

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

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

OF

**Product Name:** PeopleNet Connected Tablet  
**Brand Name:** PeopleNet  
**Model No.:** MS5  
**Model Difference:** N/A  
**FCC ID:** NKS-MS5N  
**Report No.:** E2/2015/10036-01  
**Issue Date:** Jan. 04, 2017  
**FCC Rule Part:** §15.407  
**PEOPLENET**  
**Prepared for:** 4400 Baker Road, Minnetonka, MN 55343,  
USA  
**Prepared by:** SGS Taiwan Ltd.  
**Electronics & Communication Laboratory**  
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## VERIFICATION OF COMPLIANCE

**Applicant:** PEOPLENET  
4400 Baker Road, Minnetonka, MN 55343, USA

**Product Name:** PeopleNet Connected Tablet

**Brand Name:** PeopleNet

**Model No.:** MS5

**Model Difference:** N/A

**FCC ID:** NKS-MS5N

**File Number:** E2/2015/10036-01

**Date of test:** Jan. 30, 2015 ~ Mar. 11, 2015

**Date of EUT Received:** Jan. 30, 2015

### 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 C63.4:2014 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.407.

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

**Test By:**

*Marcus Tseng*

**Date:**

Jan. 04, 2017

**Marcus Tseng / Engineer**

**Prepared By:**

*Allen Tsai*

**Date:**

Jan. 04, 2017

**Allen Tsai / Engineer**

**Approved By:**

*Jim Chang*

**Date:**

Jan. 04, 2017

**Jim Chang / Supervisor**

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### Version

Report Number	Revision	Description	Issue Date
E2/2015/10036-01	Rev.00	Initial creation of document	Jan. 04, 2017

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## Table of Contents

<b>1</b>	<b>GENERAL INFORMATION .....</b>	<b>5</b>
<b>2</b>	<b>SYSTEM TEST CONFIGURATION.....</b>	<b>8</b>
<b>3</b>	<b>SUMMARY OF TEST RESULT .....</b>	<b>10</b>
<b>4</b>	<b>DESCRIPTION OF TEST MODES.....</b>	<b>11</b>
<b>5</b>	<b>MEASUREMENT UNCERTAINTY .....</b>	<b>14</b>
<b>6</b>	<b>CONDUCTED EMISSION TEST.....</b>	<b>15</b>
<b>7</b>	<b>26dB &amp; 6dB EMISSION BANDWIDTH MEASUREMENT.....</b>	<b>19</b>
<b>8</b>	<b>The MAXIMUM OUTPUT POWER MEASUREMENT .....</b>	<b>40</b>
<b>9</b>	<b>PEAK POWER SPECTRAL DENSITY .....</b>	<b>43</b>
<b>10</b>	<b>UNDESIRABLE EMISSION - RADIATED MEASUREMENT.....</b>	<b>58</b>
<b>11</b>	<b>TRANSMISSION IN THE ABSENCE OF DATA .....</b>	<b>139</b>
<b>12</b>	<b>FREQUENCY STABILITY.....</b>	<b>140</b>
<b>13</b>	<b>ANTENNA REQUIREMENT .....</b>	<b>145</b>

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# 1 GENERAL INFORMATION

## 1.1 Product Description

General:

Product Name:	PeopleNet Connected Tablet	
Brand Name:	PeopleNet	
Model No.:	MS5	
Model Difference:	N/A	
Hardware Version:	N/A	
Software Version:	N/A	
Tablet Docking Station	Model No.: MS-57602, Supplier: MSI	
Power Cable	P/N: L016-0576, Supplier: ELECTRI-CORD MFG.CO.	
Power Supply:	7.4Vdc from LITHIUM-ION rechargeable battery or 12/24Vdc from DC Car battery	
	Battery:	Model No.: MS5760 , Supplier: Getac

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WLAN 5GHz:

Wi-Fi	Frequency Range	Channels	Rated Power (Avg.)	Modulation Technology
11a	5150~5250	4	13.86dBm (Avg.)	OFDM
	5250~5350	4	13.97dBm (Avg.)	
	5470~5725	8	13.97dBm (Avg.)	
	5725-5850	5	13.97dBm (Avg.)	
11n	HT20 5150~5250	4	12.97dBm (Avg.)	OFDM
	HT20 5250~5350	4	12.83dBm (Avg.)	
	HT20 5470~5725	8	12.97dBm (Avg.)	
	HT20 5725-5850	5	12.96dBm (Avg.)	

Antenna Designation	PIFA Antenna: 5GHz Gain: 2.96dBi (5150MHz-5250MHz) 5GHz Gain: 2.96dBi (5250MHz-5350MHz) 5GHz Gain: 2.91dBi (5470MHz-5725MHz) 5GHz Gain: 2.11dBi (5725MHz-5850MHz)
Modulation type	64QAM, 16QAM, QPSK, BPSK for OFDM
Transition Rate:	802.11 a: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 6.5 – 65.0Mbps

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## 1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: NKS-MS5N** filing to comply with Section 15.407 of the FCC Part 15, Subpart E Rules. The composite system (digital device) is compliance with Subpart B is authorized under a DoC procedure.

## 1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4:2014 & ANSI C63.10:2013 & 789033 D02 published on 06, 06, 2014 General UNII Test Procedure New Rules v01. Radiated testing was performed at an antenna to EUT distance 3 meters.

Tested in accordance with Jun. 2014 KDB789033 D02 for compliance to FCC 47CFR 15.407 requirements.

## 1.4 Test Facility

The measurement facilities used to collect the 3m Radiated Emission and AC power line conducted data are located on the address of SGS Taiwan Ltd. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333 which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2014 & [ANSI C63.10:2013](#). FCC Registration Number: 628985. Canada Registration Number: 4620A-4.

The 10 m Open Area Test Sites located on the address of SGS Taiwan Ltd. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan Township, Taoyuan County, Taiwan, which is constructed and calibrated to meet the CISPR 22/EN 55022 requirements. SGS Site No. 1(3 & 10 meters) and FCC Registration Number: 455997

## 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 a placed on as turn table which is 0.8 m above ground plane. According to the general criterion in Section 7.1 of ANSI C63.4:2014 & 6.2 ANSI 63.10:2013. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz, and the measurement procedure 7.3 in ANSI 63.4:2014 & 6.2.2, and 6.2.3 in ANSI 63.10:2013 is followed to carry out the test. The CISPR Quasi-Peak and Average detector mode is employed according to §15.107

#### 2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. 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 according to the requirements in Section 8 and 13 and of ANSI C63.4:2014, & Section 6.3, 6.4, 6.5, and 6.6 of ANSI 63.10:2013.

