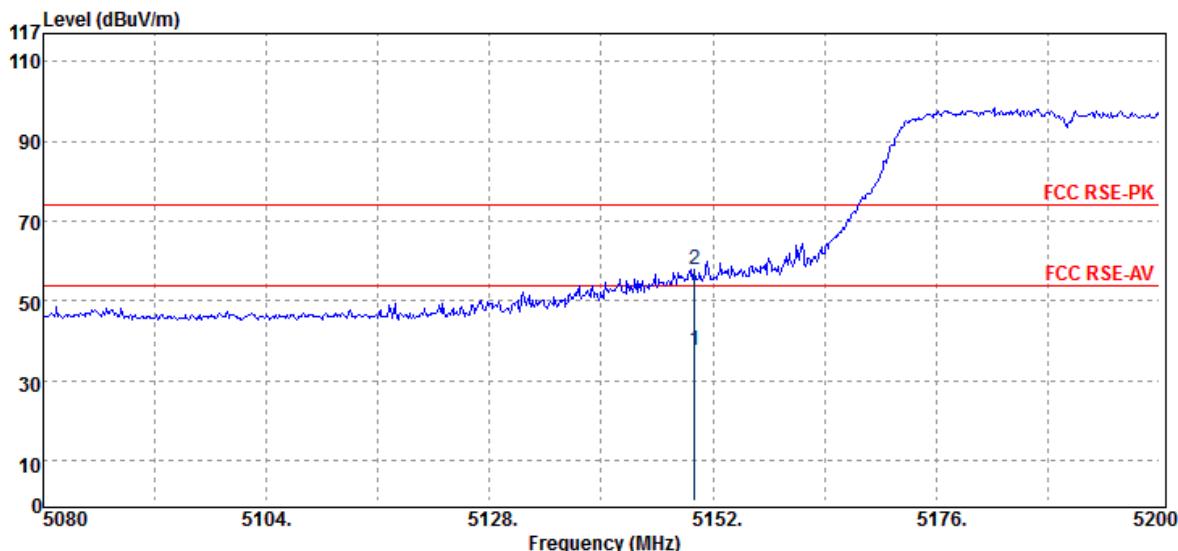
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Operation Band :802.11n40B1  
Fundamental Frequency :5190 MHz  
Operation Mode :Bandedge CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5150.00	E	Average	31.70	5.88	37.58	54.00	-16.42
5150.00	E	Peak	52.09	5.88	57.97	74.00	-16.03

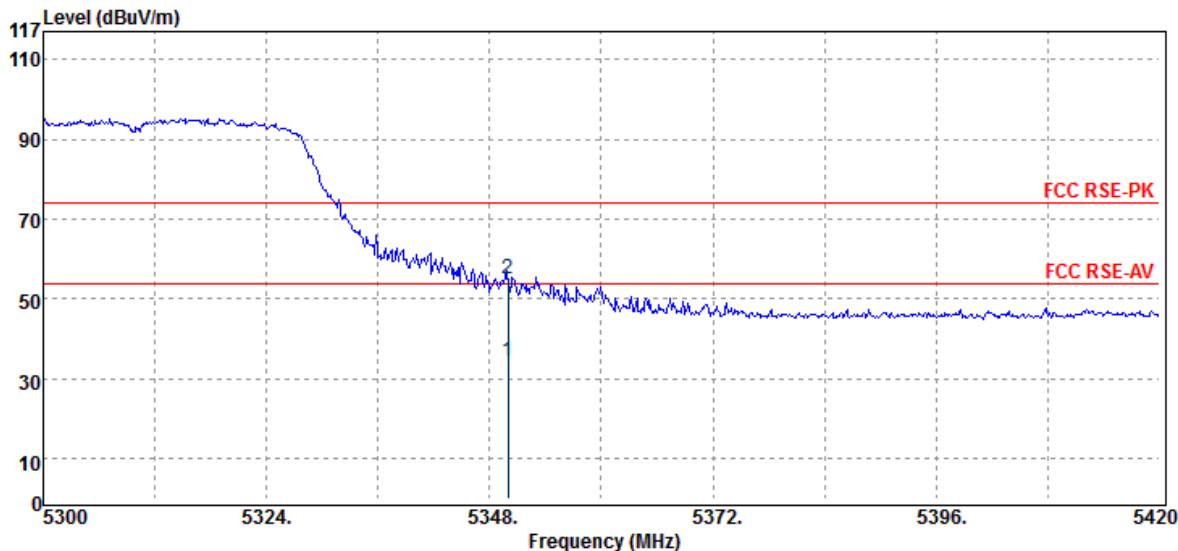
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Operation Band :802.11n40B2  
Fundamental Frequency :5310 MHz  
Operation Mode :Bandedge CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
5350.00	E	Average	28.05	6.16	34.21	54.00	-19.79
5350.00	E	Peak	48.90	6.16	55.06	74.00	-18.94

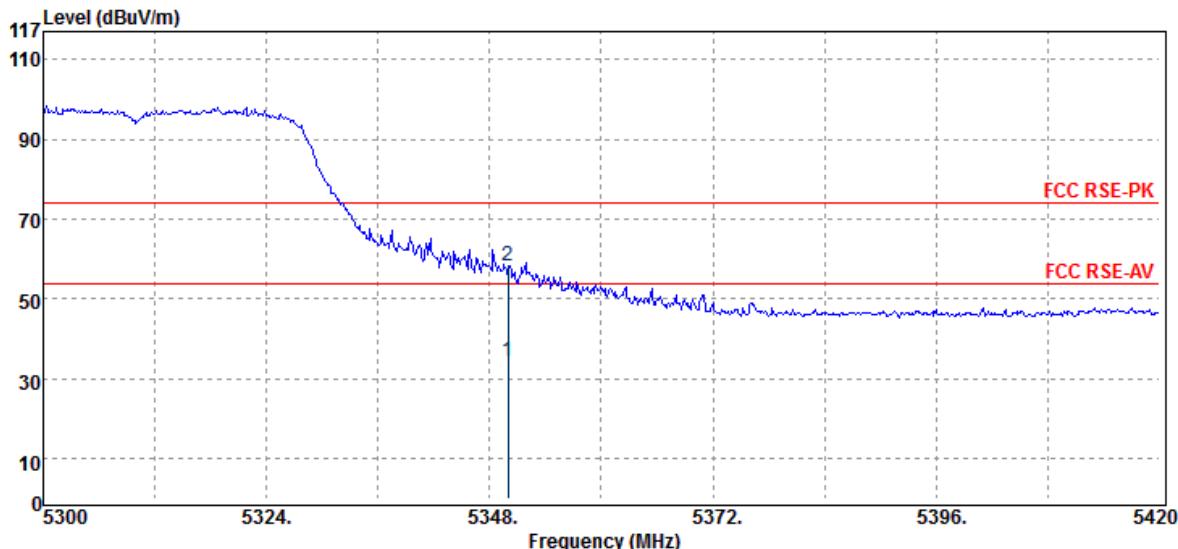
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Operation Band :802.11n40B2  
Fundamental Frequency :5310 MHz  
Operation Mode :Bandedge CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
5350.00	E	Average	28.36	6.16	34.52	54.00	-19.48
5350.00	E	Peak	52.12	6.16	58.28	74.00	-15.72

