

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

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

OF

**Applicant:** Barco NV  
President Kennedypark 35, 8500 Kortrijk, Belgium

**Product Name:** Pulse

**Brand Name:** Barco NV

**Model No.:** R8767900, R87679001

**Model Difference:** Only difference between both is the modular boards have been removed to be able to send an empty Pulse to the customer

**FCC ID:** 2AOUF-R8767900X

**Report Number:** ER/2017/90084

**FCC Rule Part:** §15.407, Cat: NII

**Issue Date:** Jan. 08, 2018

**Date of Test:** Dec. 19, 2017 ~ Dec. 20, 2017

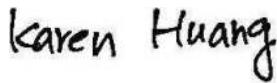
**Date of EUT Received:** Sep. 13, 2017

**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 compliance with conducted and radiated emission limits.

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

**Prepared By:**

  
Karen Huang

*Karen Huang / Clerk*

**Approved By:**

  
Jim Chang

*Jim Chang / Asst. Manager*



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## Revision History

Report Number	Revision	Description	Issue Date
ER/2017/90084	Rev.00	Initial creation of document	Jan. 08, 2018

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## 1. GENERAL INFORMATION

### 1.1 Product Description

General:

Product Name:	Pulse
Brand Name:	Barco NV
Model No.:	R8767900, R87679001
Model Difference:	Only difference between both is the modular boards have been removed to be able to send an empty Pulse to the costumer
Hardware Version:	10
Software Version:	1,3,10
Power Supply:	12Vdc from DC power source

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## WLAN 5GHz:

Wi-Fi	Frequency Range	Channels	Rated Power (Avg.)	Modulation Technology	
11a	5150~5250	4	19.63dBm	OFDM	
	5250~5350	4	16.47dBm		
	5470~5725	11	16.48dBm		
	5725-5850	5	16.94dBm		
11n_20M	HT 20 5150~5250	4	16.67dBm	OFDM	
	HT 20 5250~5350	4	13.81dBm		
	HT 20 5470~5725	11	13.79dBm		
	HT 20 5725-5850	5	14.00dBm		
11n_40M	HT 40 5150~5250	2	16.62dBm	OFDM	
	HT 40 5250~5350	2	13.62dBm		
	HT 40 5470~5725	5	13.80dBm		
	HT 40 5725-5850	2	13.99dBm		
Antenna Designation	Dipole Antenna, Peak Gain: 3dBi (5150MHz-5250MHz) 3dBi (5250MHz-5350MHz) 3dBi (5470MHz-5725MHz) 3dBi (5725MHz-5850MHz)				
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM				
Transition Rate:	802.11 a: 6/9/12/18/24/36/48/54 Mbps; 802.11 n_20MHz: 6.5 – 65Mbps 802.11 n_40MHz: 13.5 – 135Mbps				

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## 1.2 Test Methodology of Applied Standards

FCC Part 15, Subpart E §15.407

FCC KDB 789033 D02 General UNII Test Procedures New Rules

FCC KDB 644545 D03 Guidance for IEEE 802.11ac v01

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

## 1.3 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 Number and Designation number are: 509634 / TW0001

## 1.4 Special Accessories

There are no special accessories used while test was conducted.

## 1.5 Equipment Modifications

There was no modification incorporated into the EUT.

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## 2. SYSTEM TEST CONFIGURATION

### 2.1 EUT Configuration

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

### 2.2 EUT Exercise

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

### 2.3 Test Procedure

#### 2.3.1 Conducted Emissions

The EUT is placed on a turn table which is 0.8 m above ground plane. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 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 and attenuator.

**Offset:**

= RF cable loss (dB)+ attenuation factor(dB) dB =11.7dB

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## 2.5 Configuration of Tested System

Fig. 2-1 Radiated Emission



Fig. 2-2 Conducted (Antenna Port) Configuration Emission



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	P0000014	unshielded	shielded

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### 3. SUMMARY OF TEST RESULT

FCC Rules	Description Of Test	Result
§15.207	AC Power Line Conducted Emission	N/A
§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

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

2 channels are provided for 802.11n\_HT40

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190 MHz	46	5230 MHz

Operated band in 5250 MHz ~5350 MHz:

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

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

2 channels are provided for 802.11n\_HT40

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
54	5270 MHz	62	5310 MHz

Operated band in 5470 MHz ~5725 MHz:

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

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

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

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Operated band in 5725 MHz ~5850 MHz:

5 channels are provided for 802.11a, 802.11n\_HT20

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
149	5745 MHz	161	5805 MHz
153	5765 MHz	165	5825 MHz
157	5785 MHz		

2 channels are provided for 802.11n\_HT40

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755 MHz	159	5795 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.

### 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
802.11a	5260~5320	52 to 64	52,60,64	OFDM	6	MAIN
802.11a	5500~5700	100 to 140	100,116,140	OFDM	6	MAIN
802.11a	5745~5825	149 to 165	149,157,165	OFDM	6	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
802.11a	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
802.11a	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
802.11a	5745~5825	149 to 165	149,157,165	OFDM	6	MAIN
802.11n_HT20				OFDM	MCS0	MAIN
802.11n_HT40	5755~5795	151 to 159	151,159	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 WLAN Transmitter for channel Low, Mid and High, the worst case E2 position was reported.

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## 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
802.11a	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
802.11a	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
802.11a	5745~5825	149 to 165	149,157,165	OFDM	6	MAIN
802.11n_HT20				OFDM	MCS0	MAIN
802.11n_HT40	5755~5795	151 to 159	151,159	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	SCHWARZ- BECK	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.

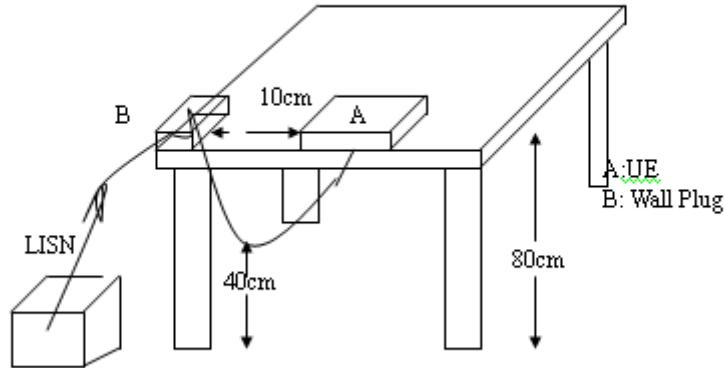
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## 6.4. Test SET-UP



## 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

N/A, EUT is powered by DC power source.

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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/Duty Cycle )	1/T (kHz)	VBW setting (kHz)
802.11a	87.79	0.57	0.69	1.00
802.11n_20	86.96	0.61	0.74	1.00
802.11n_40	76.71	1.15	1.50	2.00

Duty Cycle Factor:  $10 * \log(1/0.8779) = 0.57$

Duty Cycle Factor:  $10 * \log(1/0.8696) = 0.61$

Duty Cycle Factor:  $10 * \log(1/0.7671) = 1.15$

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## DUTY CYCLE TEST SIGNAL Measurement Result

### 802.11a



### 802.11n HT20

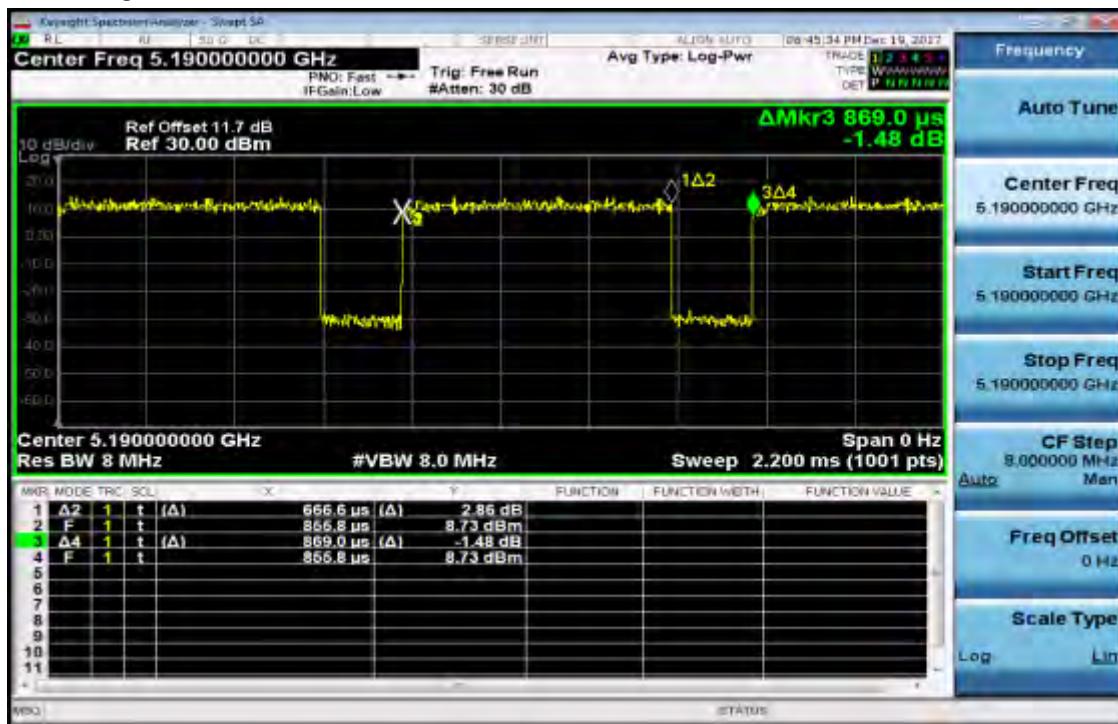


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## 802.11n HT 40



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## 8. 26dB & 6dB EMISSION BANDWIDTH MEASUREMENT

### 8.1 Standard Applicable

There is no limit bandwidth for U-NII-1, U-NII-2-A and U-NII-2-C.

The minimum of 6dB Bandwidth measurement is 0.5 MHz for U-NII-3

### 8.2 Measurement Procedure

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

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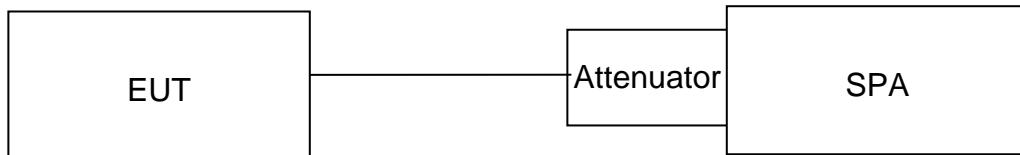
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### 8.3 Measurement Equipment Used

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Power Meter	Anritsu	ML2495A	1005007	12/14/2017	12/13/2018
Power Sensor	Anritsu	MA2411B	917032	12/14/2017	12/13/2018
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	HU-BER+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	10/26/2017	10/27/2018
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	27.92	14.459
5220	28.11	14.488
5240	29.65	14.720
5260	19.98	13.005
5300	18.45	12.661
5320	18.57	12.689
5500	18.52	12.676
5580	18.81	12.744
5700	19.06	12.802

802.11n\_HT20\_Main

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	21.16	13.256
5220	19.23	12.840
5240	19.36	12.868
5260	19.09	12.807
5300	19.24	12.842
5320	19.09	12.808
5500	19.27	12.848
5580	18.89	12.763
5700	18.90	12.765

802.11n\_HT40\_Main

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5190	38.30	15.832
5230	40.02	16.022
5270	38.31	15.833
5310	38.29	15.830
5510	38.11	15.810
5550	<b>38.27</b>	15.828
5670	38.43	15.847

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**6dB Bandwidth (5725 MHz~ 5850 MHz) measure with Peak detector for FCC****802.11a\_Main**

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	15.88	12.008
5785	15.82	11.993
5825	15.72	11.964

**802.11n\_HT20\_Main**

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	15.82	11.993
5785	15.80	11.986
5825	16.03	12.050

**802.11n\_HT40\_Main**

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5755	35.12	15.456
5795	35.19	15.465

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**99% BW to prove that all signals in band I is no over band I**

802.11a\_Main

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5240	5248.28	< 5250

802.11n\_HT 20 Main

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5240	5248.73	< 5250

802.11n\_HT 40 Main

Frequency (MHz)	Measured Frequency (MHz)	Limit (MHz)
5230	5247.9	< 5250

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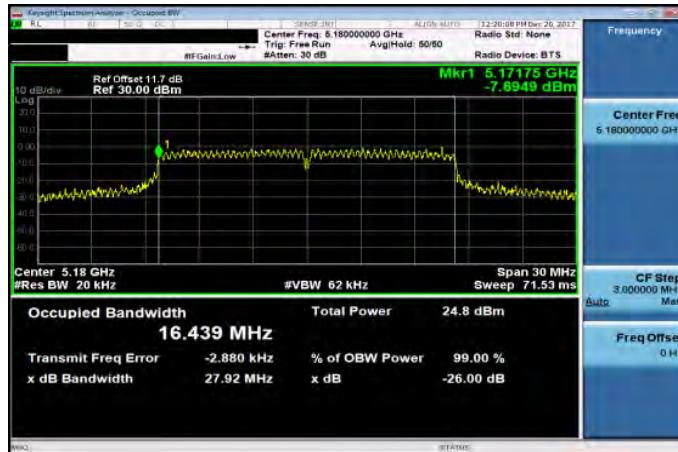
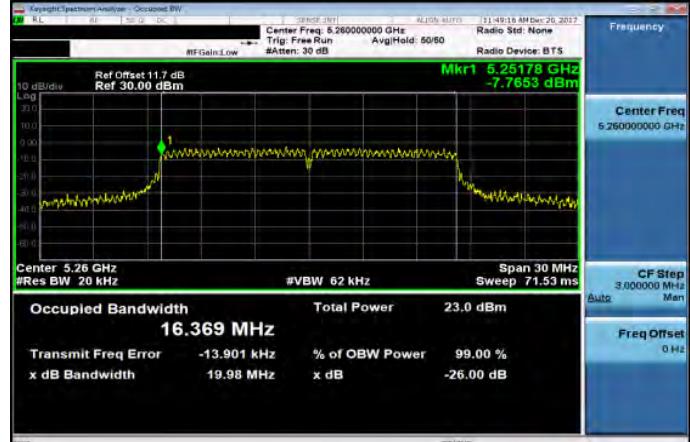
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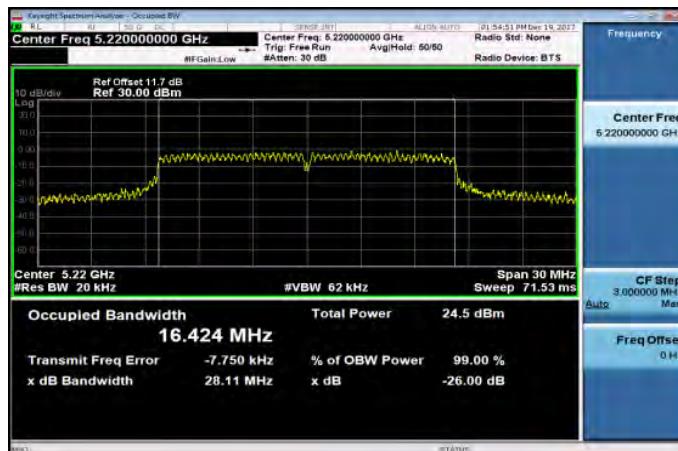
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## 802.11a, 5150~5250 MHz (Main)

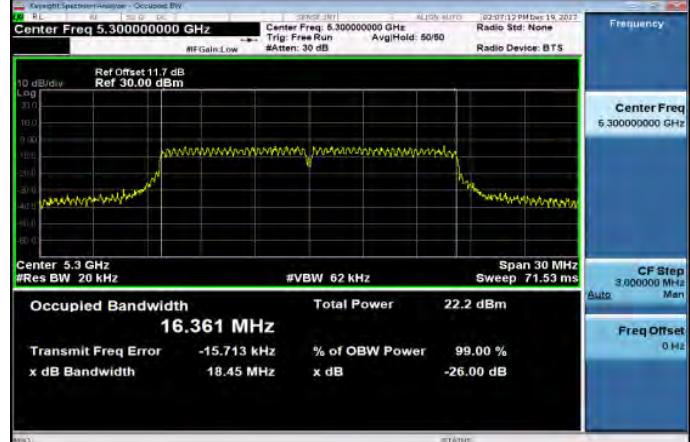
## 26dB Band Width Test Data CH-Low (5180MHz)


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


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



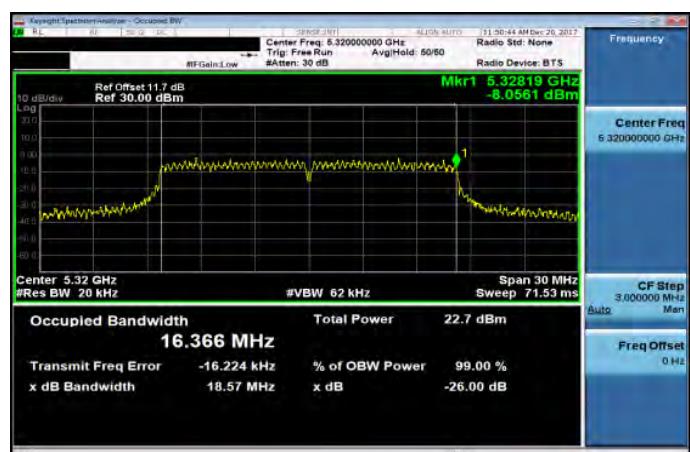
## 26dB Band Width Test Data CH-Mid (5300MHz)



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



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



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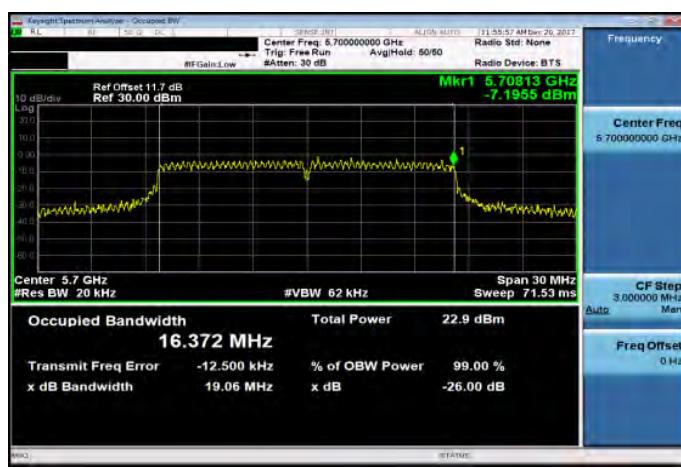
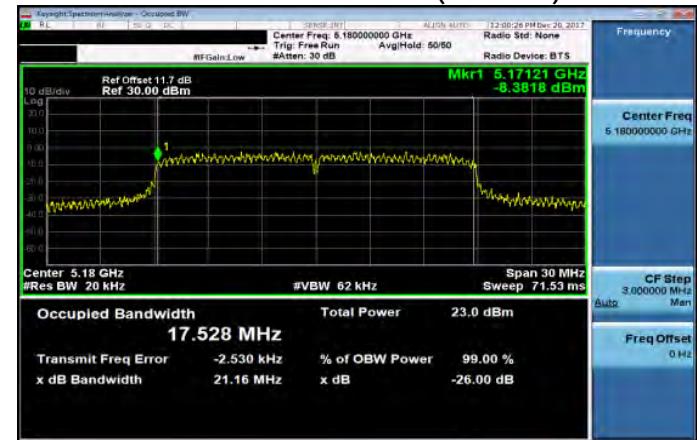
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802.11a, 5470~5725 MHz (Main)  
 26dB Band Width Test Data CH-Low (5500MHz)

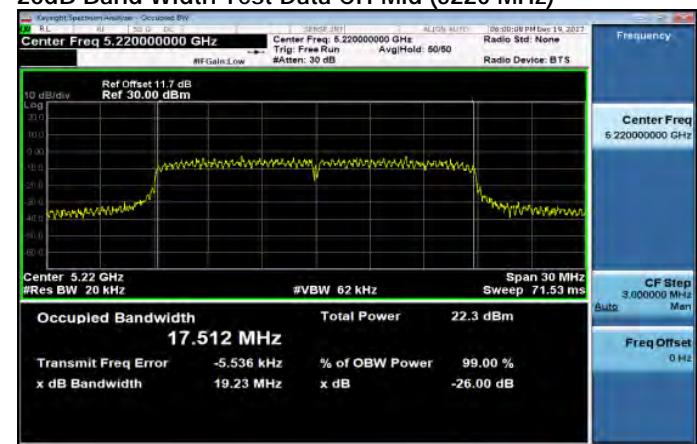

## 26dB Band Width Test Data CH-Mid (5580MHz)



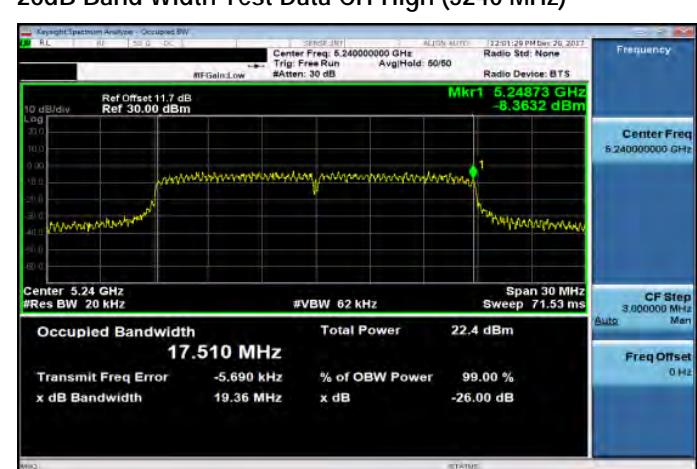
## 26dB Band Width Test Data CH-High (5700MHz)


 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)



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

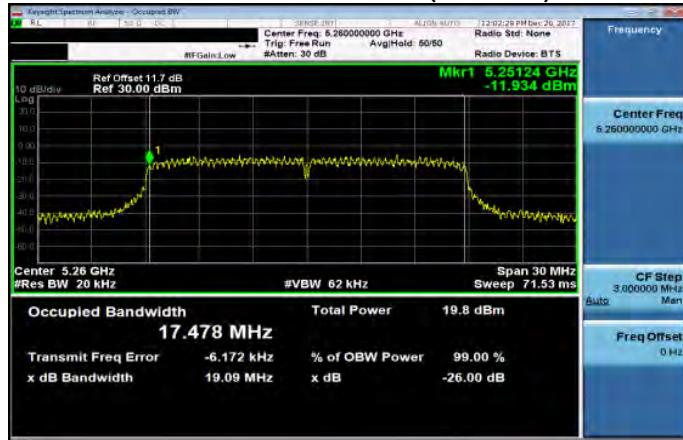


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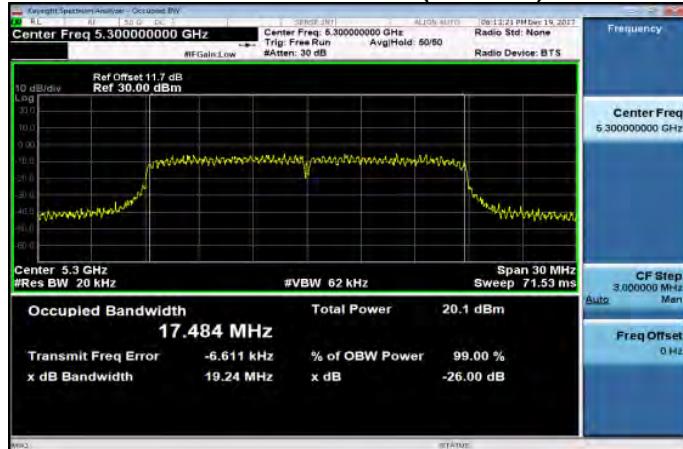
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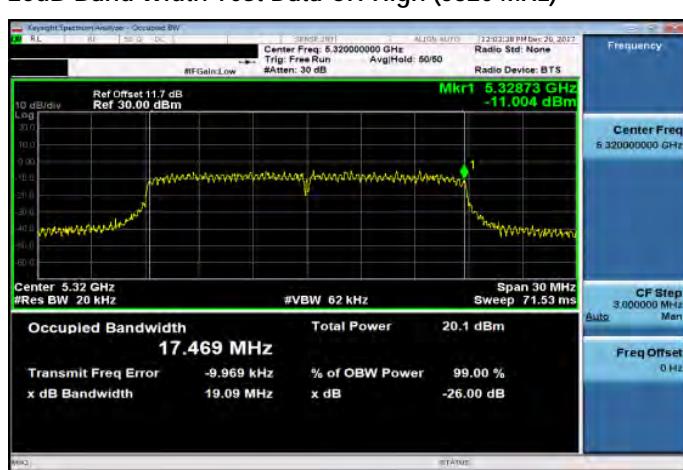
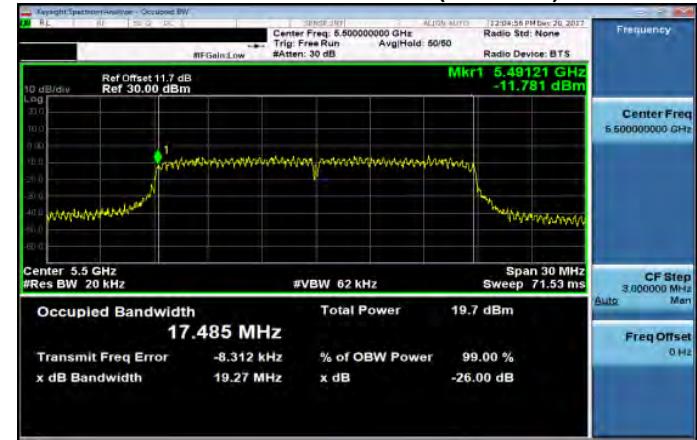
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802.11n HT20, 5250~5350 MHz (Main)  
 26dB Band Width Test Data CH-Low (5260 MHz)


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



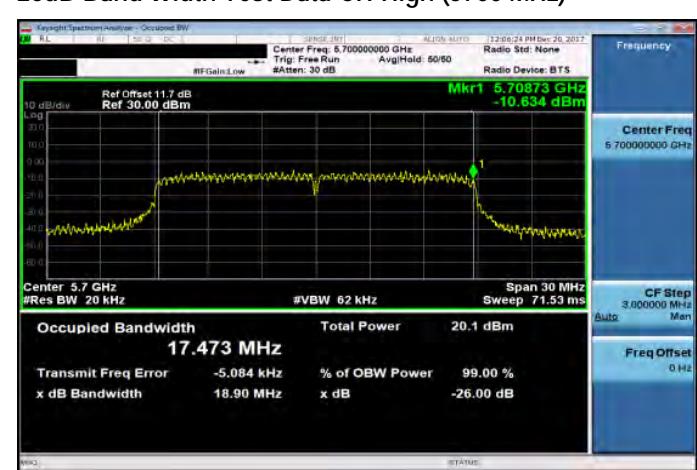
## 26dB Band Width Test Data CH-High (5320 MHz)


 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)



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

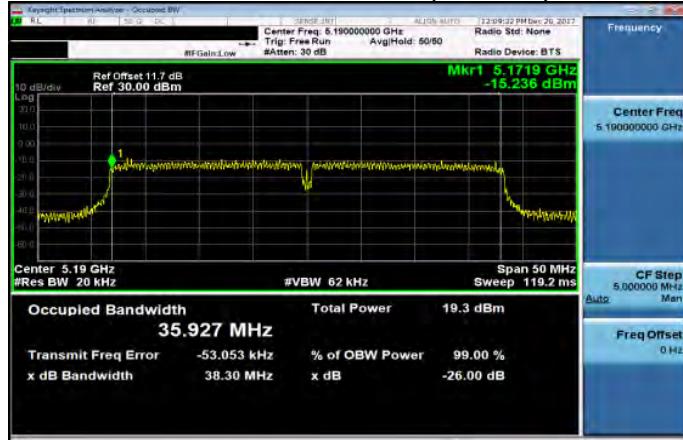


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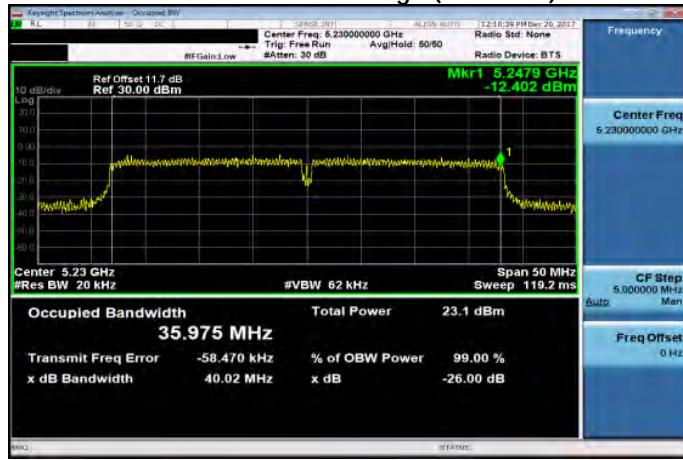
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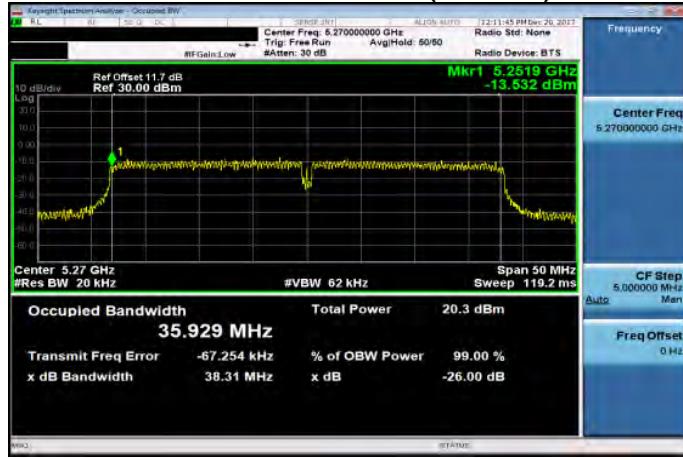
802.11n HT40, 5150~5250 MHz (Main)  
 26dB Band Width Test Data CH-Low (5190 MHz)


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

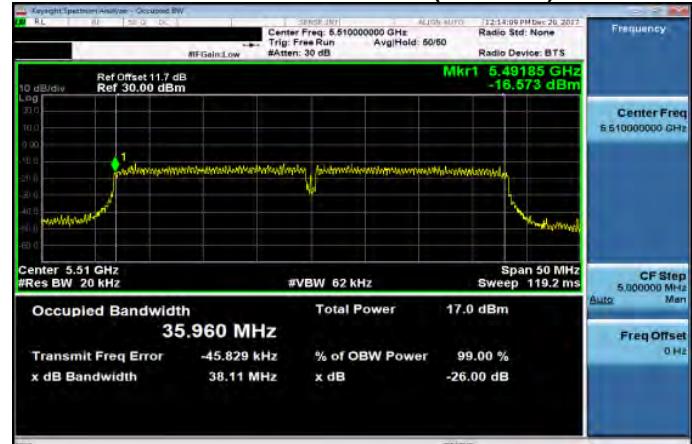


## 802.11n HT40, 5250~5350 MHz (Main)

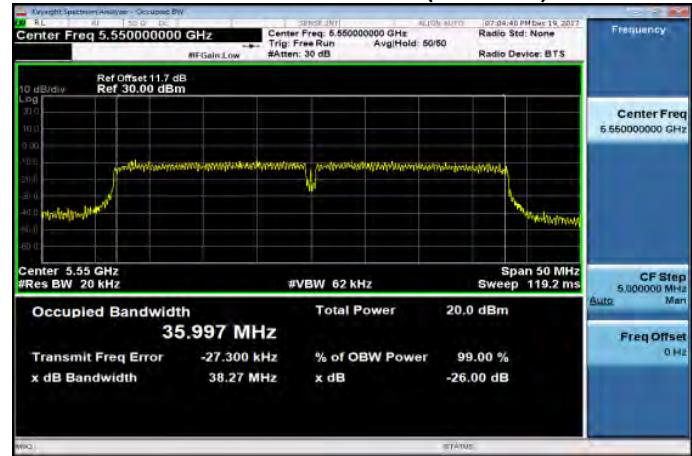
## 26dB Band Width Test Data CH-Low (5270 MHz)



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


 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)



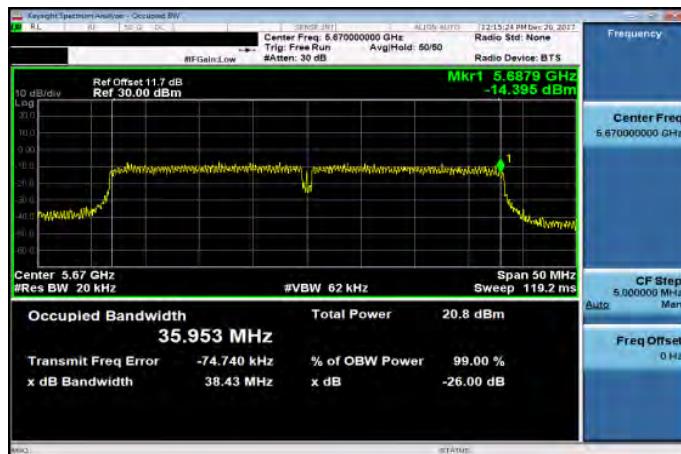
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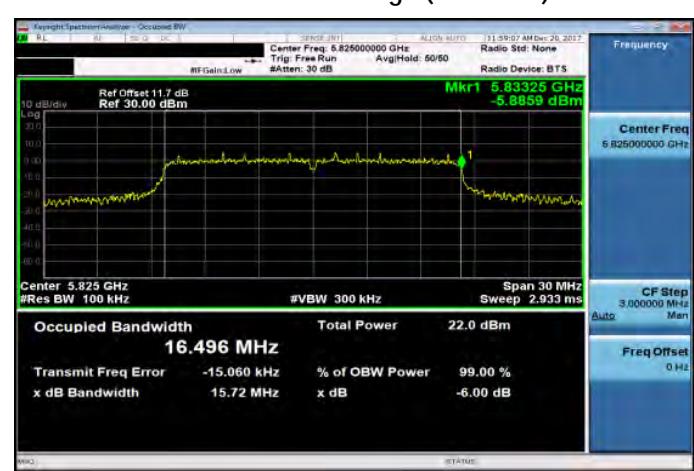
## 26dB Band Width Test Data CH-High (5670 MHz)


 802.11a, 5725~5850 MHz (Main)  
 6dB Band Width Test Data CH-Low (5745 MHz)


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



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



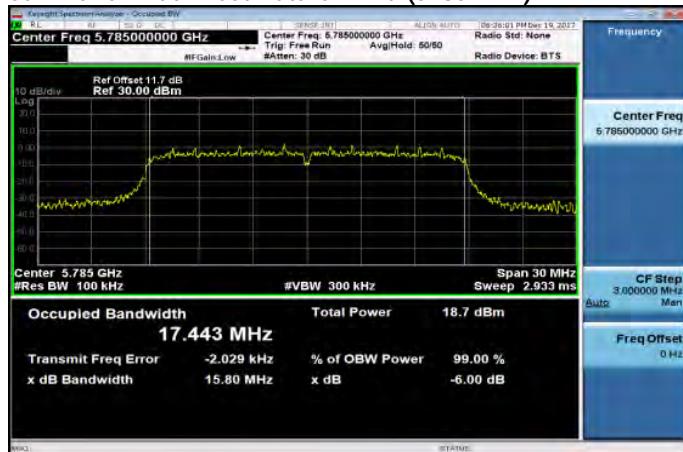
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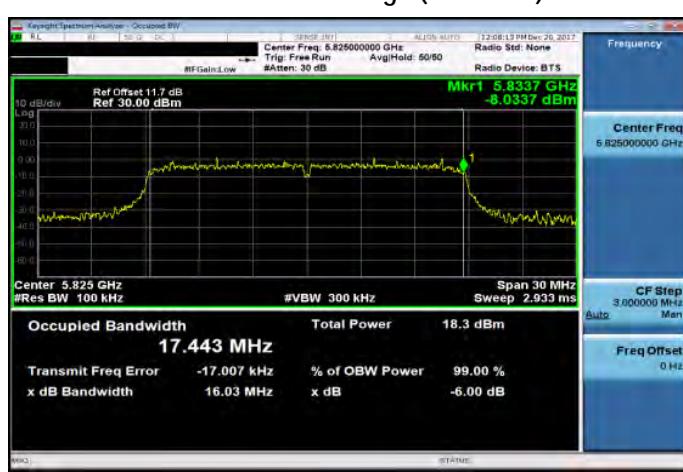
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802.11n\_HT20, 5725~5850 MHz (Main)  
 6dB Band Width Test Data CH-Low (5745 MHz)

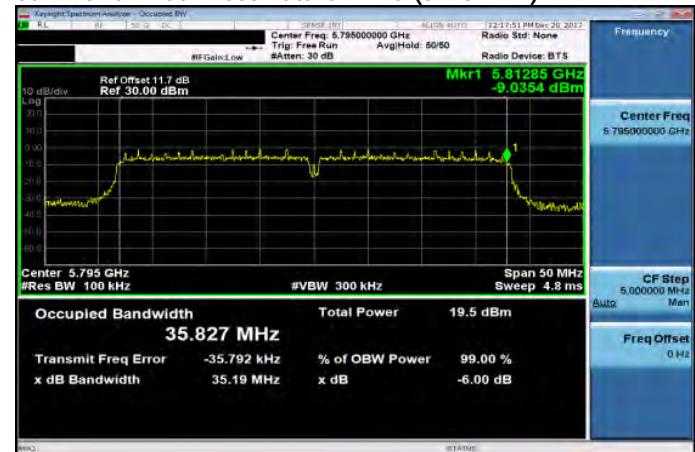

## 6dB Band Width Test Data CH-Mid (5785 MHz)



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


 802.11n\_HT40, 5725~5850 MHz (Main)  
 6dB Band Width Test Data CH-Low (5755 MHz)


## 6dB Band Width Test Data CH-Mid (5795 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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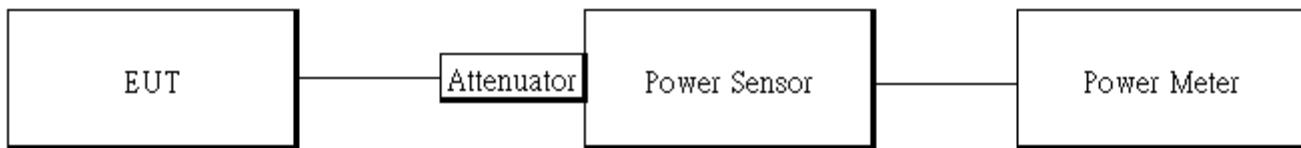
## 9.2 Measurement Procedure

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

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Power Meter	Anritsu	ML2495A	1005007	12/14/2017	12/13/2018
Power Sensor	Anritsu	MA2411B	917032	12/14/2017	12/13/2018
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	HU-BER+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	10/26/2017	10/27/2018
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	<b>19.63</b>	91.739		30	PASS
44	5220	6	19.13	81.763		30	PASS
48	5240	6	19.36	86.209		30	PASS
52	5260	6	<b>16.47</b>	44.315	23.98	or $11+10\log(B) = 24.01$	PASS
60	5300	6	16.12	40.884	23.98	or $11+10\log(B) = 23.66$	PASS
64	5320	6	16.10	40.696	23.98	or $11+10\log(B) = 23.69$	PASS
100	5500	6	16.46	44.214	23.98	or $11+10\log(B) = 23.68$	PASS
116	5580	6	16.39	43.507	23.98	or $11+10\log(B) = 23.74$	PASS
140	5700	6	<b>16.48</b>	44.418	23.98	or $11+10\log(B) = 23.80$	PASS
149	5745	6	<b>16.94</b>	49.380		30	PASS
157	5785	6	16.93	49.267		30	PASS
165	5825	6	16.88	48.703		30	PASS

#### 802.11n\_HT20\_Main

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
36	5180	MCS0	<b>16.67</b>	46.417		30	PASS
44	5220	MCS0	16.32	42.823		30	PASS
48	5240	MCS0	16.45	44.125		30	PASS
52	5260	MCS0	13.76	23.751	23.98	or $11+10\log(B) = 23.81$	PASS
60	5300	MCS0	<b>13.81</b>	24.026	23.98	or $11+10\log(B) = 23.84$	PASS
64	5320	MCS0	13.71	23.479	23.98	or $11+10\log(B) = 23.81$	PASS
100	5500	MCS0	<b>13.79</b>	23.916	23.98	or $11+10\log(B) = 23.85$	PASS
116	5580	MCS0	13.50	22.371	23.98	or $11+10\log(B) = 23.76$	PASS
140	5700	MCS0	<b>13.79</b>	23.916	23.98	or $11+10\log(B) = 23.76$	PASS
149	5745	MCS0	<b>14.00</b>	25.100		30	PASS
157	5785	MCS0	13.99	25.043		30	PASS
165	5825	MCS0	13.93	24.699		30	PASS

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## 802.11n\_HT40\_Main

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	MCS0	12.95	19.731	30	PASS
46	5230	MCS0	<b>16.62</b>	45.935	30	PASS
54	5270	MCS0	<b>13.62</b>	23.022	23.98 or $11+10\log(B) = 26.83$	PASS
62	5310	MCS0	13.59	22.864	23.98 or $11+10\log(B) = 26.83$	PASS
102	5510	MCS0	10.81	12.054	23.98 or $11+10\log(B) = 26.81$	PASS
110	5550	MCS0	13.69	23.396	23.98 or $11+10\log(B) = 26.83$	PASS
134	5670	MCS0	<b>13.80</b>	23.997	23.98 or $11+10\log(B) = 26.85$	PASS
151	5755	MCS0	<b>13.99</b>	25.070	30	PASS
159	5795	MCS0	13.98	25.012	30	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:

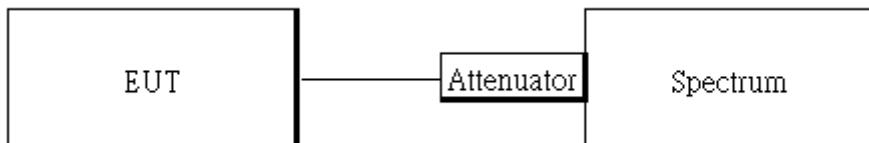
Set RBW=500 kHz, VBW≥ 3RBW, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)

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

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Power Meter	Anritsu	ML2495A	1005007	12/14/2017	12/13/2018
Power Sensor	Anritsu	MA2411B	917032	12/14/2017	12/13/2018
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	HU-BER+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	10/26/2017	10/27/2018
Temperature Chamber	TERCHY	MHG-120LF	911009	05/19/2017	05/18/2018

## 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	2.98	0.57	3.55	11	-7.45
5220	2.22	0.57	2.79	11	-8.21
5240	5.46	0.57	6.03	11	-4.97
5260	0.94	0.57	1.51	11	-9.49
5300	2.45	0.57	3.02	11	-7.98
5320	1.35	0.57	1.92	11	-9.08
5500	0.50	0.57	1.07	11	-9.93
5580	-0.75	0.57	-0.18	11	-11.18
5700	1.71	0.57	2.28	11	-8.72
5745	9.12	0.57	9.12	30	-20.88
5785	9.09	0.57	9.09	30	-20.91
5825	8.84	0.57	8.84	30	-21.16
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	0.35	0.61	0.96	11	-10.04
5220	0.67	0.61	1.28	11	-9.72
5240	4.30	0.61	4.91	11	-6.09
5260	-0.91	0.61	-0.30	11	-11.30
5300	-4.65	0.61	-4.04	11	-15.04
5320	-4.87	0.61	-4.26	11	-15.26
5500	-2.49	0.61	-1.88	11	-12.88
5580	-1.79	0.61	-1.18	11	-12.18
5700	1.46	0.61	2.07	11	-8.93
5745	6.46	0.61	6.46	30	-23.54
5785	5.65	0.61	5.65	30	-24.35
5825	5.13	0.61	5.13	30	-24.87
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	-8.45	1.15	-7.30	11	-18.30
5230	-7.81	1.15	-6.66	11	-17.66
5270	-7.31	1.15	-6.16	11	-17.16
5310	-8.37	1.15	-7.22	11	-18.22
5510	-11.4	1.15	-10.25	11	-21.25
5550	-5.31	1.15	-4.16	11	-15.16
5670	-7.58	1.15	-6.43	11	-17.43
5755	3.38	1.15	3.38	30	-26.62
5795	3.00	1.15	3.00	30	-27.00

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802.11a 5150-5250 MHz

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



802.11a 5250-5350 MHz

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



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



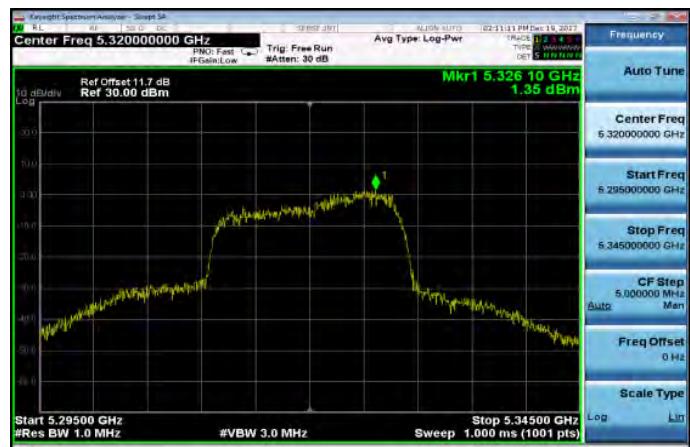
## Peak Power Spectral Density Data Plot (CH Mid 5300 MHz)