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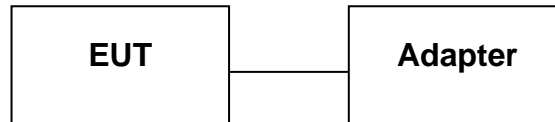
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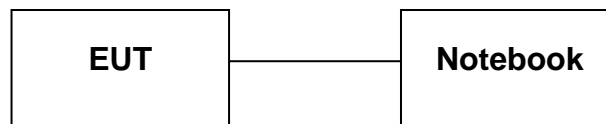


## 2.4 Configuration of Tested System

**Fig. 2-1 Radiated Emission & Conduction Emission Configuration**



**Fig. 2-2 Conducted (Antenna Port) 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.	Notebook	Lenovo	L430	R9-YYG88	N/A	Unshielded

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### 3 SUMMARY OF TEST RESULT

FCC Rules	Description Of Test	Result
§15.207	AC Power Line Conducted Emission	Compliant
§15.407(a) (1) (2)	26 dB & 6dB Emission Bandwidth	Compliant
§15.407(a) (1) (2)	The Maximum Output Power Measurement	Compliant
§15.407(a) (5)	Peak Power Spectral Density Measurement	Compliant
§15.407(b) (1) (2) (3)	Undesirable Emission – Conducted Measurement	Compliant
§15.407(b) (1) (2) (3)(6) (7)	Undesirable Emission – Radiated Measurement	Compliant
§15.407(c)	Transmission in case of Absence of Information	Compliant
§15.407(g)	Frequency Stability	Compliant
§15.203	Antenna Requirement	Compliant

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#### 4 DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

Test program used to control the EUT for staying in continuous transmitting mode is programmed.

a mode:

5150MHz-5250MHz: Channel lowest(5180MHz) 、Mid(5220MHz) and Highest(5240MHz).

5250MHz-5350MHz: Channel lowest(5260MHz) 、Mid(5300MHz) and Highest(5320MHz).

5470MHz-5725MHz: Channel lowest(5500MHz) 、Mid(5580MHz) and Highest(5700MHz)

5725MHz-5850MHz: Channel lowest(5745MHz) 、Mid(5785MHz) and Highest(5850MHz)

and with 6Mbps data rate are chosen for full testing.

n HT 20 mode:

5150MHz-5250MHz: Channel lowest(5180MHz) 、Mid(5220MHz) and Highest(5240MHz).

5250MHz-5350MHz: Channel lowest(5260MHz) 、Mid(5300MHz) and Highest(5320MHz).

5470MHz-5725MHz: Channel lowest(5500MHz) 、Mid(5580MHz) and Highest(5700MHz)

5725MHz-5850MHz: Channel lowest(5745MHz) 、Mid(5785MHz) and Highest(5850MHz)

with 6.5Mbps data rate are chosen for full testing

The worst case is determined by the output power that generates the highest emission. As examined in the section of output power measurement, the section 8.5, the lowest data rate at a/n\_HT20 resulted the highest level of fundamental emission, and therefore, the lowest data rate is chosen as the worst-case to conduct the remaining of other mandatory test cases.

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

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**Duty Cycle Analysis:**

*Pre-analysis Check: While conducting average power measurement, duty cycle of each mode (a/n\_ht20) 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, resulted as obtained below, and showed only the most representative ones*

*Tabular results as indicates below entails the results of duty factor for all supported modes.*

**Formula:**

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

**Test Procedure:**

*Set span = 0, RBW = 8MHz, the largest as possible, VBW = 8MHz, Detector = Peak, and RBW, and VBW = the highest RBW the spectrum is capable of, where zero-span is permissible, that > 50/T, where T is ~ 4.3ms*

*Duty Cycle:*

	Antenna	Duty Cycle	Duty Factor (dBm)
802.11a	Single	0.986	0.06
802.11n_20	Single	0.983	0.07

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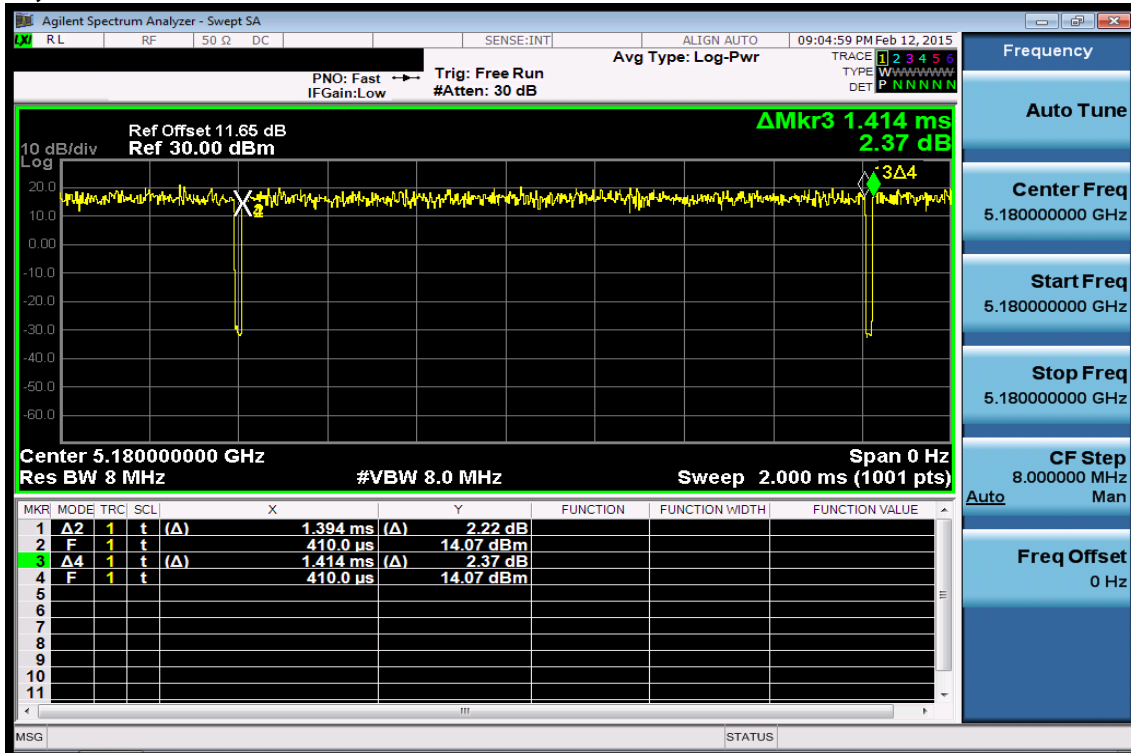
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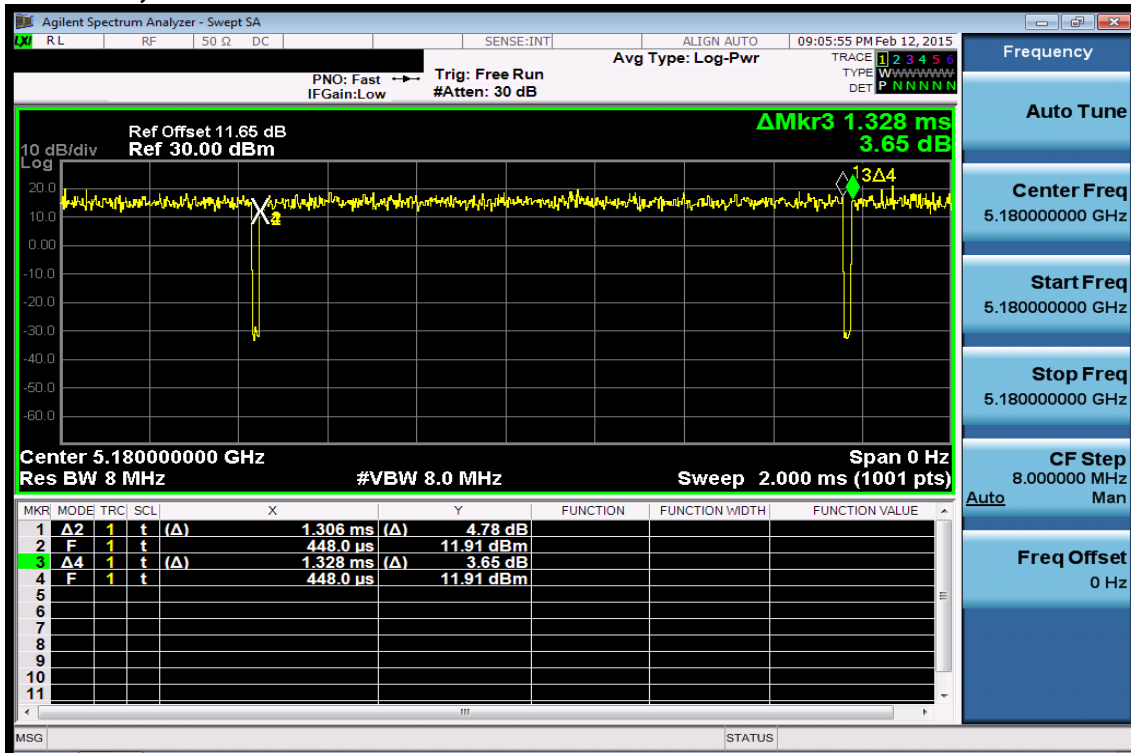
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## DUTY CYCLE OF TEST SIGNAL 802.11a, CH Low 5180 MHz



