

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

## INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART E AND INDUSTRY CANADA RSS 247 REQUIREMENT

OF

<b>Product Name:</b>	<b>Personal Device Assistant</b>
<b>Brand Name:</b>	<b>Datalogic</b>
<b>Model No.:</b>	<b>DL-Axist WWAN</b>
<b>Model Difference:</b>	<b>N/A</b>
<b>FCC ID:</b>	<b>U4GDLNFCUR1</b>
<b>IC:</b>	<b>3862E-DLNFCUR1</b>
<b>Report No.:</b>	<b>E2/2016/60071</b>
<b>Issue Date:</b>	<b>Jan. 18, 2017</b>
<b>FCC Rule Part:</b>	<b>§15.407</b>
<b>IC Rule Part</b>	<b>RSS-247 issue 1 May 2015</b>
	<b>Datalogic S.r.l.</b>
<b>Prepared for:</b>	<b>Via San Vitalino no. 13, Calderara di Reno - 40012 (Bologna) - Italy</b>
	<b>SGS Taiwan Ltd.</b>
<b>Prepared by:</b>	<b>Electronics &amp; Communication Laboratory</b>
	<b>No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333</b>



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## VERIFICATION OF COMPLIANCE

**Applicant:** Datalogic S.r.l.  
Via San Vitalino no. 13, Calderara di Reno - 40012 (Bologna) - Italy

**Product Name:** Personal Device Assistant

**Brand Name:** Datalogic

**Model No.:** DL-Axist WWAN

**Model Difference:** N/A

**FCC ID:** U4GDLNFCUR1

**IC:** 3862E-DLNFCUR1

**File Number:** E2/2016/60071

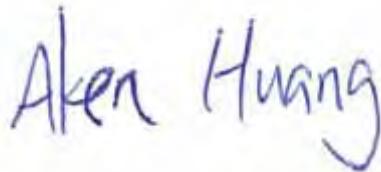
**Date of Test:** Jul. 04, 2016 ~ Jan. 18, 2017

**Date of EUT Received:** Jul. 04, 2016

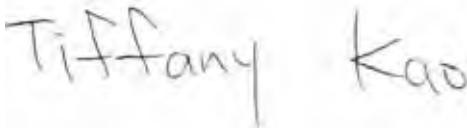
**We hereby certify that:**

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.

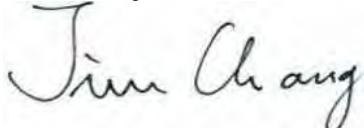
The test results of this report relate only to the tested sample identified in this report.

**Test By:****Date:**

Jan. 18, 2017

*Aken Huang / Engineer***Prepared By:****Date:**

Jan. 18, 2017

*Tiffany Kao / Clerk***Approved By:****Date:**

Jan. 18, 2017

*Jim Chang / Asst. Manager*

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## Revision History

Report Number	Revision	Description	Issue Date
E2/2016/60071	Rev.00	Initial creation of document	Jan. 18, 2017

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## 1. GENERAL INFORMATION

### 1.1 Product Description

General:

Product Name:	Personal Device Assistant	
Brand Name:	Datalogic	
Model No.:	DL-Axist WWAN	
Model Difference:	N/A	
Product SW/HW version:	2.00.09 / ES4	
Radio SW/HW version:	N/A / N/A	
Test SW Version:	N/A	
RF power setting in TEST SW:	N/A	
Power Supply:	3.8Vdc from Rechargeable Li-polymer Battery or 5V from AC/DC Adapter	
	Battery:	1. Model No.: Standard BTDL1, Supplier: JMS 2. Model No.: Extended BTDL1, Supplier: JMS
	Adapter:	1. Model No.: SYS1561-1005, Supplier: Sunny

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## WLAN 5GHz:

Wi-Fi	Frequency Range	Channels	Rated Power (Avg.) / (EIRP)	Modulation Technology	Type of Emission	
11a	5150~5250	4	10.71 dBm (Avg.) / 13.61 dBm (EIRP)	OFDM	16M7D1D	
	5250~5350	4	10.84 dBm (Avg.) / 13.84 dBm (EIRP)		16M7D1D	
	5470~5725	12	9.47 dBm (Avg.) / 13.17 dBm (EIRP)		16M5D1D	
	5725-5850	5	8.68 dBm		13M8D1D	
11n	HT20 5150~5250	4	HT: 11.26 dBm (Avg.) / 14.16 dBm (EIRP) (Worst Case)	OFDM	17M9D1D	
	HT 20 5250~5350	4	HT: 10.41 dBm (Avg.) / 13.41 dBm (EIRP) (Worst Case)		17M7D1D	
	HT 20 5470~5725	11	HT: 9.53 dBm (Avg.) / 13.23 dBm (EIRP) (Worst Case)		17M9D1D	
	HT20 5725-5850	5	HT: 8.75 dBm (Worst Case)		15M1D1D	
Antenna Designation		PIFA Antenna, 5GHz Gain: 2.9dBi (5150MHz-5250MHz) 5GHz Gain: 3.0dBi (5250MHz-5350MHz) 5GHz Gain: 3.7dBi (5470MHz-5725MHz) 5GHz Gain: 1.2dBi (5725MHz-5850MHz)				
Modulation type		64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 802.11ac only				
Transition Rate:		802.11 a: 6/9/12/18/24/36/48/54 Mbps; 802.11 n_20MHz: 6.5 – 65Mbps				

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## 1.2 Product Feature of Equipment Under Test

The equipment under Test (Hereafter Called: EUT) is Personal Device Assistant, supporting GSM / WCDMA, Wi-Fi 802.11a/b/g/n, Bluetooth, NFC features, and below is details of information.

Product Feature	
Product Name:	Personal Device Assistant
Brand Name:	Datalogic
Model No.:	DL-Axist WWAN
Model Difference:	N/A
FCC ID:	U4GDLNFCUR1
IC :	3862E-DLNFCUR1
GSM Operating Band(s)	GSM 850/1900MHz
GPRS / EGPRS Multi Slot Class	GPRS Class 12
WCDMA Operating Band(s)	FDD Band II / V
WCDMA Rel. Version	Rel.3.3
Bluetooth Version	V4.0 dual mode
Wi-Fi- Specification	802.11a/b/g/n
NFC Specification	NFC

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

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### 1.3 Test Methodology of Applied Standards

FCC Part 15, Subpart E §15.407

FCC KDB 789033 D02 General UNII Test Procedures New Rules

FCC KDB 644545 D03 Guidance for IEEE 802.11ac v01

RSS-247 issue 1 May 2015

RSS-Gen issue 4 Nov. 2014

ANSI C63.10:2013

Note:

1. All test items have been performed and record as per the above standards.
2. The composite system is compliance with FCC Subpart B is authorized under the certification procedure.

### 1.4 Test Facility

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

FCC Registration Numbers are: 735305

Canada Registration Number: 4620A-5.

### 1.5 Special Accessories

There are no special accessories used while test was conducted.

### 1.6 Equipment Modifications

There was no modification incorporated into the EUT.

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## 2. SYSTEM TEST CONFIGURATION

### 2.1 EUT Configuration

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

### 2.2 EUT Exercise

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

### 2.3 Test Procedure

#### 2.3.1 Conducted Emissions

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

#### 2.3.2 Radiated Emissions

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

### 2.4 Measurement Results Explanation Example

#### For all conducted test items:

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

#### Note:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor. Following shows an offset computation example with cable loss 0.5dB, and 10dB attenuator.

#### Offset:

= RF cable loss (dB)+ attenuation factor(dB) dB =10.5dB

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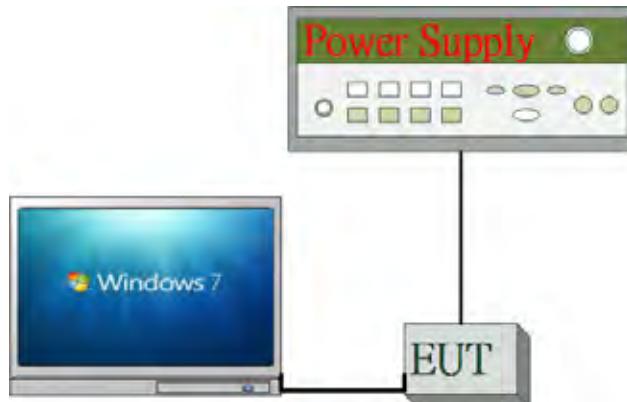
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## 2.5 Configuration of Tested System

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



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

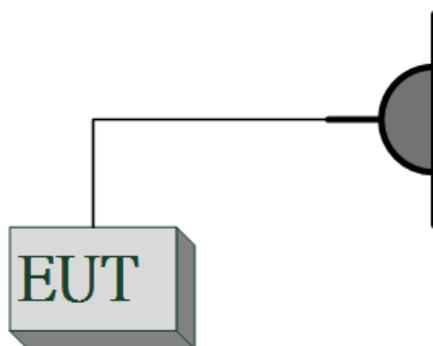


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**Fig. 2-3 C AC Power Line Conducted Configuration****Table 2-1 Equipment Used in Tested System**

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.	DC Power Supply	Agilent	E3640A	MY53140006	N/A	Un-shielded
3.	Notebook	Lenovo	L430	R9-YYG88	Shielded	Un-shielded

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### 3. SUMMARY OF TEST RESULT

FCC Rules	IC Rules	Description Of Test	Result
§15.207	RSS-Gen §8.8	AC Power Line Conducted Emission	Compliant
§15.403(i) §15.407(e)	RSS-247 §6.2.1~ 4 (1) RSS-Gen §6.6	26 dB & 6dB & 99% Emission Bandwidth	Compliant
§15.407(a)	RSS-247 §6.2.1~ 4 (1)	Maximum Conducted Output Power	Compliant
§15.407(a)	RSS-247 §6.2.1~ 4 (1)	Power Spectral Density	Compliant
§15.407(b)	RSS-247 §6.2.1~ 4 (2)	Undesirable Radiated Emissions	Compliant
§15.407(c)	RSS-247 §6.4	Transmission in case of Absence of Information	Compliant
§15.407(g)	RSS-Gen §6.11	Frequency Stability	Compliant
§15.203 §15.407(a)	RSS- Gen §6.7 RSS- Gen §8.3	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

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

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		

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		

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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	44	OFDM	6	MAIN
802.11a	5260~5320	52 to 64	60	OFDM	6	MAIN
802.11a	5500~5720	100 to 140	116	OFDM	6	MAIN
802.11a	5745~5825	149 to 165	157	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
802.11a	5260~5320	52 to 64	52,60,64	OFDM	6	MAIN
802.11n_HT20				OFDM	MCS0	MAIN
802.11a	5500~5720	100 to 144	100,116,140	OFDM	6	MAIN
802.11n_HT20				OFDM	MCS0	MAIN
802.11a	5745~5825	149 to 165	149,157,165	OFDM	6	MAIN
802.11n_HT20				OFDM	MCS0	MAIN

#### Note:

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

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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
802.11a	5260~5320	52 to 64	52,60,64	OFDM	6	MAIN
802.11n_HT20				OFDM	MCS0	MAIN
802.11a	5500~5700	100 to 140	100,116,140	OFDM	6	MAIN
802.11n_HT20				OFDM	MCS0	MAIN
802.11a	5745~5825	149 to 165	149,157,165	OFDM	6	MAIN
802.11n_HT20				OFDM	MCS0	MAIN

**Remark: The device will not operate in 5600~5650MHz band for ISED.**

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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	ESCI 7	100950	12/12/2015	12/11/2016
Coaxial Cables	N/A	N30N30-1042-150 cm	N/A	02/07/2016	02/06/2017
LISN	Schwarzbeck	NSLK 8127	8127-648	03/11/2016	03/10/2017
Test Software	Farad	EZ-EMC	Ver. SGS-03A2	N.C.R.	N.C.R.

### 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.

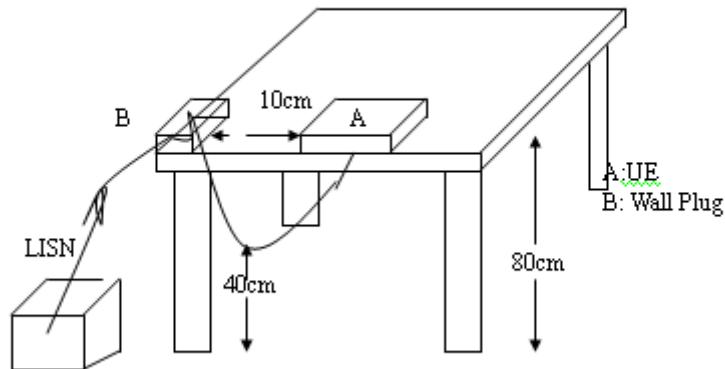
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## 6.4. Test SET-UP



## 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

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

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

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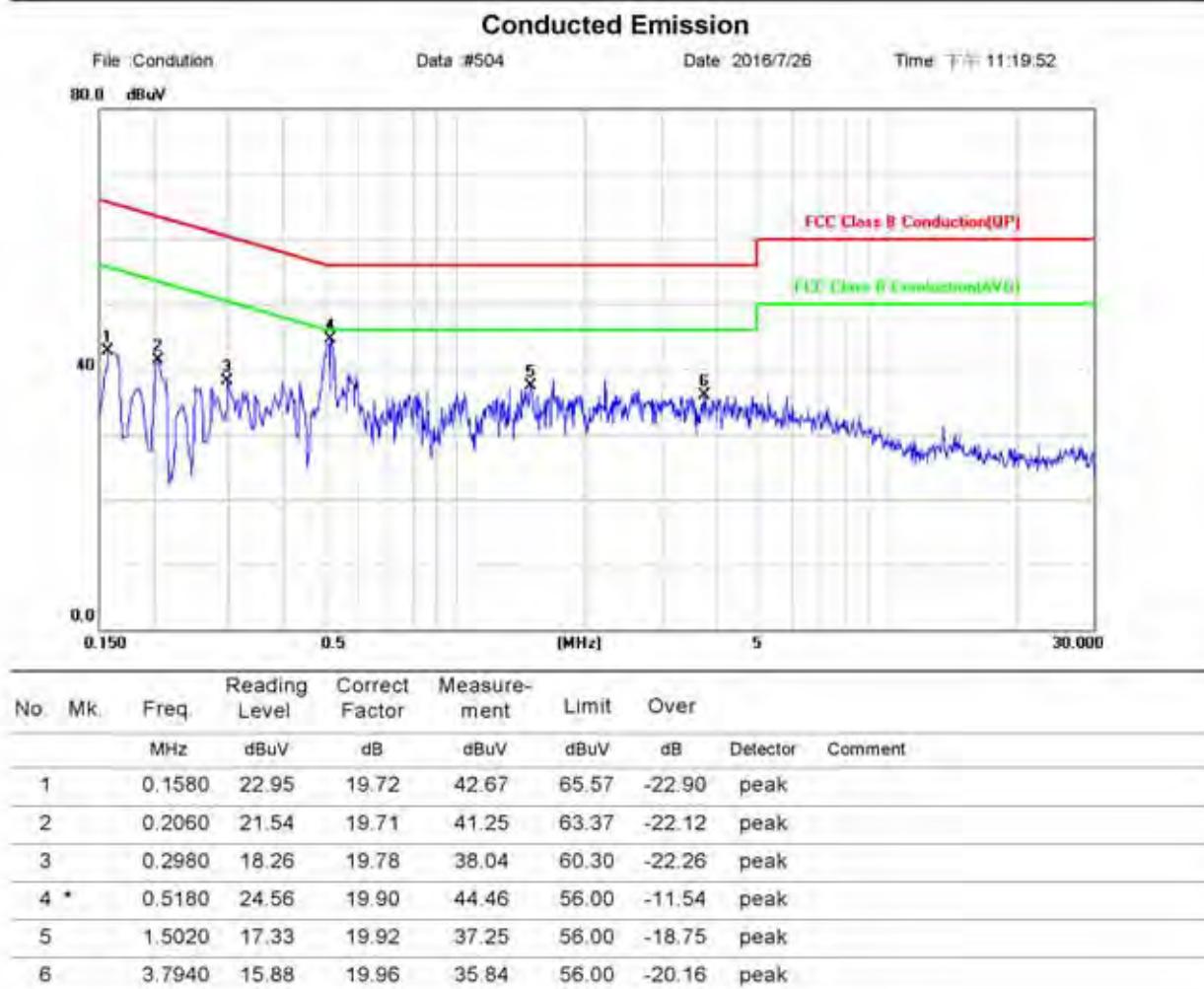
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## AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	Operation mode			Test Date:	Jul. 26, 2016
Temperature:	20	Humidity:	58 %	Test By:	Aken
Adapter:	Model No.: SYS1561-1005			Phase:	L1

Site: Conduction Room Phase: **L1** Temperature: 22 °C  
 Limit: FCC Class B Conduction(QP) Power: AC 120V/60Hz Humidity: 63 %  
 Mode: SYS1561-1005  
 Note:



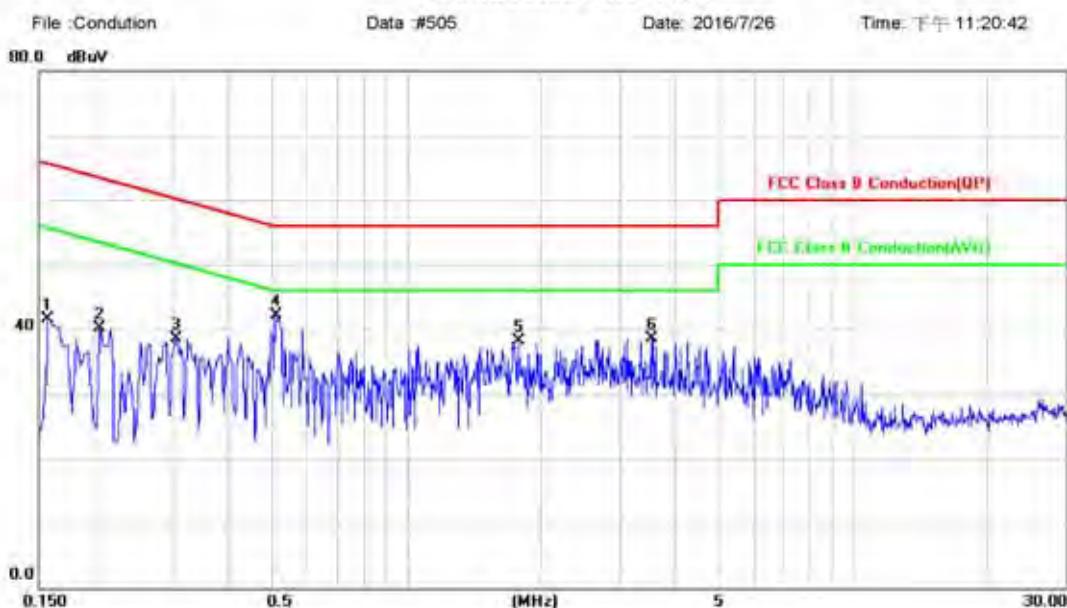
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Site: Conduction Room Phase: **N** Temperature: 22 °C  
 Limit: FCC Class B Conduction(QP) Power: AC 120V/60Hz Humidity: 63 %  
 Mode: SYS1561-1005  
 Note:

### Conducted Emission



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dB	Over	
							Detector	Comment
1	0.1580	21.73	19.73	19.73	41.46	65.57	-24.11	peak
2	0.2060	20.46	19.72	19.72	40.18	63.37	-23.19	peak
3	0.3060	18.71	19.78	19.78	38.49	60.08	-21.59	peak
4 *	0.5100	22.29	19.91	19.91	42.20	56.00	-13.80	peak
5	1.7860	18.21	19.94	19.94	38.15	56.00	-17.85	peak
6	3.5420	18.49	19.96	19.96	38.45	56.00	-17.55	peak

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## 7. DUTY CYCLE TEST SIGNAL

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

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

### Formula:

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

### Measurement Procedure:

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

### Duty Cycle:

Mode	Duty Cycle (%)	Duty Factor (dB) $=10 \log (1/\text{Duty Cycle})$
802.11a	86.62	0.62
802.11n_20	86.00	0.66

Duty Cycle Factor:  $10 \log(1/0.8662) = 0.62$

Duty Cycle Factor:  $10 \log(1/0.86) = 0.66$

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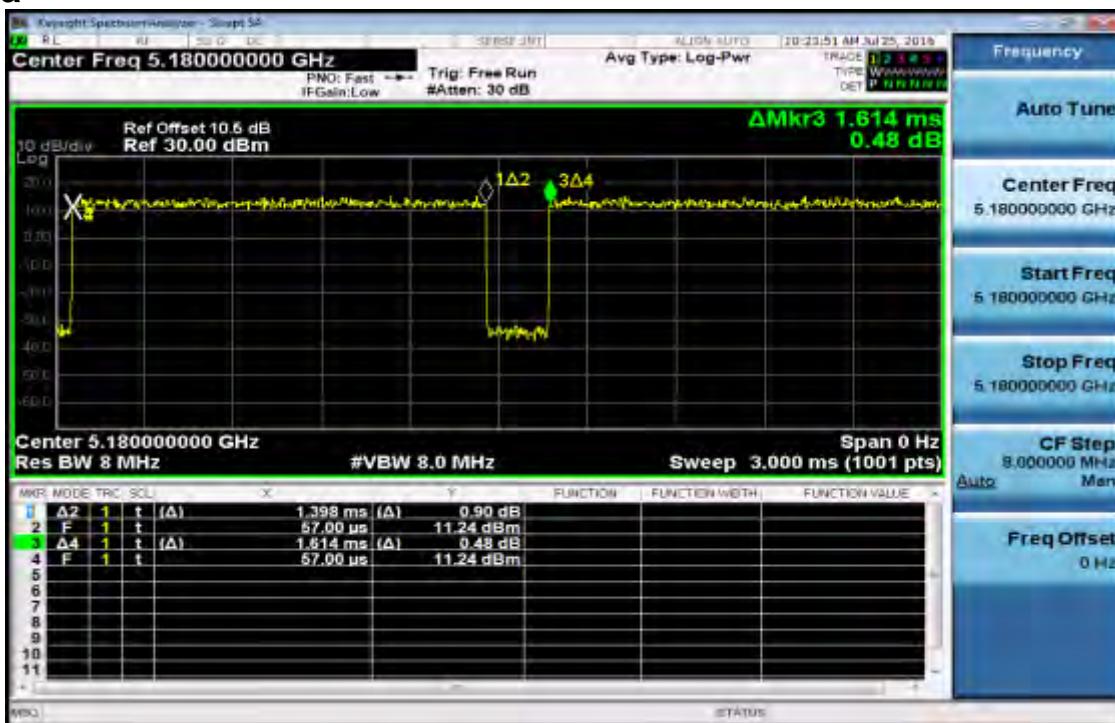
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## DUTY CYCLE TEST SIGNAL Measurement Result

### 802.11a



### 802.11n HT20



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## 8. 26dB & 6dB & 99% EMISSION BANDWIDTH MEASUREMENT

### 8.1 Standard Applicable

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

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

### 8.2 Measurement Procedure

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

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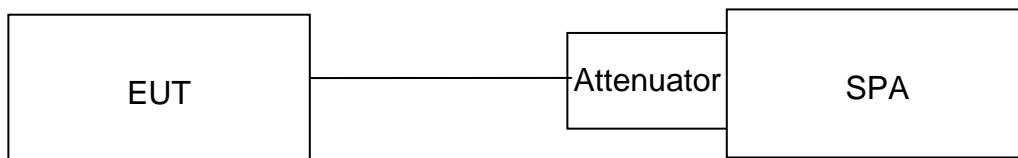
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### 8.3 Measurement Equipment Used

SGS Conducted Room					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum Analyzer	KEYSIGHT	N9010A	MY54510568	04/14/2016	04/13/2017
Power Meter	Anritsu	ML2496A	1326001	06/23/2016	06/22/2017
Power Sensor	Anritsu	MA2411B	1315048	06/23/2016	06/22/2017
Power Sensor	Anritsu	MA2411B	1315049	06/23/2016	06/22/2017
Coaxial Cable 30cm	WOKEN	00100A1F1A195C	RF01	12/12/2015	12/11/2016
DC Block	PASTERNAK	PE8210	RF29	12/12/2015	12/11/2016
Splitter	RF-LAMBAD	RFLT2W1G18G	RF35	12/12/2015	12/11/2016
Attenuator	WOKEN	218FS-10	RF23	12/12/2015	12/11/2016
DC Power Supply	Agilent	E3640A	MY53140006	05/04/2016	05/03/2017

### 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	24.87	13.957
5220	24.49	13.890
5240	24.62	13.913
5260	24.31	13.857
5300	24.46	13.885
5320	25.81	14.117
5500	22.25	13.474
5580	22.93	13.603
5700	22.34	13.491

802.11n\_HT20\_Main

Frequency (MHz)	26dB BW (MHz)	10 Log (B) (dB)
5180	29.13	14.643
5220	24.74	13.934
5240	28.30	14.518
5260	26.69	14.263
5300	23.99	13.801
5320	26.37	14.211
5500	24.20	13.838
5580	26.24	14.189
5700	23.81	13.767

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## 99% Bandwidth

## 802.11a\_Main

Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)
5180	16.323	12.128
5220	16.422	12.154
5240	16.327	12.129
5260	16.385	12.144
5300	16.633	12.210
5320	16.659	12.216
5500	16.274	12.115
5580	16.366	12.139
5700	16.501	12.175

## 802.11n\_HT20\_Main

Frequency (MHz)	99% BW (MHz)	10 Log (B) (dB)
5180	17.467	12.422
5220	17.718	12.484
5240	17.479	12.425
5260	17.413	12.409
5300	17.542	12.441
5320	17.495	12.429
5500	17.628	12.462
5580	17.423	12.411
5700	17.722	12.485

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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	12.94	11.118
5785	13.75	11.382
5825	13.84	11.410

**802.11n\_HT20\_Main**

Frequency (MHz)	6dB BW (MHz)	10 Log (B) (dB)
5745	14.03	11.469
5785	15.09	11.787
5825	14.22	11.528

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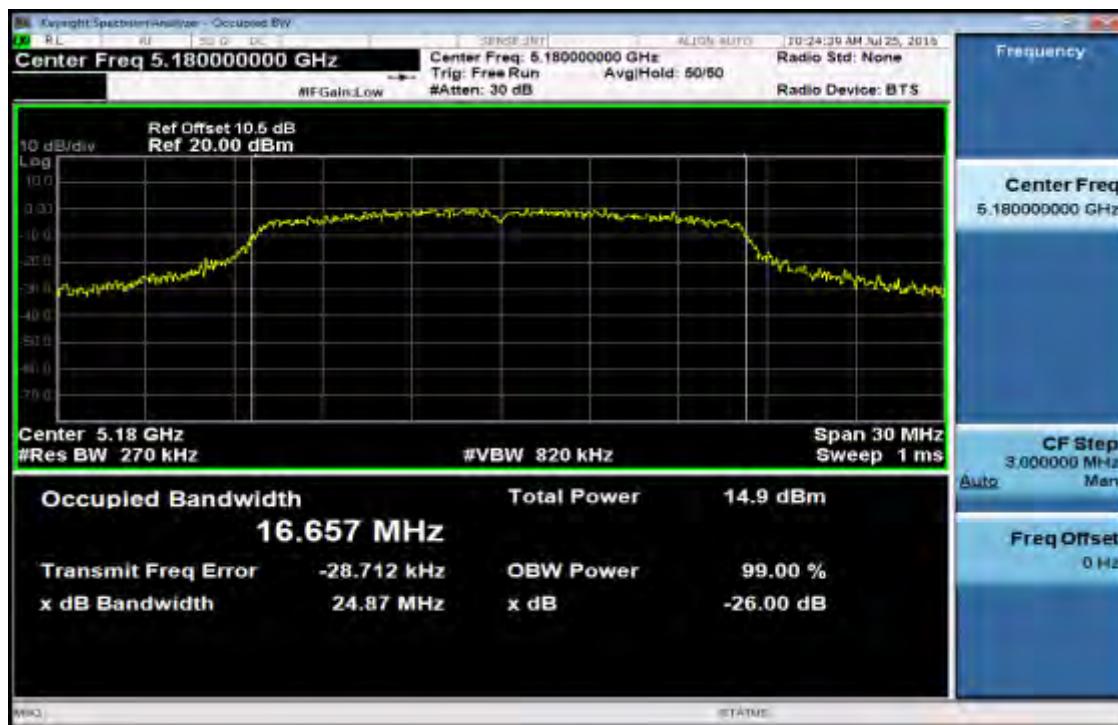
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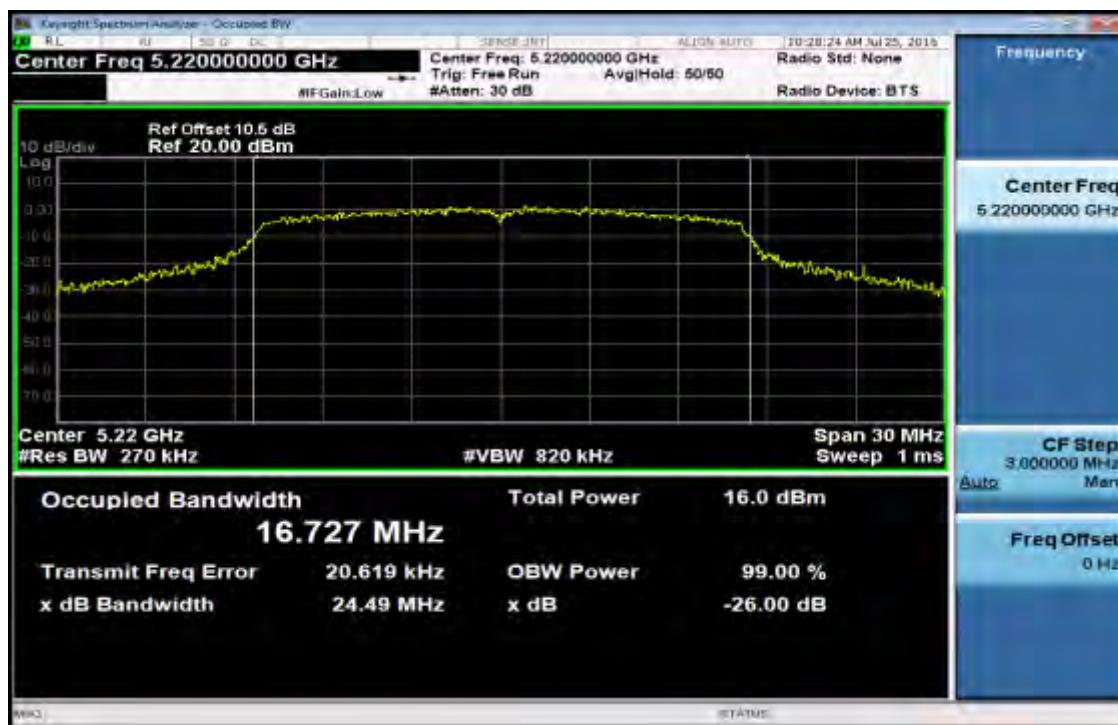
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## 802.11a, 5150~5250 MHz (Main)

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



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



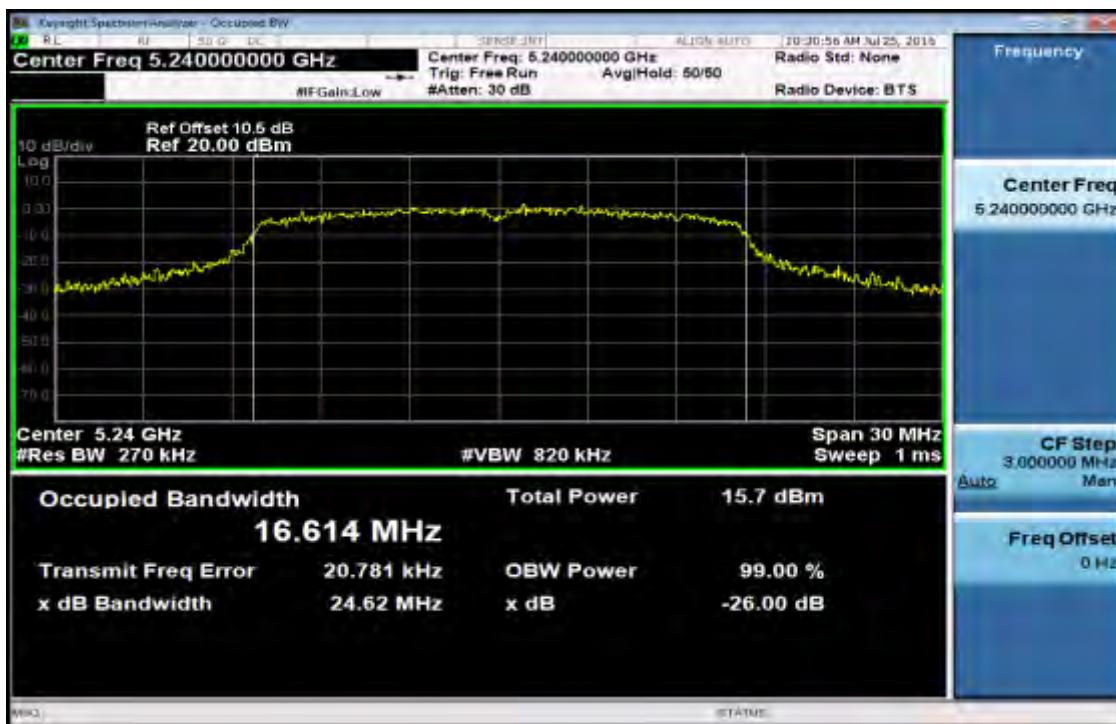
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## 26dB Band Width Test Data CH-High (5240MHz)

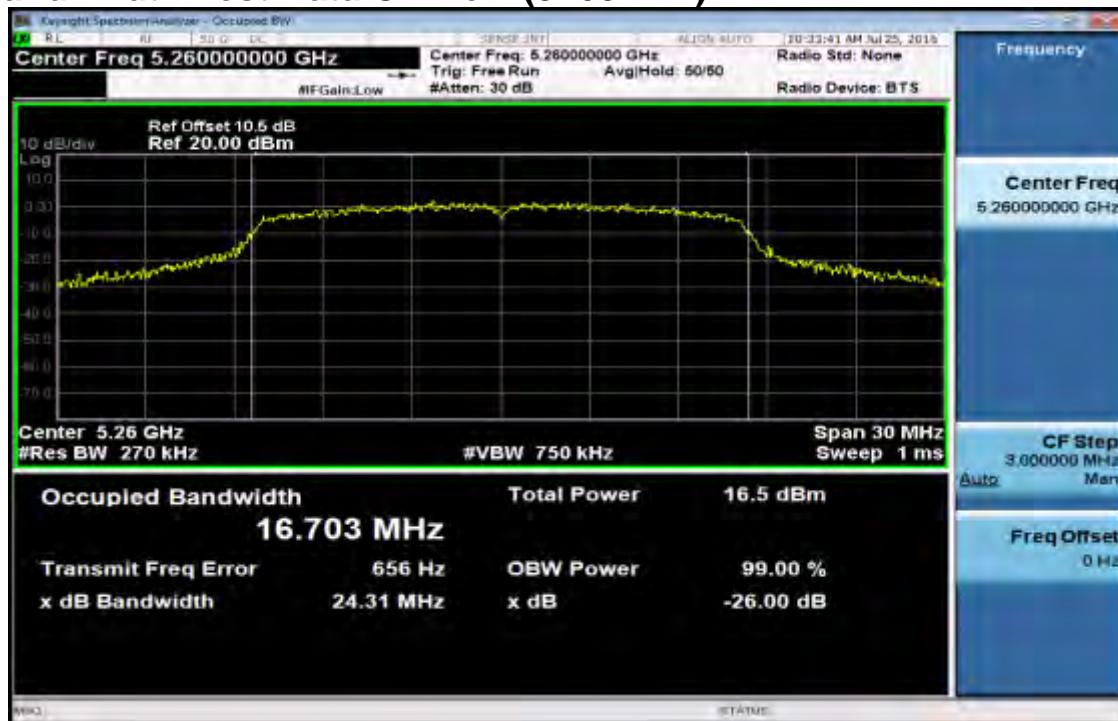


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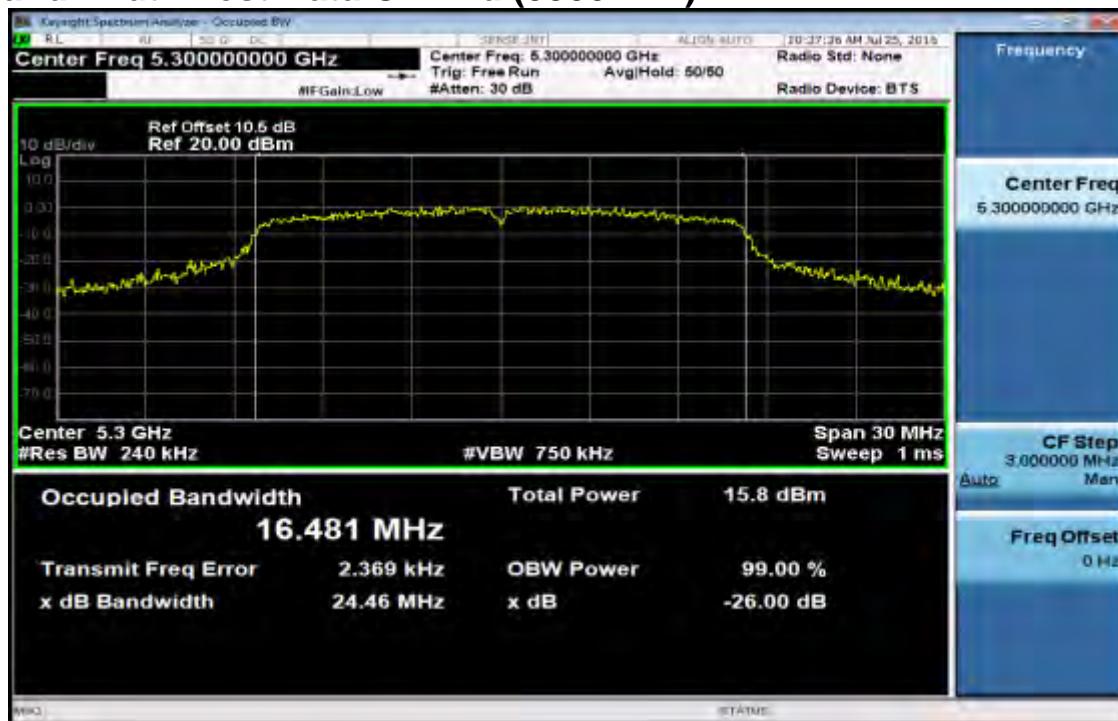
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## 802.11a, 5250~5350 MHz (Main) 26dB Band Width Test Data CH-Low (5260MHz)



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

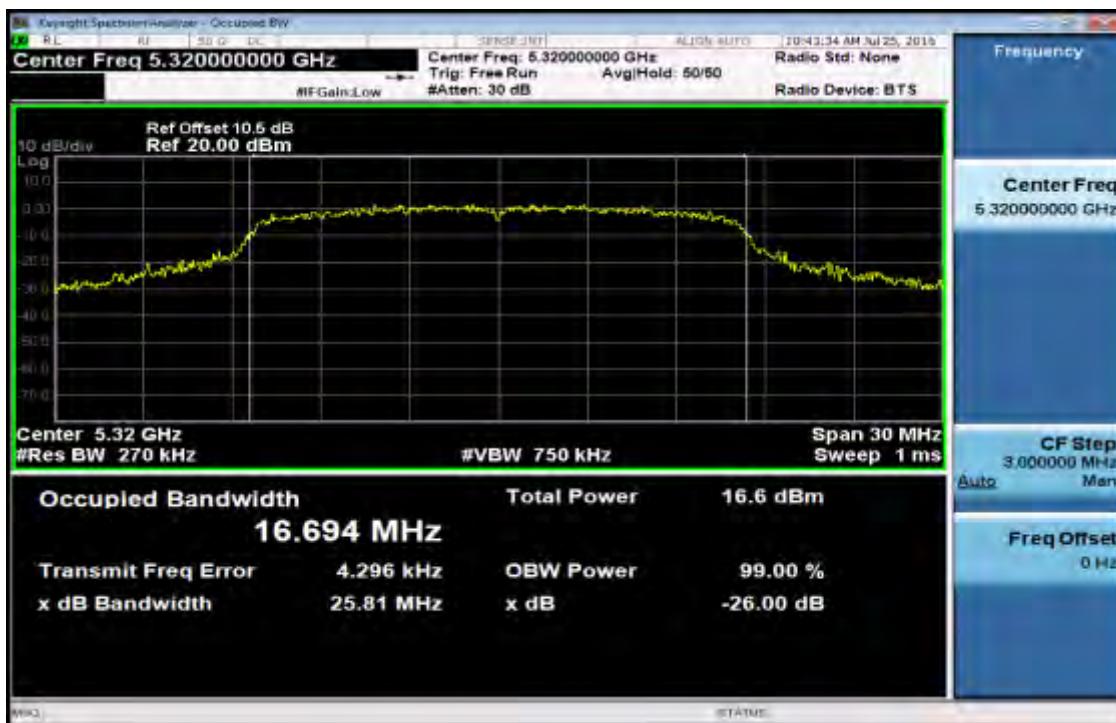


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## 26dB Band Width Test Data CH-High (5320MHz)

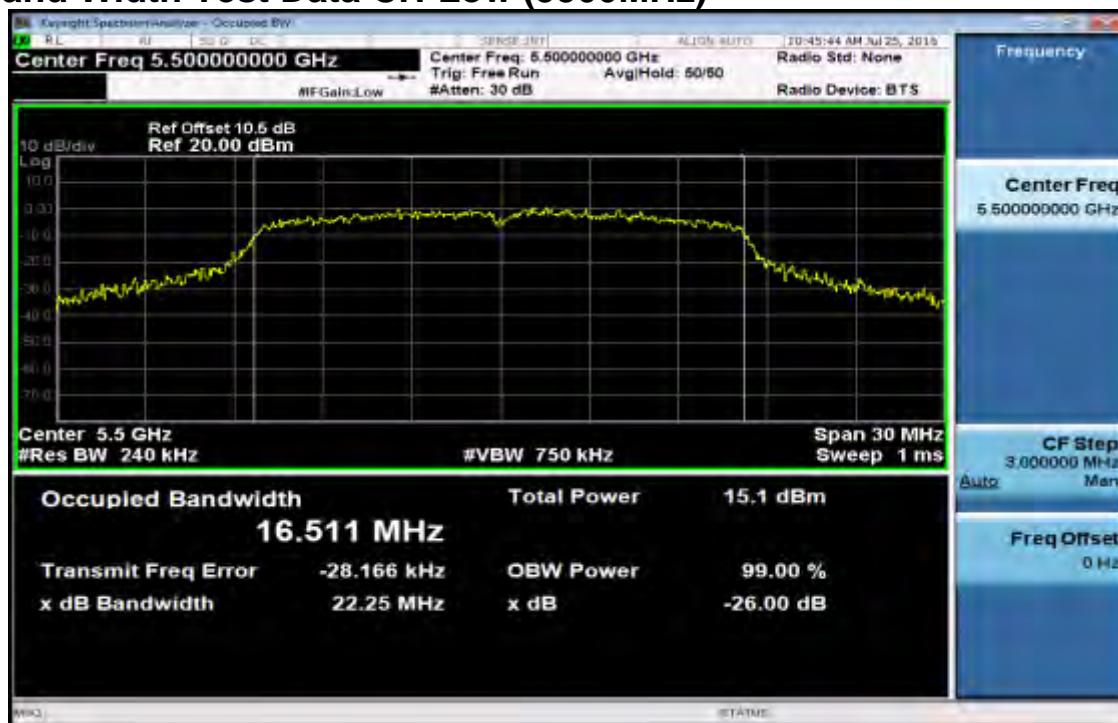


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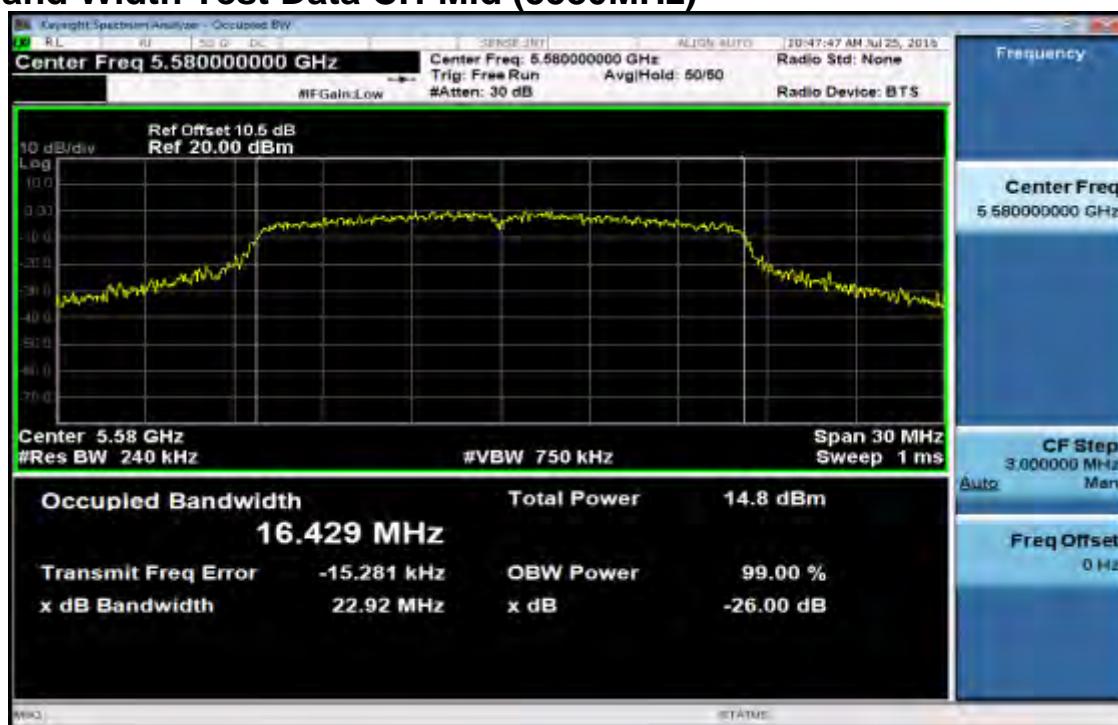
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## 802.11a, 5470~5725 MHz (Main) 26dB Band Width Test Data CH-Low (5500MHz)