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



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



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802.11a 5470-5725 MHz

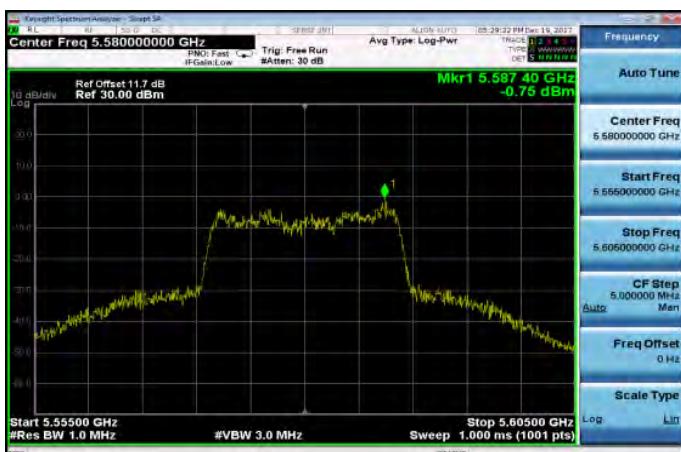
## Peak Power Spectral Density Data Plot (CH Low 5500 MHz)



## Peak Power Spectral Density Data Plot (CH Low 5745 MHz)



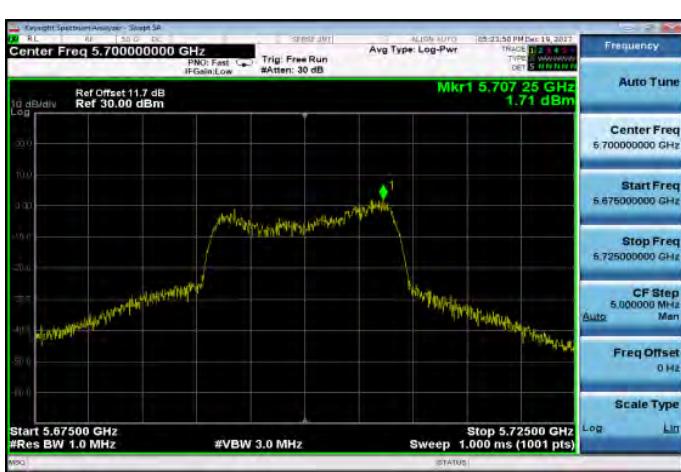
## Peak Power Spectral Density Data Plot (CH Mid 5580 MHz)



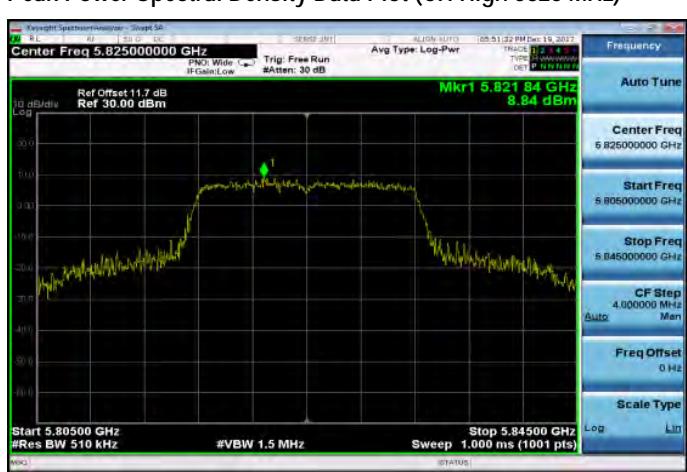
## Peak Power Spectral Density Data Plot (CH Mid 5785 MHz)



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



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



802.11a 5725-5850 MHz

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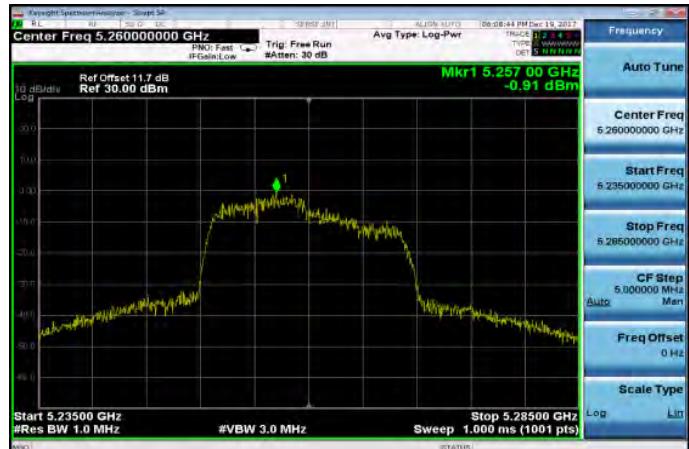
802.11n HT20, 5150~5250 MHz

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



802.11n HT20, 5250~5350 MHz

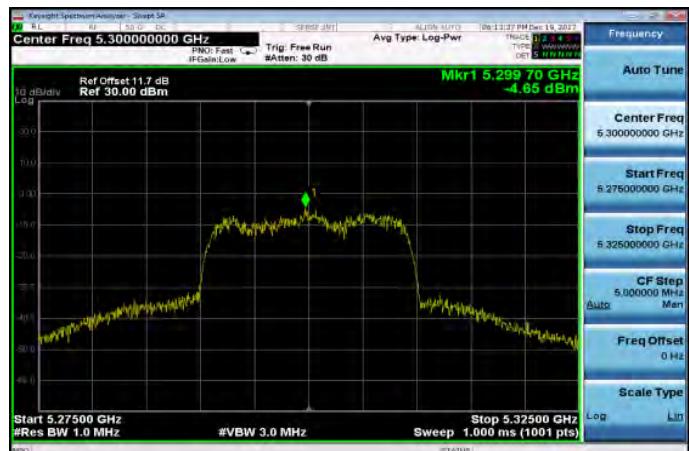
## Peak Power Spectral Density Data Plot (CH Low 5260MHz)



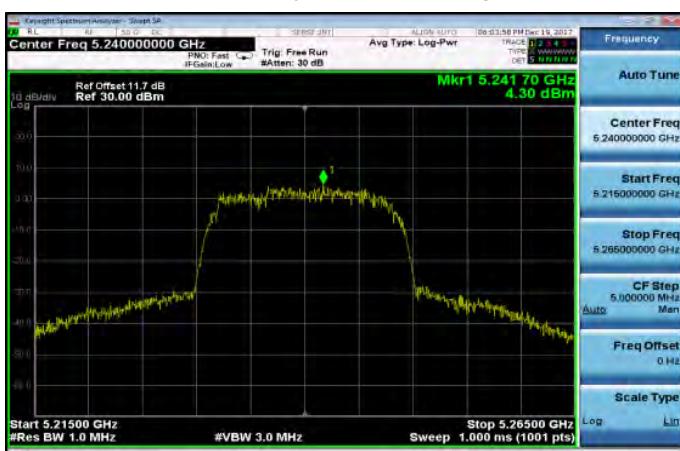
## Peak Power Spectral Density Data Plot (CH Mid 5220 MHz)



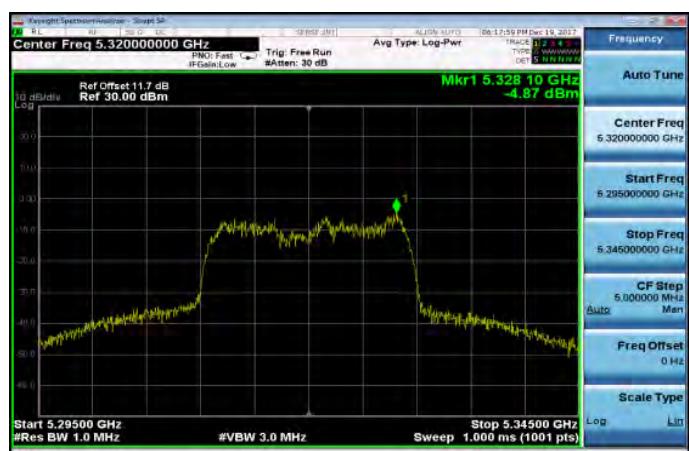
## Peak Power Spectral Density Data Plot (CH Mid 5300 MHz)



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



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



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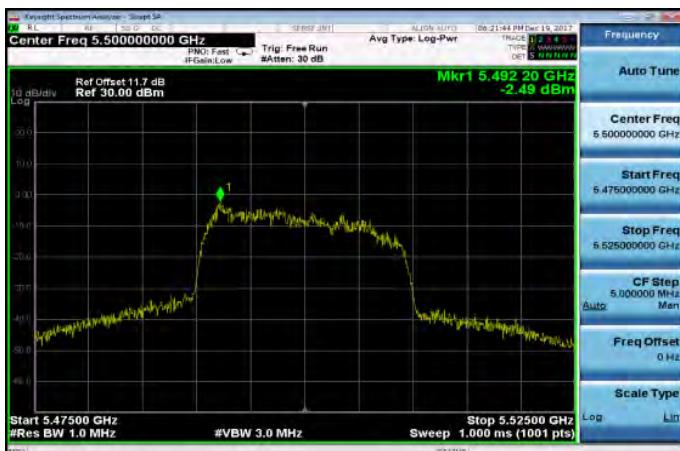
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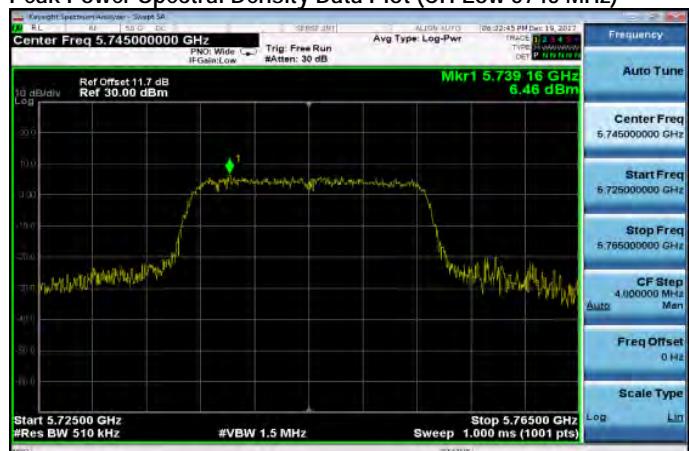
802.11n HT20, 5470~5725 MHz

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

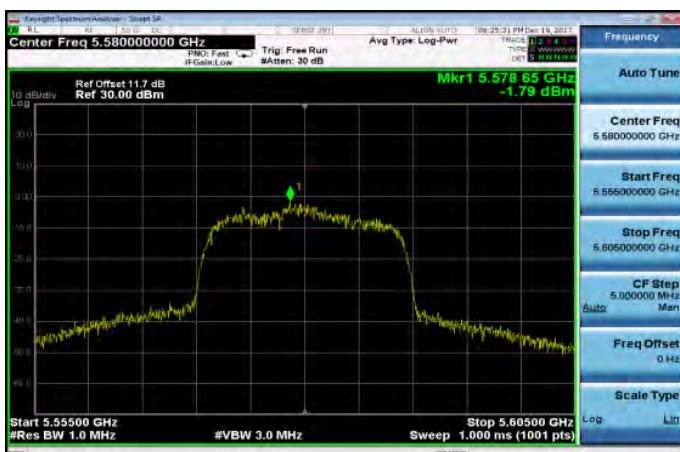


802.11n HT20, 5725~5850 MHz

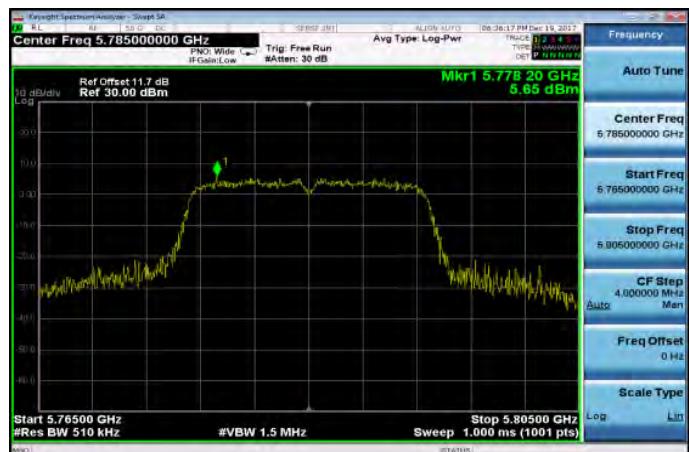
Peak Power Spectral Density Data Plot (CH Low 5745 MHz)



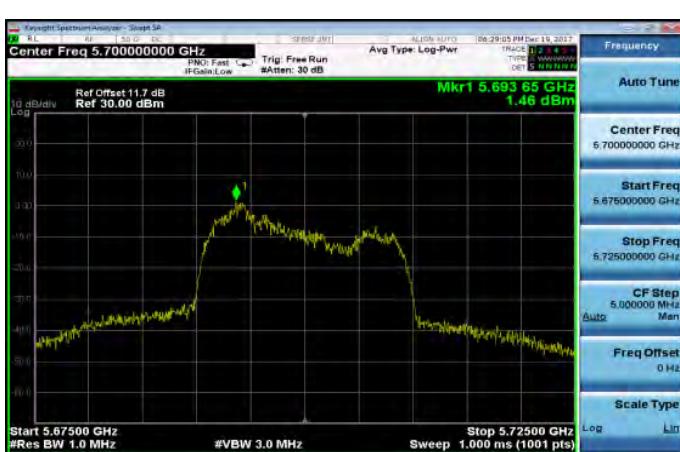
Peak Power Spectral Density Data Plot (CH Mid 5580MHz)



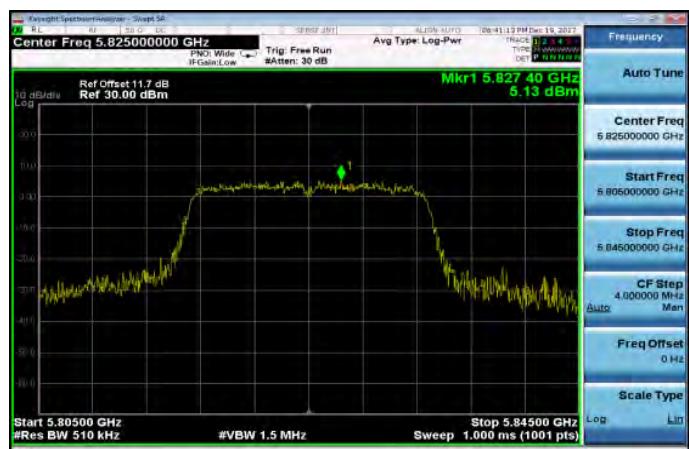
Peak Power Spectral Density Data Plot (CH Mid 5785 MHz)



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



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



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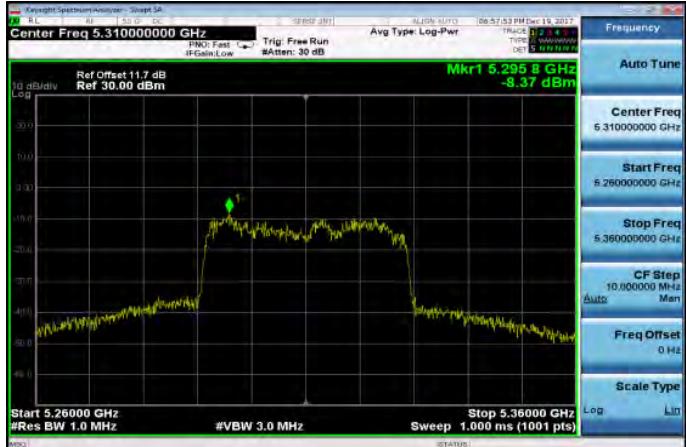
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## Peak Power Spectral Density Data Plot (CH Low 5190 MHz)



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



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



802.11n HT40, 5470~5725 MHz

## Peak Power Spectral Density Data Plot (CH Low 5510 MHz)

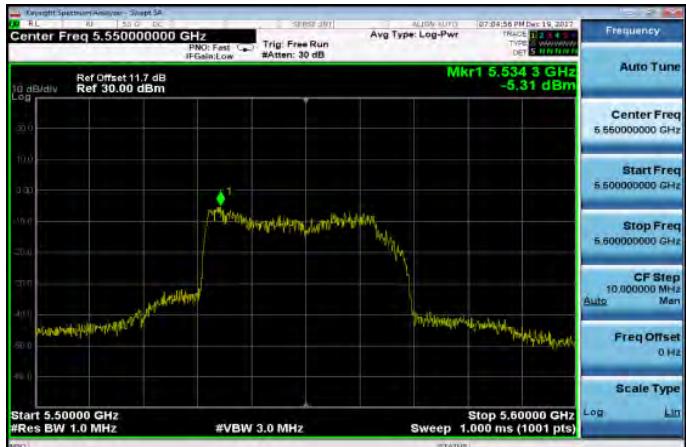


## 802.11n HT40, 5250~5350 MHz

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



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



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



802.11n HT40, 5725~5850 MHz

## Peak Power Spectral Density Data Plot (CH Low 5755 MHz)



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



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## 11. UNDESIRABLE RADIATED EMISSION MEASUREMENT

### 11.1 Standard Applicable

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

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

APPLICABLE TO	LIMIT	
FCC KDB 789033 D02 General UNII Test Procedures New Rules	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)	PK: -27 (dBm/MHz)	PK: 68.3 (dB $\mu$ V/m)
15.407(b)(2)		
15.407(b)(3)		
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 (dB $\mu$ V/m) = 20 log Emission level (dB $\mu$ V/m)

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## 11.2 Measurement Equipment Used

SGS 966 Chamber No.C					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL 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	12/18/2017	12/17/2018
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	12/12/2017	12/11/2018
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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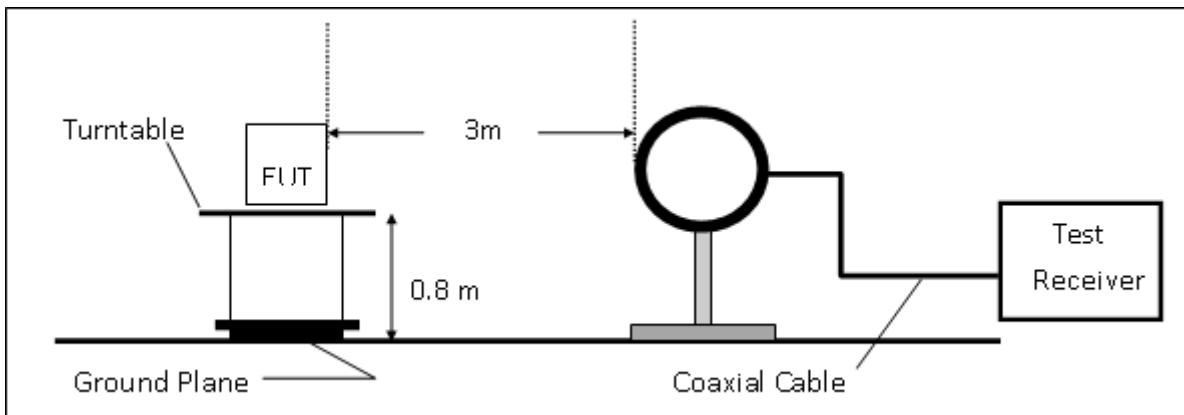
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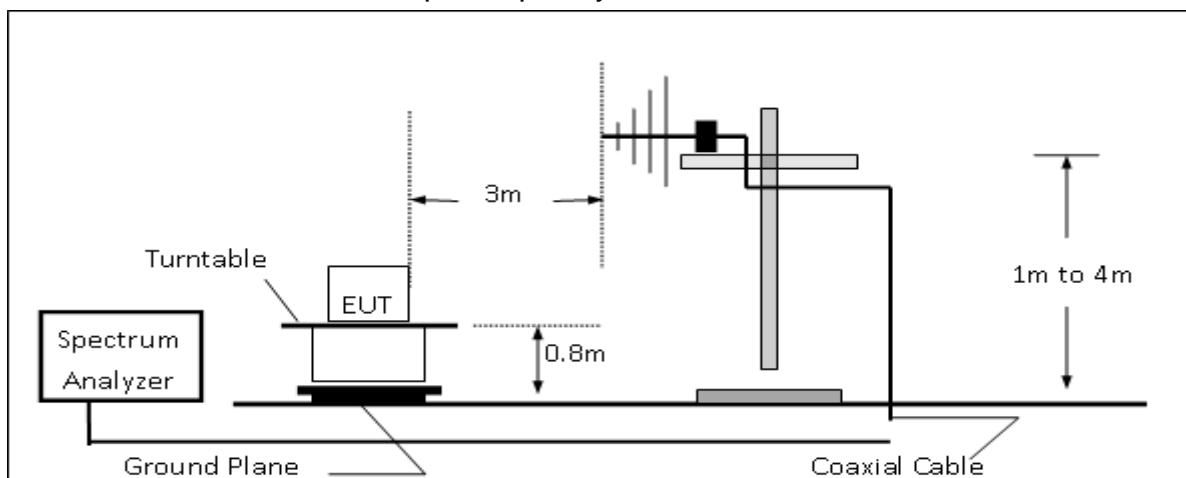
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### 11.3 Test SET-UP

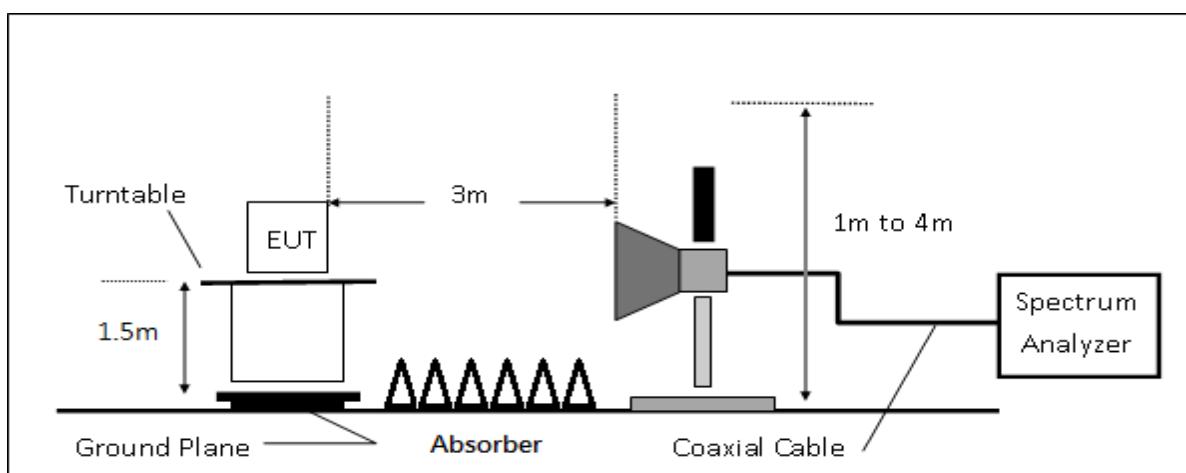
#### (A) Radiated Emission Test Set-UP Frequency Below 30MHz.



#### (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  $\geq$  1/T (Duty cycle < 98%) for Average Detector at frequency above 1 GHz.
9. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
10. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
11. Repeat above procedures until all frequency measured were complete.

## 11.5 Field Strength Calculation

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

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

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

Actual FS(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)

**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.

Note: There is a comparison data of both open-field test site and semi-Anechoic, and test result came out very similar.

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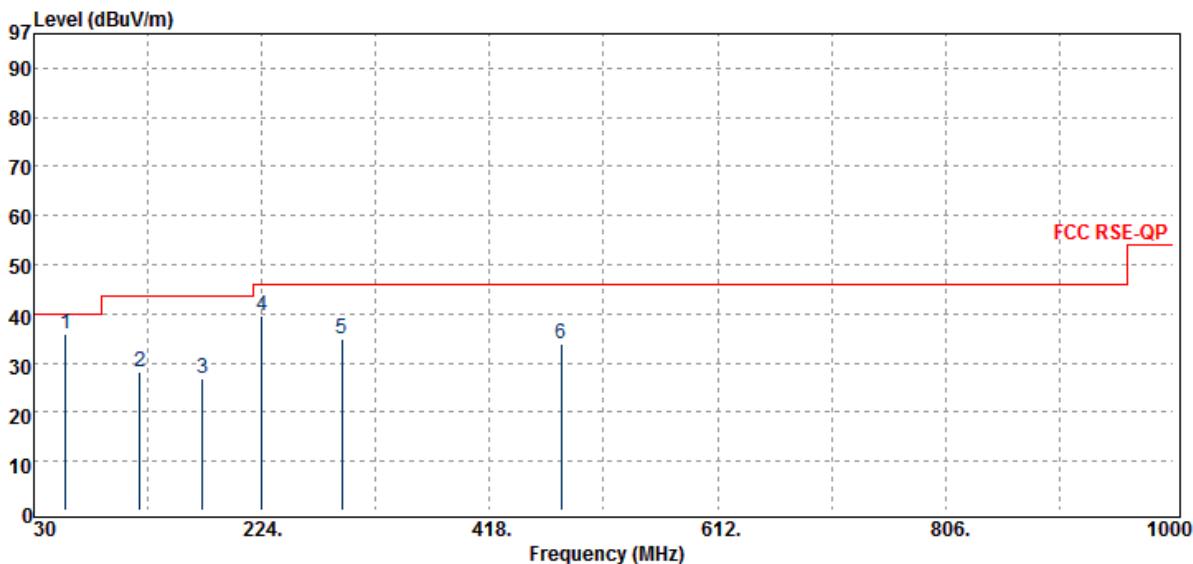
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**Radiated Spurious Emission Measurement Result****Below 1GHz Worst-Case Data:****802.11a 5150~5250 MHz**

Operation Band	:802.11aB1	Test Date	:2017-12-19
Fundamental Frequency	:5220 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level		Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
			dB $\mu$ V					
57.16	S	Peak	44.05	-7.98	36.07	40.00	-3.93	
120.21	S	Peak	38.74	-10.44	28.30	43.50	-15.20	
173.56	S	Peak	34.75	-7.96	26.79	43.50	-16.71	
224.00	S	Peak	48.93	-9.20	39.73	46.00	-6.27	
291.90	S	Peak	40.88	-6.08	34.80	46.00	-11.20	
479.11	S	Peak	36.42	-2.39	34.03	46.00	-11.97	

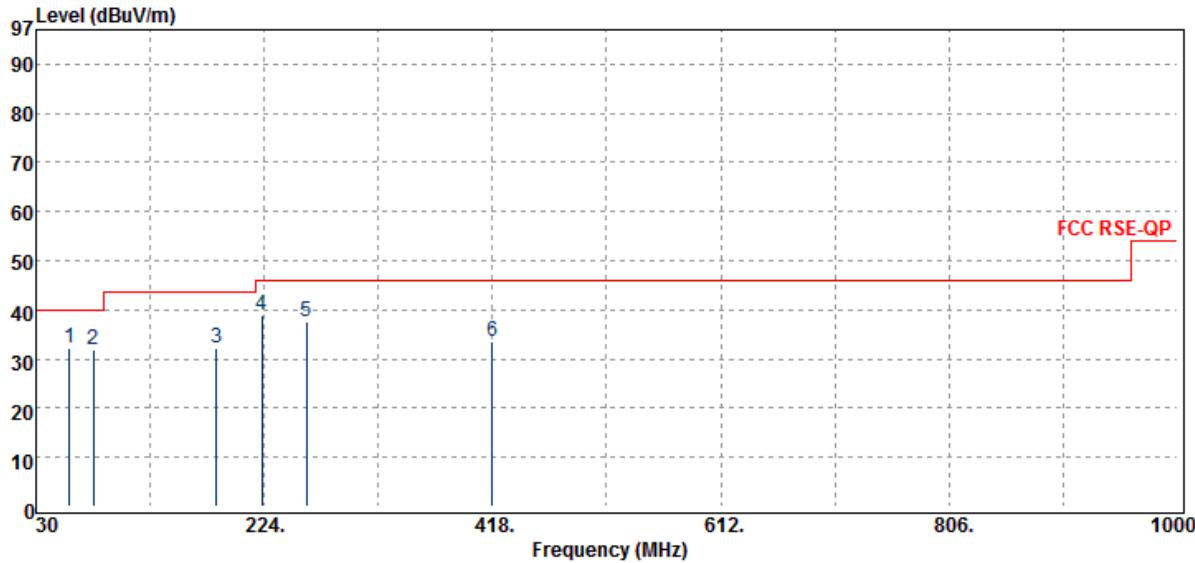
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Operation Band :802.11aB1  
 Fundamental Frequency :5220 MHz  
 Operation Mode :Tx CH MID  
 EUT Pol. :E2 Plane

Test Date :2017-12-19  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Kane  
 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				
58.13	S	Peak	40.18	-7.99	32.19	40.00	-7.81	
78.50	S	Peak	43.77	-12.02	31.75	40.00	-8.25	
183.26	S	Peak	41.17	-8.90	32.27	43.50	-11.23	
222.06	S	Peak	48.02	-9.22	38.80	46.00	-7.20	
259.89	S	Peak	45.00	-7.29	37.71	46.00	-8.29	
418.00	S	Peak	37.05	-3.37	33.68	46.00	-12.32	

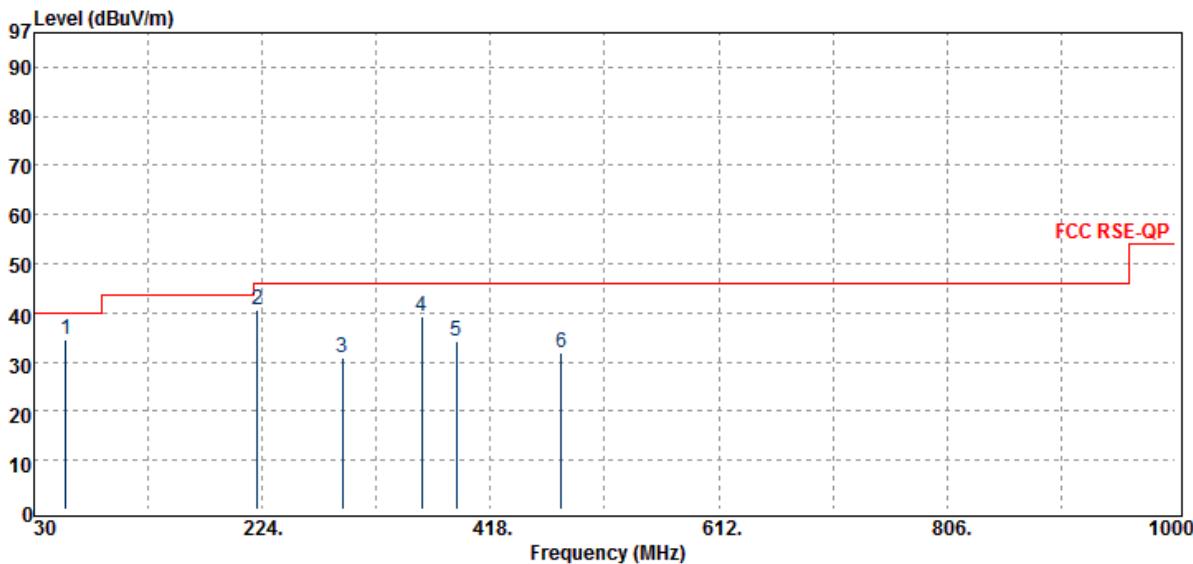
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**802.11a 5250~5350 MHz**

Operation Band	:802.11aB2	Test Date	:2017-12-19
Fundamental Frequency	:5300 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Kane
EUT Pol.	:E2 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				
57.16	S	Peak	42.54	-7.98	34.56	40.00	-5.44	
220.12	S	Peak	49.93	-9.25	40.68	46.00	-5.32	
291.90	S	Peak	37.09	-6.08	31.01	46.00	-14.99	
359.80	S	Peak	43.92	-4.79	39.13	46.00	-6.87	
388.90	S	Peak	38.53	-4.29	34.24	46.00	-11.76	
478.14	S	Peak	34.28	-2.43	31.85	46.00	-14.15	

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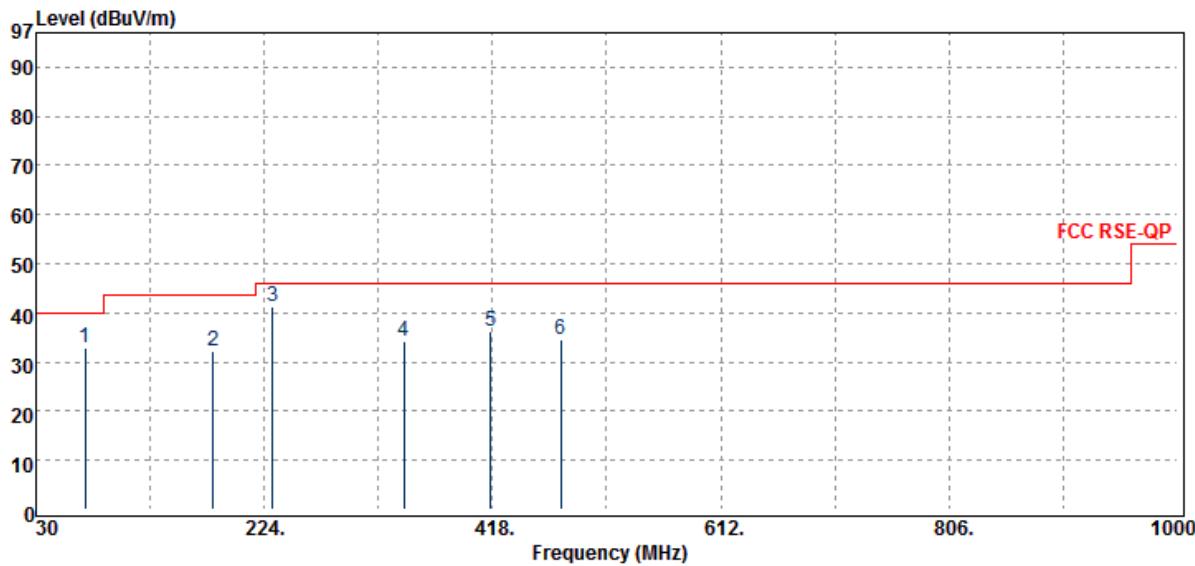
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Operation Band :802.11aB2  
 Fundamental Frequency :5300 MHz  
 Operation Mode :Tx CH MID  
 EUT Pol. :E2 Plane

Test Date :2017-12-19  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Kane  
 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
			PK/QP/AV	Reading Level dB $\mu$ V				
71.71	S	Peak	43.60	-10.62	32.98	40.00	-7.02	
180.35	S	Peak	40.88	-8.69	32.19	43.50	-11.31	
230.79	S	Peak	50.21	-8.93	41.28	46.00	-4.72	
342.34	S	Peak	39.44	-5.10	34.34	46.00	-11.66	
416.06	S	Peak	39.62	-3.27	36.35	46.00	-9.65	
476.20	S	Peak	36.89	-2.45	34.44	46.00	-11.56	

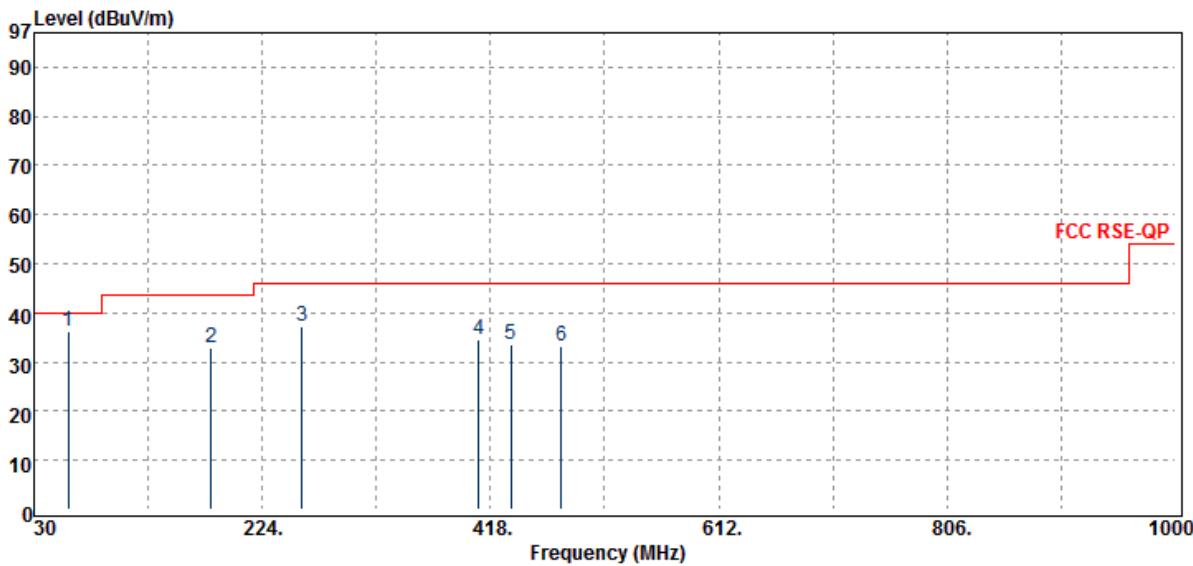
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**802.11a, 5470~5725 MHz**

Operation Band	:802.11aB3	Test Date	:2017-12-19
Fundamental Frequency	:5580 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Kane
EUT Pol.	:E2 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				
59.10	S	Peak	44.22	-8.03	36.19	40.00	-3.81	
180.35	S	Peak	41.69	-8.69	33.00	43.50	-10.50	
257.95	S	Peak	44.56	-7.37	37.19	46.00	-8.81	
408.30	S	Peak	37.98	-3.53	34.45	46.00	-11.55	
435.46	S	Peak	37.18	-3.54	33.64	46.00	-12.36	
478.14	S	Peak	35.53	-2.43	33.10	46.00	-12.90	

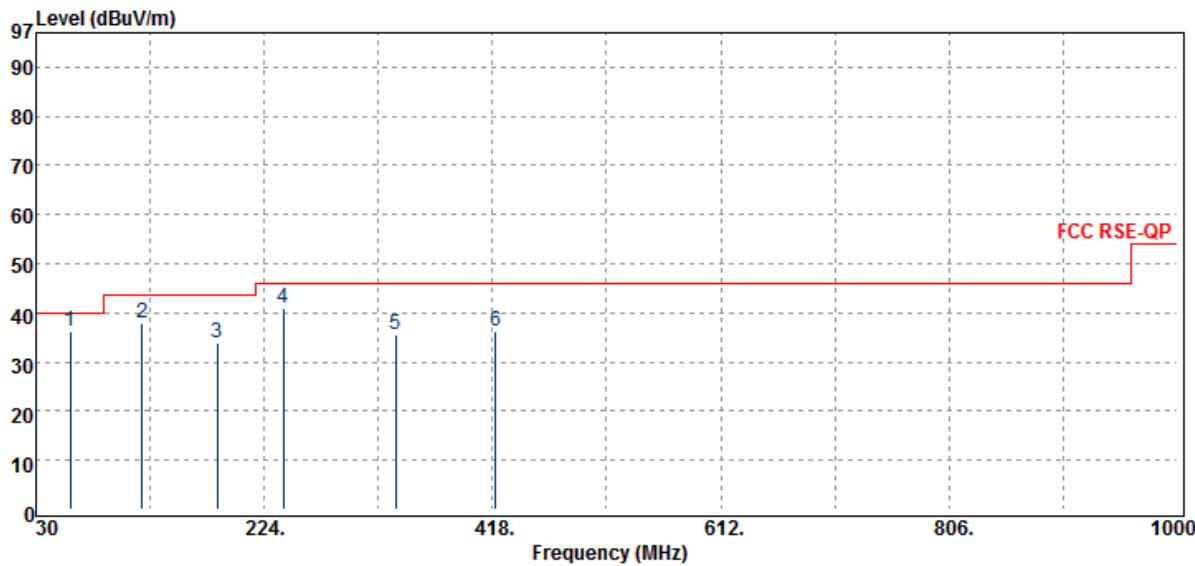
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Operation Band	:802.11aB3	Test Date	:2017-12-19
Fundamental Frequency	:5580 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



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				
59.10	S	Peak	44.15	-8.03	36.12	40.00	-3.88	
120.21	S	Peak	48.31	-10.44	37.87	43.50	-5.63	
184.23	S	Peak	42.80	-8.98	33.82	43.50	-9.68	
240.49	S	Peak	49.06	-8.04	41.02	46.00	-4.98	
335.55	S	Peak	40.93	-5.32	35.61	46.00	-10.39	
420.91	S	Peak	39.64	-3.32	36.32	46.00	-9.68	

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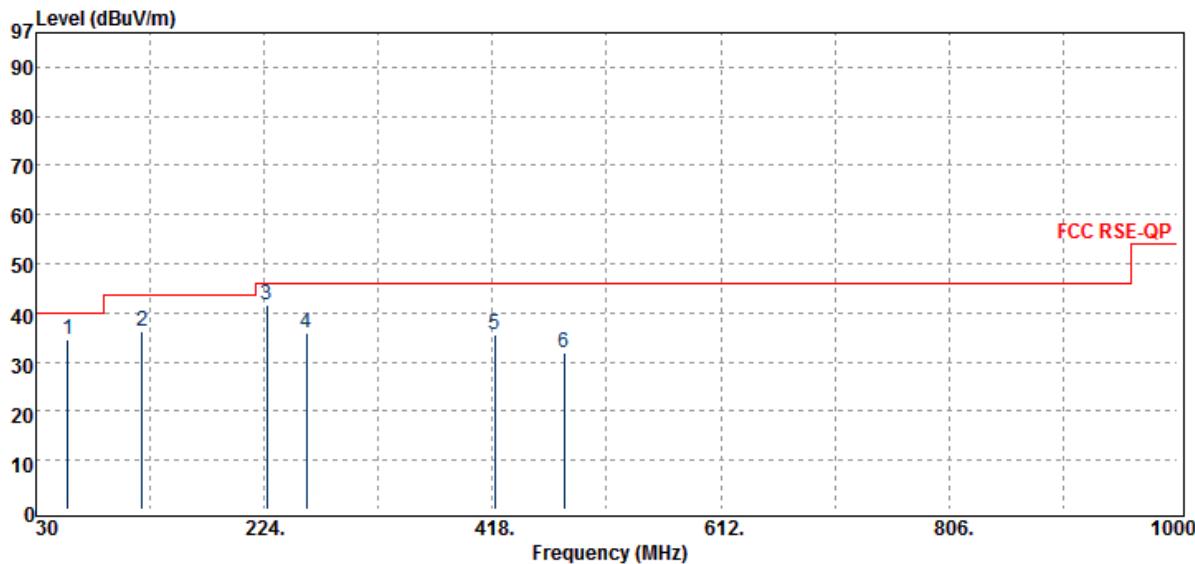
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**802.11a, 5725~5850 MHz**

Operation Band	:802.11aB4	Test Date	:2017-12-19
Fundamental Frequency	:5785 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Kane
EUT Pol.	:E2 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				
57.16	S	Peak	42.58	-7.98	34.60	40.00	-5.40	
120.21	S	Peak	46.84	-10.44	36.40	43.50	-7.10	
225.94	S	Peak	50.86	-9.11	41.75	46.00	-4.25	
259.89	S	Peak	43.28	-7.29	35.99	46.00	-10.01	
419.94	S	Peak	39.05	-3.39	35.66	46.00	-10.34	
479.11	S	Peak	34.42	-2.39	32.03	46.00	-13.97	

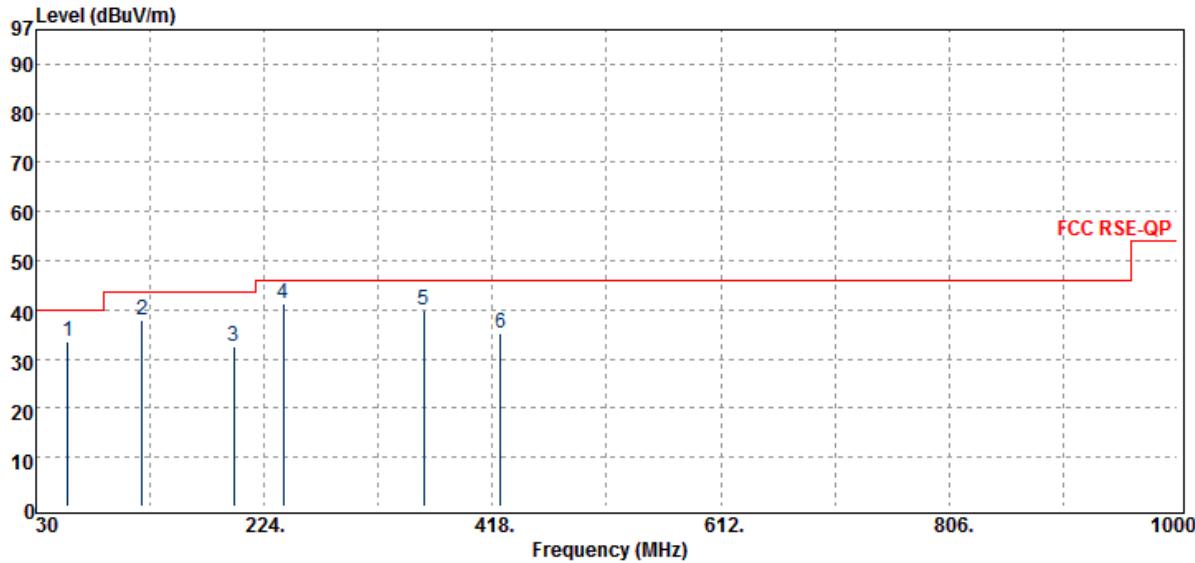
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Operation Band	:802.11aB4	Test Date	:2017-12-19
Fundamental Frequency	:5785 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



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
			PK/QP/AV	Reading Level dB $\mu$ V				
57.16	S	Peak	41.68	-7.98	33.70	40.00	-6.30	
120.21	S	Peak	48.39	-10.44	37.95	43.50	-5.55	
197.81	S	Peak	41.99	-9.57	32.42	43.50	-11.08	
240.49	S	Peak	49.31	-8.04	41.27	46.00	-4.73	
359.80	S	Peak	44.65	-4.79	39.86	46.00	-6.14	
424.79	S	Peak	38.46	-3.33	35.13	46.00	-10.87	