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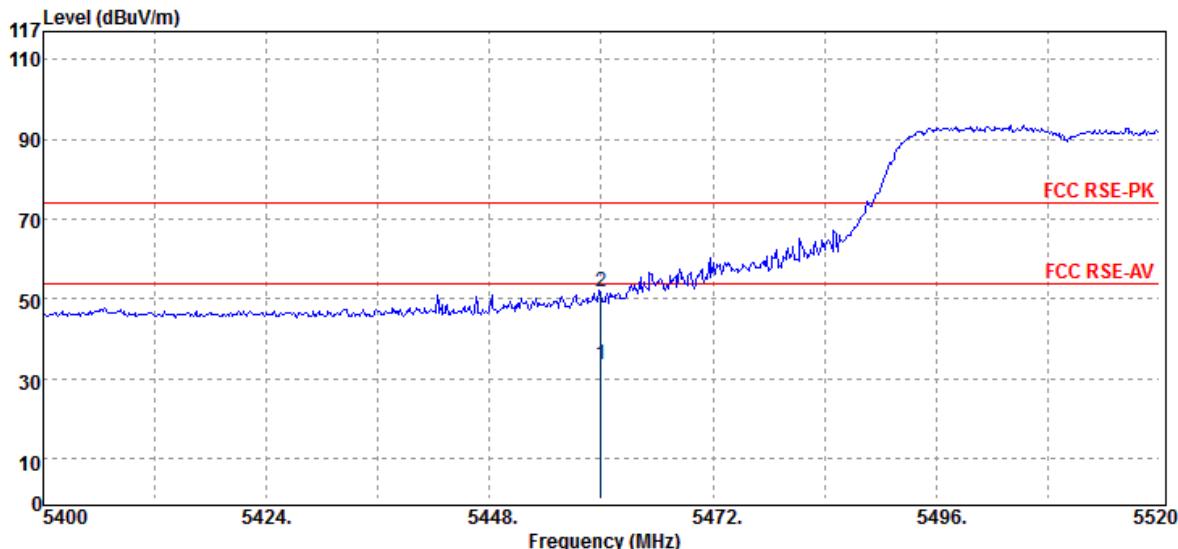
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Operation Band :802.11n40B3  
Fundamental Frequency :5510 MHz  
Operation Mode :Bandedge CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
		PK/QP/AV	Level dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5460.00	E	Average	27.36	6.23	33.59	54.00	-20.41
5460.00	E	Peak	45.44	6.23	51.67	74.00	-22.33

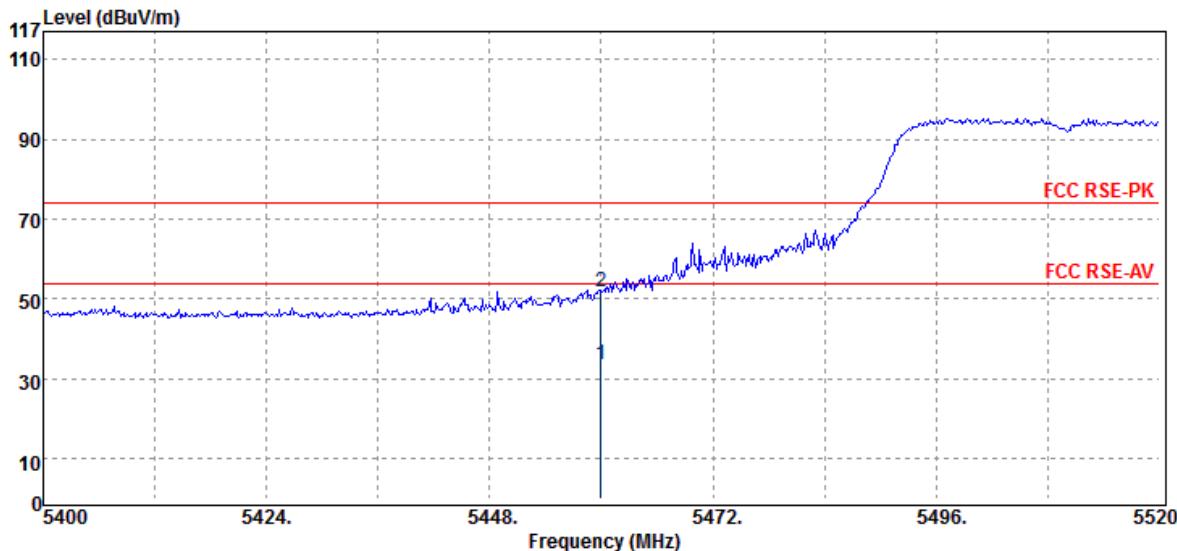
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Operation Band :802.11n40B3  
Fundamental Frequency :5510 MHz  
Operation Mode :Bandedge CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
		PK/QP/AV	Level dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5460.00	E	Average	27.50	6.23	33.73	54.00	-20.27
5460.00	E	Peak	45.68	6.23	51.91	74.00	-22.09

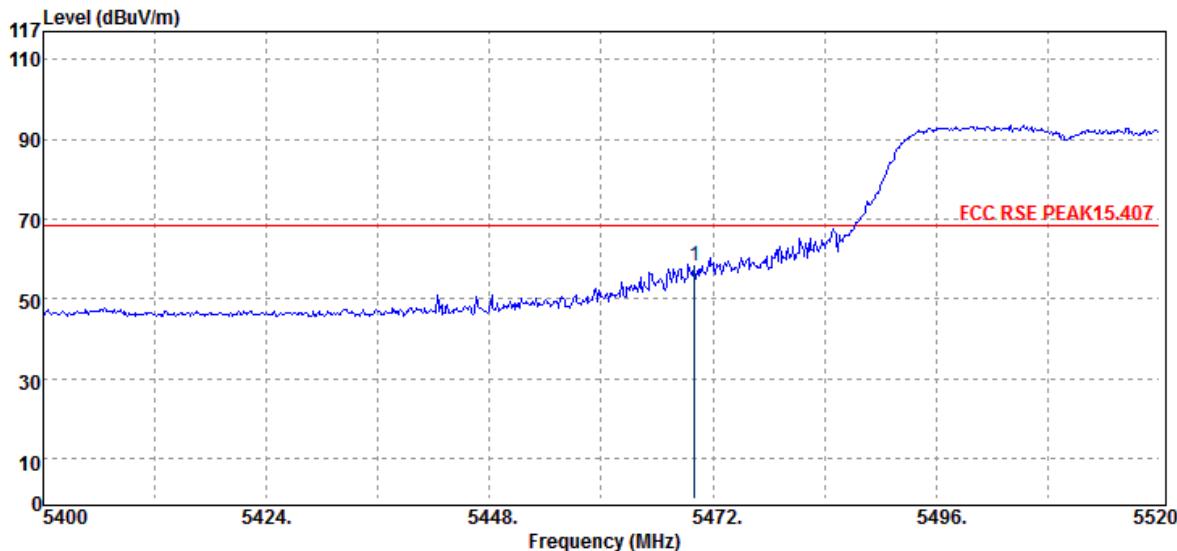
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Operation Band :802.11n40B3  
 Fundamental Frequency :5510 MHz  
 Operation Mode :Bandedge CH LOW  
 EUT Pol. :E1 Plane

Test Date :2017-11-16  
 Temp./Humi. :21 deg\_C / 62 RH  
 Engineer :Tin  
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
5470.00	E	Peak	52.04	6.26	58.30	68.30	-10.00

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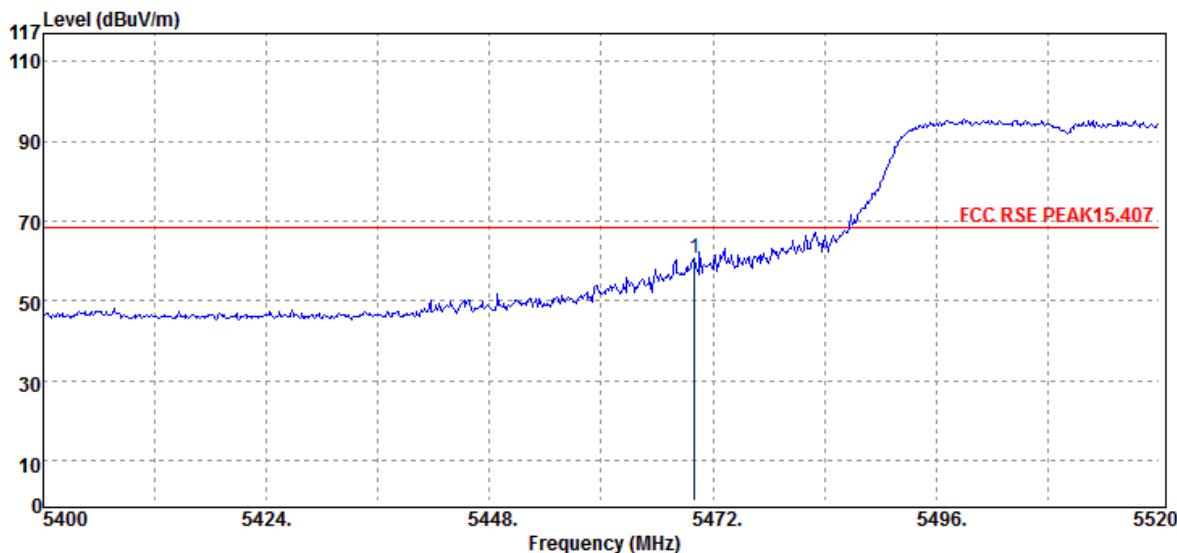
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Operation Band :802.11n40B3  
Fundamental Frequency :5510 MHz  
Operation Mode :Bandedge CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
			Reading				
PK/QP/AV	Peak	dB $\mu$ V	54.49	6.26	60.75	68.30	-7.55