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

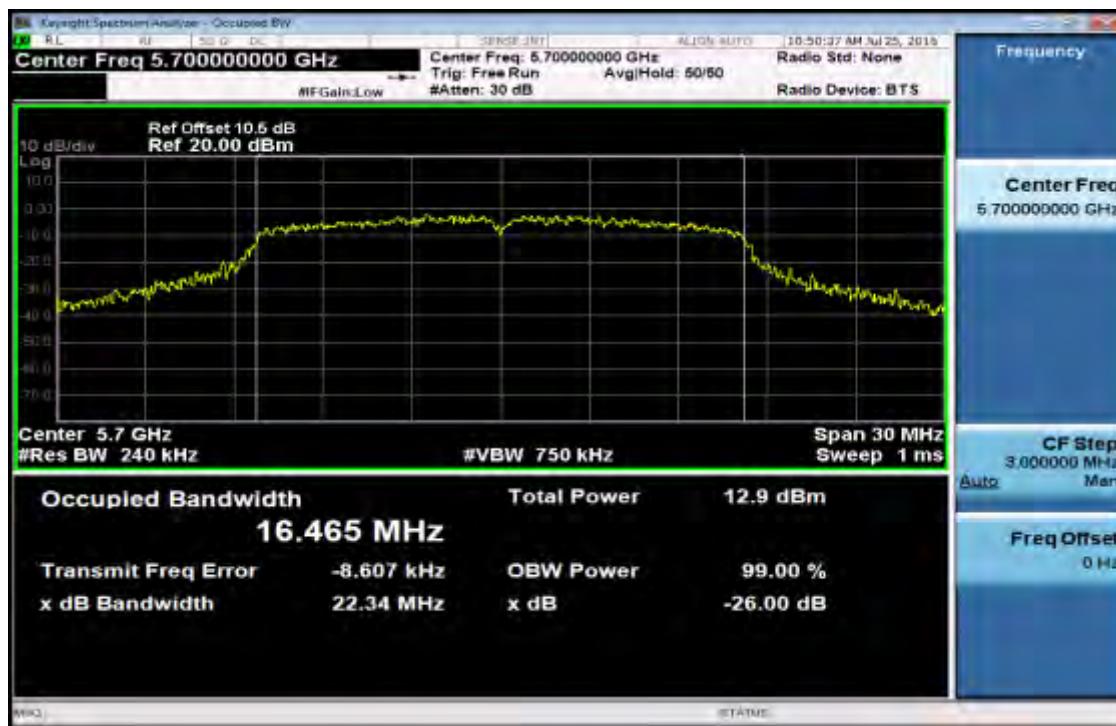


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## 26dB Band Width Test Data CH-High (5700MHz)



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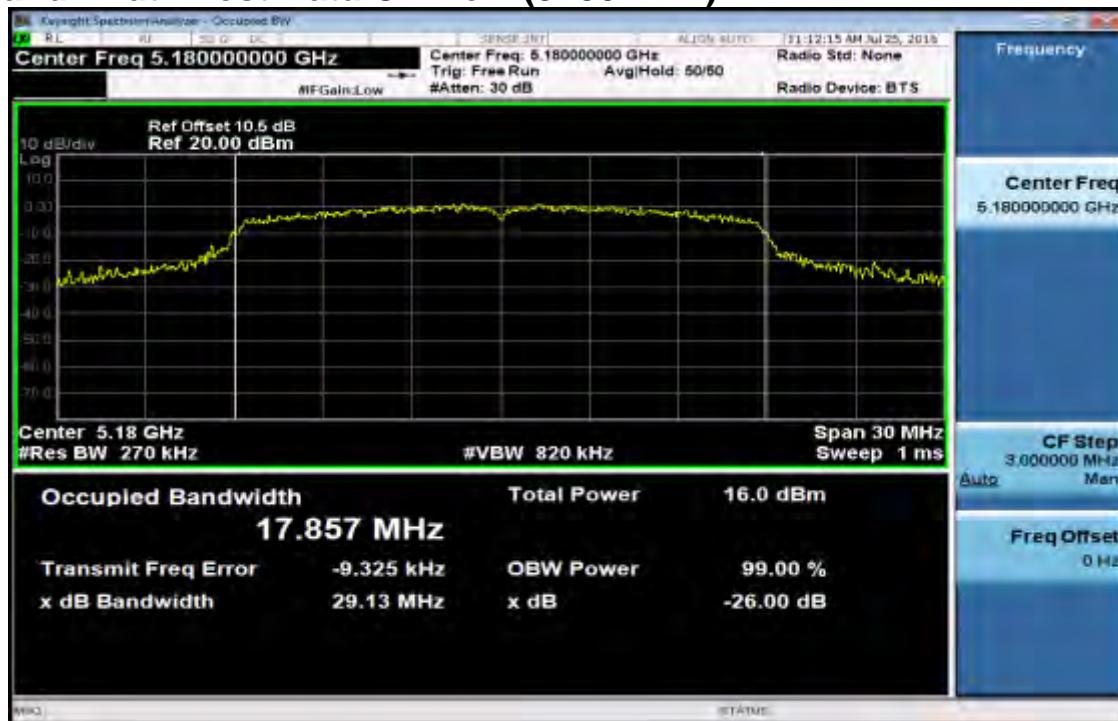
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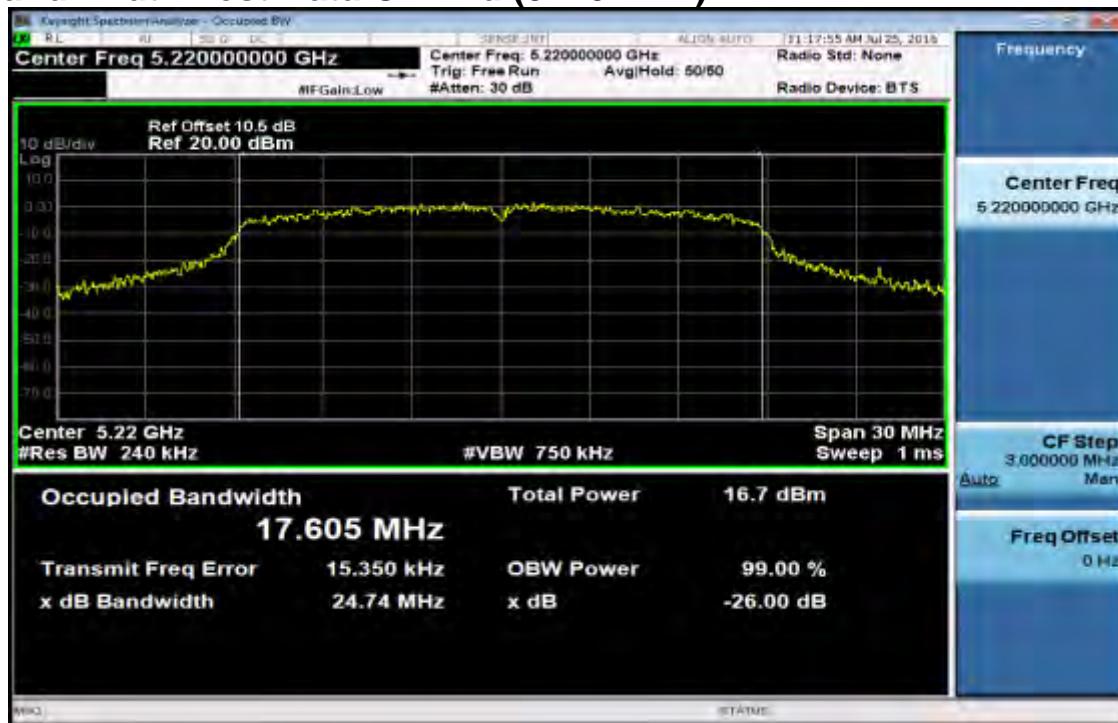
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## 802.11n HT20, 5150~5250 MHz (Main) 26dB Band Width Test Data CH-Low (5180 MHz)



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

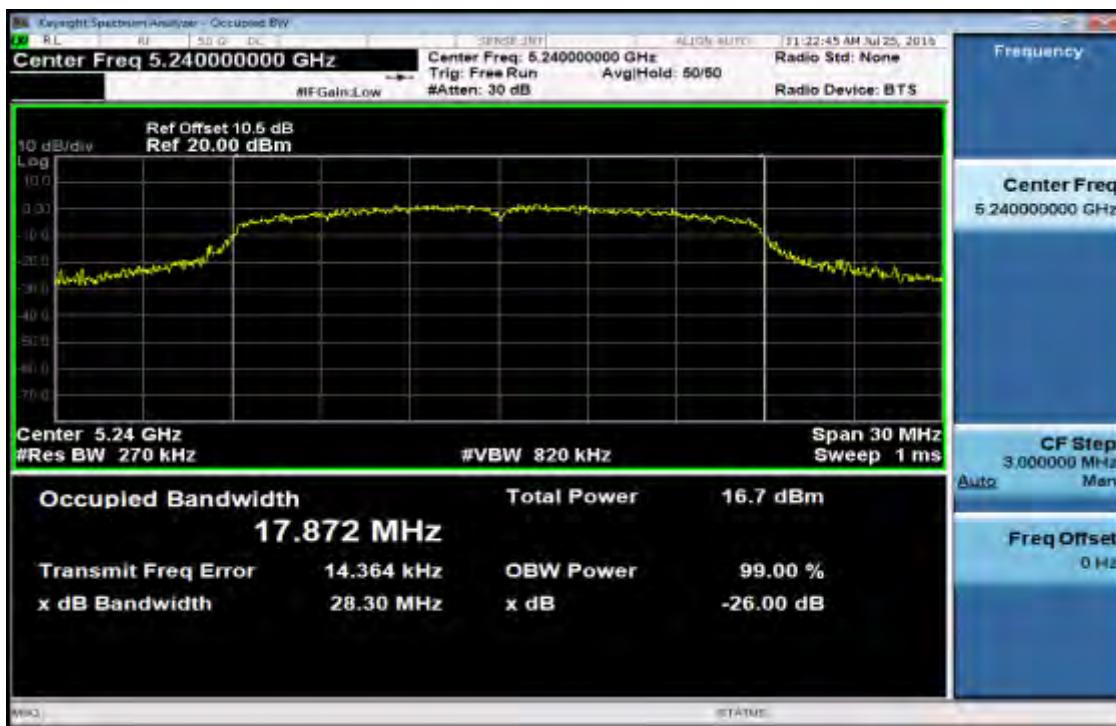


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## 26dB Band Width Test Data CH-High (5240 MHz)

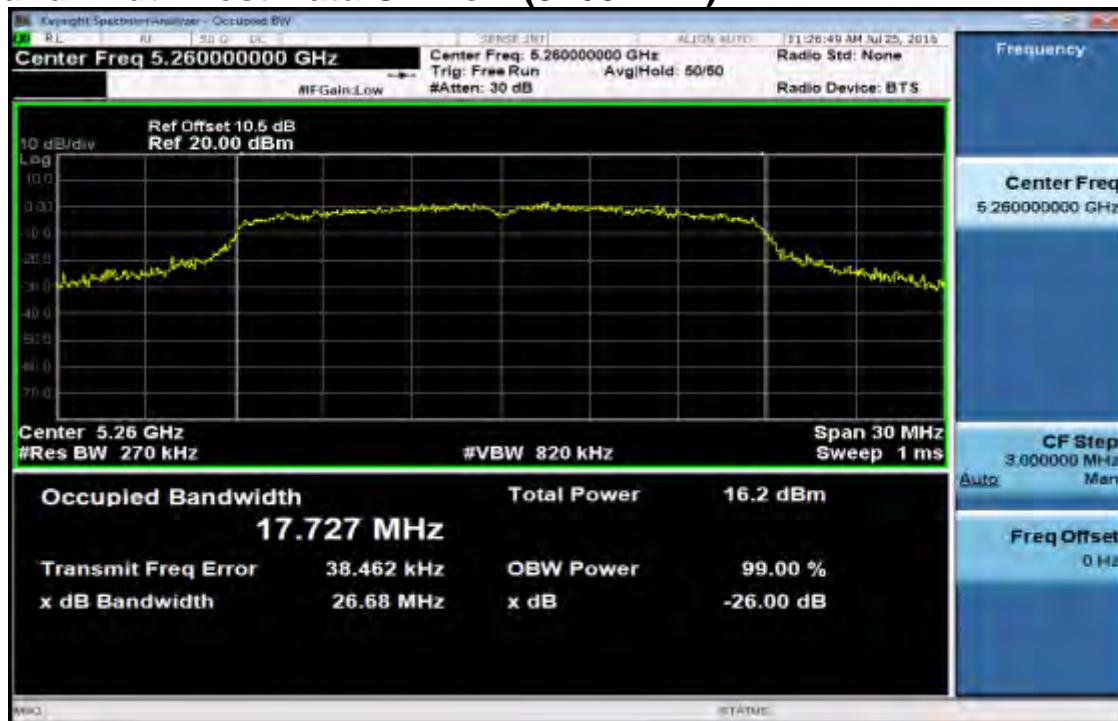


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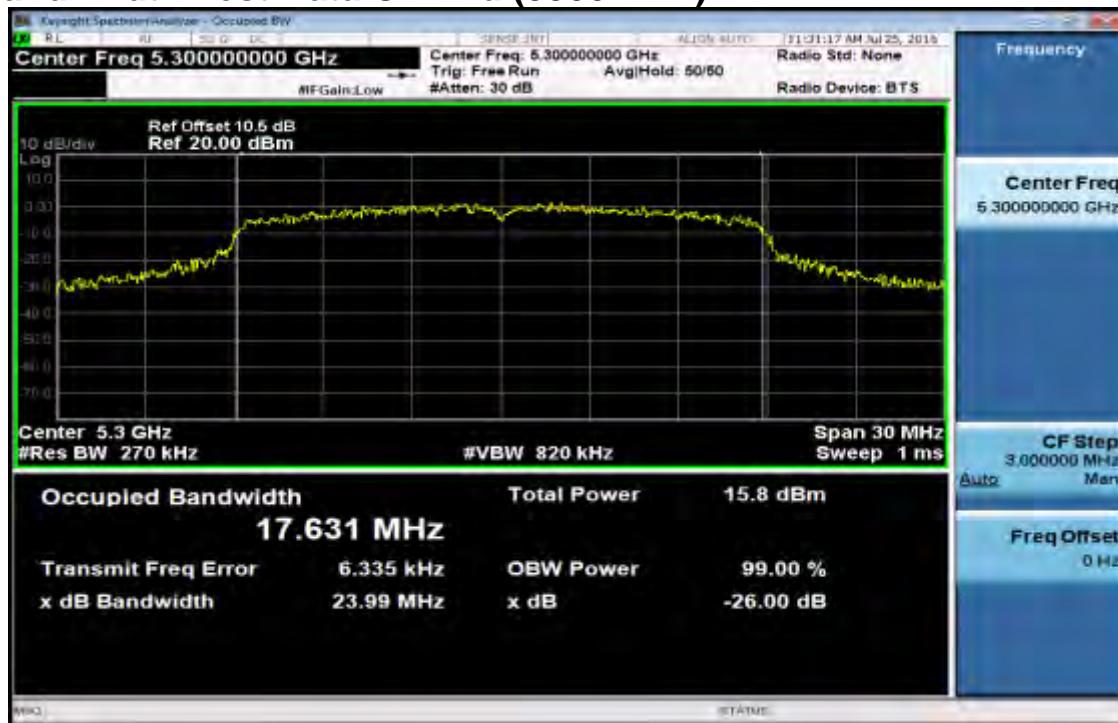
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## 802.11n HT20, 5250~5350 MHz (Main) 26dB Band Width Test Data CH-Low (5260 MHz)



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

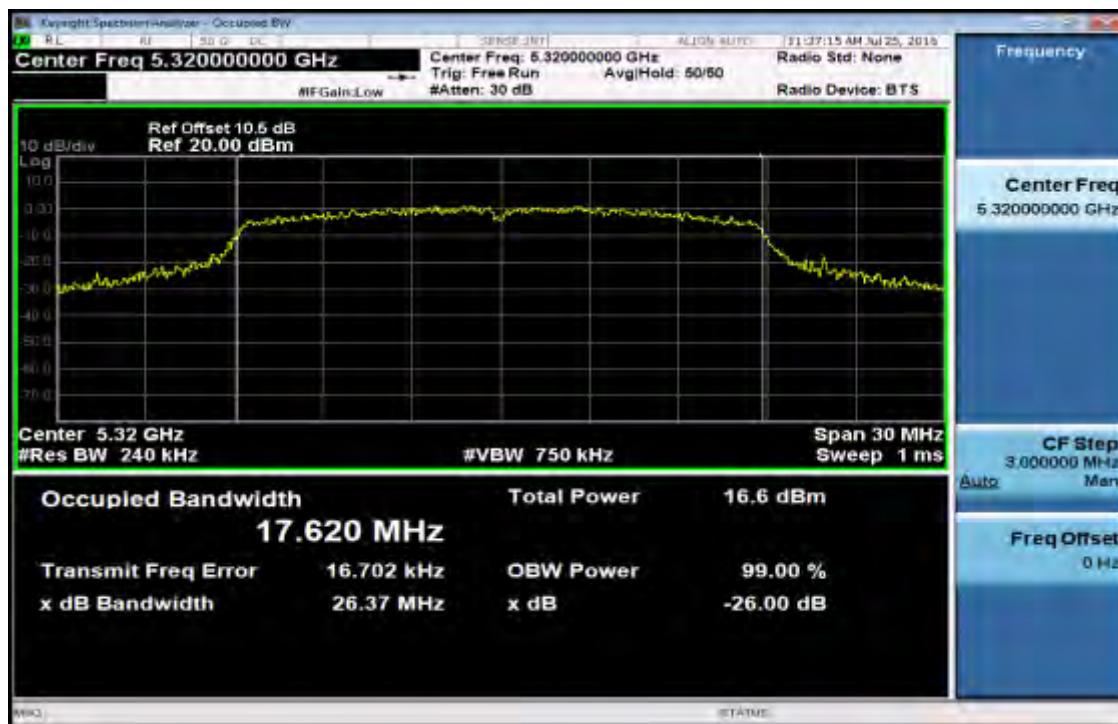


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## 26dB Band Width Test Data CH-High (5320 MHz)

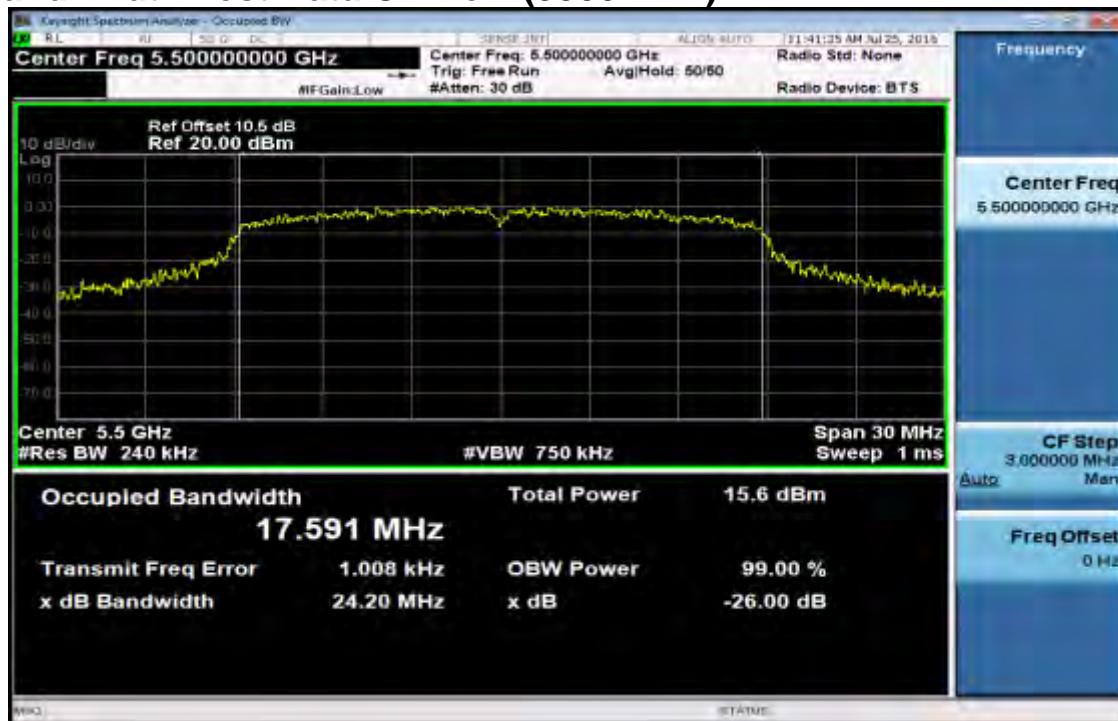


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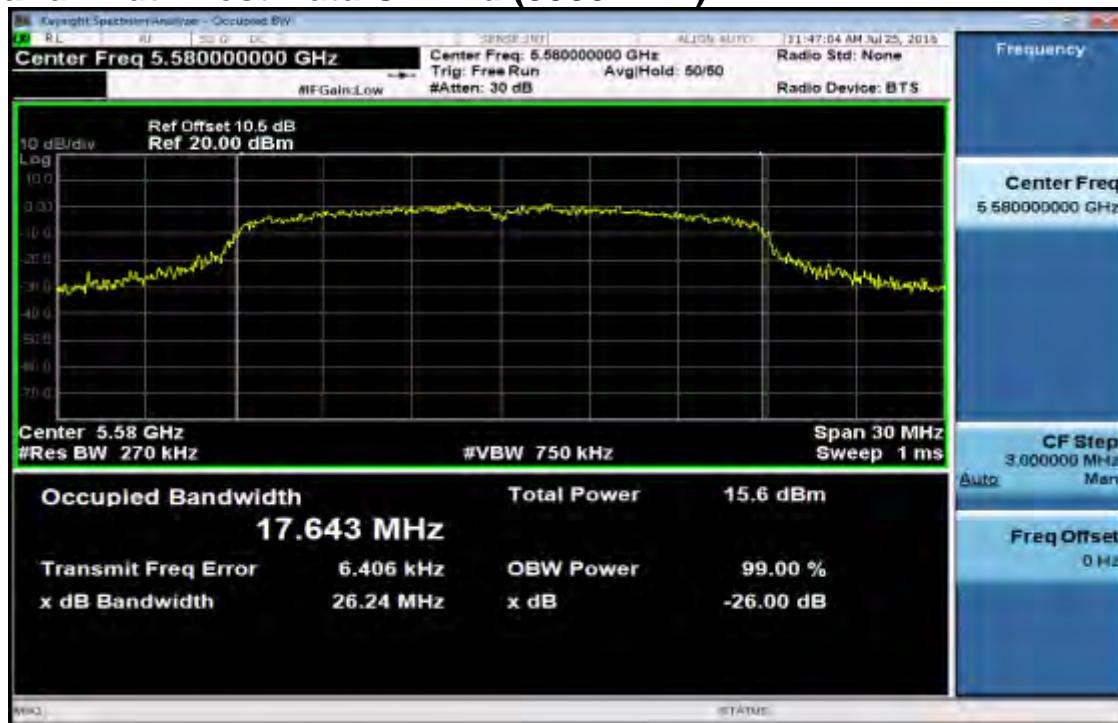
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## 802.11n HT20, 5470~5725 MHz (Main) 26dB Band Width Test Data CH-Low (5500 MHz)



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

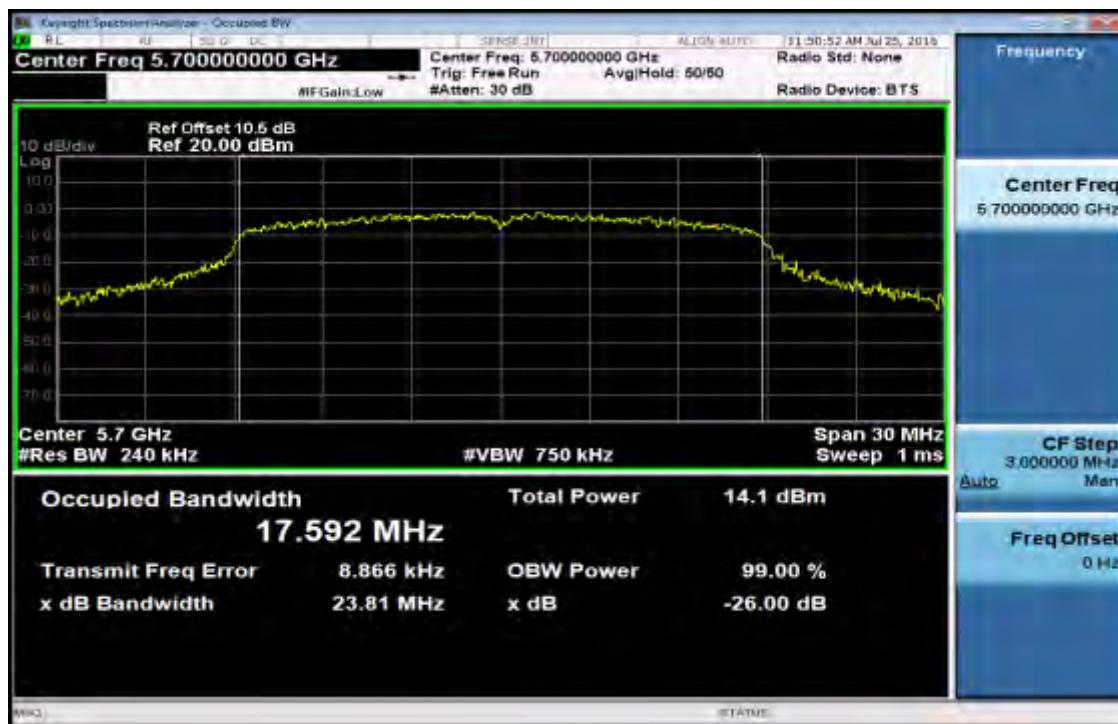


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## 26dB Band Width Test Data CH-High (5700 MHz)



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t (886-2) 2299-3279

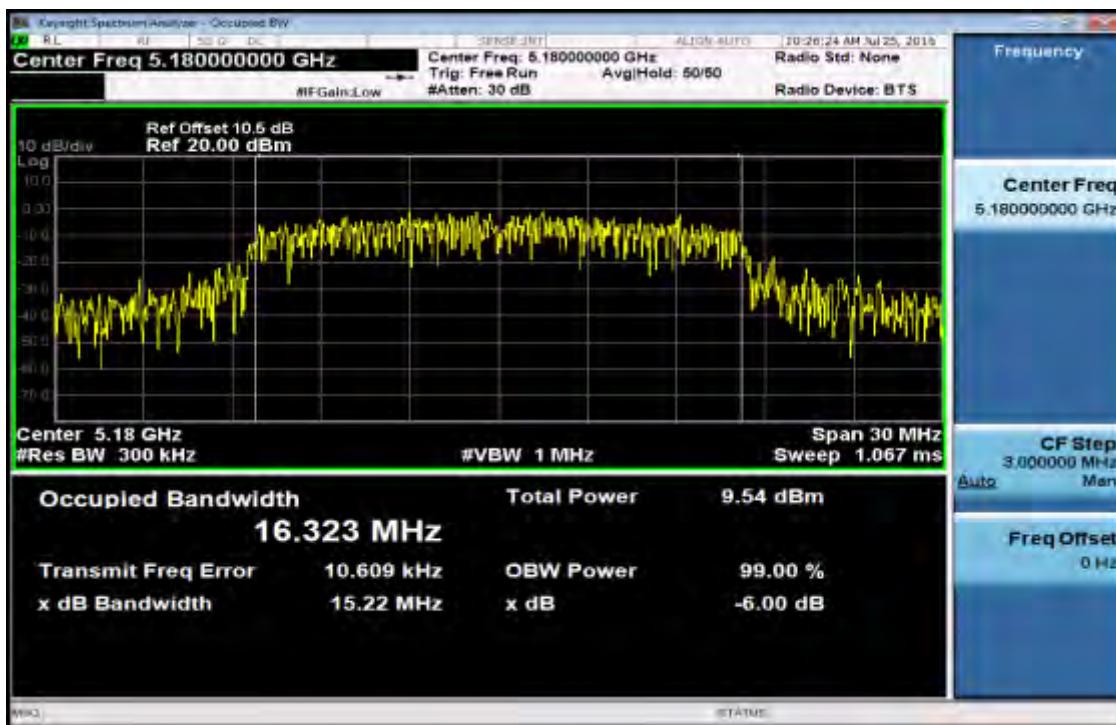
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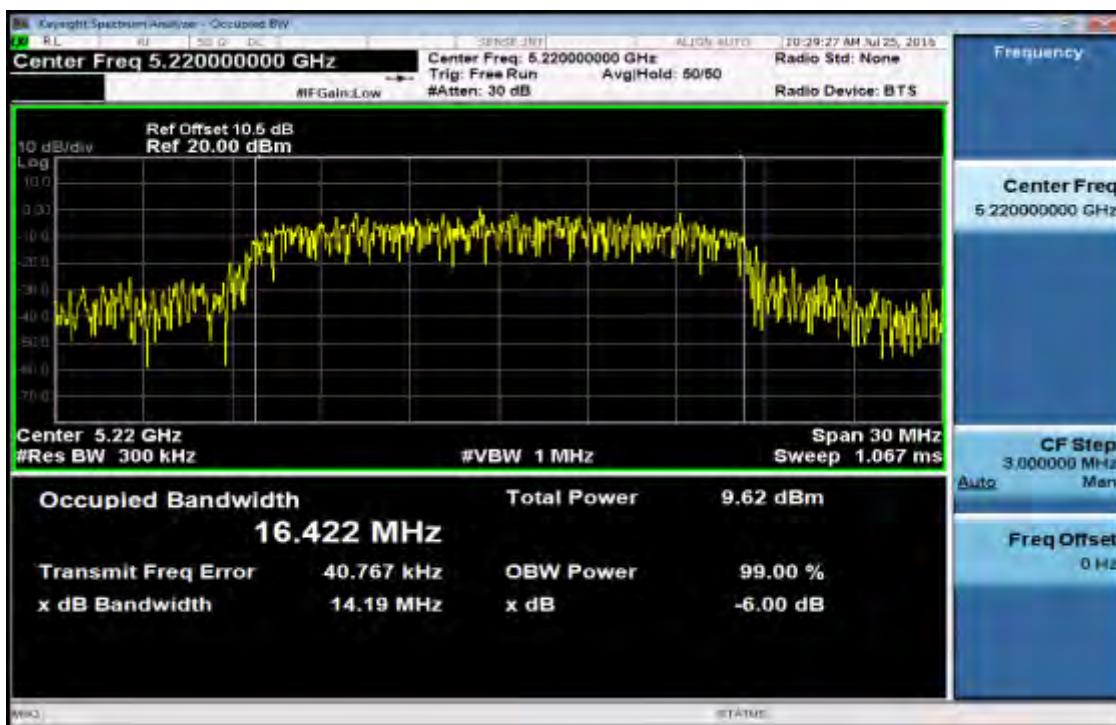
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## 802.11a, 5150~5250 MHz (Main)

### 99% Band Width Test Data CH-Low (5180MHz)



### 99% Band Width Test Data CH-Mid (5220MHz)

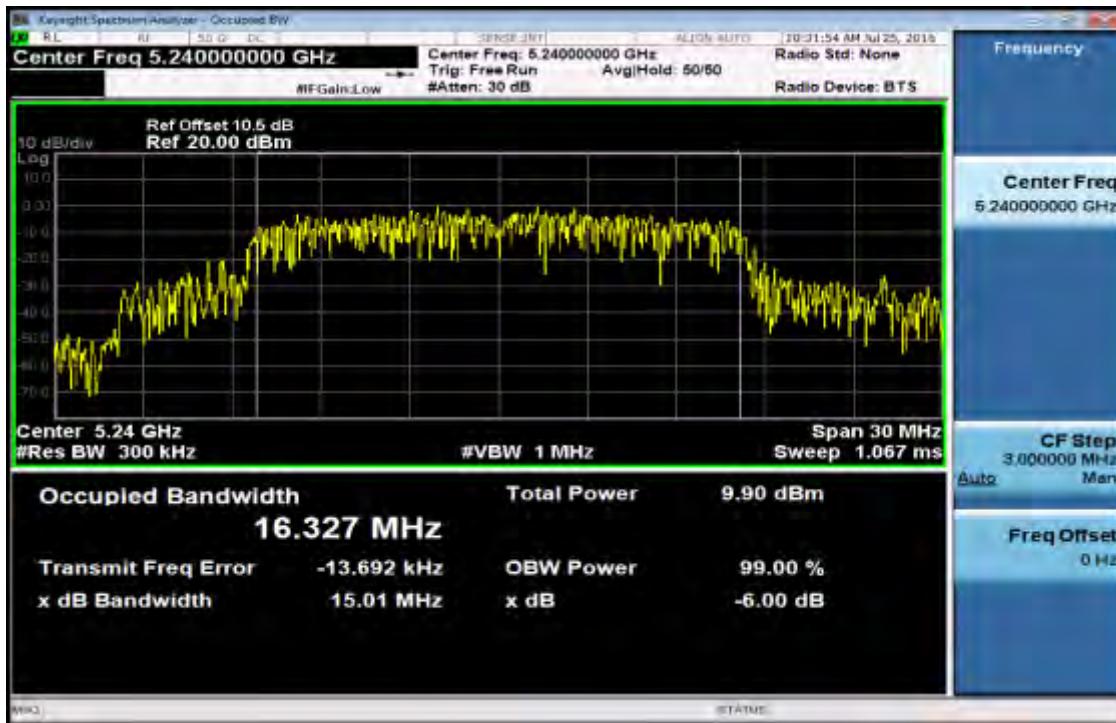


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## 99% Band Width Test Data CH-High (5240MHz)

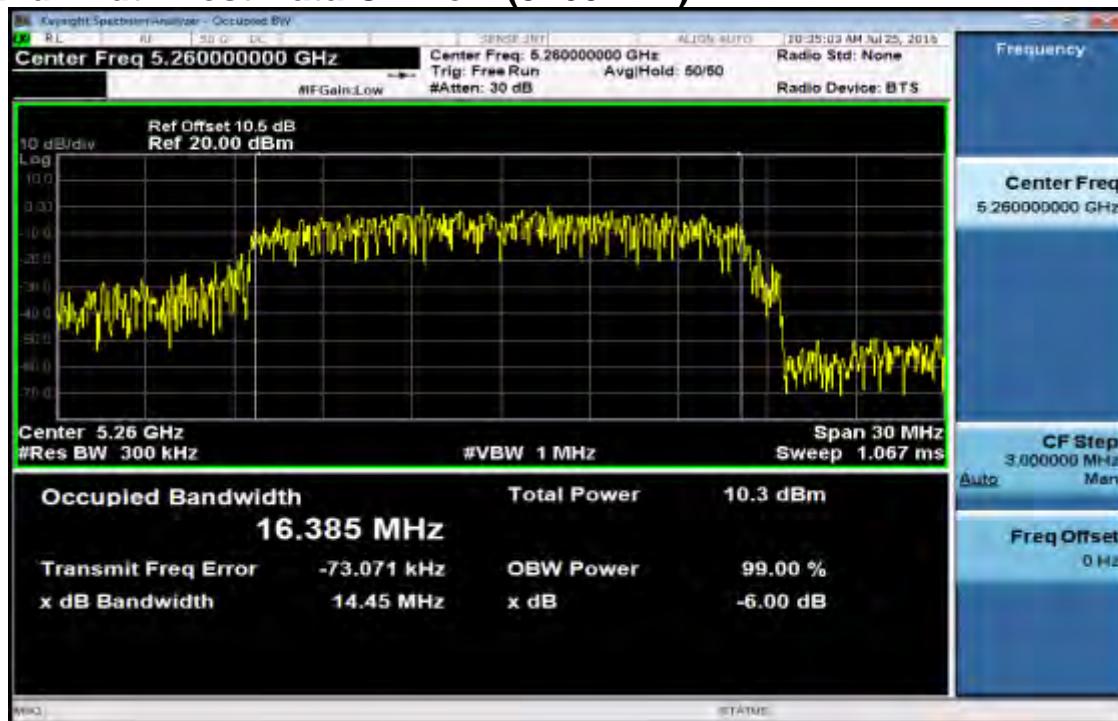


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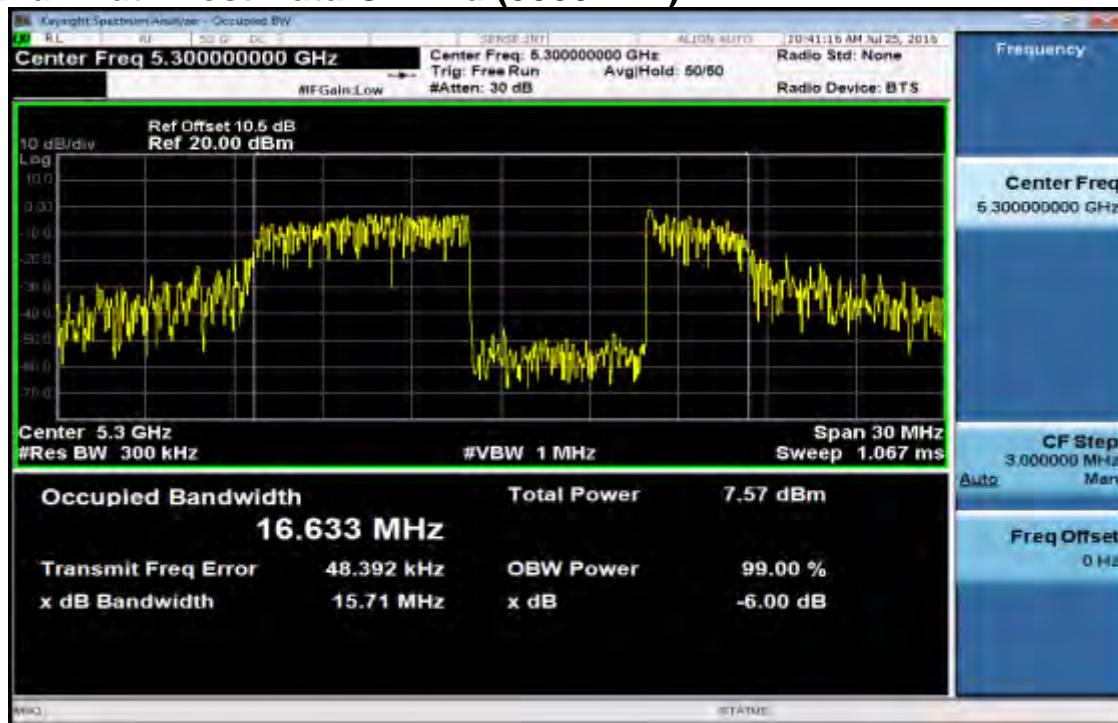
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## 802.11a, 5250~5350 MHz (Main) 99% Band Width Test Data CH-Low (5260MHz)



## 99% Band Width Test Data CH-Mid (5300MHz)



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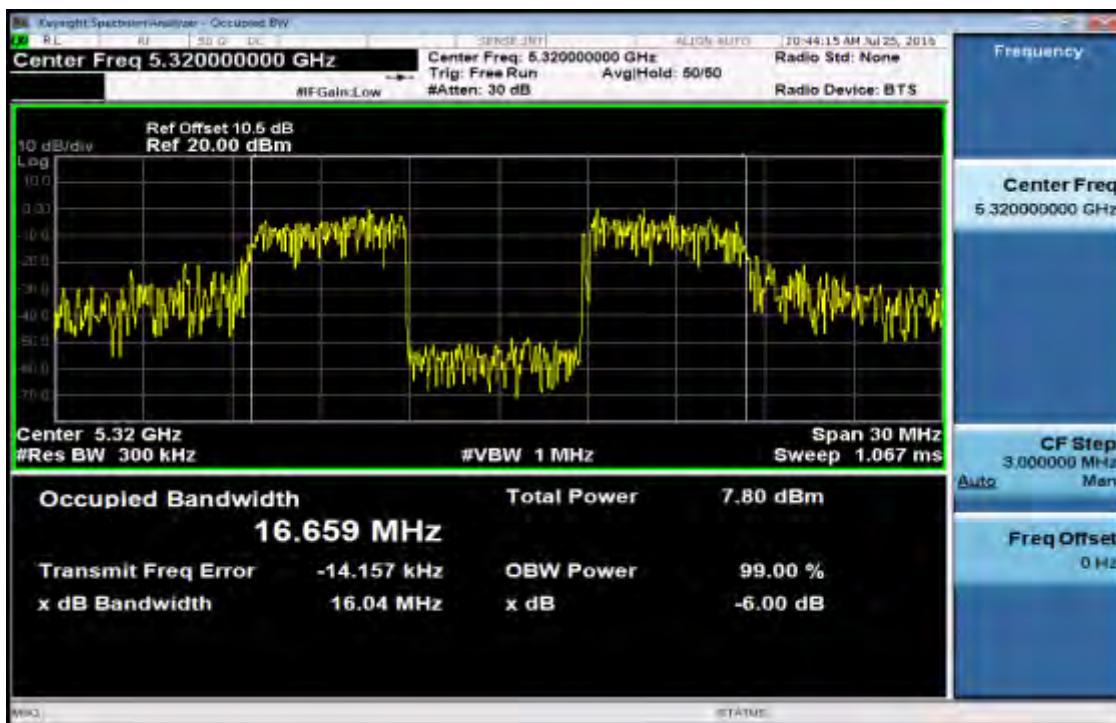
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## 99% Band Width Test Data CH-High (5320MHz)

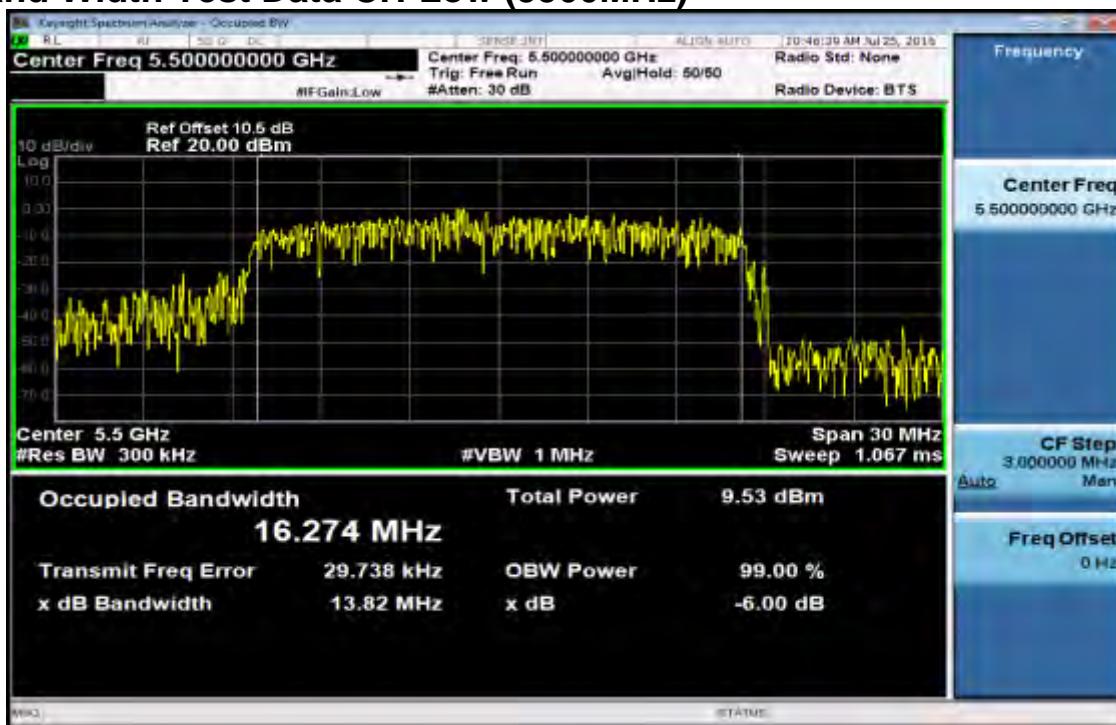


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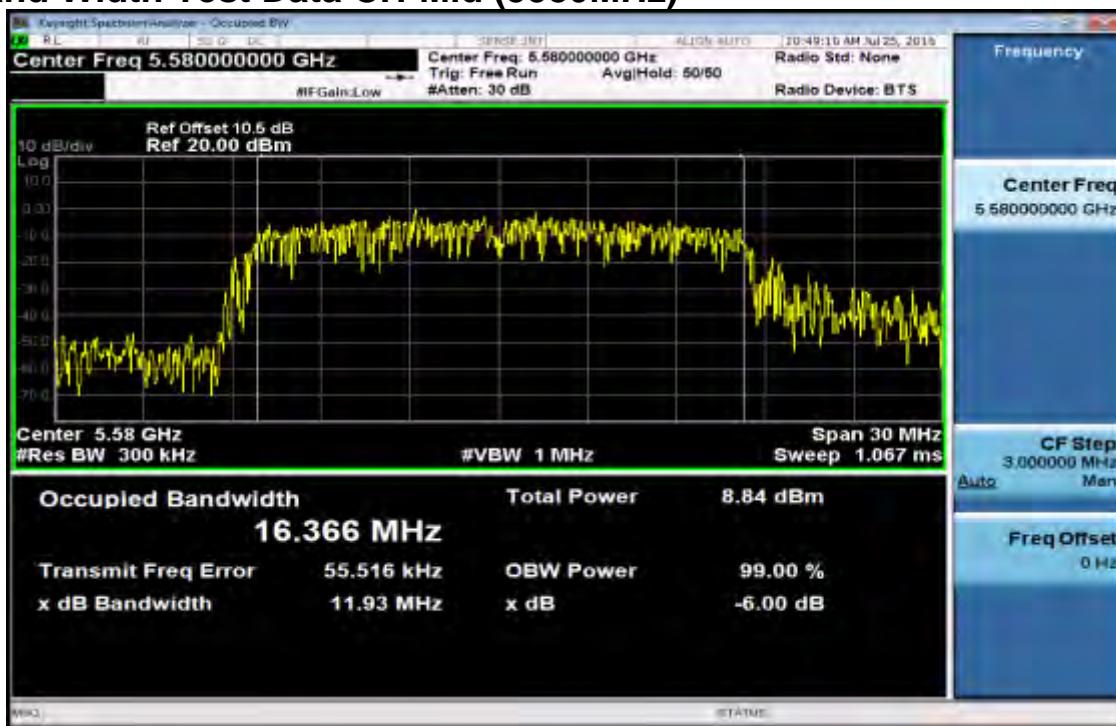
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## 802.11a, 5470~5725 MHz (Main) 99% Band Width Test Data CH-Low (5500MHz)