## 802.11n HT20, CH Low 5180 MHz



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## 5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 2.586 dB
26 dB and 99% Emission Bandwidth	+/- 123.36 Hz
The Maximum Output Power Measurement	+/- 1.42 dB
Peak Power Spectral Density Measurement	+/- 1.55 dB
Peak Excursion Measurement	+/- 1.55 dB
Undesirable Emission – Conducted Measurement	+/- 1.55 dB
Transmission in case of Absence of Information	+/- 1.55 dB
Frequency Stability	+/- 123.36 Hz
TPC and DFS Measurement	+/- 123.36 Hz
Temperature	+/- 0.8 °C
Humidity	+/- 4.7 %
DC / AC Power Source	DC= +/- 1%, AC= +/- 0.2%

### Radiated Spurious Emission:

Measurement uncertainty (Polarization : <b>Vertical</b> )	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> )	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

According to §15.207 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 3	101311	06/20/2014	06/19/2015
Coaxial Cables	N/A	N30N30-1042-150 cm	N/A	01/06/2015	01/07/2016
LISN	Schwarzbeck	NSLK 8127	8127-648	06/10/2014	06/09/2015
LISN	Rolf-Heine	NNB-2/16Z	99012	03/26/2014	03/25/2015
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 C63.4:2014.
2. The AC/DC Power adaptor of EUT was plug-in LISN. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
3. The LISN was connected with 120Vac/60Hz power source.

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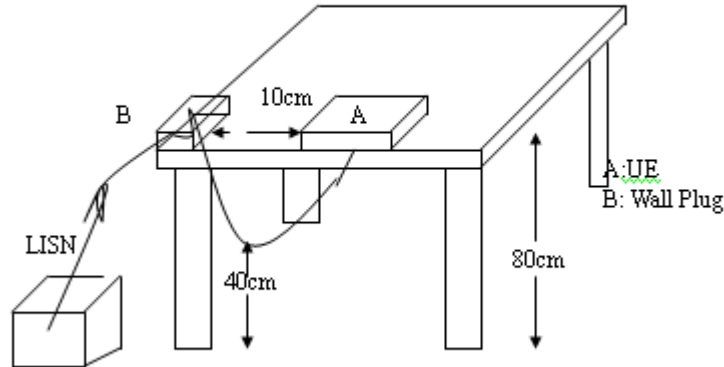
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## 6.4 Test SET-UP (Block Diagram of Configuration)



## 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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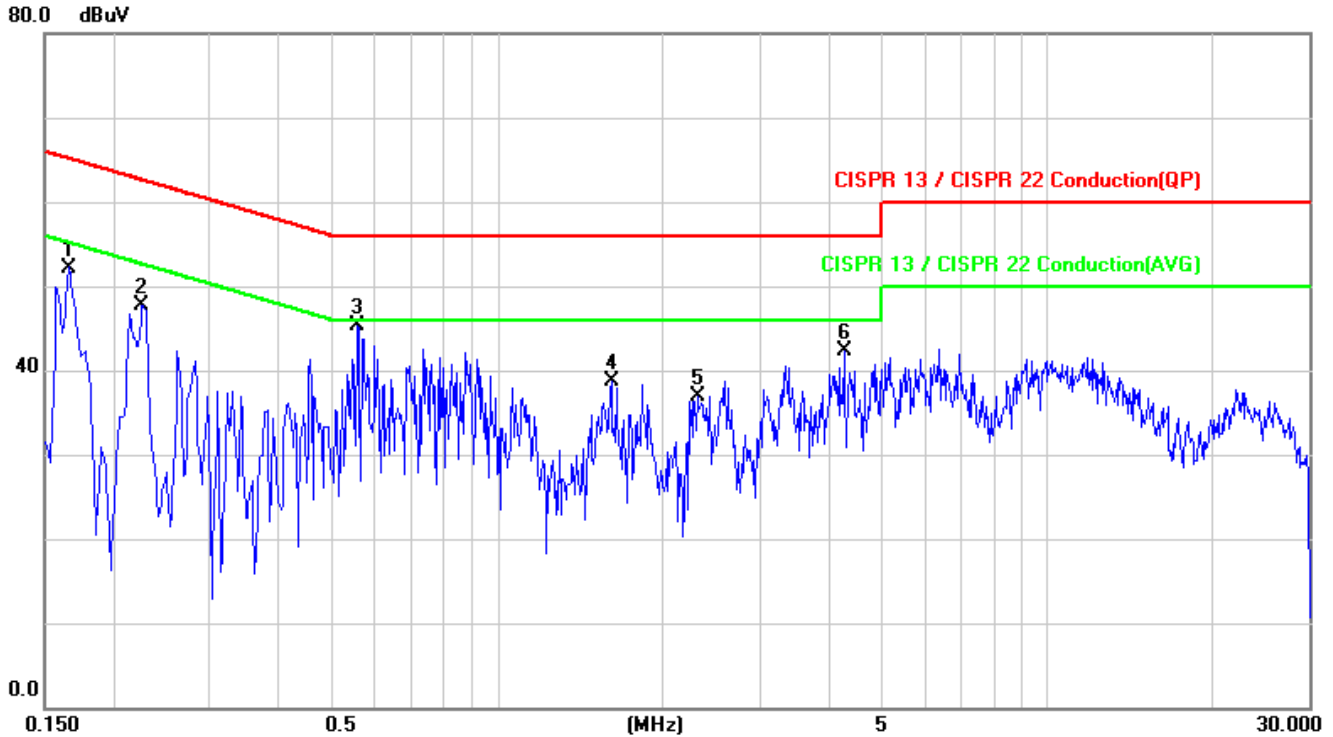
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## AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	Operation Mode		Test Date:	Feb. 26, 2015	
Temperature:	23	Humidity:	58 %	Test By:	Vito
Probe:	L1				