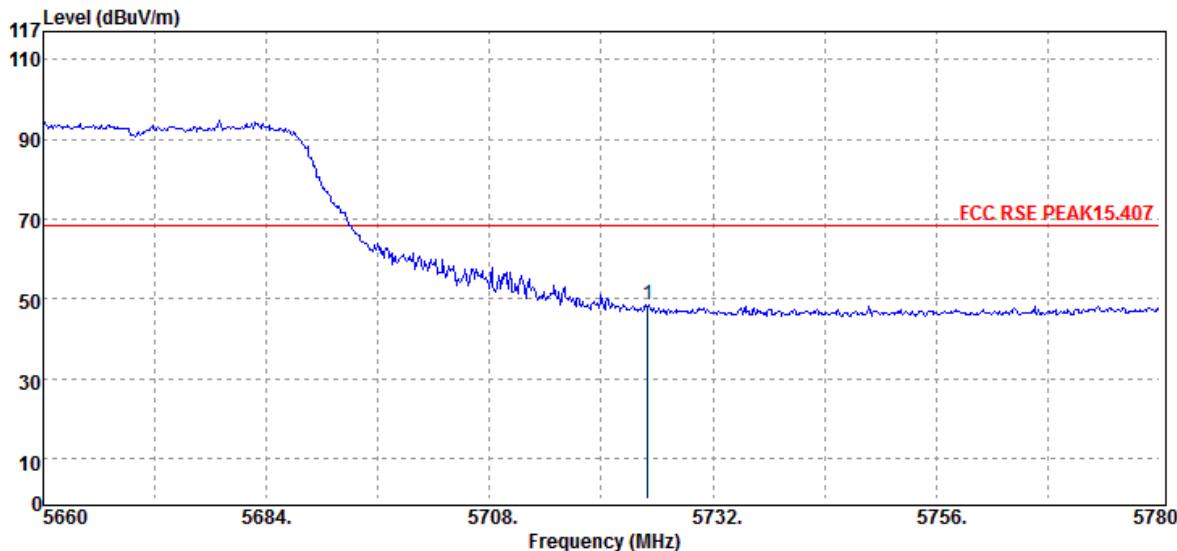
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Operation Band :802.11n40B3  
Fundamental Frequency :5670 MHz  
Operation Mode :Bandedge CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor Reading Level	Actual FS	Limit @3m	Margin	
			PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5725.00	E	Peak		41.96	6.59	48.55	68.30	-19.75

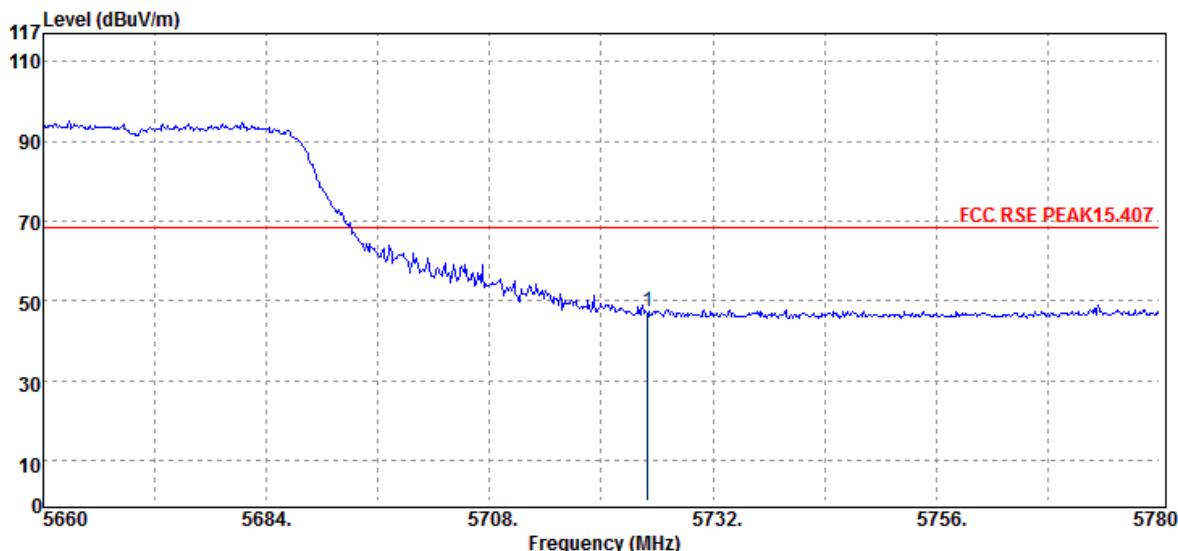
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Operation Band :802.11n40B3  
Fundamental Frequency :5670 MHz  
Operation Mode :Bandedge CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading	Factor	Actual FS	Limit	Margin
						dB $\mu$ V/m	dB $\mu$ V/m
5725.00	E	Peak	40.88	6.59	47.47	68.30	-20.83

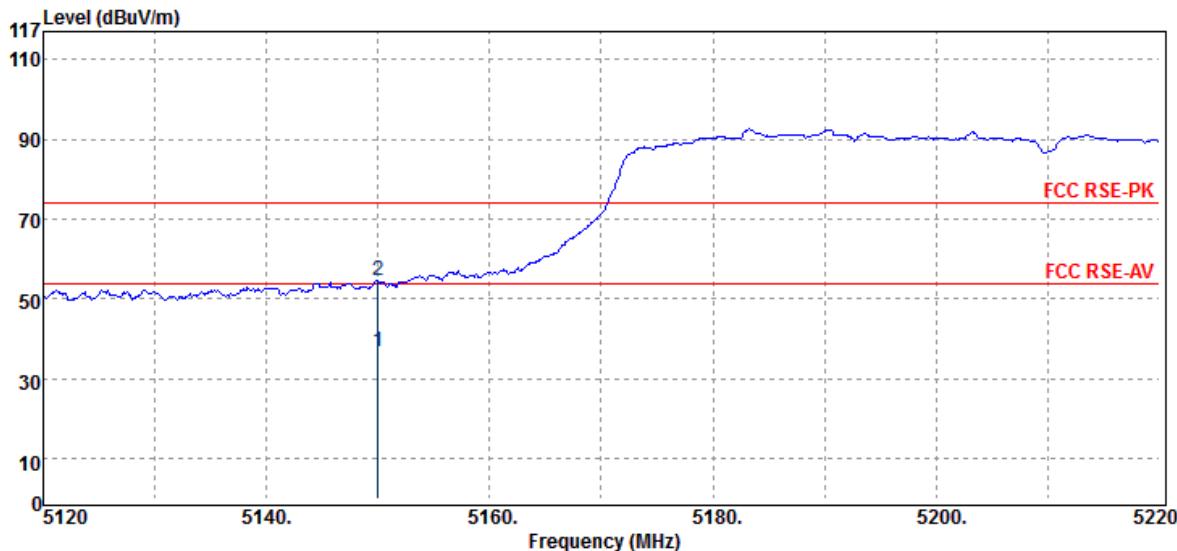
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**802.11ac80 VHT mode**

Operation Band :802.11ac80B1 Test Date :2017-11-16  
Fundamental Frequency :5210 MHz Temp./Humi. :21 deg\_C / 62 RH  
Operation Mode :Bandedge CH LOW Engineer :Tin  
EUT Pol. :E1 Plane Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
5150.00	E	Average	30.86	5.88	36.74	54.00	-17.26
5150.00	E	Peak	48.86	5.88	54.74	74.00	-19.26