## 99% Band Width Test Data CH-Mid (5580MHz)

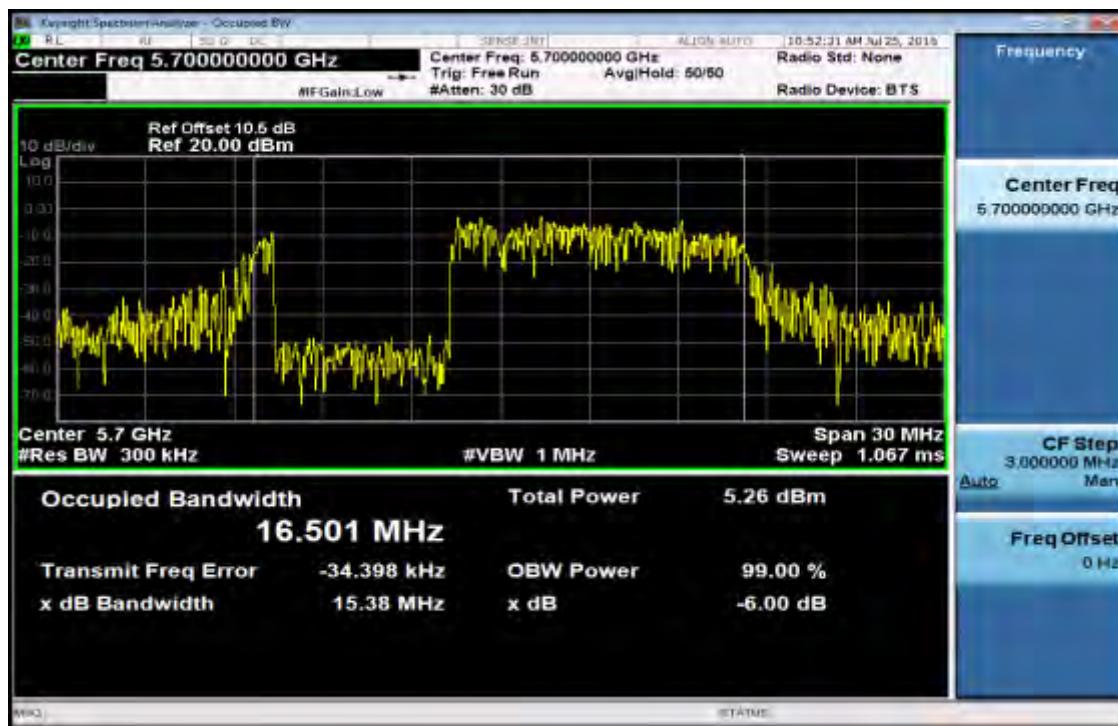


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## 99% Band Width Test Data CH-High (5700MHz)

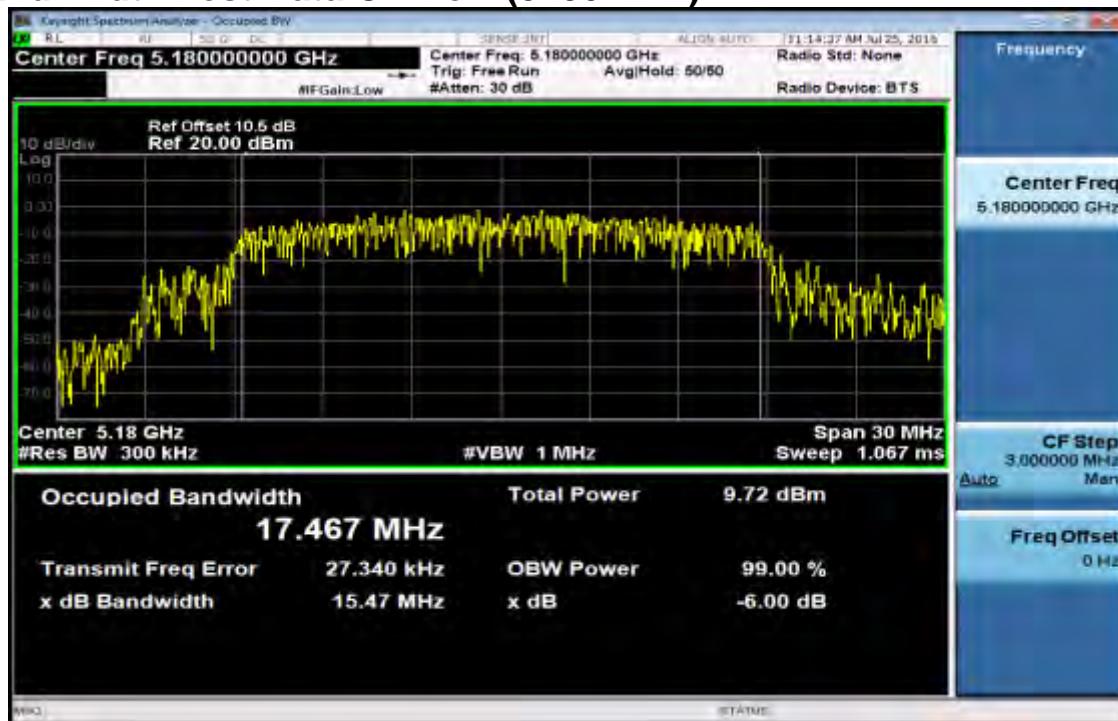


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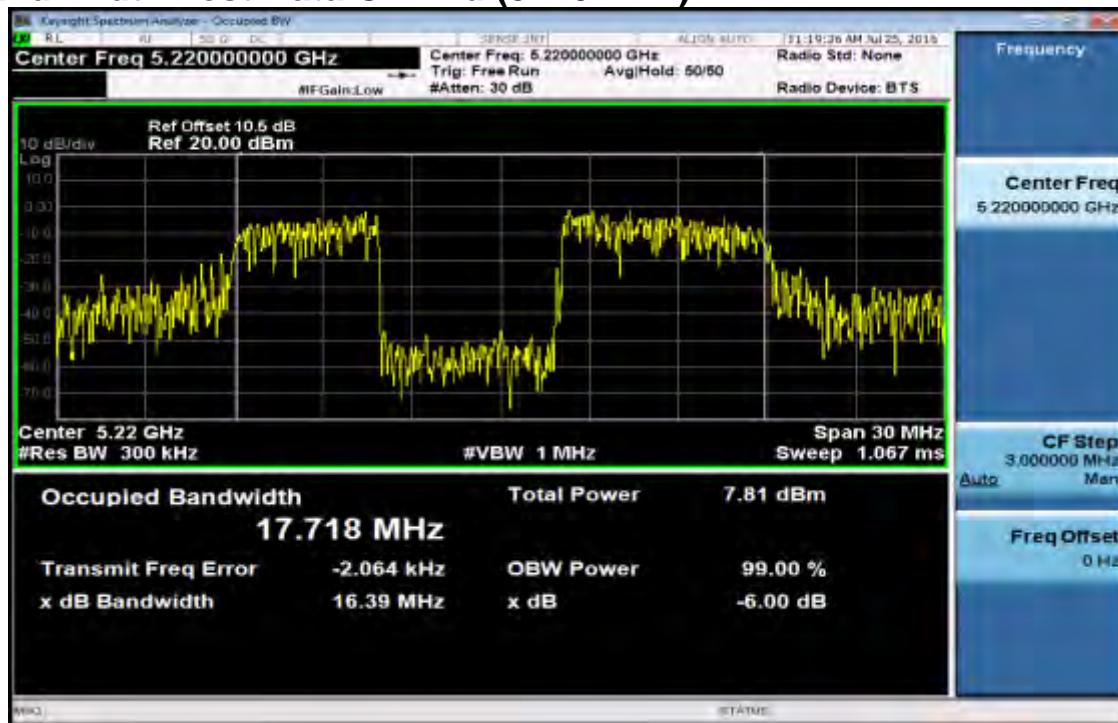
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## 802.11n HT20, 5150~5250 MHz (Main) 99% Band Width Test Data CH-Low (5180 MHz)



## 99% Band Width Test Data CH-Mid (5220 MHz)



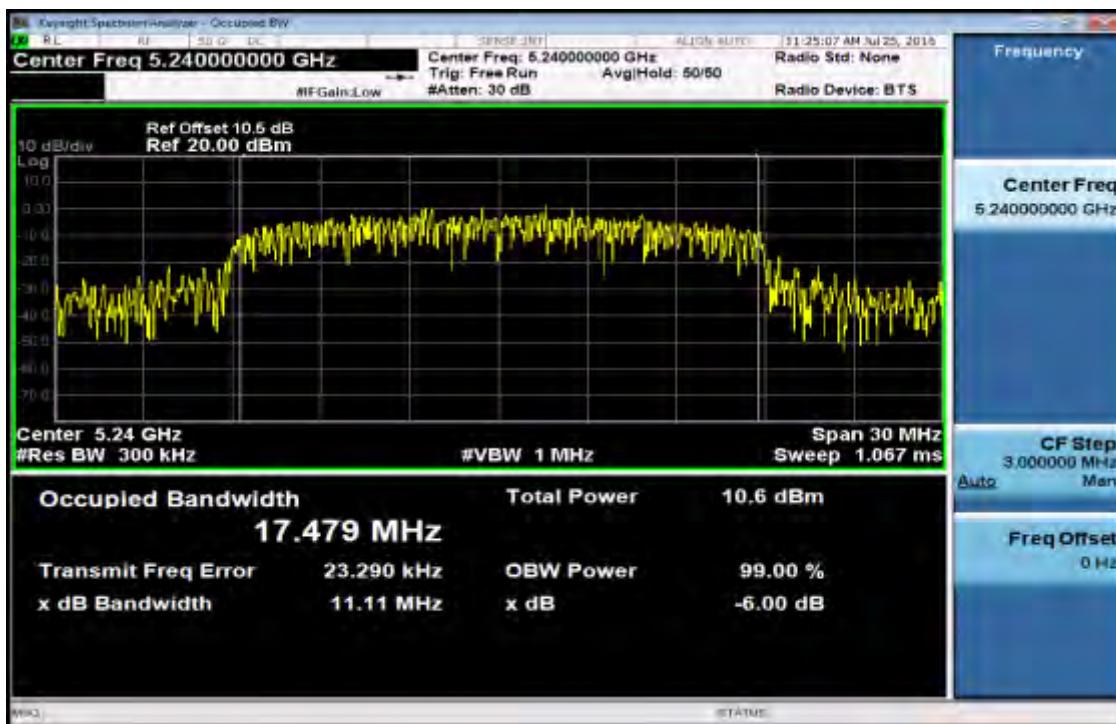
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## 99% Band Width Test Data CH-High (5240 MHz)



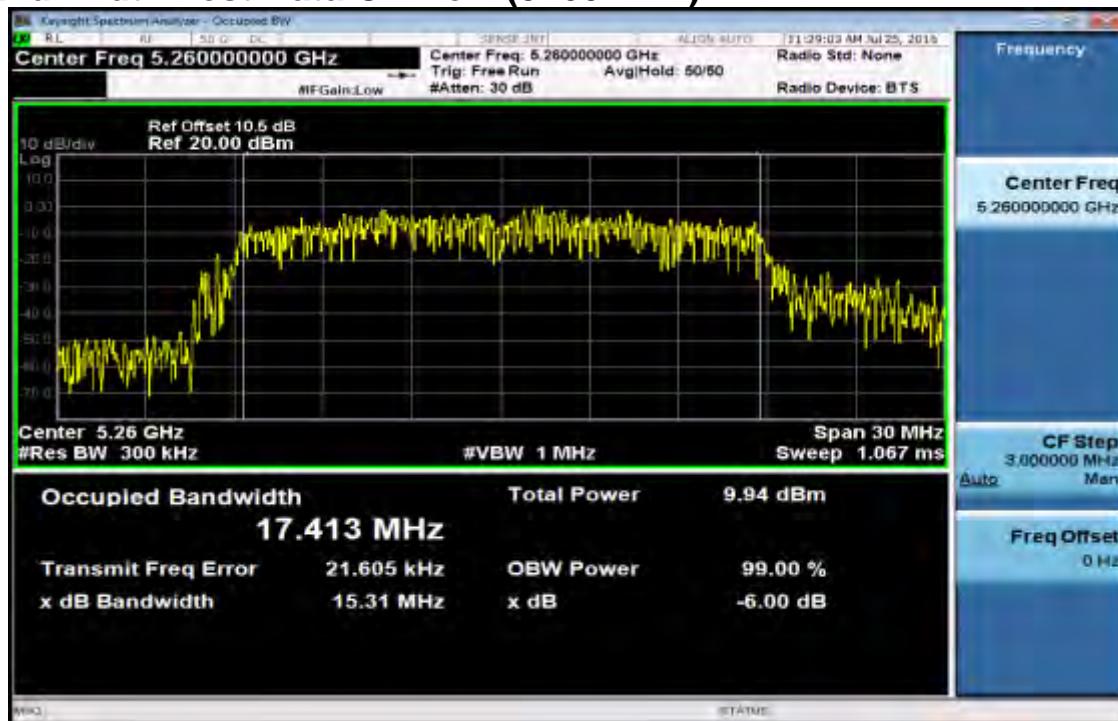
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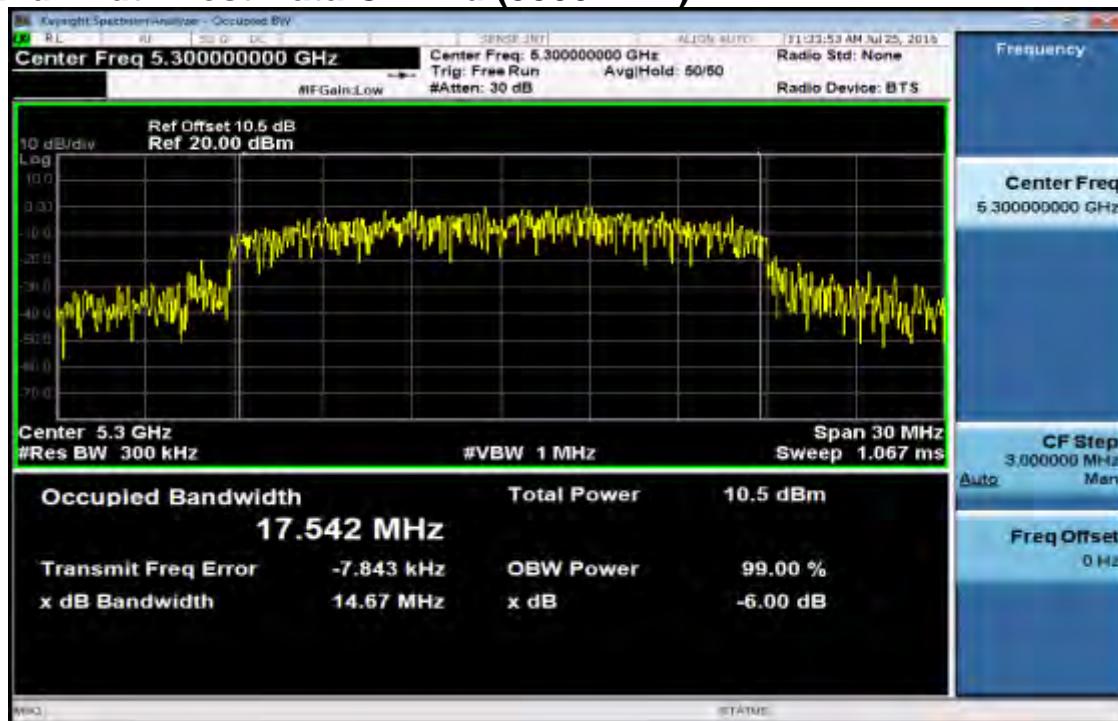
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## 802.11n HT20, 5250~5350 MHz (Main) 99% Band Width Test Data CH-Low (5260 MHz)



## 99% Band Width Test Data CH-Mid (5300 MHz)



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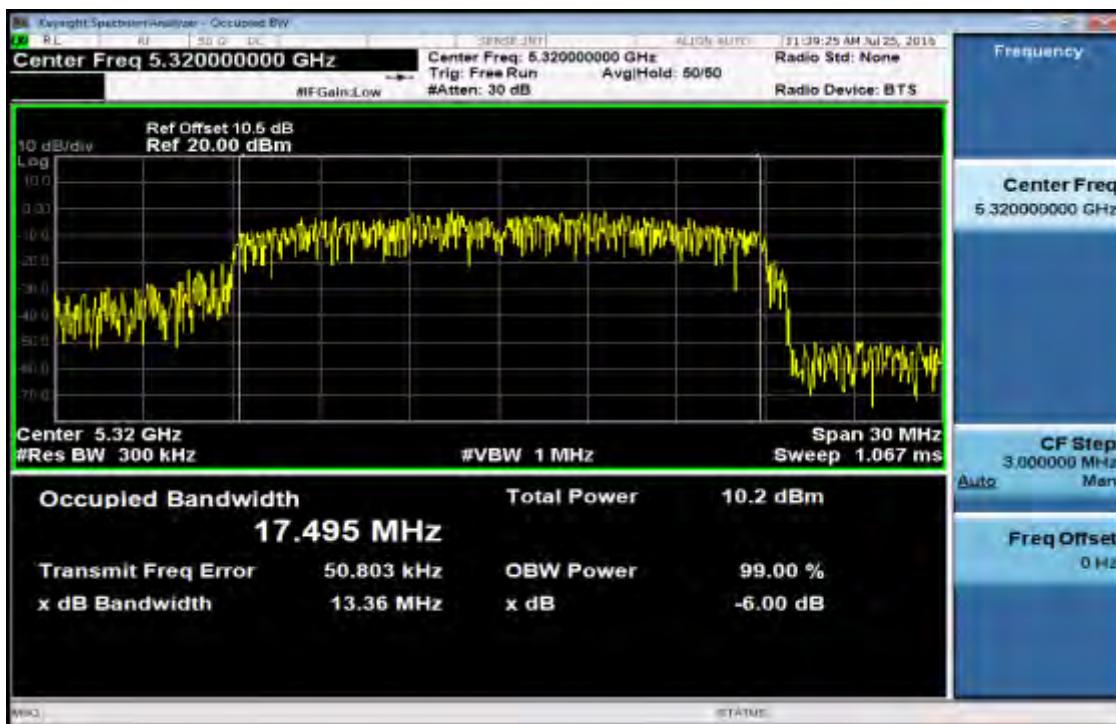
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## 99% Band Width Test Data CH-High (5320 MHz)

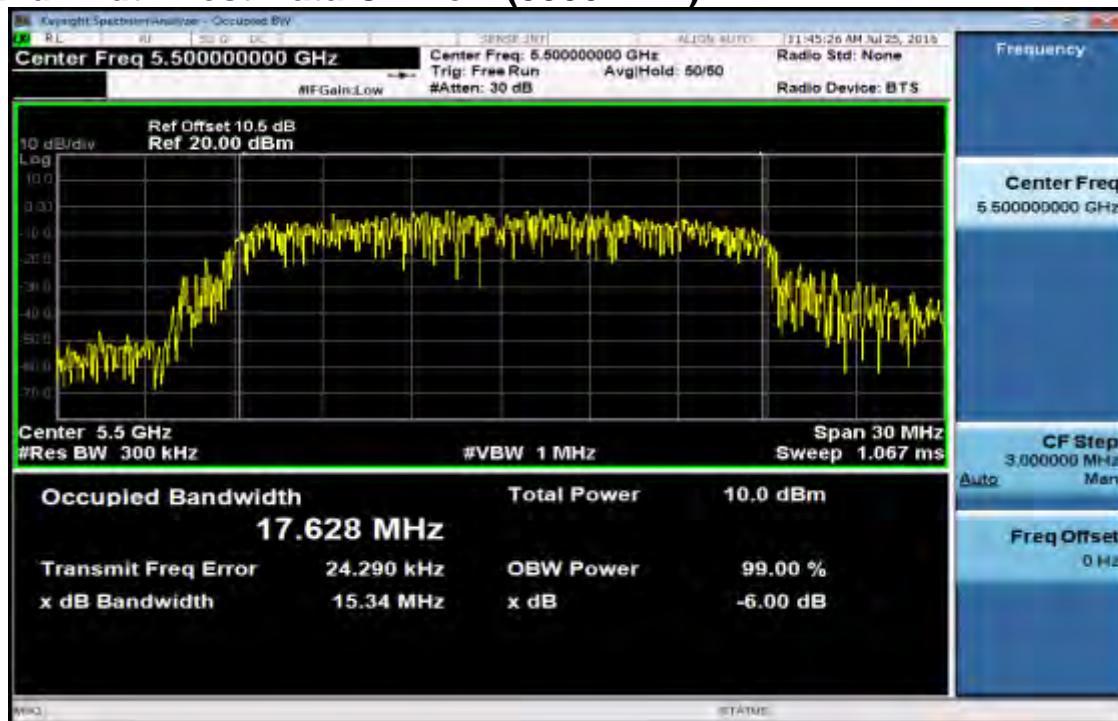


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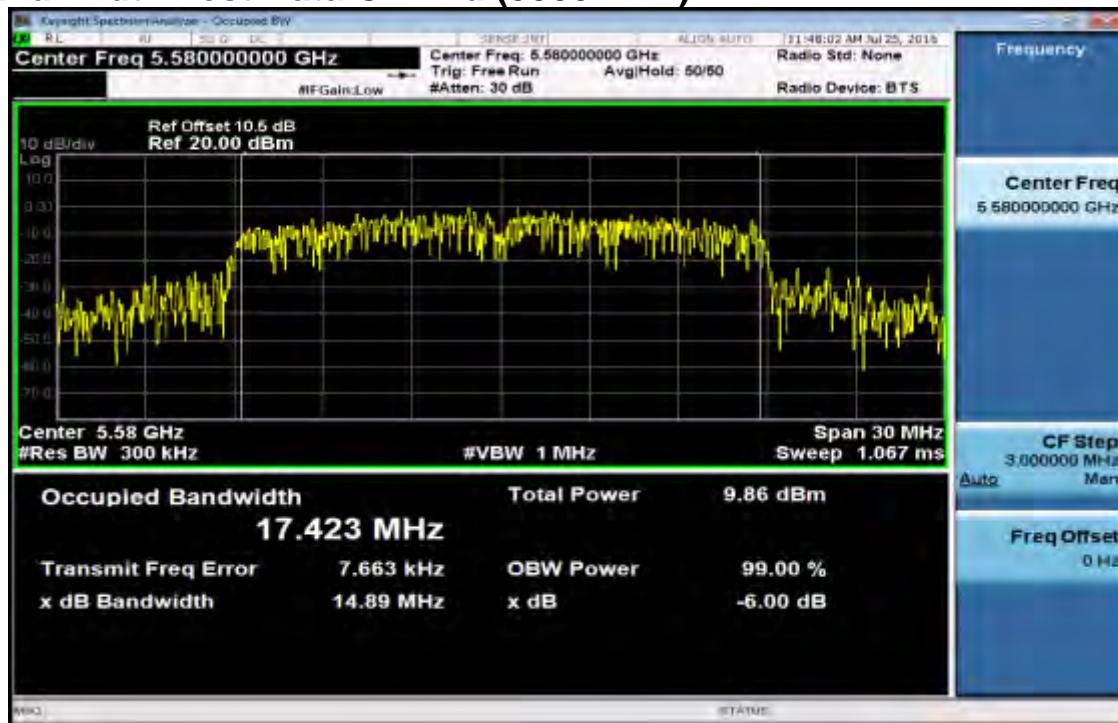
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## 802.11n HT20, 5470~5725 MHz (Main) 99% Band Width Test Data CH-Low (5500 MHz)



## 99% Band Width Test Data CH-Mid (5580 MHz)

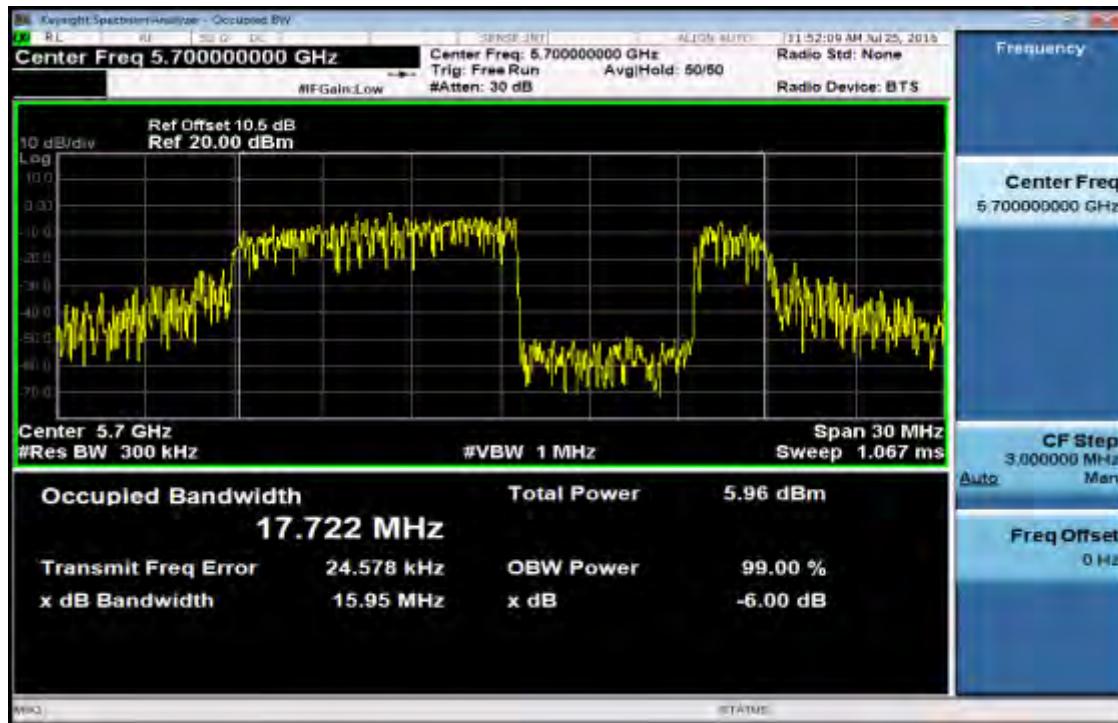


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## 99% Band Width Test Data CH-High (5700 MHz)



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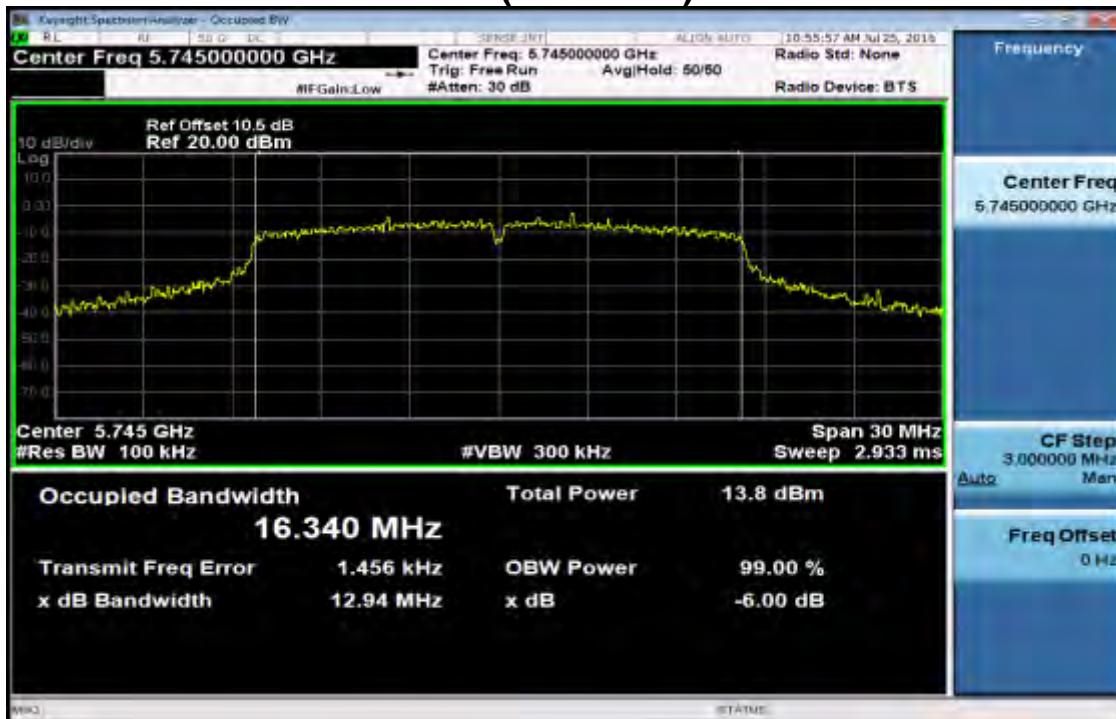
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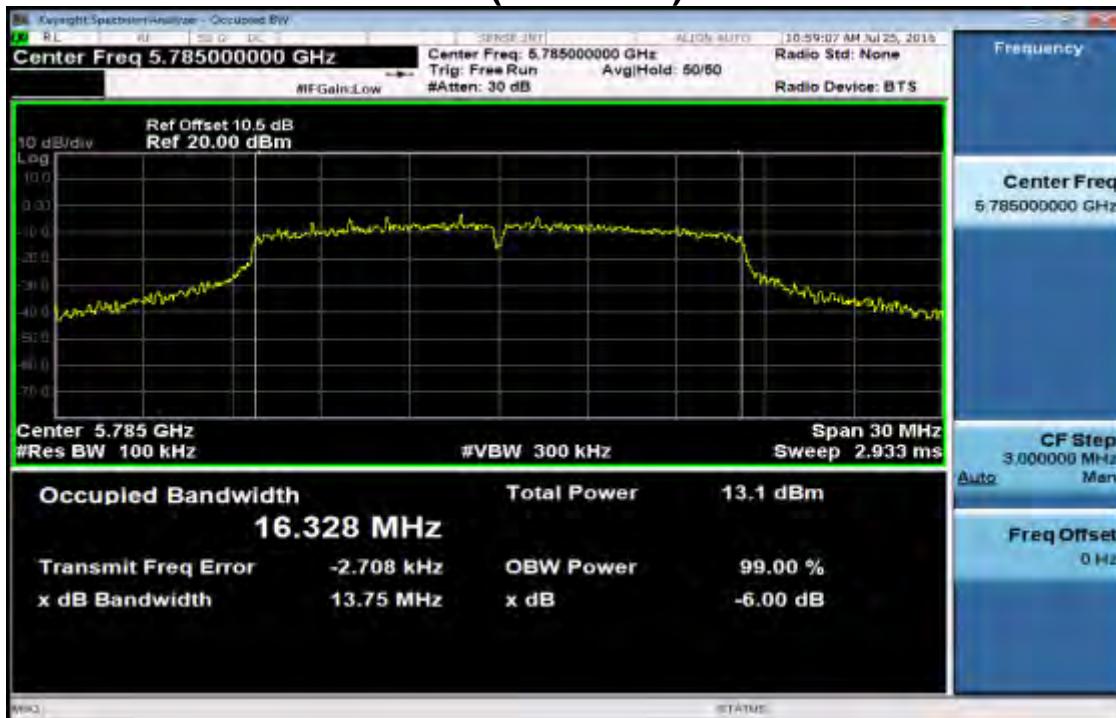
## 6dB Band Width measure with Peak detector

### 802.11a, 5725~5850 MHz (Main)

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



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



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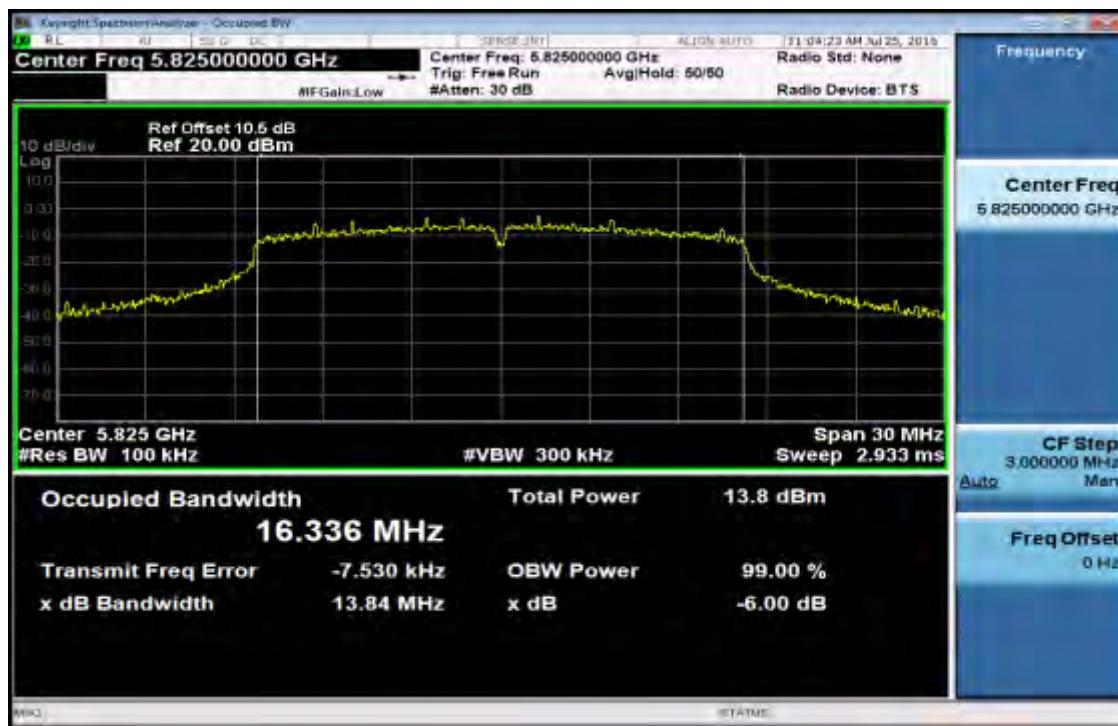
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## 6dB Band Width Test Data CH-High (5825 MHz)

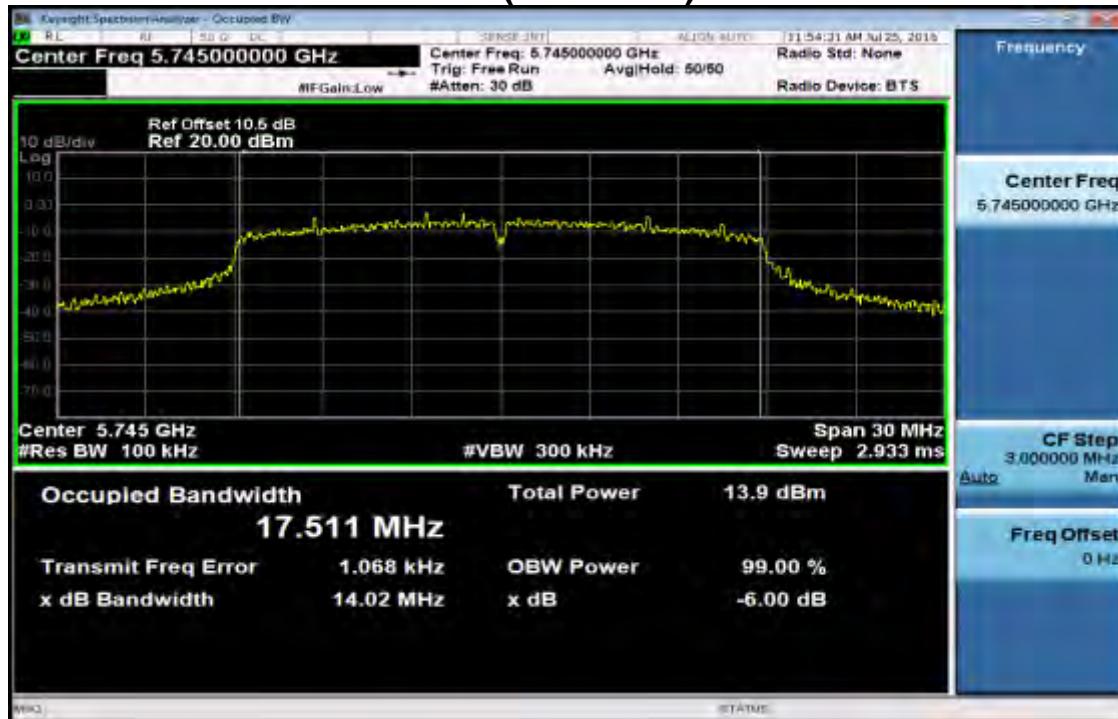


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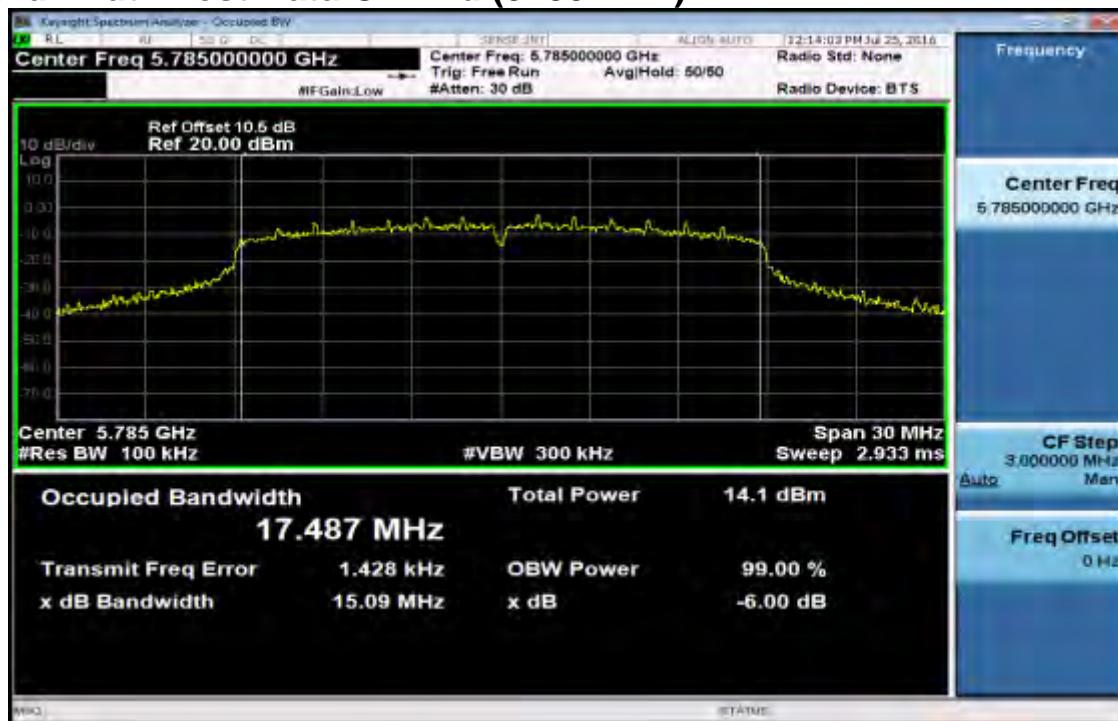
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## 802.11n\_HT20, 5725~5850 MHz (Main) 6dB Band Width Test Data CH-Low (5745 MHz)



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

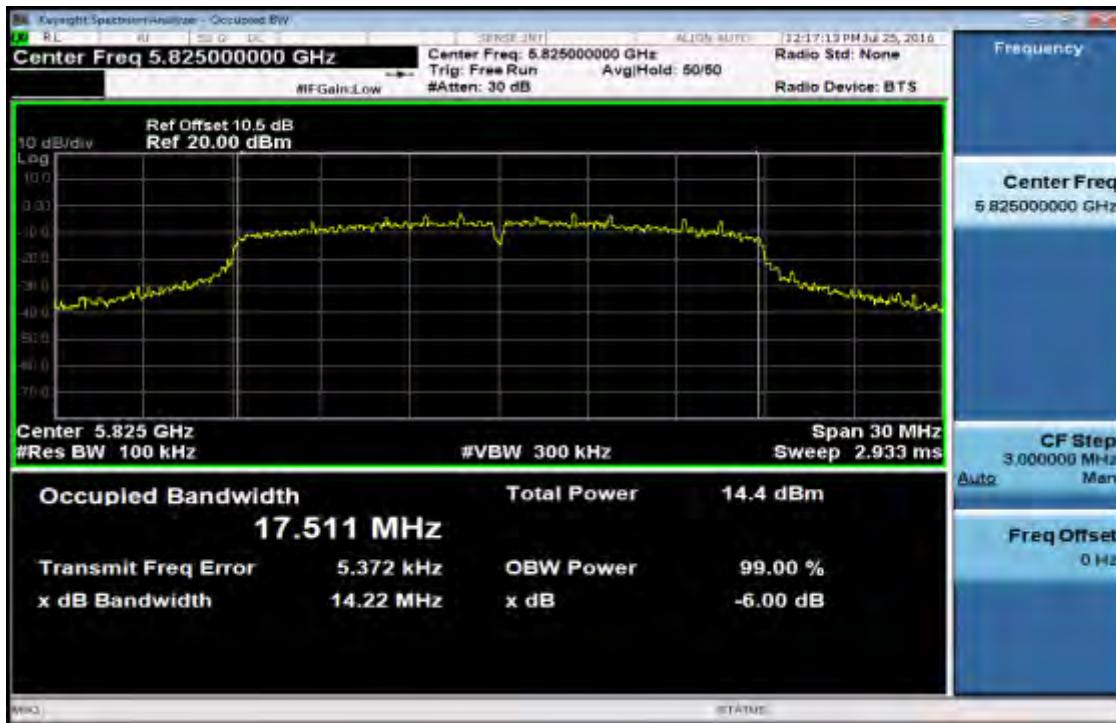


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## 6dB Band Width Test Data CH-High (5825 MHz)



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## 9. MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

### 9.1 Standard Applicable

FCC

OPERATION Band	EUT CATEGORY		LIMIT
U-NII-1		Access Point (Master device)	1 Watt(30dBm)
		Fixed point-to-point Access Point	1 Watt(30dBm)
	✓	Mobile and portable client device	250mW(23.98dBm)
U-NII-2A	✓		250mW(23.98dBm) or 11dBm+10 log B
U-NII-2C	✓		250mW(23.98dBm) or 11dBm+10 log B
U-NII-3	✓		1 Watt(30dBm)

IC

OPERATION FREQUENCY BAND	LIMIT
5150~5250 MHz	EIRP shall not exceed 200 mW or $10 + 10 \log_{10} B$ , dBm
5250~5350 MHz	Conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$ EIRP shall not exceed 1.0 W or $17 + 10 \log_{10} B$ , dBm
5470~5600 MHz and 5650~5725 MHz	Conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$ EIRP shall not exceed 1.0 W or $17 + 10 \log_{10} B$ , dBm
5725~5850 MHz	Conducted output power shall not exceed 1 W

If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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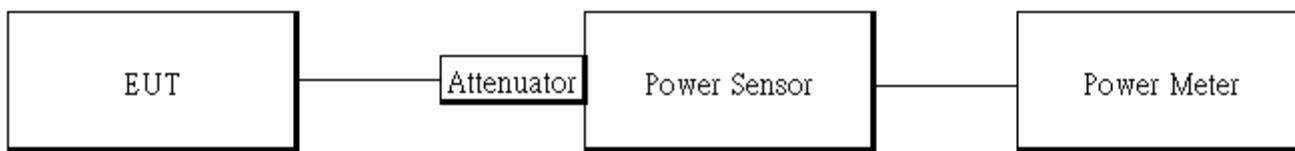
## 9.2 Measurement Procedure

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

## 9.3 Measurement Equipment Used

SGS Conducted Room					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum Analyzer	KEYSIGHT	N9010A	MY54510568	04/14/2016	04/13/2017
Power Meter	Anritsu	ML2496A	1326001	06/23/2016	06/22/2017
Power Sensor	Anritsu	MA2411B	1315048	06/23/2016	06/22/2017
Power Sensor	Anritsu	MA2411B	1315049	06/23/2016	06/22/2017
Coaxial Cable 30cm	WOKEN	00100A1F1A195C	RF01	12/12/2015	12/11/2016
DC Block	PASTERNACK	PE8210	RF29	12/12/2015	12/11/2016
Splitter	RF-LAMBAD	RFLT2W1G18G	RF35	12/12/2015	12/11/2016
Attenuator	WOKEN	218FS-10	RF23	12/12/2015	12/11/2016
DC Power Supply	Agilent	E3640A	MY53140006	05/04/2016	05/03/2017

## 9.4 Test Set-up



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## 9.5 Measurement Result

### Conducted output power (FCC)

#### 802.11a\_Main

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
36	5180	MCS0	<b>10.71</b>	<b>11.776</b>		23.98	PASS
44	5220	MCS0	10.55	11.350		23.98	PASS
48	5240	MCS0	10.59	11.455		23.98	PASS
52	5260	MCS0	10.43	11.041	23.98 or 11+10log(B) =	24.86	PASS
60	5300	MCS0	10.35	10.839	23.98 or 11+10log(B) =	24.89	PASS
64	5320	MCS0	<b>10.84</b>	<b>12.134</b>	23.98 or 11+10log(B) =	25.12	PASS
100	5500	MCS0	8.87	7.709	23.98 or 11+10log(B) =	24.47	PASS
116	5580	MCS0	<b>9.47</b>	<b>8.851</b>	23.98 or 11+10log(B) =	24.60	PASS
140	5700	MCS0	8.48	7.047	23.98 or 11+10log(B) =	24.49	PASS
149	5745	MCS0	<b>8.68</b>	<b>7.379</b>		30	PASS
157	5785	MCS0	8.32	6.792		30	PASS
165	5825	MCS0	7.91	6.180		30	PASS

#### 802.11n\_HT20\_Main

CH	Frequency (MHz)	Data Rate	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)		RESULT
36	5180	MCS0	10.76	11.912		23.98	PASS
44	5220	MCS0	<b>11.26</b>	<b>13.366</b>		23.98	PASS
48	5240	MCS0	11.16	13.062		23.98	PASS
52	5260	MCS0	10.36	10.864	23.98 or 11+10log(B) =	25.26	PASS
60	5300	MCS0	<b>10.41</b>	<b>10.990</b>	23.98 or 11+10log(B) =	24.80	PASS
64	5320	MCS0	10.29	10.691	23.98 or 11+10log(B) =	25.21	PASS
100	5500	MCS0	9.30	8.511	23.98 or 11+10log(B) =	24.84	PASS
116	5580	MCS0	<b>9.53</b>	<b>8.974</b>	23.98 or 11+10log(B) =	25.19	PASS
140	5700	MCS0	8.37	6.871	23.98 or 11+10log(B) =	24.77	PASS
149	5745	MCS0	<b>8.75</b>	<b>7.499</b>		30	PASS
157	5785	MCS0	8.32	6.792		30	PASS
165	5825	MCS0	8.28	6.730		30	PASS

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## Conducted output power (IC)

### 802.11a\_Main

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
52	5260	10.43	11.041	23.98 or $11+10\log(B) = 23.14$	PASS
60	5300	10.53	11.298	23.98 or $11+10\log(B) = 23.21$	PASS
64	5320	<b>10.84</b>	<b>12.134</b>	23.98 or $11+10\log(B) = 23.22$	PASS
100	5500	8.87	7.709	23.98 or $11+10\log(B) = 23.11$	PASS
116	5580	<b>9.47</b>	<b>8.851</b>	23.98 or $11+10\log(B) = 23.14$	PASS
140	5700	8.48	7.047	23.98 or $11+10\log(B) = 23.18$	PASS
149	5745	<b>8.68</b>	<b>7.379</b>	30	PASS
157	5785	8.32	6.792	30	PASS
165	5825	7.91	6.180	30	PASS

### 802.11n\_HT20\_Main

CH	Frequency (MHz)	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
52	5260	10.36	10.864	23.98 or $11+10\log(B) = 23.41$	PASS
60	5300	<b>10.41</b>	<b>10.990</b>	23.98 or $11+10\log(B) = 23.44$	PASS
64	5320	10.29	10.691	23.98 or $11+10\log(B) = 23.43$	PASS
100	5500	9.30	8.511	23.98 or $11+10\log(B) = 23.46$	PASS
116	5580	<b>9.53</b>	<b>8.974</b>	23.98 or $11+10\log(B) = 23.41$	PASS
140	5700	8.37	6.871	23.98 or $11+10\log(B) = 23.49$	PASS
149	5745	<b>8.75</b>	<b>7.499</b>	30	PASS
157	5785	8.32	6.792	30	PASS
165	5825	8.28	6.730	30	PASS

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**EIRP (IC)**
**802.11a\_Main**

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	REQUIRED LIMIT (dBm)		RESULT	
36	5180	<b>10.71</b>	2.900	<b>13.610</b>	23.01	or $10+10\log(B)=$	22.13	PASS
44	5220	10.55	2.900	13.450	23.01	or $10+10\log(B)=$	22.15	PASS
48	5240	10.59	2.900	13.490	23.01	or $10+10\log(B)=$	22.13	PASS
52	5260	10.43	3.000	13.430	30	or $17+10\log(B)=$	29.14	PASS
60	5300	10.35	3.000	13.350	30	or $17+10\log(B)=$	29.21	PASS
64	5320	<b>10.84</b>	3.000	<b>13.840</b>	30	or $17+10\log(B)=$	29.22	PASS
100	5500	8.87	3.700	12.570	30	or $17+10\log(B)=$	29.11	PASS
116	5580	<b>9.47</b>	3.700	<b>13.170</b>	30	or $17+10\log(B)=$	29.14	PASS
140	5700	8.48	3.700	12.180	30	or $17+10\log(B)=$	29.18	PASS

**802.11n\_HT20\_Main**

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	REQUIRED LIMIT (dBm)		RESULT	
36	5180	10.76	2.900	13.660	23.01	or $10+10\log(B)=$	22.42	PASS
44	5220	<b>11.26</b>	2.900	<b>14.160</b>	23.01	or $10+10\log(B)=$	22.48	PASS
48	5240	11.16	2.900	14.060	23.01	or $10+10\log(B)=$	22.43	PASS
52	5260	10.36	3.000	13.360	30	or $17+10\log(B)=$	29.41	PASS
60	5300	<b>10.41</b>	3.000	<b>13.410</b>	30	or $17+10\log(B)=$	29.44	PASS
64	5320	10.29	3.000	13.290	30	or $17+10\log(B)=$	29.43	PASS
100	5500	9.30	3.700	13.000	30	or $17+10\log(B)=$	29.46	PASS
116	5580	<b>9.53</b>	3.700	<b>13.230</b>	30	or $17+10\log(B)=$	29.41	PASS
140	5700	8.26	3.700	11.960	30	or $17+10\log(B)=$	29.49	PASS

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## 10. PEAK POWER SPECTRAL DENSITY

### 10.1 Standard Applicable

#### FCC

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

#### IC

OPERATION FREQUENCY BAND	LIMIT
5150~5250 MHz	EIRP spectral density 10 dBm / MHz
5250~5350 MHz	11dBm / MHz
5470-5600 MHz and 5650-5725 MHz	11dBm / MHz
5725~5850 MHz	30dBm / 500 kHz

If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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## 10.2 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules.
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Spectrum.
4. **For U-NII1, U-NII-2A, U-NII-2C Band:**

Set RBW=1MHz, VBW=3MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)

### For U-NII-3 Band:

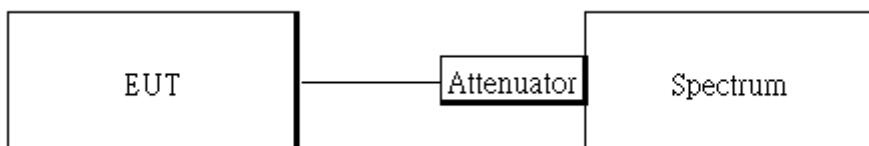
Set RBW=500 kHz, VBW $\geq$  3RBW, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)

5. Use the cursor on spectrum to peak search the highest level of trace
6. Record the max. reading and add 10 log(1/duty cycle).
7. Repeat above procedures until all default test channel (low, middle, and high) was complete.