No.	Mk.	Freq. (MHz)	Reading dBuV	Factor (dB)	Measurement (dBuV)	Limit (dBuV)	Over (dB)	Detector	Comment
1		0.1660	52.15	0.05	52.20	65.16	-12.96	peak	
2		0.2260	47.72	0.05	47.77	62.60	-14.83	peak	
3	*	0.5580	45.17	0.20	45.37	56.00	-10.63	peak	
4		1.6140	38.24	0.45	38.69	56.00	-17.31	peak	
5		2.3180	36.43	0.51	36.94	56.00	-19.06	peak	
6		4.2860	41.89	0.50	42.39	56.00	-13.61	peak	

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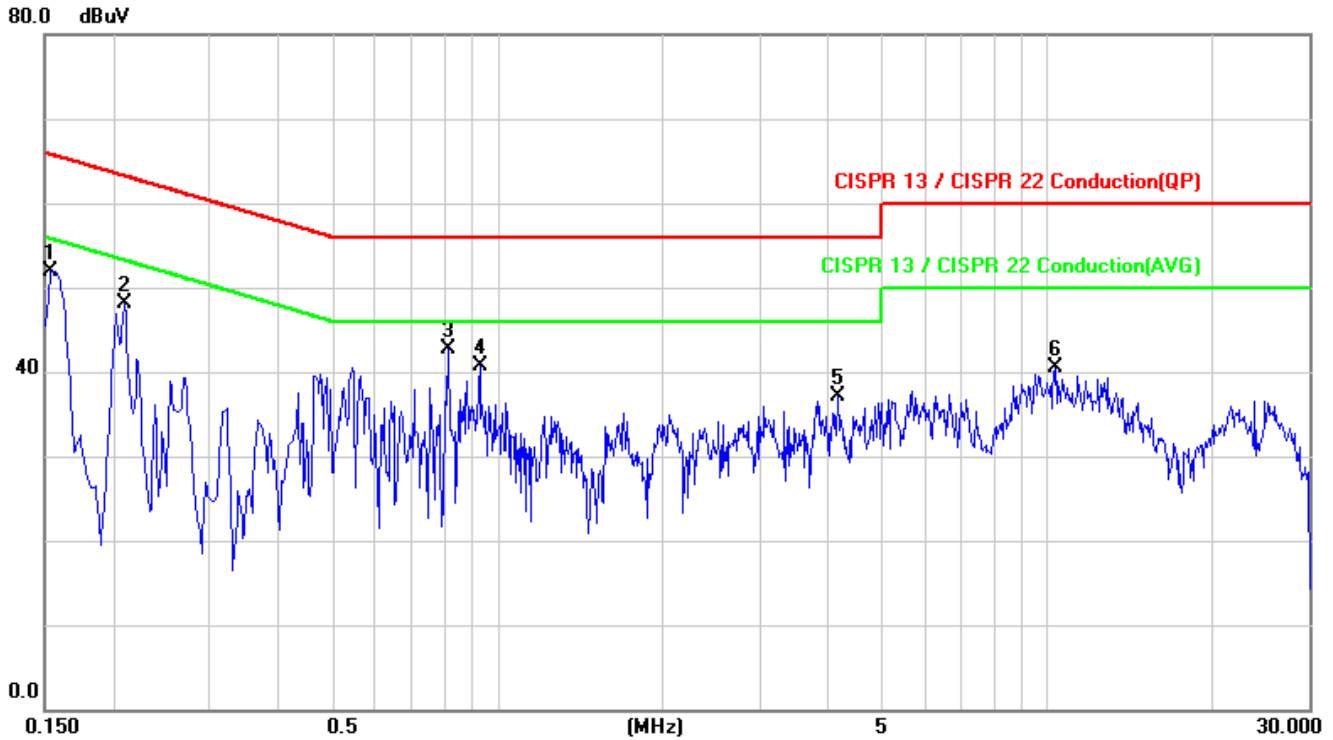
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Operation Mode:	Operation Mode		Test Date:	Feb. 26, 2015	
Temperature:	23	Humidity:	58 %	Test By:	Vito
Probe:	N				



No.	Mk.	Freq. (MHz)	Reading dBuV	Factor (dB)	Measurement (dBuV)	Limit (dBuV)	Over (dB)	Detector	Comment
1		0.1540	51.84	0.05	51.89	65.78	-13.89	peak	
2		0.2100	48.04	0.04	48.08	63.21	-15.13	peak	
3	*	0.8140	42.47	0.30	42.77	56.00	-13.23	peak	
4		0.9300	40.35	0.34	40.69	56.00	-15.31	peak	
5		4.1660	36.51	0.51	37.02	56.00	-18.98	peak	
6		10.3620	39.97	0.47	40.44	60.00	-19.56	peak	

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## 7 26DB & 6DB EMISSION BANDWIDTH MEASUREMENT

### 7.1 Standard Applicable

According to §15.407(a). No Limit required.

And §15.407 (e) Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

### 7.2 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the Antenna port to the spectrum analyzer.
3.
  - 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.

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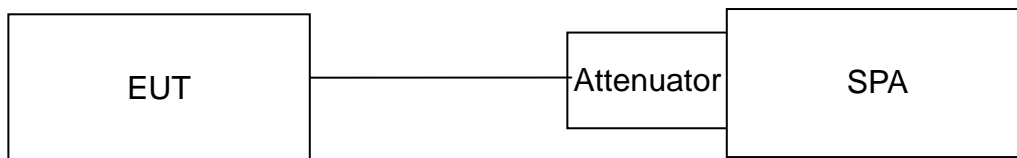
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### 7.3 Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Power Meter	Anritsu	ML2495A	1005007	12/20/2014	12/19/2015
Power Sensor	Anritsu	MA2411B	917032	12/20/2014	12/19/2015
Spectrum Analyzer	Agilent	E4446A	MY51100003	05/19/2014	05/18/2015
Spectrum Analyzer	Agilent	E4440A	MY45304525	03/08/2014	03/07/2015
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2015	01/01/2016
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	01/02/2015	01/01/2016
Attenuator	Mini-Circuit	BW-S10W2+	002	01/02/2015	01/01/2016
Splitter	Agilent	11636B	N/A	01/02/2015	01/01/2016

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.

### 7.4 Test Set-up:



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## 7.5 Measurement Result

### 26dB Bandwidth

802.11a, 5150~5250 MHz

Frequency (MHz)	26dB Bandwidth (B) (MHz)	10 Log (B) (dB)
5180	23.170	13.65
5220	21.940	13.41
5240	20.920	13.21

802.11a, 5250~5350 MHz

Frequency (MHz)	26dB Bandwidth (B) (MHz)	10 Log (B) (dB)
5260	21.410	13.31
5300	20.650	13.15
5320	21.360	13.30

802.11a, 5470~5725 MHz

Frequency (MHz)	26dB Bandwidth (B) (MHz)	10 Log (B) (dB)
5500	20.750	13.17
5580	21.580	13.34
5700	20.790	13.18

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802.11n HT20, 5150~5250 MHz MIMO-Main

Frequency (MHz)	26dB Bandwidth (B) (MHz)	10 Log (B) (dB)
5180	21.760	13.38
5220	21.580	13.34
5240	22.250	13.47

802.11n HT20, 5250~5350 MHz

Frequency (MHz)	26dB Bandwidth (B) (MHz)	10 Log (B) (dB)
5260	21.490	13.32
5300	21.390	13.30
5320	21.080	13.24