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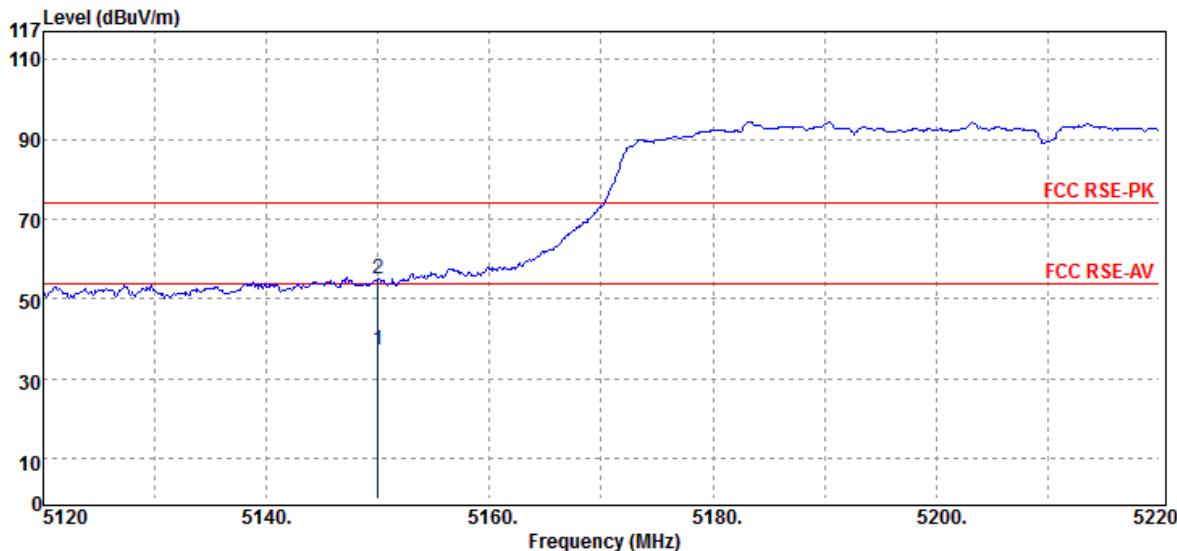
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Operation Band :802.11ac80B1  
Fundamental Frequency :5210 MHz  
Operation Mode :Bandedge CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5150.00	E	Average	31.32	5.88	37.20	54.00	-16.80
5150.00	E	Peak	49.22	5.88	55.10	74.00	-18.90

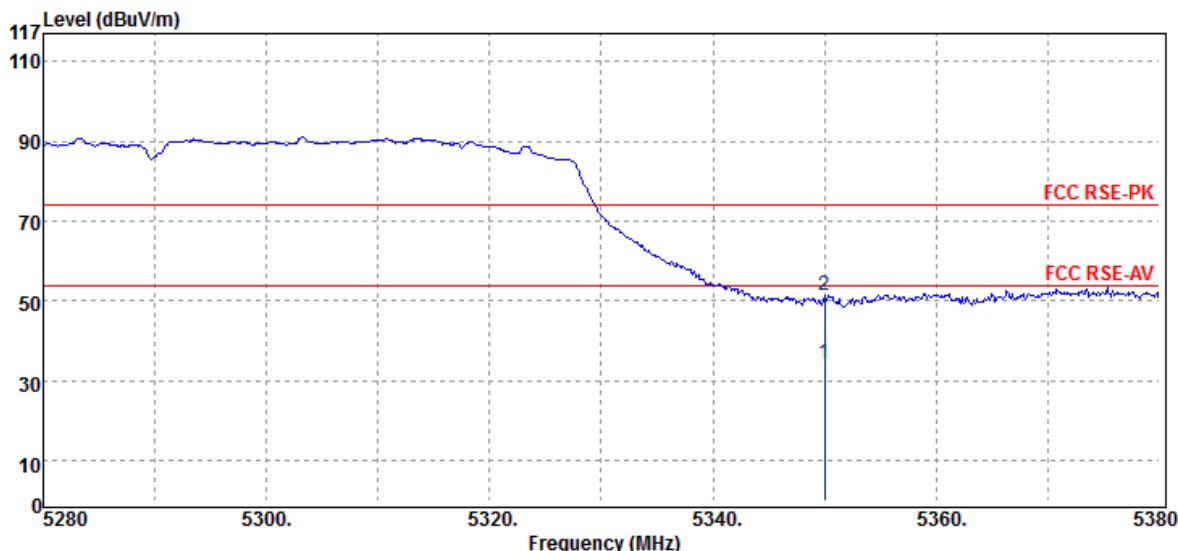
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Operation Band :802.11ac80B2  
Fundamental Frequency :5290 MHz  
Operation Mode :Bandedge CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
5350.00	E	Average	28.42	6.16	34.58	54.00	-19.42
5350.00	E	Peak	45.21	6.16	51.37	74.00	-22.63

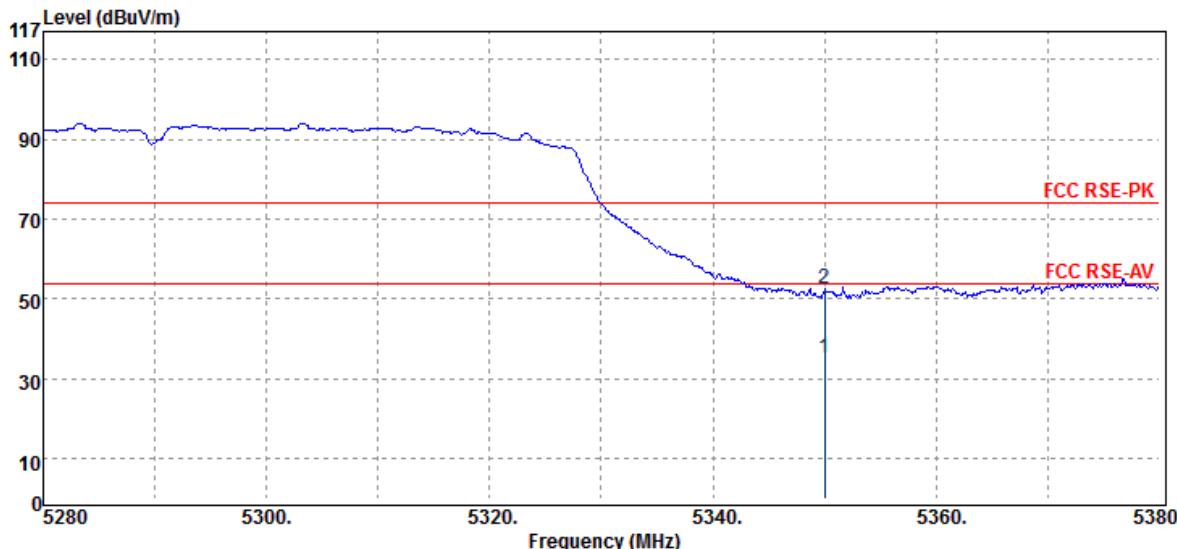
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Operation Band :802.11ac80B2  
Fundamental Frequency :5290 MHz  
Operation Mode :Bandedge CH HIGH  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5350.00	E	Average	28.89	6.16	35.05	54.00	-18.95
5350.00	E	Peak	46.65	6.16	52.81	74.00	-21.19