## 10.3 Measurement Equipment Used

SGS Conducted Room					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum Analyzer	KEYSIGHT	N9010A	MY54510568	04/14/2016	04/13/2017
DC Block	PASTERNACK	PE8210	RF29	12/12/2015	12/11/2016
Attenuator	WOKEN	218FS-10	RF23	12/12/2015	12/11/2016

## 10.4 Test Set-up



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## 10.5 Measurement Result

POWER DENSITY 802.11a MODE			
Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
5180	-8.07	11	-19.07
5220	-7.46	11	-18.46
5240	-7.32	11	-18.32
5260	-6.09	11	-17.09
5300	-5.90	11	-16.90
5320	-5.60	11	-16.60
5500	-9.13	11	-20.13
5580	-5.64	11	-16.64
5700	-10.35	11	-21.35
5745	1.69	30	-28.31
5785	1.25	30	-28.75
5825	1.79	30	-28.21

POWER DENSITY 802.11n HT20 MODE			
Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
5180	-7.48	11	-18.48
5220	-6.43	11	-17.43
5240	-7.47	11	-18.47
5260	-7.48	11	-18.48
5300	-6.20	11	-17.20
5320	-6.35	11	-17.35
5500	-9.29	11	-20.29
5580	-8.10	11	-19.10
5700	-4.49	11	-15.49
5745	2.14	30	-27.86
5785	1.25	30	-28.75
5825	2.05	30	-27.95

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## EIRP Power Density

EIRP spectral density 802.11a MODE					
Freq. (MHz)	PPSD (dBm)	Ant. Gain (dBi)	EIRP SD (dBm)	Limit (dBm)	Margin (dB)
5180	-8.07	2.90	-5.17	10	-18.07
5220	-7.46	2.90	-4.56	10	-17.46
5240	-7.32	2.90	-4.42	10	-17.32

EIRP spectral density 802.11n HT20 MODE					
Freq. (MHz)	PPSD (dBm)	Ant. Gain (dBi)	EIRP SD (dBm)	Limit (dBm)	Margin (dB)
5180	-7.48	2.90	-4.58	10	-17.48
5220	-6.43	2.90	-3.53	10	-16.43
5240	-7.47	2.90	-4.57	10	-17.47

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## 802.11a 5150~5250 MHz

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



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



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



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## 802.11a 5250~5350 MHz

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



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



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## 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 Mid 5580 MHz)



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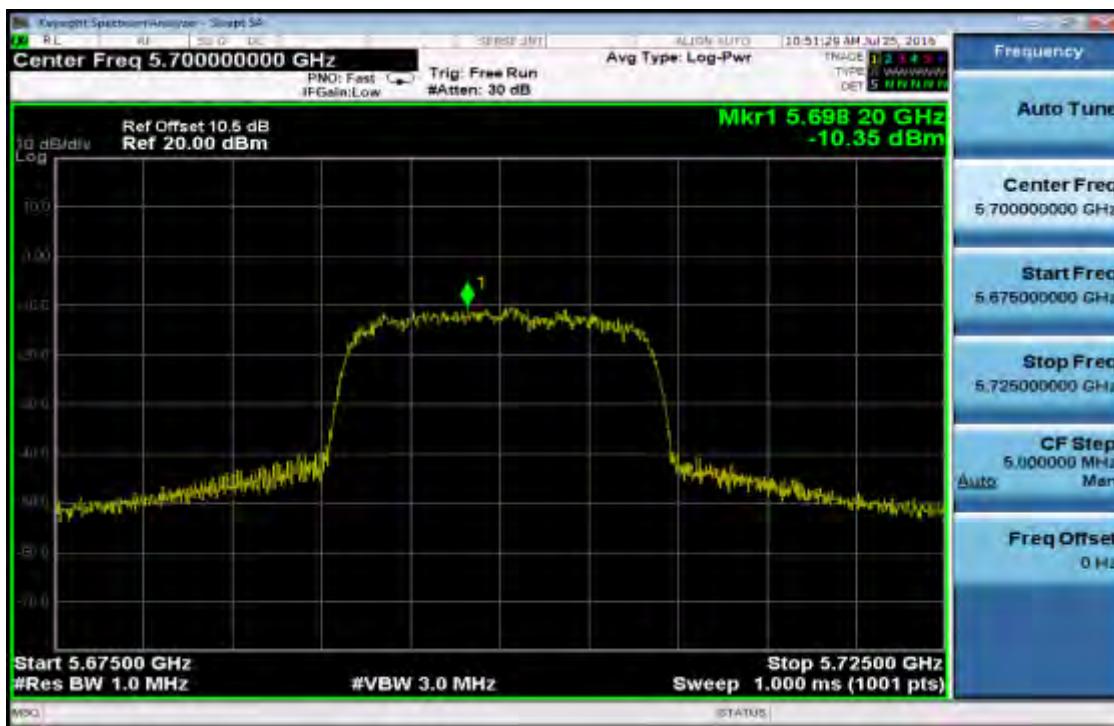
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## Peak Power Spectral Density Data Plot (CH High 5700 MHz)



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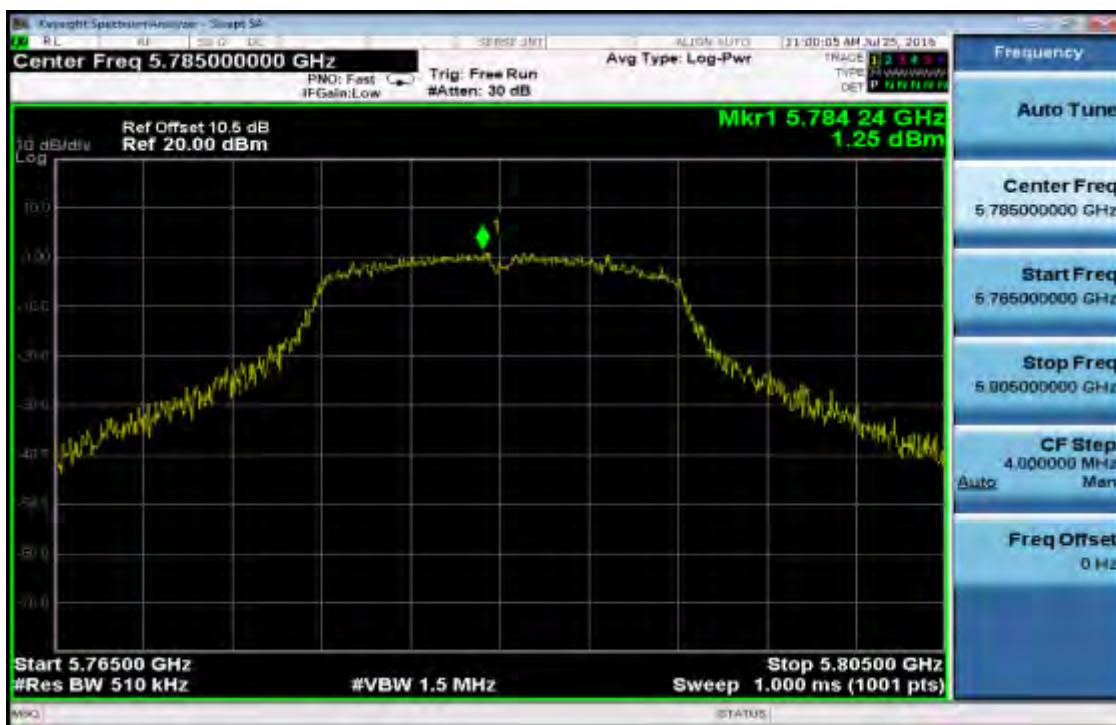
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## 802.11a 5725~5850 MHz

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



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



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



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## 802.11n HT20, 5150~5250 MHz

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



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



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



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## 802.11n HT20, 5250~5350 MHz

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



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



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



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## 802.11n HT20, 5470~5725 MHz

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



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



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



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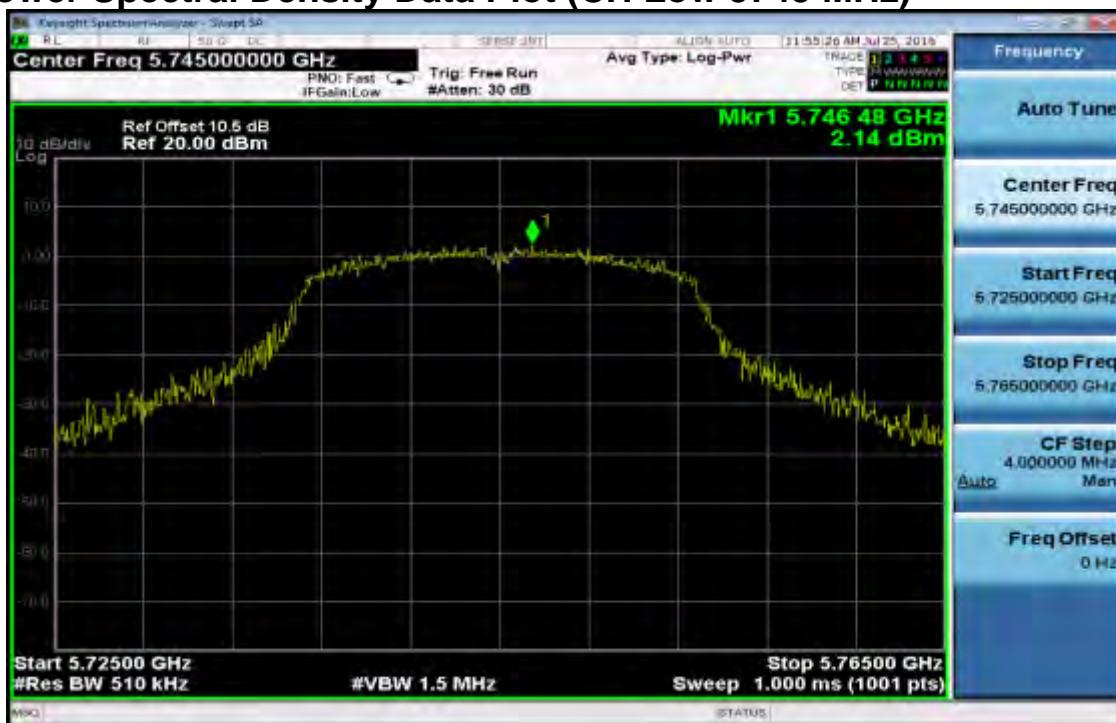
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## 802.11n HT20, 5725~5850 MHz

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



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



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## Peak Power Spectral Density Data Plot (CH High 5825 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.

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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
RSS-247 6.2.4 (2)	PK: -27 (dBm/MHz) PK: -17 (dBm/MHz)	PK: 68.3 (dB $\mu$ V/m) PK: 78.2 (dB $\mu$ V/m)

\*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 SAC-III					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
EMI Test Receiver	R&S	ESU 40	100363	04/12/2016	04/11/2017
Loop Antenna	ETS-Lindgren	6502	00143303	12/23/2015	12/22/2016
Broadband Antenna	TESEQ	CBL 6112D	35240	10/28/2015	10/27/2016
Horn Antenna	ETS-Lindgren	3117	00143272	12/16/2015	12/15/2016
Horn Antenna	Schwarzbeck	BBHA9170	185	07/24/2015	07/23/2016
Pre Amplifier	EMC Instruments	EMC330	980096	12/12/2015	12/11/2016
Pre Amplifier	EMC Instruments	EMC0011830	980199	12/12/2015	12/11/2016
Pre Amplifier	R&S	SCU-18	10204	12/12/2015	12/11/2016
Pre Amplifier	EMC Instruments	EMC184045B	980135	12/12/2015	12/11/2016
Coaxial Cable	Huber+Suhner	RG 214/U	966Rx 9K-30M	12/12/2015	12/11/2016
Coaxial Cable	Huber+Suhner	RG 214/U SUCOFLEX 104	966Rx 30M-3G	12/12/2015	12/11/2016
Coaxial Cable	Huber+Suhner	SUCOFLEX 104	966Rx 1G-18G	12/12/2015	12/11/2016
Coaxial Cable	Huber+Suhner	mini 141-12 SUCOFLEX 104	966Rx 18G-40G	12/12/2015	12/11/2016
Coaxial Cable	Huber+Suhner	SUCOFLEX 104	966Tx 30M-18G	12/12/2015	12/11/2016
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	966Tx 18G-40G	12/12/2015	12/11/2016
Attenuator	WOKEN	218FS-10	RF27	12/12/2015	12/11/2016
Site NSA	SGS	966 Chamber C	SAC-C	03/04/2016	03/03/2017
Site VSWR	SGS	966 Chamber C	SAC-C	03/04/2016	03/03/2017
DC Power Supply	HOLA	DP-3003	D7070035	05/04/2016	05/03/2017
Controller	MF	MF-7802	N/A	N.C.R.	N.C.R.
Antenna Master	MF	N/A	N/A	N.C.R.	N.C.R.
Turn Table	MF	N/A	N/A	N.C.R.	N.C.R.
Test Software	World-Pallas	Dr. E	V 3.0 Lite	N.C.R.	N.C.R.

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SGS SAC-III					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
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Horn Antenna	ETS-Lindgren	3117	00143272	12/15/2016	12/16/2017
Horn Antenna	Schwarzbeck	BBHA9170	185	07/24/2016	07/23/2017
Pre Amplifier	EMC Instruments	EMC330	980096	12/12/2016	12/11/2017
Pre Amplifier	EMC Instruments	EMC0011830	980199	12/12/2016	12/11/2017
Pre Amplifier	R&S	SCU-18	10204	12/12/2016	12/11/2017
Pre Amplifier	EMC Instruments	EMC184045B	980135	12/12/2016	12/11/2017
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Coaxial Cable	Huber+Suhner	RG 214/U SUCOFLEX 104	966Rx 30M-3G	12/12/2016	12/11/2017
Coaxial Cable	Huber+Suhner	SUCOFLEX 104	966Rx 1G-18G	12/12/2016	12/11/2017
Coaxial Cable	Huber+Suhner	mini 141-12 SUCOFLEX 104	966Rx 18G-40G	12/12/2016	12/11/2017
Coaxial Cable	Huber+Suhner	SUCOFLEX 104	966Tx 30M-18G	12/12/2016	12/11/2017
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	966Tx 18G-40G	12/12/2016	12/11/2017
Attenuator	WOKEN	218FS-10	RF27	12/12/2016	12/11/2017

Remark: Please note that the duration to conduct the test took place in the mean time when the calibration for several equipments is due, and therefore extra tables of equipment calibration is constructed to indicate the calibration work is still maintained.

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

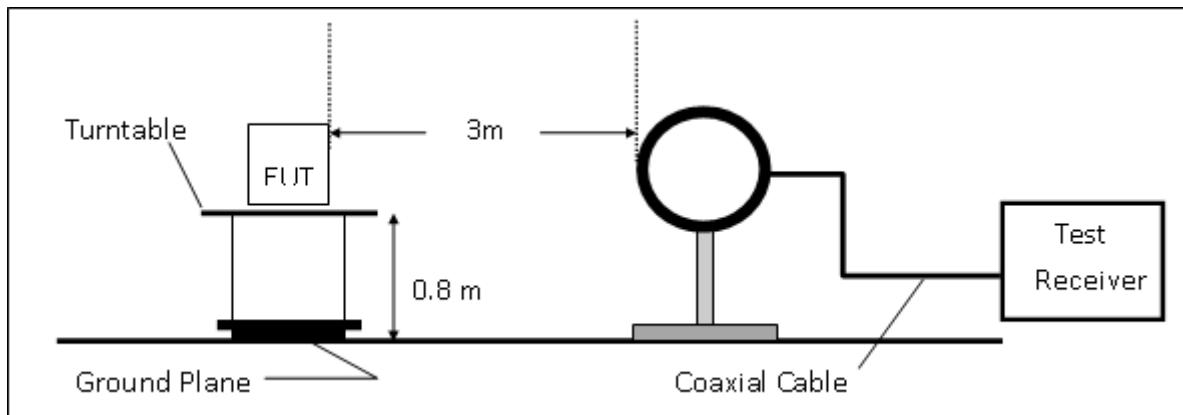
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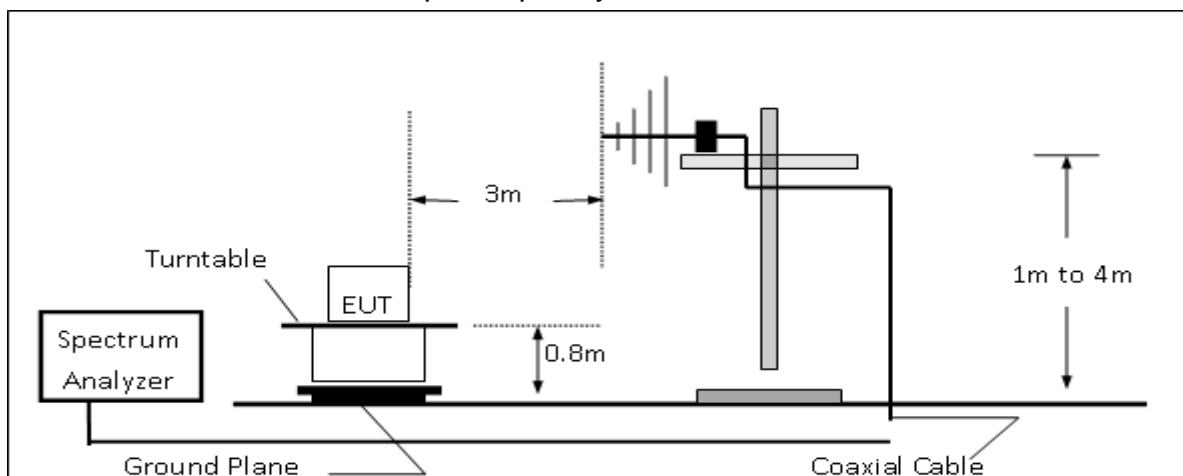
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### 11.3 Test SET-UP

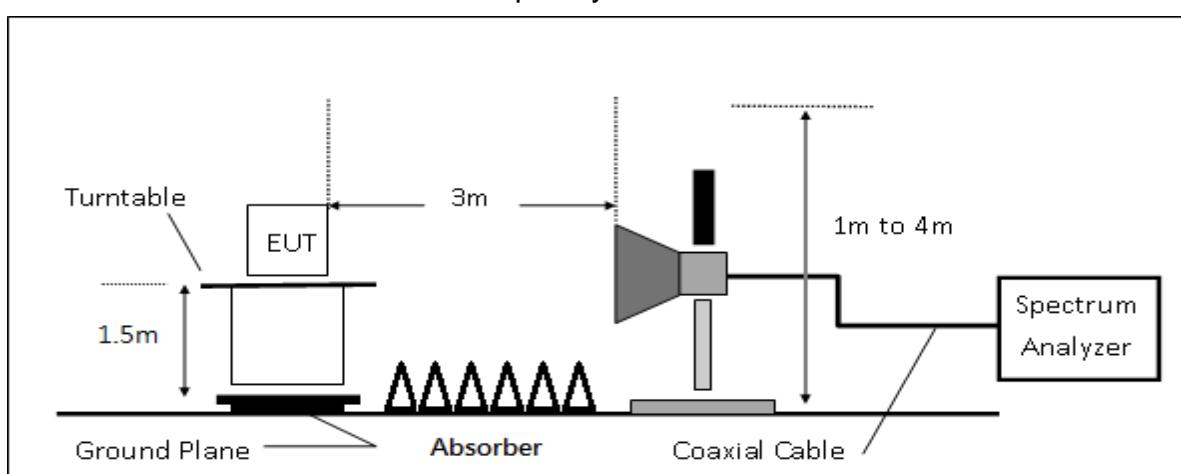
#### (A) Radiated Emission Test Set-UP Frequency Below 30MHz.



#### (B) Radiated Emission Test Set-UP, Frequency from 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)

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**Note :**

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

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

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

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

## 11.7 Measurement Result

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

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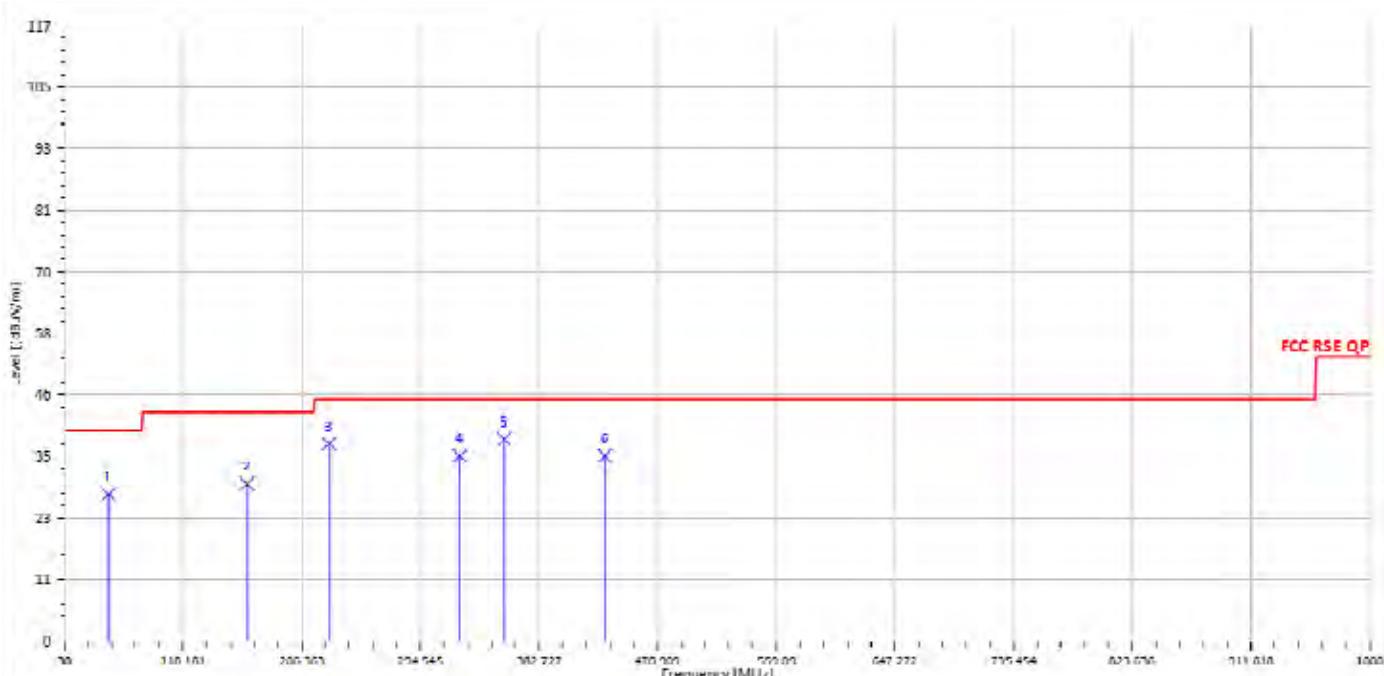
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## Radiated Spurious Emission Measurement Result

## Below 1GHz Worst-Case Data:

## 802.11a 5150~5250 MHz

Operation Mode :	802.11a	Test Date :	2016/7/22
Fundamental Frequency :	5220 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	Tx CH MID	Test Engineer :	Tank
EUT Pol. :	E1	Measurement Antenna Pol. :	Vertical



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBrV	Factor dB	Actual FS dBrV/m	Limit @3m dBrV/m	Margin dB
62.98	S	Peak	46.21	-18.39	27.83	40	-12.17
165.80	S	Peak	45.95	-16.07	29.88	43.5	-13.62
226.91	S	Peak	55.46	-18.01	37.45	46	-8.55
323.91	S	Peak	49.85	-14.62	35.23	46	-10.77
356.89	S	Peak	52.42	-14.10	38.32	46	-7.68
431.58	S	Peak	47.80	-12.61	35.19	46	-10.81

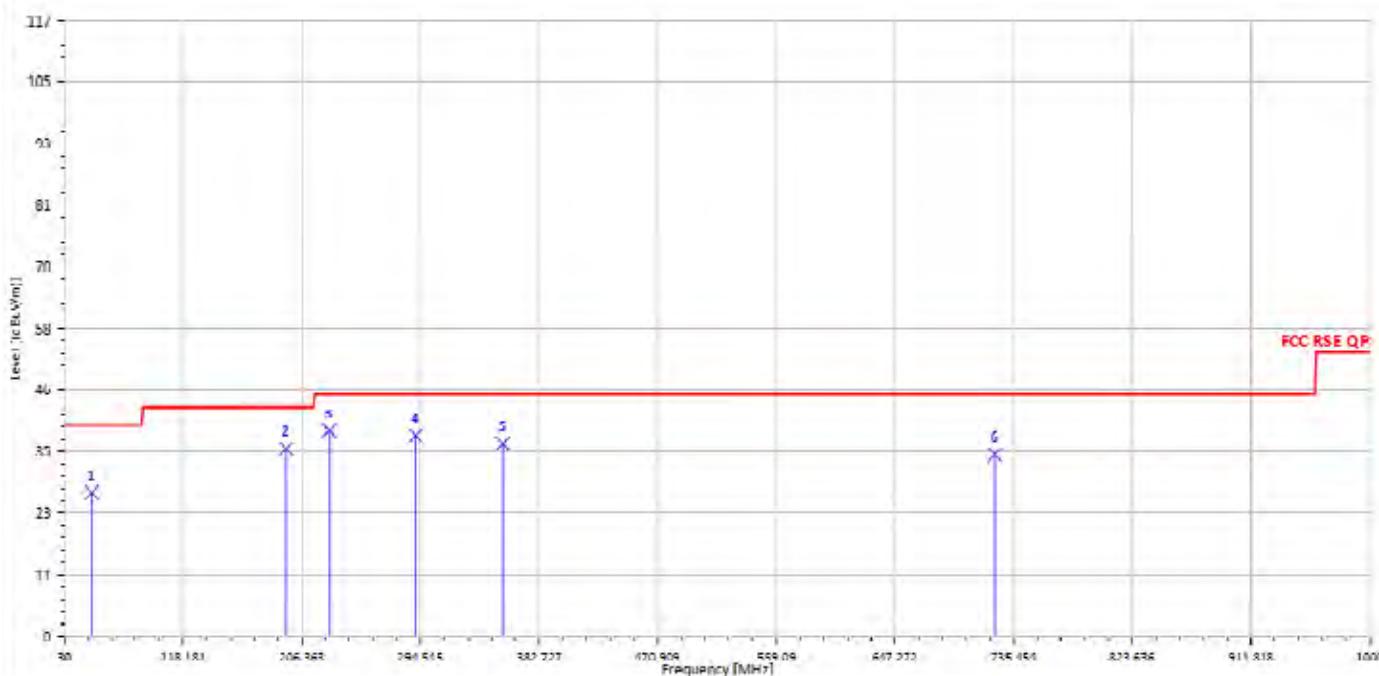
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Operation Mode : 802.11a Test Date : 2016/7/22  
 Fundamental Frequency : 5220 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH MID Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
50.37	S	Peak	44.52	-17.24	27.28	40	-12.72
194.90	S	Peak	54.29	-18.69	35.60	43.5	-7.90
226.91	S	Peak	57.05	-18.01	39.04	46	-6.96
290.93	S	Peak	53.57	-15.45	38.11	46	-7.89
355.92	S	Peak	50.72	-14.12	36.60	46	-9.40
721.61	S	Peak	42.05	-7.56	34.48	46	-11.52

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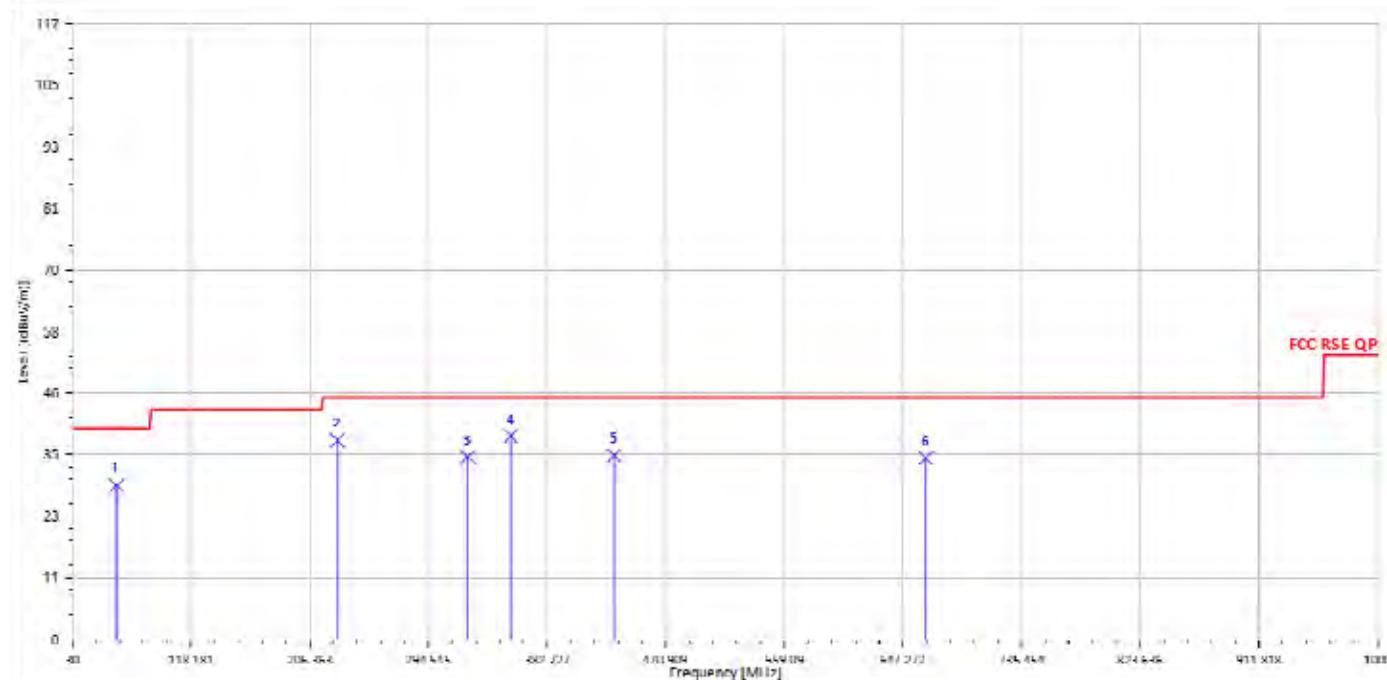
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## 802.11a 5250~5350 MHz

Operation Mode : 802.11a Test Date : 2016/7/22  
 Fundamental Frequency : 5300 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH MID Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level		Factor	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
			Reading	Level dB				
62.98	S	Peak	47.59	-18.39	29.20	40	-10.80	
226.91	S	Peak	55.84	-18.01	37.83	46	-8.17	
323.91	S	Peak	49.28	-14.62	34.66	46	-11.34	
355.92	S	Peak	52.78	-14.12	38.66	46	-7.34	
432.55	S	Peak	47.51	-12.60	34.91	46	-11.09	
664.38	S	Peak	42.81	-8.37	34.44	46	-11.56	

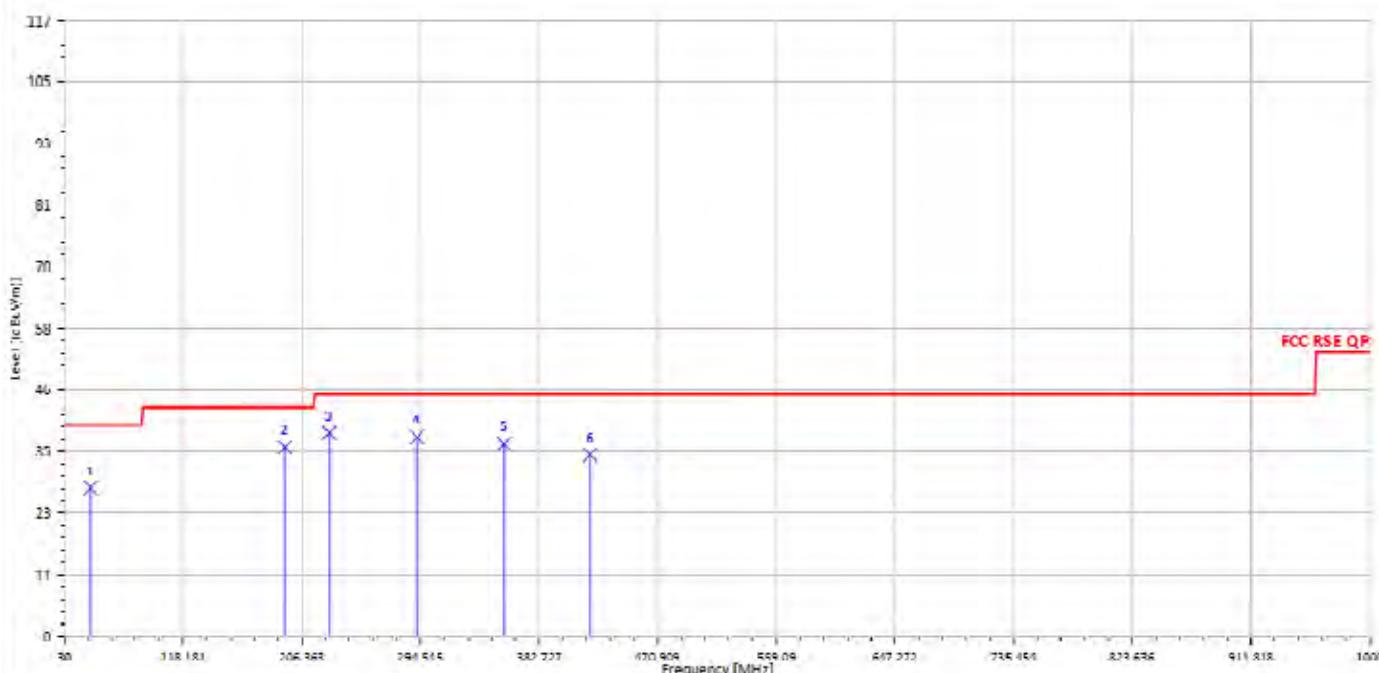
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Operation Mode : 802.11a Test Date : 2016/7/22  
 Fundamental Frequency : 5300 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH MID Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
49.40	S	Peak	45.41	-17.20	28.21	40	-11.79
193.93	S	Peak	54.60	-18.69	35.90	43.5	-7.60
226.91	S	Peak	56.65	-18.01	38.65	46	-7.35
291.90	S	Peak	53.28	-15.45	37.83	46	-8.17
356.89	S	Peak	50.62	-14.10	36.52	46	-9.48
420.91	S	Peak	46.54	-12.09	34.45	46	-11.55

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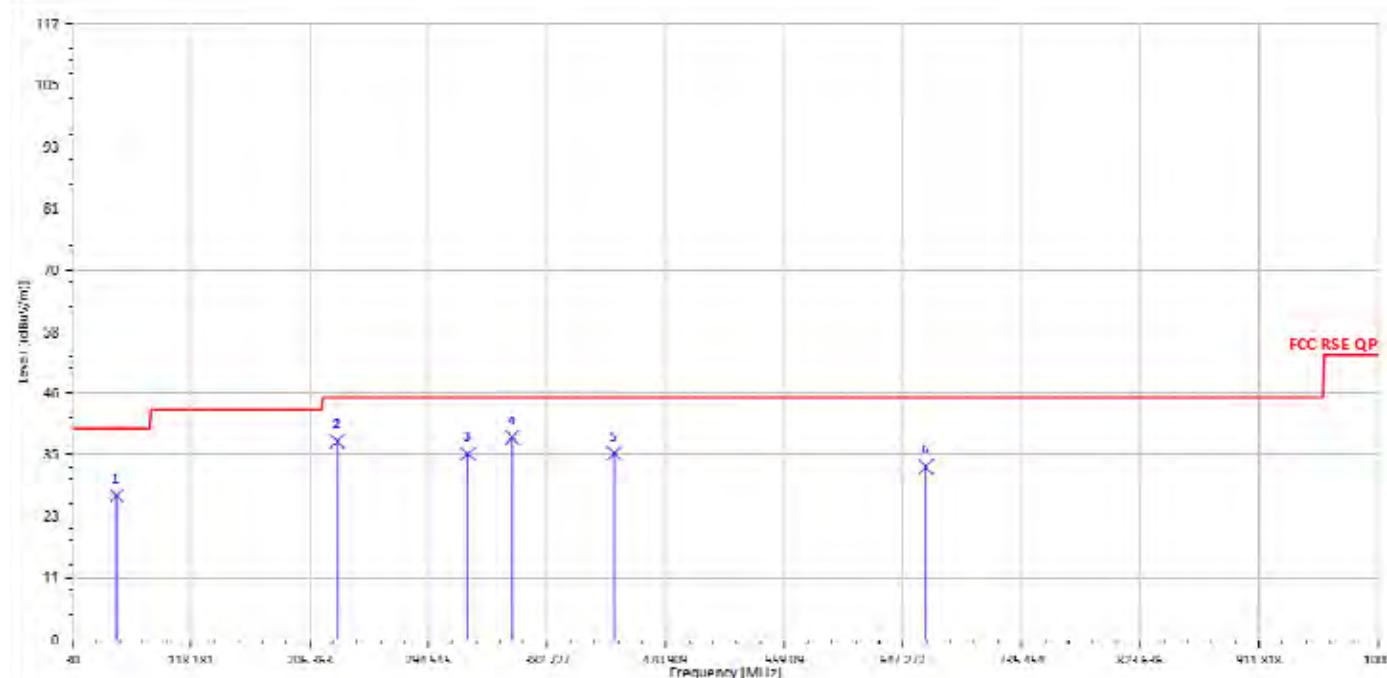
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## 802.11a, 5470~5725 MHz

Operation Mode : 802.11a Test Date : 2016/7/22  
 Fundamental Frequency : 5580 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH MID Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
62.98	S	Peak	45.68	-18.39	27.29	40	-12.71
226.91	S	Peak	55.64	-18.01	37.63	46	-8.37
323.91	S	Peak	49.88	-14.62	35.26	46	-10.74
356.89	S	Peak	52.52	-14.10	38.42	46	-7.58
432.55	S	Peak	47.95	-12.60	35.34	46	-10.66
664.38	S	Peak	41.15	-8.37	32.78	46	-13.22

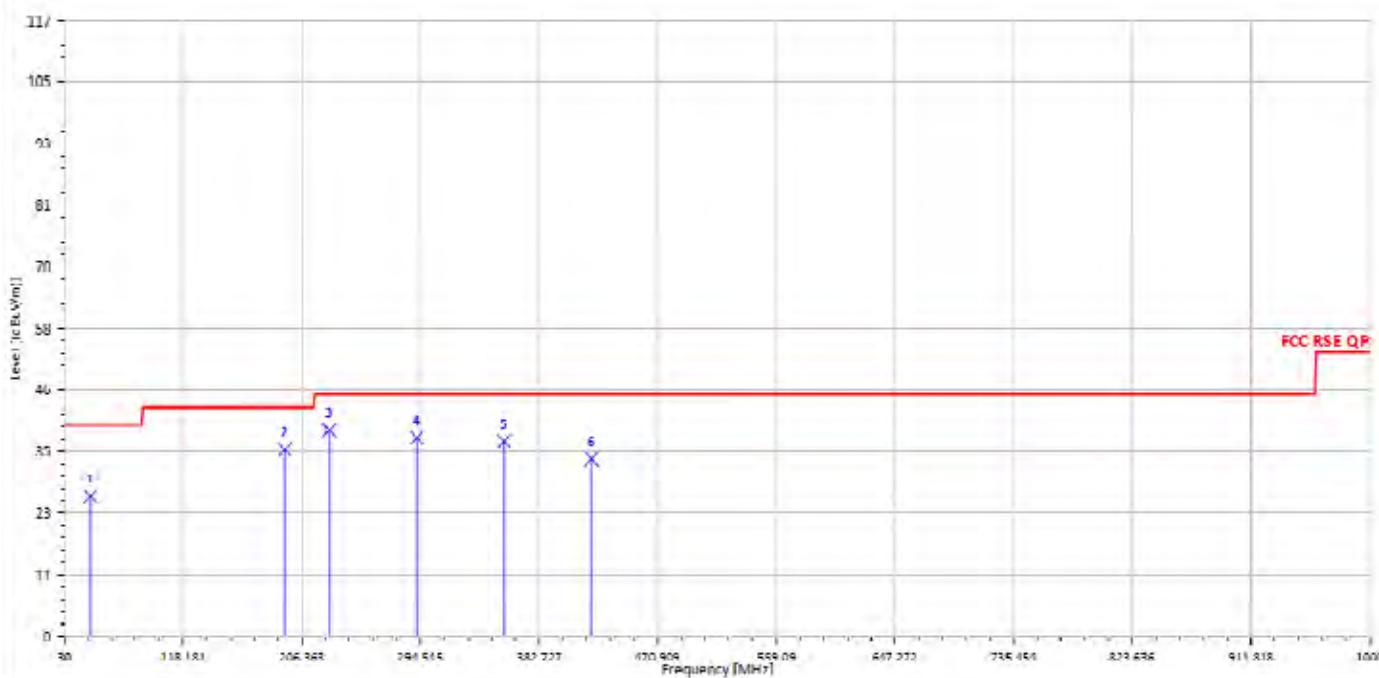
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Operation Mode : 802.11a Test Date : 2016/7/22  
 Fundamental Frequency : 5580 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH MID Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
49.40	S	Peak	43.86	-17.20	26.67	40	-13.33
193.93	S	Peak	54.13	-18.69	35.44	43.5	-8.06
226.91	S	Peak	57.13	-18.01	39.12	46	-6.88
291.90	S	Peak	53.15	-15.45	37.70	46	-8.30
356.89	S	Peak	51.15	-14.10	37.05	46	-8.95
421.88	S	Peak	45.87	-12.14	33.72	46	-12.28