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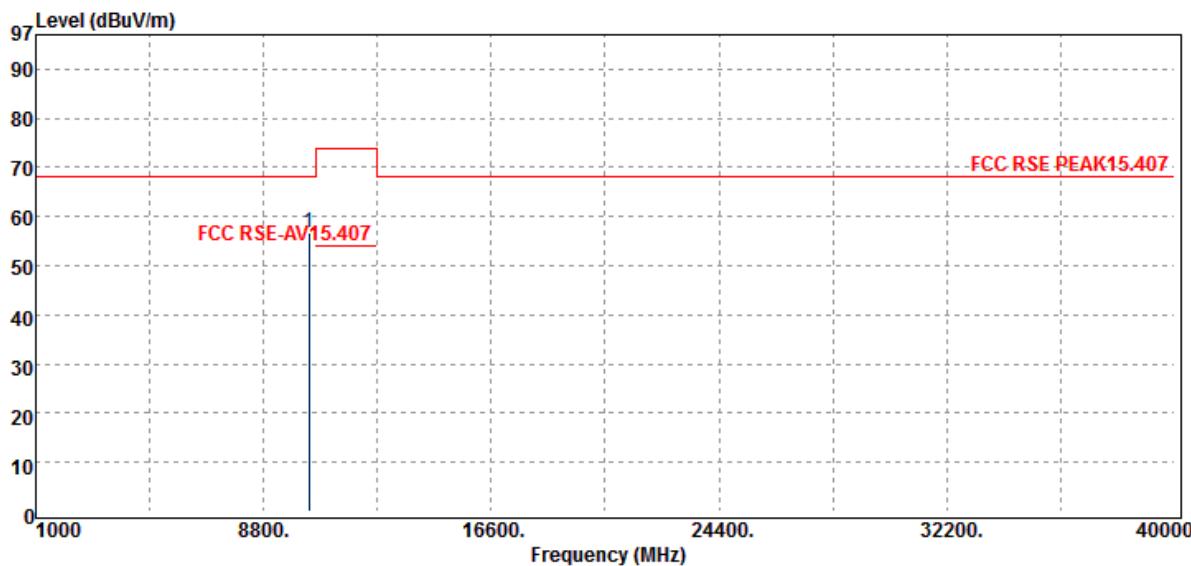
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**Above 1GHz Worst-Case Data:****Radiated Spurious Emission Measurement Result 802.11a, 5150~5250 MHz**

Operation Band	:802.11aB1	Test Date	:2017-12-19
Fundamental Frequency	:5180 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH LOW	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit dB $\mu$ V/m	Safe Margin dB
					FS dB $\mu$ V/m	@3m dB $\mu$ V/m	
10360.00	H	Peak	38.48	18.29	56.77	68.30	-11.53

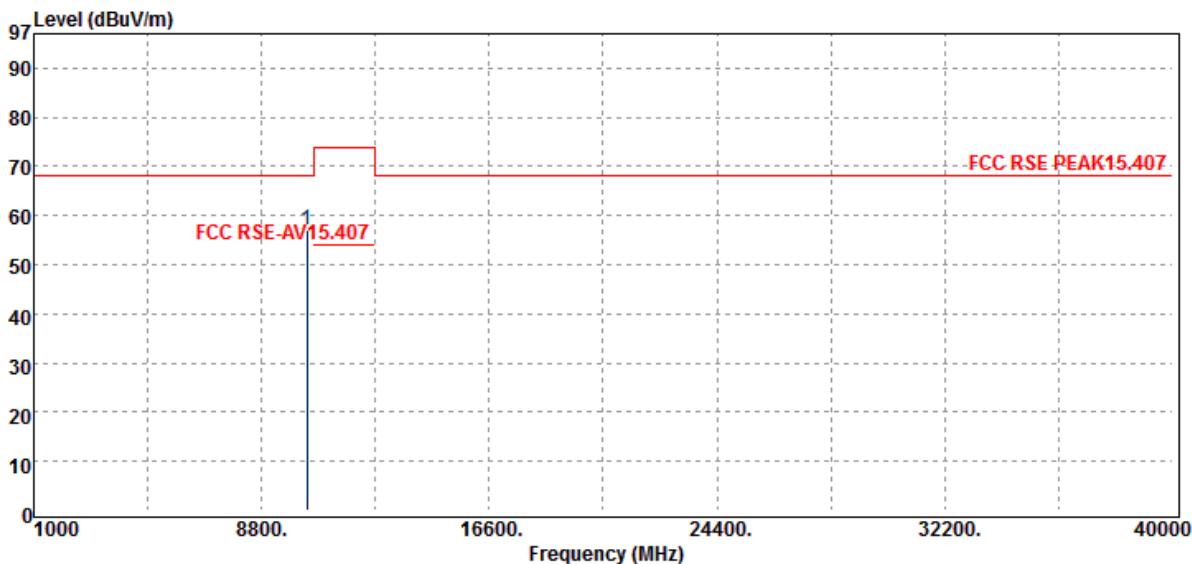
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Operation Band :802.11aB1  
Fundamental Frequency :5180 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
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
10360.00	H	Peak	38.93	18.29	57.22	68.30	-11.08

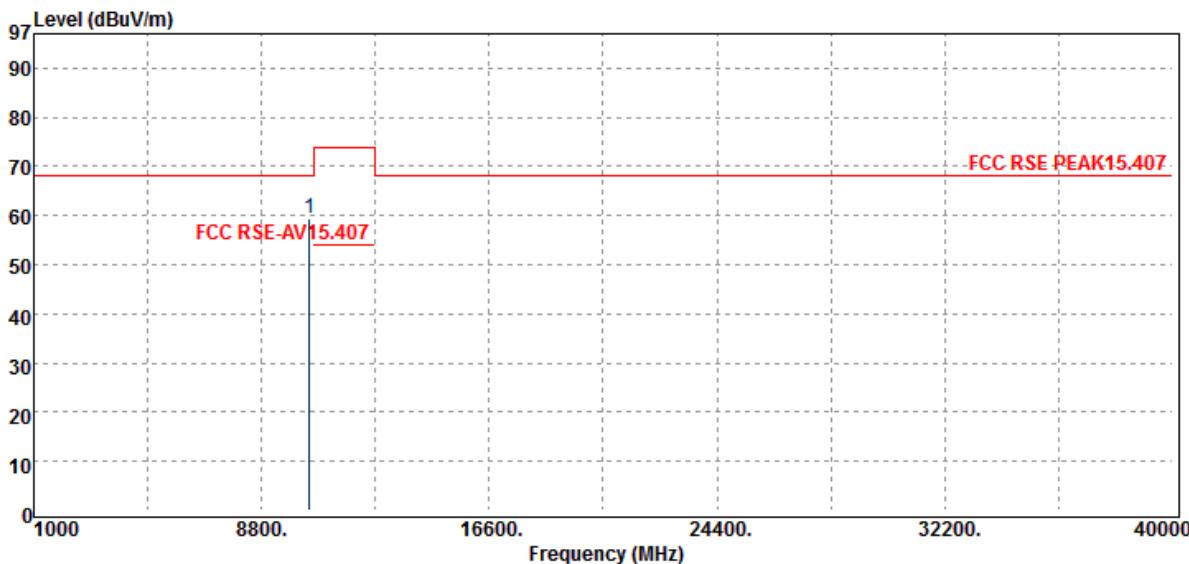
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Operation Band :802.11aB1  
Fundamental Frequency :5220 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :VERTICAL



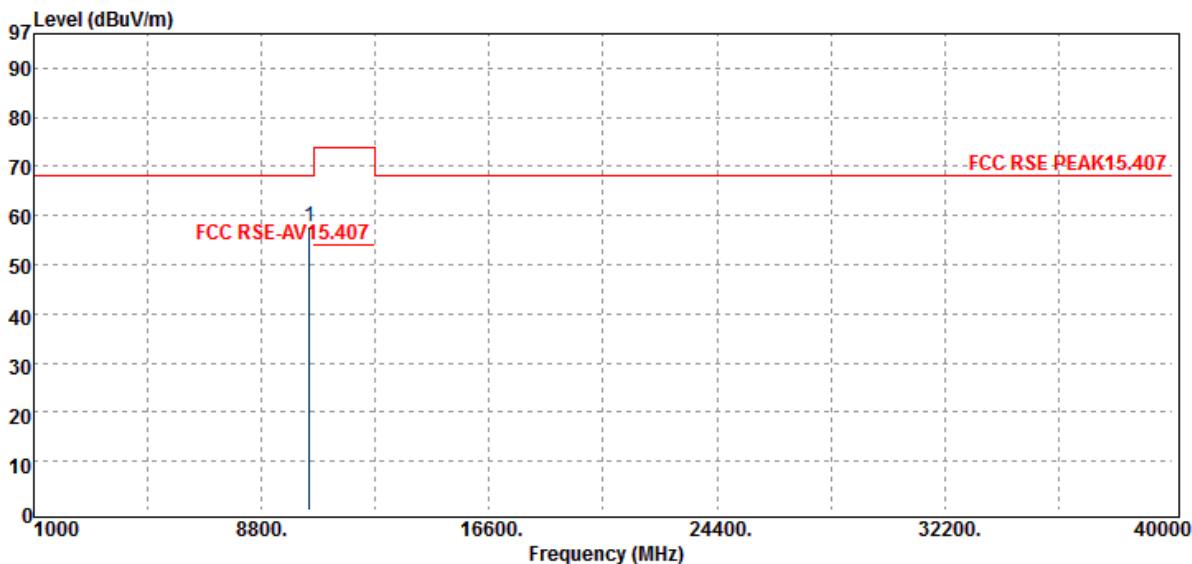
Freq. MHz	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
10440.00	H	Peak	40.86	18.69	59.55	68.30	-8.75

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Operation Band	:802.11aB1	Test Date	:2017-12-19
Fundamental Frequency	:5220 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



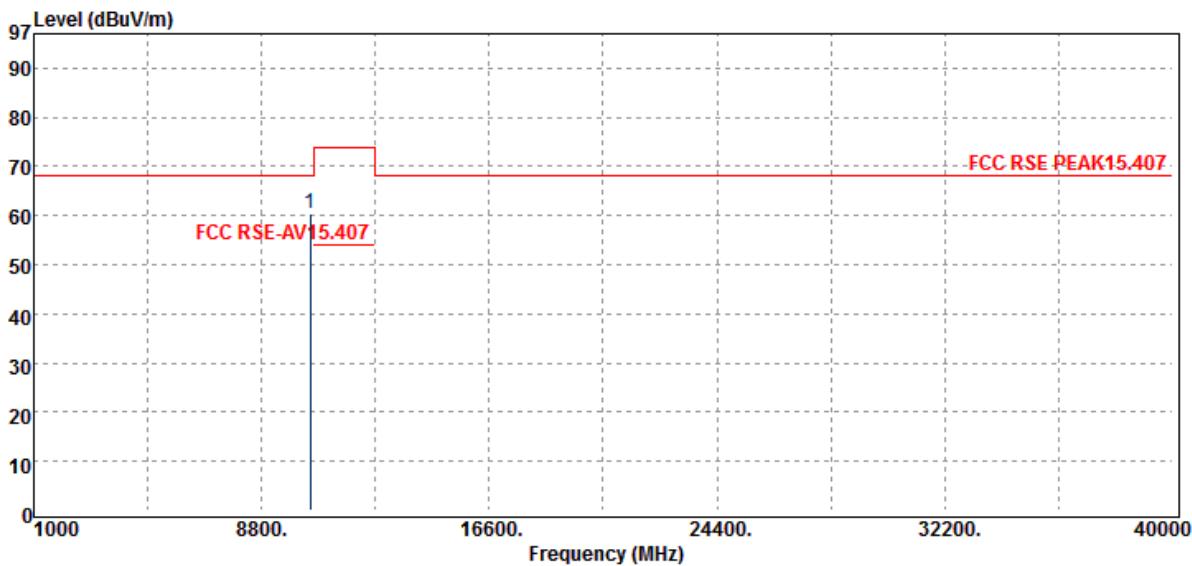
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
MHz	F/H/E/S	Mode	Reading Level	FS	dBuV/m	@3m	Margin
10440.00	H	Peak	39.17	18.69	57.86	68.30	-10.44

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Operation Band	:802.11aB1	Test Date	:2017-12-19
Fundamental Frequency	:5240 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



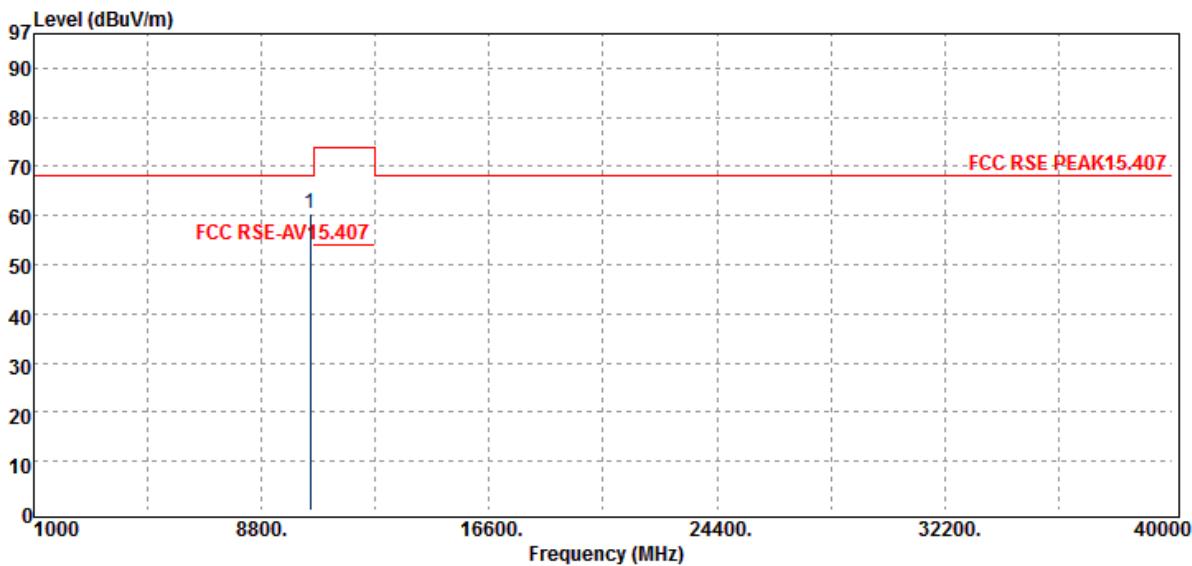
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Safe Margin dB
10480.00	H	Peak	42.08	18.30	60.38	68.30	-7.92

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Operation Band	:802.11aB1	Test Date	:2017-12-19
Fundamental Frequency	:5240 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Kane
EUT Pol.	:E2 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
10480.00	H	Peak	42.24	18.30	60.54	68.30	-7.76

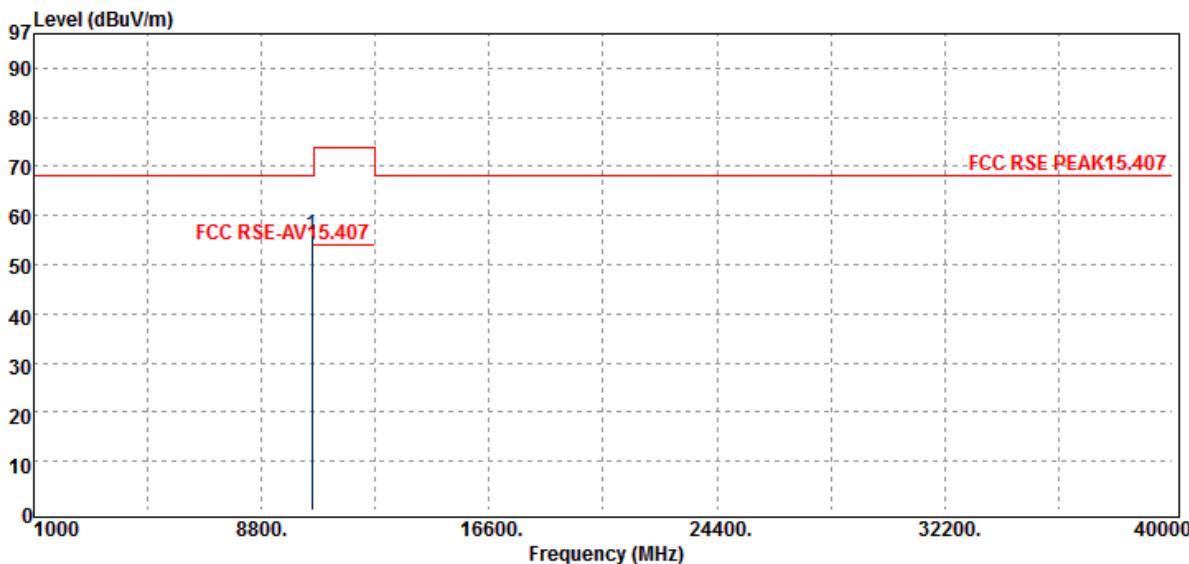
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**Radiated Spurious Emission Measurement Result 802.11a, 5250MHz-5350MHz**

Operation Band :802.11aB2 Test Date :2017-12-19  
Fundamental Frequency :5260 MHz Temp./Humi. :23 deg\_C / 62 RH  
Operation Mode :Tx CH LOW Engineer :Kane  
EUT Pol. :E2 Plane 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
10520.00	H	Peak	36.59	19.38	55.97	68.30	-12.33

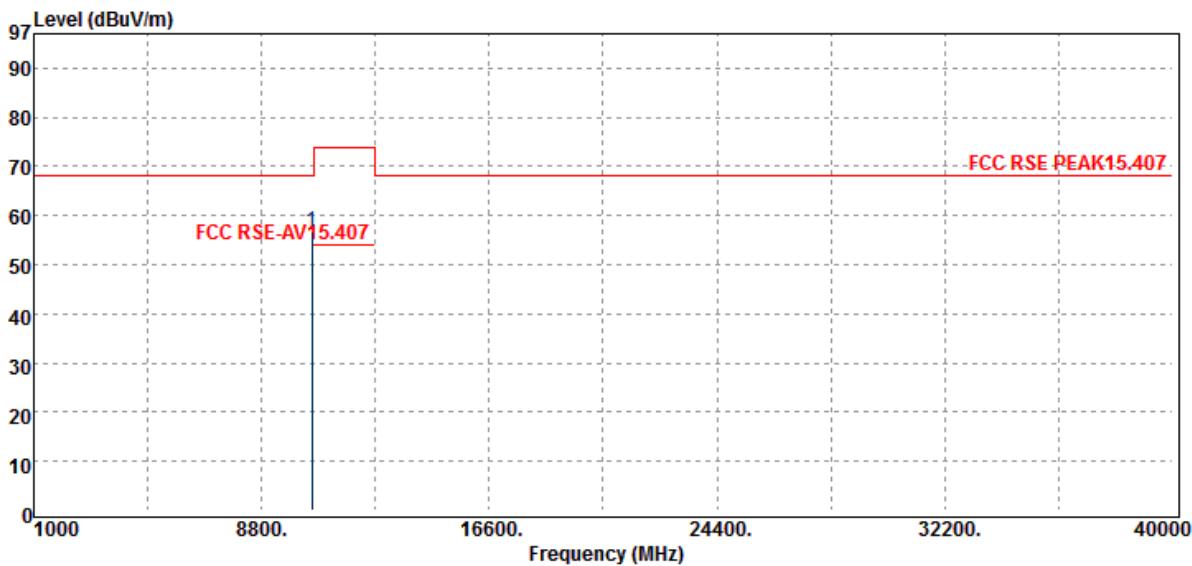
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Operation Band :802.11aB2  
Fundamental Frequency :5260 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :HORIZONTAL



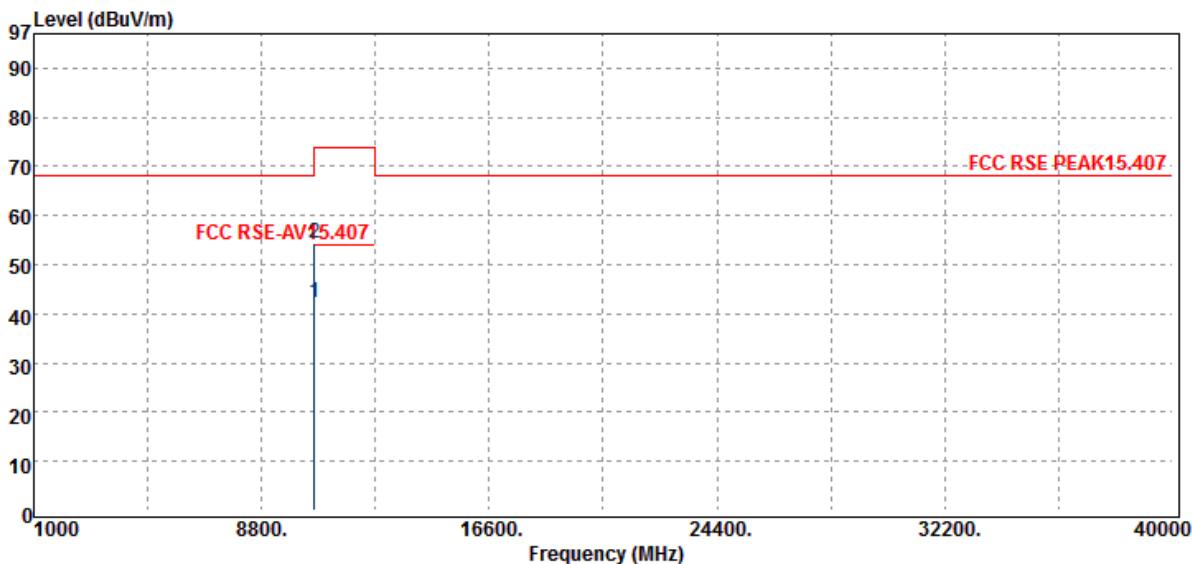
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
10520.00	H	Peak	37.21	19.38	56.59	68.30	-11.71

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Operation Band	:802.11aB2	Test Date	:2017-12-19
Fundamental Frequency	:5300 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



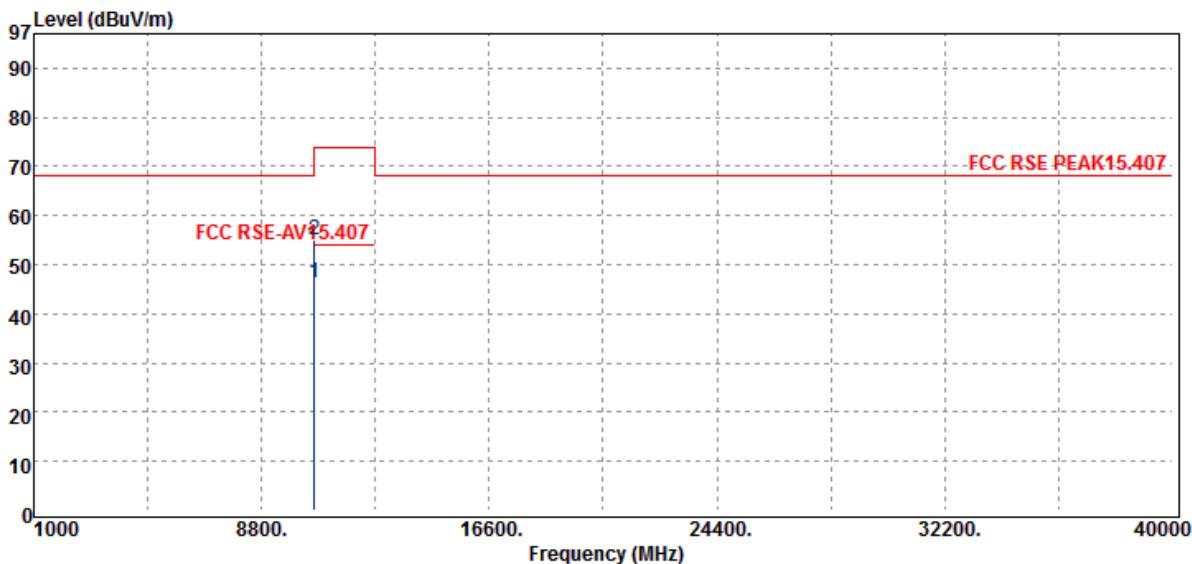
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
10600.00	H	Average	23.55	18.91	42.46	54.00	-11.54	
10600.00	H	Peak	35.47	18.91	54.38	74.00	-19.62	

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Operation Band	:802.11aB2	Test Date	:2017-12-19
Fundamental Frequency	:5300 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
10600.00	H	Average	27.41	18.91	46.32	54.00	-7.68	
10600.00	H	Peak	36.13	18.91	55.04	74.00	-18.96	

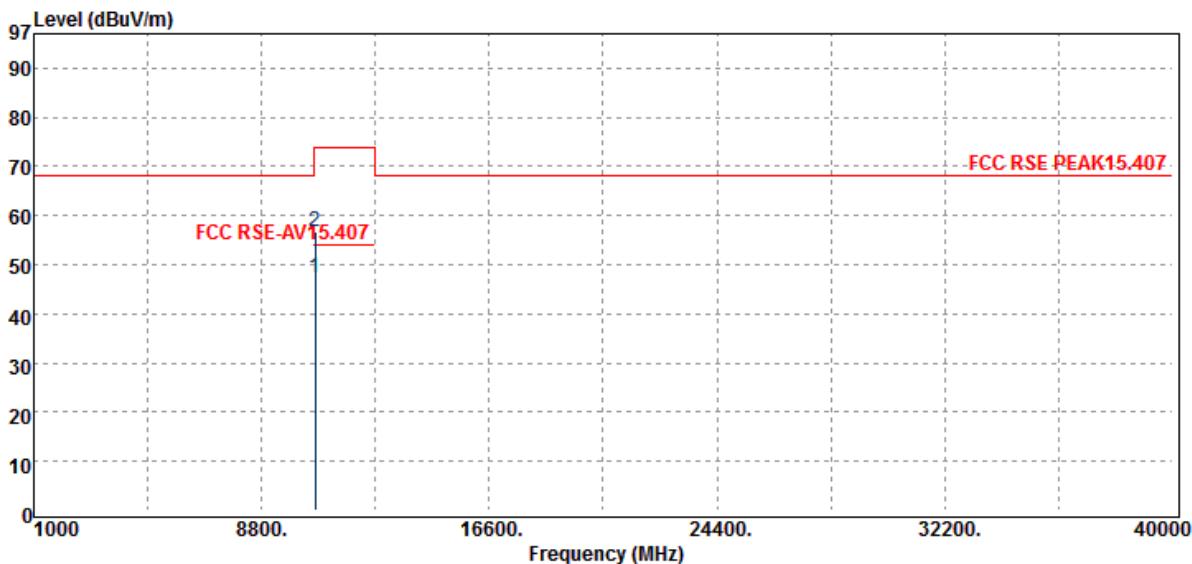
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Operation Band	:802.11aB2	Test Date	:2017-12-19
Fundamental Frequency	:5320 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS dB	Limit @3m dBuV/m	Safe Margin dB
			PK/QP/AV	Reading Level dB $\mu$ V				
10640.00	H	Average	28.08	19.19	47.27	54.00	-6.73	
10640.00	H	Peak	37.42	19.19	56.61	74.00	-17.39	

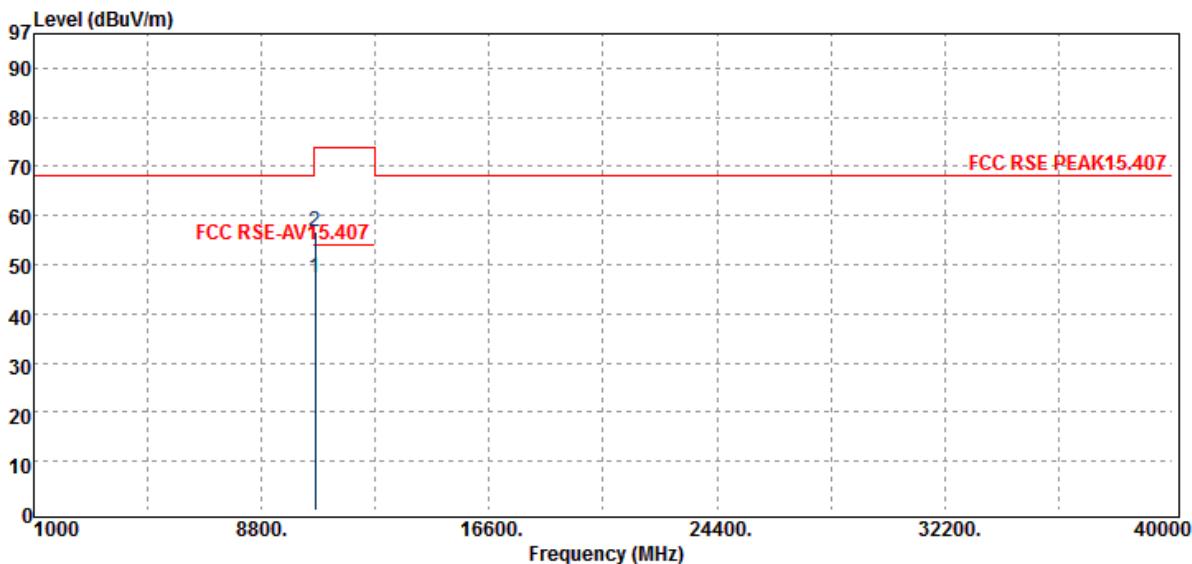
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Operation Band :802.11aB2  
Fundamental Frequency :5320 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
10640.00	H	Average	28.11	19.19	47.30	54.00	-6.70	
10640.00	H	Peak	37.55	19.19	56.74	74.00	-17.26	

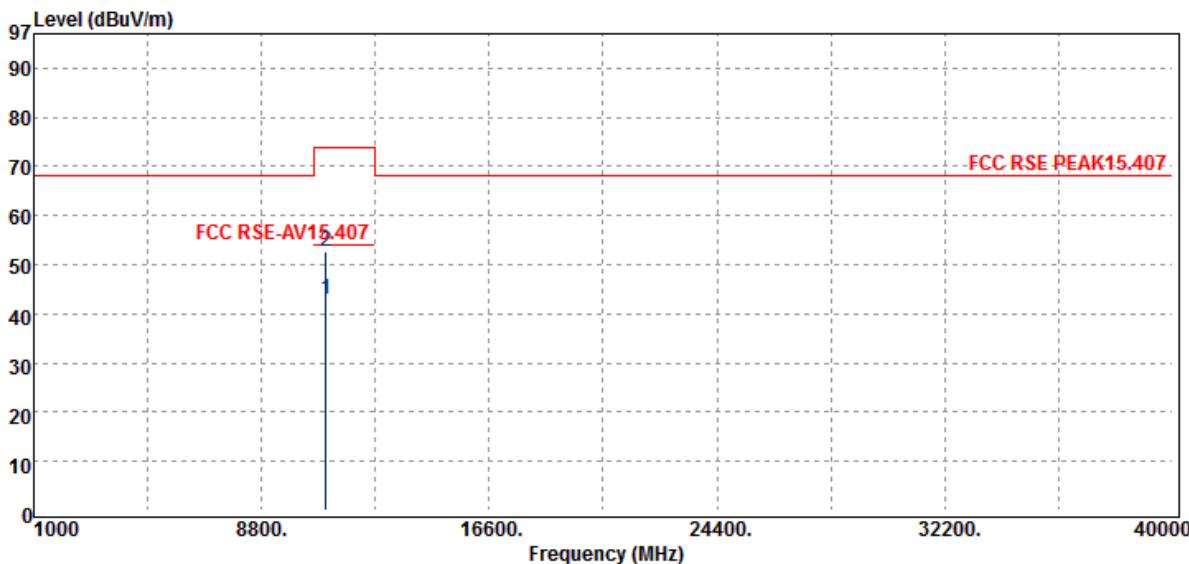
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**Radiated Spurious Emission Measurement Result 802.11a, 5470~5725 MHz**

Operation Band :802.11aB3 Test Date :2017-12-19  
Fundamental Frequency :5500 MHz Temp./Humi. :23 deg\_C / 62 RH  
Operation Mode :Tx CH LOW Engineer :Kane  
EUT Pol. :E2 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
11000.00	H	Average	22.70	20.16	42.86	54.00	-11.14
11000.00	H	Peak	32.64	20.16	52.80	74.00	-21.20

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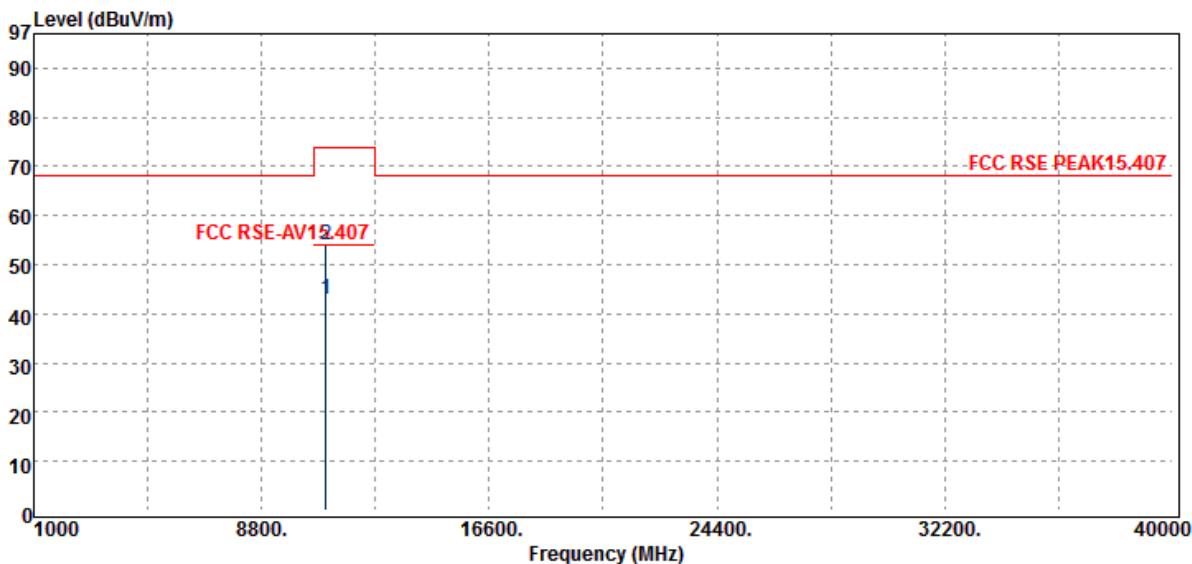
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Operation Band	:802.11aB3	Test Date	:2017-12-19
Fundamental Frequency	:5500 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH LOW	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11000.00	H	Average		22.91	20.16	43.07	54.00	-10.93
11000.00	H	Peak		33.87	20.16	54.03	74.00	-19.97

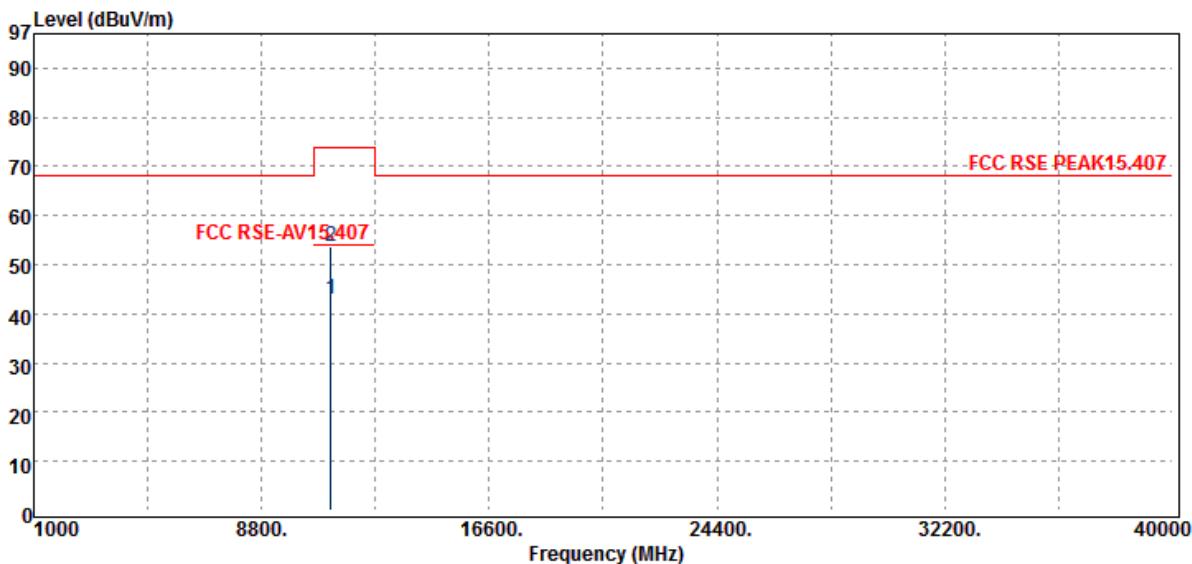
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Operation Band :802.11aB3  
Fundamental Frequency :5580 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E2 Plane

Test Date :2017-12-20  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11160.00	H	Average		22.46	20.44	42.90	54.00	-11.10
11160.00	H	Peak		33.12	20.44	53.56	74.00	-20.44

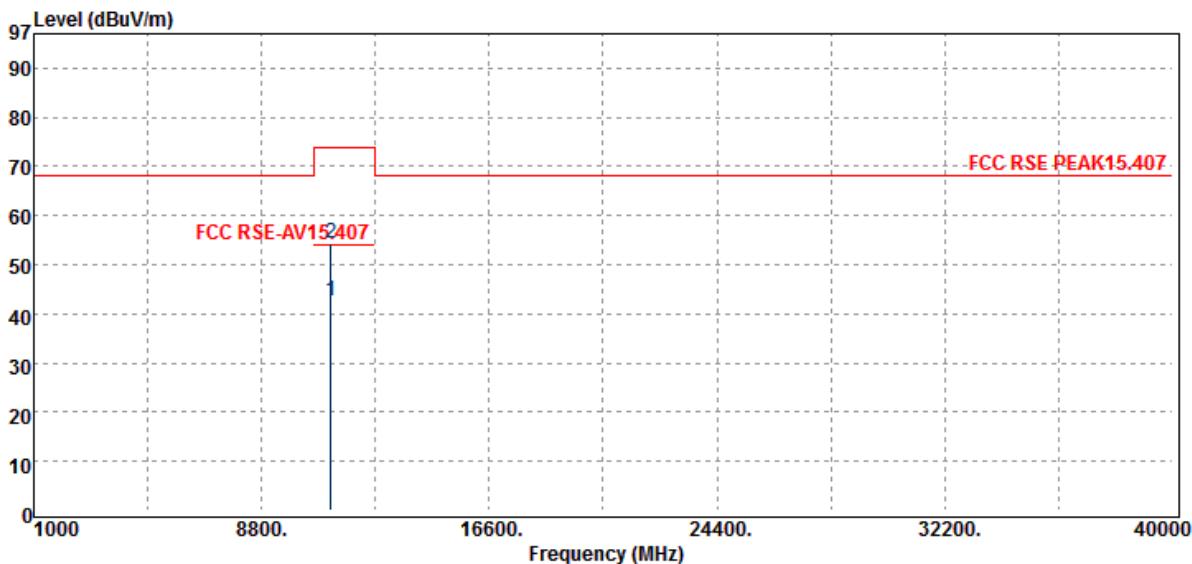
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Operation Band :802.11aB3  
Fundamental Frequency :5580 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E2 Plane

Test Date :2017-12-20  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :HORIZONTAL



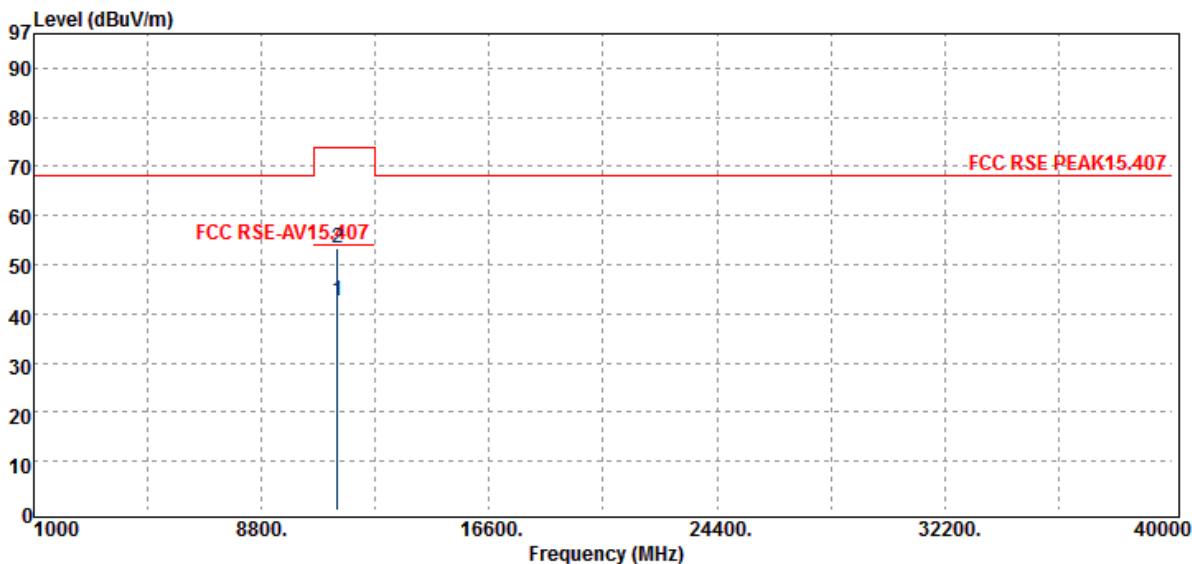
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11160.00	H	Average		22.25	20.44	42.69	54.00	-11.31
11160.00	H	Peak		33.96	20.44	54.40	74.00	-19.60

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Operation Band	:802.11aB3	Test Date	:2017-12-20
Fundamental Frequency	:5700 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



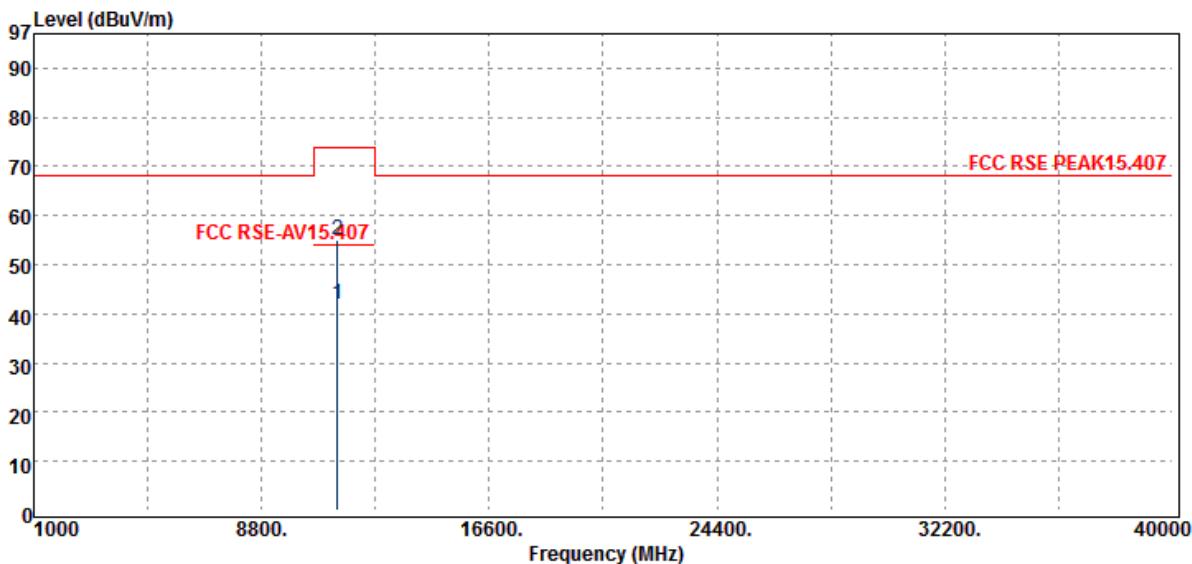
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11400.00	H	Average		21.96	20.56	42.52	54.00	-11.48
11400.00	H	Peak		32.77	20.56	53.33	74.00	-20.67

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Operation Band	:802.11aB3	Test Date	:2017-12-20
Fundamental Frequency	:5700 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11400.00	H	Average	21.43	21.43	20.56	41.99	54.00	-12.01
11400.00	H	Peak	34.41	34.41	20.56	54.97	74.00	-19.03

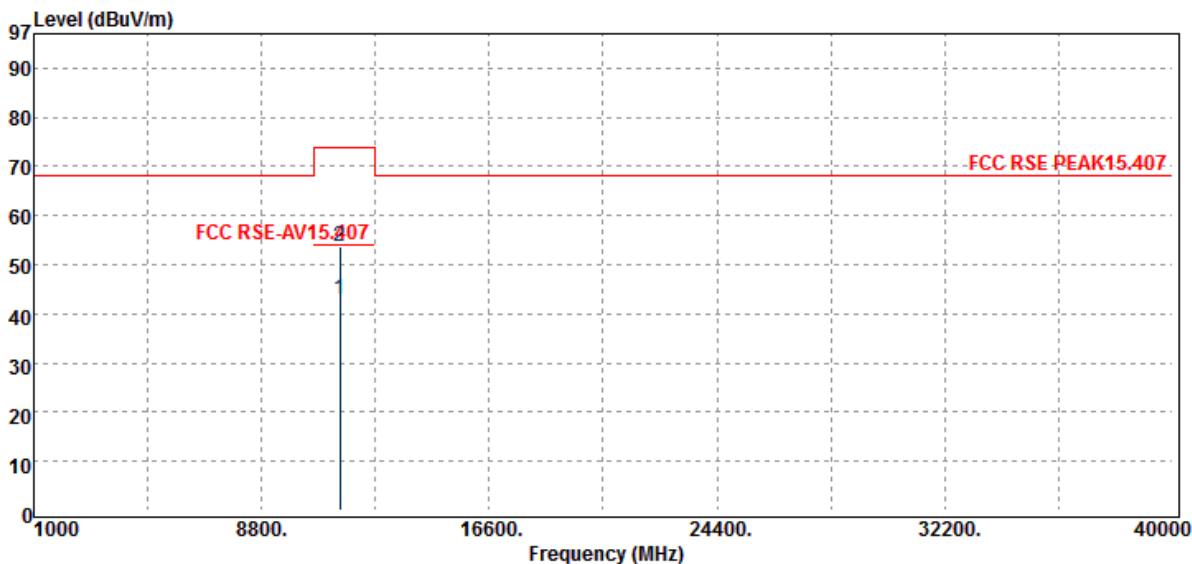
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## Radiated Spurious Emission Measurement Result 802.11a, 5725~5850 MHz