802.11n HT20, 5470~5725 MHz

Frequency (MHz)	26dB Bandwidth (B) (MHz)	10 Log (B) (dB)
5500	21.090	13.24
5580	20.860	13.19
5700	21.090	13.24

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### 6dB Bandwidth

802.11a, 5725~5850 MHz

Frequency (MHz)	6dB Bandwidth (B) (MHz)	10 Log (B) (dB)
5745	16.380	12.14
5785	16.420	12.15
5825	16.400	12.15

802.11n HT20, 5725~5850 MHz

Frequency (MHz)	6dB Bandwidth (B) (MHz)	10 Log (B) (dB)
5745	17.620	12.46
5785	17.640	12.46
5825	17.630	12.46

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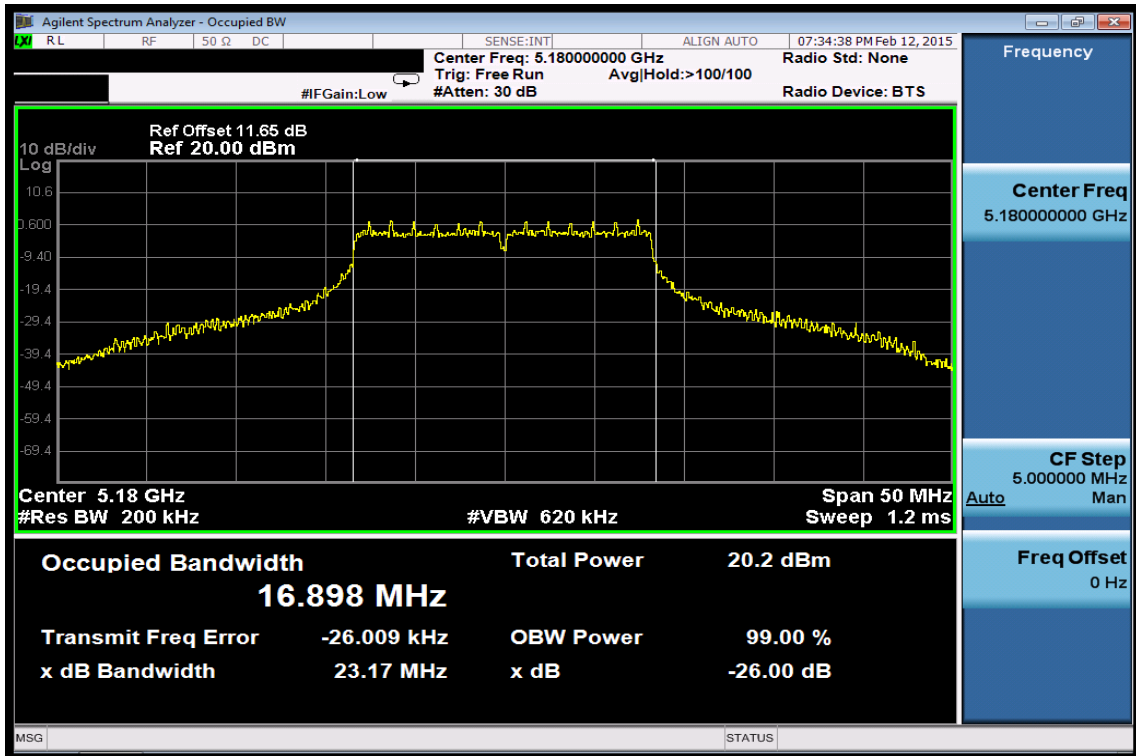
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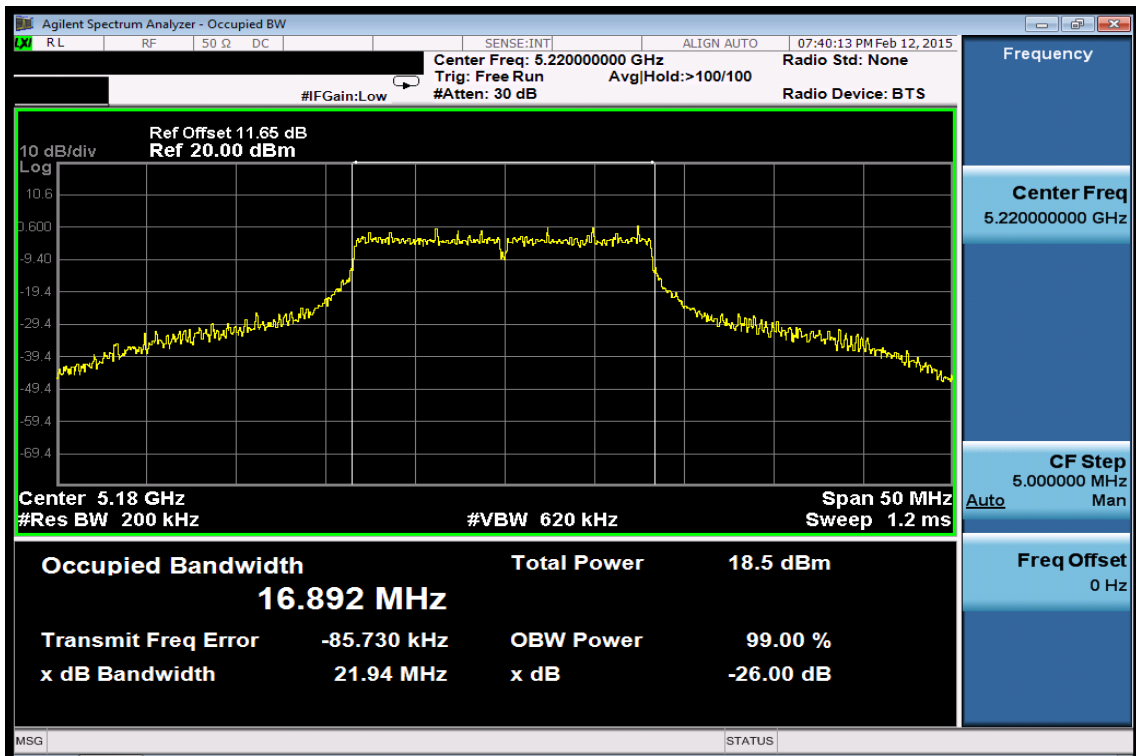
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### 802.11a, 5150~5250 MHz 26dB Band Width Test Data CH-Low (5180MHz)