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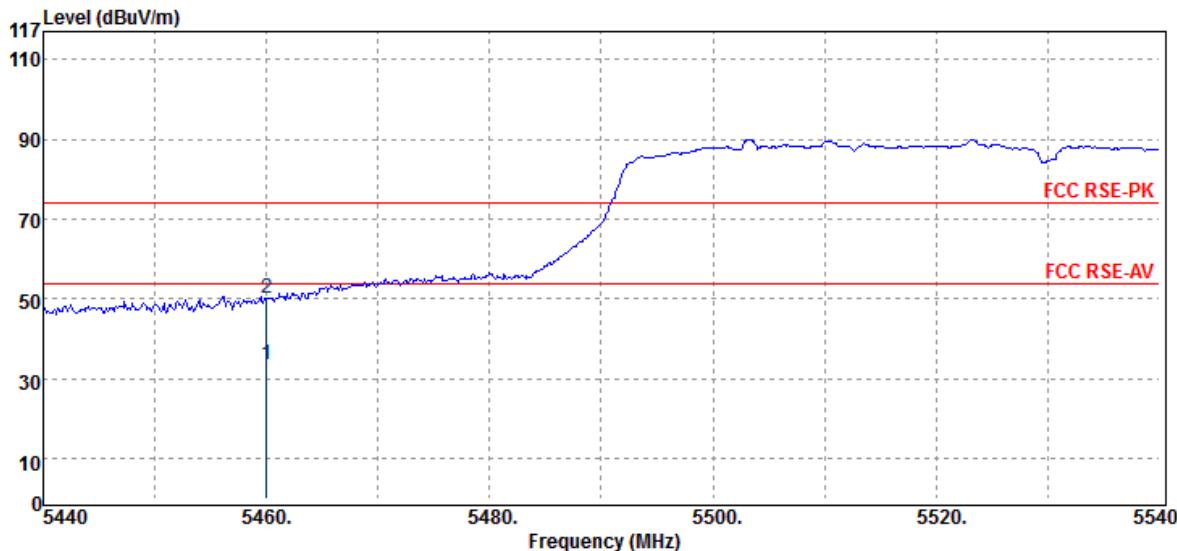
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Operation Band :802.11ac80B3  
Fundamental Frequency :5530 MHz  
Operation Mode :Bandedge CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
5460.00	E	Average	27.46	6.23	33.69	54.00	-20.31
5460.00	E	Peak	43.81	6.23	50.04	74.00	-23.96

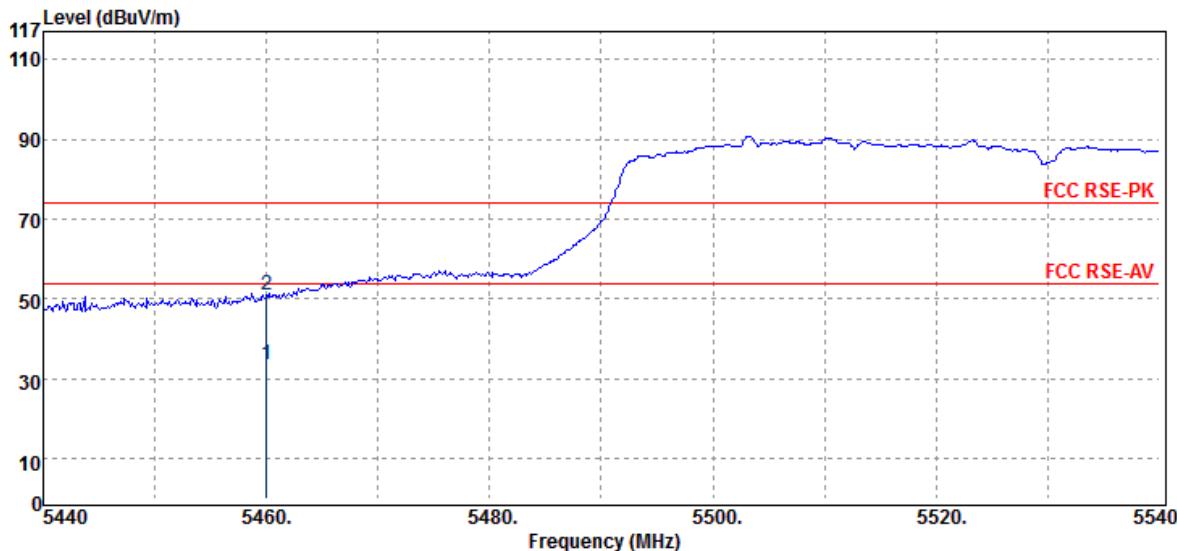
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Operation Band :802.11ac80B3  
Fundamental Frequency :5530 MHz  
Operation Mode :Bandedge CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
5460.00	E	Average	27.56	6.23	33.79	54.00	-20.21
5460.00	E	Peak	44.76	6.23	50.99	74.00	-23.01

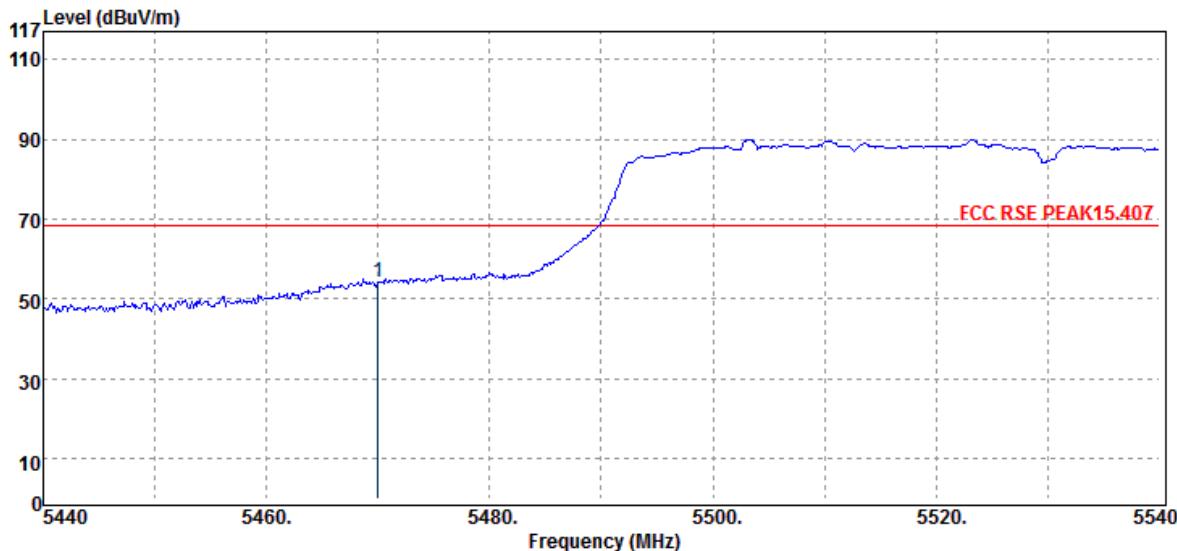
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Operation Band :802.11ac80B3  
Fundamental Frequency :5530 MHz  
Operation Mode :Bandedge CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor Reading Level	Actual FS	Limit @3m	Margin
			PK/QP/AV				
5470.00	E	Peak	Peak	48.10	6.26	54.36	68.30

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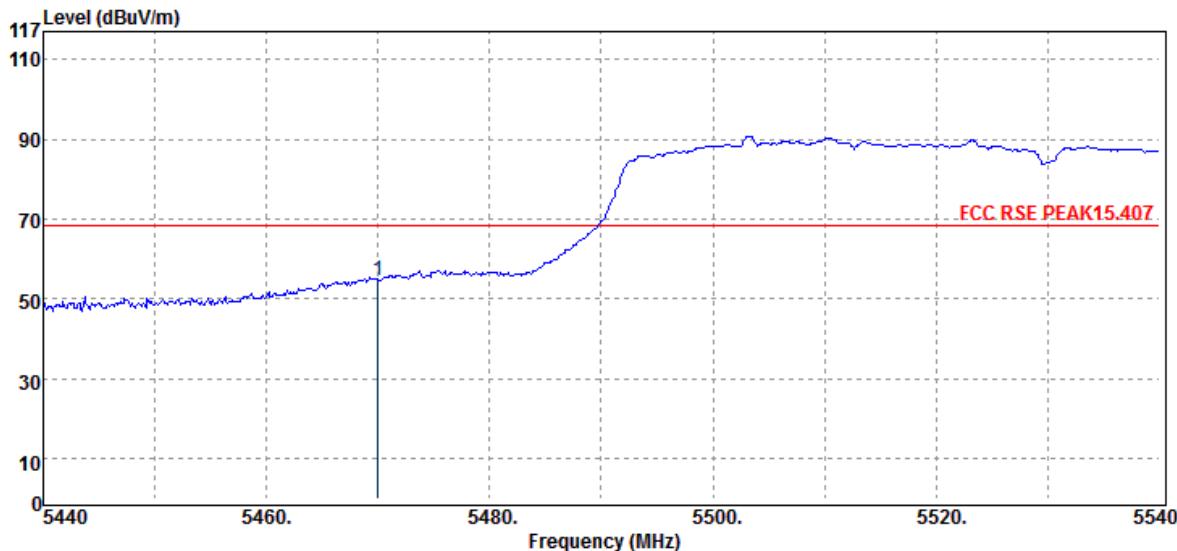
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Operation Band :802.11ac80B3  
Fundamental Frequency :5530 MHz  
Operation Mode :Bandedge CH LOW  
EUT Pol. :E1 Plane