Operation Band	:802.11aB4	Test Date	:2017-12-20
Fundamental Frequency	:5745 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH LOW	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11490.00	H	Average	22.45	20.42	42.87	54.00	-11.13	
11490.00	H	Peak	33.41	20.42	53.83	74.00	-20.17	

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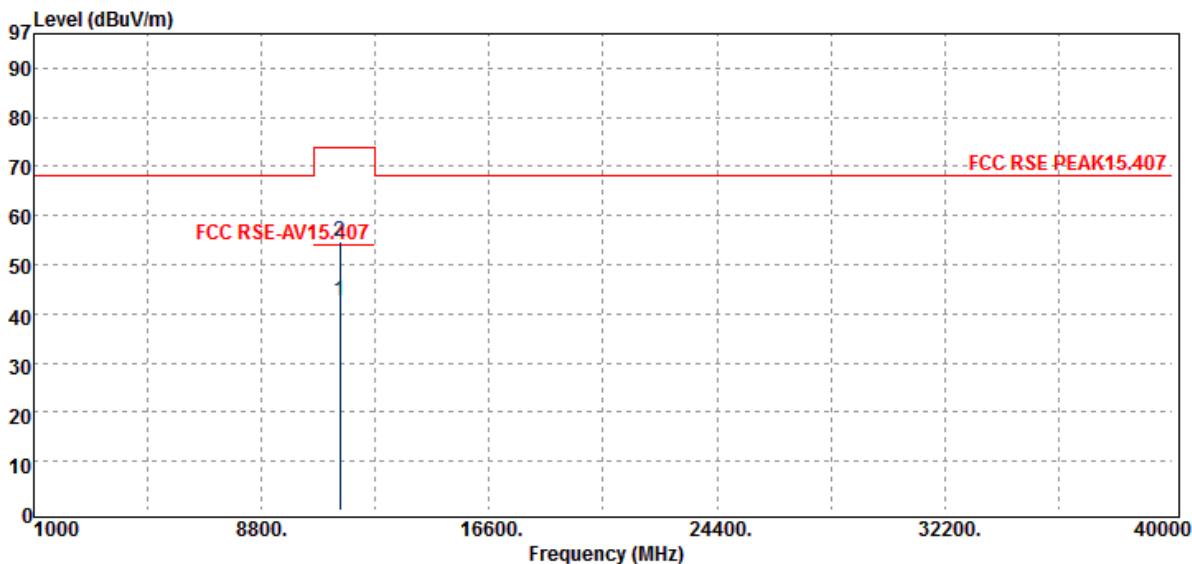
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Operation Band :802.11aB4  
Fundamental Frequency :5745 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E2 Plane

Test Date :2017-12-20  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :HORIZONTAL



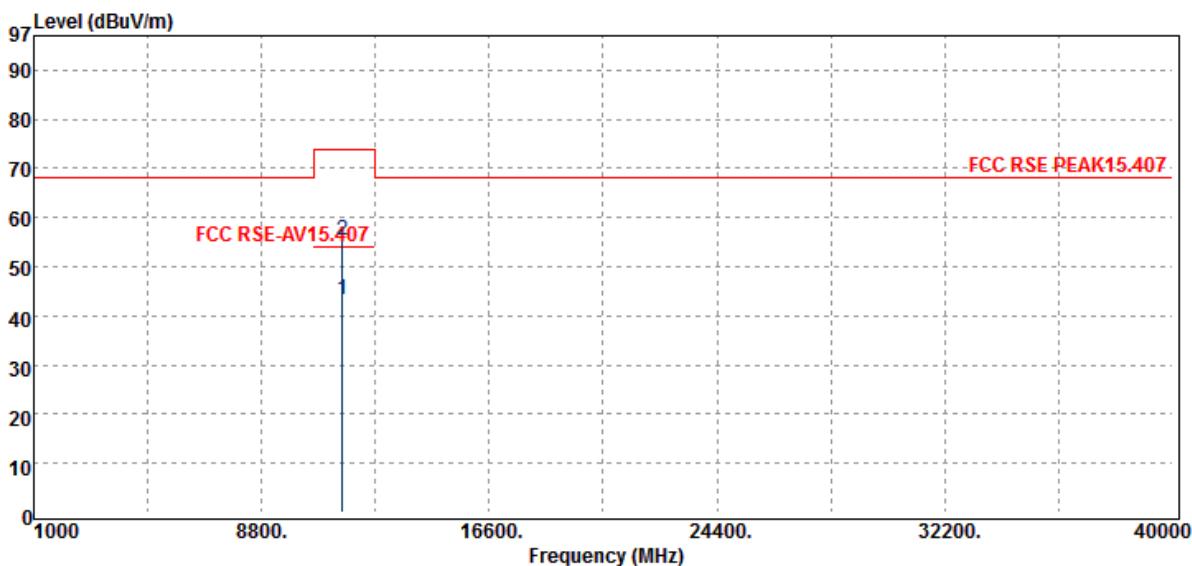
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11490.00	H	Average		22.05	20.42	42.47	54.00	-11.53
11490.00	H	Peak		34.24	20.42	54.66	74.00	-19.34

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Operation Band	:802.11aB4	Test Date	:2017-12-20
Fundamental Frequency	:5785 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11570.00	H	Average		22.86	20.58	43.44	54.00	-10.56
11570.00	H	Peak		34.71	20.58	55.29	74.00	-18.71

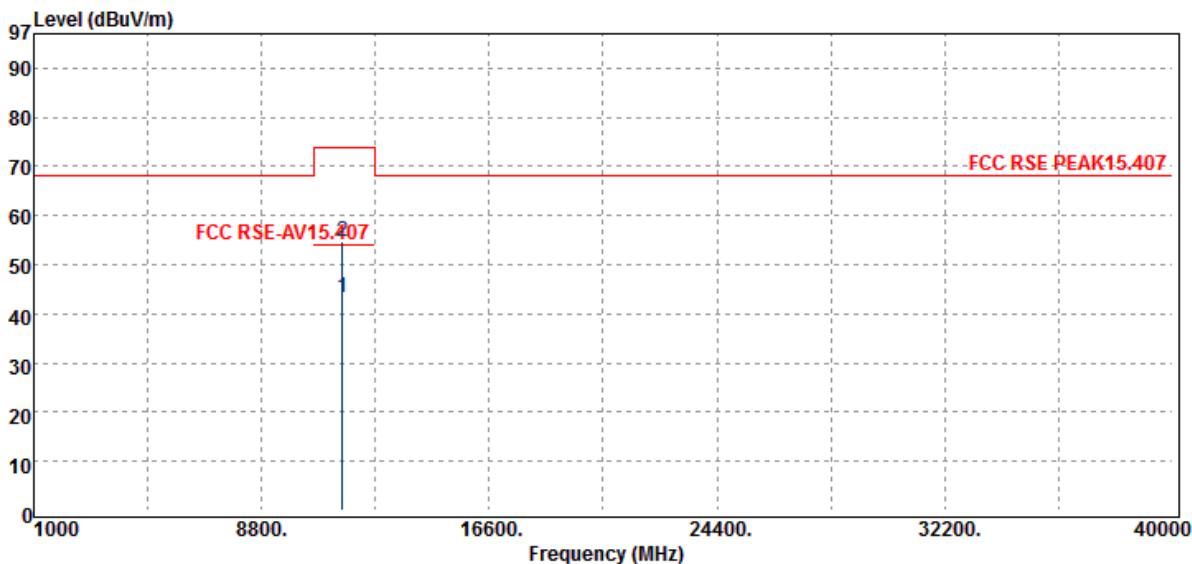
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Operation Band :802.11aB4  
Fundamental Frequency :5785 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E2 Plane

Test Date :2017-12-20  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11570.00	H	Average		22.58	20.58	43.16	54.00	-10.84
11570.00	H	Peak		34.00	20.58	54.58	74.00	-19.42

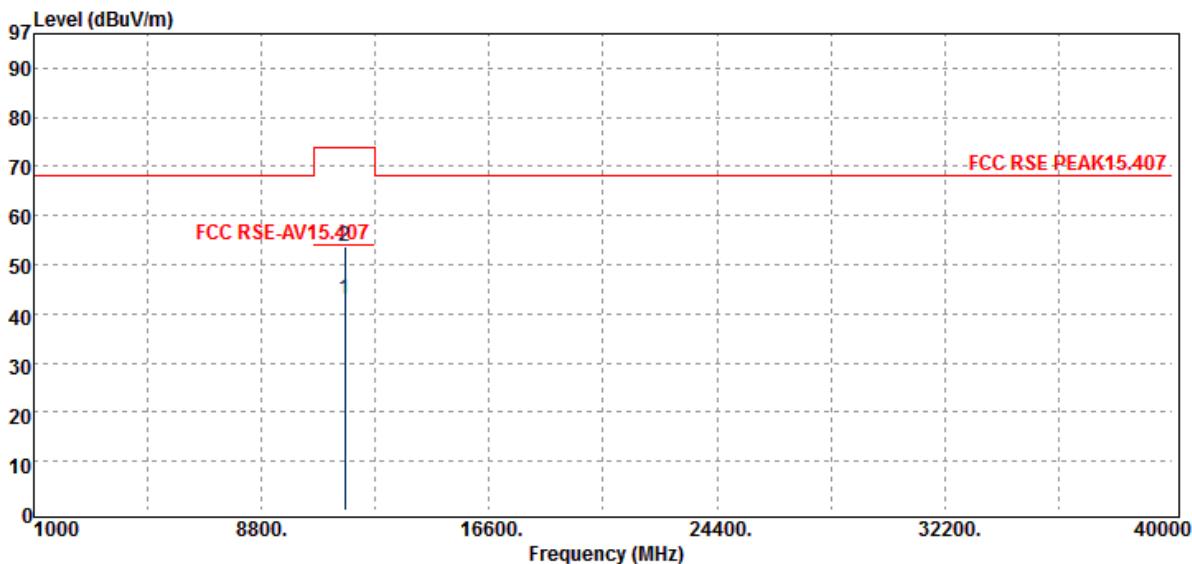
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Operation Band :802.11aB4  
Fundamental Frequency :5825 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E2 Plane

Test Date :2017-12-20  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11650.00	H	Average		22.65	20.43	43.08	54.00	-10.92
11650.00	H	Peak		33.15	20.43	53.58	74.00	-20.42

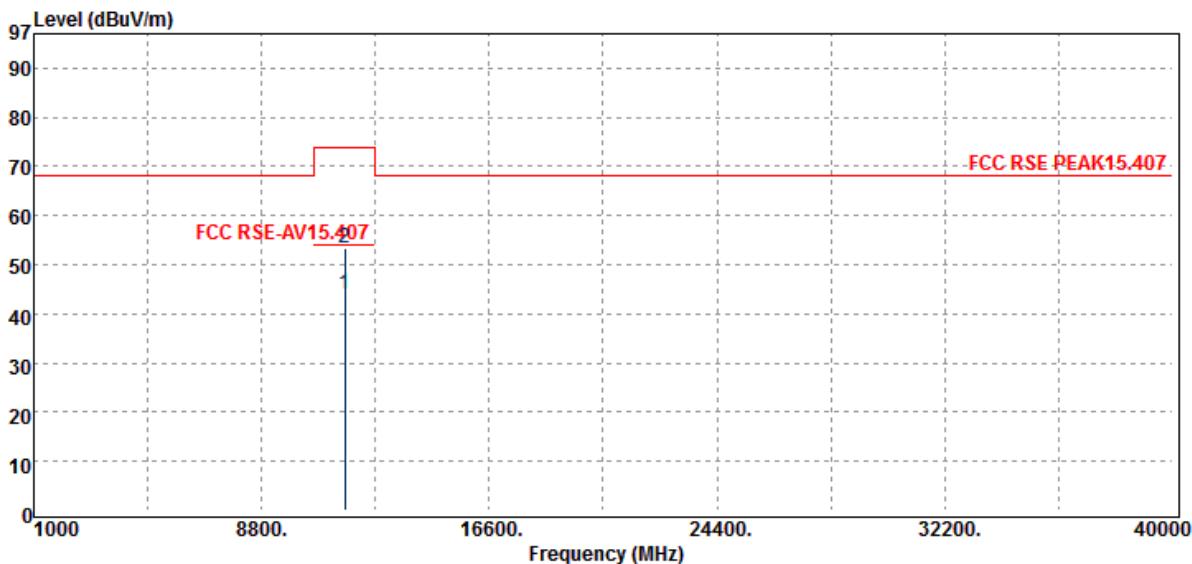
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Operation Band :802.11aB4  
Fundamental Frequency :5825 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E2 Plane

Test Date :2017-12-20  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11650.00	H	Average		23.64	20.43	44.07	54.00	-9.93
11650.00	H	Peak		33.08	20.43	53.51	74.00	-20.49

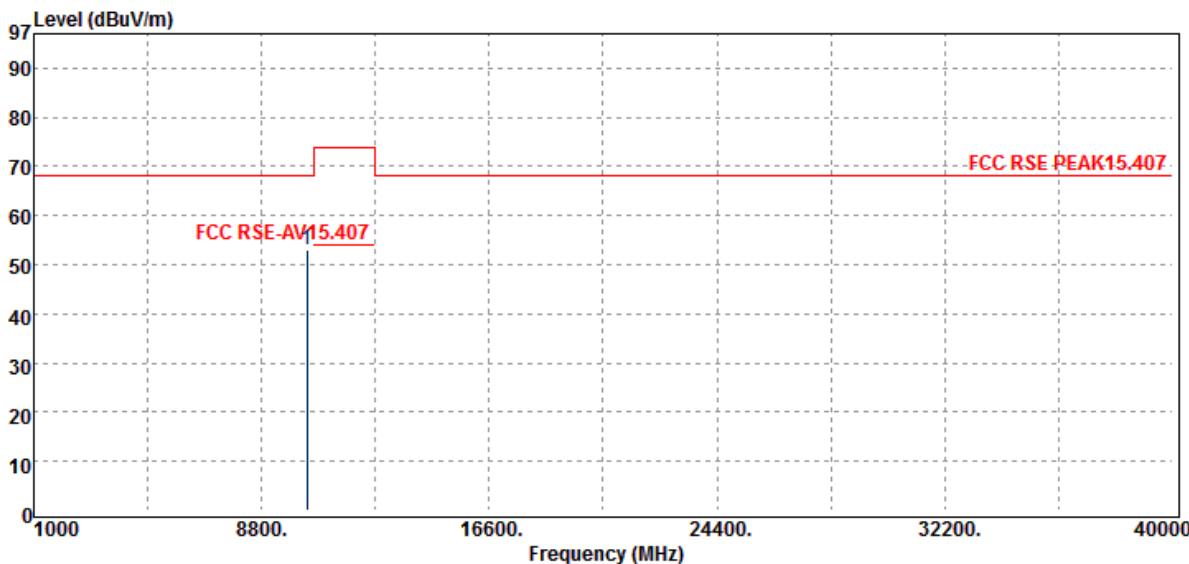
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**Radiated Spurious Emission Measurement Result 802.11n HT20, 5150~5250 MHz**

Operation Band :802.11n20B1 Test Date :2017-12-19  
Fundamental Frequency :5180 MHz Temp./Humi. :23 deg\_C / 62 RH  
Operation Mode :Tx CH LOW Engineer :Kane  
EUT Pol. :E2 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
10360.00	H	Peak	34.61	18.29	52.90	68.30	-15.40

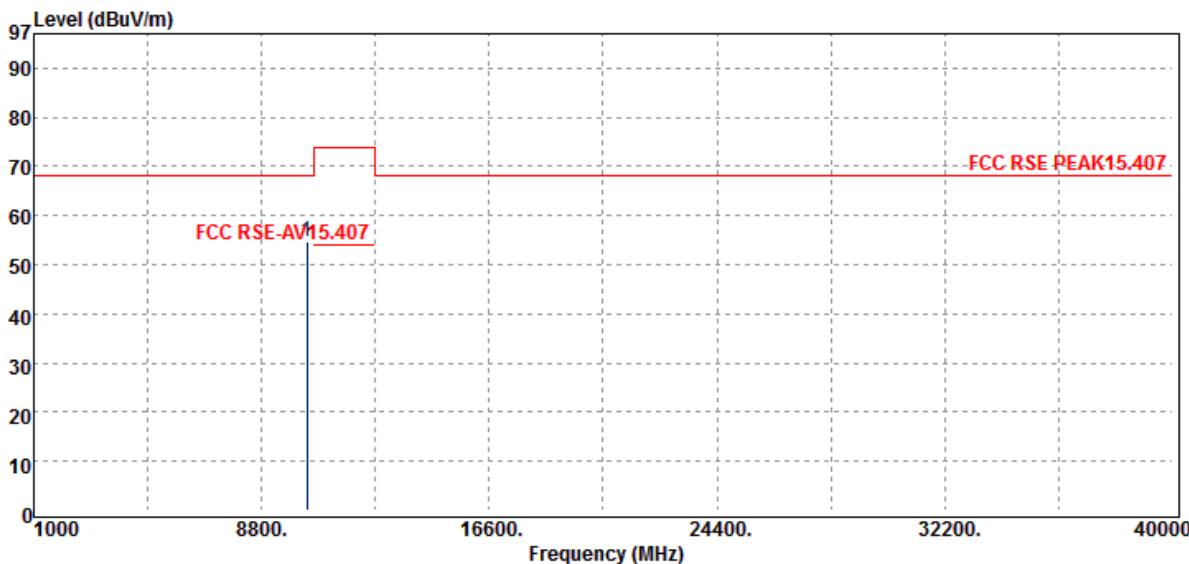
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Operation Band :802.11n20B1  
Fundamental Frequency :5180 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
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
10360.00	H	Peak	36.31	18.29	54.60	68.30	-13.70

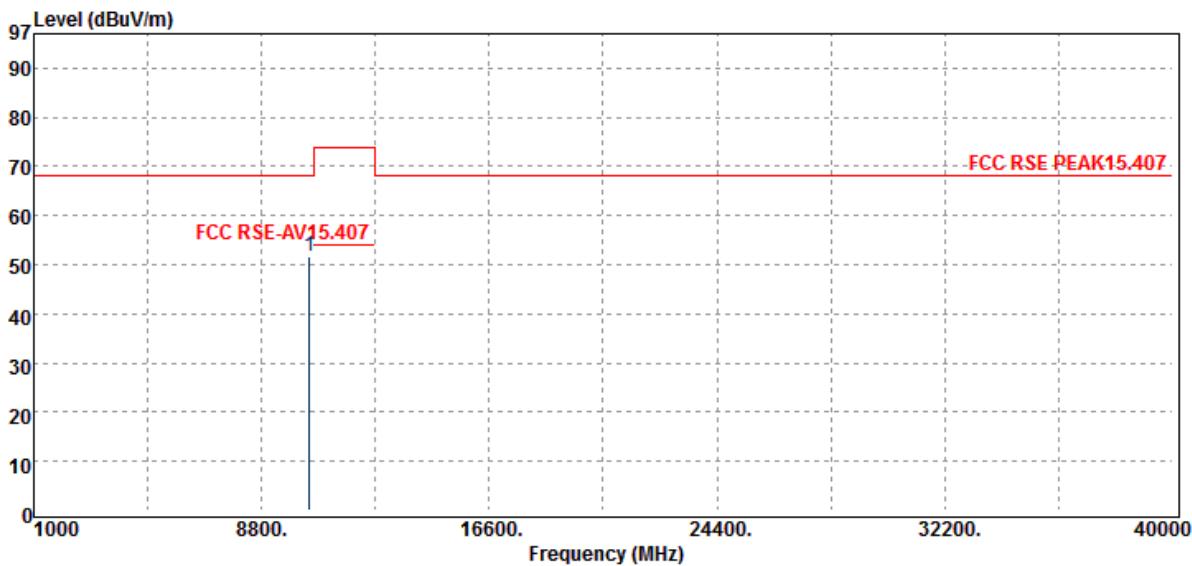
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Operation Band :802.11n20B1  
Fundamental Frequency :5220 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
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	33.08	18.69	51.77	68.30	-16.53

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Operation Band	:802.11n20B1	Test Date	:2017-12-19
Fundamental Frequency	:5220 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



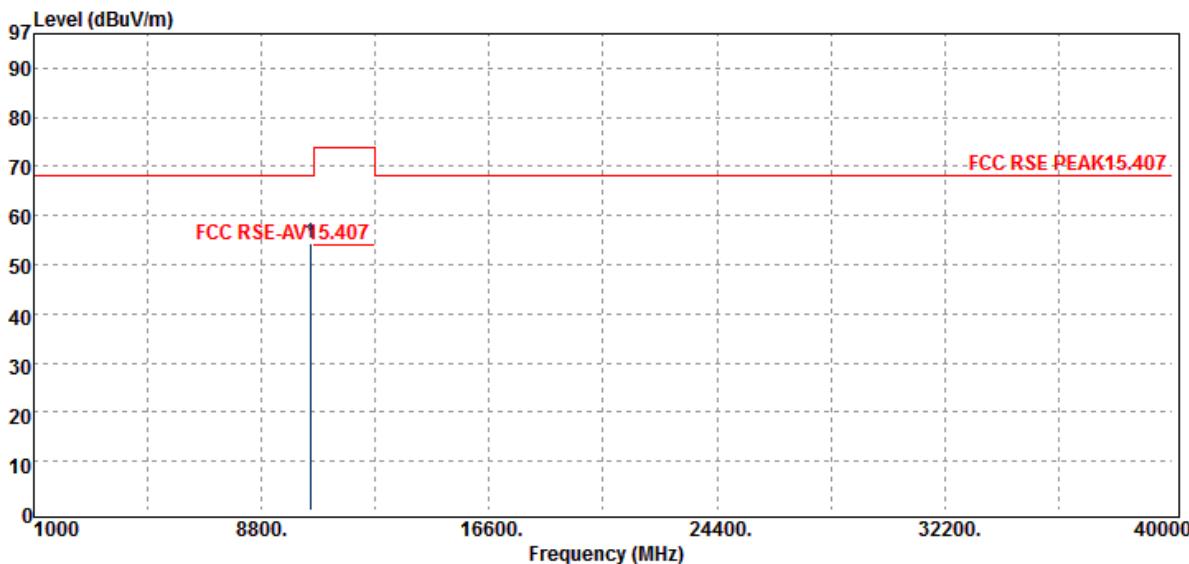
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
10440.00	H	Peak	33.10	18.69	51.79	68.30	-16.51

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Operation Band	:802.11n20B1	Test Date	:2017-12-19
Fundamental Frequency	:5240 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



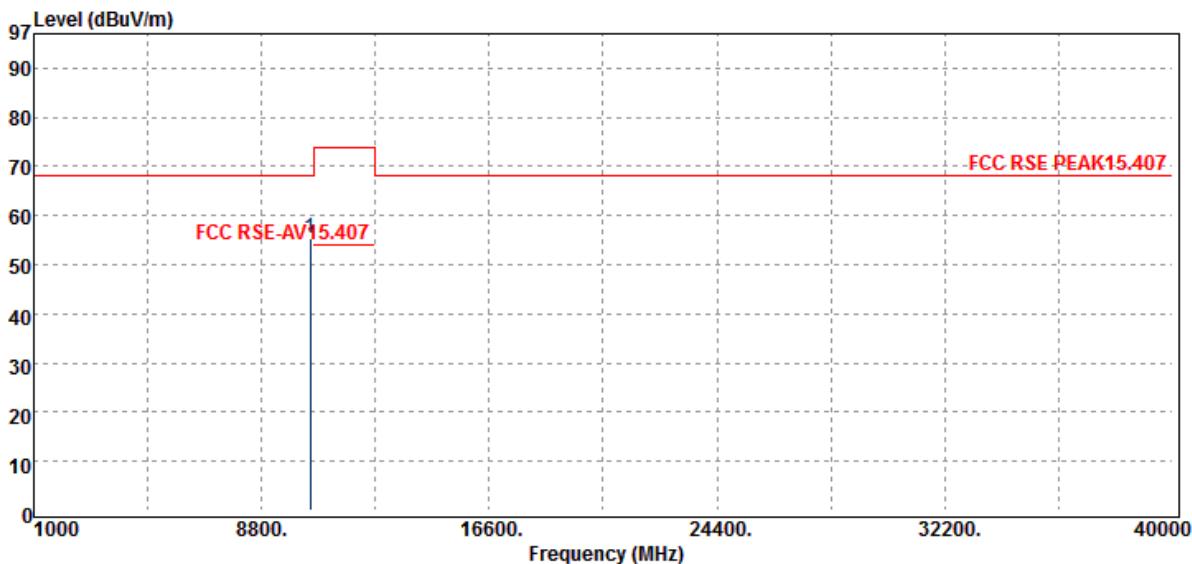
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
MHz	F/H/E/S	Mode	Reading Level	FS	dBuV/m	@3m	Margin
10480.00	H	Peak	35.92	18.30	54.22	68.30	-14.08

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Operation Band	:802.11n20B1	Test Date	:2017-12-19
Fundamental Frequency	:5240 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



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
10480.00	H	Peak	37.10	18.30	55.40	68.30	-12.90

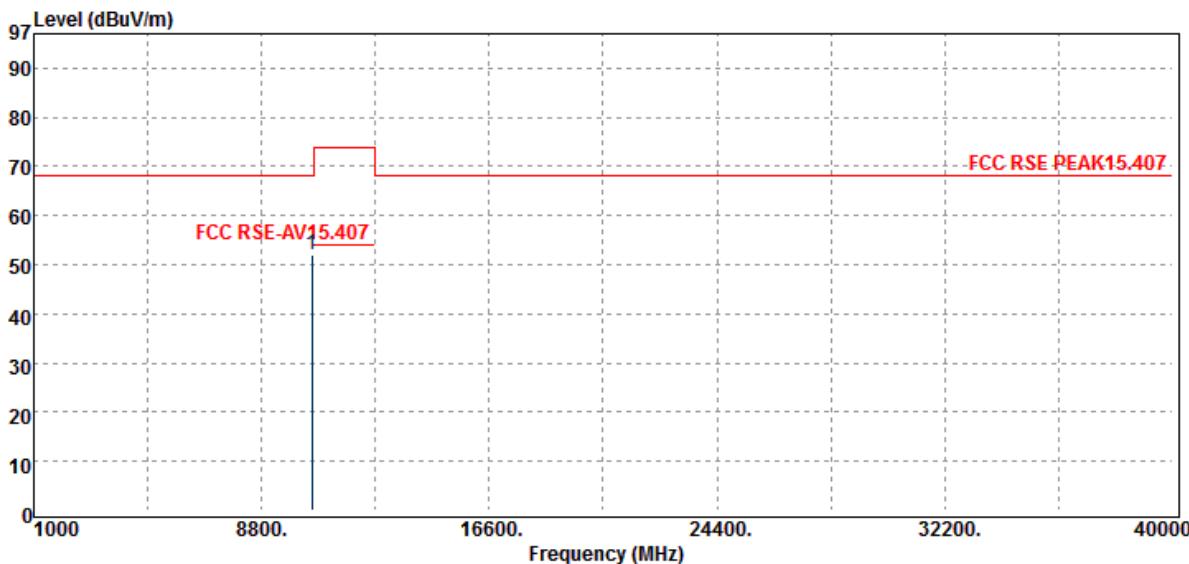
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**Radiated Spurious Emission Measurement Result 802.11n HT20, 5250~5350 MHz**

Operation Band :802.11n20B2 Test Date :2017-12-19  
Fundamental Frequency :5260 MHz Temp./Humi. :23 deg\_C / 62 RH  
Operation Mode :Tx CH LOW Engineer :Kane  
EUT Pol. :E2 Plane Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
MHz	F/H/E/S	Mode	Reading Level	FS	dBuV/m	@3m	Margin
10520.00	H	Peak	32.55	19.38	51.93	68.30	-16.37

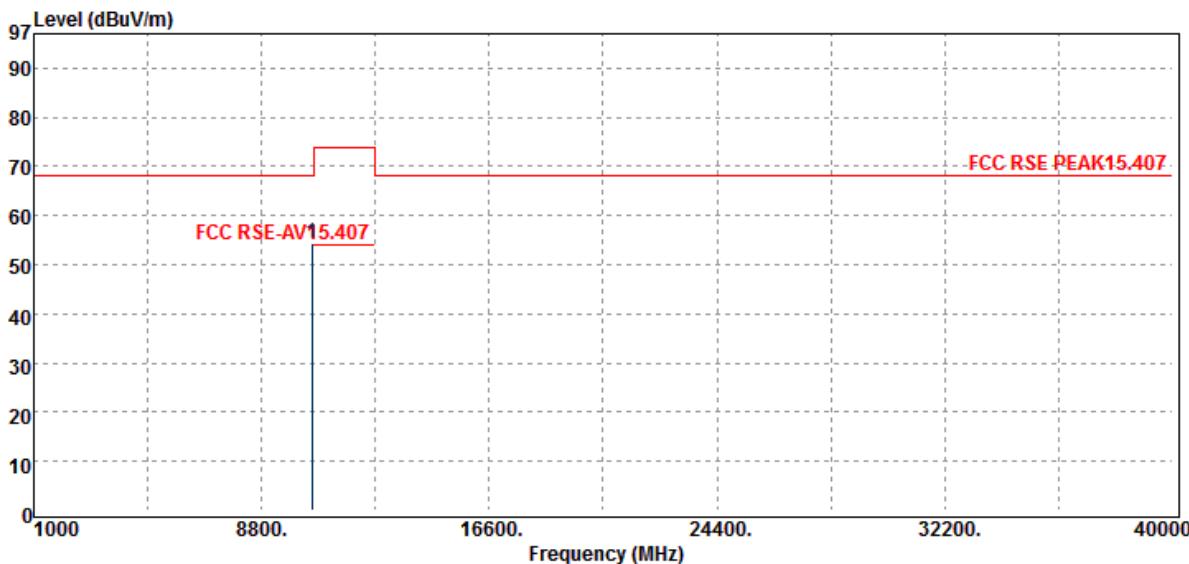
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Operation Band :802.11n20B2  
Fundamental Frequency :5260 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :HORIZONTAL



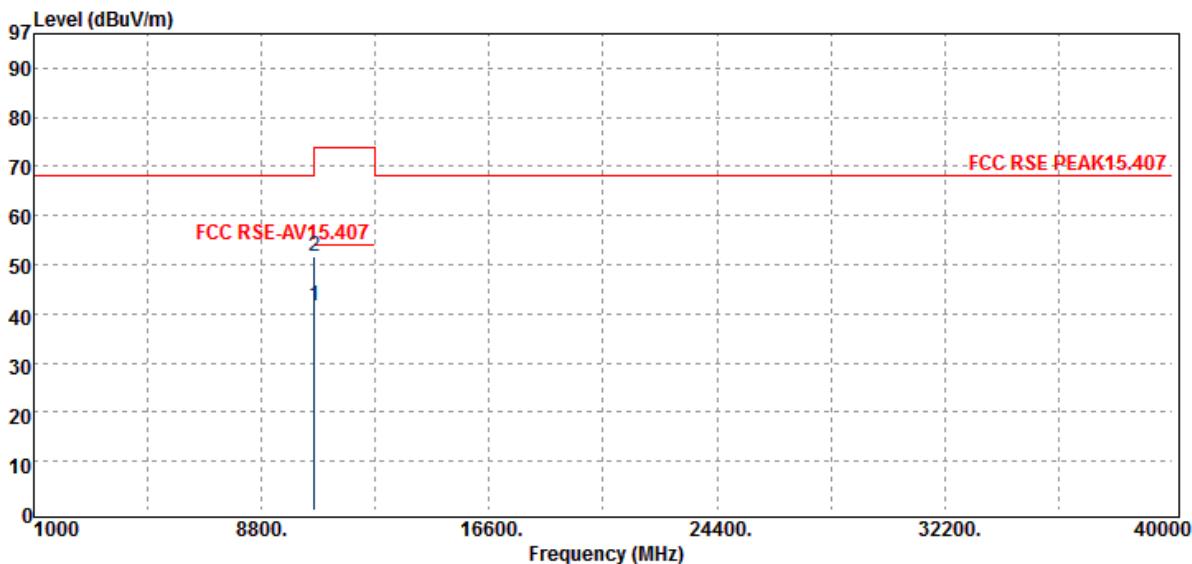
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
10520.00	H	Peak	34.89	19.38	54.27	68.30	-14.03

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Operation Band	:802.11n20B2	Test Date	:2017-12-19
Fundamental Frequency	:5300 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Kane
EUT Pol.	:E2 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	Safe Margin dB
			PK/QP/AV	dB $\mu$ V				
10600.00	H	Average		22.61	18.91	41.52	54.00	-12.48
10600.00	H	Peak		32.85	18.91	51.76	74.00	-22.24

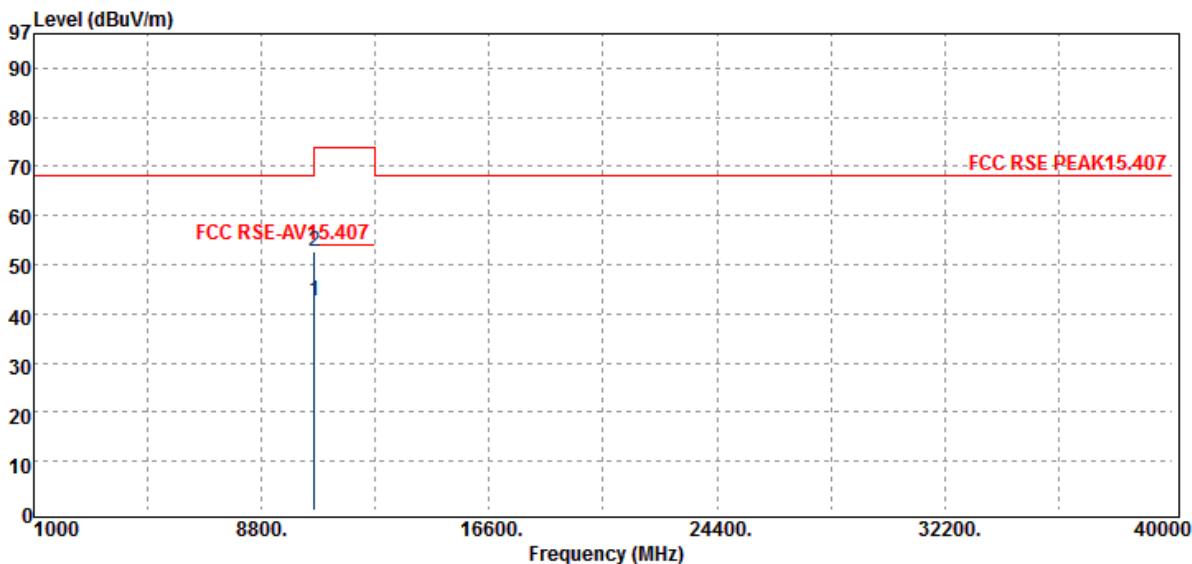
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Operation Band	:802.11n20B2	Test Date	:2017-12-19
Fundamental Frequency	:5300 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



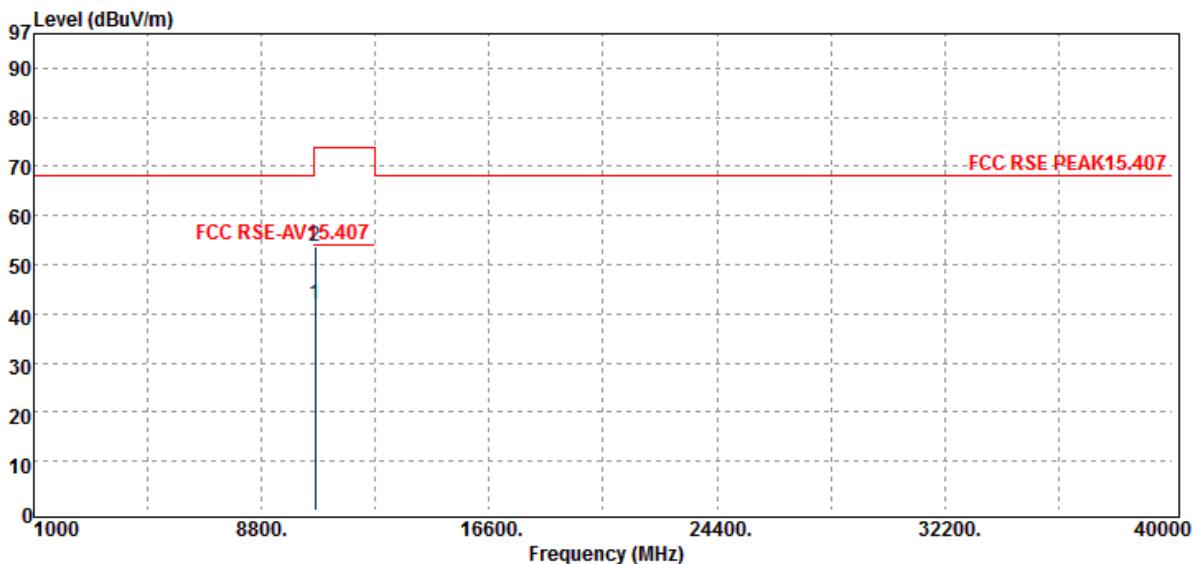
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
10600.00	H	Average	23.56	18.91	42.47	54.00	-11.53	
10600.00	H	Peak	33.62	18.91	52.53	74.00	-21.47	

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Operation Band	:802.11n20B2	Test Date	:2017-12-19
Fundamental Frequency	:5320 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Kane
EUT Pol.	:E2 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	Safe Margin dB
			PK/QP/AV	dB $\mu$ V				
10640.00	H	Average		22.68	19.19	41.87	54.00	-12.13
10640.00	H	Peak		34.63	19.19	53.82	74.00	-20.18

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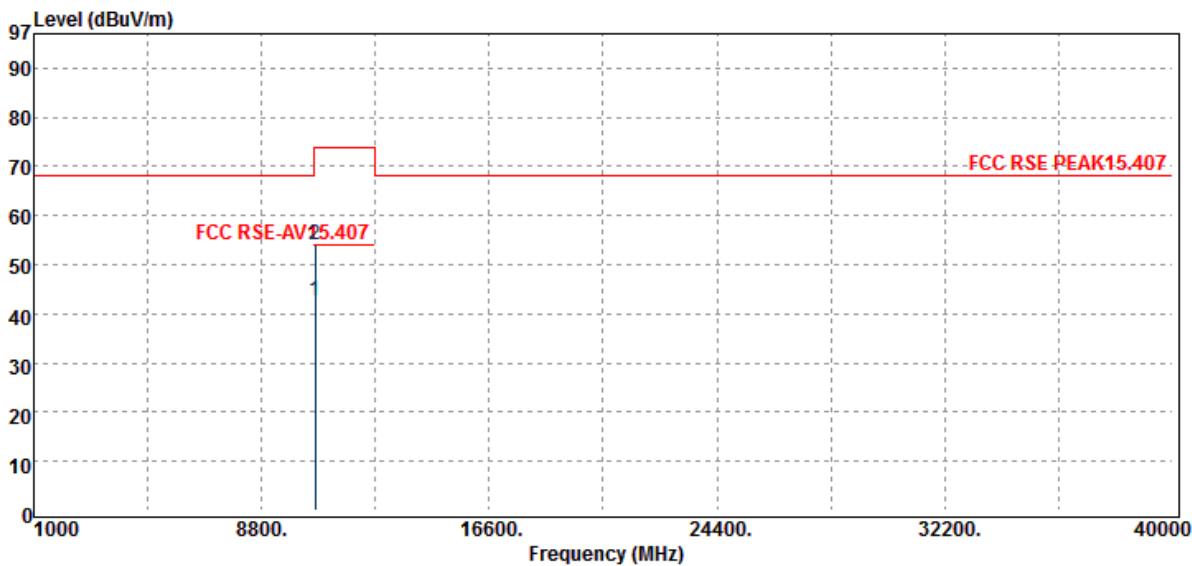
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Operation Band :802.11n20B2  
Fundamental Frequency :5320 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
10640.00	H	Average	23.54	19.19	42.73	54.00	-11.27	
10640.00	H	Peak	34.86	19.19	54.05	74.00	-19.95	

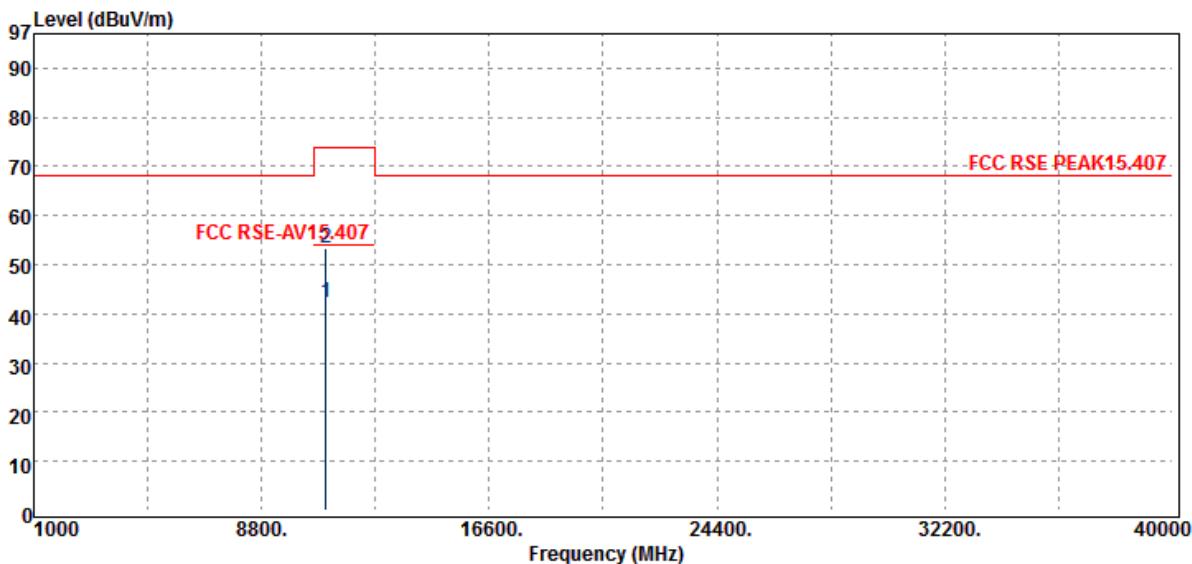
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## Radiated Spurious Emission Measurement Result 802.11n HT20, 5470~5725 MHz

Operation Band	:802.11n20B3	Test Date	:2017-12-20
Fundamental Frequency	:5500 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH LOW	Engineer	:Kane
EUT Pol.	:E2 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	Safe Margin dB
			PK/QP/AV	dB $\mu$ V				
11000.00	H	Average		22.28	20.16	42.44	54.00	-11.56
11000.00	H	Peak		33.06	20.16	53.22	74.00	-20.78

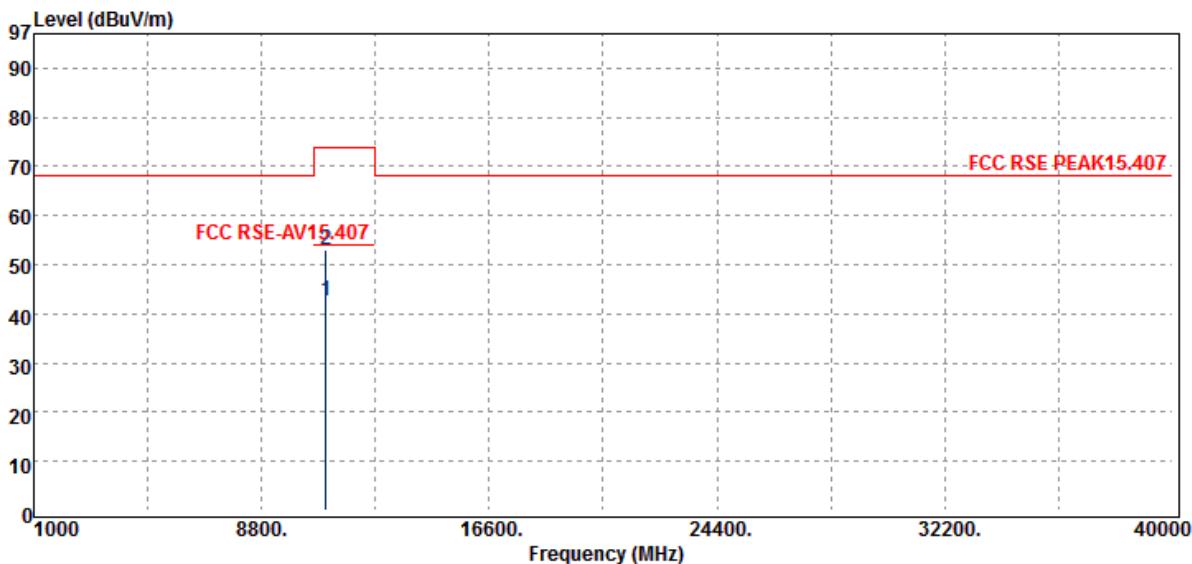
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Operation Band	:802.11n20B3	Test Date	:2017-12-20
Fundamental Frequency	:5500 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH LOW	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Safe Margin dB
			PK/QP/AV	Reading Level dB $\mu$ V				
11000.00	H	Average	22.32	20.16	42.48	54.00	-11.52	
11000.00	H	Peak	32.84	20.16	53.00	74.00	-21.00	