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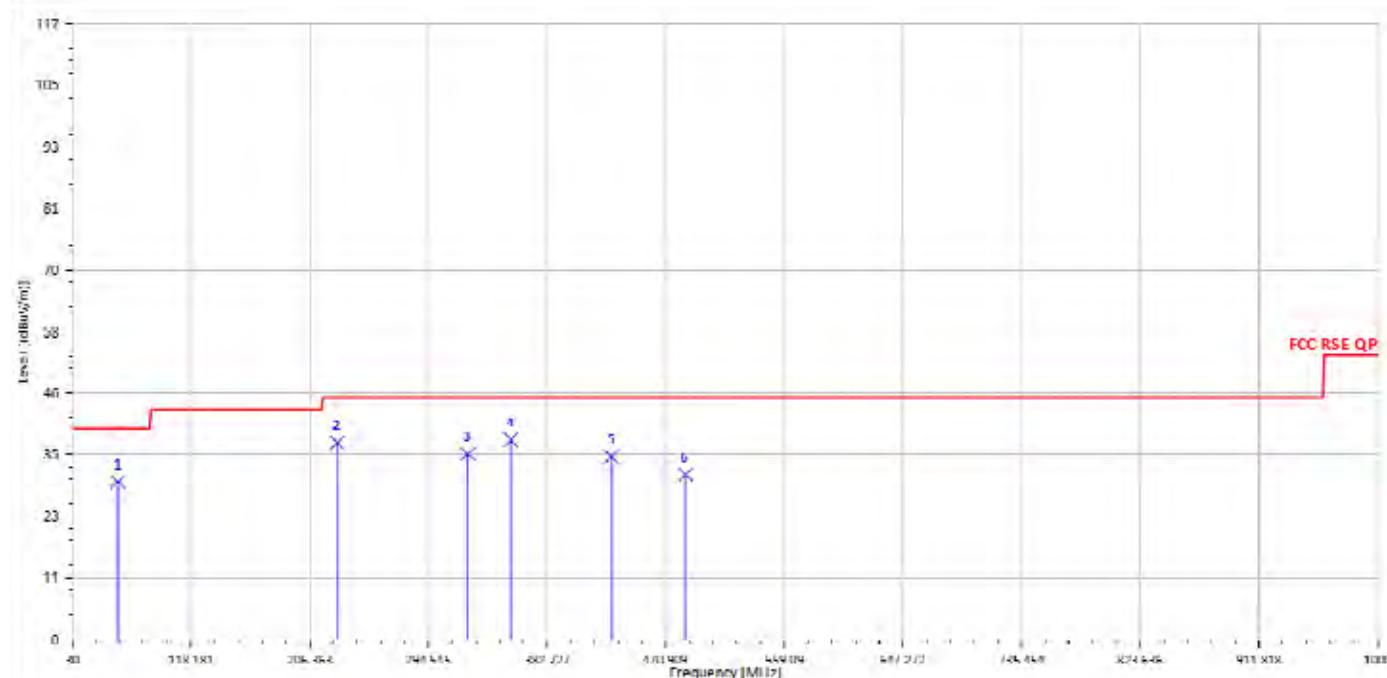
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## 802.11a, 5725~5850 MHz

Operation Mode : 802.11a Test Date : 2016/7/22  
 Fundamental Frequency : 5785 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH MID Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level		Factor	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
			Reading	Level				
63.95	S	Peak	48.51		-18.52	29.99	40	-10.01
226.91	S	Peak	55.38		-18.01	37.37	46	-8.63
323.91	S	Peak	49.88		-14.62	35.26	46	-10.74
355.92	S	Peak	52.04		-14.12	37.92	46	-8.08
430.61	S	Peak	47.30		-12.61	34.69	46	-11.31
485.90	S	Peak	42.55		-11.20	31.35	46	-14.65

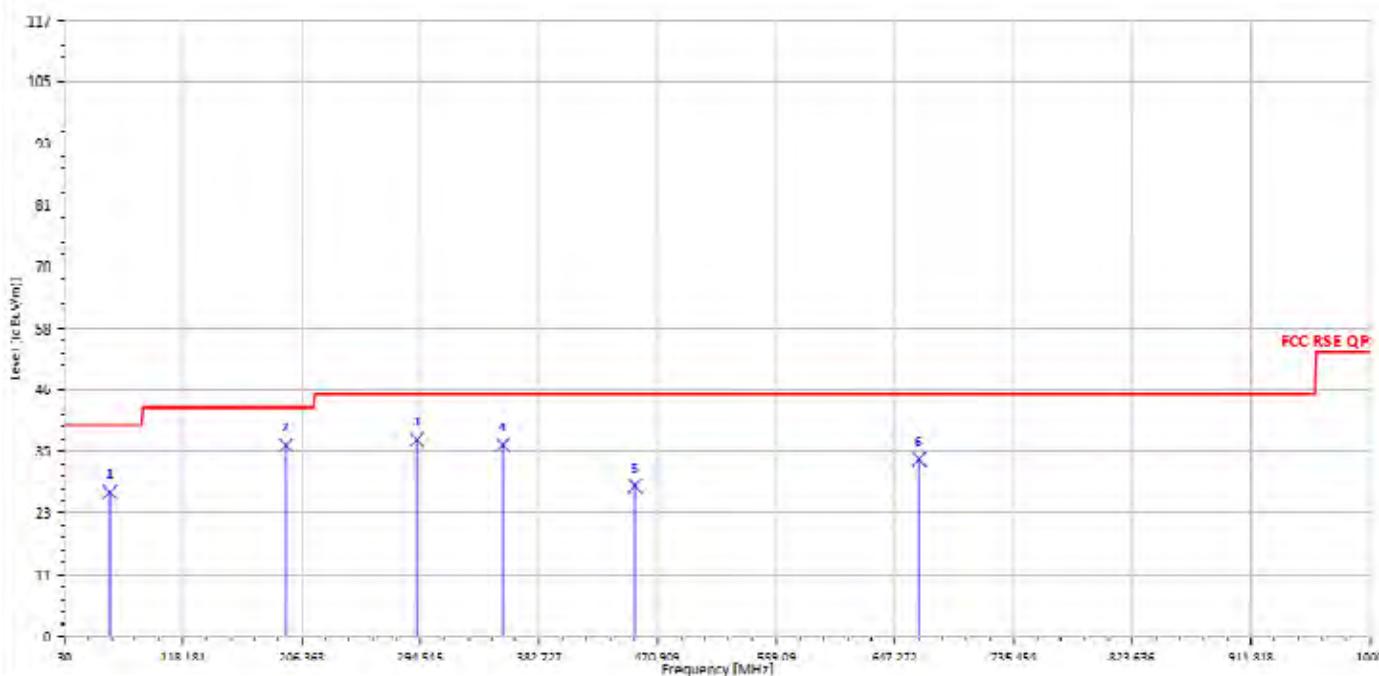
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Operation Mode : 802.11a Test Date : 2016/7/22  
 Fundamental Frequency : 5785 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH MID Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
63.95	S	Peak	45.89	-18.52	27.37	40	-12.63
194.90	S	Peak	54.99	-18.69	36.31	43.5	-7.19
291.90	S	Peak	52.83	-15.45	37.38	46	-8.62
355.92	S	Peak	50.51	-14.12	36.39	46	-9.61
453.89	S	Peak	40.27	-11.64	28.63	46	-17.37
665.35	S	Peak	42.06	-8.43	33.63	46	-12.37

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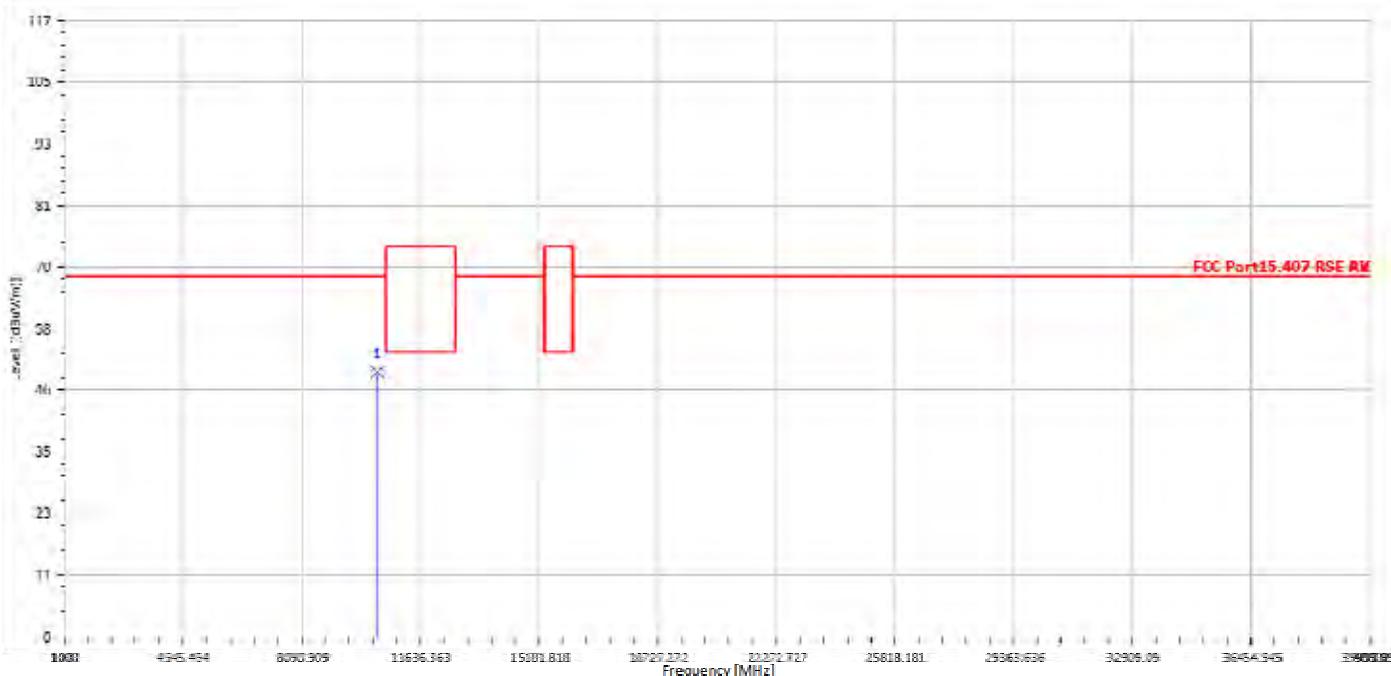
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## Above 1GHz Worst-Case Data:

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

Operation Mode : 802.11a Test Date : 2016/7/21  
 Fundamental Frequency : 5180 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH LOW Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical



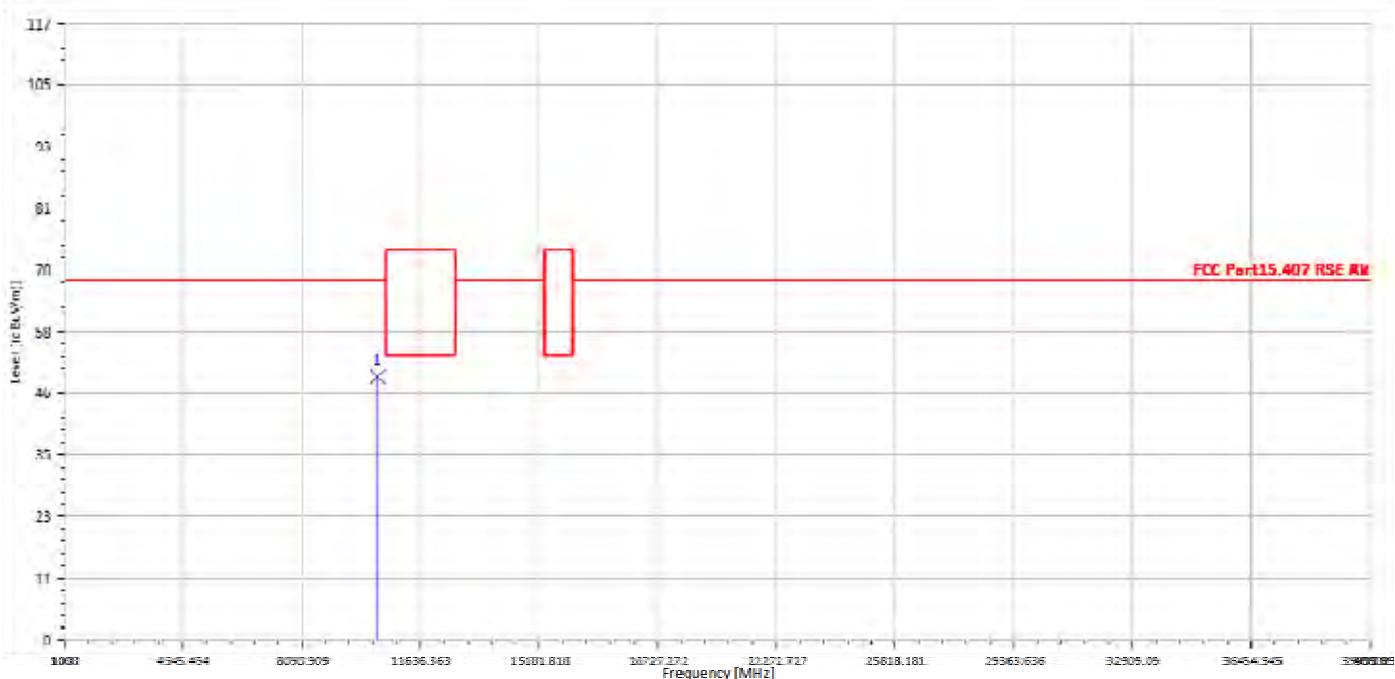
Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10360.00	H	Peak	40.97	9.27	50.24	68.3	-18.06

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Operation Mode : 802.11a Test Date : 2016/7/21  
 Fundamental Frequency : 5180 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH LOW Test Engineer : Tank  
 EUT Pol. : E1 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	Margin dB
10360.00	H	Peak	40.63	9.27	49.90	68.3	-18.40

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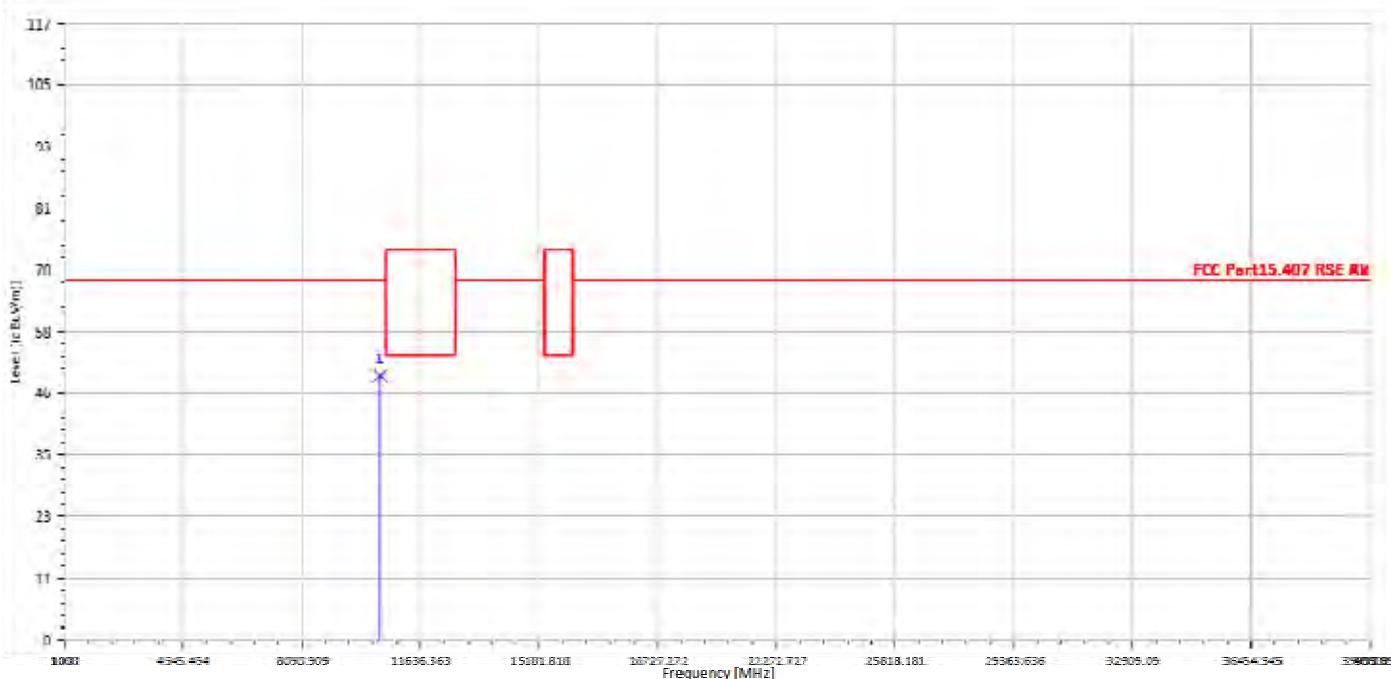
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Operation Mode : 802.11a Test Date : 2016/7/21  
 Fundamental Frequency : 5220 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH MID Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10440.00	H	Peak	40.55	9.57	50.12	68.3	-18.18

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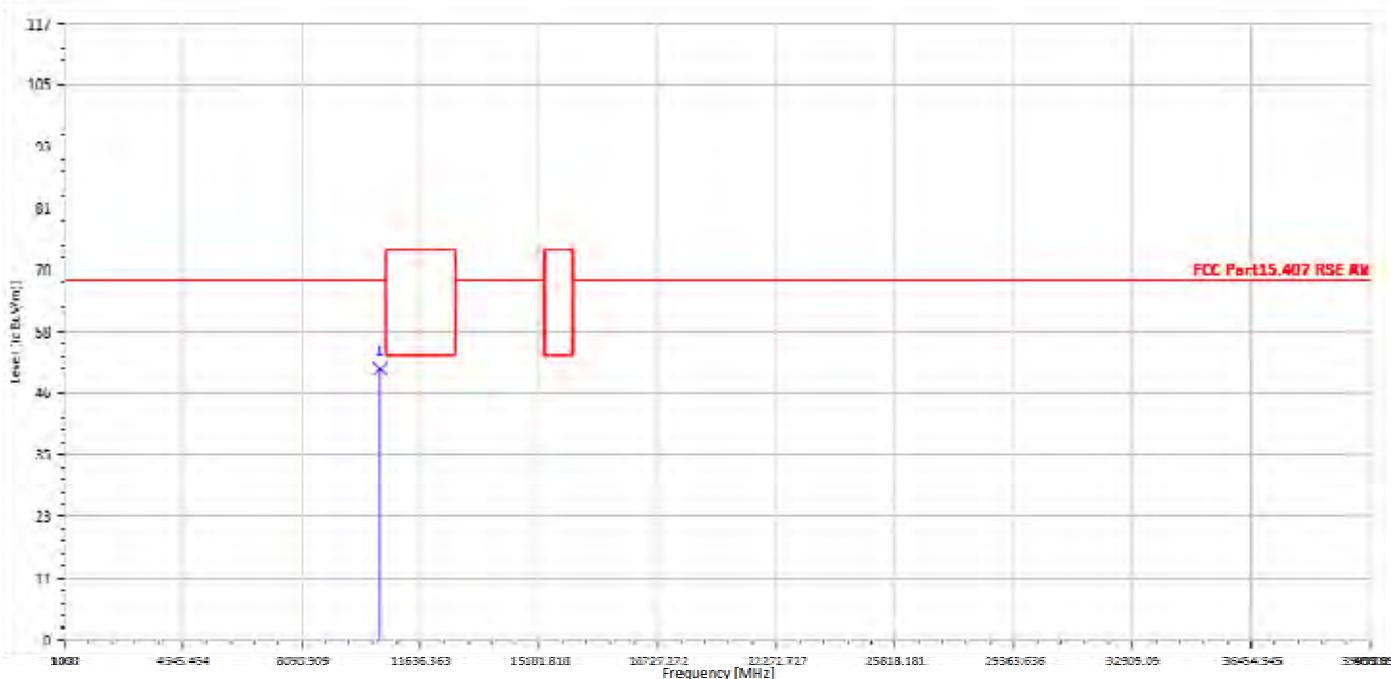
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Operation Mode : 802.11a Test Date : 2016/7/21  
Fundamental Frequency : 5220 MHz Temp. / Humi. : 22.7deg\_C/57RH  
Operation Band : Tx CH MID Test Engineer : Tank  
EUT Pol. : E1 Measurement Antenna Pol. : Horizontal



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	Margin dB
10440.00	H	Peak	41.85	9.57	51.42	68.3	-16.88

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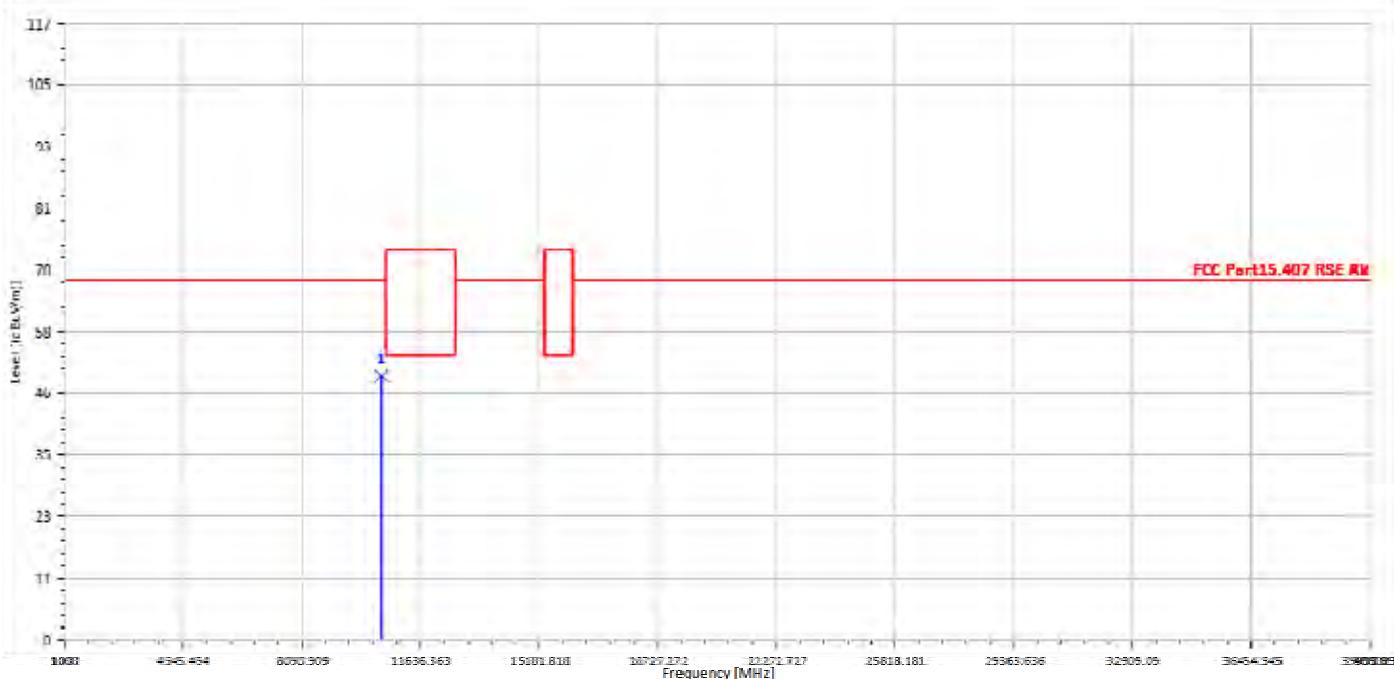
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Operation Mode : 802.11a      Test Date : 2016/7/21  
 Fundamental Frequency : 5240 MHz      Temp. / Humi. : 22.7 deg\_C/57RH  
 Operation Band : Tx CH High      Test Engineer : Tank  
 EUT Pol. : E1      Measurement Antenna Pol. : Vertical



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
10480.00	H	Peak	40.42	9.64	50.06	68.3	-18.24

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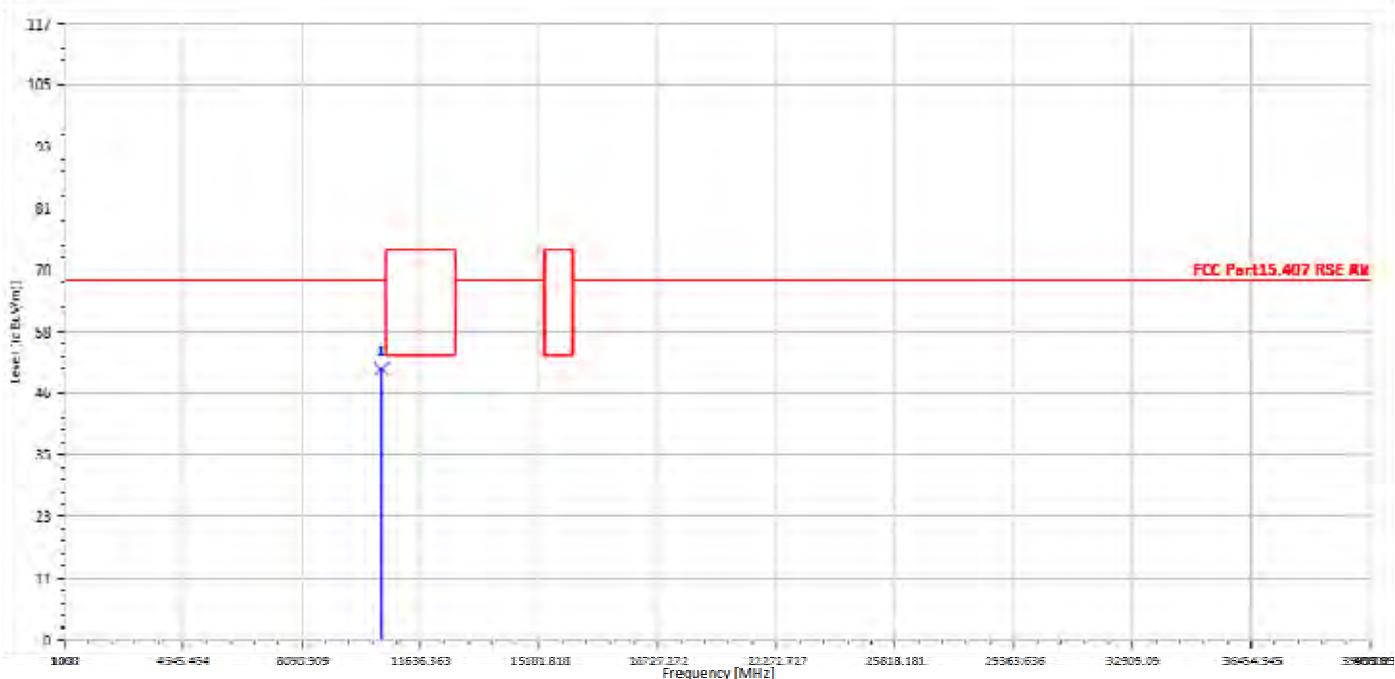
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Operation Mode : 802.11a Test Date : 2016/7/21  
Fundamental Frequency : 5240 MHz Temp. / Humi. : 22.7 deg\_C/57RH  
Operation Band : Tx CH High Test Engineer : Tank  
EUT Pol. : E1 Measurement Antenna Pol. : Horizontal



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	Margin dB
10480.00	H	Peak	41.73	9.64	51.38	68.3	-16.92

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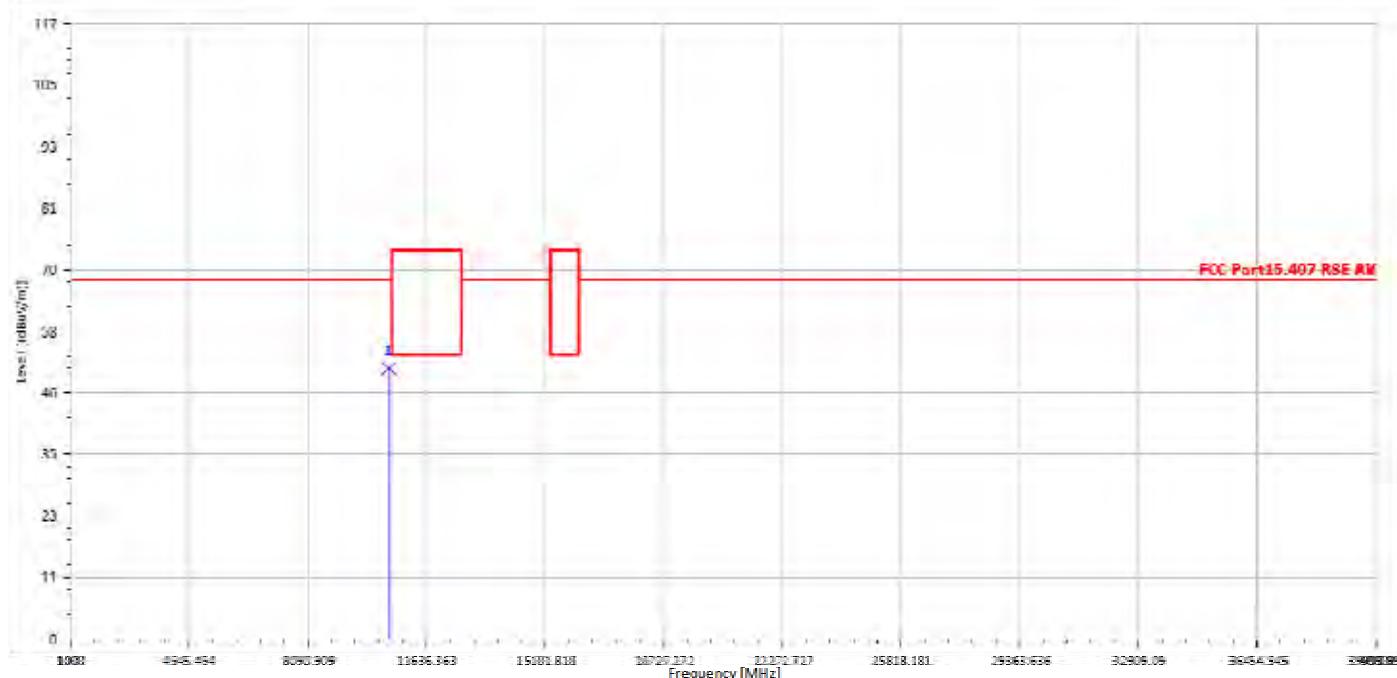
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## Radiated Spurious Emission Measurement Result 802.11a, 5250MHz-5350MHz

Operation Mode : 802.11a Test Date : 2016/7/21  
Fundamental Frequency : 5260 MHz Temp. / Humi. : 22.7deg\_C/57RH  
Operation Band : Tx CH LOW Test Engineer : Tank  
EUT Pol. : E1 Measurement Antenna Pol. : Vertical



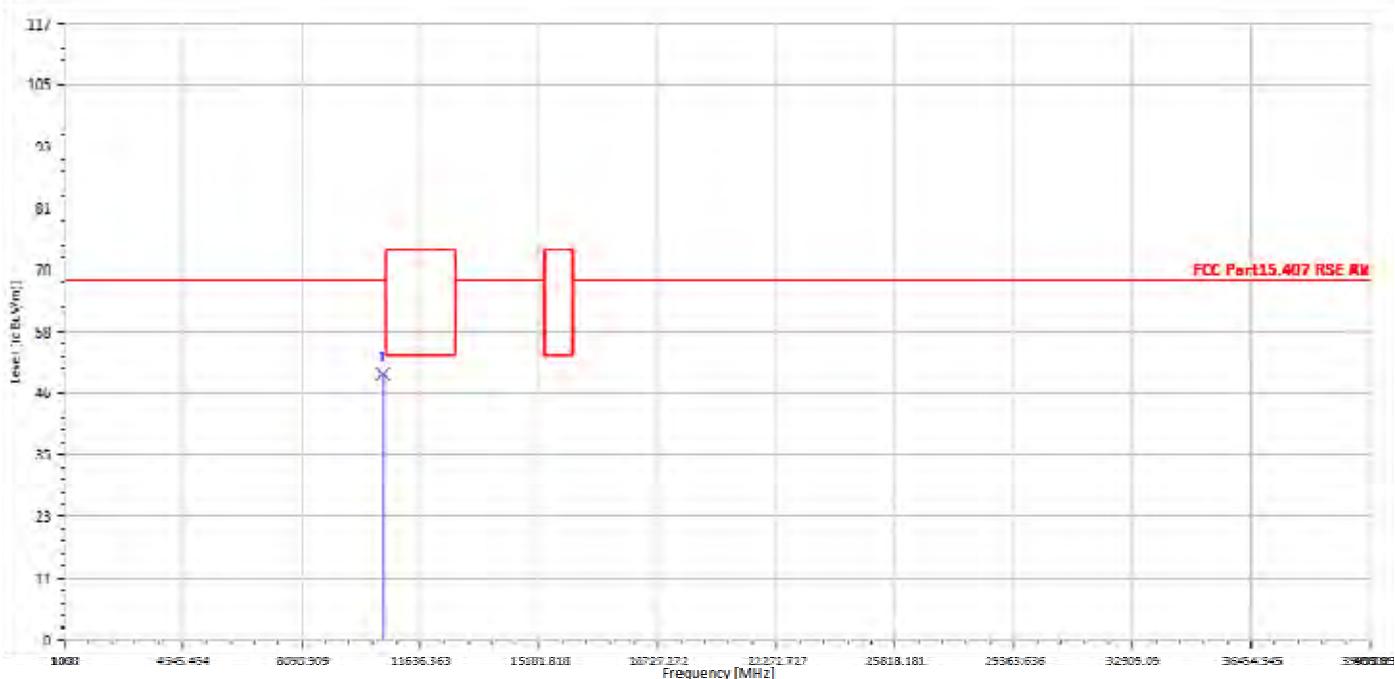
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
10520.00	H	Peak	41.69	9.77	51.46	68.3	-16.84

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Operation Mode : 802.11a Test Date : 2016/7/21  
Fundamental Frequency : 5260 MHz Temp. / Humi. : 22.7deg\_C/57RH  
Operation Band : Tx CH LOW Test Engineer : Tank  
EUT Pol. : E1 Measurement Antenna Pol. : Horizontal



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	F/H/E/S	Mode	Reading Level	dB	FS	@3m	
		PK/QP/AV	dB $\mu$ V		dB $\mu$ V/m	dB $\mu$ V/m	
10520.00	H	Peak	40.63	9.77	50.40	68.3	-17.90

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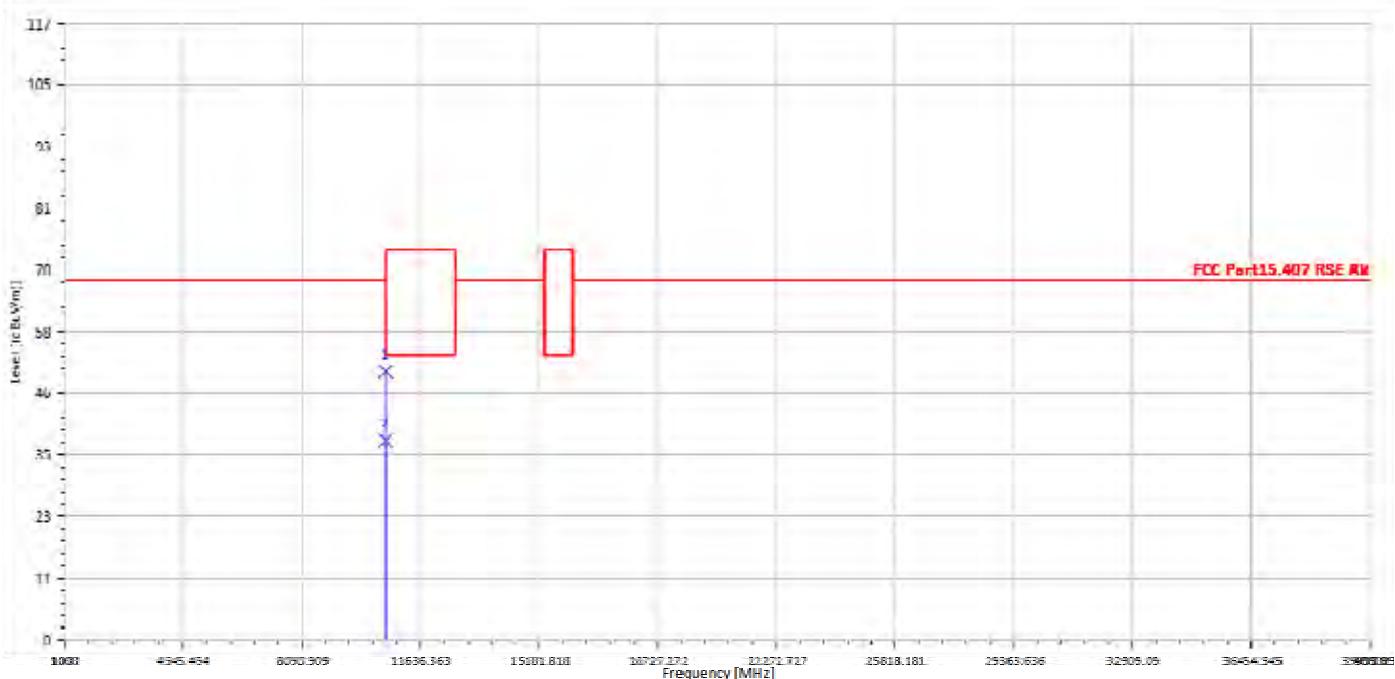
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Operation Mode : 802.11a Test Date : 2016/7/21  
 Fundamental Frequency : 5300 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH MID Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10600.00	H	Peak	40.82	10.15	50.97	74	-23.03
10600.00	H	Average	27.67	10.15	37.82	54	-16.18

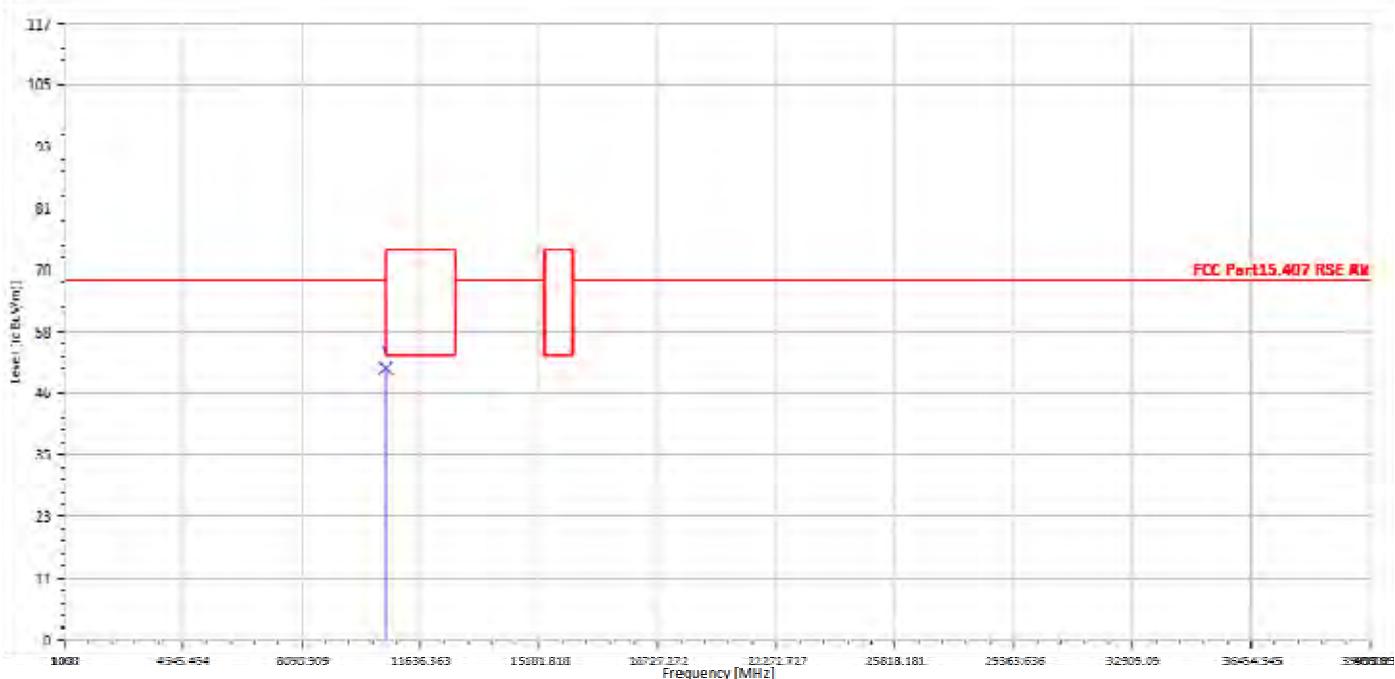
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Operation Mode : 802.11a Test Date : 2016/7/21  
Fundamental Frequency : 5300 MHz Temp. / Humi. : 22.7deg\_C/57RH  
Operation Band : Tx CH MID Test Engineer : Tank  
EUT Pol. : E1 Measurement Antenna Pol. : Horizontal



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	F/H/E/S	Mode	Reading Level	dB	FS	@3m	dB
10600.00	H	PK/QP/AV	41.45	10.15	51.60	74	-22.40

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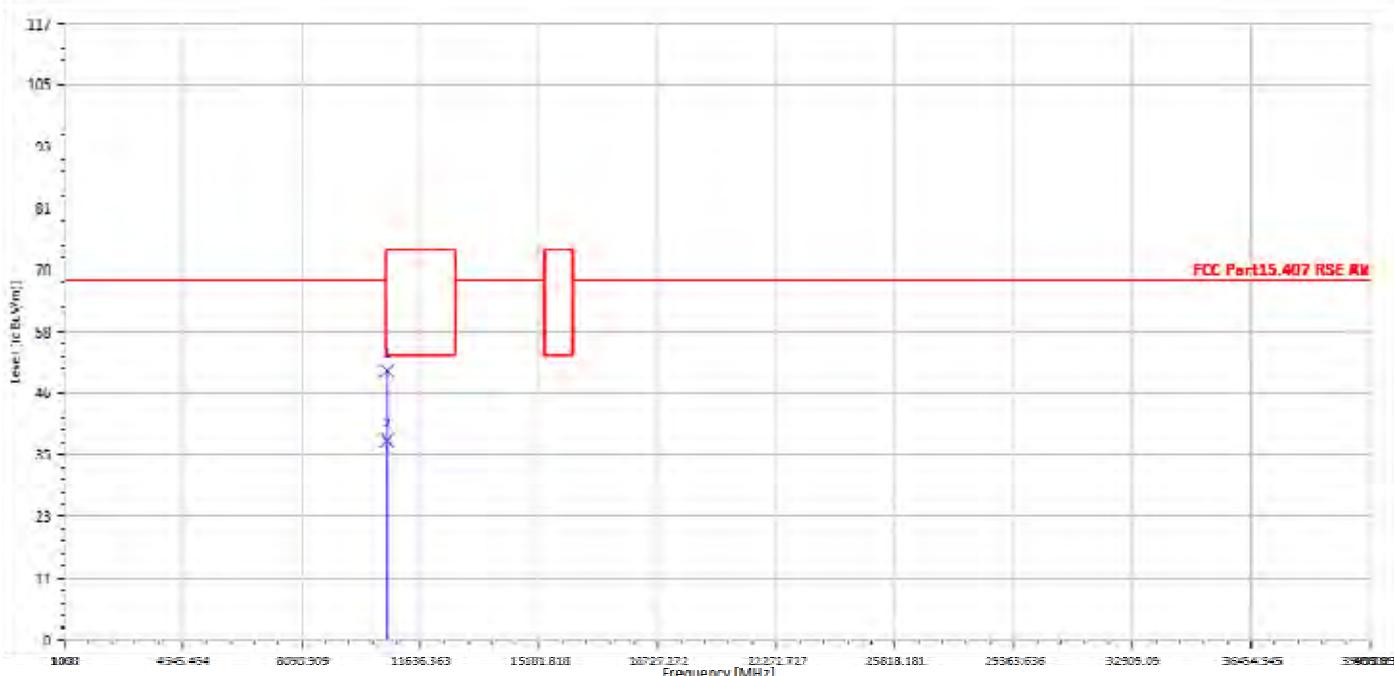
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Operation Mode : 802.11a Test Date : 2016/7/21  
 Fundamental Frequency : 5320 MHz Temp. / Humi. : 22.7 deg\_C/57RH  
 Operation Band : Tx CH High Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10640.00	H	Peak	41.02	10.07	51.10	74	-22.90
10640.00	H	Average	27.78	10.07	37.85	54	-16.15

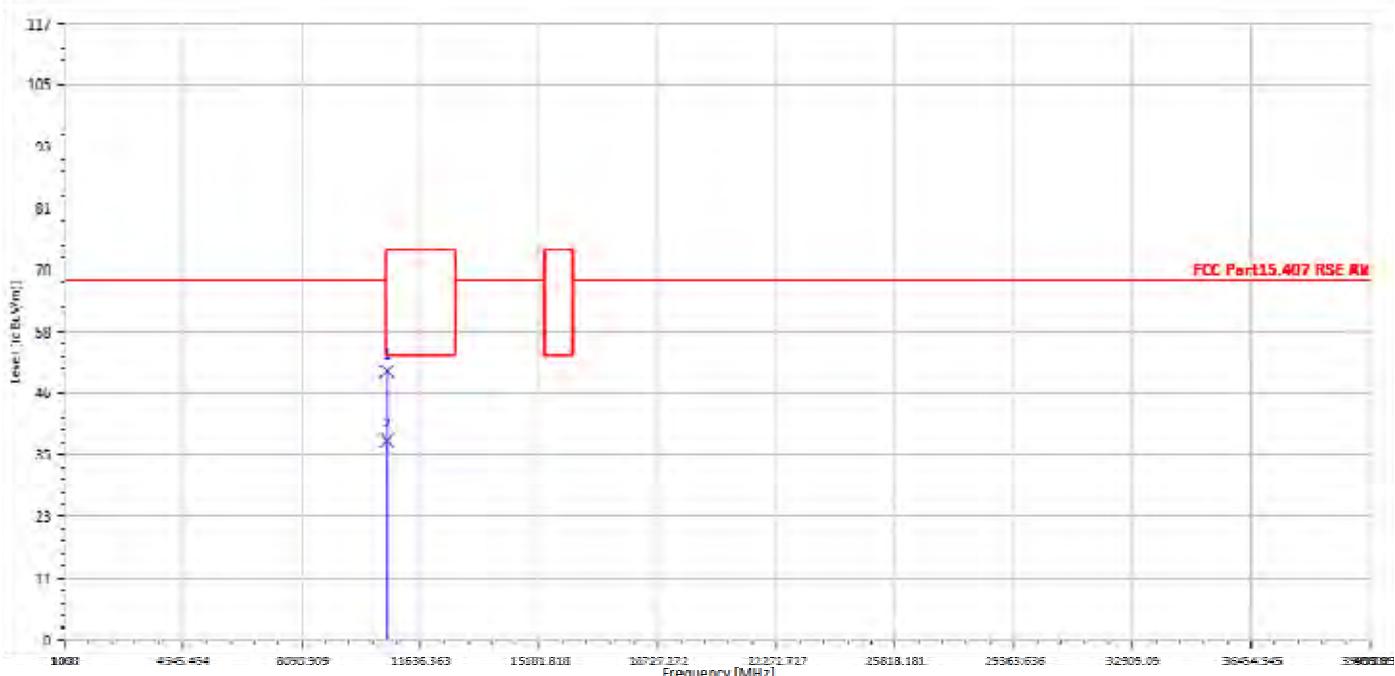
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Operation Mode : 802.11a Test Date : 2016/7/21  
 Fundamental Frequency : 5320 MHz Temp. / Humi. : 22.7 deg\_C/57RH  
 Operation Band : Tx CH High Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal



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	Margin dB
10640.00	H	Peak	40.95	10.07	51.02	74	-22.98
10640.00	H	Average	27.79	10.07	37.86	54	-16.14