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



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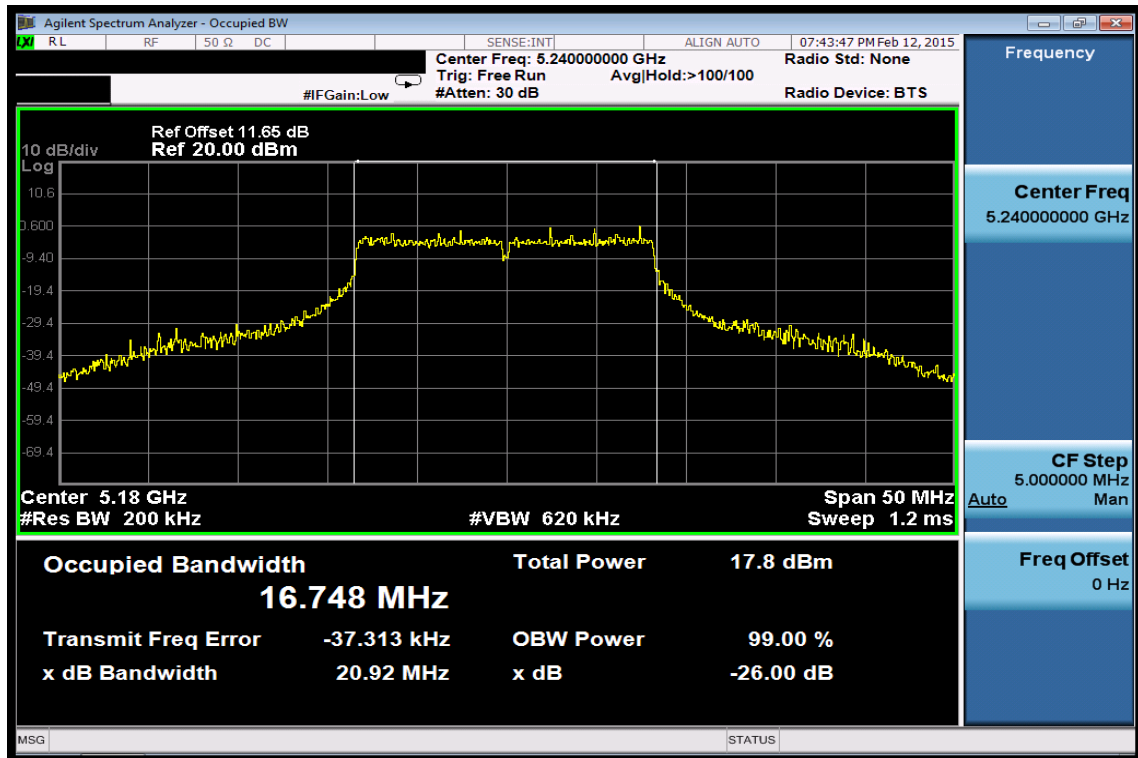
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## 26dB Band Width Test Data CH-High (5240MHz)



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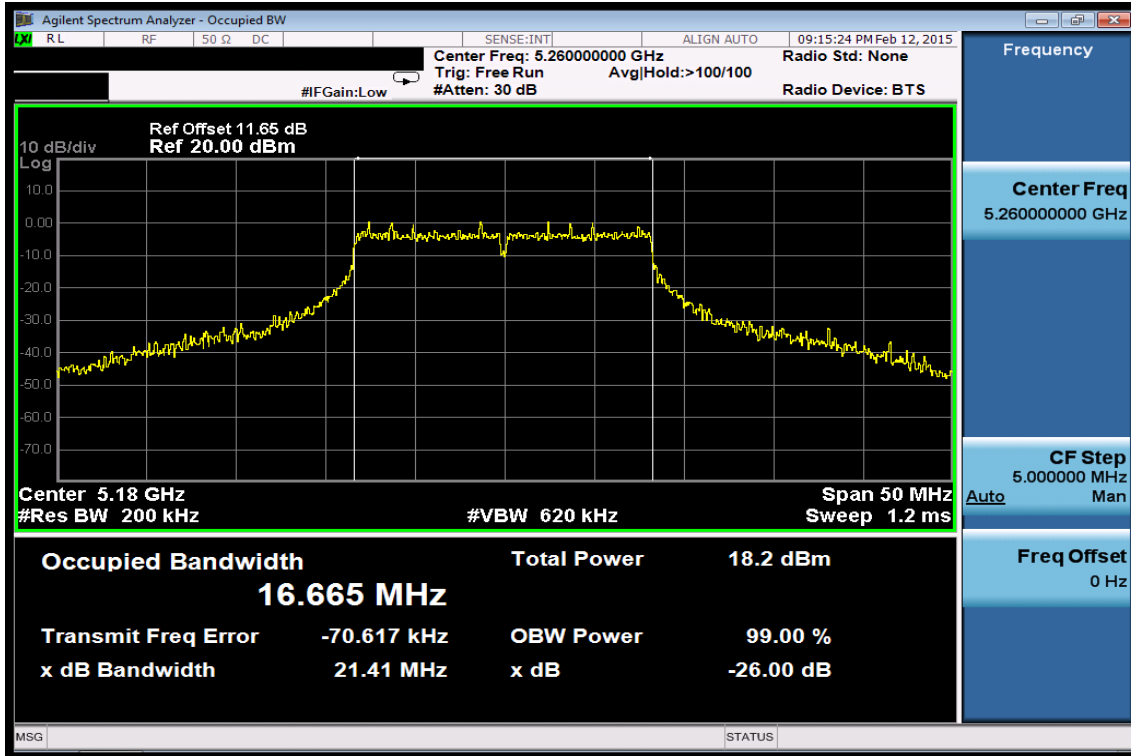
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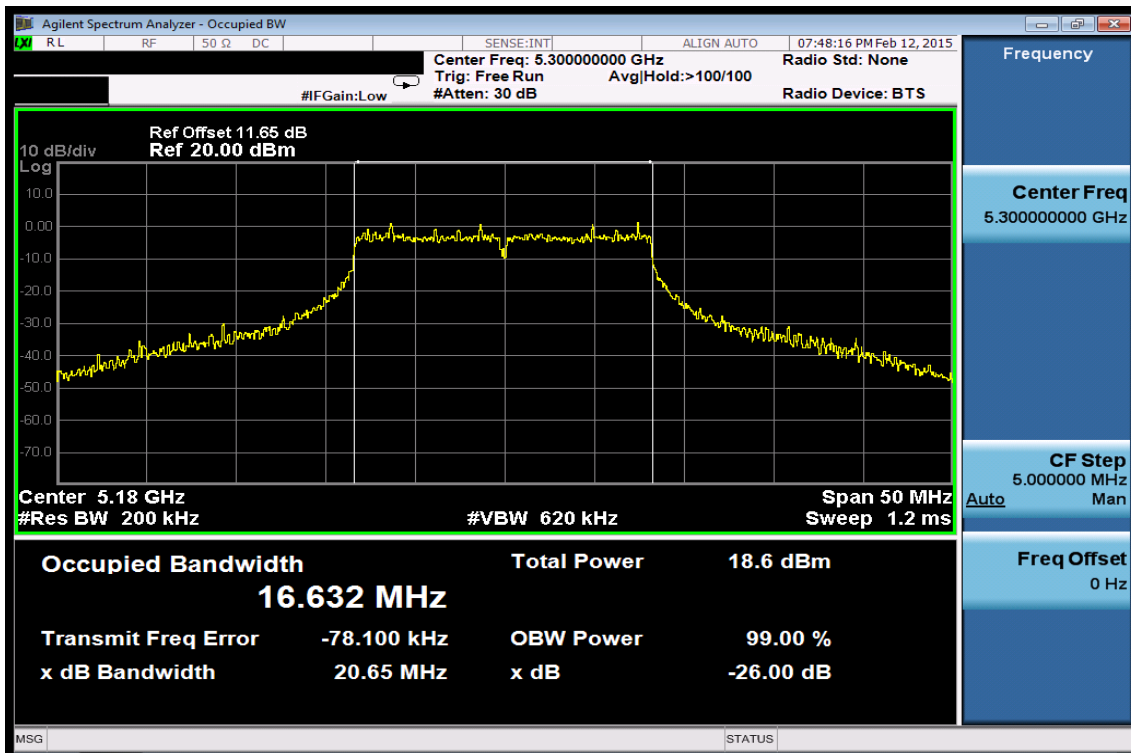
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### 802.11a, 5250~5350 MHz 26dB Band Width Test Data CH-Low (5260MHz)