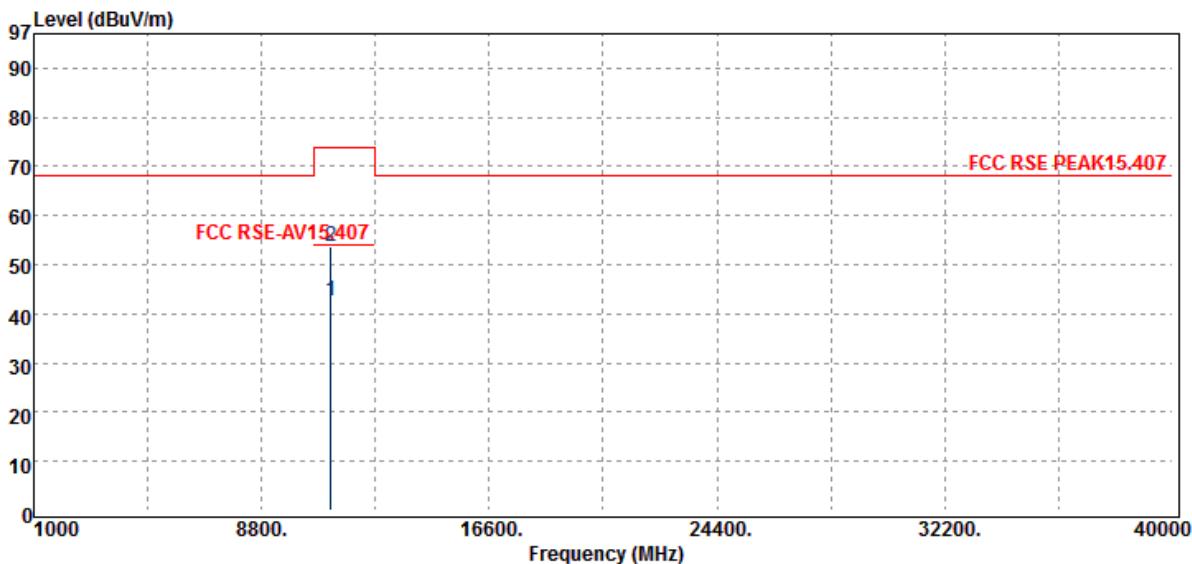
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Operation Band :802.11n20B3  
Fundamental Frequency :5580 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E2 Plane

Test Date :2017-12-20  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11160.00	H	Average	22.17	20.44	42.61	54.00	-11.39	
11160.00	H	Peak	33.41	20.44	53.85	74.00	-20.15	

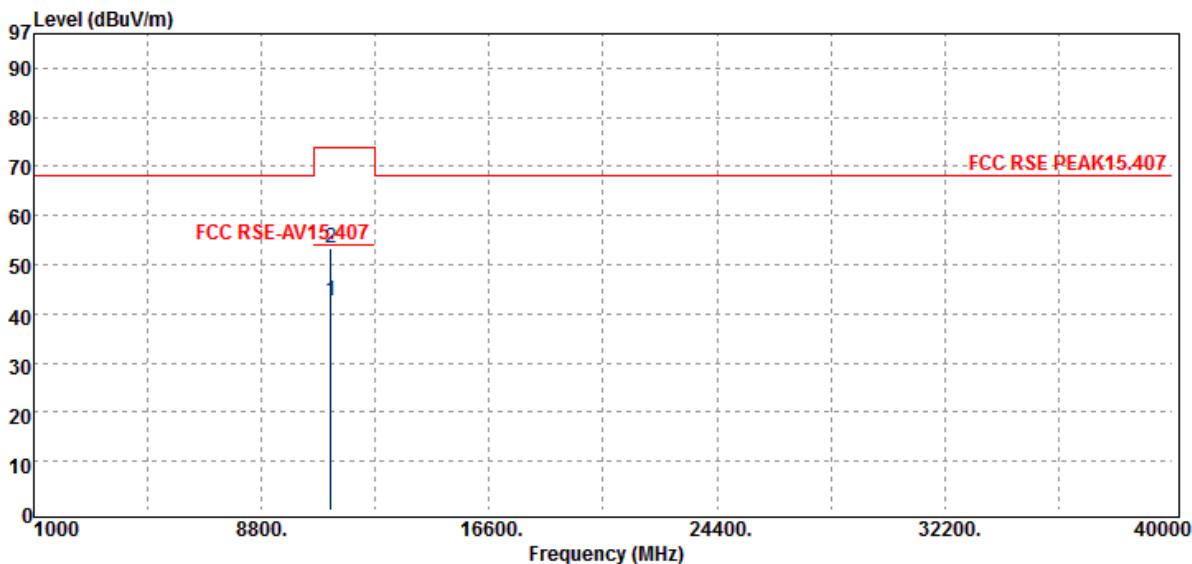
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Operation Band :802.11n20B3  
Fundamental Frequency :5580 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E2 Plane

Test Date :2017-12-20  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :HORIZONTAL



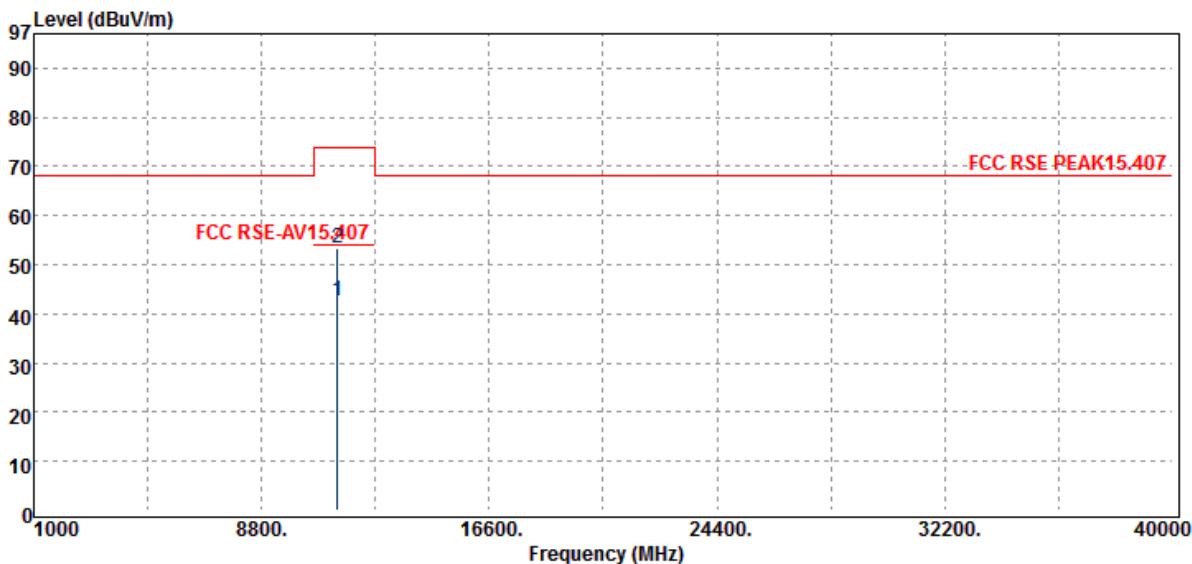
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11160.00	H	Average	22.08	22.08	20.44	42.52	54.00	-11.48
11160.00	H	Peak	33.01	33.01	20.44	53.45	74.00	-20.55

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Operation Band	:802.11n20B3	Test Date	:2017-12-20
Fundamental Frequency	:5700 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



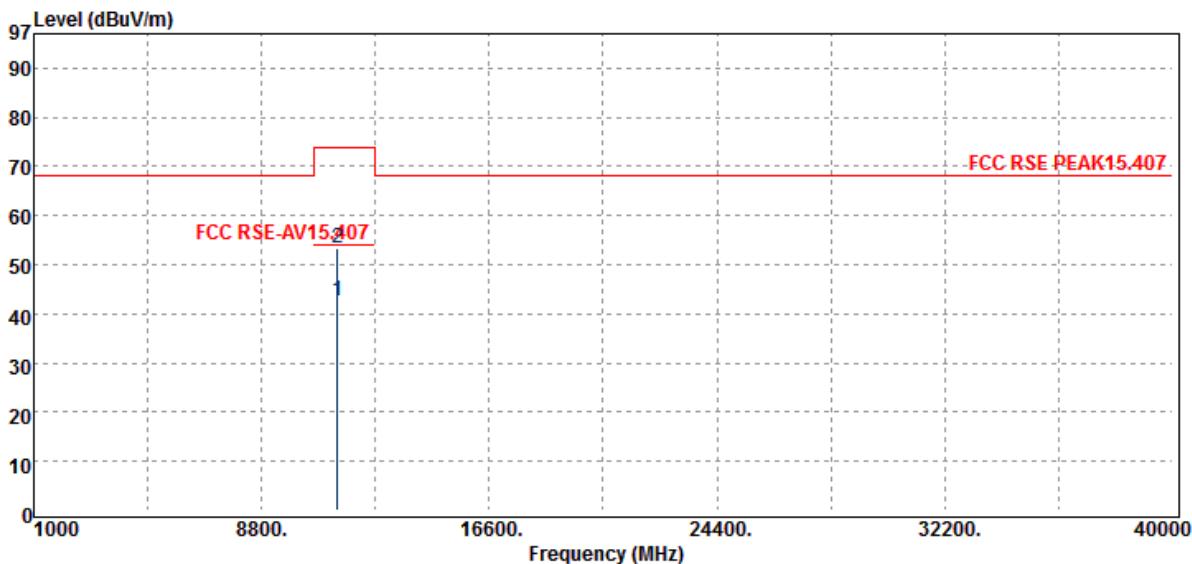
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS dB	Limit @3m dBuV/m	Safe Margin dB
			PK/QP/AV	Reading Level dB $\mu$ V				
11400.00	H	Average		21.93	20.56	42.49	54.00	-11.51
11400.00	H	Peak		32.92	20.56	53.48	74.00	-20.52

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Operation Band	:802.11n20B3	Test Date	:2017-12-20
Fundamental Frequency	:5700 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



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	Safe Margin dB
			PK/QP/AV	dB $\mu$ V				
11400.00	H	Average		22.12	20.56	42.68	54.00	-11.32
11400.00	H	Peak		32.83	20.56	53.39	74.00	-20.61

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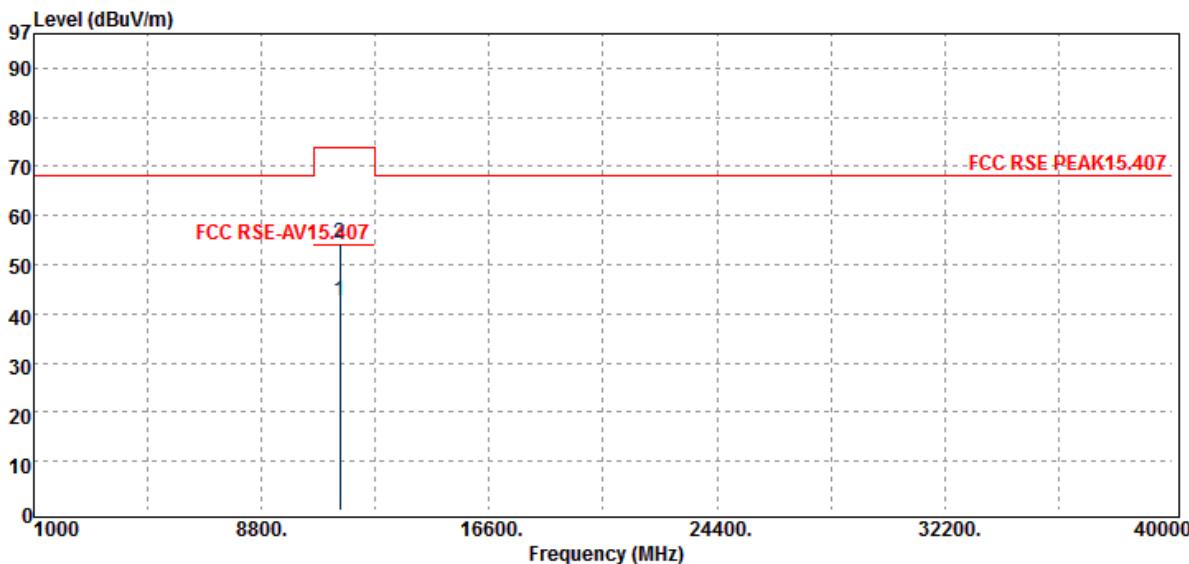
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**Radiated Spurious Emission Measurement Result 802.11n HT20, 5725~5850 MHz**

Operation Band :802.11n20B4 Test Date :2017-12-20  
Fundamental Frequency :5745 MHz Temp./Humi. :23 deg\_C / 62 RH  
Operation Mode :Tx CH LOW Engineer :Kane  
EUT Pol. :E2 Plane Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11490.00	H	Average	22.15	20.42	42.57	54.00	-11.43	
11490.00	H	Peak	33.90	20.42	54.32	74.00	-19.68	

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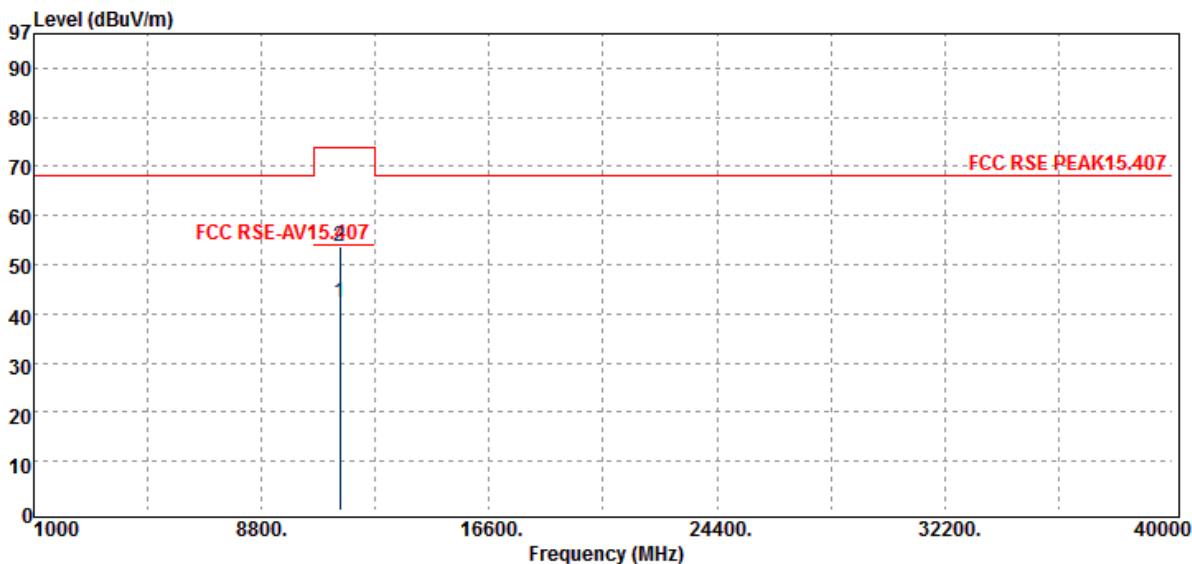
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Operation Band	:802.11n20B4	Test Date	:2017-12-20
Fundamental Frequency	:5745 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH LOW	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



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	Safe Margin dB
			PK/QP/AV	dB $\mu$ V				
11490.00	H	Average		21.99	20.42	42.41	54.00	-11.59
11490.00	H	Peak		33.20	20.42	53.62	74.00	-20.38

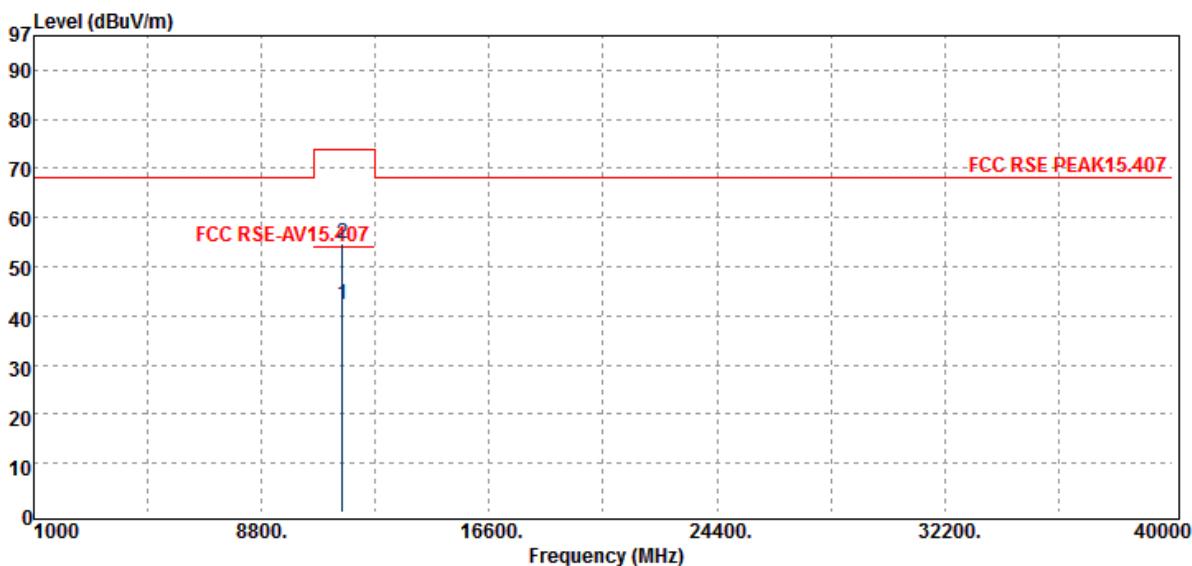
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Operation Band	:802.11n20B4	Test Date	:2017-12-20
Fundamental Frequency	:5785 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11570.00	H	Average	21.87	21.87	20.58	42.45	54.00	-11.55
11570.00	H	Peak	34.24	34.24	20.58	54.82	74.00	-19.18

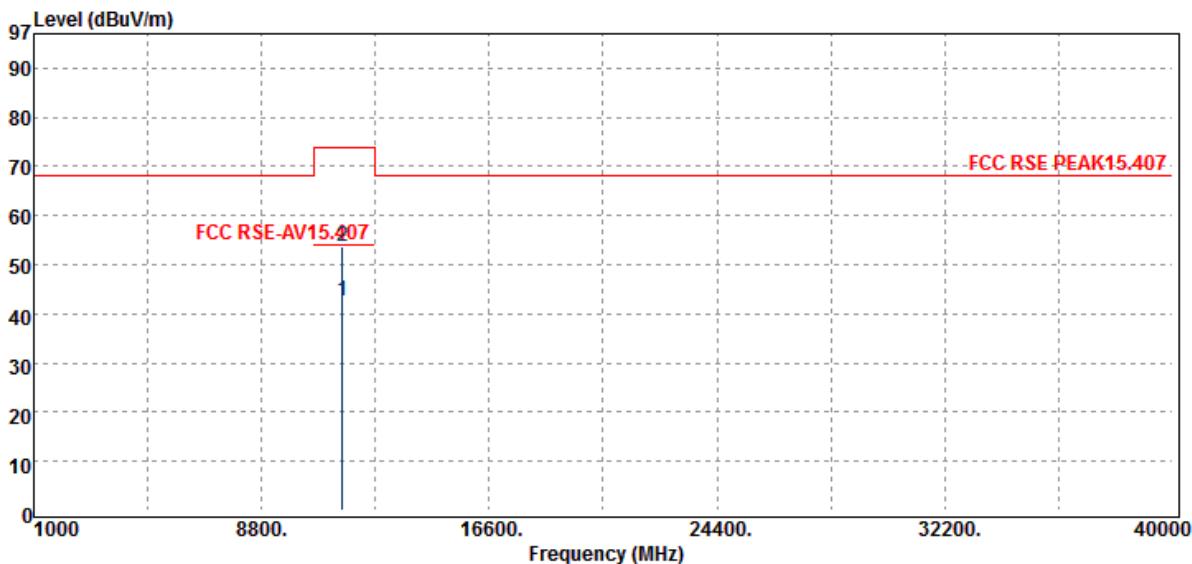
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Operation Band	:802.11n20B4	Test Date	:2017-12-20
Fundamental Frequency	:5785 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11570.00	H	Average		21.96	20.58	42.54	54.00	-11.46
11570.00	H	Peak		33.21	20.58	53.79	74.00	-20.21

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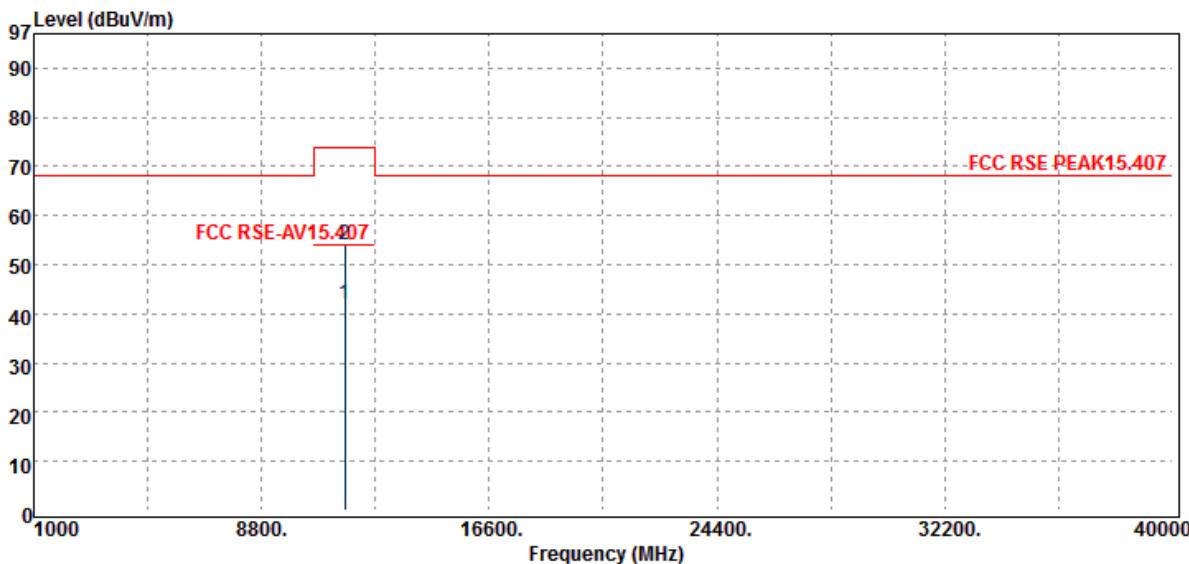
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Operation Band :802.11n20B4  
Fundamental Frequency :5825 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E2 Plane

Test Date :2017-12-20  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11650.00	H	Average	21.53	20.43	41.96	54.00	-12.04	
11650.00	H	Peak	33.75	20.43	54.18	74.00	-19.82	

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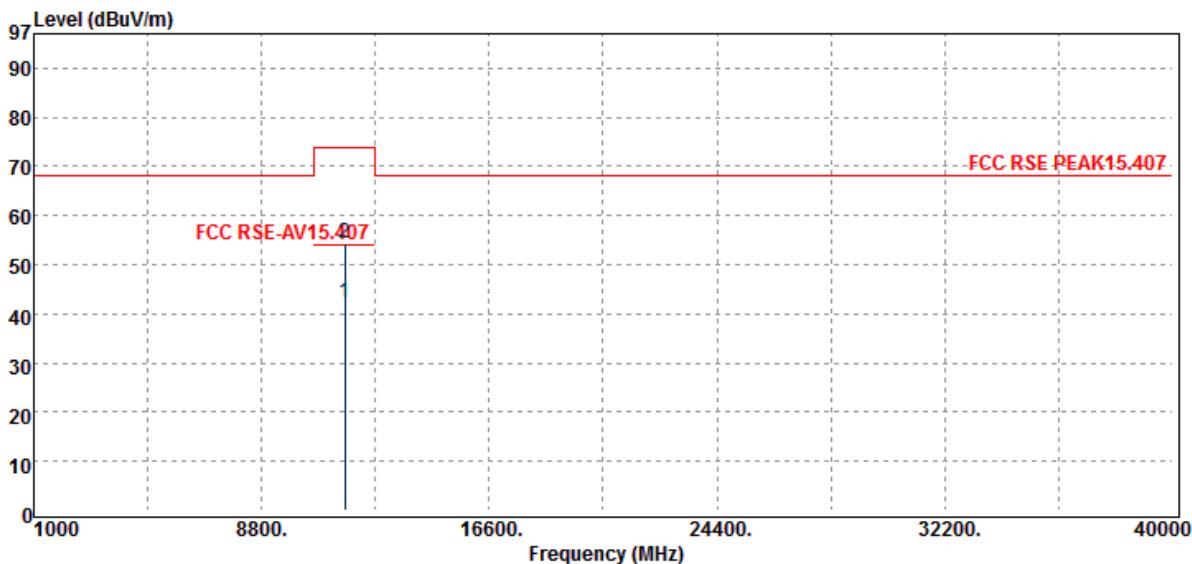
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Operation Band :802.11n20B4  
Fundamental Frequency :5825 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E2 Plane

Test Date :2017-12-20  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dBμV				
11650.00	H	Average		21.86	20.43	42.29	54.00	-11.71
11650.00	H	Peak		34.01	20.43	54.44	74.00	-19.56

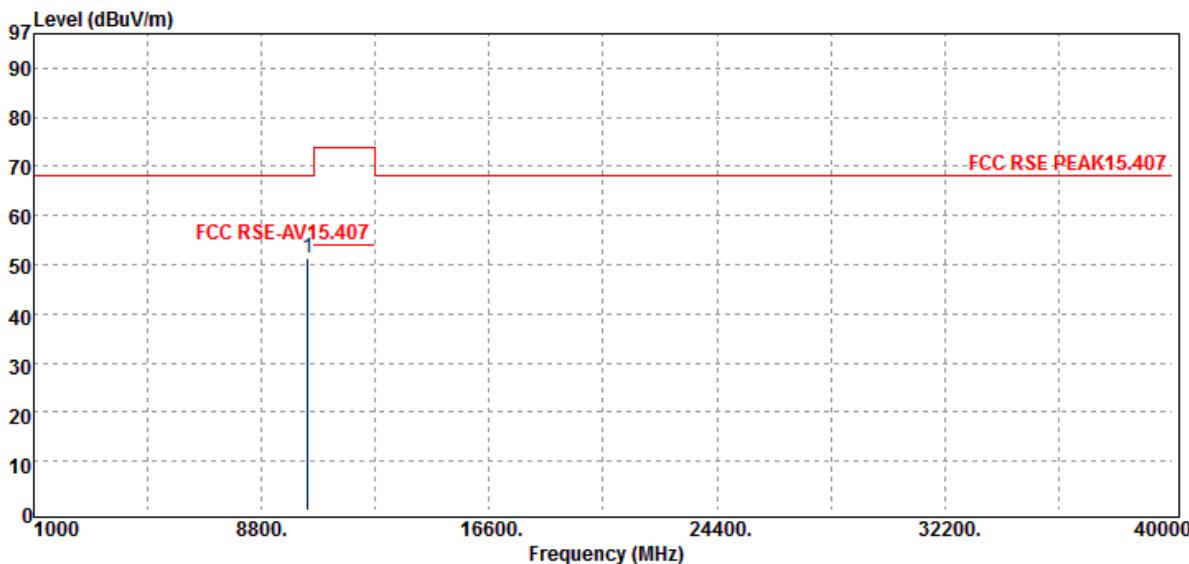
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**Radiated Spurious Emission Measurement Result 802.11n HT40, 5150~5250 MHz**

Operation Band :802.11n40B1 Test Date :2017-12-19  
Fundamental Frequency :5190 MHz Temp./Humi. :23 deg\_C / 62 RH  
Operation Mode :Tx CH LOW Engineer :Kane  
EUT Pol. :E2 Plane Measurement Antenna Pol. :VERTICAL



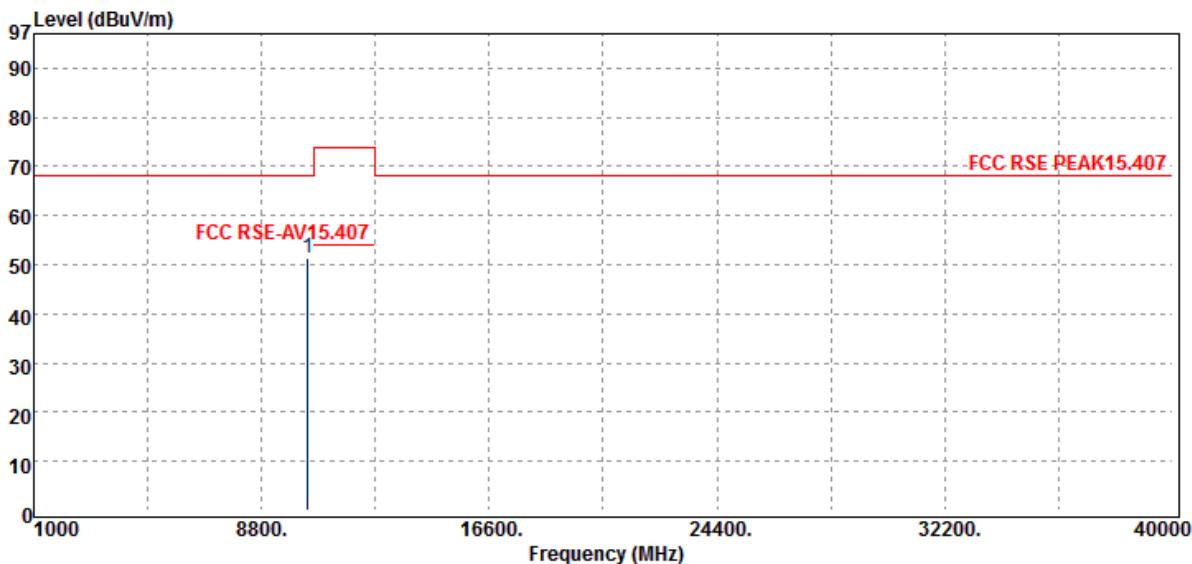
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
MHz	F/H/E/S	Mode	Reading Level	FS	dBuV/m	@3m	Margin
10380.00	H	Peak	33.08	18.12	51.20	68.30	-17.10

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Operation Band	:802.11n40B1	Test Date	:2017-12-19
Fundamental Frequency	:5190 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH LOW	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



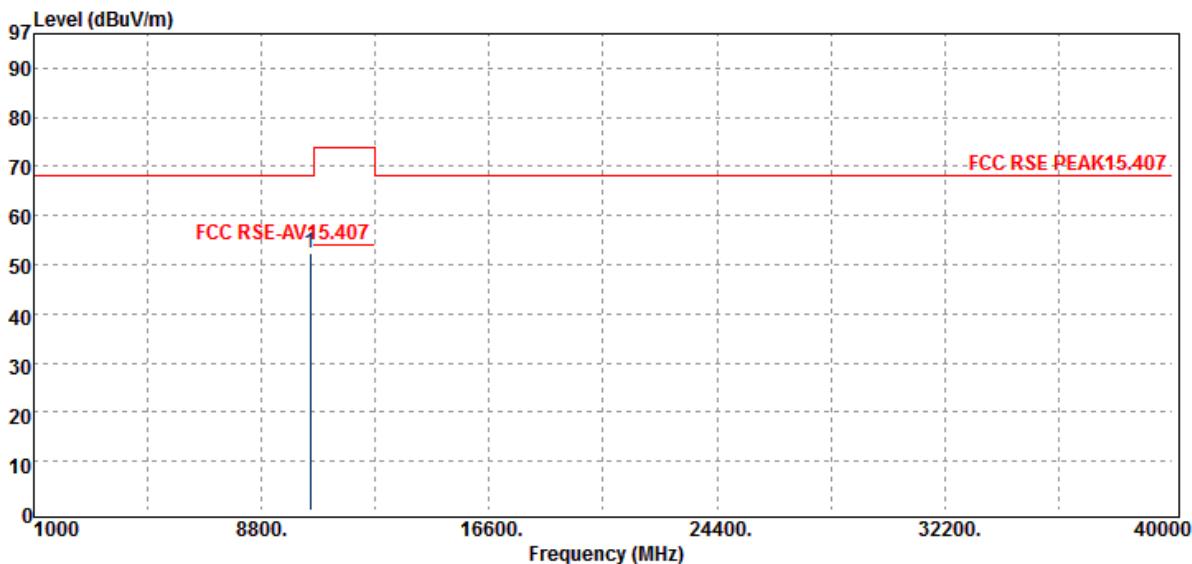
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
MHz	F/H/E/S	Mode	Reading Level	FS	dBuV/m	@3m	Margin
		PK/QP/AV	dB $\mu$ V	dB			
10380.00	H	Peak	33.38	18.12	51.50	68.30	-16.80

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Operation Band	:802.11n40B1	Test Date	:2017-12-19
Fundamental Frequency	:5230 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Kane
EUT Pol.	:E2 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
10460.00	H	Peak	33.96	18.55	52.51	68.30	-15.79

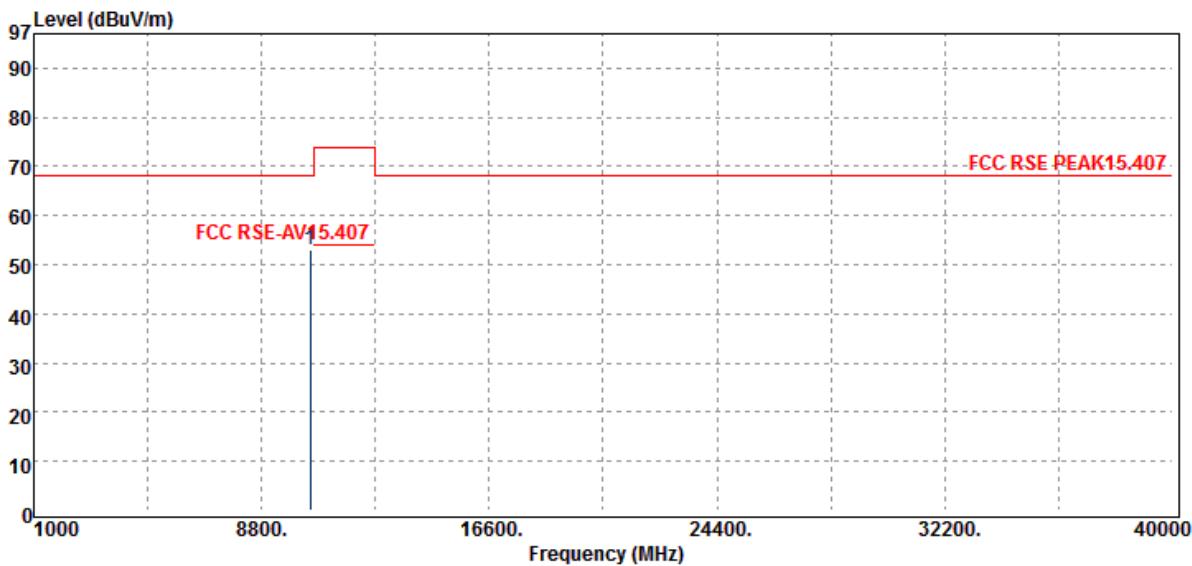
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Operation Band :802.11n40B1  
Fundamental Frequency :5230 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
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
10460.00	H	Peak	34.54	18.55	53.09	68.30	-15.21

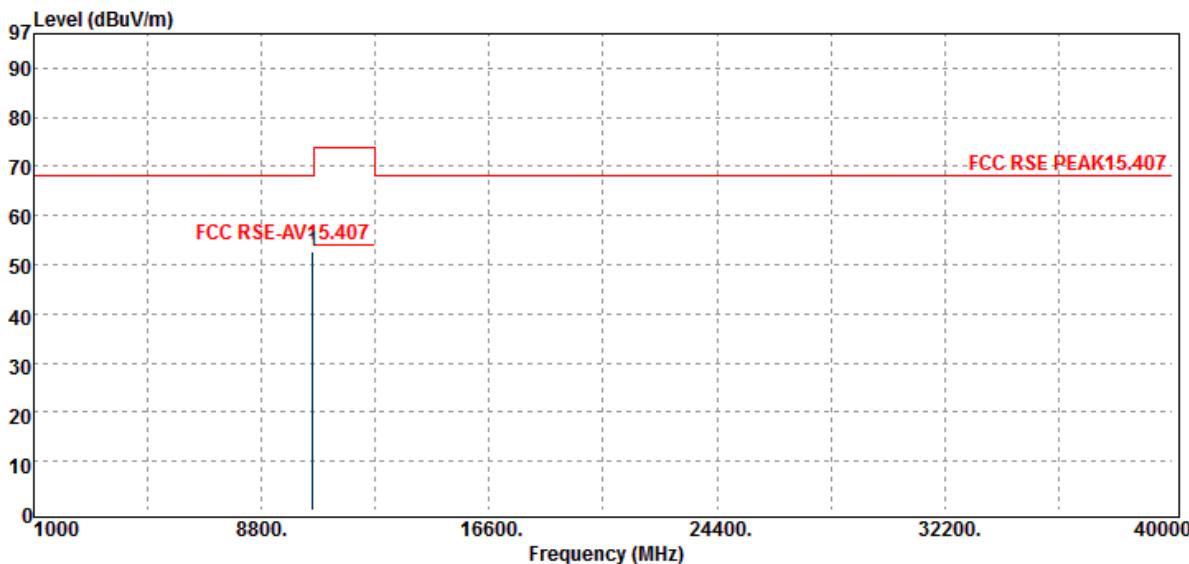
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**Radiated Spurious Emission Measurement Result 802.11n HT40, 5250~5350 MHz**

Operation Band :802.11n40B2 Test Date :2017-12-19  
Fundamental Frequency :5270 MHz Temp./Humi. :23 deg\_C / 62 RH  
Operation Mode :Tx CH LOW Engineer :Kane  
EUT Pol. :E2 Plane Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
MHz	F/H/E/S	Mode	Reading Level	FS	dB $\mu$ V/m	@3m	Margin
		PK/QP/AV	dB $\mu$ V	dB			
10540.00	H	Peak	33.53	19.17	52.70	68.30	-15.60

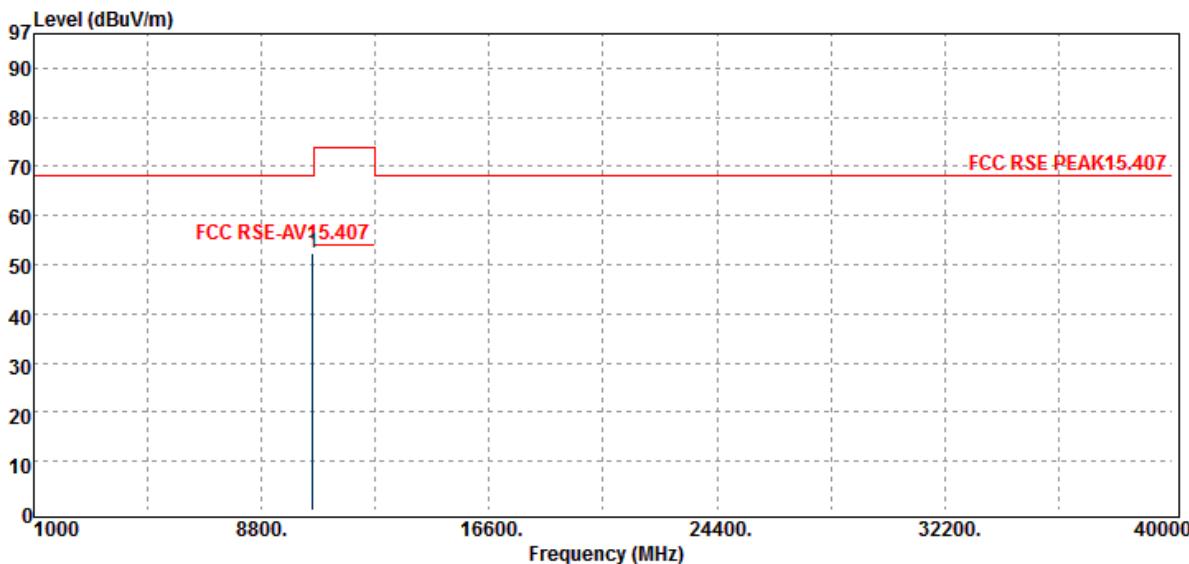
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Operation Band :802.11n40B2  
Fundamental Frequency :5270 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :HORIZONTAL



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				
10540.00	H	Peak	33.28	19.17	52.45	68.30	-15.85

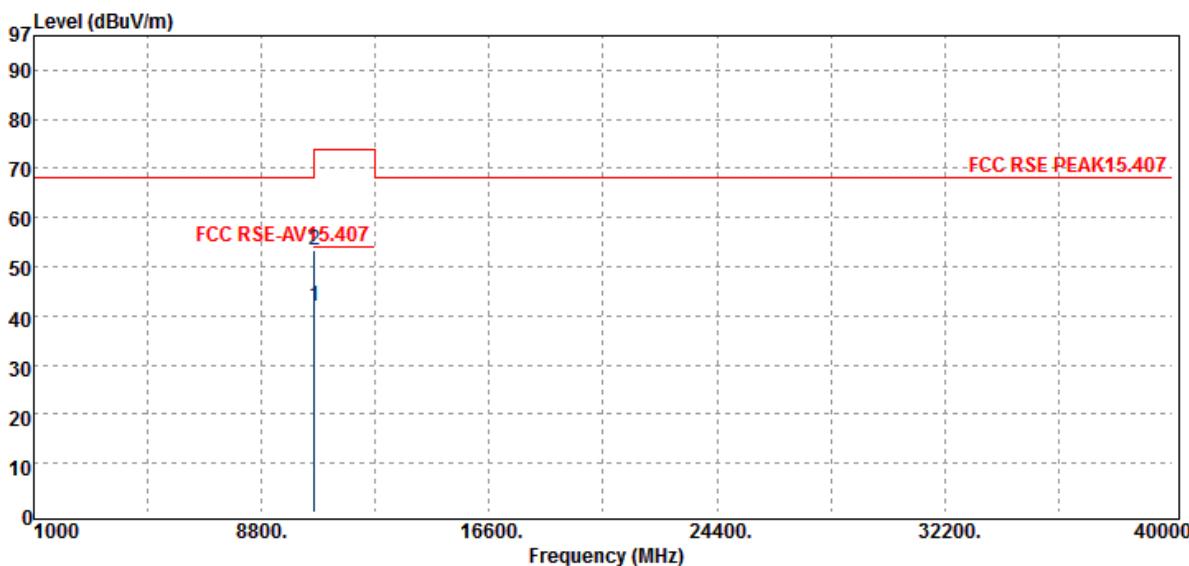
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Operation Band :802.11n40B2  
Fundamental Frequency :5310 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :VERTICAL



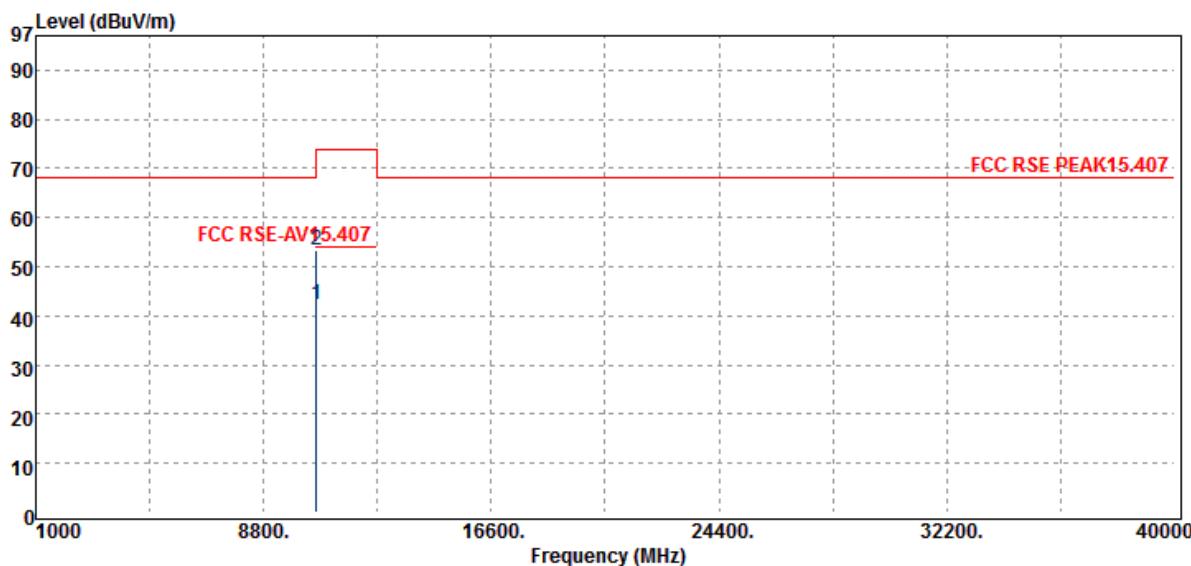
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
10620.00	H	Average	22.76	19.11	41.87	54.00	-12.13	
10620.00	H	Peak	34.27	19.11	53.38	74.00	-20.62	

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Operation Band	:802.11n40B2	Test Date	:2017-12-19
Fundamental Frequency	:5310 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
10620.00	H	Average	23.04	19.11	42.15	54.00	-11.85	
10620.00	H	Peak	34.25	19.11	53.36	74.00	-20.64	

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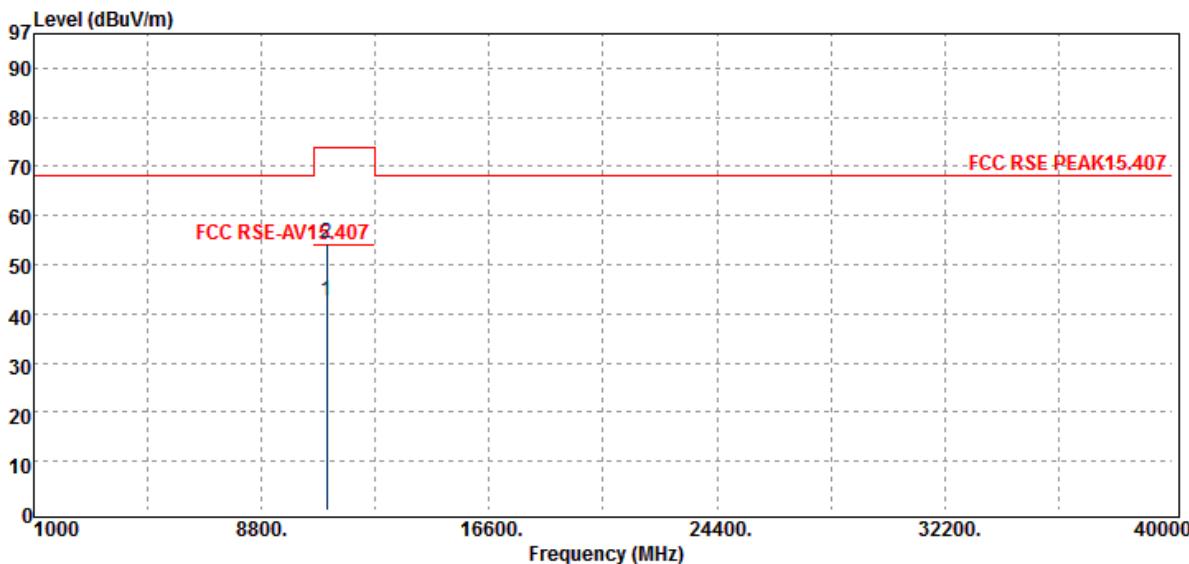
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**Radiated Spurious Emission Measurement Result 802.11n HT40, 5470~5725 MHz**