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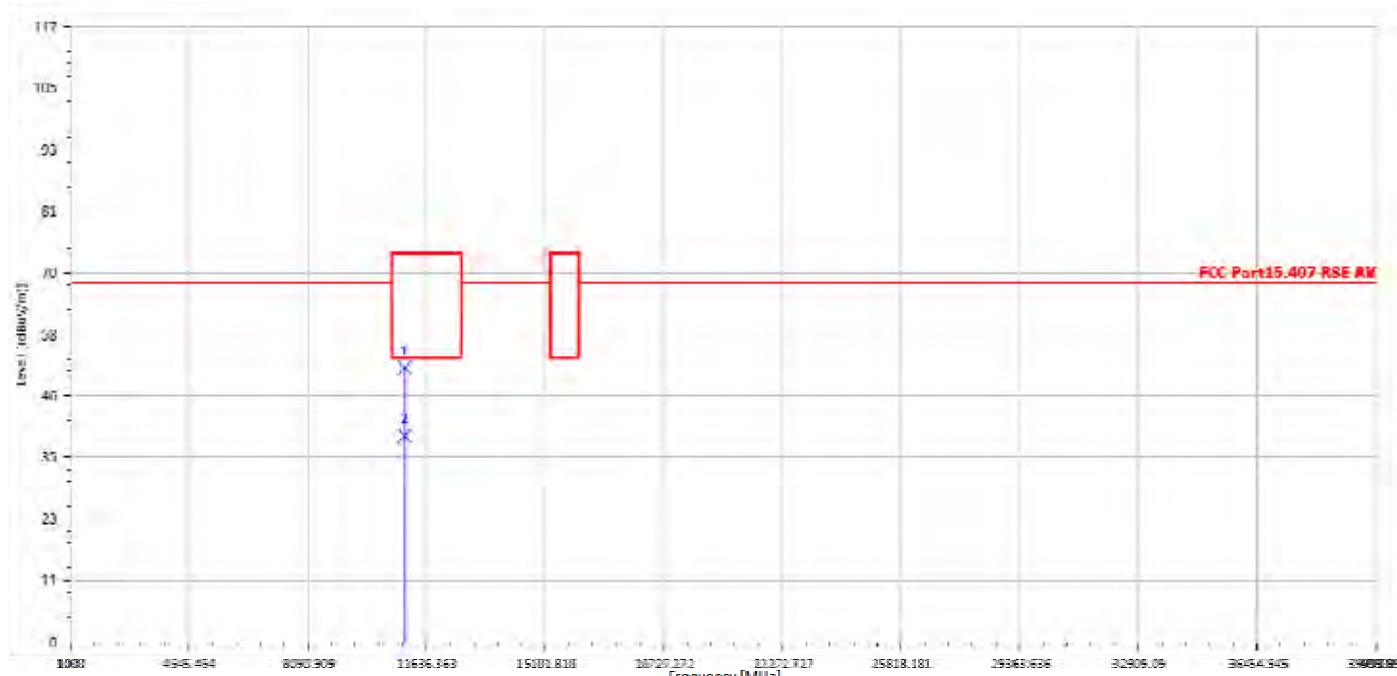
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## Radiated Spurious Emission Measurement Result 802.11a, 5470~5725 MHz

Operation Mode : 802.11a Test Date : 2016/7/21  
 Fundamental Frequency : 5500 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH Low Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11000.00	H	Peak	40.46	11.71	52.17	74	-21.83
11000.00	H	Average	27.47	11.71	39.18	54	-14.82

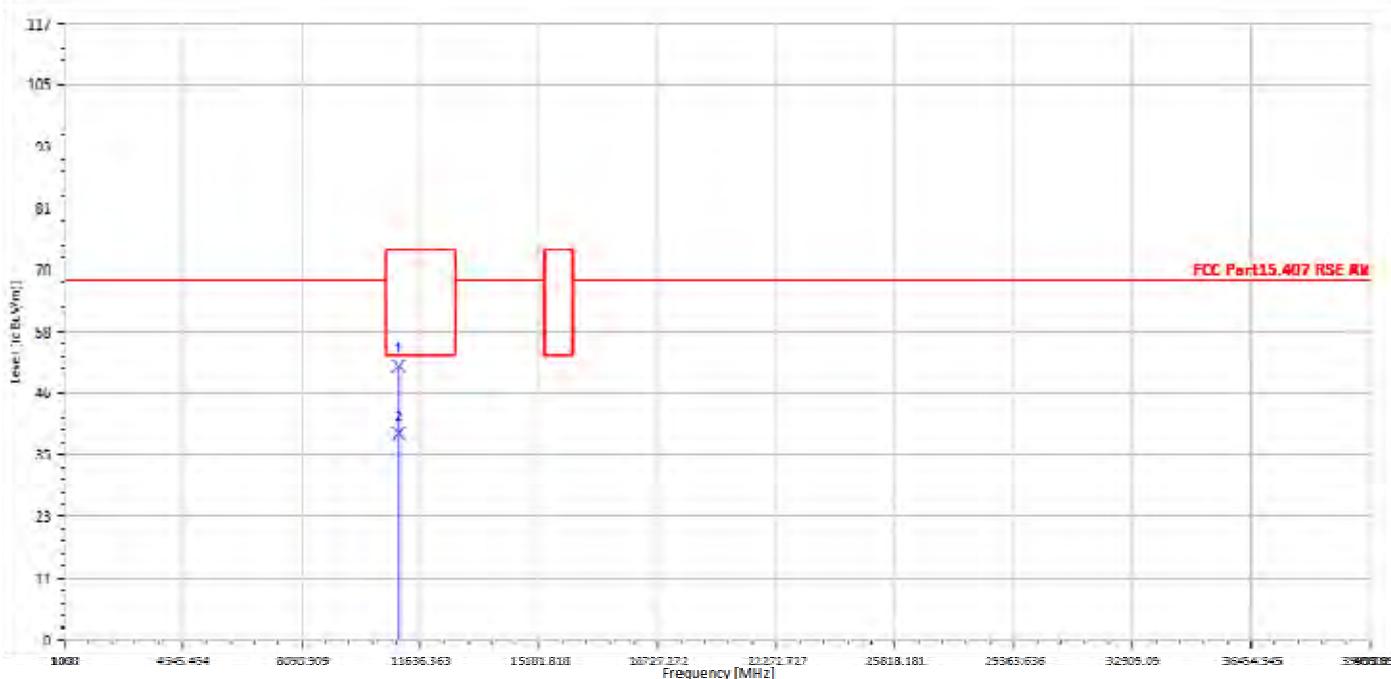
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Operation Mode : 802.11a Test Date : 2016/7/21  
 Fundamental Frequency : 5500 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH Low Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal



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	Margin dB
11000.00	H	Peak	40.32	11.71	52.03	74	-21.97
11000.00	H	Average	27.47	11.71	39.18	54	-14.82

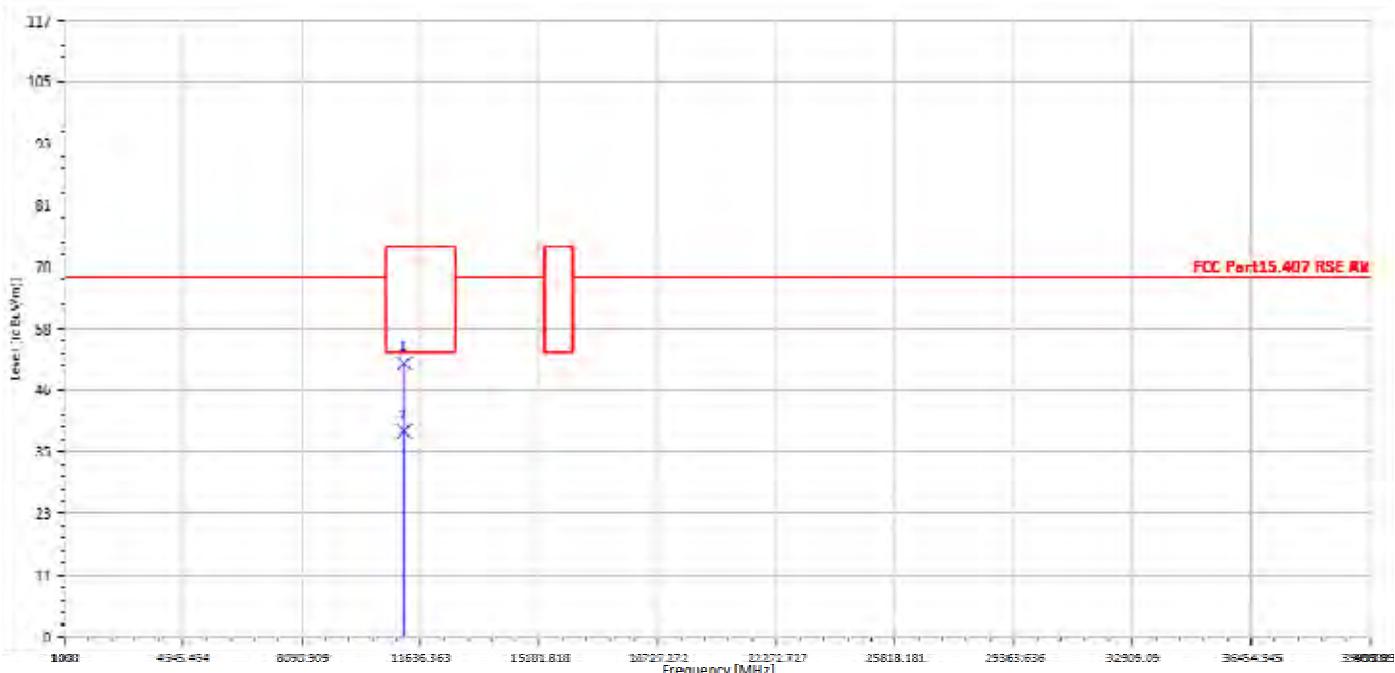
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Operation Mode : 802.11a Test Date : 2016/7/21  
 Fundamental Frequency : 5580 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH MID Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
11160.00	H	Peak	40.43	11.51	51.94	74	-22.06
11160.00	H	Average	27.52	11.51	39.03	54	-14.97

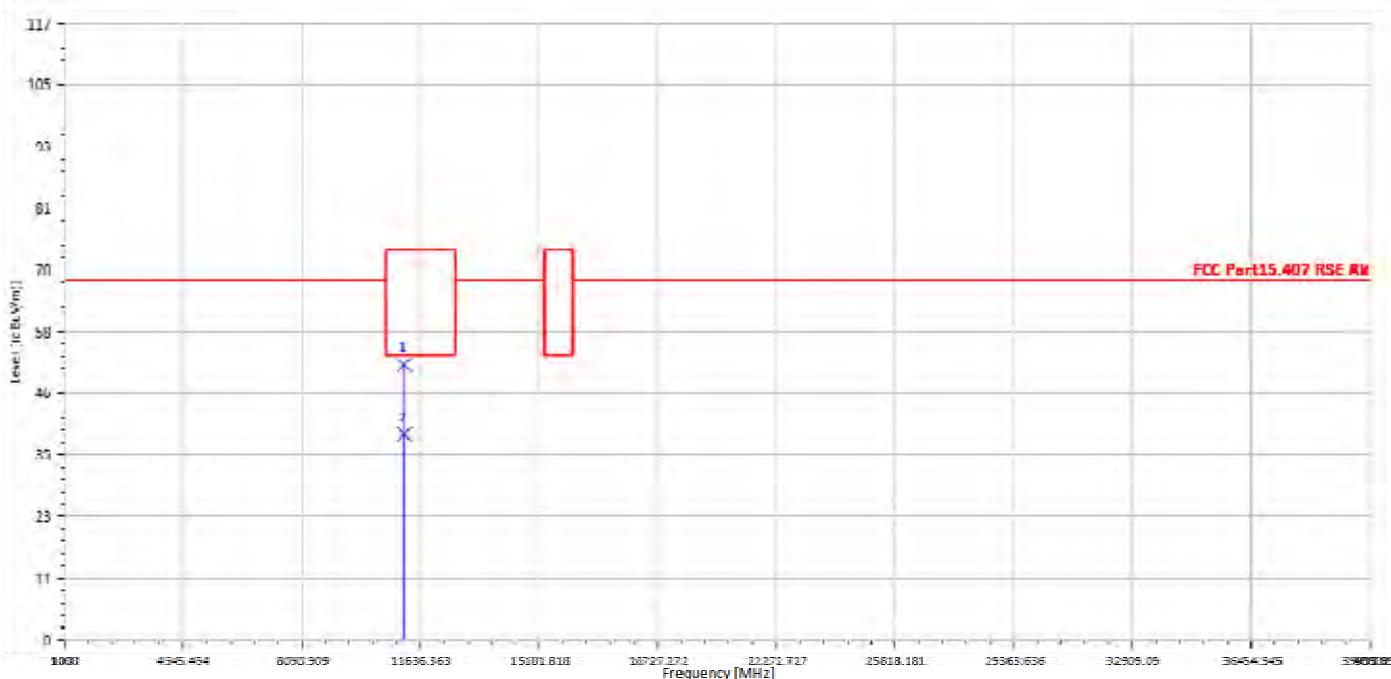
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Operation Mode : 802.11a Test Date : 2016/7/21  
 Fundamental Frequency : 5580 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH MID Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal



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	Margin dB
11160.00	H	Peak	40.72	11.51	52.23	74	-21.77
11160.00	H	Average	27.53	11.51	39.04	54	-14.96

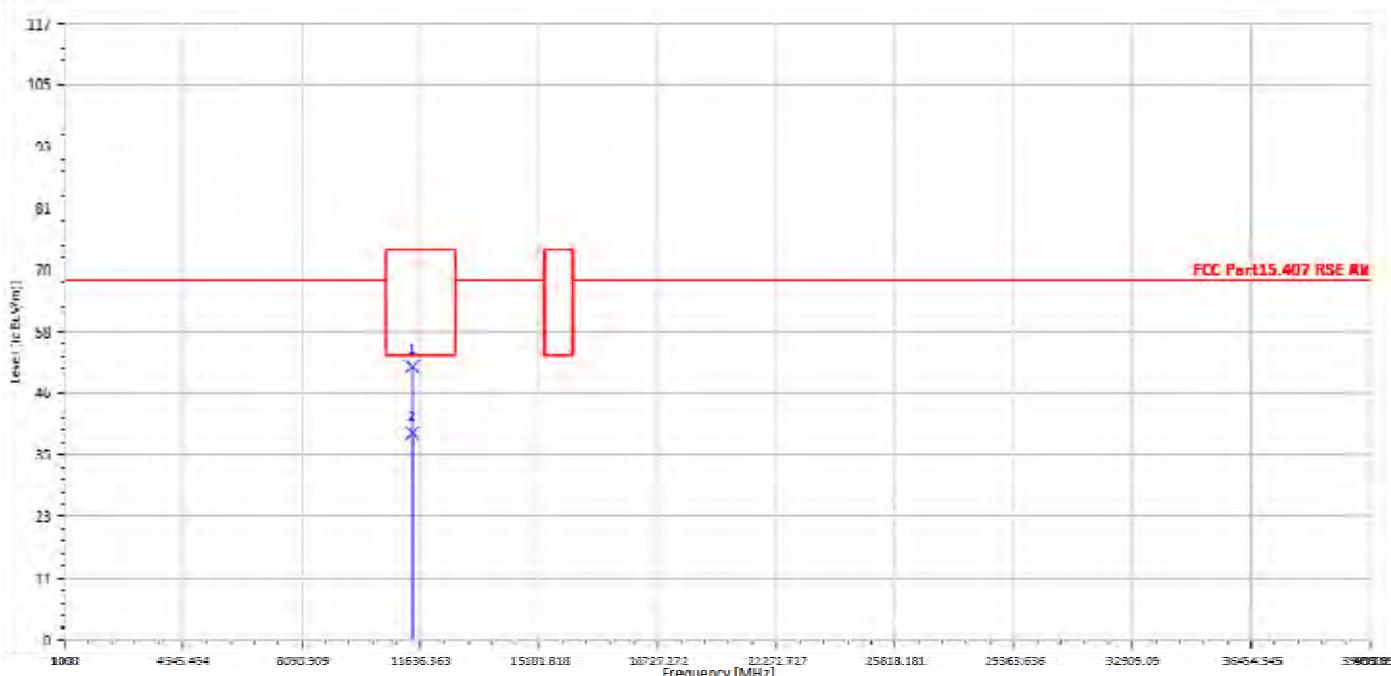
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Operation Mode : 802.11a Test Date : 2016/7/21  
 Fundamental Frequency : 5700 MHz Temp. / Humi. : 22.7 deg\_C/57RH  
 Operation Band : Tx CH High Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
11400.00	H	Peak	40.28	11.60	51.88	74	-22.12
11400.00	H	Average	27.62	11.60	39.22	54	-14.78

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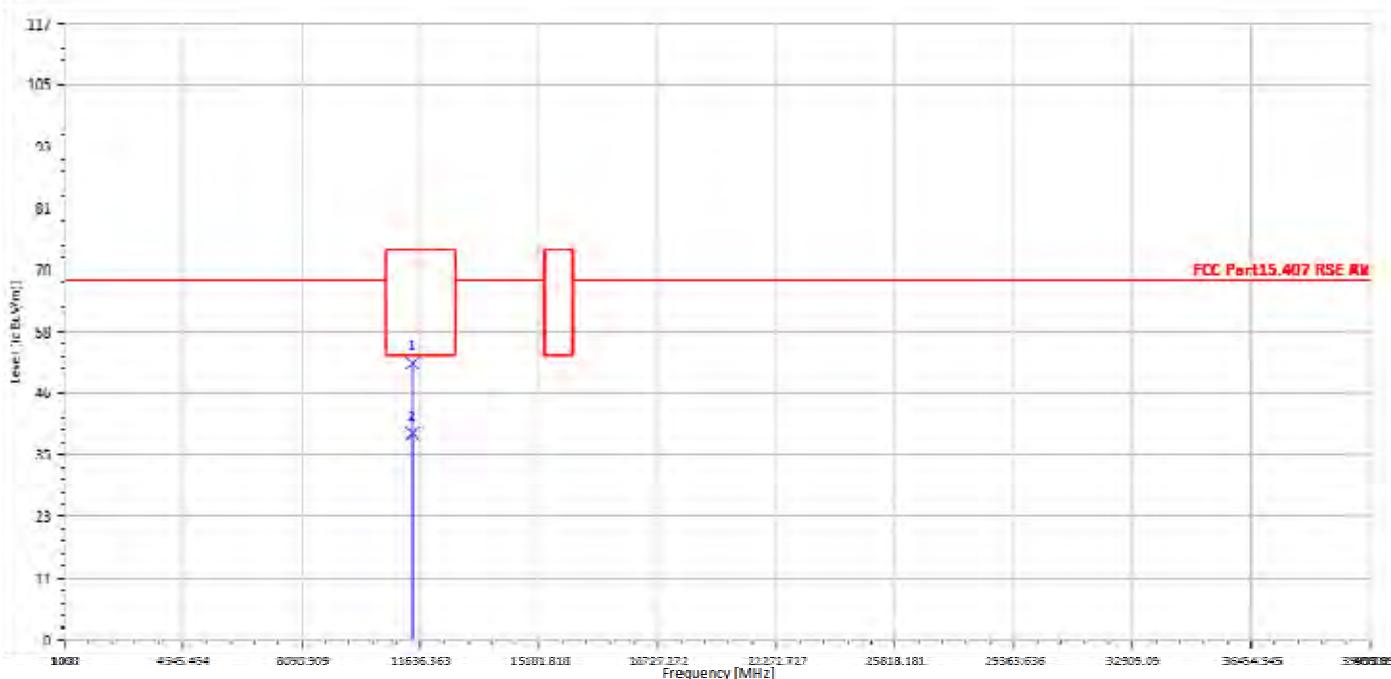
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Operation Mode : 802.11a Test Date : 2016/7/21  
 Fundamental Frequency : 5700 MHz Temp. / Humi. : 22.7 deg\_C/57RH  
 Operation Band : Tx CH High Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11400.00	H	Peak	40.96	11.60	52.56	74	-21.44
11400.00	H	Average	27.55	11.60	39.15	54	-14.85

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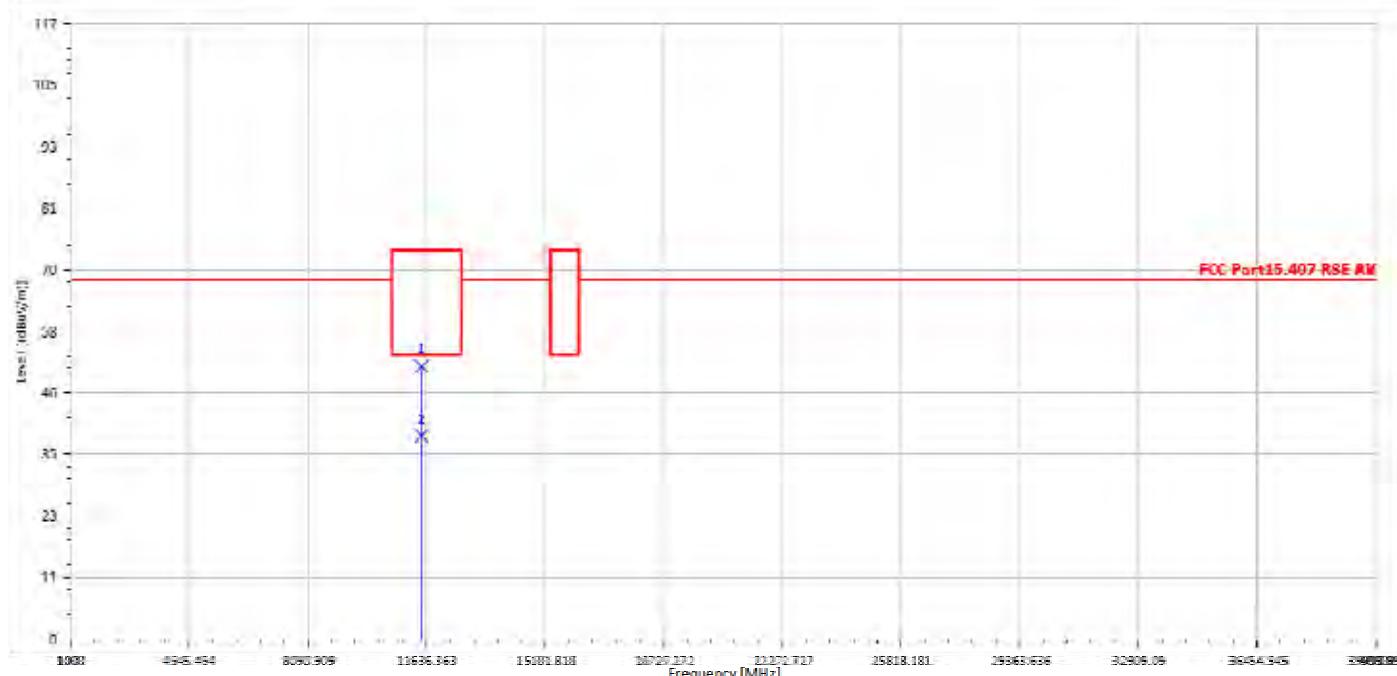
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## Radiated Spurious Emission Measurement Result 802.11a, 5725~5850 MHz

Operation Mode : 802.11a Test Date : 2016/7/21  
 Fundamental Frequency : 5745 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH Low Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical



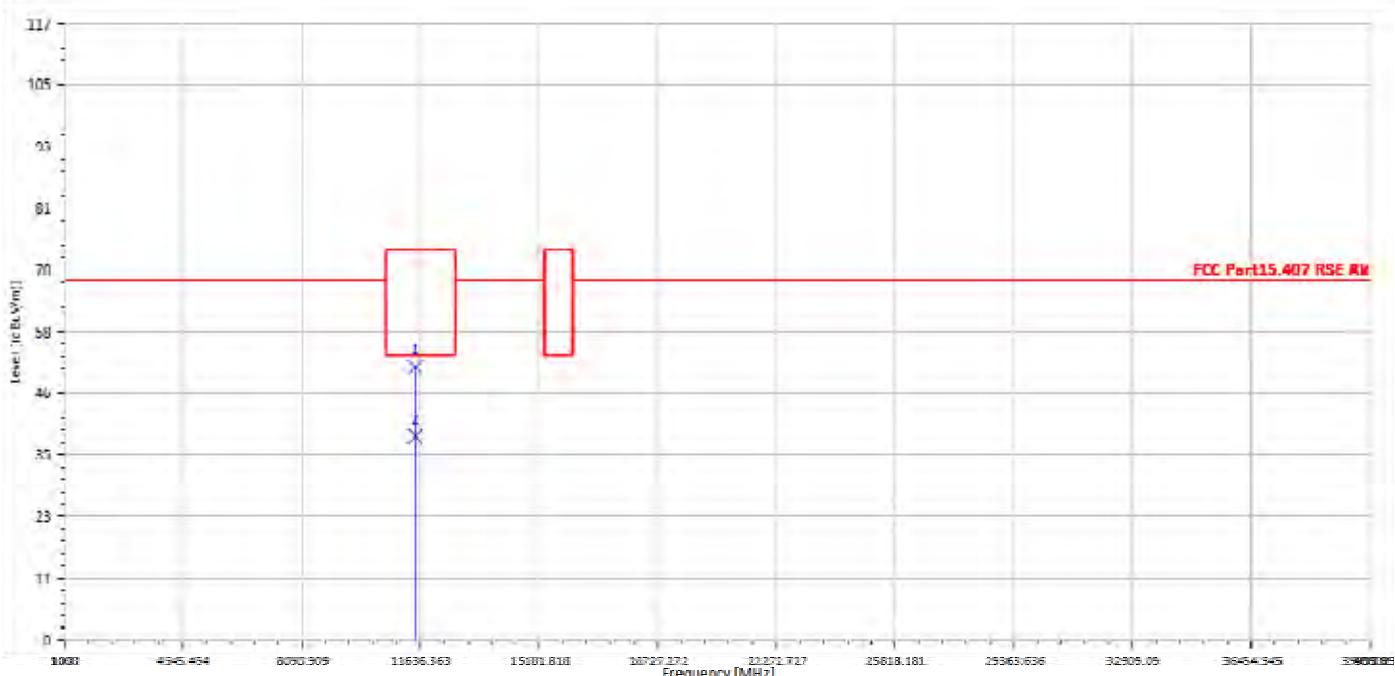
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11490.00	H	Peak	40.68	11.18	51.85	74	-22.15
11490.00	H	Average	27.45	11.18	38.63	54	-15.37

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Operation Mode : 802.11a Test Date : 2016/7/21  
 Fundamental Frequency : 5745 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH Low Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11490.00	H	Peak	40.61	11.18	51.79	74	-22.21
11490.00	H	Average	27.44	11.18	38.62	54	-15.38

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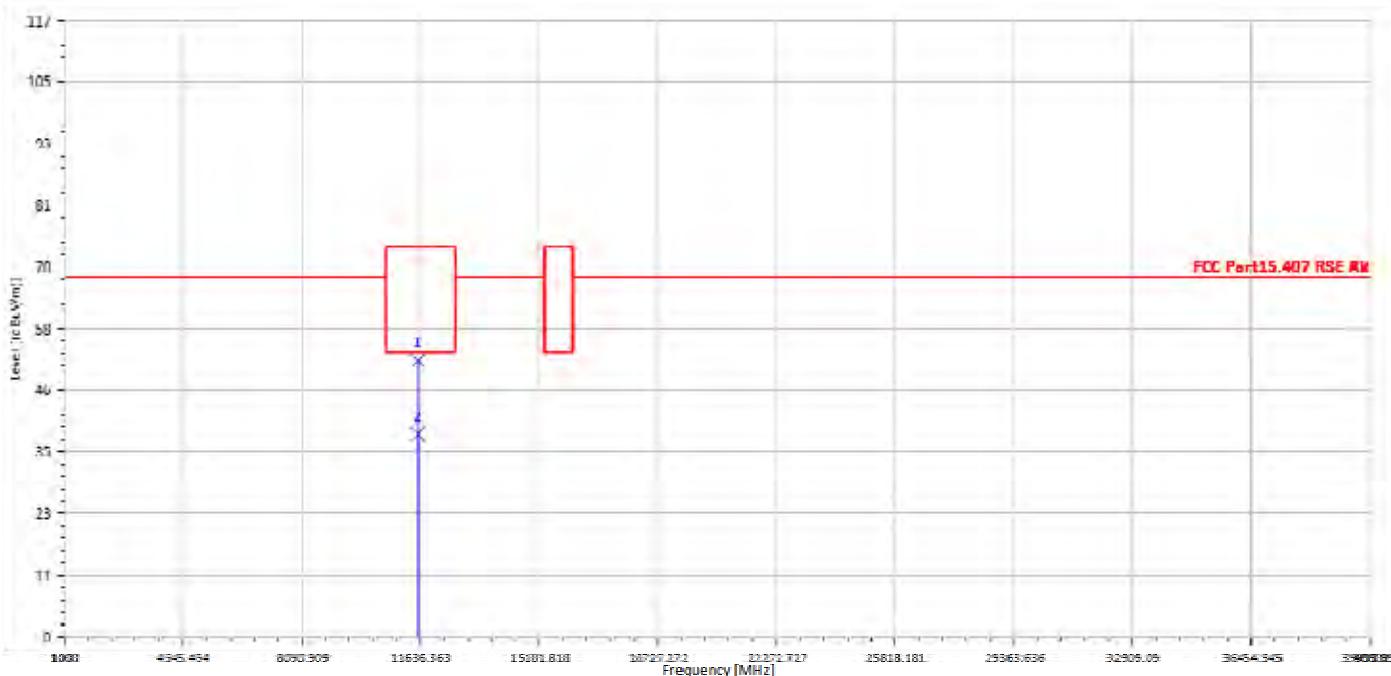
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Operation Mode : 802.11a Test Date : 2016/7/21  
 Fundamental Frequency : 5785 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH MID Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical



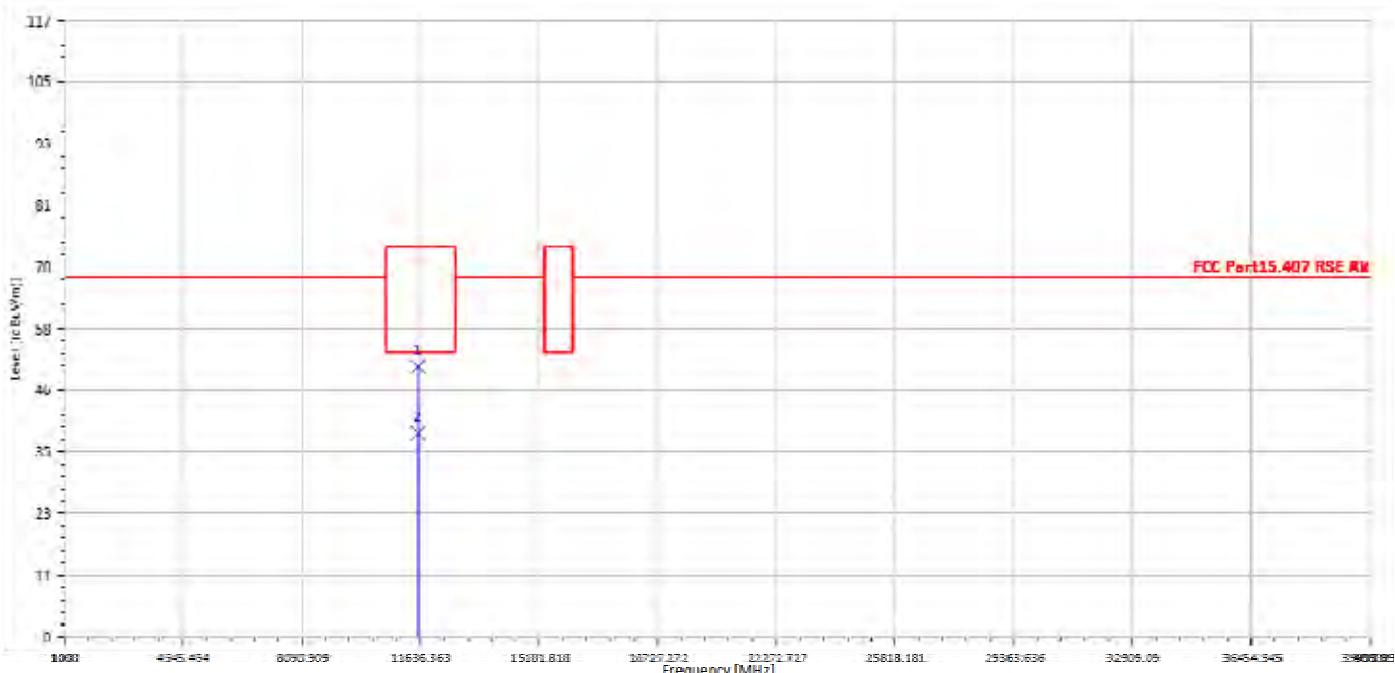
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
11570.00	H	Peak	41.42	11.06	52.48	74	-21.52
11570.00	H	Average	27.40	11.06	38.46	54	-15.54

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Operation Mode : 802.11a Test Date : 2016/7/21  
 Fundamental Frequency : 5785 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH MID Test Engineer : Tank  
 EUT Pol. : E1 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	Margin dB
11570.00	H	Peak	40.22	11.06	51.28	74	-22.72
11570.00	H	Average	27.53	11.06	38.59	54	-15.41

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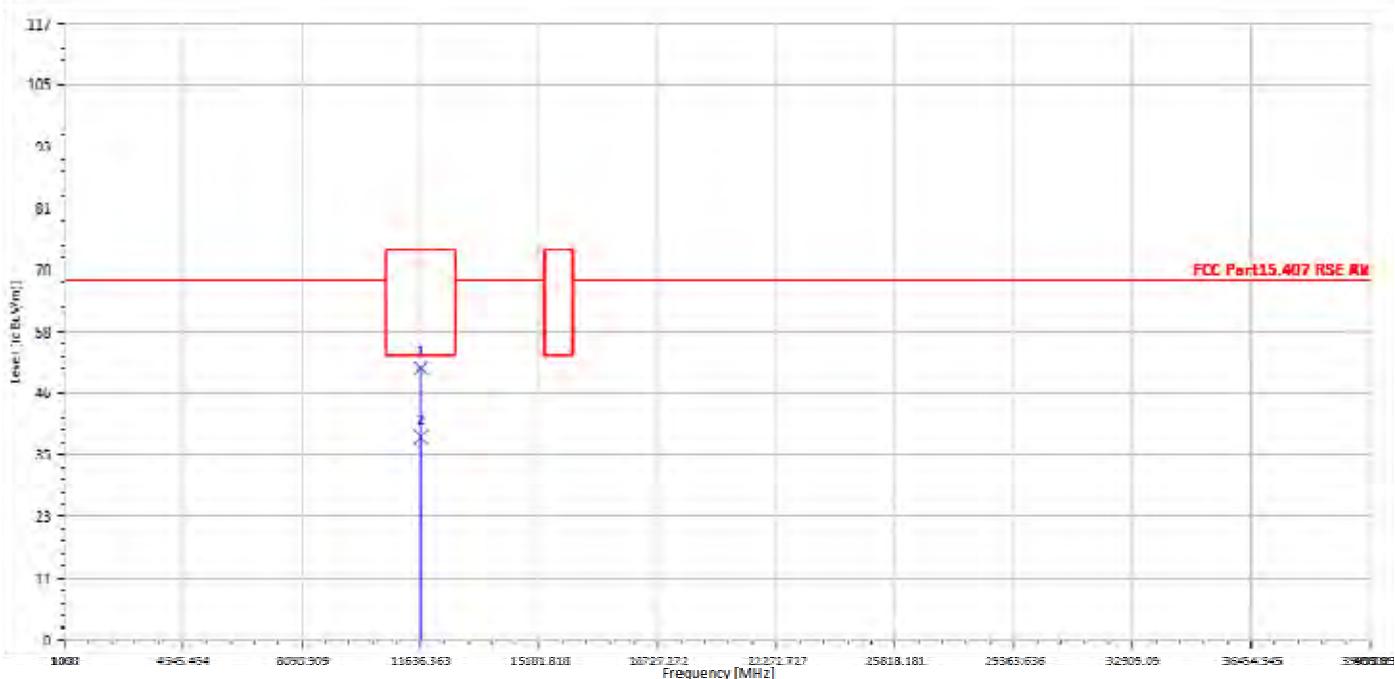
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Operation Mode : 802.11a Test Date : 2016/7/21  
 Fundamental Frequency : 5825 MHz Temp. / Humi. : 22.7 deg\_C/57RH  
 Operation Band : Tx CH High Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
11650.00	H	Peak	40.95	10.69	51.64	74	-22.36
11650.00	H	Average	27.78	10.69	38.47	54	-15.53

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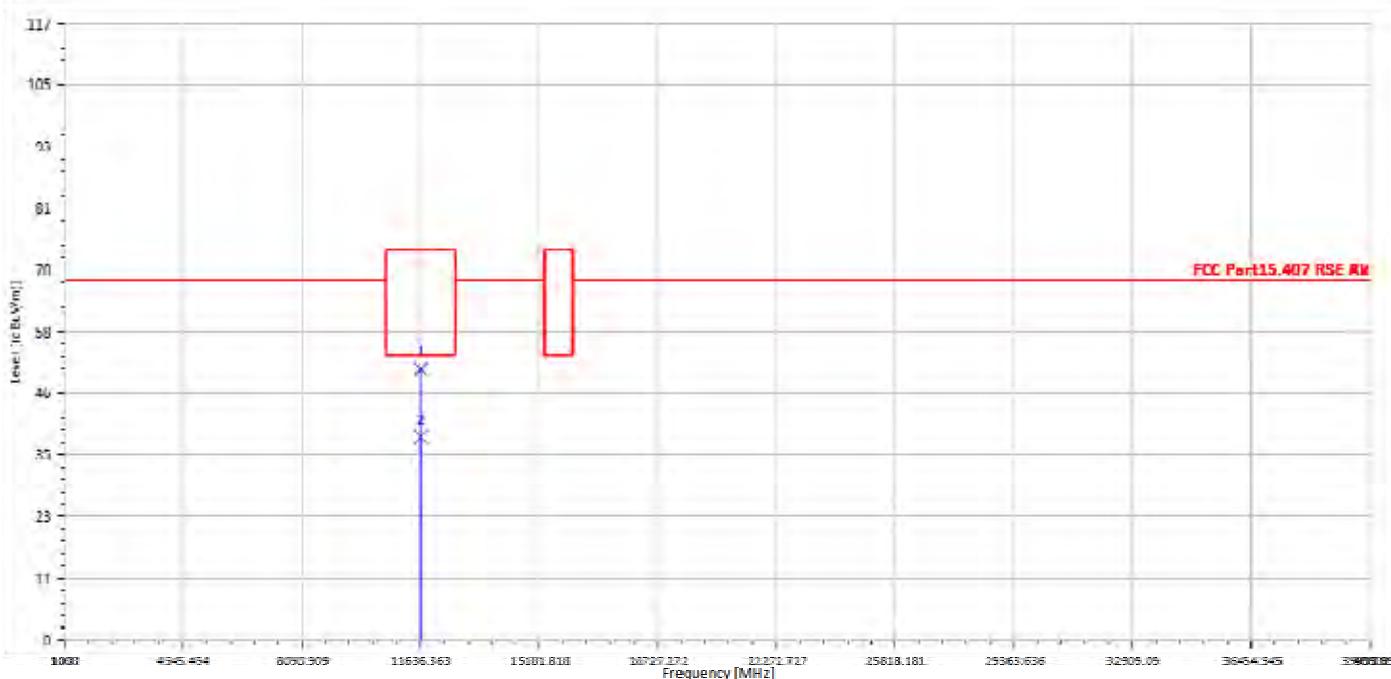
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Operation Mode : 802.11a Test Date : 2016/7/21  
 Fundamental Frequency : 5825 MHz Temp. / Humi. : 22.7 deg\_C/57RH  
 Operation Band : Tx CH High Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
11650.00	H	Peak	40.65	10.69	51.34	74	-22.66
11650.00	H	Average	27.81	10.69	38.50	54	-15.50

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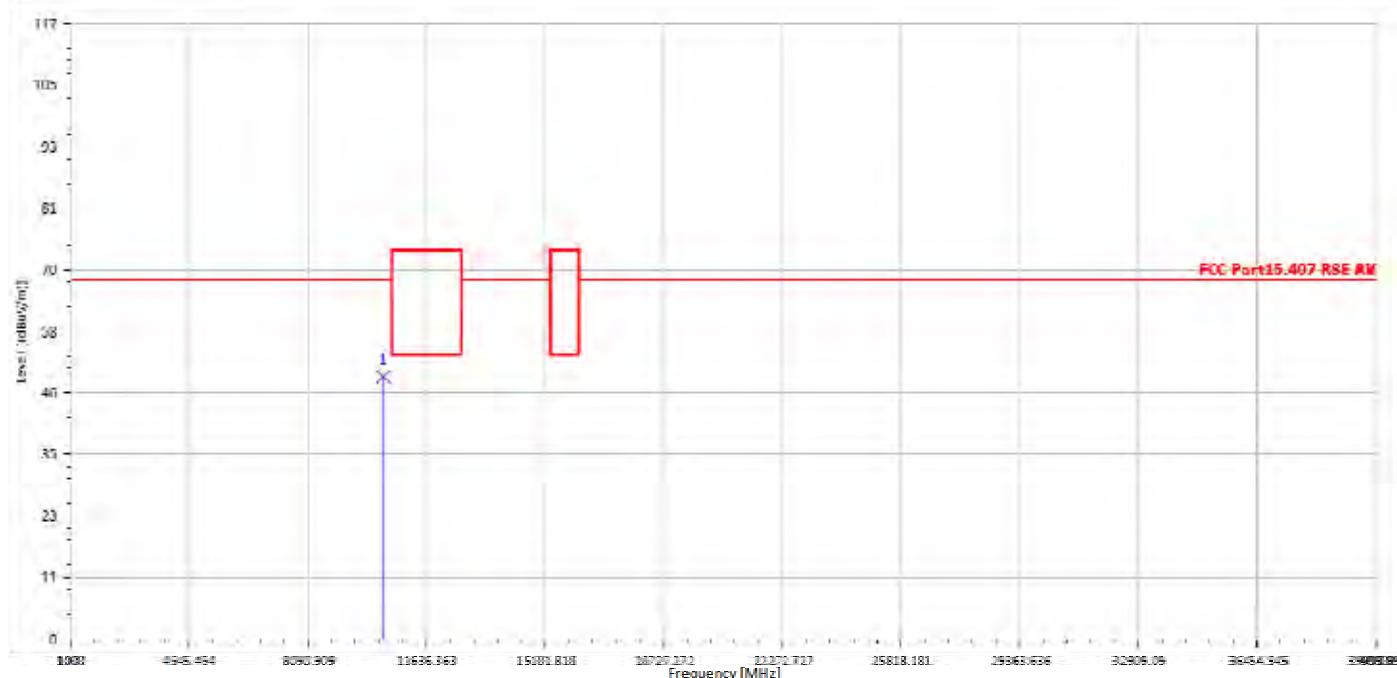
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## Radiated Spurious Emission Measurement Result 802.11n HT20, 5150~5250 MHz

Operation Mode : 802.11n20 Test Date : 2016/7/21  
Fundamental Frequency : 5180 MHz Temp. / Humi. : 22.7deg\_C/57RH  
Operation Band : Tx CH LOW Test Engineer : Tank  
EUT Pol. : E1 Measurement Antenna Pol. : Vertical



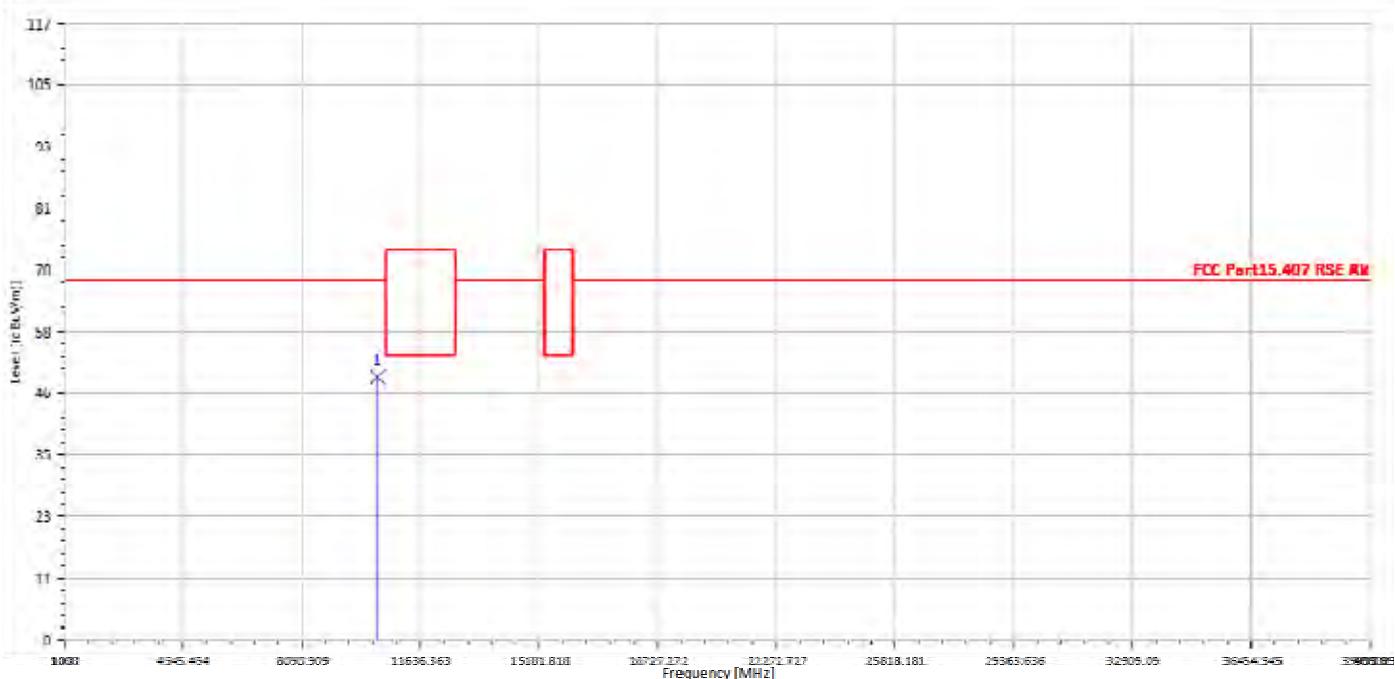
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
10360.00	H	Peak	40.61	9.27	49.88	68.3	-18.42

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Operation Mode : 802.11n20 Test Date : 2016/7/21  
Fundamental Frequency : 5180 MHz Temp. / Humi. : 22.7deg\_C/57RH  
Operation Band : Tx CH LOW Test Engineer : Tank  
EUT Pol. : E1 Measurement Antenna Pol. : Horizontal