Test Date :2017-11-16  
Temp./Humi. :21 deg\_C / 62 RH  
Engineer :Tin  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor Reading Level	Actual FS	Limit @3m	Margin
			PK/QP/AV				
5470.00	E	Peak	48.35	6.26	54.61	68.30	-13.69

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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

No non-compliance noted:

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

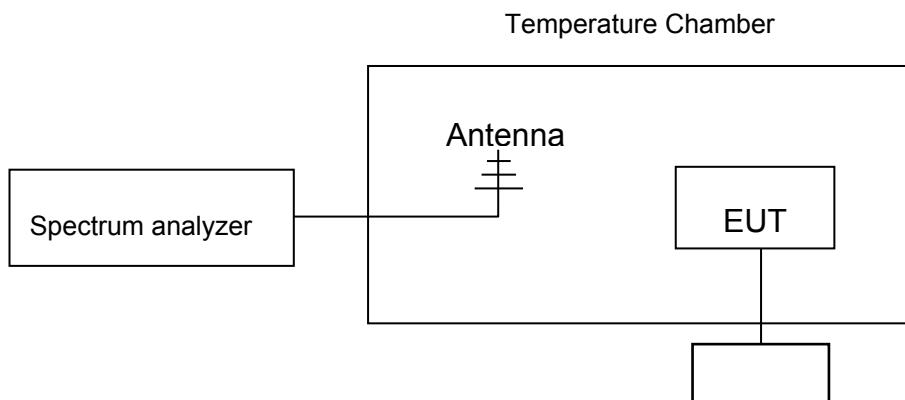
### 13.1 Standard Applicable

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:

Variable AC Power Supply

SGS Conducted Room					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	03/21/2017	03/20/2018
DC Power Supply	Agilent	E3640A	MY52410006	11/21/2017	11/20/2018
Temperature Chamber	TERCHY	MHG-120LF	911009	05/19/2017	05/18/2018

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### 13.5 Measurement Result

#### Startup

Operation Mode	802.11 a	Test Date	2017.11.20
Temperature	:23	Test By	Mike
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4.29V	36	5180	5,179.96997	0.00000580
		44	5220	5,219.96997	0.00000575
		48	5240	5,239.96997	0.00000573
		52	5260	5,259.96997	0.00000571
		60	5300	5,299.96997	0.00000567
		64	5320	5,319.96997	0.00000564
		100	5500	5,499.98486	0.00000275
		116	5580	5,579.96997	0.00000538
		140	5700	5,699.96997	0.00000527
	3.51V	36	5180	5,179.98511	0.00000288
		44	5220	5,219.98486	0.00000290
		48	5240	5,239.96997	0.00000573
		52	5260	5,259.98486	0.00000288
		60	5300	5,299.96997	0.00000567
		64	5320	5,319.96997	0.00000564
		100	5500	5,499.96997	0.00000546
		116	5580	5,579.96997	0.00000538
		140	5700	5,699.96997	0.00000527

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25	3.8V	36	5180	5,179.98486	0.00000292
		44	5220	5,219.98486	0.00000290
		48	5240	5,239.96997	0.00000573
		52	5260	5,259.96997	0.00000571
		60	5300	5,299.98486	0.00000286
		64	5320	5,319.96997	0.00000564
		100	5500	5,499.98486	0.00000275
		116	5580	5,579.96997	0.00000538
		140	5700	5,699.98486	0.00000266
		36	5180	5,179.96997	0.00000580
55	4.29V	44	5220	5,219.98486	0.00000290
		48	5240	5,239.96997	0.00000573
		52	5260	5,259.98486	0.00000288
		60	5300	5,299.96997	0.00000567
		64	5320	5,319.96997	0.00000564
		100	5500	5,499.96997	0.00000546
		116	5580	5,579.96997	0.00000538
		140	5700	5,699.96997	0.00000527
		36	5180	5,179.96997	0.00000580
		44	5220	5,219.96997	0.00000575
	3.51V	48	5240	5,239.98486	0.00000289
		52	5260	5,259.96997	0.00000571
		60	5300	5,299.98486	0.00000286
		64	5320	5,319.96997	0.00000564
		100	5500	5,499.96997	0.00000546
		116	5580	5,579.96997	0.00000538
		140	5700	5,699.96997	0.00000527
		36	5180	5,179.96997	0.00000580
		44	5220	5,219.96997	0.00000575
		48	5240	5,239.98486	0.00000289

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Operation Mode		802.11 n_HT40		Test Date	2017.11.20
Temperature		:23		Test By	Mike
Humidity		:68 %			
Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4.29V	38	5190	5,190.00000	0.000000000
		46	5230	5,229.97510	0.00000476
		54	5270	5,269.97510	0.00000473
		62	5310	5,309.97510	0.00000469
		102	5510	5,509.94995	0.00000908
		110	5550	5,550.00000	0.000000000
		134	5670	5,669.97510	0.00000439
	3.51V	38	5190	5,189.95020	0.00000960
		46	5230	5,229.97510	0.00000476
		54	5270	5,269.97510	0.00000473
		62	5310	5,310.00000	0.000000000
		102	5510	5,510.00000	0.000000000
		110	5550	5,549.97510	0.00000449
		134	5670	5,669.97510	0.00000439
25	3.8V	38	5190	5,189.97510	0.00000480
		46	5230	5,229.97510	0.00000476
		54	5270	5,270.00000	0.000000000
		62	5310	5,309.95020	0.00000938
		102	5510	5,509.97510	0.00000452
		110	5550	5,549.95020	0.00000897
		134	5670	5,670.00000	0.000000000

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55	4.29V	38	5190	5,189.97510	0.00000480
		46	5230	5,229.97510	0.00000476
		54	5270	5,270.00000	0.000000000
		62	5310	5,309.97510	0.00000469
		102	5510	5,510.00000	0.000000000
		110	5550	5,549.97510	0.00000449
		134	5670	5,669.95020	0.00000878
	3.51V	38	5190	5,190.00000	0.000000000
		46	5230	5,230.00000	0.000000000
		54	5270	5,270.00000	0.000000000
		62	5310	5,309.97510	0.00000469
		102	5510	5,509.97510	0.00000452
		110	5550	5,549.97510	0.00000449
		134	5670	5,670.00000	0.000000000

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Operation Mode	802.11 ac_VHT80	Test Date	2017.11.20
Temperature	:23	Test By	Mike
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4.29V	42	5210	5,209.84985	0.00002882
		58	5290	5,289.94995	0.00000946
		106	5530	5,529.84985	0.00002715
		122	5610	5,609.94995	0.00000892
	3.51V	42	5210	5,209.94995	0.00000961
		58	5290	5,289.94995	0.00000946
		106	5530	5,529.69995	0.00005426
		122	5610	5,609.84985	0.00002676
25	3.8V	42	5210	5,209.84985	0.00002882
		58	5290	5,289.94995	0.00000946
		106	5530	5,529.84985	0.00002715
		122	5610	5,609.84985	0.00002676
55	4.29V	42	5210	5,209.84985	0.00002882
		58	5290	5,289.94995	0.00000946
		106	5530	5,529.84985	0.00002715
		122	5610	5,609.84985	0.00002676
	3.51V	42	5210	5,209.94995	0.00000961
		58	5290	5,289.94995	0.00000946
		106	5530	5,529.84985	0.00002715
		122	5610	5,609.94995	0.00000892