Operation Band :802.11n40B3 Test Date :2017-12-20  
Fundamental Frequency :5510 MHz Temp./Humi. :23 deg\_C / 62 RH  
Operation Mode :Tx CH LOW Engineer :Kane  
EUT Pol. :E2 Plane Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
						dB $\mu$ V/m	dB
11020.00	H	Average	22.34	20.16	42.50	54.00	-11.50
11020.00	H	Peak	34.07	20.16	54.23	74.00	-19.77

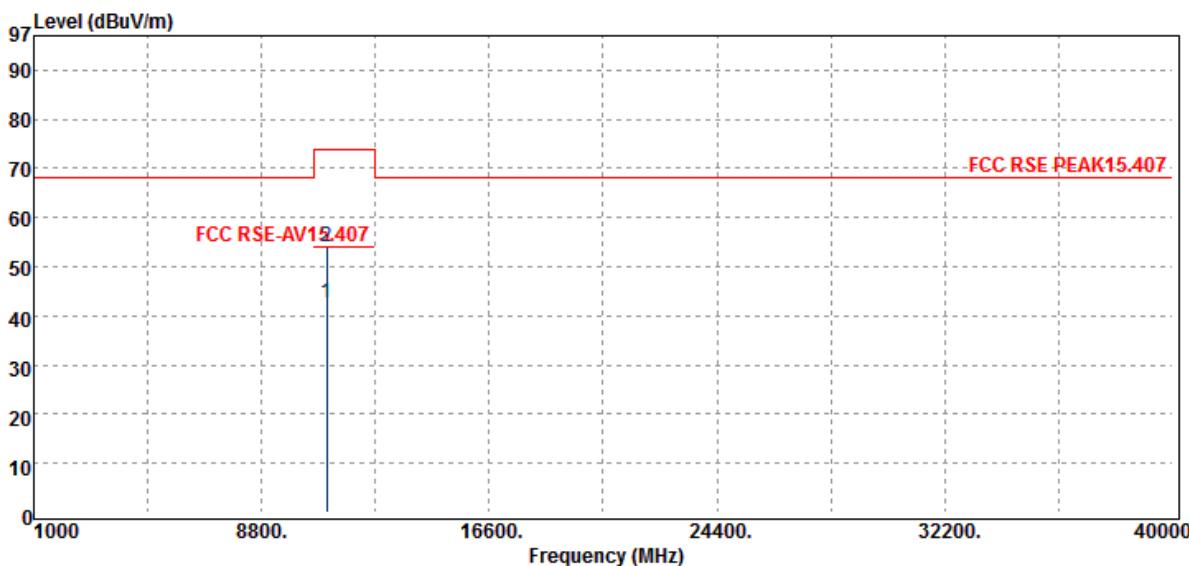
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Operation Band :802.11n40B3  
Fundamental Frequency :5510 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E2 Plane

Test Date :2017-12-20  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11020.00	H	Average	22.38	22.38	20.16	42.54	54.00	-11.46
11020.00	H	Peak	33.76	33.76	20.16	53.92	74.00	-20.08

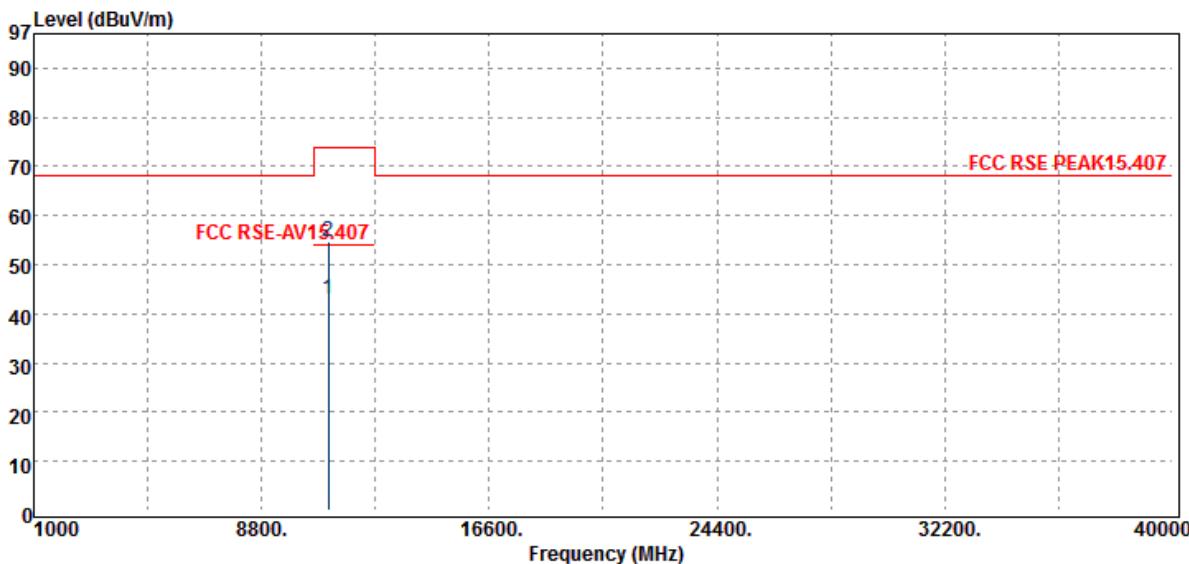
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Operation Band	:802.11n40B3	Test Date	:2017-12-20
Fundamental Frequency	:5550 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH MID	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11100.00	H	Average	22.52	20.32	42.84	54.00	-11.16	
11100.00	H	Peak	34.51	20.32	54.83	74.00	-19.17	

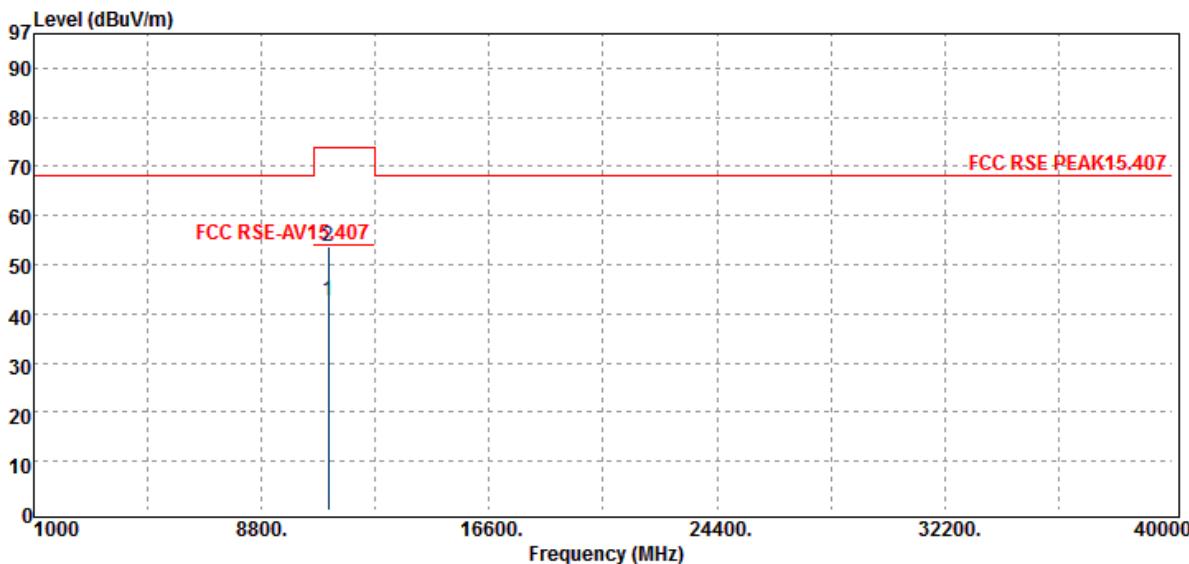
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Operation Band :802.11n40B3  
Fundamental Frequency :5550 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E2 Plane

Test Date :2017-12-20  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :HORIZONTAL



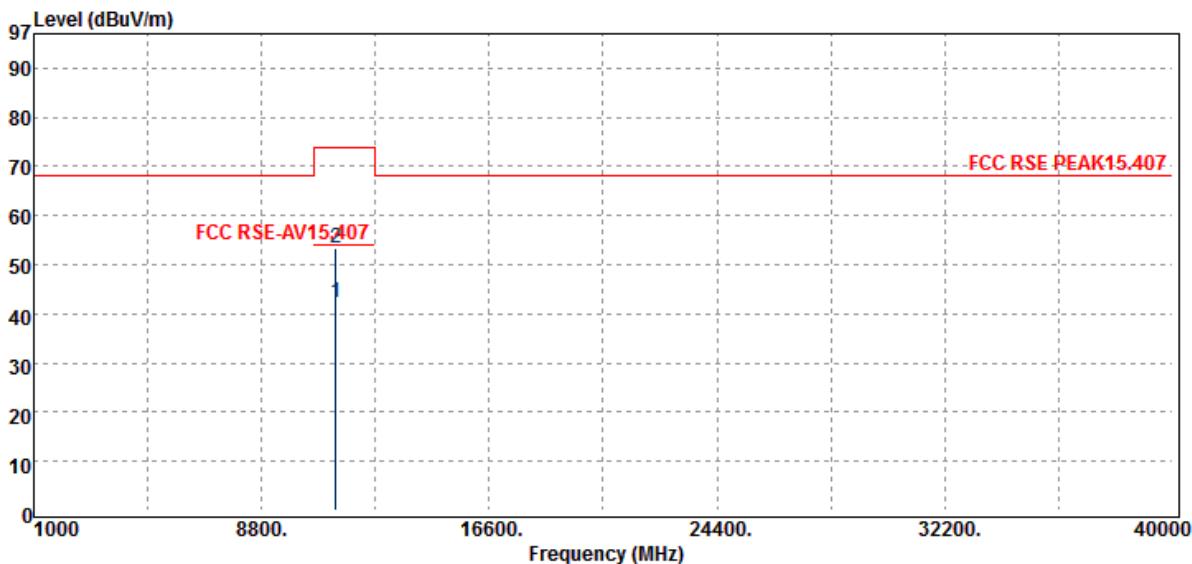
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11100.00	H	Average		22.38	20.32	42.70	54.00	-11.30
11100.00	H	Peak		33.41	20.32	53.73	74.00	-20.27

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Operation Band	:802.11n40B3	Test Date	:2017-12-20
Fundamental Frequency	:5670 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



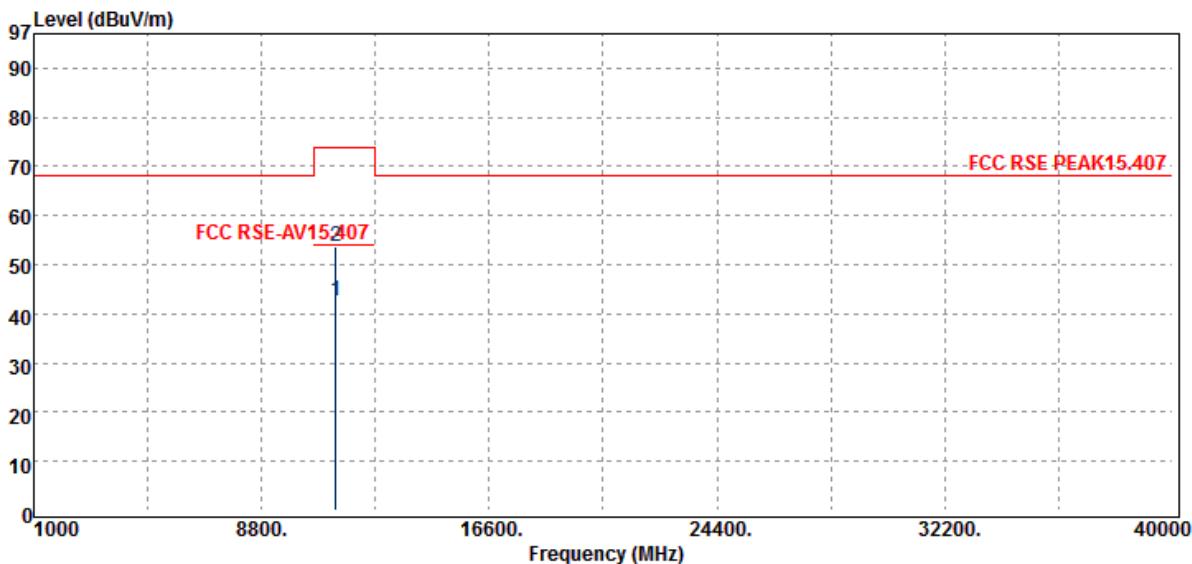
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11340.00	H	Average		22.03	20.38	42.41	54.00	-11.59
11340.00	H	Peak		33.10	20.38	53.48	74.00	-20.52

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Operation Band	:802.11n40B3	Test Date	:2017-12-20
Fundamental Frequency	:5670 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Tx CH HIGH	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11340.00	H	Average		22.15	20.38	42.53	54.00	-11.47
11340.00	H	Peak		33.29	20.38	53.67	74.00	-20.33

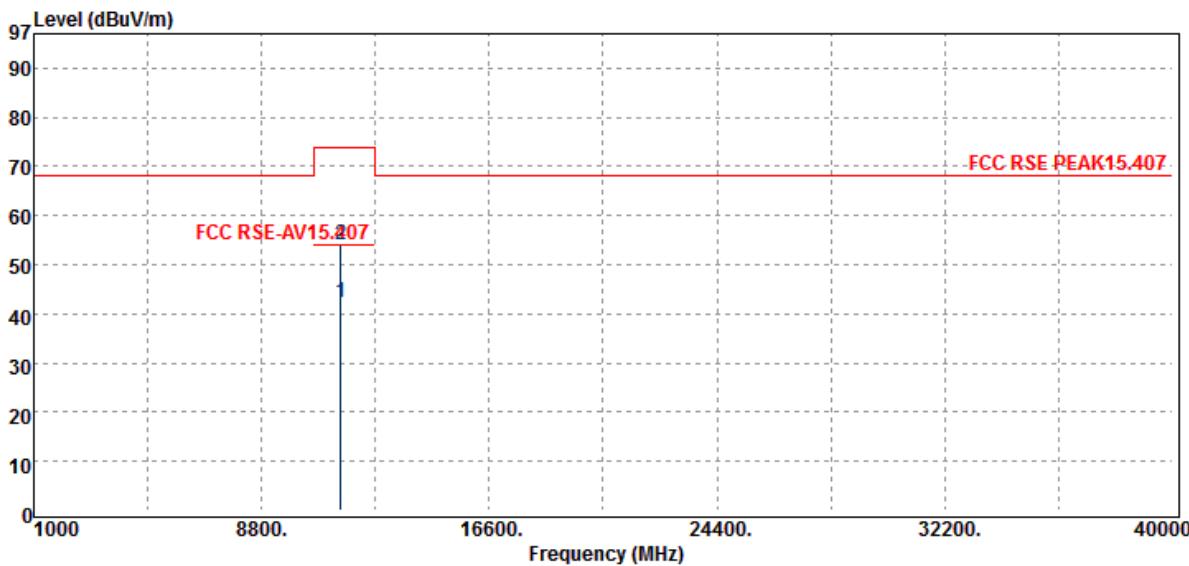
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**Radiated Spurious Emission Measurement Result 802.11n HT40, 5725~5850 MHz**

Operation Band :802.11n40B4 Test Date :2017-12-20  
Fundamental Frequency :5755 MHz Temp./Humi. :23 deg\_C / 62 RH  
Operation Mode :Tx CH LOW Engineer :Kane  
EUT Pol. :E2 Plane Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11510.00	H	Average	21.84	21.84	20.38	42.22	54.00	-11.78
11510.00	H	Peak	33.80	33.80	20.38	54.18	74.00	-19.82

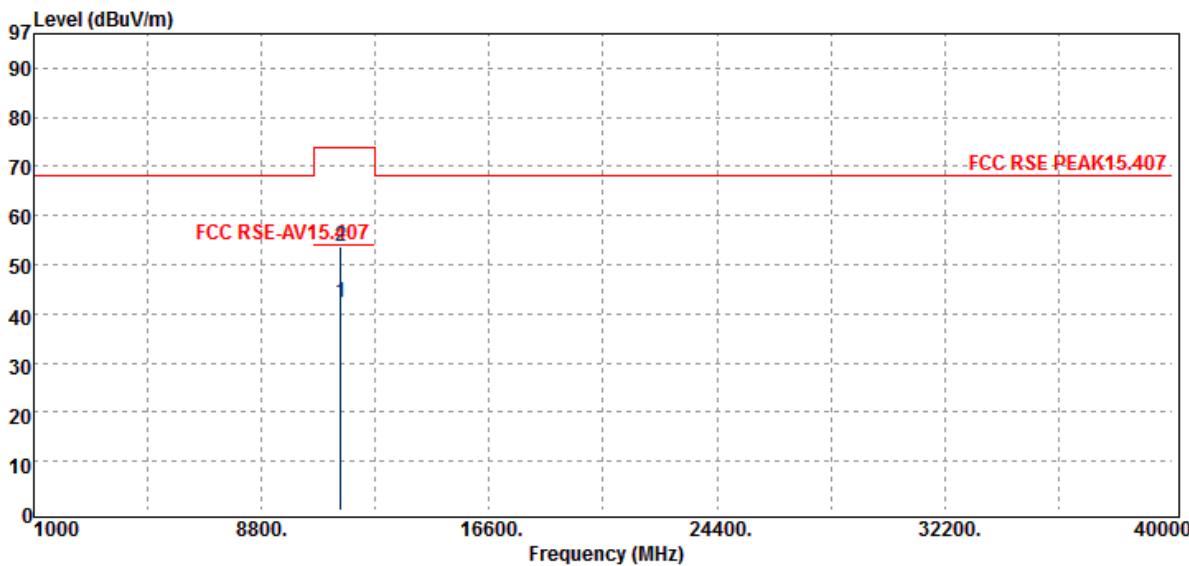
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Operation Band :802.11n40B4  
Fundamental Frequency :5755 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E2 Plane

Test Date :2017-12-20  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11510.00	H	Average	21.75	21.75	20.38	42.13	54.00	-11.87
11510.00	H	Peak	33.48	33.48	20.38	53.86	74.00	-20.14

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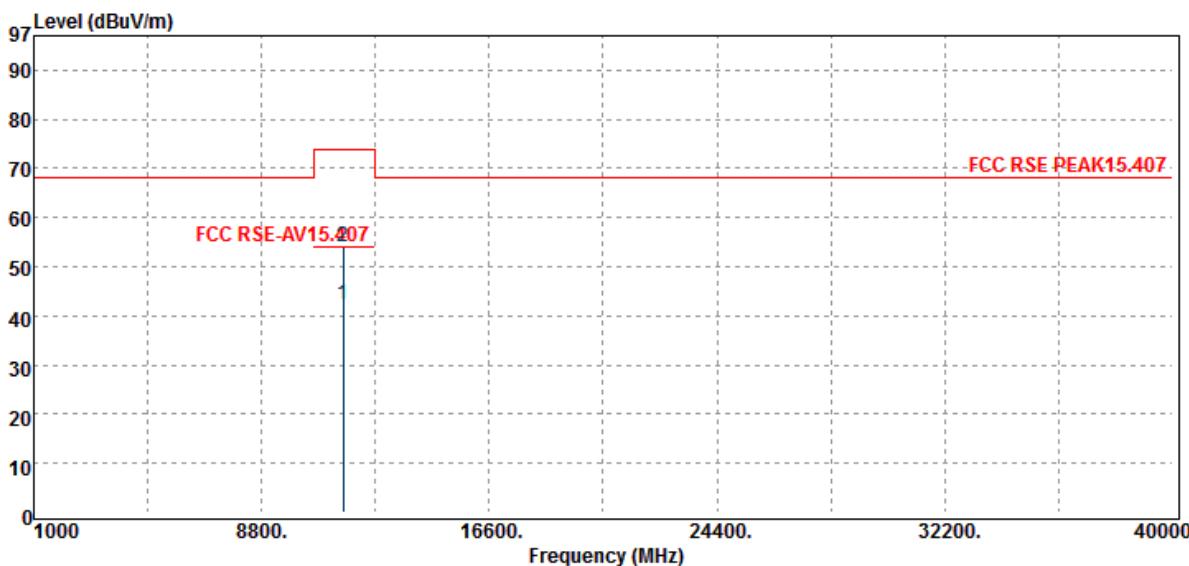
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Operation Band :802.11n40B4  
Fundamental Frequency :5795 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E2 Plane

Test Date :2017-12-20  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dBμV				
11590.00	H	Average		21.95	20.43	42.38	54.00	-11.62
11590.00	H	Peak		33.54	20.43	53.97	74.00	-20.03

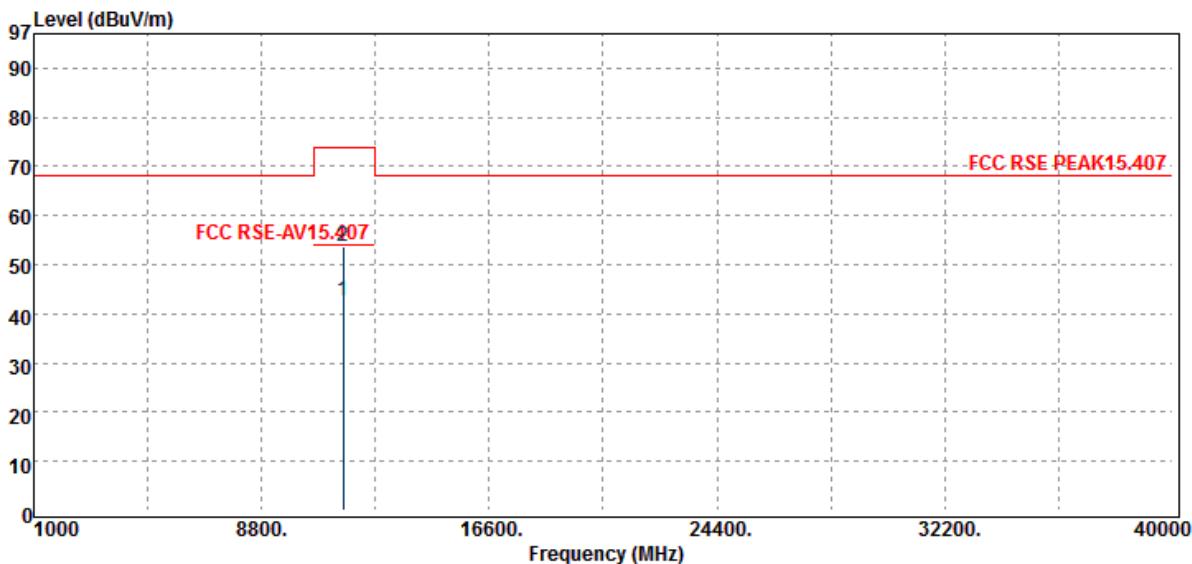
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Operation Band :802.11n40B4  
Fundamental Frequency :5795 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E2 Plane

Test Date :2017-12-20  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Safe Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
11590.00	H	Average	22.18	22.18	20.43	42.61	54.00	-11.39
11590.00	H	Peak	33.44	33.44	20.43	53.87	74.00	-20.13

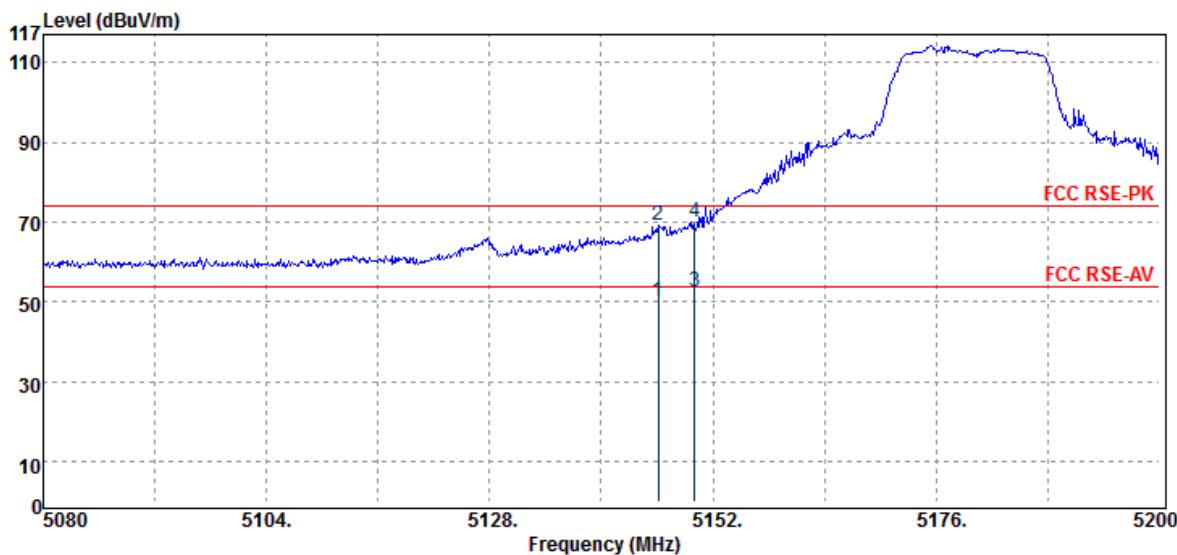
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**Band edge falling to restricted band****802.11a mode**

Operation Band	:802.11aB1	Test Date	:2017-12-19
Fundamental Frequency	:5180 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Bandedge CH LOW	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	dB $\mu$ V				
5146.12	E	Average	44.46	5.89	50.35	54.00	-3.65	
5146.12	E	Peak	63.16	5.89	69.05	74.00	-4.95	
5150.00	E	Average	46.65	5.88	52.53	54.00	-1.47	
5150.00	E	Peak	64.08	5.88	69.96	74.00	-4.04	

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台灣檢驗科技股份有限公司

t (886-2) 2299-3279

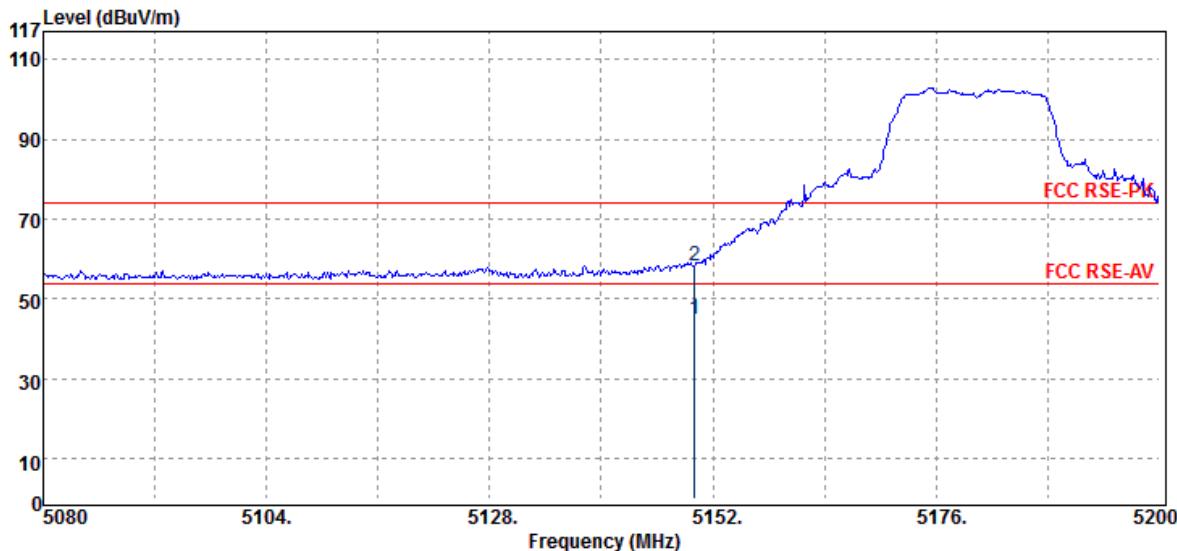
f (886-2) 2298-0488

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

Member of SGS Group

Operation Band :802.11aB1  
 Fundamental Frequency :5180 MHz  
 Operation Mode :Bandedge CH LOW  
 EUT Pol. :E2 Plane

Test Date :2017-12-19  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Kane  
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	dB $\mu$ V				
5150.00	E	Average	39.18	5.88	45.06	54.00	-8.94	
5150.00	E	Peak	52.43	5.88	58.31	74.00	-15.69	

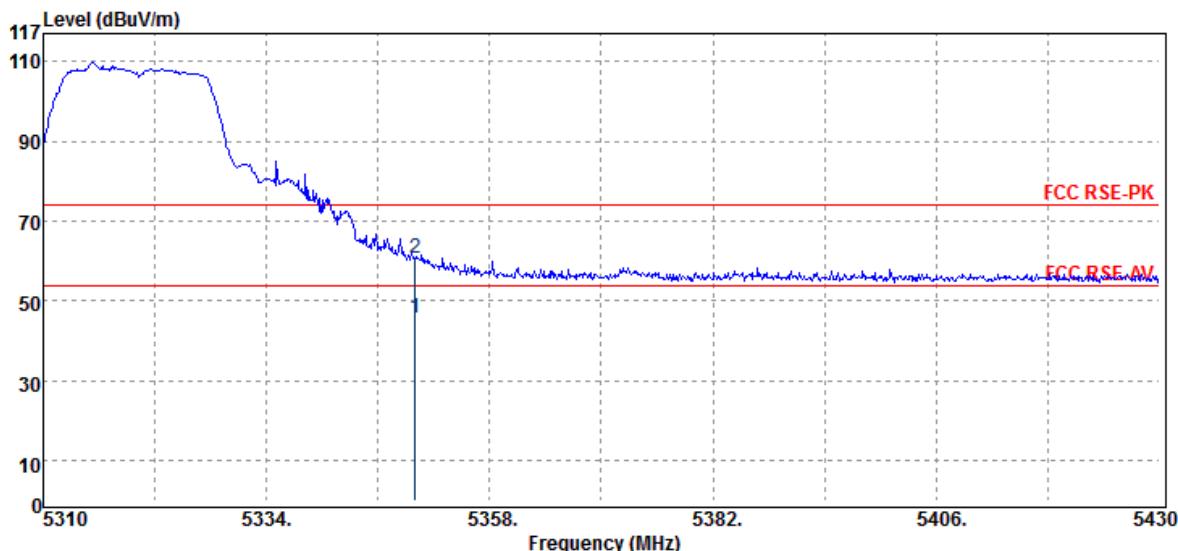
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Operation Band :802.11aB2  
Fundamental Frequency :5320 MHz  
Operation Mode :Bandedge CH HIGH  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
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	dB				
5350.00	E	Average	39.51	6.16		45.67	54.00	-8.33
5350.00	E	Peak	54.39	6.16		60.55	74.00	-13.45

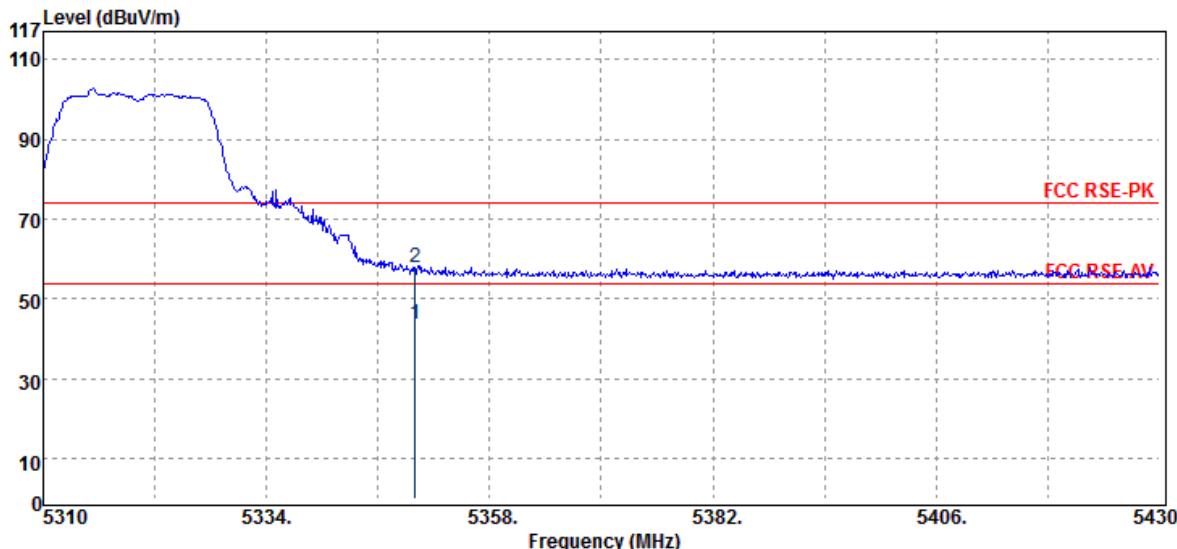
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Operation Band :802.11aB2  
Fundamental Frequency :5320 MHz  
Operation Mode :Bandedge CH HIGH  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level		Factor	Actual FS	Limit @3m	Margin
			dB $\mu$ V	dB				
5350.00	E	Average	37.71	6.16		43.87	54.00	-10.13
5350.00	E	Peak	51.62	6.16		57.78	74.00	-16.22

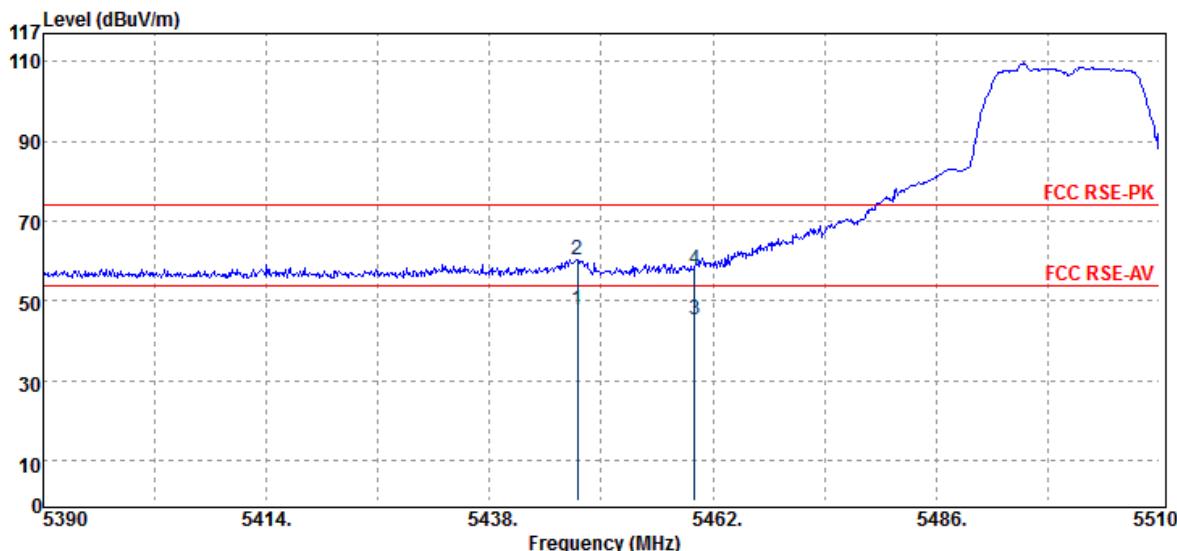
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Operation Band :802.11aB3  
Fundamental Frequency :5500 MHz  
Operation Mode :Bandedge CH LOW  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	dB $\mu$ V				
5447.48	E	Average	41.41	6.19	47.60	54.00	-6.40	
5447.48	E	Peak	54.21	6.19	60.40	74.00	-13.60	
5460.00	E	Average	39.01	6.23	45.24	54.00	-8.76	
5460.00	E	Peak	51.68	6.23	57.91	74.00	-16.09	

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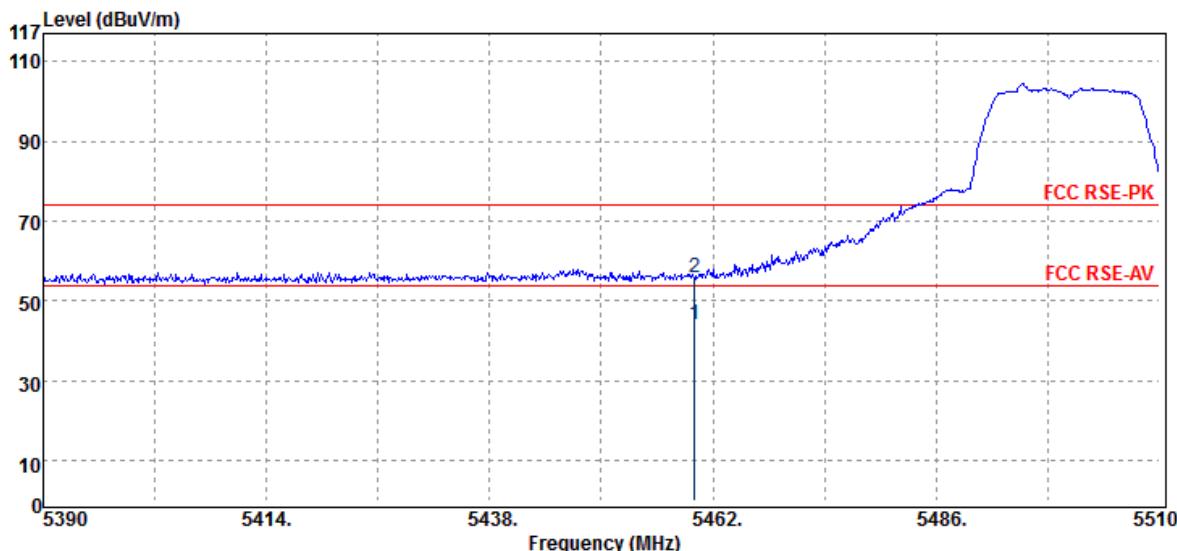
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Operation Band :802.11aB3  
 Fundamental Frequency :5500 MHz  
 Operation Mode :Bandedge CH LOW  
 EUT Pol. :E2 Plane

Test Date :2017-12-19  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Kane  
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
5460.00	E	Average	37.75	37.75	6.23	43.98	54.00	-10.02
5460.00	E	Peak	49.56	49.56	6.23	55.79	74.00	-18.21

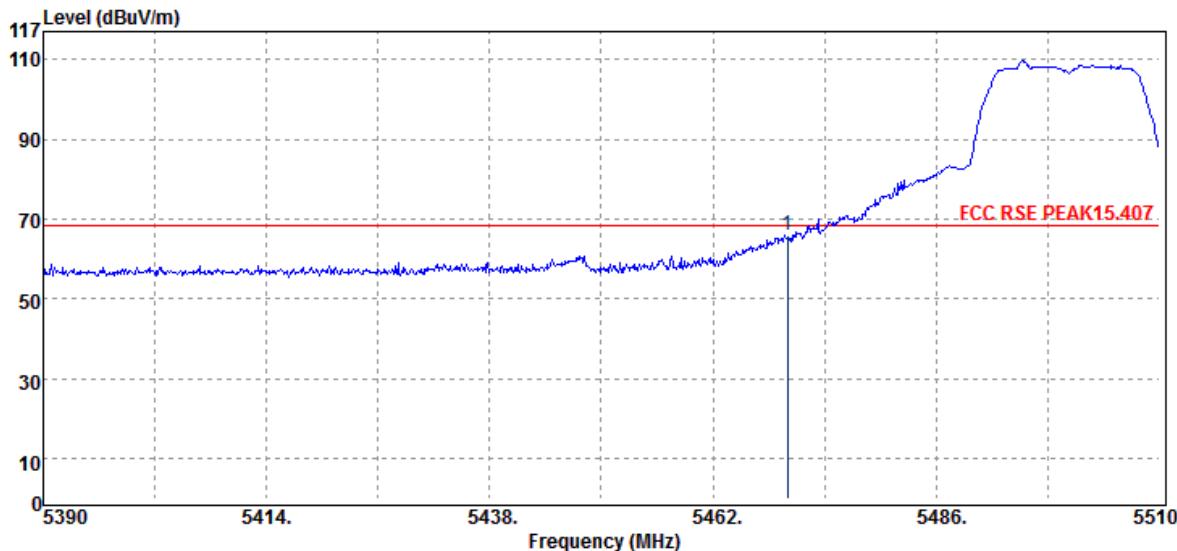
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Operation Band :802.11aB3  
Fundamental Frequency :5500 MHz  
Operation Mode :Bandedge CH LOW RSE  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
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
						dB $\mu$ V/m	dB
5470.00	E	Peak	59.72	6.26	65.98	68.30	-2.32

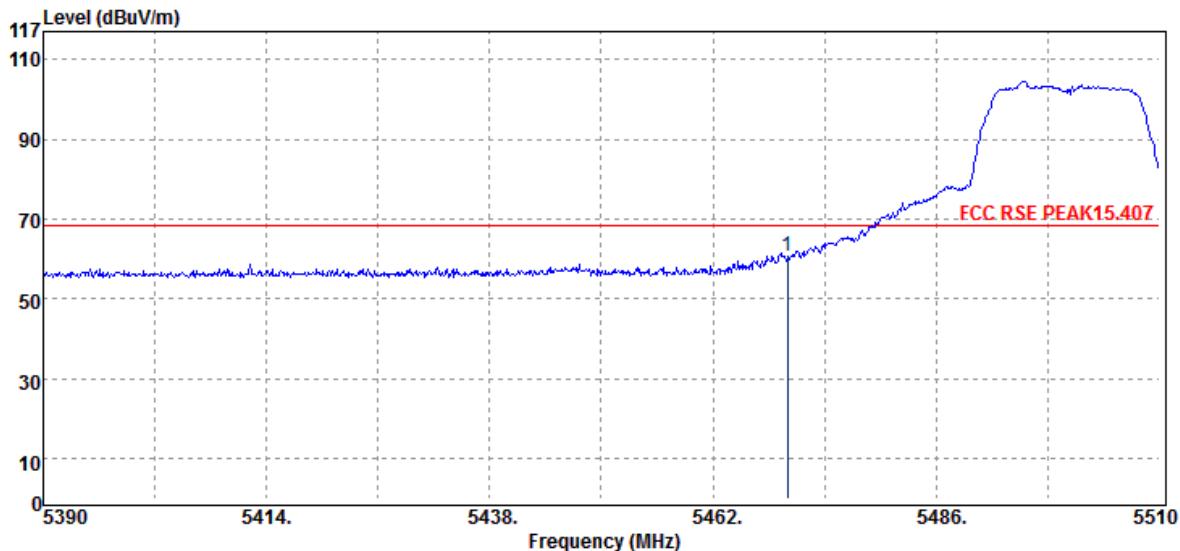
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Operation Band :802.11aB3  
Fundamental Frequency :5500 MHz  
Operation Mode :Bandedge CH LOW RSE  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
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	Margin dB
						dB $\mu$ V/m	dB
5470.00	E	Peak	54.67	6.26	60.93	68.30	-7.37

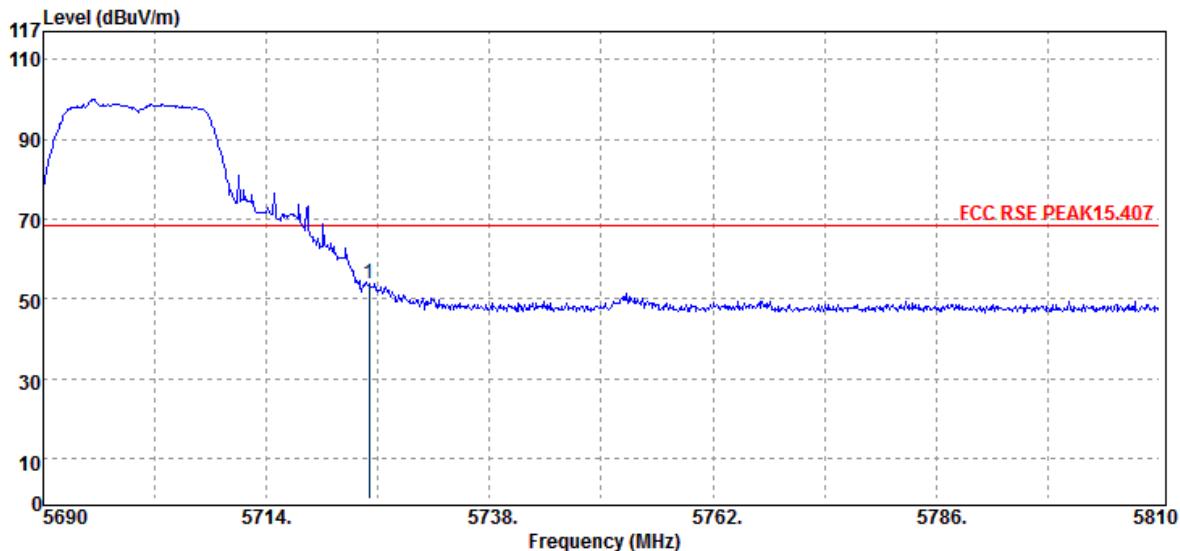
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Operation Band :802.11aB3  
Fundamental Frequency :5700 MHz  
Operation Mode :Bandedge CH HIGH RSE  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
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
						dB $\mu$ V/m	dB
5725.00	E	Peak	47.36	6.59	53.95	68.30	-14.35