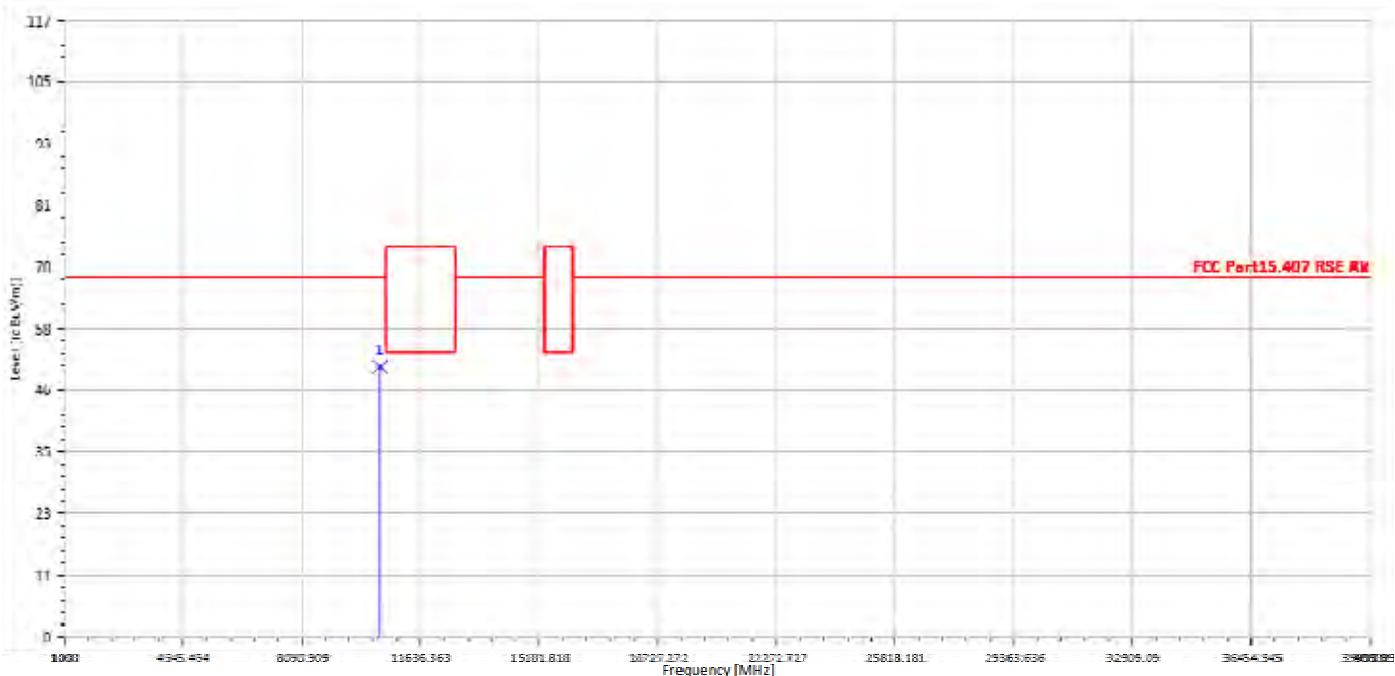
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	F/H/E/S	Mode	Reading Level	dB	FS	@3m	dB
10360.00	H	PK/QP/AV	40.57	9.27	49.84	68.3	-18.46

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Operation Mode : 802.11n20 Test Date : 2016/7/21  
Fundamental Frequency : 5220 MHz Temp. / Humi. : 22.7deg\_C/57RH  
Operation Band : Tx CH MID Test Engineer : Tank  
EUT Pol. : E1 Measurement Antenna Pol. : Vertical



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
10440.00	H	Peak	41.68	9.57	51.25	68.3	-17.05

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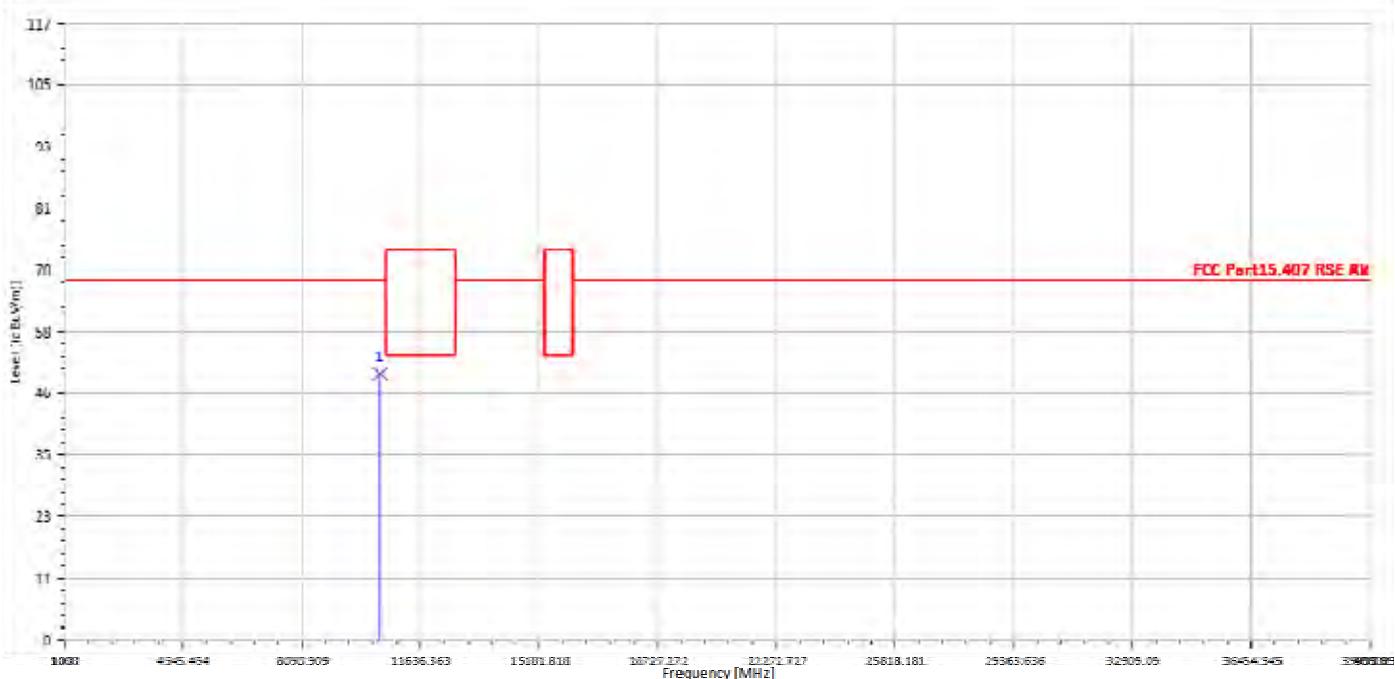
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Operation Mode : 802.11n20 Test Date : 2016/7/21  
 Fundamental Frequency : 5220 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH MID Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal



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	Margin dB
10440.00	H	Peak	40.89	9.57	50.46	68.3	-17.84

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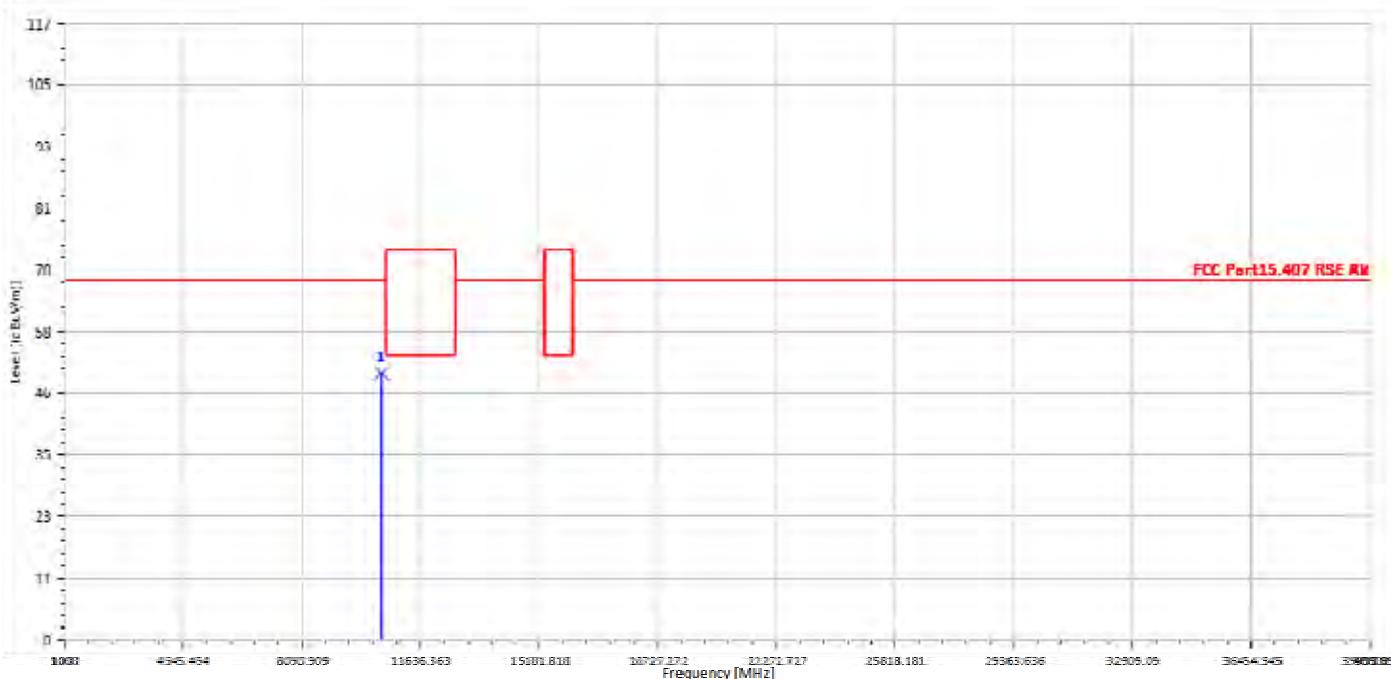
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Operation Mode : 802.11n20 Test Date : 2016/7/21  
Fundamental Frequency : 5240 MHz Temp. / Humi. : 22.7deg\_C/57RH  
Operation Band : Tx CH HIGH Test Engineer : Tank  
EUT Pol. : E1 Measurement Antenna Pol. : Vertical



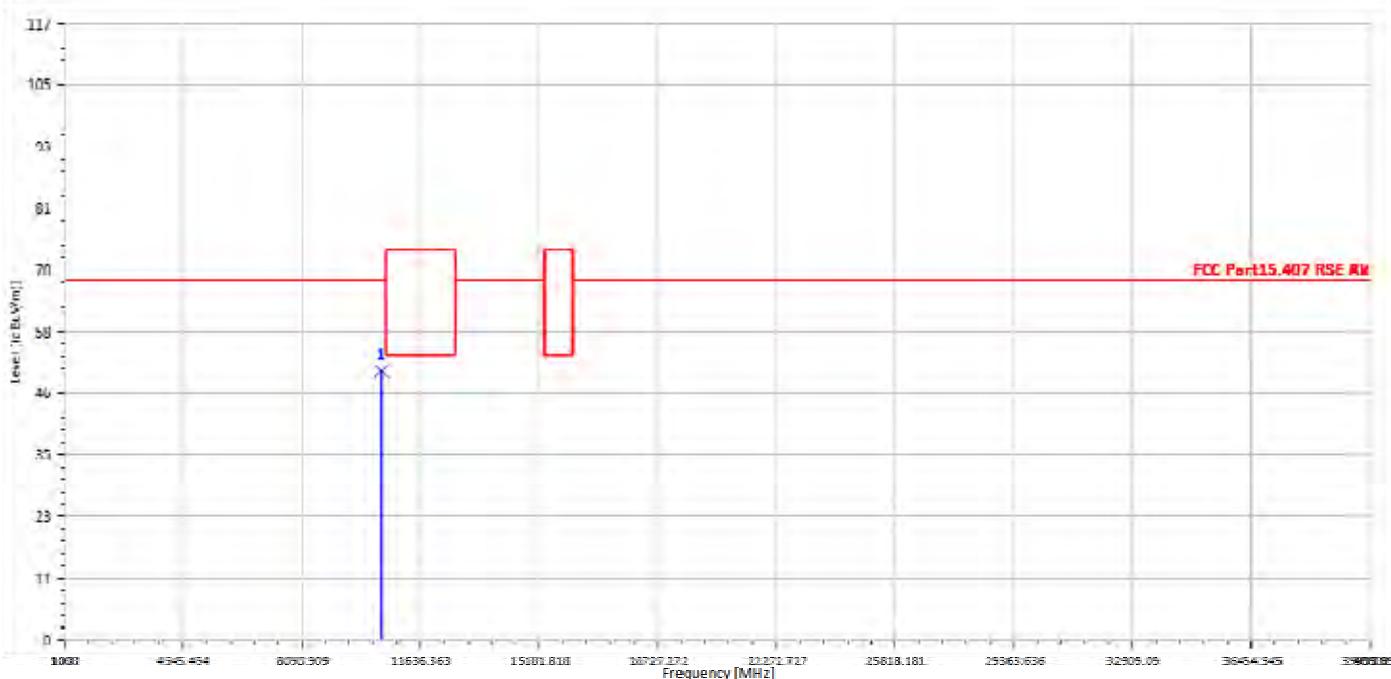
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10480.00	H	Peak	40.94	9.64	50.58	68.3	-17.72

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Operation Mode : 802.11n20 Test Date : 2016/7/21  
Fundamental Frequency : 5240 MHz Temp. / Humi. : 22.7deg\_C/57RH  
Operation Band : Tx CH HIGH Test Engineer : Tank  
EUT Pol. : E1 Measurement Antenna Pol. : Horizontal



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10480.00	H	Peak	41.41	9.64	51.06	68.3	-17.24

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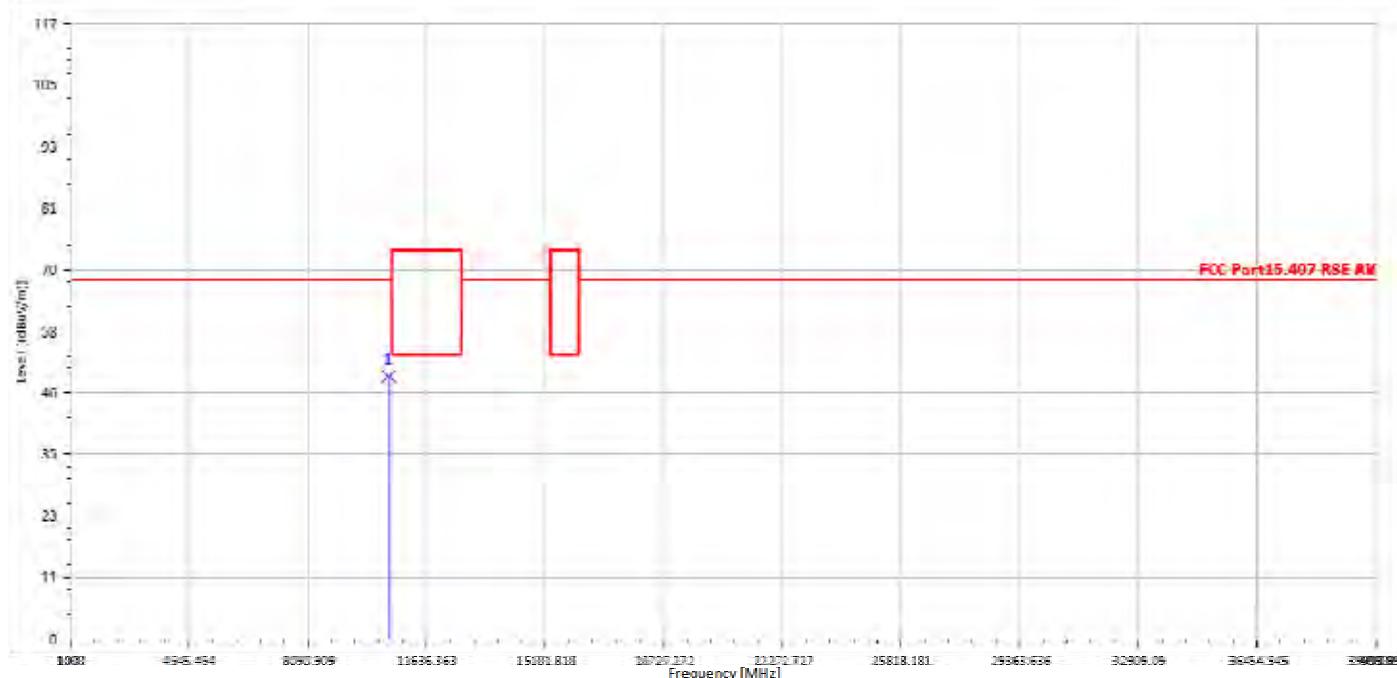
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## Radiated Spurious Emission Measurement Result 802.11n HT20, 5250~5350 MHz

Operation Mode : 802.11n20 Test Date : 2016/7/21  
Fundamental Frequency : 5260 MHz Temp. / Humi. : 22.7deg\_C/57RH  
Operation Band : Tx CH LOW Test Engineer : Tank  
EUT Pol. : E1 Measurement Antenna Pol. : Vertical



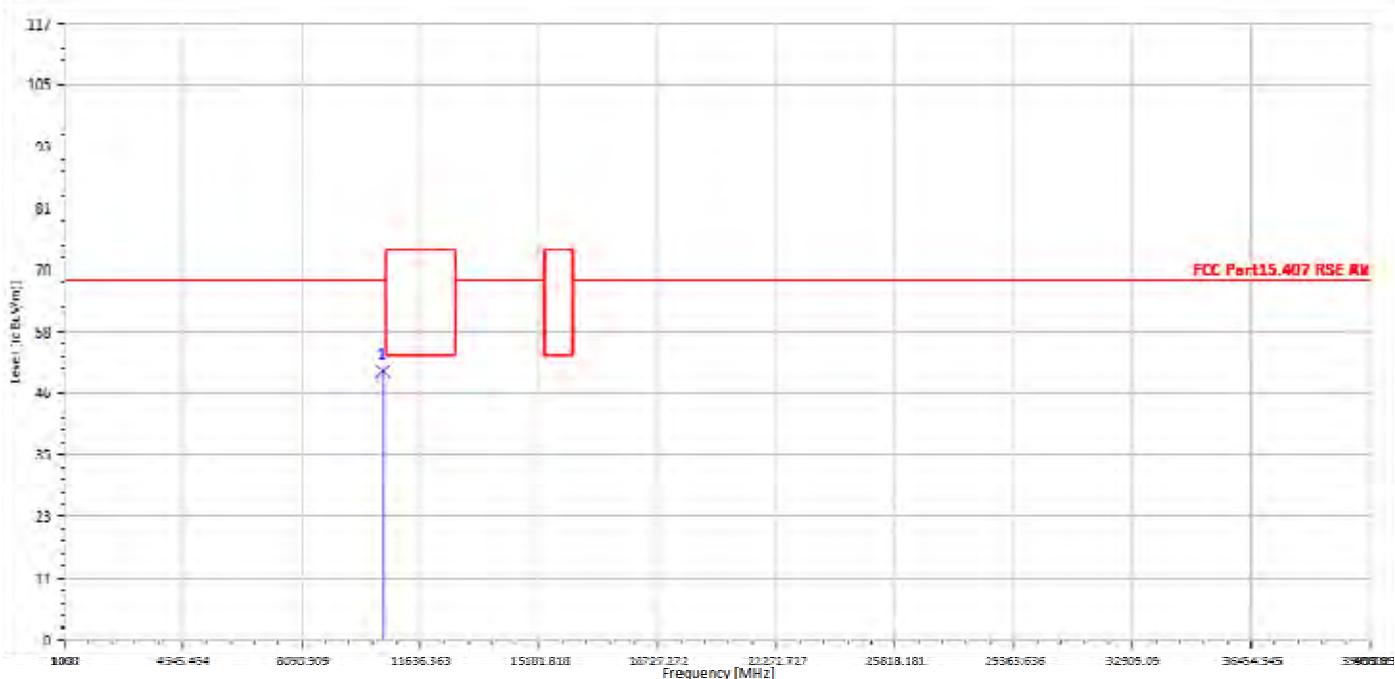
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB <sub>µ</sub> V	Factor dB	Actual FS dB <sub>µ</sub> V/m	Limit @3m dB <sub>µ</sub> V/m	Margin dB
10520.00	H	Peak	40.12	9.77	49.89	68.3	-18.41

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Operation Mode : 802.11n20      Test Date : 2016/7/21  
 Fundamental Frequency : 5260 MHz      Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH LOW      Test Engineer : Tank  
 EUT Pol. : E1      Measurement Antenna Pol. : Horizontal



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
10520.00	H	Peak	41.25	9.77	51.03	68.3	-17.27

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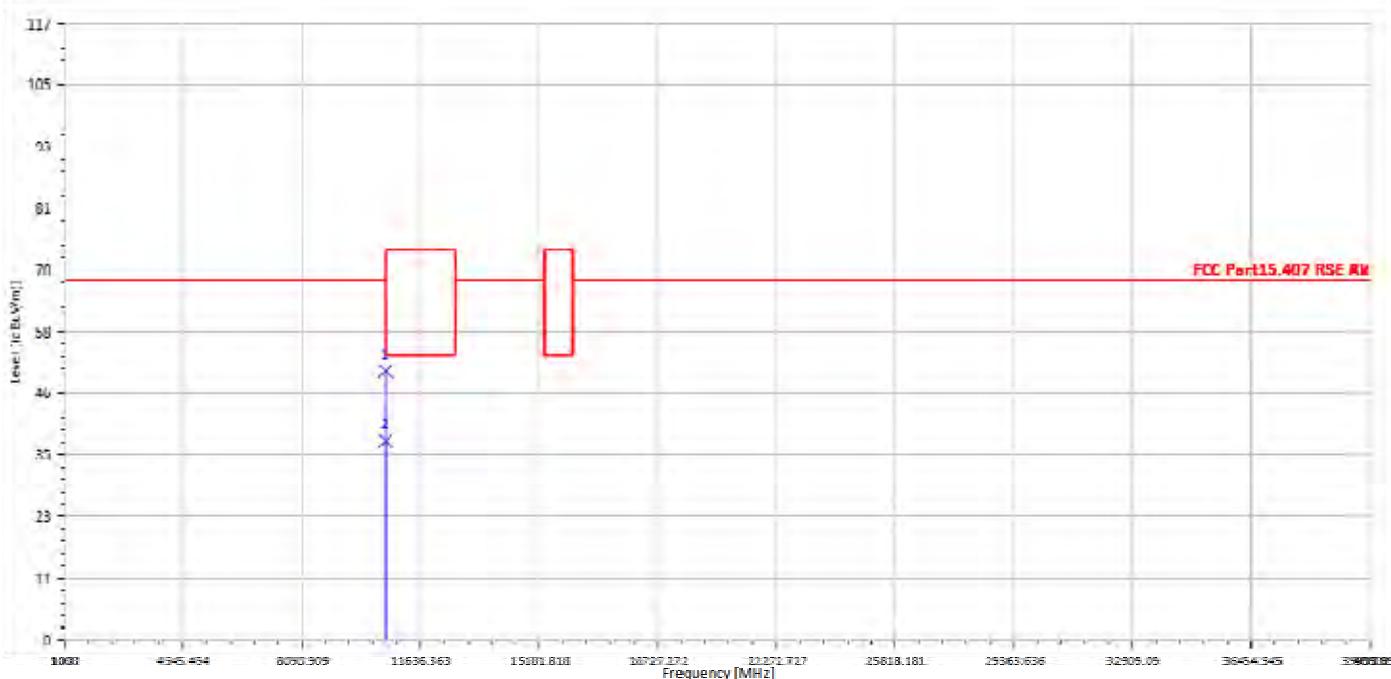
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Operation Mode : 802.11n20 Test Date : 2016/7/21  
 Fundamental Frequency : 5300 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH MID Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
10600.00	H	Peak	40.90	10.15	51.05	74	-22.95
10600.00	H	Average	27.63	10.15	37.78	54	-16.22

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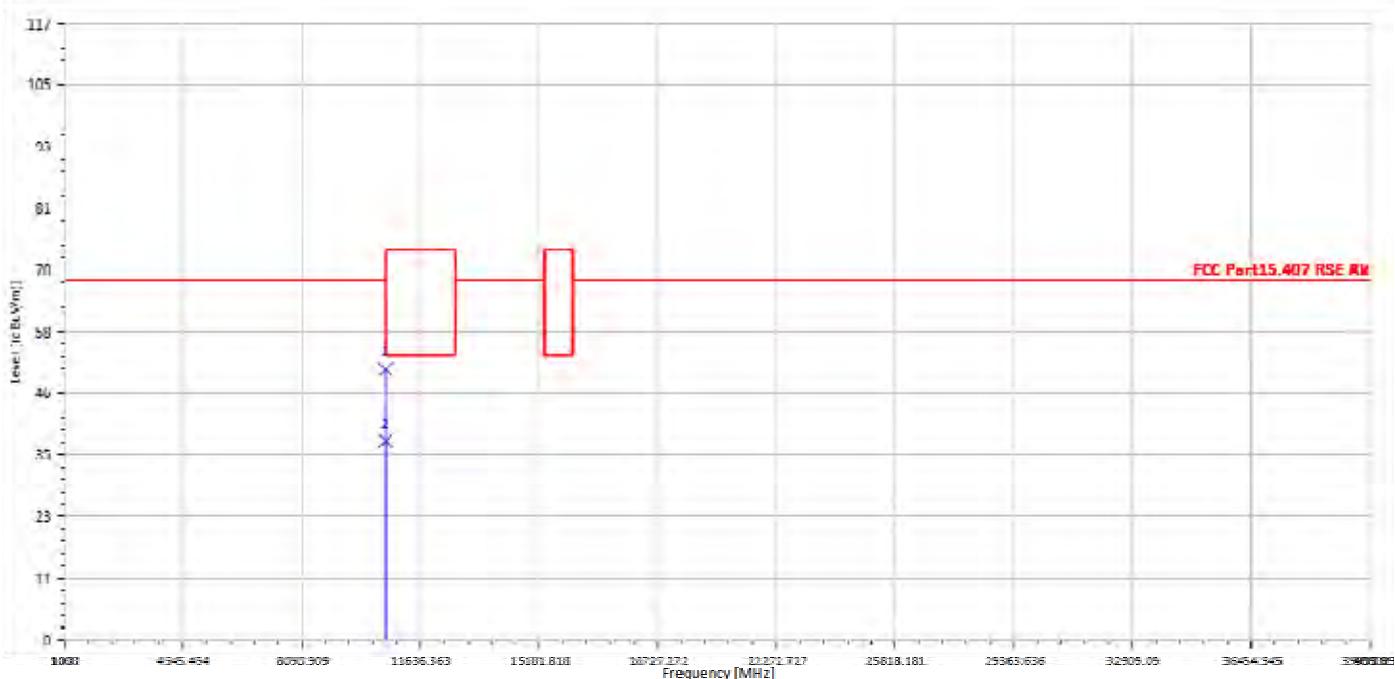
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Operation Mode : 802.11n20 Test Date : 2016/7/21  
 Fundamental Frequency : 5300 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH MID Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10600.00	H	Peak	41.20	10.15	51.35	74	-22.65
10600.00	H	Average	27.63	10.15	37.78	54	-16.22

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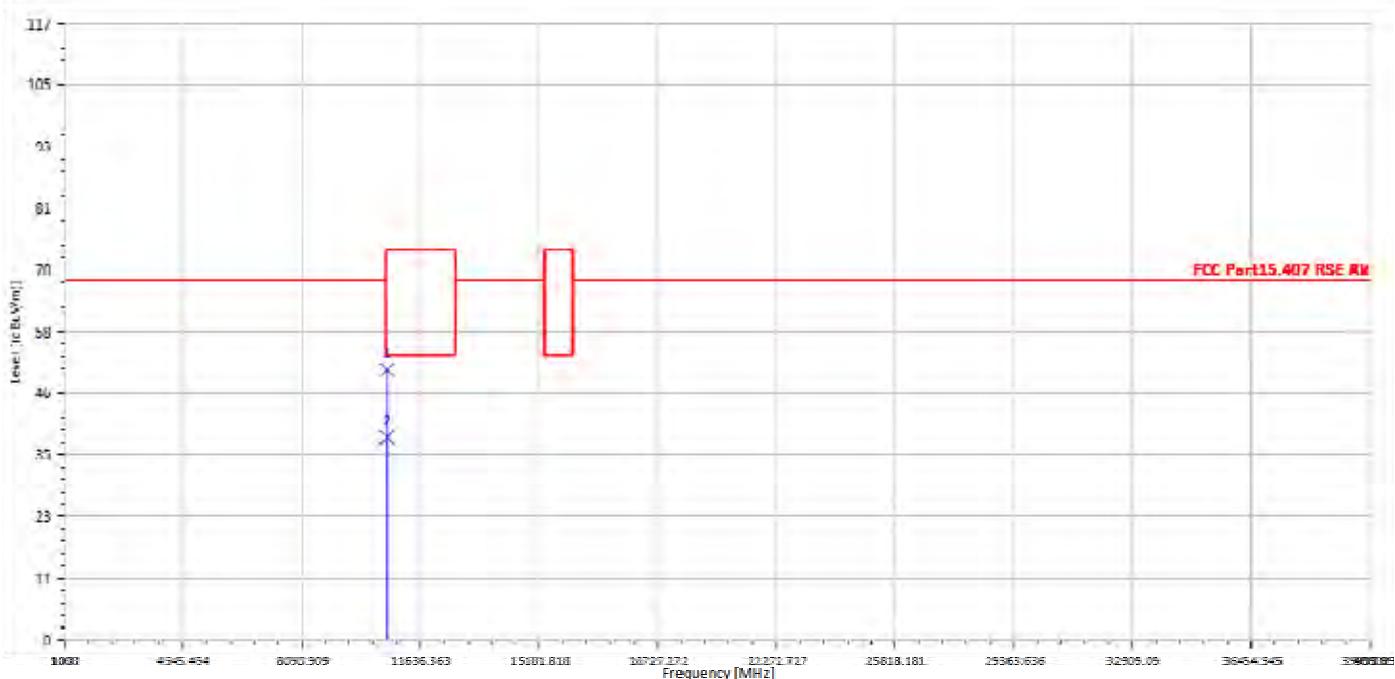
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Operation Mode : 802.11n20 Test Date : 2016/7/21  
 Fundamental Frequency : 5320 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH High Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10640.00	H	Peak	41.18	10.07	51.25	74	-22.75
10640.00	H	Average	28.37	10.07	38.44	54	-15.56

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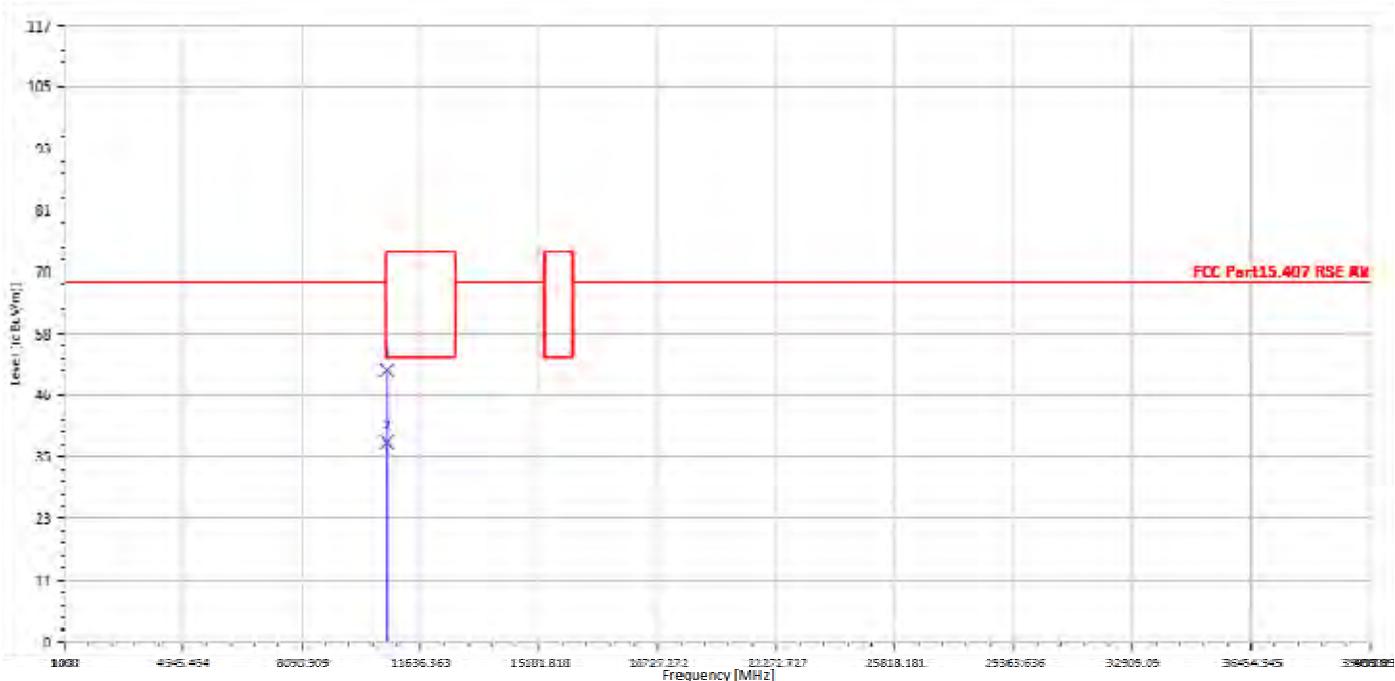
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Operation Mode : 802.11n20 Test Date : 2016/7/21  
 Fundamental Frequency : 5320 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH High Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10640.00	H	Peak	41.51	10.07	51.58	74	-22.42
10640.00	H	Average	27.80	10.07	37.87	54	-16.13

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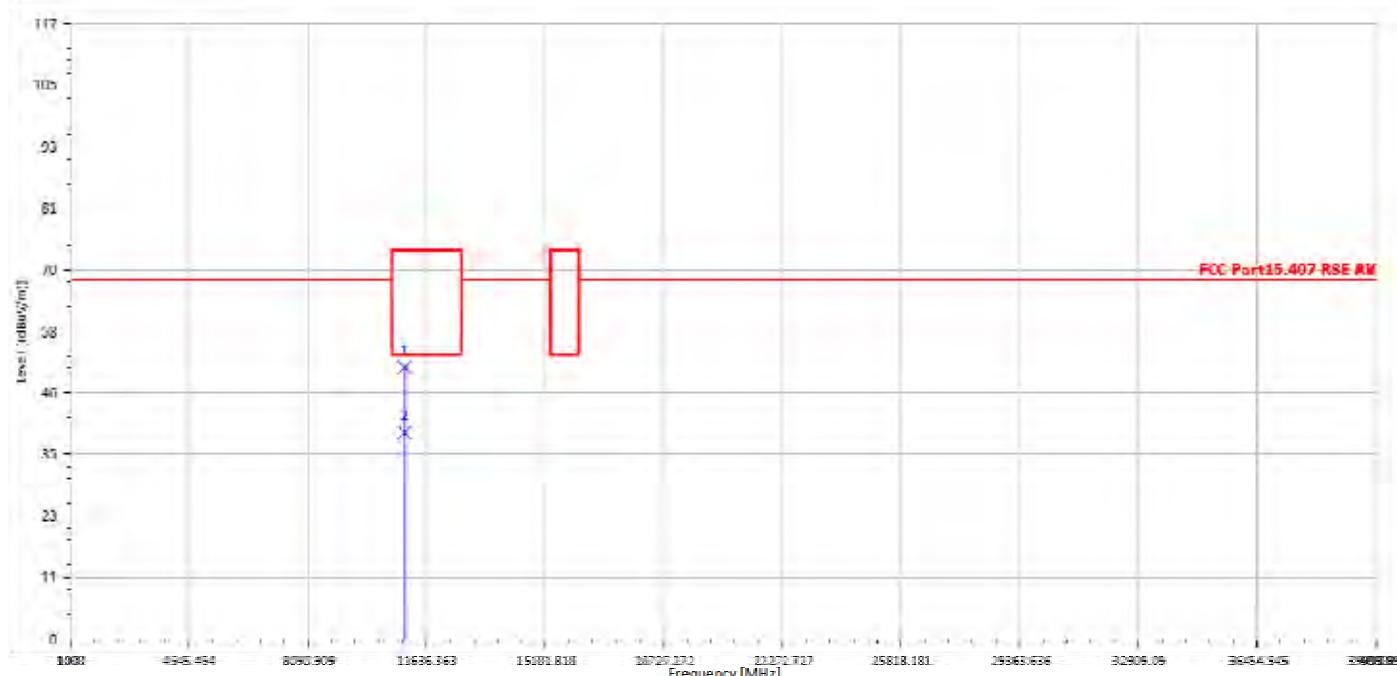
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## Radiated Spurious Emission Measurement Result 802.11n HT20, 5470~5725 MHz

Operation Mode : 802.11n20 Test Date : 2016/7/21  
 Fundamental Frequency : 5500 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH LOW Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical



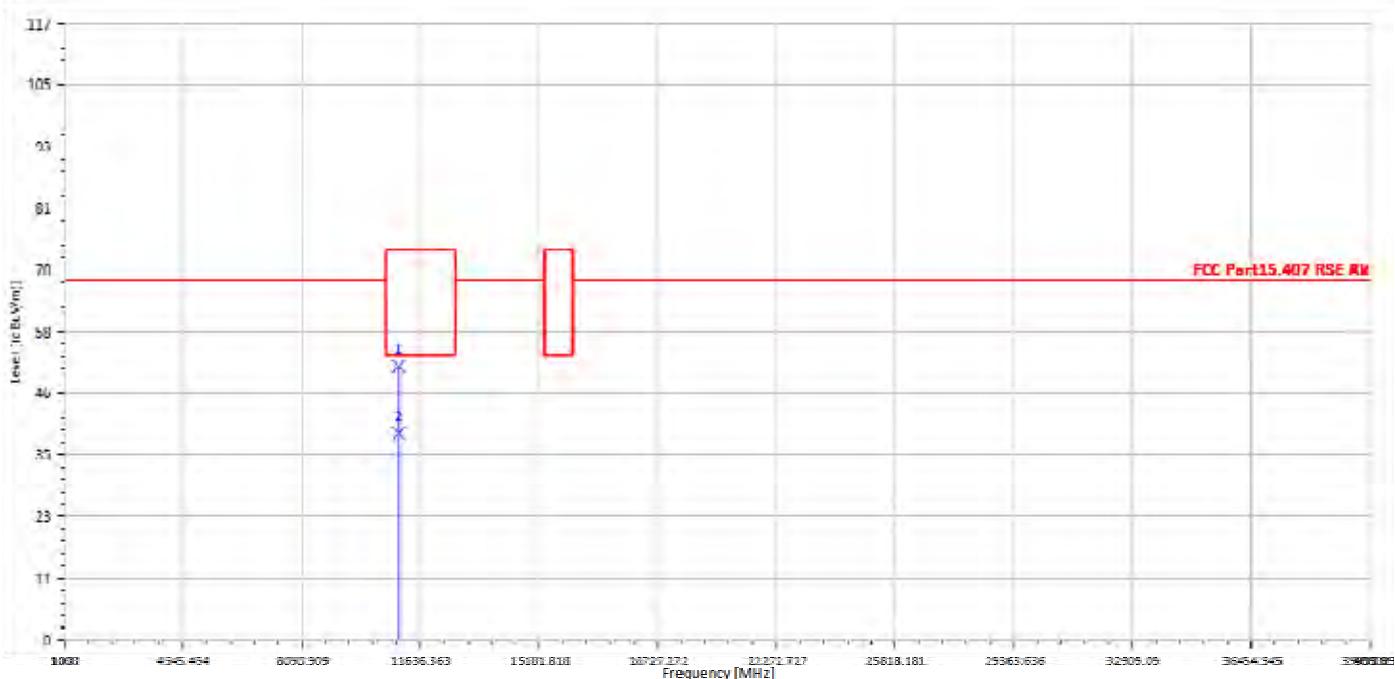
Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
11000.00	H	Peak	39.99	11.71	51.70	74	-22.30
11000.00	H	Average	27.50	11.71	39.21	54	-14.79

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Operation Mode : 802.11n20      Test Date : 2016/7/22  
 Fundamental Frequency : 5500 MHz      Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH LOW      Test Engineer : Tank  
 EUT Pol. : E1      Measurement Antenna Pol. : Horizontal



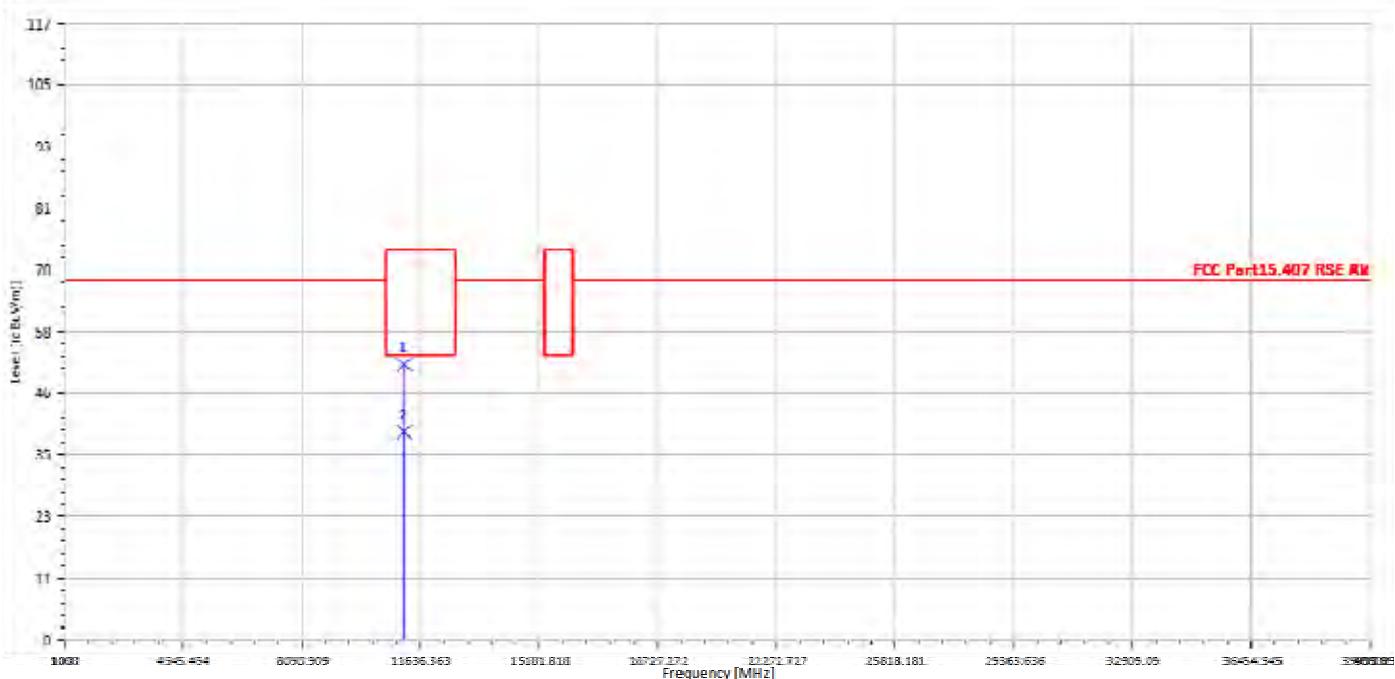
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
11000.00	H	Peak	40.25	11.71	51.96	74	-22.04
11000.00	H	Average	27.48	11.71	39.19	54	-14.81

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Operation Mode : 802.11n20 Test Date : 2016/7/21  
 Fundamental Frequency : 5580 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH MID Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
11160.00	H	Peak	40.78	11.51	52.29	74	-21.71
11160.00	H	Average	27.93	11.51	39.44	54	-14.56

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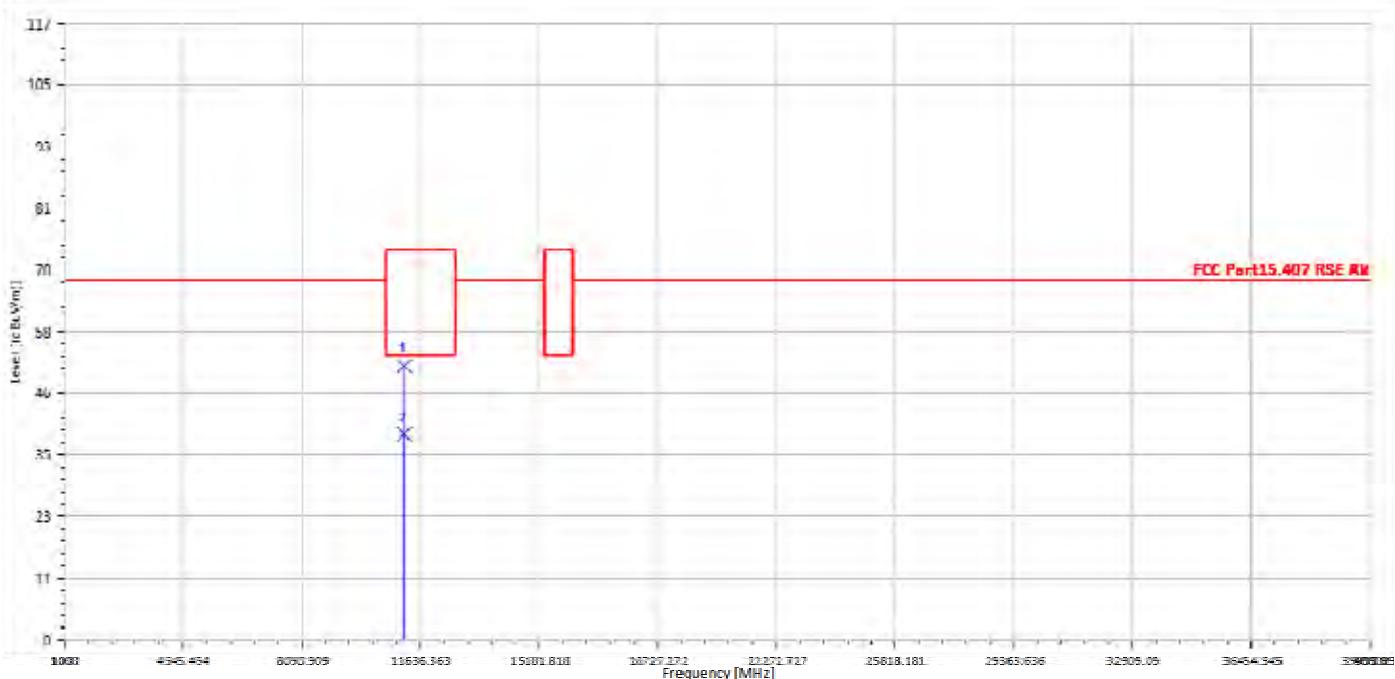
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Operation Mode : 802.11n20 Test Date : 2016/7/21  
 Fundamental Frequency : 5580 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH MID Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal