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**2 minutes**

Operation Mode	802.11 a	Test Date	2017.11.20
Temperature	:23	Test By	Mike
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4.29V	36	5180	5,179.97974	0.00000391
		44	5220	5,219.96491	0.00000672
		48	5240	5,239.97685	0.00000442
		52	5260	5,259.97348	0.00000504
		60	5300	5,299.97680	0.00000438
		64	5320	5,319.97521	0.00000466
		100	5500	5,499.97951	0.00000373
		116	5580	5,579.96552	0.00000618
	3.51V	140	5700	5,699.97901	0.00000368
		36	5180	5,179.98317	0.00000325
		44	5220	5,219.99317	0.00000131
		48	5240	5,239.97187	0.00000537
		52	5260	5,259.98653	0.00000256
		60	5300	5,299.97765	0.00000422
		64	5320	5,319.96346	0.00000687
		100	5500	5,499.97333	0.00000485
		116	5580	5,579.97980	0.00000362
		140	5700	5,699.97198	0.00000492

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25	3.8V	36	5180	5,179.97901	0.00000405
		44	5220	5,219.99132	0.00000166
		48	5240	5,239.97940	0.00000393
		52	5260	5,259.97457	0.00000483
		60	5300	5,299.98530	0.00000277
		64	5320	5,319.96383	0.00000680
		100	5500	5,499.99430	0.00000104
		116	5580	5,579.97094	0.00000521
		140	5700	5,699.98610	0.00000244
		36	5180	5,179.97752	0.00000434
55	4.29V	44	5220	5,219.98762	0.00000237
		48	5240	5,239.97550	0.00000468
		52	5260	5,259.97501	0.00000475
		60	5300	5,299.97110	0.00000545
		64	5320	5,319.97293	0.00000509
		100	5500	5,499.96701	0.00000600
		116	5580	5,579.97513	0.00000446
		140	5700	5,699.96695	0.00000580
		36	5180	5,179.97375	0.00000507
		44	5220	5,219.97599	0.00000460
	3.51V	48	5240	5,239.98776	0.00000234
		52	5260	5,259.97924	0.00000395
		60	5300	5,299.97980	0.00000381
		64	5320	5,319.97779	0.00000417
		100	5500	5,499.97751	0.00000409
		116	5580	5,579.96476	0.00000632
		140	5700	5,699.97647	0.00000413

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Operation Mode		802.11 n_HT40		Test Date	2017.11.20
Temperature		:23		Test By	Mike
Humidity		:68 %			
Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4.29V	38	5190	5,190.00077	-0.00000015
		46	5230	5,229.97180	0.00000539
		54	5270	5,269.96827	0.00000602
		62	5310	5,309.97707	0.00000432
		102	5510	5,509.94248	0.00001044
		110	5550	5,550.00611	-0.00000110
		134	5670	5,669.96935	0.00000541
	3.51V	38	5190	5,189.94905	0.00000982
		46	5230	5,229.97143	0.00000546
		54	5270	5,269.98436	0.00000297
		62	5310	5,309.99074	0.00000174
		102	5510	5,509.99285	0.00000130
		110	5550	5,549.97225	0.00000500
		134	5670	5,669.97355	0.00000467
25	3.8V	38	5190	5,189.97914	0.00000402
		46	5230	5,229.96886	0.00000595
		54	5270	5,269.99979	0.00000004
		62	5310	5,309.95012	0.00000939
		102	5510	5,509.98282	0.00000312
		110	5550	5,549.95964	0.00000727
		134	5670	5,670.00992	-0.00000175

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55	4.29V	38	5190	5,189.97371	0.00000507
		46	5230	5,229.96623	0.00000646
		54	5270	5,269.99432	0.00000108
		62	5310	5,309.97973	0.00000382
		102	5510	5,509.99267	0.00000133
		110	5550	5,549.97083	0.00000526
		134	5670	5,669.95975	0.00000710
	3.51V	38	5190	5,189.99884	0.00000022
		46	5230	5,229.99488	0.00000098
		54	5270	5,269.99002	0.00000189
		62	5310	5,309.98301	0.00000320
		102	5510	5,509.98348	0.00000300
		110	5550	5,549.97820	0.00000393
		134	5670	5,670.00697	-0.00000123

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t (886-2) 2299-3279

f (886-2) 2298-0488

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Operation Mode	802.11 ac_VHT80	Test Date	2017.11.20
Temperature	:23	Test By	Mike
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4.29V	42	5210	5,209.84118	0.00003048
		58	5290	5,289.94075	0.00001120
		106	5530	5,529.84242	0.00002849
		122	5610	5,609.94954	0.00000899
	3.51V	42	5210	5,209.94930	0.00000973
		58	5290	5,289.94839	0.00000976
		106	5530	5,529.69671	0.00005484
		122	5610	5,609.84316	0.00002796
25	3.8V	42	5210	5,209.84362	0.00003002
		58	5290	5,289.94782	0.00000986
		106	5530	5,529.84600	0.00002785
		122	5610	5,609.84981	0.00002677
55	4.29V	42	5210	5,209.85465	0.00002790
		58	5290	5,289.95296	0.00000889
		106	5530	5,529.84875	0.00002735
		122	5610	5,609.85154	0.00002646
	3.51V	42	5210	5,209.95115	0.00000938
		58	5290	5,289.94540	0.00001032
		106	5530	5,529.84602	0.00002784
		122	5610	5,609.94070	0.00001057

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## 5 minutes

Operation Mode		802.11 a		Test Date	2017.11.20
Temperature		:23		Test By	Mike
Humidity		:68 %			
Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4.29V	36	5180	5,179.97603	0.00000463
		44	5220	5,219.96331	0.00000703
		48	5240	5,239.97615	0.00000455
		52	5260	5,259.96579	0.00000650
		60	5300	5,299.96886	0.00000587
		64	5320	5,319.96112	0.00000731
		100	5500	5,499.98044	0.00000356
		116	5580	5,579.96444	0.00000637
		140	5700	5,699.96405	0.00000631
	3.51V	36	5180	5,179.99260	0.00000143
		44	5220	5,219.98339	0.00000318
		48	5240	5,239.97587	0.00000461
		52	5260	5,259.99067	0.00000177
		60	5300	5,299.96280	0.00000702
		64	5320	5,319.97318	0.00000504
		100	5500	5,499.96480	0.00000640
		116	5580	5,579.96184	0.00000684
		140	5700	5,699.96360	0.00000639

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25	3.8V	36	5180	5,179.98343	0.00000320
		44	5220	5,219.99456	0.00000104
		48	5240	5,239.97050	0.00000563
		52	5260	5,259.96452	0.00000675
		60	5300	5,299.97770	0.00000421
		64	5320	5,319.96129	0.00000728
		100	5500	5,499.98396	0.00000292
		116	5580	5,579.97866	0.00000382
		140	5700	5,699.97928	0.00000364
		36	5180	5,179.97853	0.00000414
55	4.29V	44	5220	5,219.97740	0.00000433
		48	5240	5,239.96754	0.00000620
		52	5260	5,259.97613	0.00000454
		60	5300	5,299.96432	0.00000673
		64	5320	5,319.96926	0.00000578
		100	5500	5,499.97187	0.00000511
		116	5580	5,579.96083	0.00000702
		140	5700	5,699.96751	0.00000570
		36	5180	5,179.96681	0.00000641
		44	5220	5,219.96154	0.00000737
	3.51V	48	5240	5,239.98000	0.00000382
		52	5260	5,259.96308	0.00000702
		60	5300	5,299.98306	0.00000320
		64	5320	5,319.97554	0.00000460
		100	5500	5,499.96841	0.00000574
		116	5580	5,579.97482	0.00000451
		140	5700	5,699.96689	0.00000581