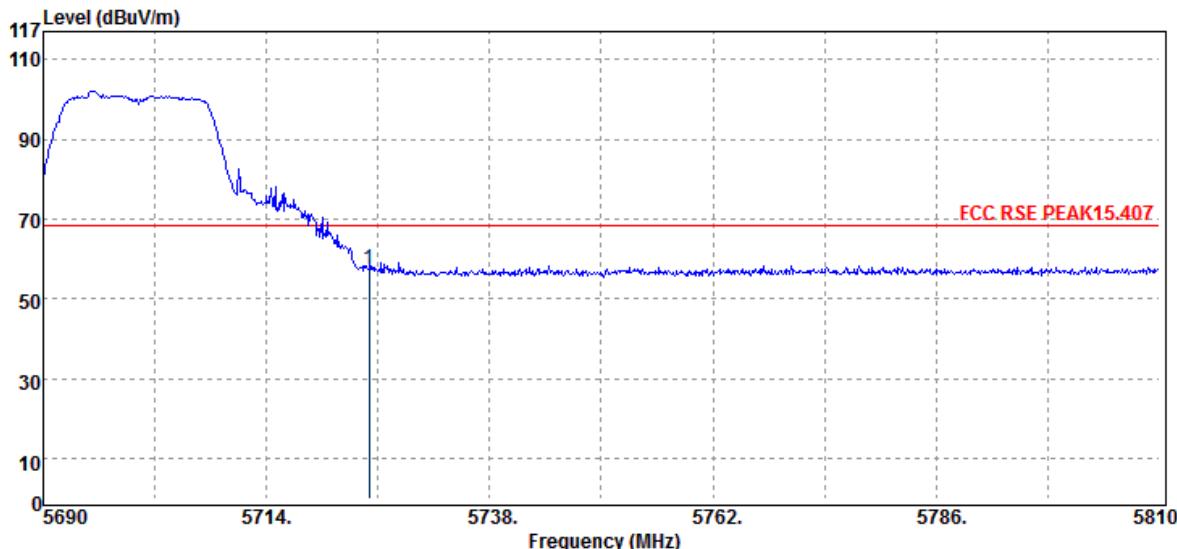
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Operation Band :802.11aB3  
Fundamental Frequency :5700 MHz  
Operation Mode :Bandedge CH HIGH RSE  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :HORIZONTAL



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				
5725.00	E	Peak		50.73	6.59	57.32	68.30	-10.98

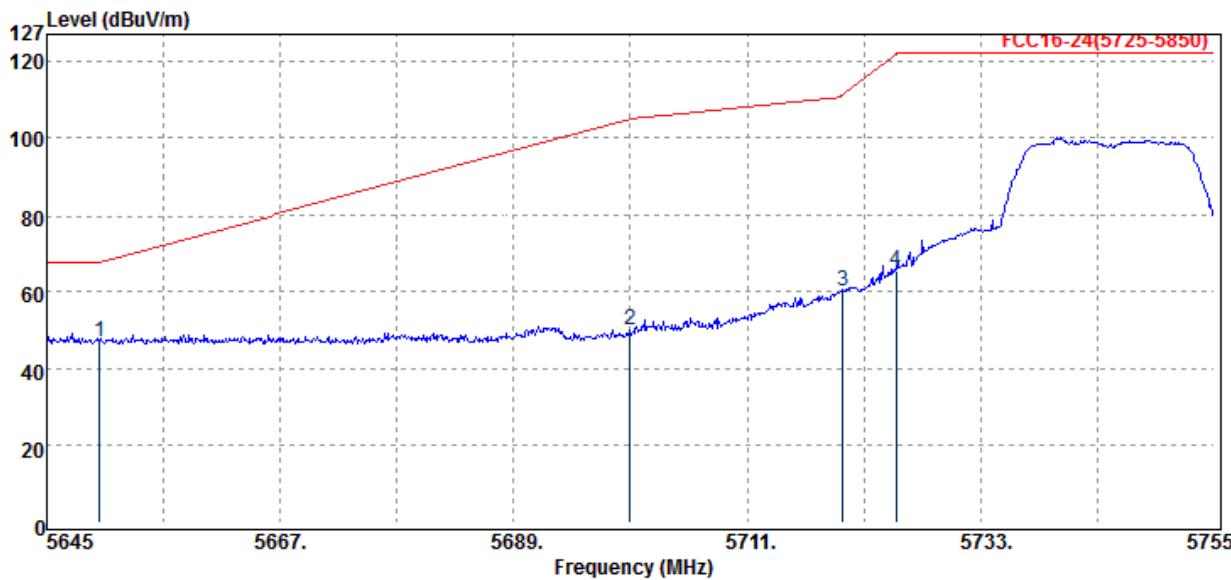
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Operation Band :802.11aB4  
 Fundamental Frequency :5745 MHz  
 Operation Mode :Bandedge CH LOW  
 EUT Pol. :E2 Plane

Test Date :2017-12-19  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Kane  
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	dB $\mu$ V				
5650.00	E	Peak	40.47	6.48	46.95	68.23	-21.28	
5700.00	E	Peak	43.29	6.67	49.96	105.23	-55.27	
5720.00	E	Peak	53.55	6.60	60.15	110.83	-50.68	
5725.00	E	Peak	59.10	6.59	65.69	122.23	-56.54	

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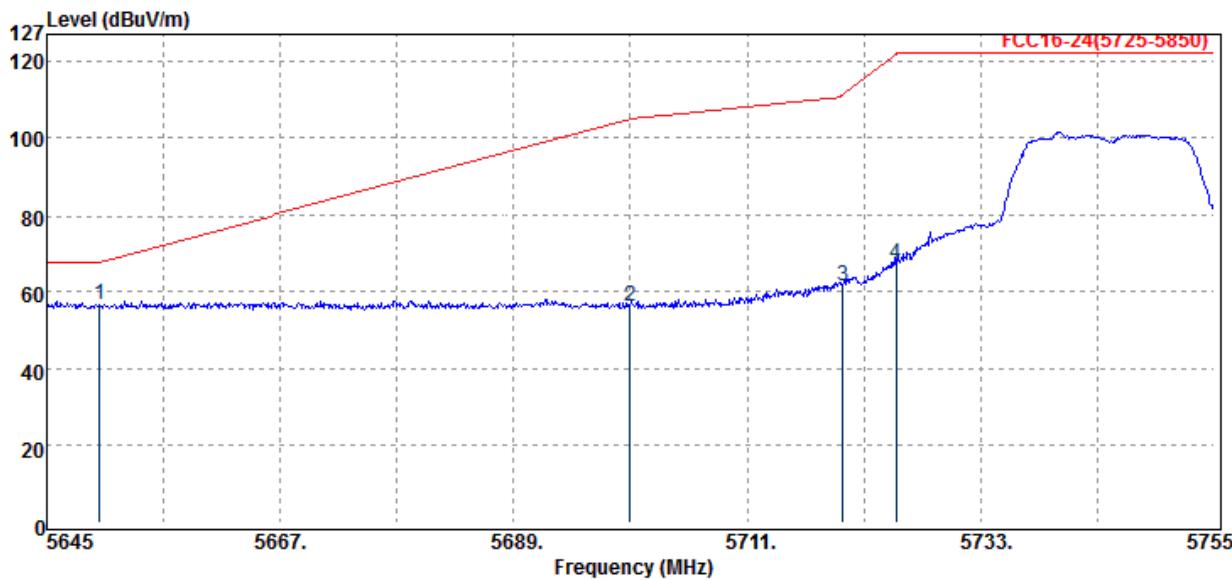
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Operation Band :802.11aB4  
 Fundamental Frequency :5745 MHz  
 Operation Mode :Bandedge CH LOW  
 EUT Pol. :E2 Plane

Test Date :2017-12-19  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Kane  
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	dB $\mu$ V				
5650.00	E	Peak		50.19	6.48	56.67	68.23	-11.56
5700.00	E	Peak		49.51	6.67	56.18	105.23	-49.05
5720.00	E	Peak		54.78	6.60	61.38	110.83	-49.45
5725.00	E	Peak		60.49	6.59	67.08	122.23	-55.15

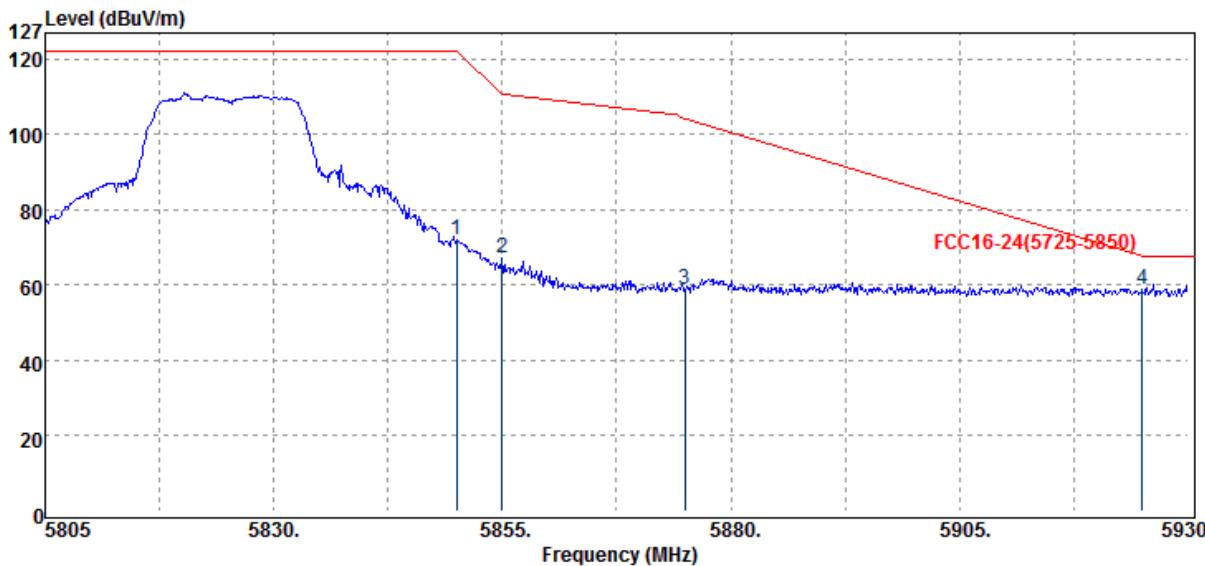
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Operation Band :802.11aB4  
 Fundamental Frequency :5825 MHz  
 Operation Mode :Bandedge CH HIGH  
 EUT Pol. :E2 Plane

Test Date :2017-12-19  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Kane  
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	dB $\mu$ V				
5850.00	E	Peak	64.72	7.28	72.00	122.23	-50.23	
5855.00	E	Peak	59.72	7.32	67.04	110.83	-43.79	
5875.00	E	Peak	51.42	7.37	58.79	105.23	-46.44	
5925.00	E	Peak	51.30	7.39	58.69	68.23	-9.54	

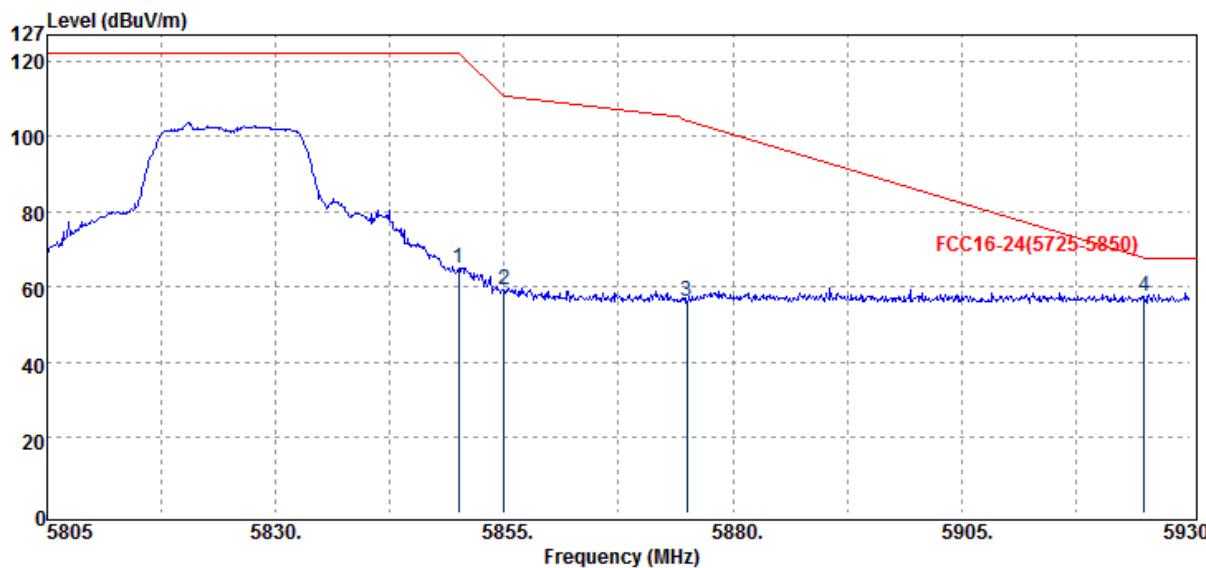
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Operation Band :802.11aB4  
 Fundamental Frequency :5825 MHz  
 Operation Mode :Bandedge CH HIGH  
 EUT Pol. :E2 Plane

Test Date :2017-12-19  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Kane  
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	dB $\mu$ V				
5850.00	E	Peak	57.87	7.28	65.15	122.23	-57.08	
5855.00	E	Peak	52.22	7.32	59.54	110.83	-51.29	
5875.00	E	Peak	49.04	7.37	56.41	105.23	-48.82	
5925.00	E	Peak	50.06	7.39	57.45	68.23	-10.78	

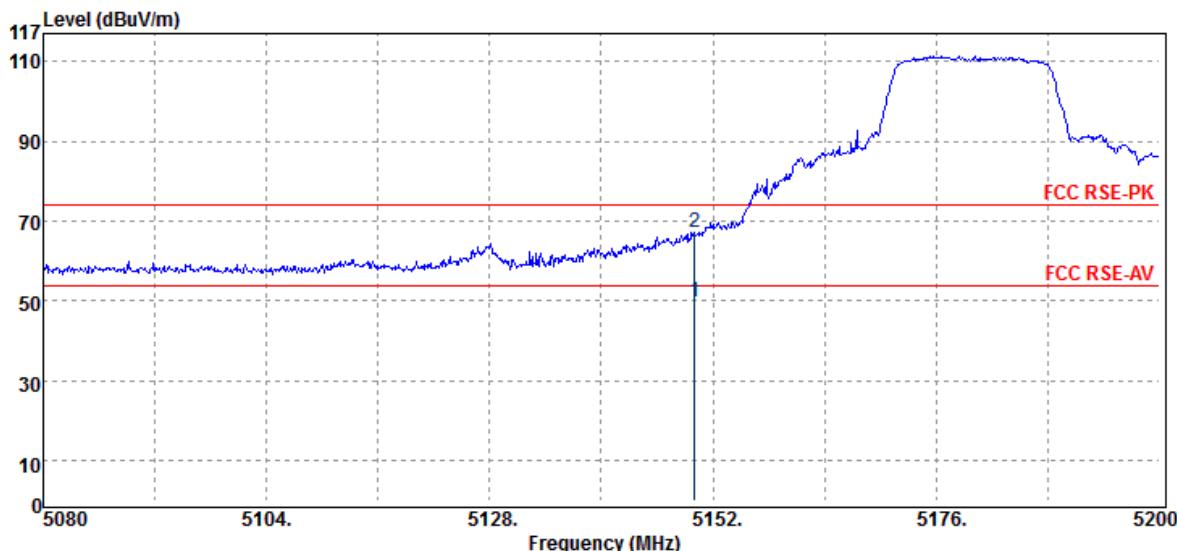
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**802.11n20 HT mode**

Operation Band	:802.11n20B1	Test Date	:2017-12-19
Fundamental Frequency	:5180 MHz	Temp./Humi.	:23 deg_C / 62 RH
Operation Mode	:Bandedge CH LOW	Engineer	:Kane
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
5150.00	E	Average	43.79	43.79	5.88	49.67	54.00	-4.33
5150.00	E	Peak	61.44	61.44	5.88	67.32	74.00	-6.68

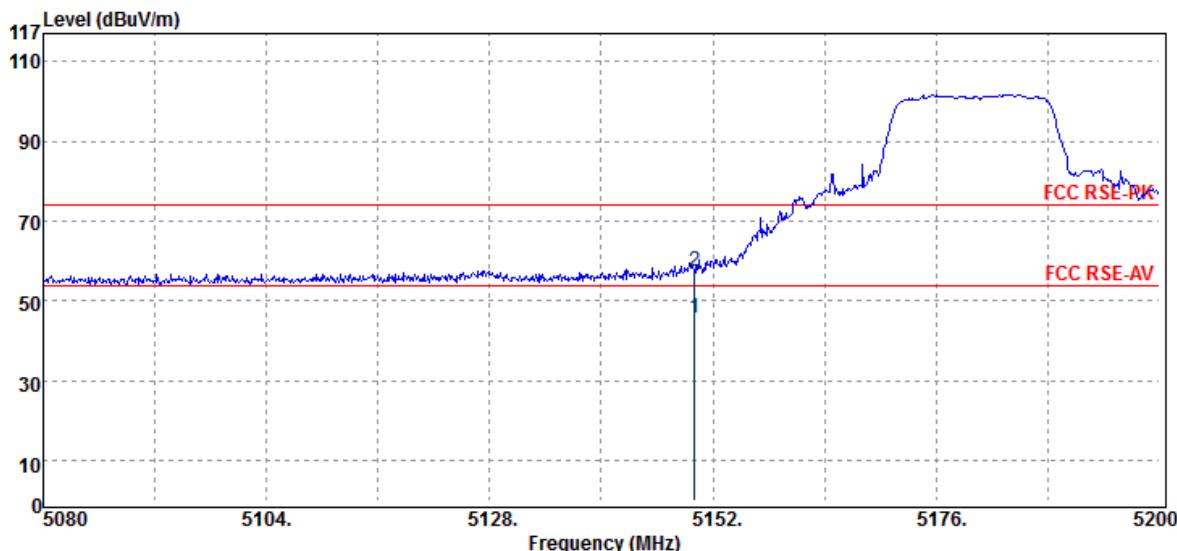
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Operation Band :802.11n20B1  
Fundamental Frequency :5180 MHz  
Operation Mode :Bandedge CH LOW  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level		Factor	Actual FS	Limit @3m	Margin
			dB $\mu$ V	dB				
5150.00	E	Average	39.96	5.88		45.84	54.00	-8.16
5150.00	E	Peak	51.69	5.88		57.57	74.00	-16.43

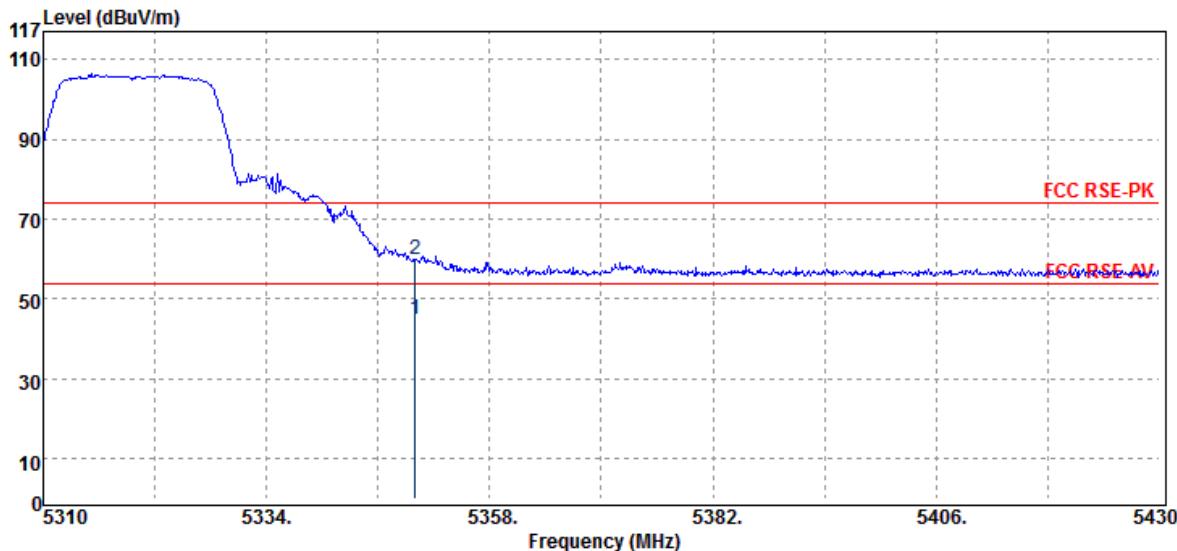
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Operation Band :802.11n20B2  
Fundamental Frequency :5320 MHz  
Operation Mode :Bandedge CH HIGH  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
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	dB				
5350.00	E	Average	38.63	6.16		44.79	54.00	-9.21
5350.00	E	Peak	53.91	6.16		60.07	74.00	-13.93

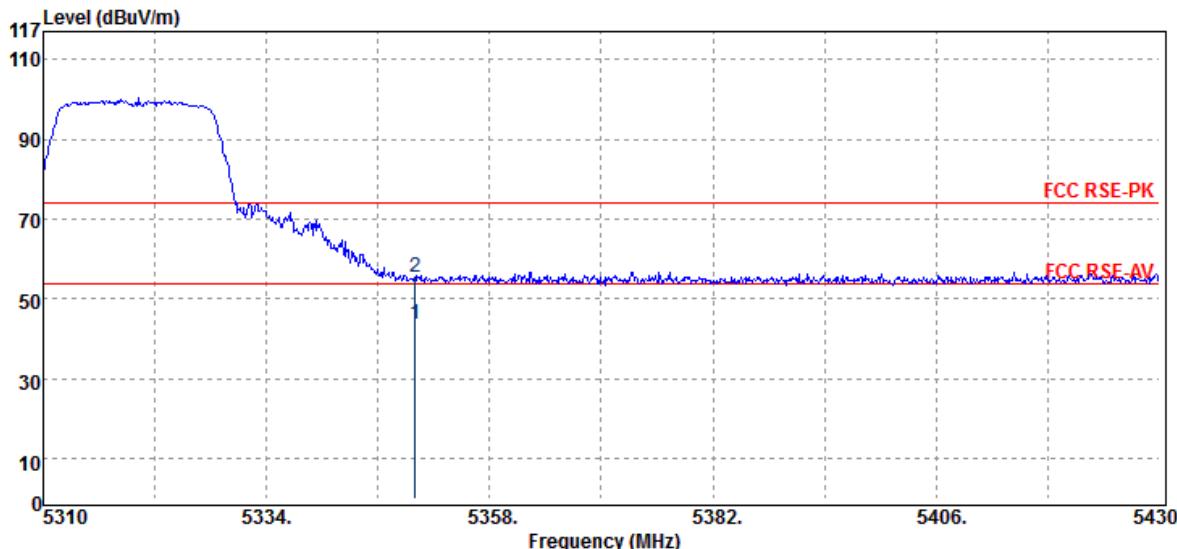
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Operation Band :802.11n20B2  
Fundamental Frequency :5320 MHz  
Operation Mode :Bandedge CH HIGH  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
5350.00	E	Average	37.50	37.50	6.16	43.66	54.00	-10.34
5350.00	E	Peak	49.22	49.22	6.16	55.38	74.00	-18.62

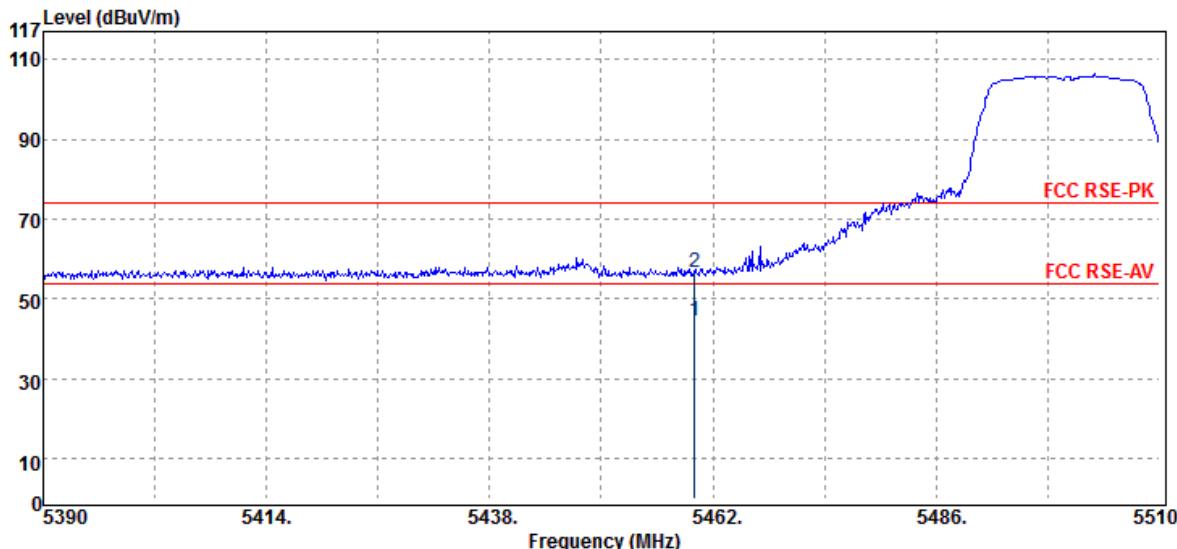
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Operation Band :802.11n20B3  
 Fundamental Frequency :5500 MHz  
 Operation Mode :Bandedge CH LOW  
 EUT Pol. :E2 Plane

Test Date :2017-12-19  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Kane  
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
5460.00	E	Average	38.34	38.34	6.23	44.57	54.00	-9.43
5460.00	E	Peak	50.57	50.57	6.23	56.80	74.00	-17.20

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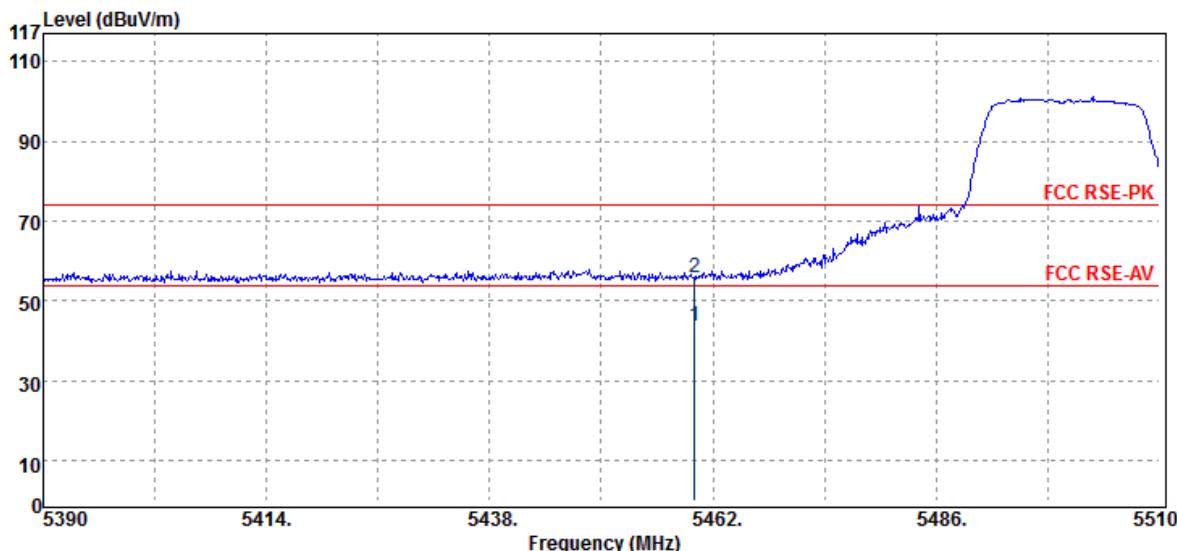
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Operation Band :802.11n20B3  
 Fundamental Frequency :5500 MHz  
 Operation Mode :Bandedge CH LOW  
 EUT Pol. :E2 Plane

Test Date :2017-12-19  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Kane  
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level		Factor	Actual FS	Limit @3m	Margin
			dB $\mu$ V	dB				
5460.00	E	Average	37.44	6.23		43.67	54.00	-10.33
5460.00	E	Peak	49.66	6.23		55.89	74.00	-18.11

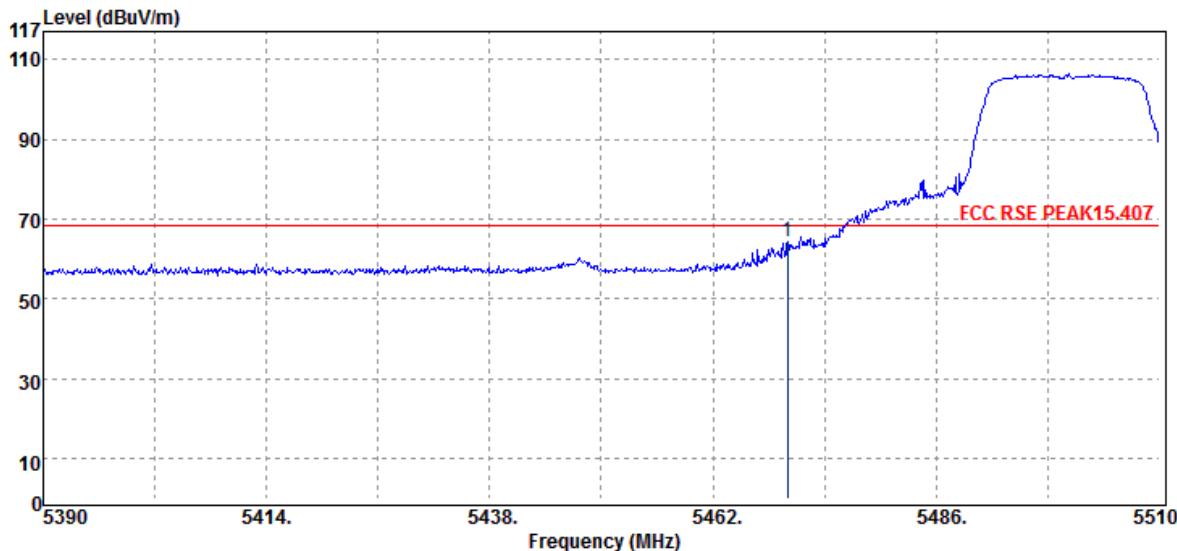
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Operation Band :802.11n20B3  
Fundamental Frequency :5500 MHz  
Operation Mode :Bandedge CH LOW RSE  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
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				
5470.00	E	Peak	58.00	58.00	6.26	64.26	68.30	-4.04

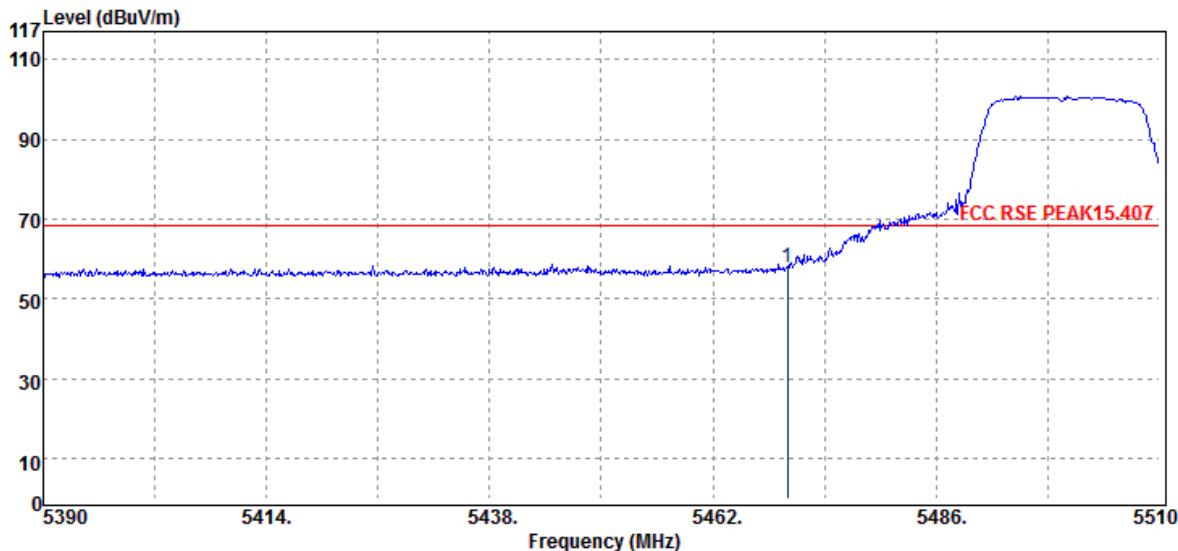
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Operation Band :802.11n20B3  
Fundamental Frequency :5500 MHz  
Operation Mode :Bandedge CH LOW RSE  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading	Factor	Actual FS	Limit	Margin
			PK/QP/AV	Level dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m
5470.00	E	Peak	51.47	6.26	57.73	68.30	-10.57

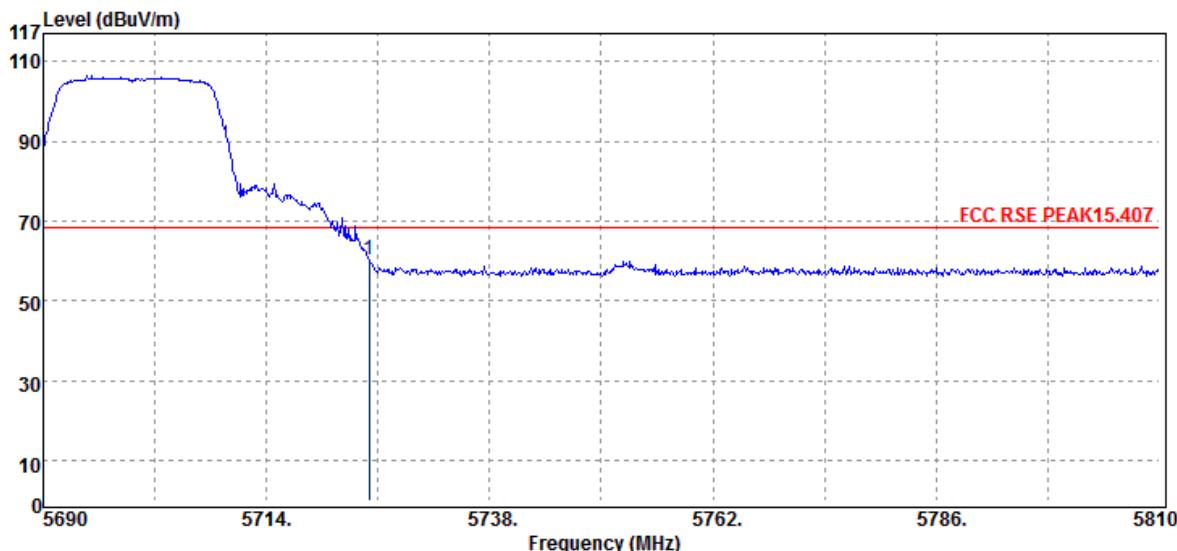
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Operation Band :802.11n20B3  
Fundamental Frequency :5700 MHz  
Operation Mode :Bandedge CH HIGH RSE  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
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
						dB $\mu$ V/m	dB
5725.00	E	Peak	53.65	6.59	60.24	68.30	-8.06

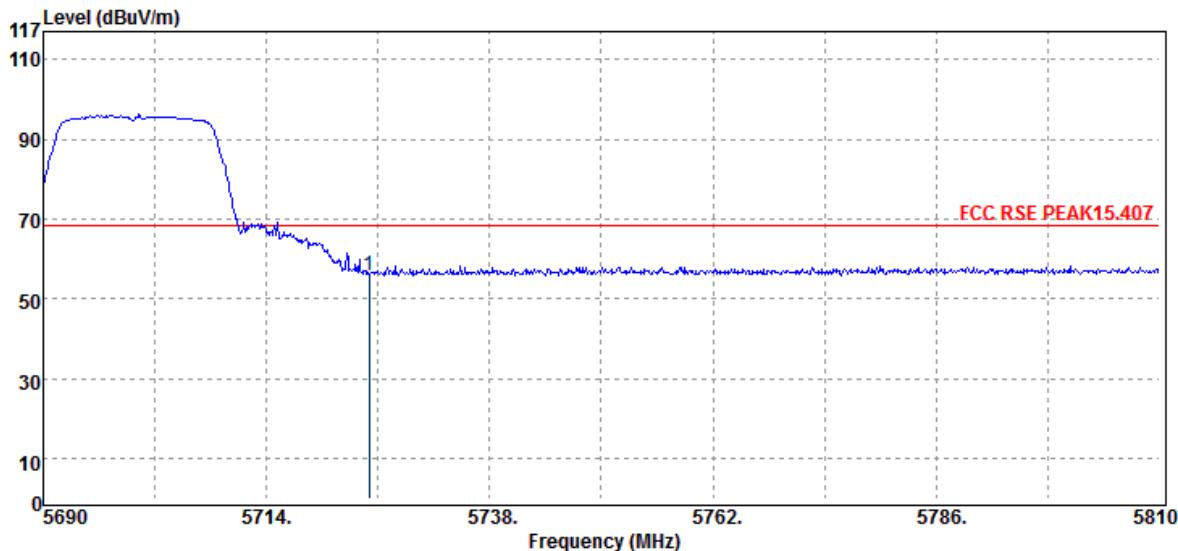
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Operation Band :802.11n20B3  
Fundamental Frequency :5700 MHz  
Operation Mode :Bandedge CH HIGH RSE  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
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
			PK/QP/AV	Reading Level dB $\mu$ V				
5725.00	E	Peak	49.43	6.59	56.02	68.30	-12.28	

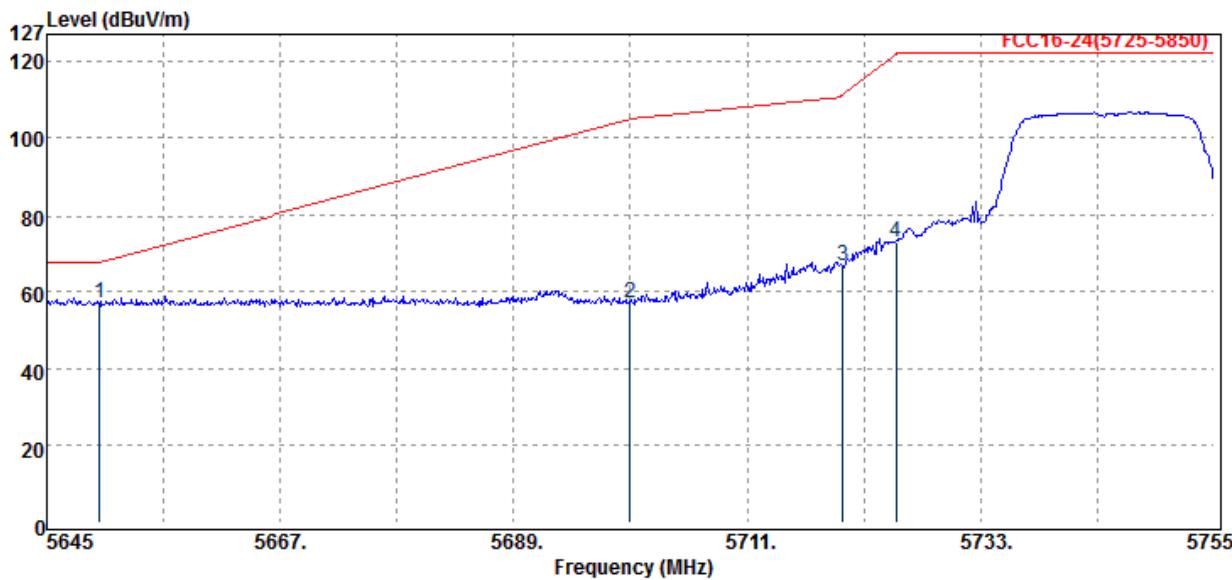
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Operation Band :802.11n20B4  
 Fundamental Frequency :5745 MHz  
 Operation Mode :Bandedge CH LOW  
 EUT Pol. :E2 Plane

Test Date :2017-12-19  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Kane  
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	dB $\mu$ V				
5650.00	E	Peak		50.52	6.48	57.00	68.23	-11.23
5700.00	E	Peak		50.60	6.67	57.27	105.23	-47.96
5720.00	E	Peak		60.10	6.60	66.70	110.83	-44.13
5725.00	E	Peak		66.43	6.59	73.02	122.23	-49.21

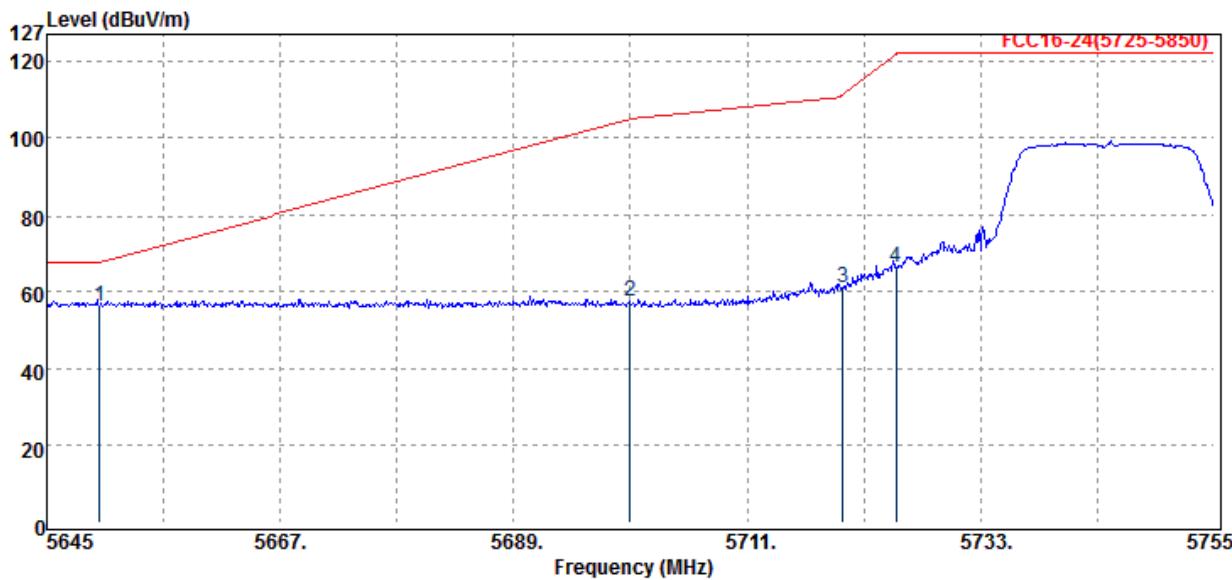
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Operation Band :802.11n20B4  
 Fundamental Frequency :5745 MHz  
 Operation Mode :Bandedge CH LOW  
 EUT Pol. :E2 Plane

Test Date :2017-12-19  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Kane  
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	dB $\mu$ V				
5650.00	E	Peak		49.91	6.48	56.39	68.23	-11.84
5700.00	E	Peak		50.95	6.67	57.62	105.23	-47.61
5720.00	E	Peak		54.58	6.60	61.18	110.83	-49.65
5725.00	E	Peak		59.59	6.59	66.18	122.23	-56.05

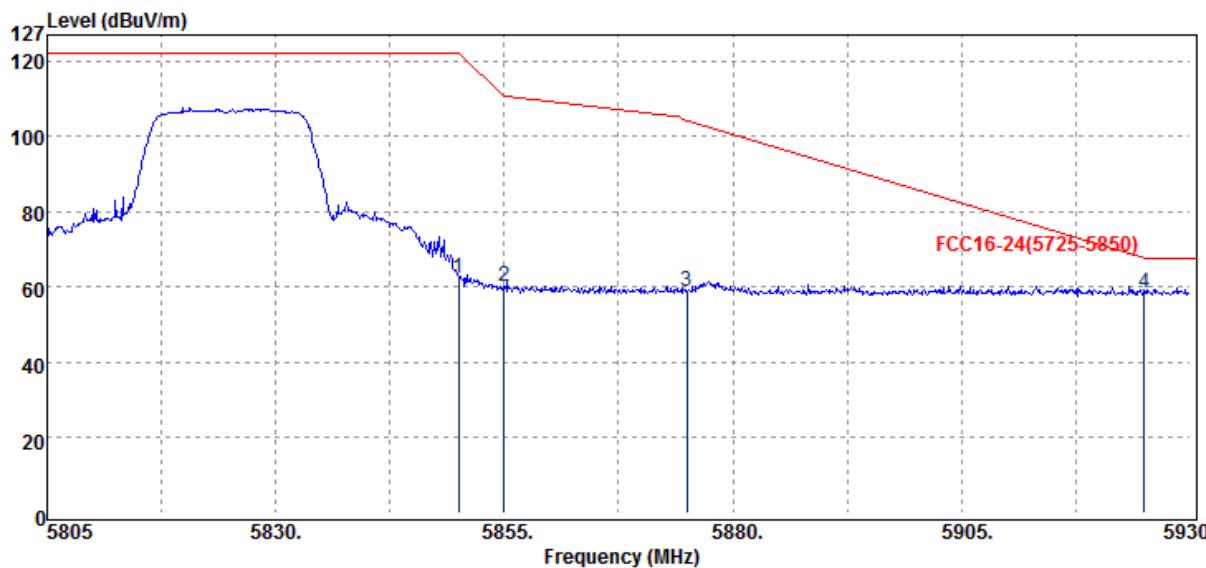
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Operation Band :802.11n20B4  
 Fundamental Frequency :5825 MHz  
 Operation Mode :Bandedge CH HIGH  
 EUT Pol. :E2 Plane

Test Date :2017-12-19  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Kane  
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	dB $\mu$ V				
5850.00	E	Peak	55.29	55.29	7.28	62.57	122.23	-59.66
5855.00	E	Peak	52.75	52.75	7.32	60.07	110.83	-50.76
5875.00	E	Peak	51.45	51.45	7.37	58.82	105.23	-46.41
5925.00	E	Peak	51.11	51.11	7.39	58.50	68.23	-9.73