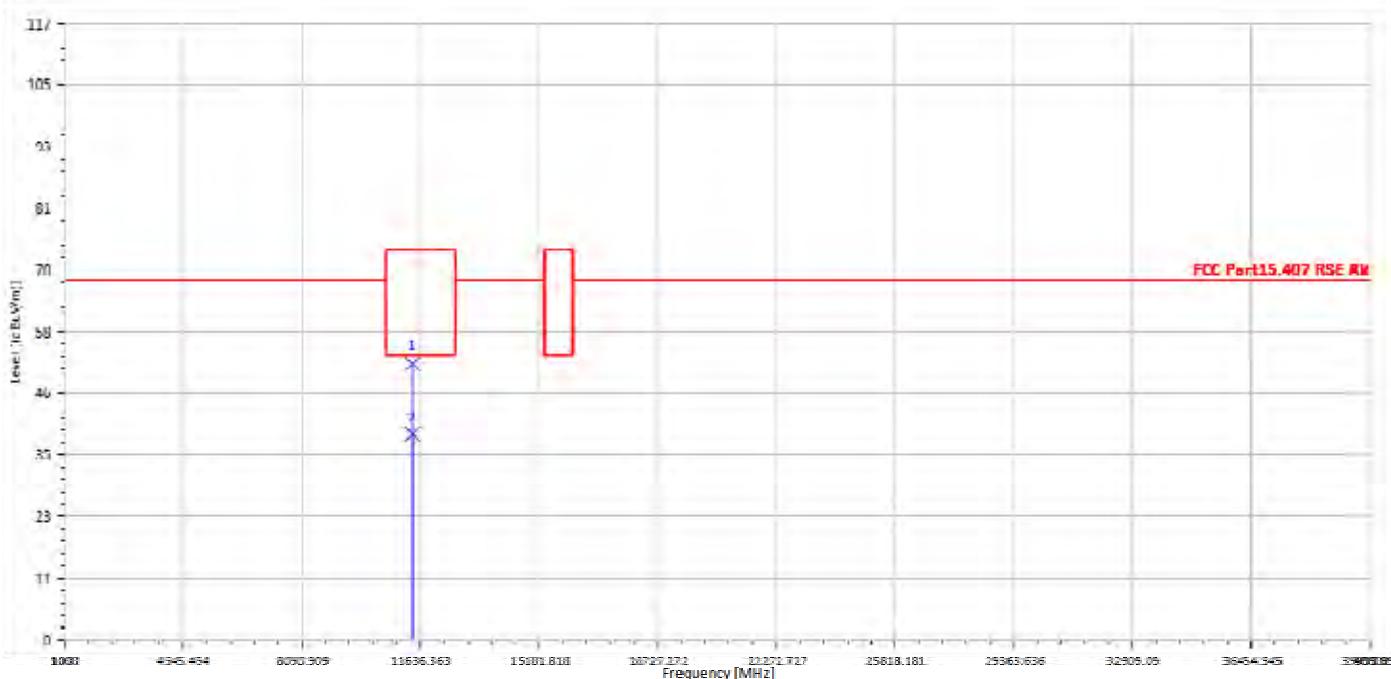
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
11160.00	H	Peak	40.55	11.51	52.06	74	-21.94
11160.00	H	Average	27.54	11.51	39.05	54	-14.95

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Operation Mode : 802.11n20 Test Date : 2016/7/21  
 Fundamental Frequency : 5700 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH High Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
11400.00	H	Peak	40.83	11.60	52.43	74	-21.57
11400.00	H	Average	27.45	11.60	39.05	54	-14.95

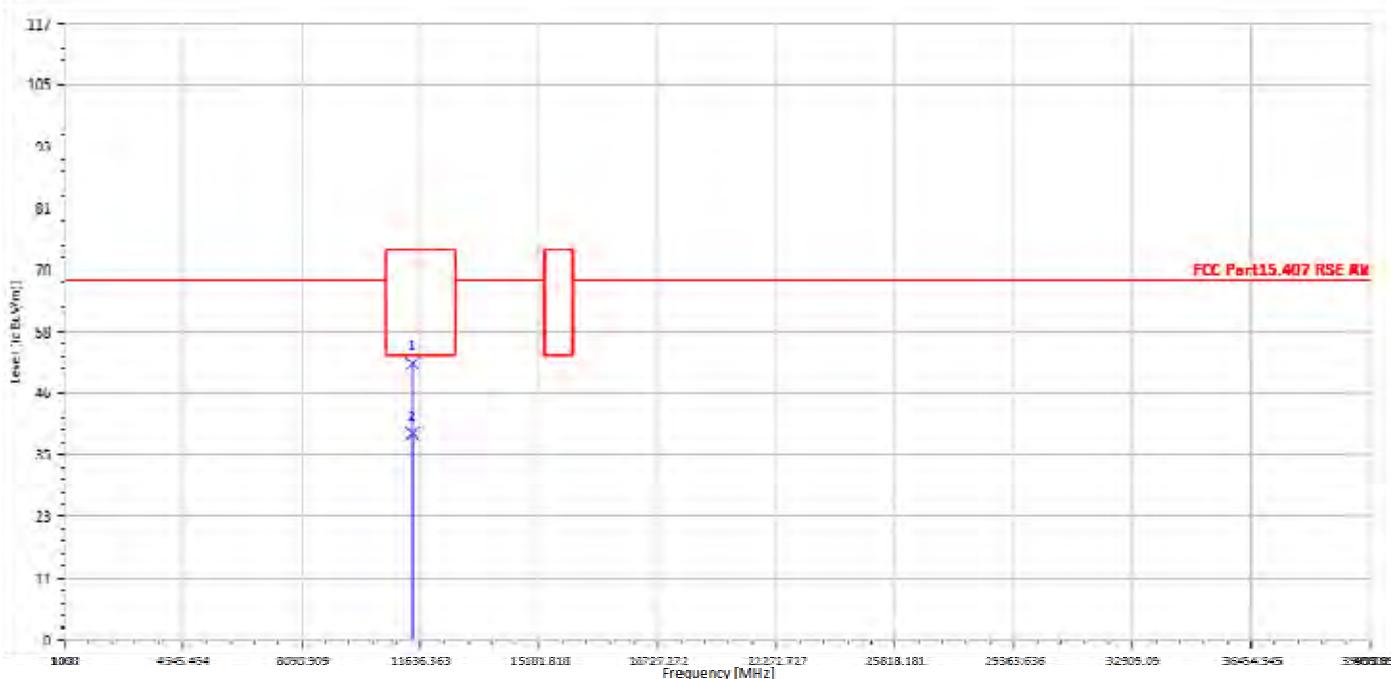
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Operation Mode : 802.11n20 Test Date : 2016/7/21  
 Fundamental Frequency : 5700 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH High Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11400.00	H	Peak	40.88	11.60	52.48	74	-21.52
11400.00	H	Average	27.54	11.60	39.14	54	-14.86

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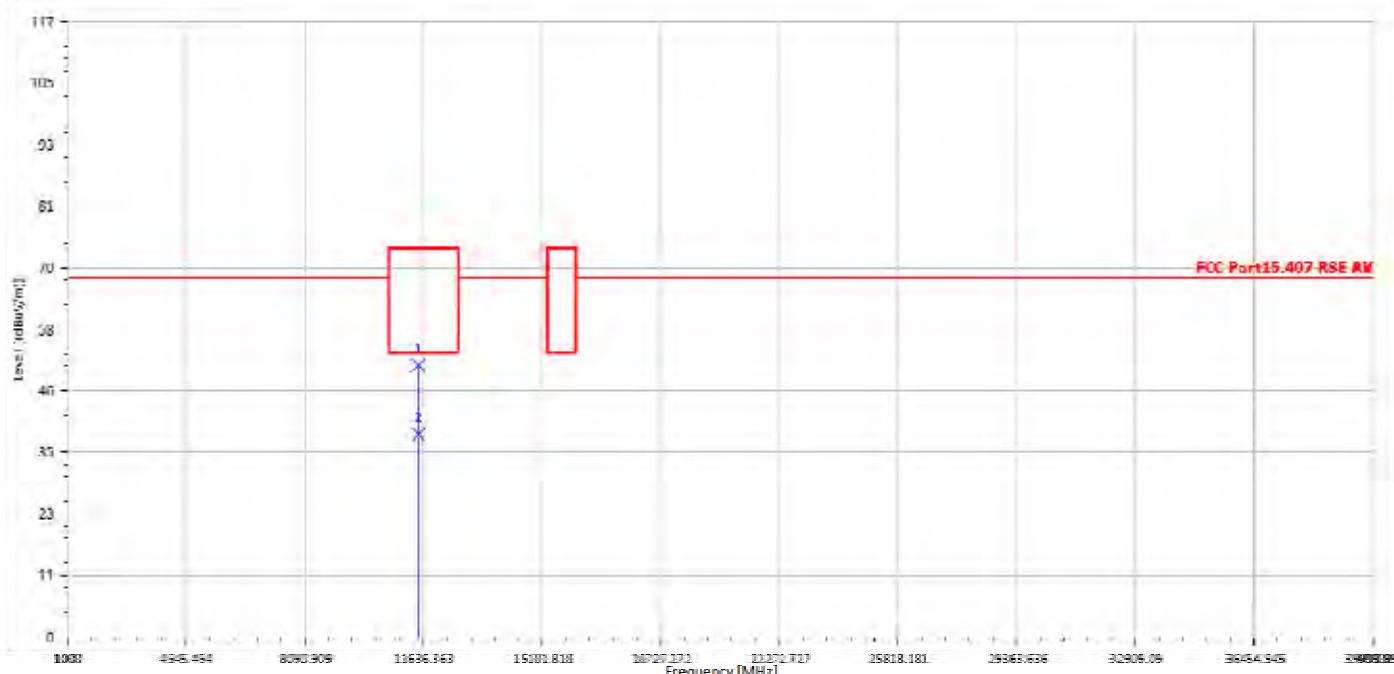
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## Radiated Spurious Emission Measurement Result 802.11n HT20, 5725~5850 MHz

Operation Mode : 802.11n20 Test Date : 2016/7/21  
 Fundamental Frequency : 5745 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH LOW Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical



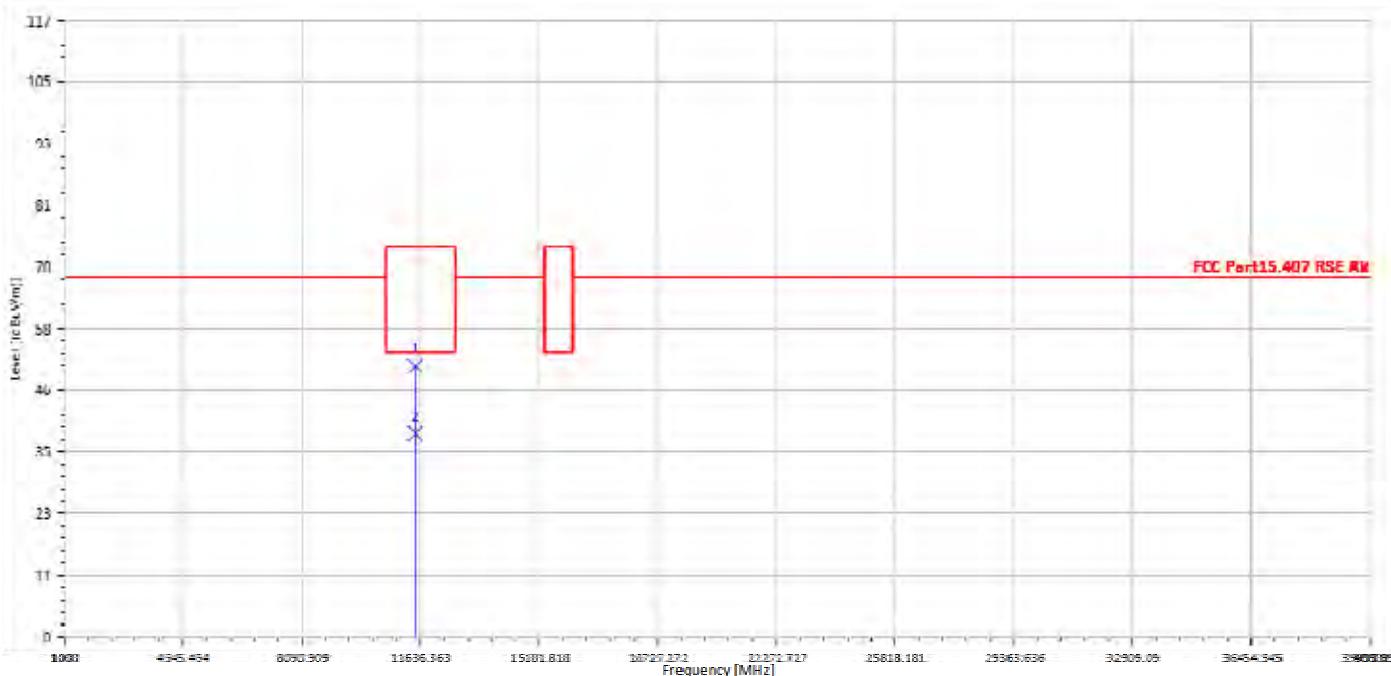
Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11490.00	H	Peak	40.55	11.18	51.73	74	-22.27
11490.00	H	Average	27.36	11.18	38.54	54	-15.46

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Operation Mode : 802.11n20      Test Date : 2016/7/21  
 Fundamental Frequency : 5745 MHz      Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH LOW      Test Engineer : Tank  
 EUT Pol. : E1      Measurement Antenna Pol. : Horizontal



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
11490.00	H	Peak	40.17	11.18	51.34	74	-22.66
11490.00	H	Average	27.39	11.18	38.57	54	-15.43

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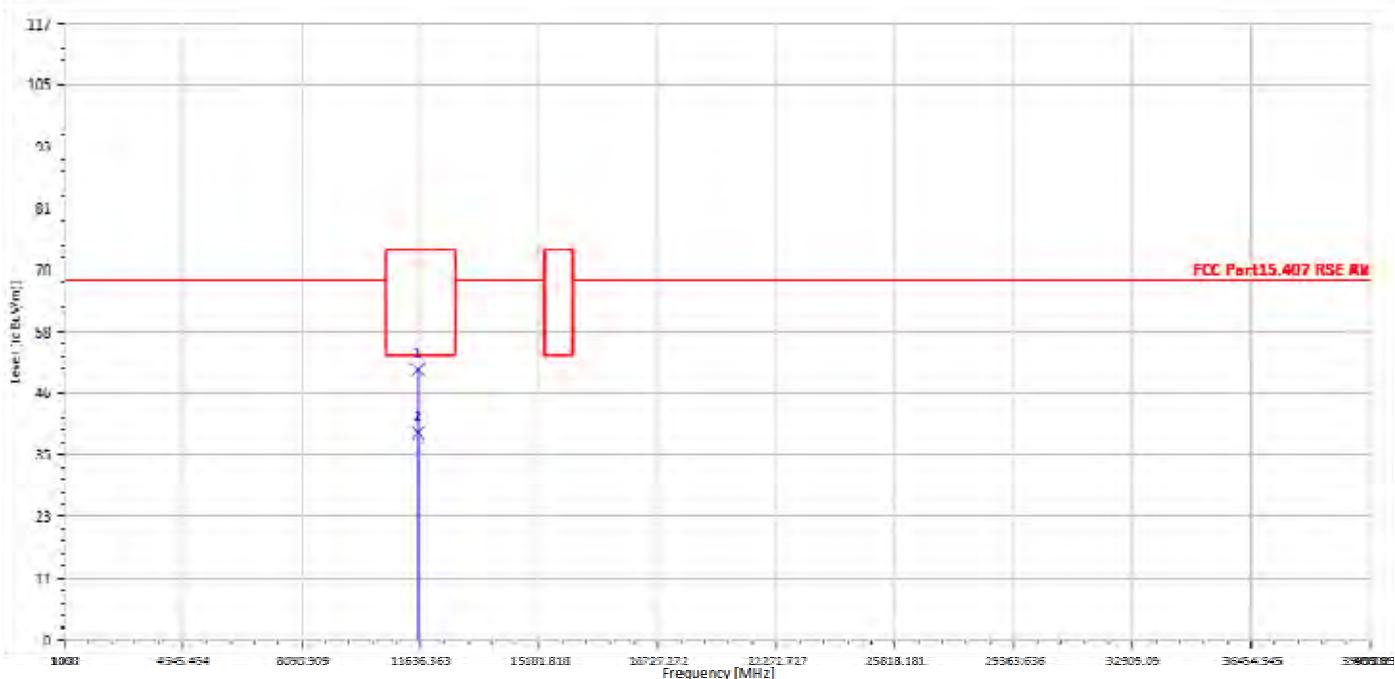
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Operation Mode : 802.11n20 Test Date : 2016/7/21  
 Fundamental Frequency : 5785 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH MID Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
11570.00	H	Peak	40.23	11.06	51.29	74	-22.71
11570.00	H	Average	28.20	11.06	39.26	54	-14.74

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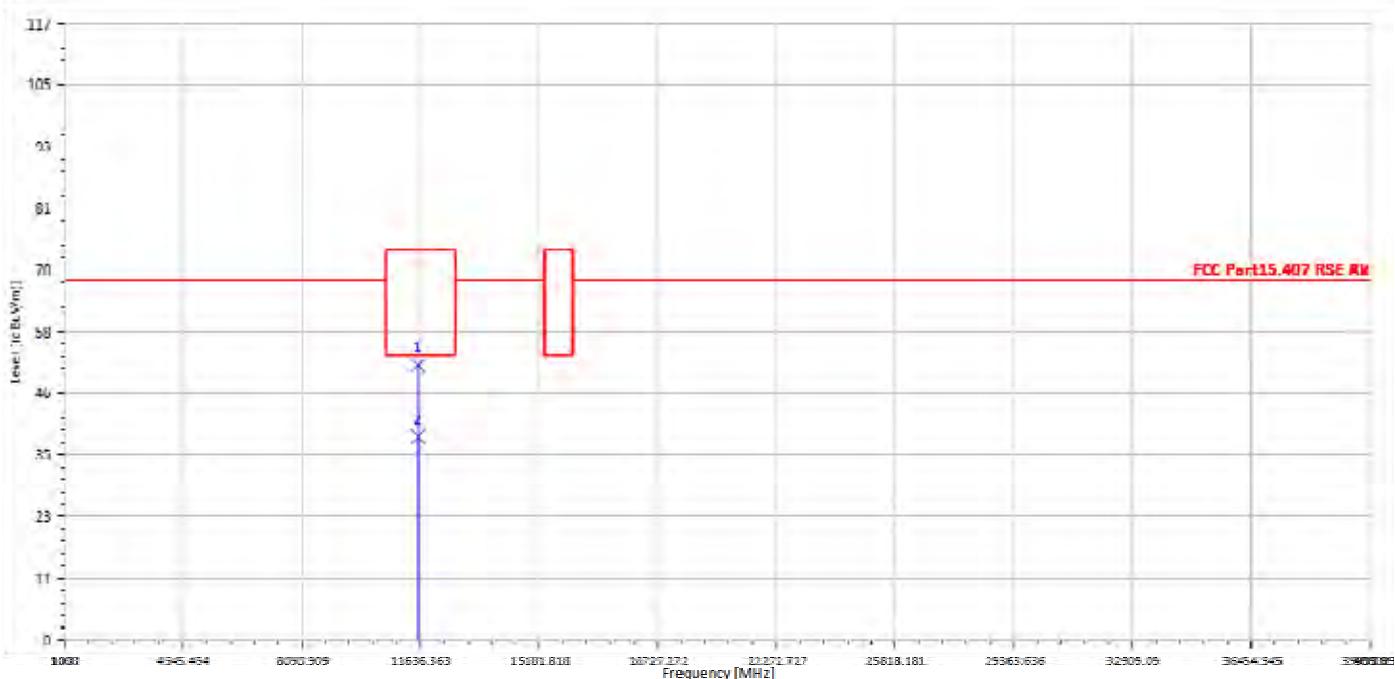
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Operation Mode : 802.11n20 Test Date : 2016/7/21  
 Fundamental Frequency : 5785 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH MID Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal



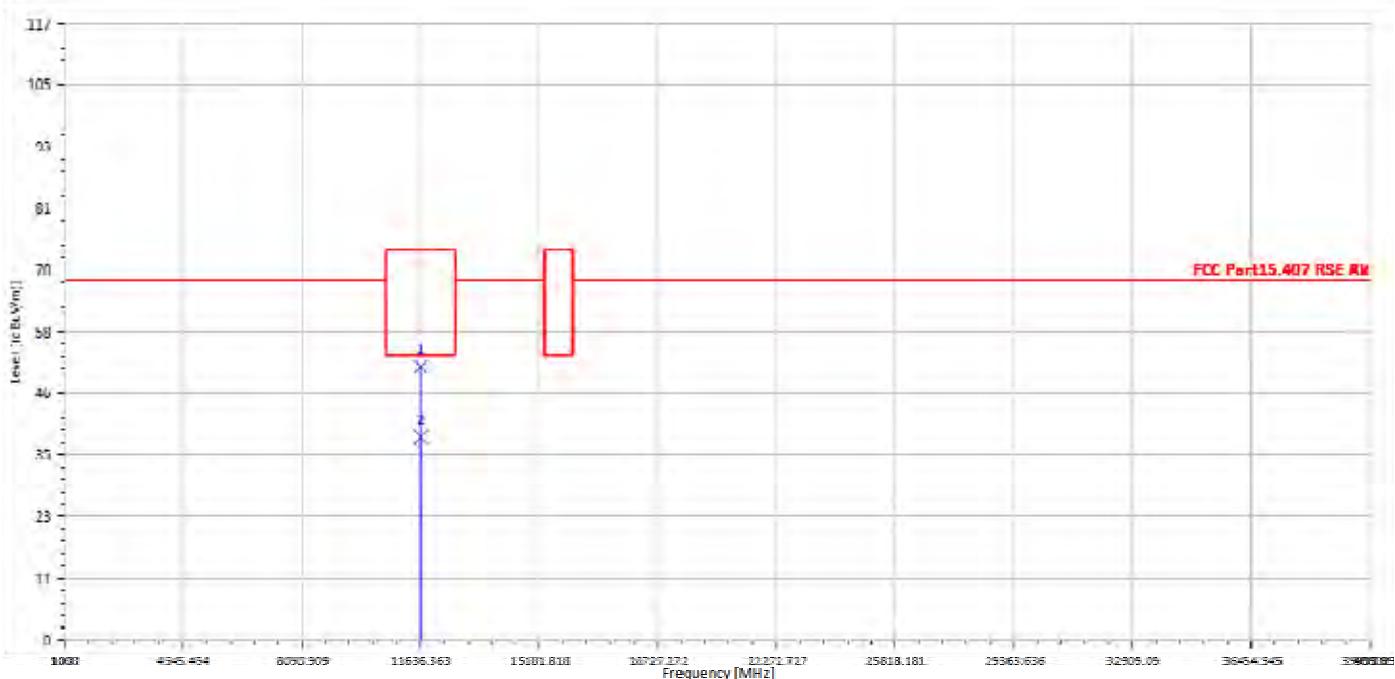
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
11570.00	H	Peak	41.14	11.06	52.20	74	-21.80
11570.00	H	Average	27.48	11.06	38.54	54	-15.46

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Operation Mode : 802.11n20 Test Date : 2016/7/21  
 Fundamental Frequency : 5825 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH HIGH Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical



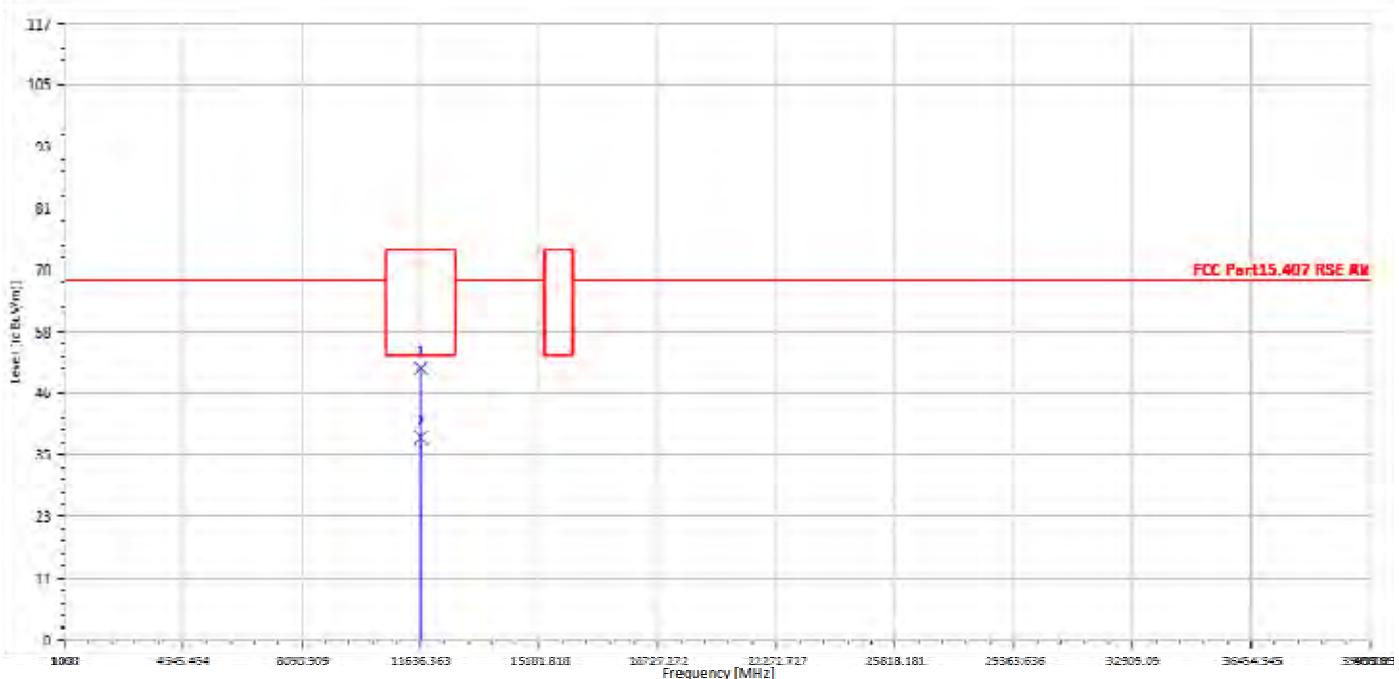
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
11650.00	H	Peak	41.12	10.69	51.81	74	-22.19
11650.00	H	Average	27.78	10.69	38.47	54	-15.53

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Operation Mode : 802.11n20 Test Date : 2016/7/21  
 Fundamental Frequency : 5825 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : Tx CH HIGH Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
11650.00	H	Peak	40.91	10.69	51.59	74	-22.41
11650.00	H	Average	27.67	10.69	38.36	54	-15.64

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

Operation Mode : 802.11a Test Date : 2016/7/19  
 Fundamental Frequency : 5180 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : BE CH LOW Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical

Freq.	Note	Detector Mode	Spectrum Reading	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5150.00	E	Peak	60.02	-0.17	59.85	74	-14.15
5150.00	E	Average	40.28	-0.17	40.11	54	-13.89

Operation Mode : 802.11a Test Date : 2016/7/19  
 Fundamental Frequency : 5180 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : BE CH LOW Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal

Freq.	Note	Detector Mode	Spectrum Reading	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5150.00	E	Peak	60.23	-0.17	60.06	74	-13.94
5150.00	E	Average	40.54	-0.17	40.37	54	-13.63

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Operation Mode : 802.11a Test Date : 2016/7/19  
 Fundamental Frequency : 5320 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : BE CH High Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical

Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
5350.00	E	Peak	60.82	-0.15	60.66	74	-13.34
5350.00	E	Average	40.34	-0.15	40.19	54	-13.81

Operation Mode : 802.11a Test Date : 2016/7/19  
 Fundamental Frequency : 5320 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : BE CH High Test Engineer : Tank  
 EUT Pol. : E1 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	Margin dB
5350.00	E	Peak	61.22	-0.15	61.07	74	-12.93
5350.00	E	Average	41.35	-0.15	41.20	54	-12.81

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Operation Mode : 802.11a Test Date : 2016/7/19  
 Fundamental Frequency : 5500 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : BE CH LOW Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical

Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
5460.00	E	Peak	54.96	0.06	55.02	74	-18.98
5460.00	E	Average	39.40	0.06	39.46	54	-14.54

Operation Mode : 802.11a Test Date : 2016/7/19  
 Fundamental Frequency : 5500 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : BE CH LOW Test Engineer : Tank  
 EUT Pol. : E1 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	Margin dB
5460.00	E	Peak	58.34	0.06	58.40	74	-15.60
5460.00	E	Average	40.50	0.06	40.56	54	-13.44

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Operation Mode : 802.11a Test Date : 2016/7/19  
Fundamental Frequency : 5500 MHz Temp. / Humi. : 22.7deg\_C/57RH  
Operation Band : BE CH LOW RSE Test Engineer : Tank  
EUT Pol. : E1 Measurement Antenna Pol. : Vertical

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	F/H/E/S	Mode	Reading Level	FS	@3m		
5470.00	E	PK/QP/AV	Peak	61.90	0.08	61.98	68.3 -6.32

Operation Mode : 802.11a Test Date : 2016/7/19  
Fundamental Frequency : 5500 MHz Temp. / Humi. : 22.7deg\_C/57RH  
Operation Band : BE CH LOW RSE Test Engineer : Tank  
EUT Pol. : E1 Measurement Antenna Pol. : Horizontal

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	F/H/E/S	Mode	Reading Level	FS	@3m		
5470.00	E	PK/QP/AV	Peak	63.18	0.08	63.26	68.3 -5.04

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Operation Mode : 802.11a Test Date : 2016/7/19  
 Fundamental Frequency : 5700 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : BE CH High Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5725.00	E	Peak	66.65	0.69	67.33	68.3	-0.97
5725.28	S	Peak	67.21	0.69	67.90	68.3	-0.40

Operation Mode : 802.11a Test Date : 2016/7/19  
 Fundamental Frequency : 5700 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : BE CH High Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5725.00	E	Peak	66.09	0.69	66.77	68.3	-1.53
5725.16	S	Peak	67.49	0.69	68.17	68.3	-0.13

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Operation Mode :	802.11a	Test Date :	2017/1/18
Fundamental Frequency :	5745 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	BE CH LOW	Test Engineer :	Tank
EUT Pol. :	E1	Measurement Antenna Pol. :	Vertical

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
			Mode				
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5714.70	S	Peak	57.39	0.63	58.03	68.3	-10.27
5725.00	E	Peak	71.65	0.69	72.34	78.2	-5.86

Operation Mode :	802.11a	Test Date :	2017/1/18
Fundamental Frequency :	5745 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	BE CH LOW	Test Engineer :	Tank
EUT Pol. :	E1	Measurement Antenna Pol. :	Horizontal

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
			Mode				
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5714.70	S	Peak	60.70	0.63	61.33	68.3	-6.97
5725.00	E	Peak	76.24	0.69	76.92	78.2	-1.28

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Operation Mode :	802.11a	Test Date :	2017/1/18
Fundamental Frequency :	5825 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	BE CH High	Test Engineer :	Tank
EUT Pol. :	E1	Measurement Antenna Pol. :	Vertical

Freq.	Note	Detector	Spectrum		Factor	Actual	Limit	Margin
			Mode	Reading Level				
			MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m
5850.00	E	Peak		60.70	1.01	61.71	78.2	-16.49
5861.00	S	Peak		54.94	1.00	55.93	68.3	-12.37
5903.30	S	Peak		53.15	0.97	54.12	68.3	-14.18

Operation Mode :	802.11a	Test Date :	2017/1/18
Fundamental Frequency :	5825 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	BE CH High	Test Engineer :	Tank
EUT Pol. :	E1	Measurement Antenna Pol. :	Horizontal

Freq.	Note	Detector	Spectrum		Factor	Actual	Limit	Margin
			Mode	Reading Level				
			MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m
5850.00	E	Peak		65.37	1.01	66.38	78.2	-11.82
5862.20	S	Peak		57.87	1.00	58.87	68.3	-9.43
5904.30	S	Peak		54.14	0.97	55.12	68.3	-13.18

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**802.11n20 HT mode**

Operation Mode : 802.11n20 Test Date : 2016/7/22  
 Fundamental Frequency : 5180 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : BE CH LOW Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5150.00	E	Peak	60.85	-0.17	60.68	74	-13.32
5150.00	E	Average	40.23	-0.17	40.06	54	-13.94

Operation Mode : 802.11n20 Test Date : 2016/7/20  
 Fundamental Frequency : 5180 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : BE CH LOW Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5150.00	E	Peak	60.36	-0.17	60.19	74	-13.81
5150.00	E	Average	41.16	-0.17	40.99	54	-13.01

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Operation Mode : 802.11n20 Test Date : 2016/7/20  
Fundamental Frequency : 5320 MHz Temp. / Humi. : 22.7deg\_C/57RH  
Operation Band : BE CH High Test Engineer : Tank  
EUT Pol. : E1 Measurement Antenna Pol. : Vertical

Freq.	Note	Detector Mode	Spectrum Reading	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5350.00	E	Peak	60.60	-0.15	60.45	74	-13.55
5350.00	E	Average	40.59	-0.15	40.44	54	-13.56

Operation Mode : 802.11n20 Test Date : 2016/7/20  
Fundamental Frequency : 5320 MHz Temp. / Humi. : 22.7deg\_C/57RH  
Operation Band : BE CH High Test Engineer : Tank  
EUT Pol. : E1 Measurement Antenna Pol. : Horizontal

Freq.	Note	Detector Mode	Spectrum Reading	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5350.00	E	Peak	62.12	-0.15	61.96	74	-12.04
5350.00	E	Average	40.94	-0.15	40.79	54	-13.22

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Operation Mode : 802.11n20 Test Date : 2016/7/20  
 Fundamental Frequency : 5500 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : BE CH LOW Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5460.00	E	Peak	58.05	0.06	58.11	74	-15.89
5460.00	E	Average	39.40	0.06	39.46	54	-14.54

Operation Mode : 802.11n20 Test Date : 2016/7/20  
 Fundamental Frequency : 5500 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : BE CH LOW Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5460.00	E	Peak	58.84	0.06	58.89	74	-15.11
5460.00	E	Average	39.58	0.06	39.64	54	-14.36

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Operation Mode : 802.11n20 Test Date : 2016/7/20  
Fundamental Frequency : 5500 MHz Temp. / Humi. : 22.7deg\_C/57RH  
Operation Band : BE CH LOW RSE Test Engineer : Tank  
EUT Pol. : E1 Measurement Antenna Pol. : Vertical

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5470.00	E	Peak	64.27	0.08	64.35	68.3	-3.95

Operation Mode : 802.11n20 Test Date : 2016/7/20  
Fundamental Frequency : 5500 MHz Temp. / Humi. : 22.7deg\_C/57RH  
Operation Band : BE CH LOW RSE Test Engineer : Tank  
EUT Pol. : E1 Measurement Antenna Pol. : Horizontal

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5470.00	E	Peak	65.08	0.08	65.16	68.3	-3.14

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Operation Mode : 802.11n20 Test Date : 2016/7/20  
Fundamental Frequency : 5700 MHz Temp. / Humi. : 22.7deg\_C/57RH  
Operation Band : BE CH High Test Engineer : Tank  
EUT Pol. : E1 Measurement Antenna Pol. : Vertical

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5725.00	E	Peak	62.18	0.69	62.87	68.3	-5.43
5725.28	S	Peak	64.20	0.69	64.89	68.3	-3.41

Operation Mode : 802.11n20 Test Date : 2016/7/20  
Fundamental Frequency : 5700 MHz Temp. / Humi. : 22.7deg\_C/57RH  
Operation Band : BE CH High Test Engineer : Tank  
EUT Pol. : E1 Measurement Antenna Pol. : Horizontal

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5725.00	E	Peak	64.02	0.69	64.71	68.3	-3.59

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Operation Mode : 802.11n20 Test Date : 2017/1/18  
 Fundamental Frequency : 5745 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : BE CH LOW Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical

Freq.	Note	Detector Mode	Spectrum Reading	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5656.90	S	Peak	52.64	0.62	53.26	68.3	-15.04
5714.80	S	Peak	59.78	0.63	60.41	68.3	-7.89
5725.00	E	Peak	74.98	0.69	75.67	78.2	-2.53

Operation Mode : 802.11n20 Test Date : 2017/1/18  
 Fundamental Frequency : 5745 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : BE CH LOW Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal

Freq.	Note	Detector Mode	Spectrum Reading	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5655.20	S	Peak	52.79	0.62	53.40	68.3	-14.90
5714.20	S	Peak	61.07	0.63	61.70	68.3	-6.60
5725.00	E	Peak	76.20	0.69	76.89	78.2	-1.31

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Operation Mode : 802.11n20 Test Date : 2017/1/18  
 Fundamental Frequency : 5825 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : BE CH High Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical

Freq.	Note	Detector Mode	Spectrum Reading	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5850.00	E	Peak	62.38	1.01	63.39	78.2	-14.81
5860.30	S	Peak	56.98	1.00	57.98	68.3	-10.32
5903.40	S	Peak	53.53	0.97	54.50	68.3	-13.80

Operation Mode : 802.11n20 Test Date : 2017/1/18  
 Fundamental Frequency : 5825 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : BE CH High Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal

Freq.	Note	Detector Mode	Spectrum Reading	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5850.00	E	Peak	68.84	1.01	69.85	78.2	-8.35
5861.10	S	Peak	60.61	1.00	61.61	68.3	-6.69
5904.70	S	Peak	53.91	0.97	54.88	68.3	-13.42

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**Band edge falling to restricted band (5725~5850MHz) for IC****802.11a mode**

Operation Mode :	802.11a	Test Date :	2017/1/18
Fundamental Frequency :	5745 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	BE CH LOW	Test Engineer :	Tank
EUT Pol. :	E1	Measurement Antenna Pol. :	Vertical

Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level	Factor	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
			dB $\mu$ V				
5714.70	S	Peak	57.39	0.63	58.03	68.3	-10.27
5725.00	E	Peak	71.65	0.69	72.34	78.2	-5.86

Operation Mode :	802.11a	Test Date :	2017/1/18
Fundamental Frequency :	5745 MHz	Temp. / Humi. :	22.7deg_C/57RH
Operation Band :	BE CH LOW	Test Engineer :	Tank
EUT Pol. :	E1	Measurement Antenna Pol. :	Horizontal

Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level	Factor	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
			dB $\mu$ V				
5714.70	S	Peak	60.70	0.63	61.33	68.3	-6.97
5725.00	E	Peak	76.24	0.69	76.92	78.2	-1.28

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Operation Mode : 802.11a Test Date : 2017/1/18  
 Fundamental Frequency : 5825 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : BE CH High Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical

Freq.	Note	Detector Mode	Spectrum Reading	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5850.00	E	Peak	60.70	1.01	61.71	78.2	-16.49
5861.00	S	Peak	54.94	1.00	55.93	68.3	-12.37
5903.30	S	Peak	53.15	0.97	54.12	68.3	-14.18

Operation Mode : 802.11a Test Date : 2017/1/18  
 Fundamental Frequency : 5825 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : BE CH High Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal

Freq.	Note	Detector Mode	Spectrum Reading	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5850.00	E	Peak	65.37	1.01	66.38	78.2	-11.82
5862.20	S	Peak	57.87	1.00	58.87	68.3	-9.43
5904.30	S	Peak	54.14	0.97	55.12	68.3	-13.18

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## 802.11n20 HT mode

Operation Mode : 802.11n20 Test Date : 2017/1/18  
 Fundamental Frequency : 5745 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : BE CH LOW Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical

Freq.	Note	Detector Mode	Spectrum Reading	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5656.90	S	Peak	52.64	0.62	53.26	68.3	-15.04
5714.80	S	Peak	59.78	0.63	60.41	68.3	-7.89
5725.00	E	Peak	74.98	0.69	75.67	78.2	-2.53

Operation Mode : 802.11n20 Test Date : 2017/1/18  
 Fundamental Frequency : 5745 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : BE CH LOW Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal

Freq.	Note	Detector Mode	Spectrum Reading	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5655.20	S	Peak	52.79	0.62	53.40	68.3	-14.90
5714.20	S	Peak	61.07	0.63	61.70	68.3	-6.60
5725.00	E	Peak	76.20	0.69	76.89	78.2	-1.31

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Operation Mode : 802.11n20 Test Date : 2017/1/18  
 Fundamental Frequency : 5825 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : BE CH High Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Vertical

Freq.	Note	Detector Mode	Spectrum Reading	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5850.00	E	Peak	62.38	1.01	63.39	78.2	-14.81
5860.30	S	Peak	56.98	1.00	57.98	68.3	-10.32
5903.40	S	Peak	53.53	0.97	54.50	68.3	-13.80

Operation Mode : 802.11n20 Test Date : 2017/1/18  
 Fundamental Frequency : 5825 MHz Temp. / Humi. : 22.7deg\_C/57RH  
 Operation Band : BE CH High Test Engineer : Tank  
 EUT Pol. : E1 Measurement Antenna Pol. : Horizontal

Freq.	Note	Detector Mode	Spectrum Reading	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
5850.00	E	Peak	68.84	1.01	69.85	78.2	-8.35
5861.10	S	Peak	60.61	1.00	61.61	68.3	-6.69
5904.70	S	Peak	53.91	0.97	54.88	68.3	-13.42

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## 12. TRANSMISSION IN THE ABSENCE OF DATA

### 12.1 Standard Applicable

According to §15.407(c)

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

### 12.2 Result

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

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## 13. FREQUENCY STABILITY

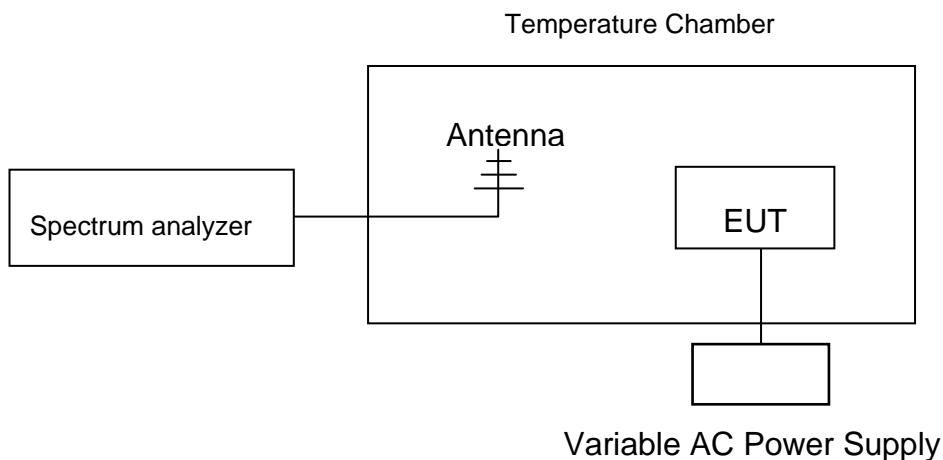
### 13.1 Standard Applicable

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

### 13.2 Measurement Procedure

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

### 13.3 Test SET-UP



### 13.4 Measurement Equipment Used:

SGS Conducted Room					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum Analyzer	KEYSIGHT	N9010A	MY54510568	04/14/2016	04/13/2017
DC Power Supply	Agilent	E3640A	MY53140006	05/04/2016	05/03/2017
Temperature Chamber	TERCHY	MHK-120LK	1020582	06/16/2016	06/15/2017

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### 13.5 Measurement Result

Operation Mode	802.11 a	Test Date	2016.07.26
Temperature	:25	Test By	Enzo
Humidity	:57 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-20	4.35V	36	5180	5,179.95462	0.00000876
		44	5220	5,220.01766	-0.00000338
		48	5240	5,239.98689	0.00000250
		52	5260	5,259.97119	0.00000548
		60	5300	5,299.97223	0.00000524
		64	5320	5,319.94669	0.00001002
		100	5500	5,499.94465	0.00001006
		116	5580	5,580.00661	-0.00000118
		140	5700	5,699.94196	0.00001018
		149	5745	5,744.94018	0.00001041
	3.5V	157	5785	5,824.93856	-0.00690381
		165	5825	5,824.98350	0.00000283
		36	5180	5,179.95577	0.00000854
		44	5220	5,220.01751	-0.00000335
		48	5240	5,239.98640	0.00000260
		52	5260	5,259.97161	0.00000540
		60	5300	5,299.97219	0.00000525
		64	5320	5,319.94639	0.00001008
		100	5500	5,499.94623	0.00000978
		116	5580	5,580.00777	-0.00000139
		140	5700	5,699.94049	0.00001044
		149	5745	5,744.94122	0.00001023
		157	5785	5,824.93906	-0.00690390
		165	5825	5,824.98354	0.00000283

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25	3.8V	36	5180	5,179.95454	0.00000878
		44	5220	5,220.01669	-0.00000320
		48	5240	5,239.98526	0.00000281
		52	5260	5,259.97024	0.00000566
		60	5300	5,299.97171	0.00000534
		64	5320	5,319.94515	0.00001031
		100	5500	5,499.94464	0.00001007
		116	5580	5,580.00648	-0.00000116
		140	5700	5,699.94003	0.00001052
		149	5745	5,744.93944	0.00001054
		157	5785	5,824.93747	-0.00690362
		165	5825	5,824.98207	0.00000308
50	4.35V	36	5180	5,179.95309	0.00000906
		44	5220	5,220.01657	-0.00000317
		48	5240	5,239.98500	0.00000286
		52	5260	5,259.96933	0.00000583
		60	5300	5,299.97102	0.00000547
		64	5320	5,319.94489	0.00001036
		100	5500	5,499.94428	0.00001013
		116	5580	5,580.00599	-0.00000107
		140	5700	5,699.94002	0.00001052
		149	5745	5,744.93757	0.00001087
		157	5785	5,824.93703	-0.00690355
		165	5825	5,824.98190	0.00000311
	3.5V	36	5180	5,179.95398	0.00000888
		44	5220	5,220.01579	-0.00000302
		48	5240	5,239.98371	0.00000311
		52	5260	5,259.96837	0.00000601
		60	5300	5,299.97161	0.00000536
		64	5320	5,319.94488	0.00001036
		100	5500	5,499.94376	0.00001023
		116	5580	5,580.00591	-0.00000106
		140	5700	5,699.93994	0.00001054
		149	5745	5,744.93775	0.00001084
		157	5785	5,824.93625	-0.00690341
		165	5825	5,824.98141	0.00000319

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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.

According to RSS-GEN 8.3

The applicant for equipment certification, as per RSP-100, must provide a list of all antenna types that may be used with the licence-exempt transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna.

Licence-exempt transmitters that have received equipment certification may operate with different types of antennas. However, it is not permissible to exceed the maximum equivalent isotropically radiated power (e.i.r.p.) limits specified in the applicable standard (RSS) for the licence-exempt apparatus.

Testing shall be performed using the highest gain antenna of each combination of licence-exempt transmitter and antenna type, with the transmitter output power set at the maximum level.<sup>9</sup> When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna manufacturer.

### 14.2 Antenna Connected Construction

PIFA antenna designs are used.

The antenna is designed with permanent attached and no consideration of replacement.

Please see EUT photo and antenna spec. for details.

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

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