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Operation Mode		802.11 n_HT40		Test Date	2017.11.20
Temperature		:23		Test By	Mike
Humidity		:68 %			
Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4.29V	38	5190	5,189.99422	0.00000111
		46	5230	5,229.98395	0.00000307
		54	5270	5,269.97845	0.00000409
		62	5310	5,309.97156	0.00000536
		102	5510	5,509.95881	0.00000748
		110	5550	5,549.99034	0.00000174
		134	5670	5,669.97870	0.00000376
	3.51V	38	5190	5,189.94375	0.00001084
		46	5230	5,229.97370	0.00000503
		54	5270	5,269.98175	0.00000346
		62	5310	5,310.00063	-0.00000012
		102	5510	5,510.00448	-0.00000081
		110	5550	5,549.97708	0.00000413
		134	5670	5,669.97475	0.00000445
25	3.8V	38	5190	5,189.97255	0.00000529
		46	5230	5,229.98002	0.00000382
		54	5270	5,270.00598	-0.00000113
		62	5310	5,309.94196	0.00001093
		102	5510	5,509.97006	0.00000543
		110	5550	5,549.94070	0.00001069
		134	5670	5,669.99258	0.00000131

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55	4.29V	38	5190	5,189.97308	0.00000519
		46	5230	5,229.97550	0.00000468
		54	5270	5,270.00165	-0.00000031
		62	5310	5,309.96825	0.00000598
		102	5510	5,510.00839	-0.00000152
		110	5550	5,549.97067	0.00000528
		134	5670	5,669.95730	0.00000753
	3.51V	38	5190	5,190.00272	-0.00000052
		46	5230	5,230.00287	-0.00000055
		54	5270	5,269.99824	0.00000033
		62	5310	5,309.98095	0.00000359
		102	5510	5,509.98129	0.00000340
		110	5550	5,549.97782	0.00000400
		134	5670	5,670.00159	-0.00000028

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Operation Mode	802.11 ac_VHT80	Test Date	2017.11.20
Temperature	:23	Test By	Mike
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4.29V	42	5210	5,209.85670	0.00002750
		58	5290	5,289.94438	0.00001051
		106	5530	5,529.85109	0.00002693
		122	5610	5,609.95842	0.00000741
	3.51V	42	5210	5,209.94907	0.00000978
		58	5290	5,289.94239	0.00001089
		106	5530	5,529.69480	0.00005519
		122	5610	5,609.84095	0.00002835
25	3.8V	42	5210	5,209.85565	0.00002771
		58	5290	5,289.95169	0.00000913
		106	5530	5,529.85759	0.00002575
		122	5610	5,609.84501	0.00002763
55	4.29V	42	5210	5,209.84015	0.00003068
		58	5290	5,289.94291	0.00001079
		106	5530	5,529.85161	0.00002683
		122	5610	5,609.84953	0.00002682
	3.51V	42	5210	5,209.95955	0.00000776
		58	5290	5,289.95577	0.00000836
		106	5530	5,529.85743	0.00002578
		122	5610	5,609.94999	0.00000891

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## 10 minutes

Operation Mode	802.11 a	Test Date	2017.11.20
Temperature	:23	Test By	Mike
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4.29V	36	5180	5,179.96522	0.00000671
		44	5220	5,219.97136	0.00000549
		48	5240	5,239.97673	0.00000444
		52	5260	5,259.97828	0.00000413
		60	5300	5,299.96923	0.00000581
		64	5320	5,319.97533	0.00000464
		100	5500	5,499.97700	0.00000418
		116	5580	5,579.96527	0.00000622
		140	5700	5,699.96553	0.00000605
	3.51V	36	5180	5,179.99368	0.00000122
		44	5220	5,219.97527	0.00000474
		48	5240	5,239.96897	0.00000592
		52	5260	5,259.98917	0.00000206
		60	5300	5,299.97732	0.00000428
		64	5320	5,319.96844	0.00000593
		100	5500	5,499.97538	0.00000448
		116	5580	5,579.96382	0.00000648
		140	5700	5,699.96962	0.00000533
25	3.8V	36	5180	5,179.98527	0.00000284
		44	5220	5,219.98571	0.00000274
		48	5240	5,239.97008	0.00000571
		52	5260	5,259.97733	0.00000431
		60	5300	5,299.98990	0.00000190
		64	5320	5,319.97705	0.00000431
		100	5500	5,499.98730	0.00000231
		116	5580	5,579.96609	0.00000608
		140	5700	5,699.97635	0.00000415

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55	4.29V	36	5180	5,179.96760	0.00000626
		44	5220	5,219.99378	0.00000119
		48	5240	5,239.97946	0.00000392
		52	5260	5,259.98411	0.00000302
		60	5300	5,299.97546	0.00000463
		64	5320	5,319.97102	0.00000545
		100	5500	5,499.97810	0.00000398
		116	5580	5,579.96070	0.00000704
		140	5700	5,699.96997	0.00000527
	3.51V	36	5180	5,179.97760	0.00000432
		44	5220	5,219.96098	0.00000748
		48	5240	5,239.98616	0.00000264
		52	5260	5,259.97249	0.00000523
		60	5300	5,299.97604	0.00000452
		64	5320	5,319.97085	0.00000548
		100	5500	5,499.96270	0.00000678
		116	5580	5,579.96698	0.00000592
		140	5700	5,699.96274	0.00000654

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Operation Mode		802.11 n_HT40		Test Date	2017.11.20
Temperature		:23		Test By	Mike
Humidity		:68 %			
Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4.29V	38	5190	5,189.99891	0.00000021
		46	5230	5,229.96749	0.00000622
		54	5270	5,269.96804	0.00000607
		62	5310	5,309.97601	0.00000452
		102	5510	5,509.95165	0.00000878
		110	5550	5,549.99512	0.00000088
		134	5670	5,669.97514	0.00000439
	3.51V	38	5190	5,189.94284	0.00001101
		46	5230	5,229.97298	0.00000517
		54	5270	5,269.97031	0.00000563
		62	5310	5,310.00872	-0.00000164
		102	5510	5,510.00472	-0.00000086
		110	5550	5,549.98060	0.00000350
		134	5670	5,669.97858	0.00000378
25	3.8V	38	5190	5,189.97721	0.00000439
		46	5230	5,229.97455	0.00000487
		54	5270	5,269.99092	0.00000172
		62	5310	5,309.95362	0.00000873
		102	5510	5,509.96557	0.00000625
		110	5550	5,549.94334	0.00001021
		134	5670	5,670.00226	-0.00000040

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55	4.29V	38	5190	5,189.97458	0.00000490
		46	5230	5,229.98381	0.00000310
		54	5270	5,270.00901	-0.00000171
		62	5310	5,309.97997	0.00000377
		102	5510	5,509.99526	0.00000086
		110	5550	5,549.96579	0.00000616
		134	5670	5,669.94167	0.00001029
	3.51V	38	5190	5,190.00397	-0.00000076
		46	5230	5,230.00012	-0.00000002
		54	5270	5,269.99014	0.00000187
		62	5310	5,309.97036	0.00000558
		102	5510	5,509.98344	0.00000301
		110	5550	5,549.97694	0.00000415
		134	5670	5,670.00491	-0.00000087

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Operation Mode	802.11 ac_VHT80	Test Date	2017.11.20
Temperature	:23	Test By	Mike
Humidity	:68 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	4.29V	42	5210	5,209.84642	0.00002948
		58	5290	5,289.94153	0.00001105
		106	5530	5,529.84007	0.00002892
		122	5610	5,609.95351	0.00000829
	3.51V	42	5210	5,209.94906	0.00000978
		58	5290	5,289.94754	0.00000992
		106	5530	5,529.69059	0.00005595
		122	5610	5,609.85743	0.00002541
25	3.8V	42	5210	5,209.85054	0.00002869
		58	5290	5,289.95481	0.00000854
		106	5530	5,529.85394	0.00002641
		122	5610	5,609.85264	0.00002627
55	4.29V	42	5210	5,209.84211	0.00003031
		58	5290	5,289.94136	0.00001108
		106	5530	5,529.85272	0.00002663
		122	5610	5,609.84118	0.00002831
	3.51V	42	5210	5,209.95712	0.00000823
		58	5290	5,289.95312	0.00000886
		106	5530	5,529.84571	0.00002790
		122	5610	5,609.94655	0.00000953

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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

PIFA antenna designs are used.

The antenna is designed with permanent attached and no consideration of replacement.  
Please see EUT photo and antenna spec. for details.

The antenna gain is less than 6dBi. Therefore, it is not necessary to reduce maximum output power limit.

*~ End of Report ~*

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