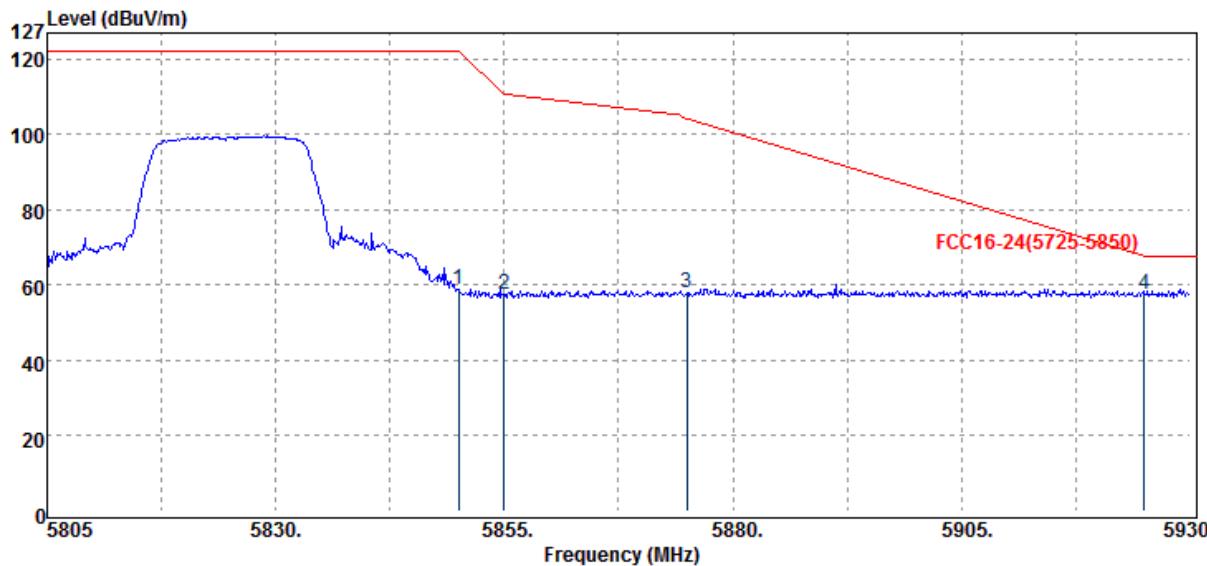
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Operation Band :802.11n20B4  
 Fundamental Frequency :5825 MHz  
 Operation Mode :Bandedge CH HIGH  
 EUT Pol. :E2 Plane

Test Date :2017-12-19  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Kane  
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	dB $\mu$ V				
5850.00	E	Peak	51.65	51.65	7.28	58.93	122.23	-63.30
5855.00	E	Peak	50.27	50.27	7.32	57.59	110.83	-53.24
5875.00	E	Peak	50.79	50.79	7.37	58.16	105.23	-47.07
5925.00	E	Peak	50.24	50.24	7.39	57.63	68.23	-10.60

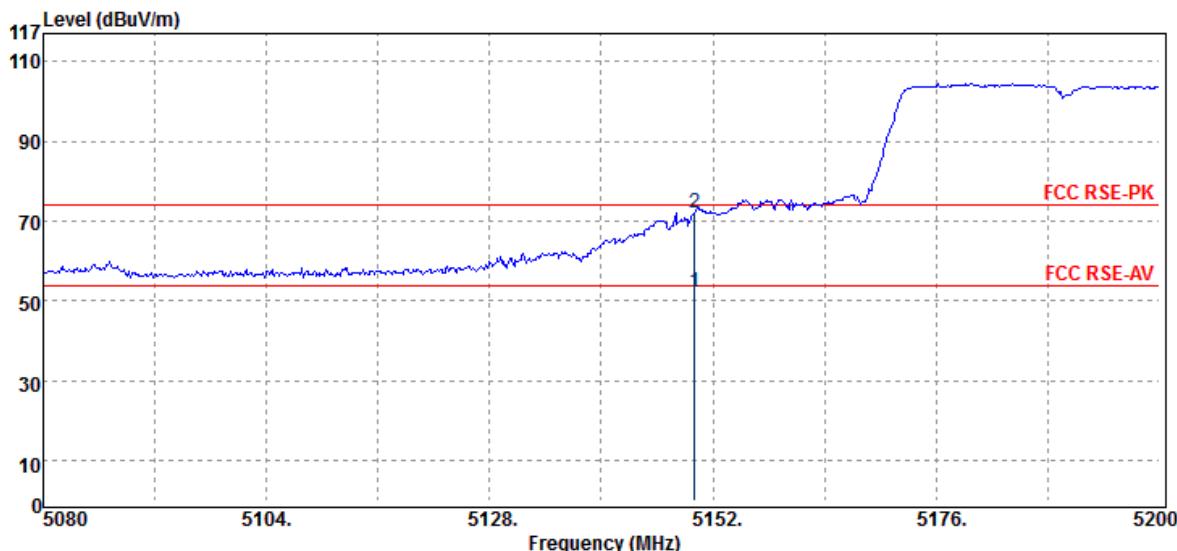
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**802.11n40 HT mode**

Operation Band :802.11n40B1 Test Date :2017-12-19  
Fundamental Frequency :5190 MHz Temp./Humi. :23 deg\_C / 62 RH  
Operation Mode :Bandedge CH LOW Engineer :Kane  
EUT Pol. :E2 Plane Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
5150.00	E	Average	46.46	46.46	5.88	52.34	54.00	-1.66
5150.00	E	Peak	66.29	66.29	5.88	72.17	74.00	-1.83

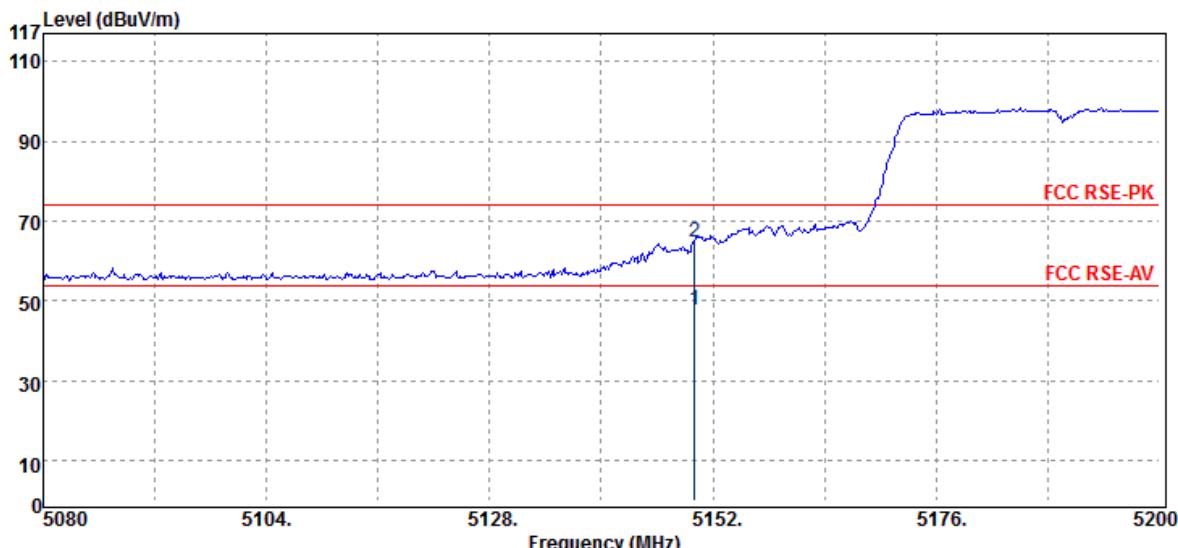
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Operation Band :802.11n40B1  
 Fundamental Frequency :5190 MHz  
 Operation Mode :Bandedge CH LOW  
 EUT Pol. :E2 Plane

Test Date :2017-12-19  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Kane  
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	dB $\mu$ V				
5150.00	E	Average	41.80	41.80	5.88	47.68	54.00	-6.32
5150.00	E	Peak	58.95	58.95	5.88	64.83	74.00	-9.17

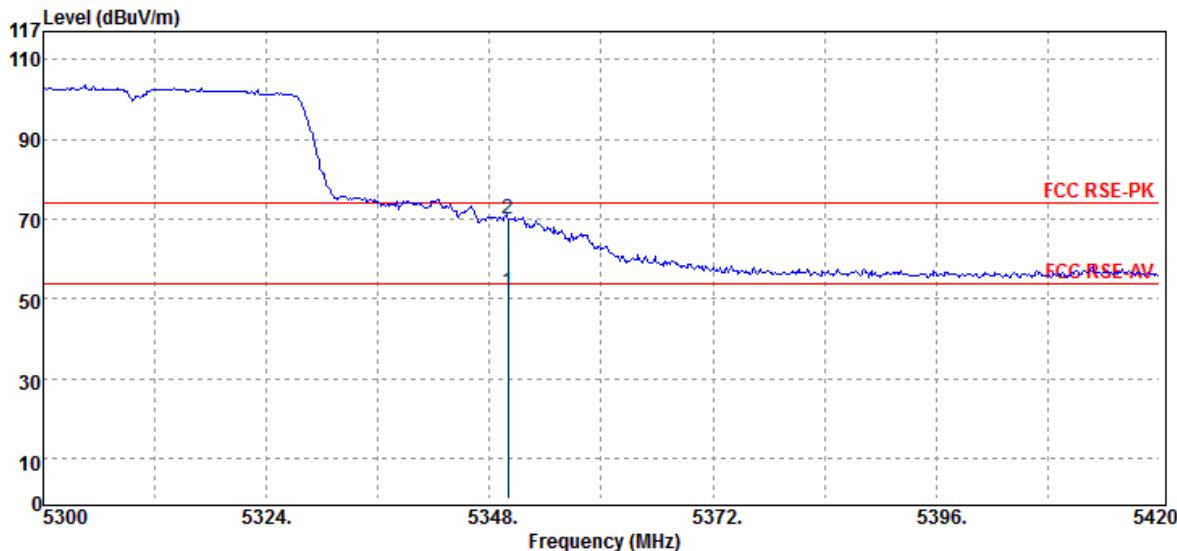
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Operation Band :802.11n40B2  
Fundamental Frequency :5310 MHz  
Operation Mode :Bandedge CH HIGH  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
5350.00	E	Average	45.60	45.60	6.16	51.76	54.00	-2.24
5350.00	E	Peak	63.99	63.99	6.16	70.15	74.00	-3.85

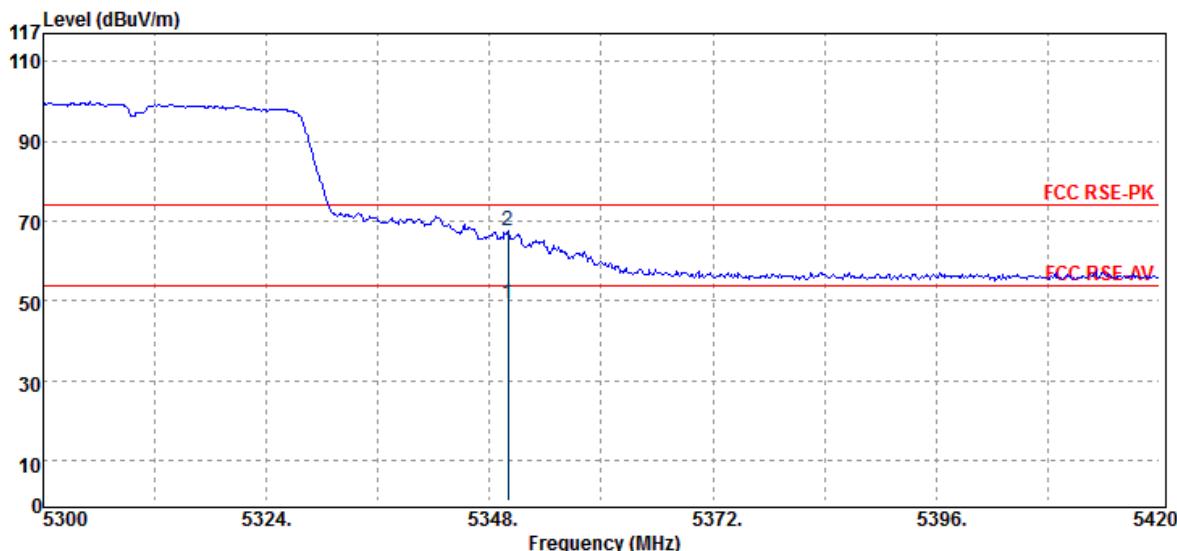
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Operation Band :802.11n40B2  
 Fundamental Frequency :5310 MHz  
 Operation Mode :Bandedge CH HIGH  
 EUT Pol. :E2 Plane

Test Date :2017-12-19  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Kane  
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	dB $\mu$ V				
5350.00	E	Average	43.14	43.14	6.16	49.30	54.00	-4.70
5350.00	E	Peak	61.40	61.40	6.16	67.56	74.00	-6.44

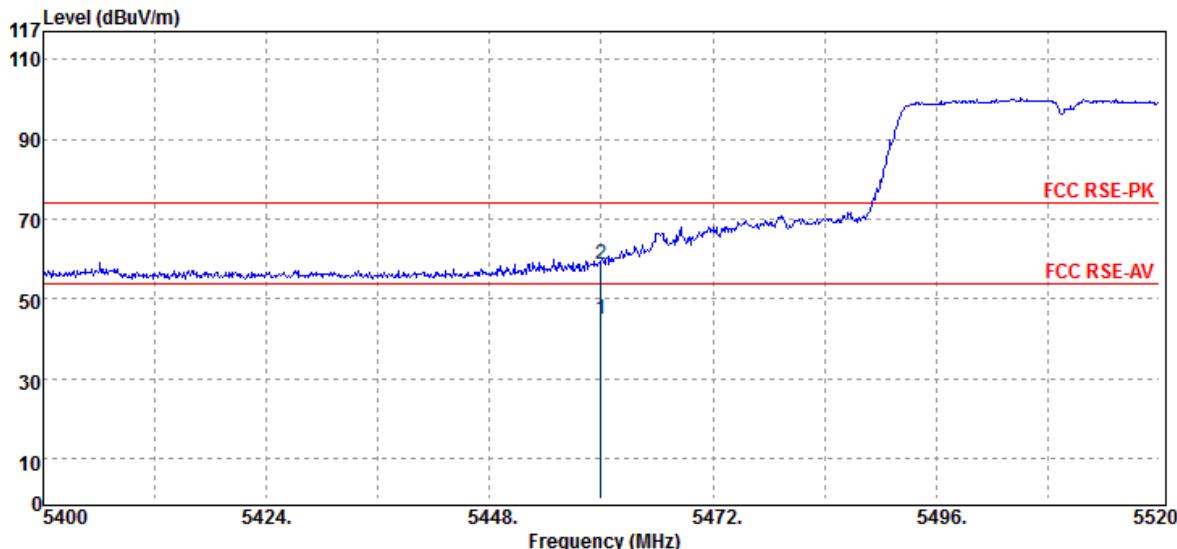
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Operation Band :802.11n40B3  
 Fundamental Frequency :5510 MHz  
 Operation Mode :Bandedge CH LOW  
 EUT Pol. :E2 Plane

Test Date :2017-12-19  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Kane  
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	dB $\mu$ V				
5460.00	E	Average	38.64	6.23	44.87	54.00	-9.13	
5460.00	E	Peak	52.40	6.23	58.63	74.00	-15.37	

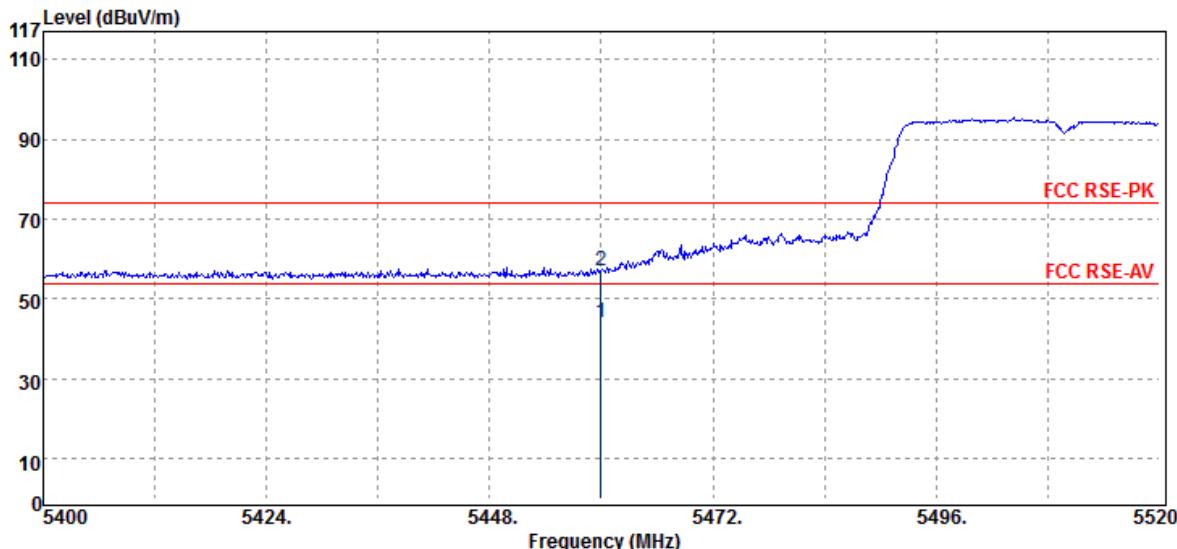
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Operation Band :802.11n40B3  
Fundamental Frequency :5510 MHz  
Operation Mode :Bandedge CH LOW  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit	Margin
						dB $\mu$ V/m	dB $\mu$ V/m
5460.00	E	Average	37.70	6.23	43.93	54.00	-10.07
5460.00	E	Peak	50.72	6.23	56.95	74.00	-17.05

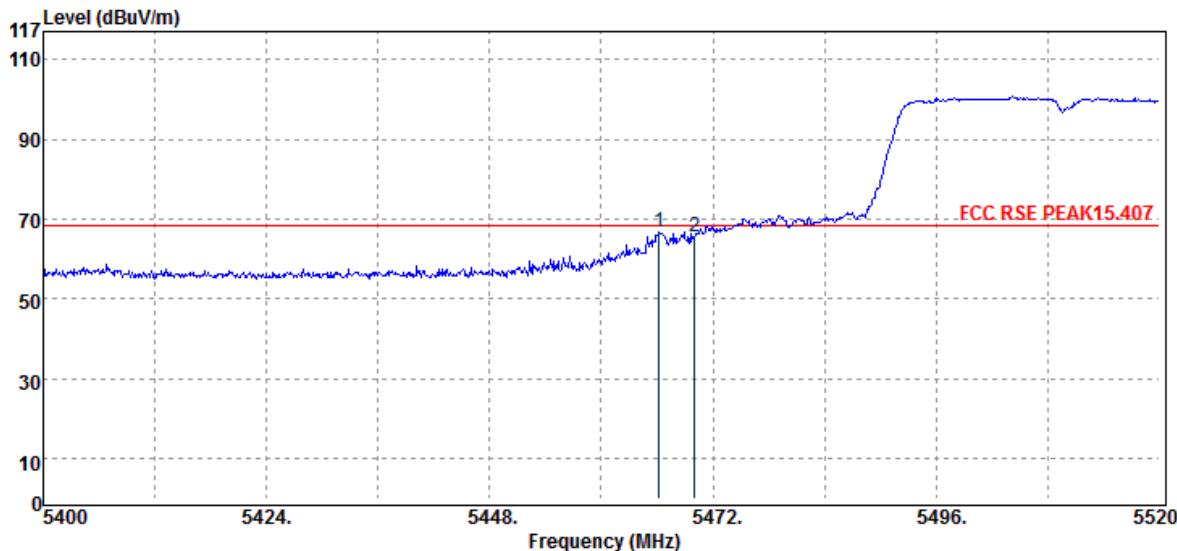
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Operation Band :802.11n40B3  
 Fundamental Frequency :5510 MHz  
 Operation Mode :Bandedge CH LOW RSE  
 EUT Pol. :E2 Plane

Test Date :2017-12-19  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Kane  
 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				
5466.24	E	Peak	Peak	60.55	6.25	66.80	68.30	-1.50
5470.00	E	Peak	Peak	59.35	6.26	65.61	68.30	-2.69

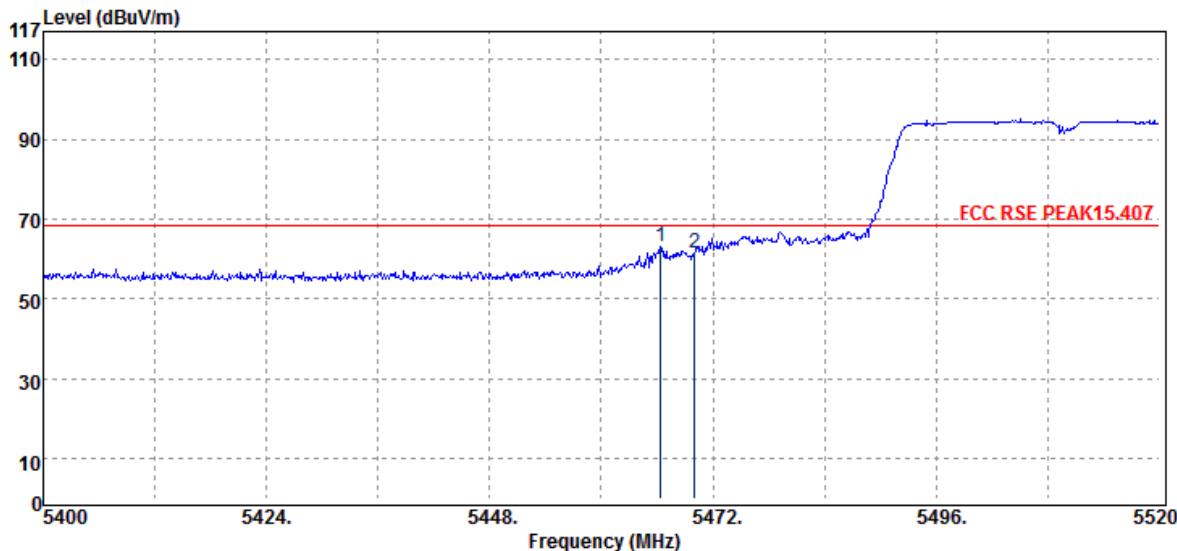
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Operation Band :802.11n40B3  
 Fundamental Frequency :5510 MHz  
 Operation Mode :Bandedge CH LOW RSE  
 EUT Pol. :E2 Plane

Test Date :2017-12-19  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Kane  
 Measurement Antenna Pol. :HORIZONTAL



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				
5466.36	E	Peak	56.80	56.80	6.25	63.05	68.30	-5.25
5470.00	E	Peak	55.36	55.36	6.26	61.62	68.30	-6.68

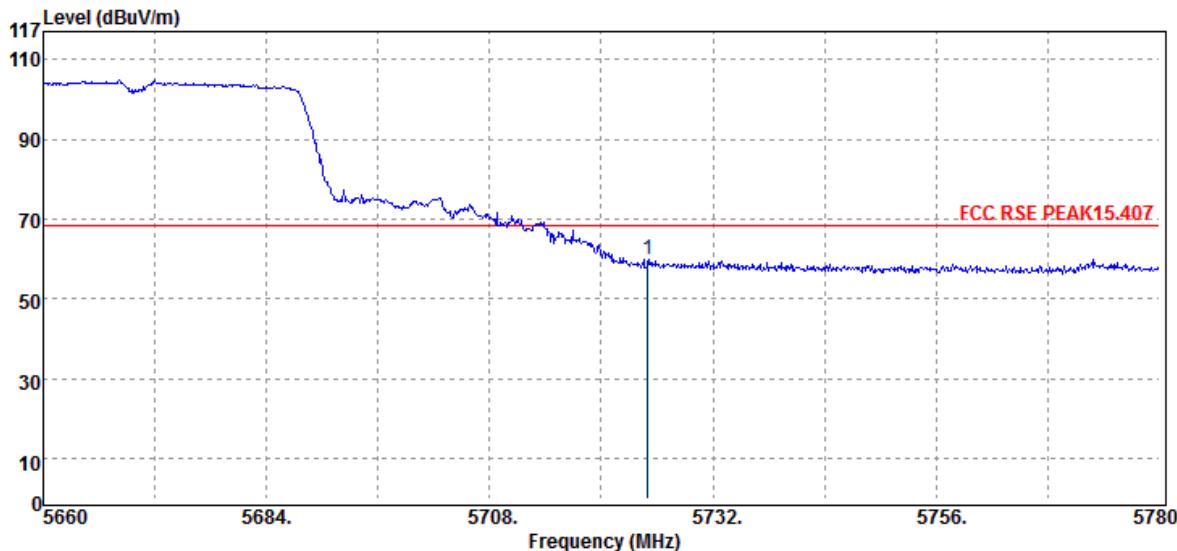
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Operation Band :802.11n40B3  
Fundamental Frequency :5670 MHz  
Operation Mode :Bandedge CH HIGH RSE  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
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
						dB $\mu$ V/m	dB
5725.00	E	Peak	53.15	6.59	59.74	68.30	-8.56

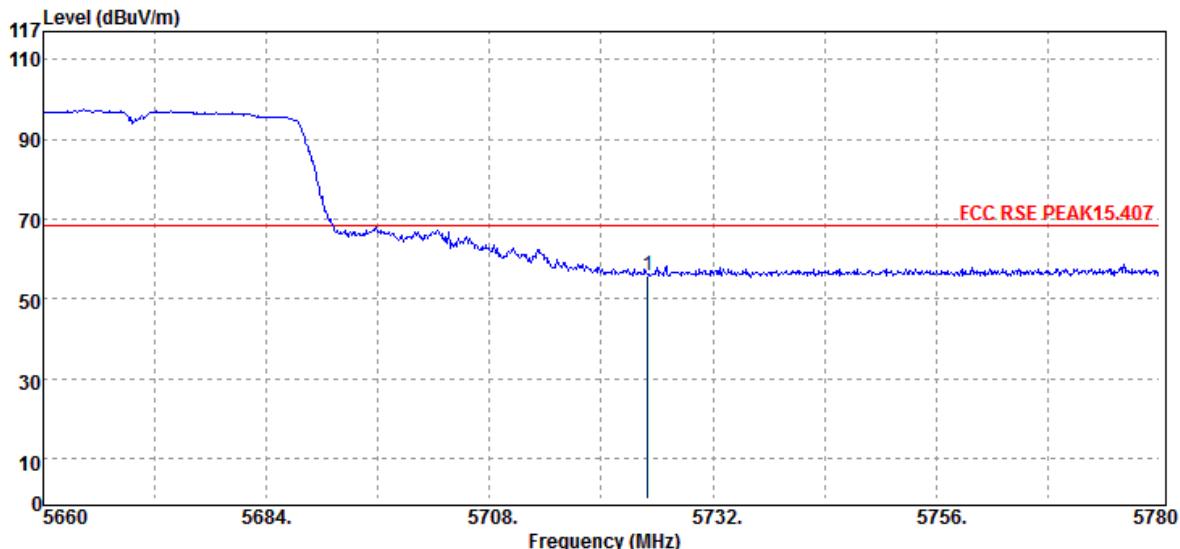
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Operation Band :802.11n40B3  
Fundamental Frequency :5670 MHz  
Operation Mode :Bandedge CH HIGH RSE  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
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	Margin dB
						dB $\mu$ V/m	dB
5725.00	E	Peak	49.33	6.59	55.92	68.30	-12.38

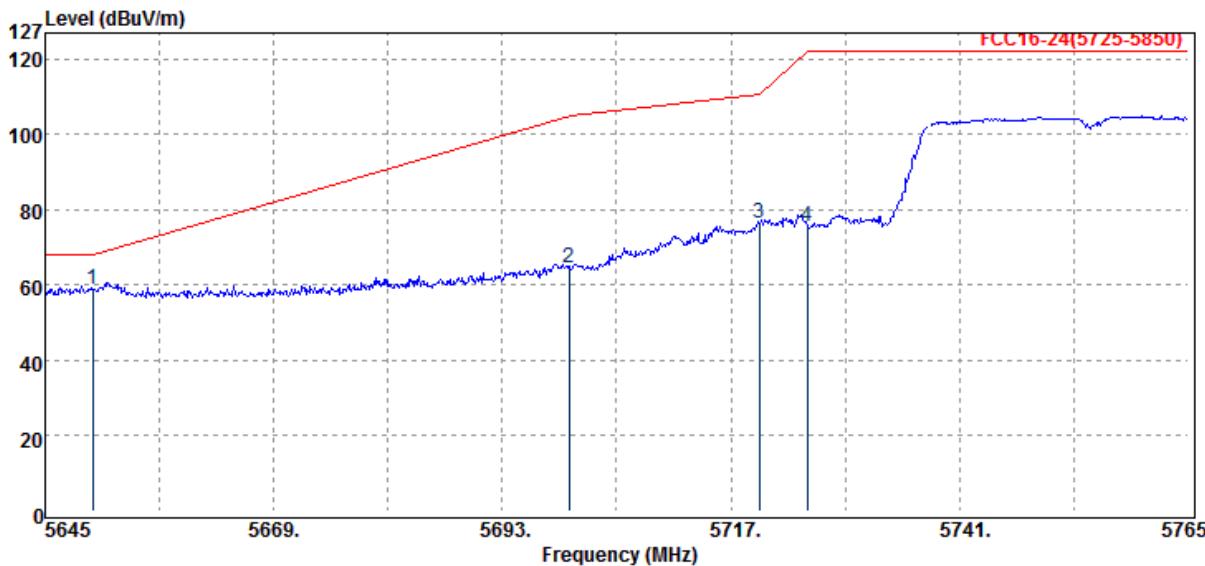
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Operation Band :802.11n40B4  
Fundamental Frequency :5755 MHz  
Operation Mode :Bandedge CH LOW  
EUT Pol. :E2 Plane

Test Date :2017-12-19  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	dB $\mu$ V				
5650.00	E	Peak	52.39	6.48	58.87	68.23	-9.36	
5700.00	E	Peak	57.95	6.67	64.62	105.23	-40.61	
5720.00	E	Peak	69.82	6.60	76.42	110.83	-34.41	
5725.00	E	Peak	68.96	6.59	75.55	122.23	-46.68	

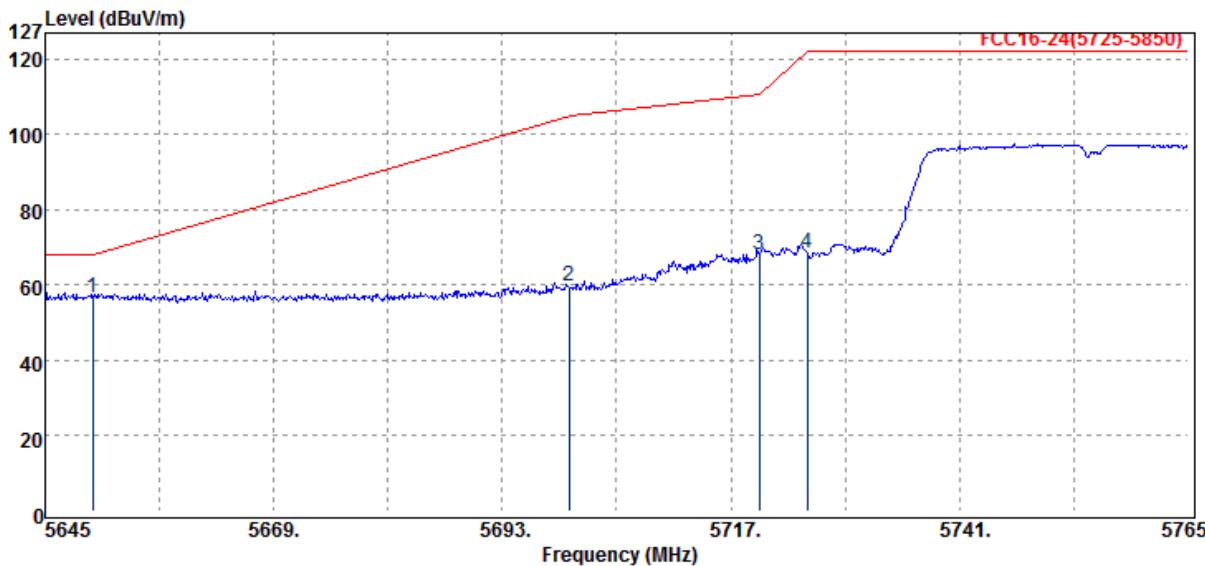
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Operation Band :802.11n40B4  
 Fundamental Frequency :5755 MHz  
 Operation Mode :Bandedge CH LOW  
 EUT Pol. :E2 Plane

Test Date :2017-12-19  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Kane  
 Measurement Antenna Pol. :HORIZONTAL



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				
5650.00	E	Peak		50.24	6.48	56.72	68.23	-11.51
5700.00	E	Peak		53.11	6.67	59.78	105.23	-45.45
5720.00	E	Peak		61.47	6.60	68.07	110.83	-42.76
5725.00	E	Peak		61.78	6.59	68.37	122.23	-53.86

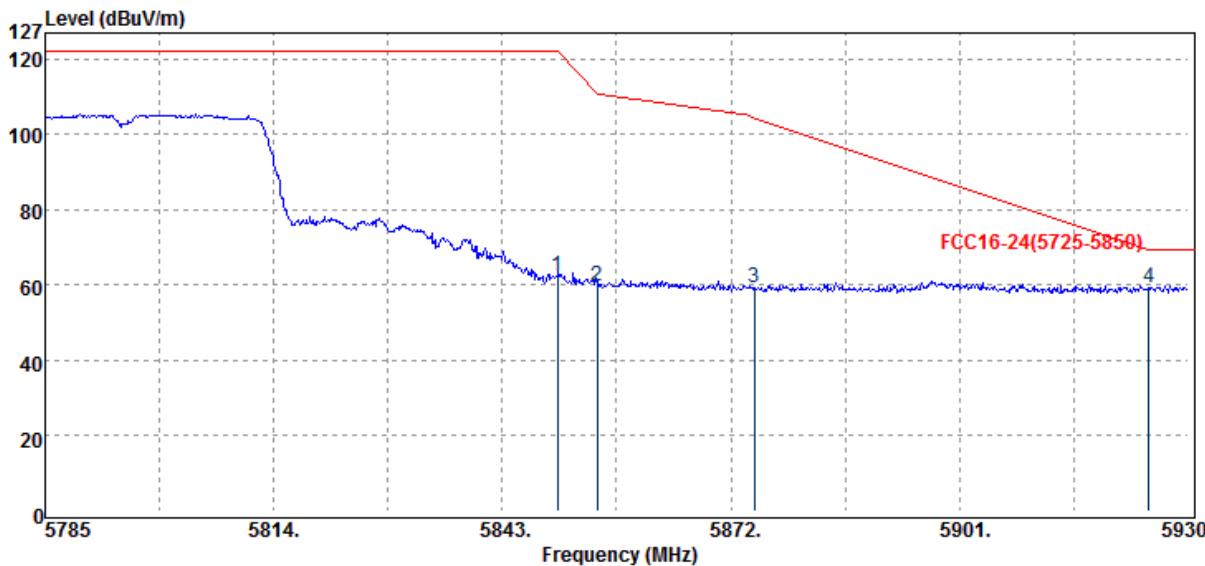
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Operation Band :802.11n40B4  
 Fundamental Frequency :5795 MHz  
 Operation Mode :Bandedge CH HIGH  
 EUT Pol. :E2 Plane

Test Date :2017-12-19  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Kane  
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	dB $\mu$ V				
5850.00	E	Peak	55.23	55.23	7.28	62.51	122.23	-59.72
5855.00	E	Peak	52.60	52.60	7.32	59.92	110.83	-50.91
5875.00	E	Peak	51.91	51.91	7.37	59.28	105.23	-45.95
5925.00	E	Peak	51.89	51.89	7.39	59.28	68.23	-8.95

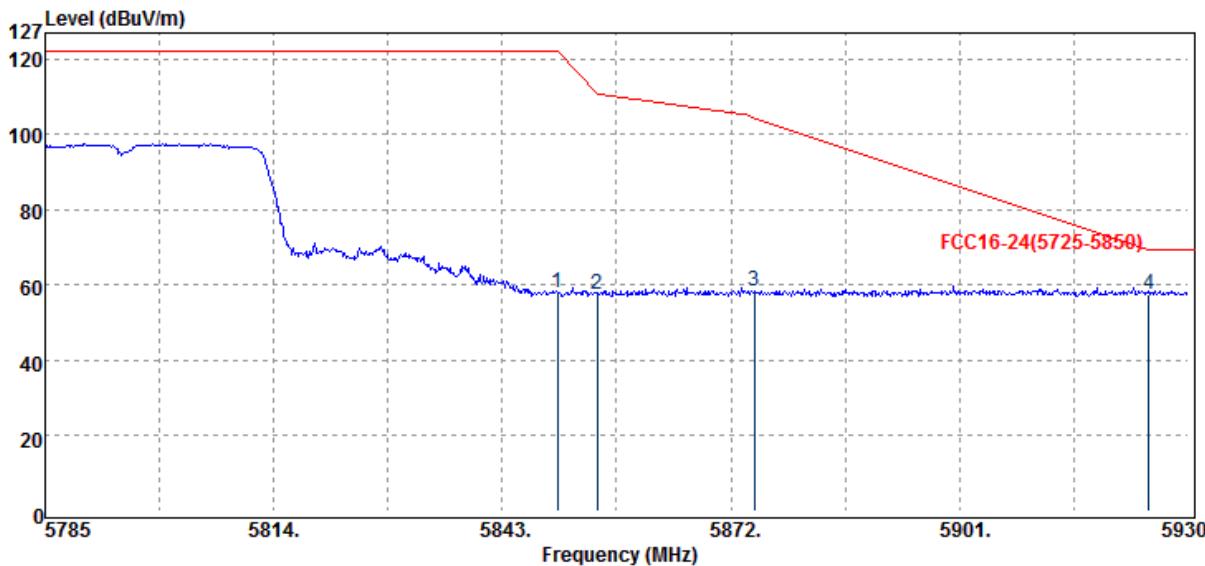
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Operation Band :802.11n40B4  
 Fundamental Frequency :5795 MHz  
 Operation Mode :Bandedge CH HIGH  
 EUT Pol. :E2 Plane

Test Date :2017-12-19  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Kane  
 Measurement Antenna Pol. :HORIZONTAL



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				
5850.00	E	Peak	50.87	50.87	7.28	58.15	122.23	-64.08
5855.00	E	Peak	50.07	50.07	7.32	57.39	110.83	-53.44
5875.00	E	Peak	51.14	51.14	7.37	58.51	105.23	-46.72
5925.00	E	Peak	50.10	50.10	7.39	57.49	68.23	-10.74

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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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台灣檢驗科技股份有限公司

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## 13. FREQUENCY STABILITY

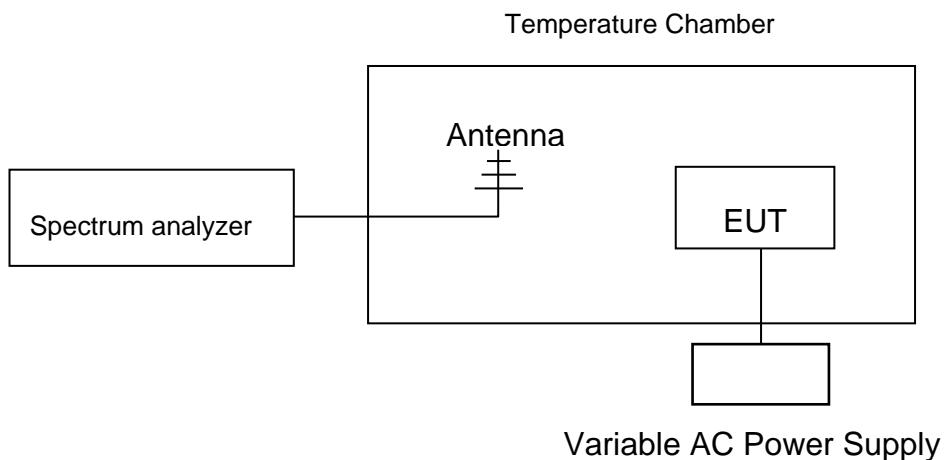
### 13.1 Standard Applicable

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



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台灣檢驗科技股份有限公司

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### 13.4 Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Power Meter	Anritsu	ML2495A	1005007	12/14/2017	12/13/2018
Power Sensor	Anritsu	MA2411B	917032	12/14/2017	12/13/2018
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	HU-BER+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	10/26/2017	10/27/2018
Temperature Chamber	TERCHY	MHG-120LF	911009	05/19/2017	05/18/2018

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### 13.5 Measurement Result

Operation Mode	802.11 a	Test Date	2017.12.20
Temperature	:22	Test By	Louis
Humidity	:61 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	13.283V	36	5180	5,179.93994	0.00001159
		44	5220	5,219.98486	0.00000290
		48	5240	5,240.00000	0.00000000
		52	5260	5,259.97022	0.00000566
		60	5300	5,300.00000	0.00000000
		64	5320	5,319.96997	0.00000564
		100	5500	5,499.97022	0.00000542
		116	5580	5,580.02979	-0.00000534
		140	5700	5,700.03003	-0.00000527
		149	5745	5,745.04492	-0.00000782
	10.1V	157	5785	5,785.01489	-0.00000257
		165	5825	5,825.01489	-0.00000256
		36	5180	5,179.97022	0.00000575
		44	5220	5,220.00000	0.00000000
		48	5240	5,239.96997	0.00000573
		52	5260	5,259.97022	0.00000566
		60	5300	5,299.92505	0.00001414
		64	5320	5,320.00000	0.00000000
		100	5500	5,500.00000	0.00000000
		116	5580	5,580.03003	-0.00000538
		140	5700	5,700.03003	-0.00000527
		149	5745	5,745.04492	-0.00000782
		157	5785	5,785.01489	-0.00000257
		165	5825	5,825.02979	-0.00000511

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25	11.55V	36	5180	5,179.98486	0.00000292
		44	5220	5,219.95508	0.00000861
		48	5240	5,239.98511	0.00000284
		52	5260	5,259.95508	0.00000854
		60	5300	5,300.00000	0.000000000
		64	5320	5,319.98511	0.00000280
		100	5500	5,499.96997	0.00000546
		116	5580	5,579.98511	0.00000267
		140	5700	5,700.03003	-0.00000527
		149	5745	5,745.03003	-0.00000523
		157	5785	5,785.04492	-0.00000777
		165	5825	5,825.02979	-0.00000511

55	13.283V	36	5180	5,179.95508	0.00000867
		44	5220	5,219.97022	0.00000571
		48	5240	5,240.00000	0.000000000
		52	5260	5,259.98486	0.00000288
		60	5300	5,299.97022	0.00000562
		64	5320	5,319.96997	0.00000564
		100	5500	5,499.98511	0.00000271
		116	5580	5,580.04492	-0.00000805
		140	5700	5,700.01489	-0.00000261
		149	5745	5,745.01489	-0.00000259
		157	5785	5,785.04492	-0.00000777
		165	5825	5,825.01489	-0.00000256
	10.1V	36	5180	5,179.98511	0.00000288
		44	5220	5,219.97022	0.00000571
		48	5240	5,239.98511	0.00000284
		52	5260	5,259.97022	0.00000566
		60	5300	5,299.98511	0.00000281
		64	5320	5,319.95483	0.00000849
		100	5500	5,499.98511	0.00000271
		116	5580	5,580.05981	-0.00001072
		140	5700	5,700.04492	-0.00000788
		149	5745	5,745.06006	-0.00001045
		157	5785	5,785.04492	-0.00000777
		165	5825	5,825.03003	-0.00000516

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Operation Mode	802.11 n_HT40	Test Date	2017.12.20
Temperature	:23	Test By	Louis
Humidity	:61 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-10	13.283V	38	5190	5,190.05005	-0.00000964
		46	5230	5,230.05005	-0.00000957
		54	5270	5,269.97510	0.00000473
		62	5310	5,310.05005	-0.00000943
		102	5510	5,510.05005	-0.00000908
		110	5550	5,549.94995	0.00000902
		134	5670	5,670.05005	-0.00000883
		151	5755	5,755.07495	-0.00001302
		159	5795	5,795.07495	-0.00001293
	10.1V	38	5190	5,189.92505	0.00001444
		46	5230	5,229.97510	0.00000476
		54	5270	5,269.97510	0.00000473
		62	5310	5,309.97510	0.00000469
		102	5510	5,510.02490	-0.00000452
		110	5550	5,550.02490	-0.00000449
		134	5670	5,670.07495	-0.00001322
		151	5755	5,754.95020	0.00000865
		159	5795	5,795.07495	-0.00001293

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25	11.55V	38	5190	5,190.05005	-0.00000964
		46	5230	5,229.97510	0.00000476
		54	5270	5,270.00000	0.000000000
		62	5310	5,309.97510	0.00000469
		102	5510	5,510.05005	-0.00000908
		110	5550	5,550.05005	-0.00000902
		134	5670	5,670.00000	0.000000000
		151	5755	5,755.07495	-0.00001302
		159	5795	5,795.05005	-0.00000864
		38	5190	5,190.05005	-0.00000964
55	13.283V	46	5230	5,230.02515	-0.00000481
		54	5270	5,270.02515	-0.00000477
		62	5310	5,310.02490	-0.00000469
		102	5510	5,510.02490	-0.00000452
		110	5550	5,550.05005	-0.00000902
		134	5670	5,670.02490	-0.00000439
		151	5755	5,755.05005	-0.00000870
		159	5795	5,794.97510	0.00000430
		38	5190	5,189.94995	0.00000964
		46	5230	5,230.05005	-0.00000957
	10.1V	54	5270	5,270.02515	-0.00000477
		62	5310	5,310.02490	-0.00000469
		102	5510	5,510.02515	-0.00000456
		110	5550	5,550.05005	-0.00000902
		134	5670	5,670.00000	0.000000000
		151	5755	5,755.05005	-0.00000870
		159	5795	5,795.05005	-0.00000864

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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

An embedded-in antenna design is 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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