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



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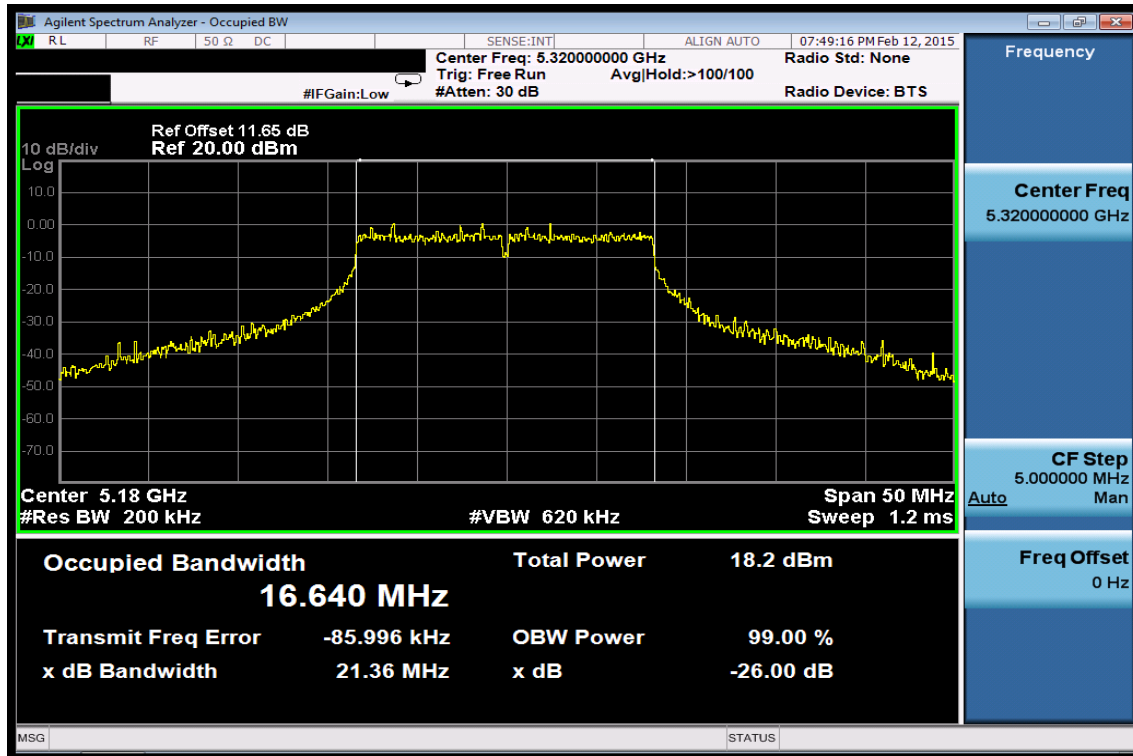
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### 26dB Band Width Test Data CH-High (5320MHz)



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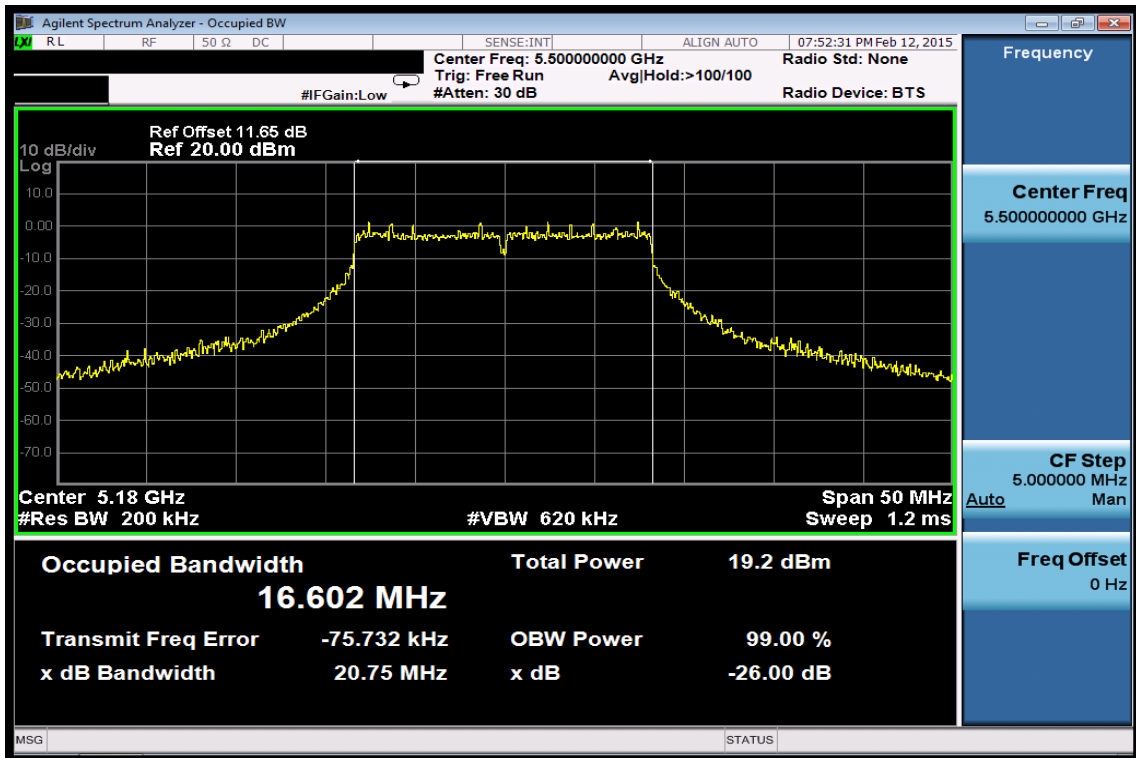
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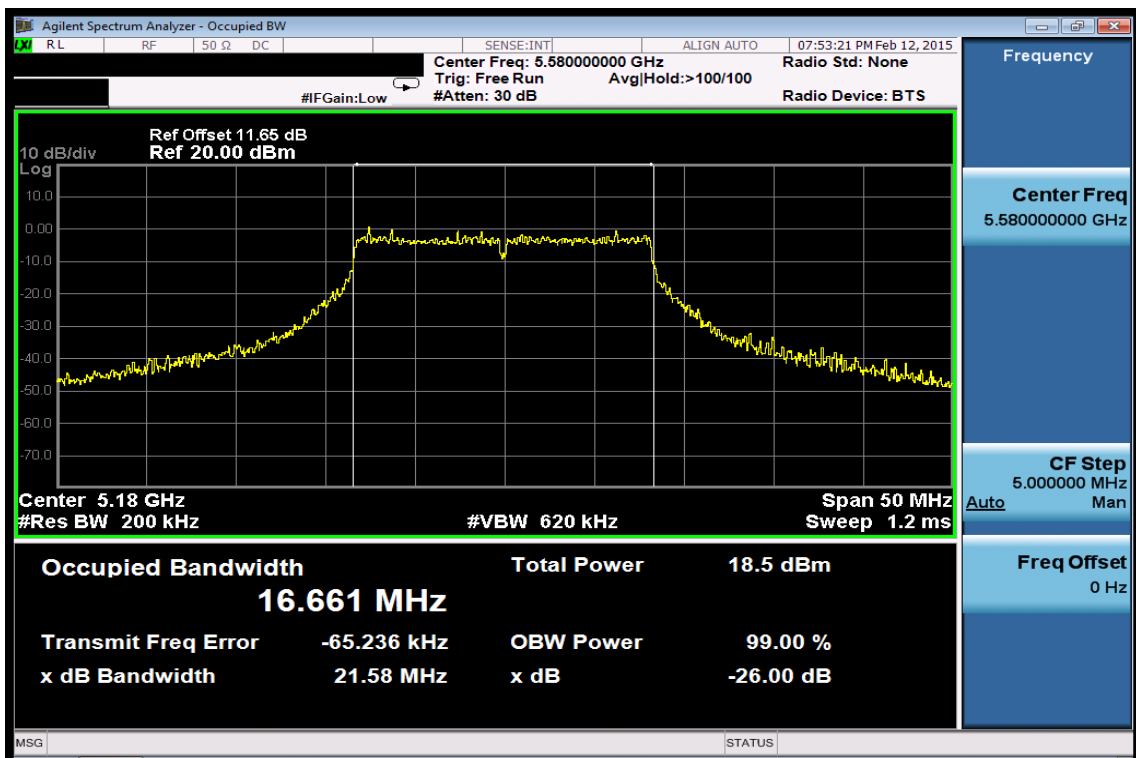
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### 802.11a, 5470~5725 MHz 26dB Band Width Test Data CH-Low (5500MHz)



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



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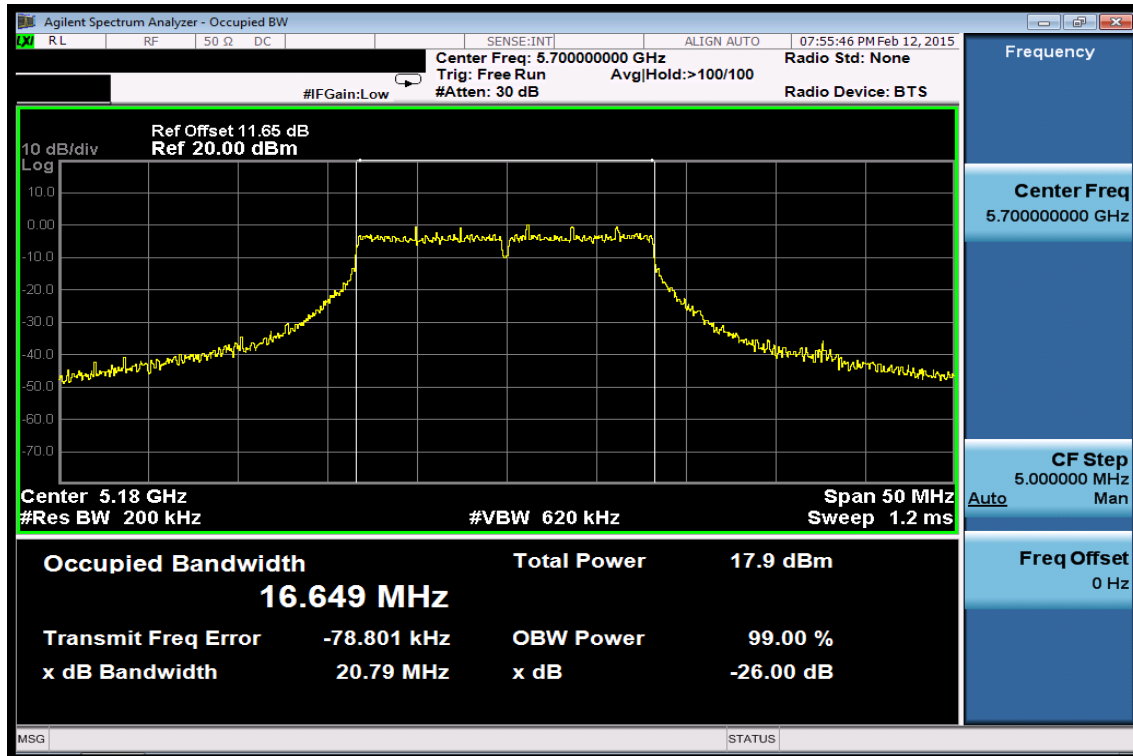
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### 26dB Band Width Test Data CH-High (5700MHz)



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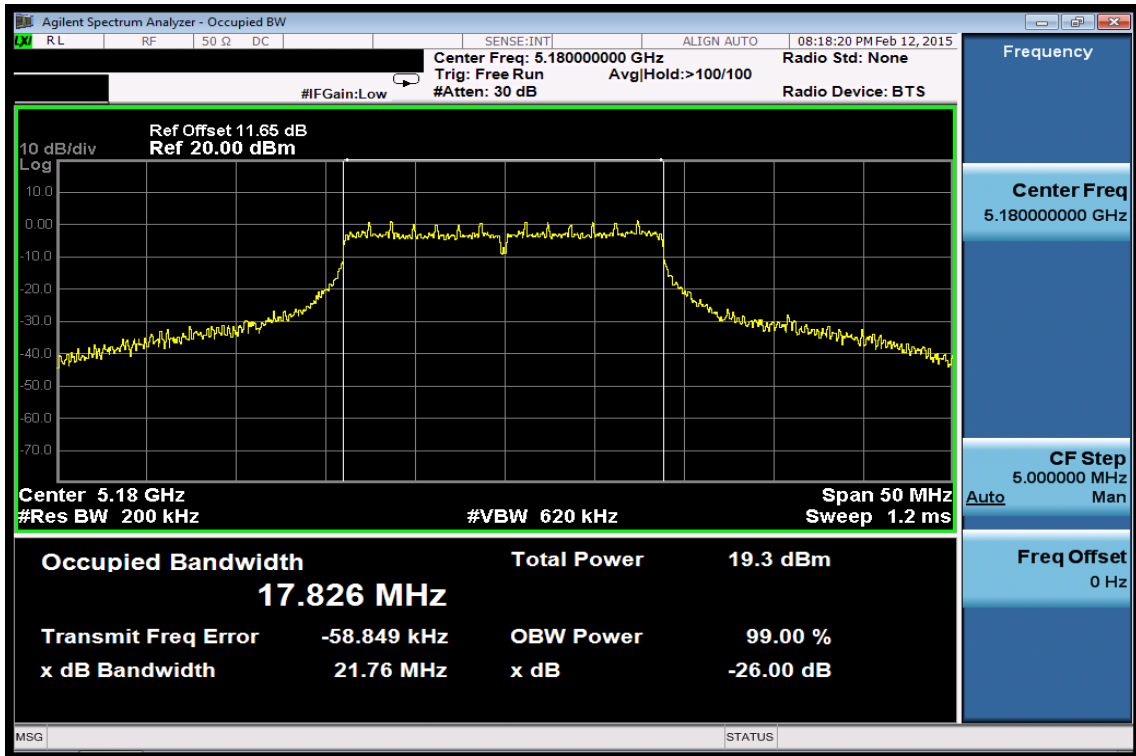
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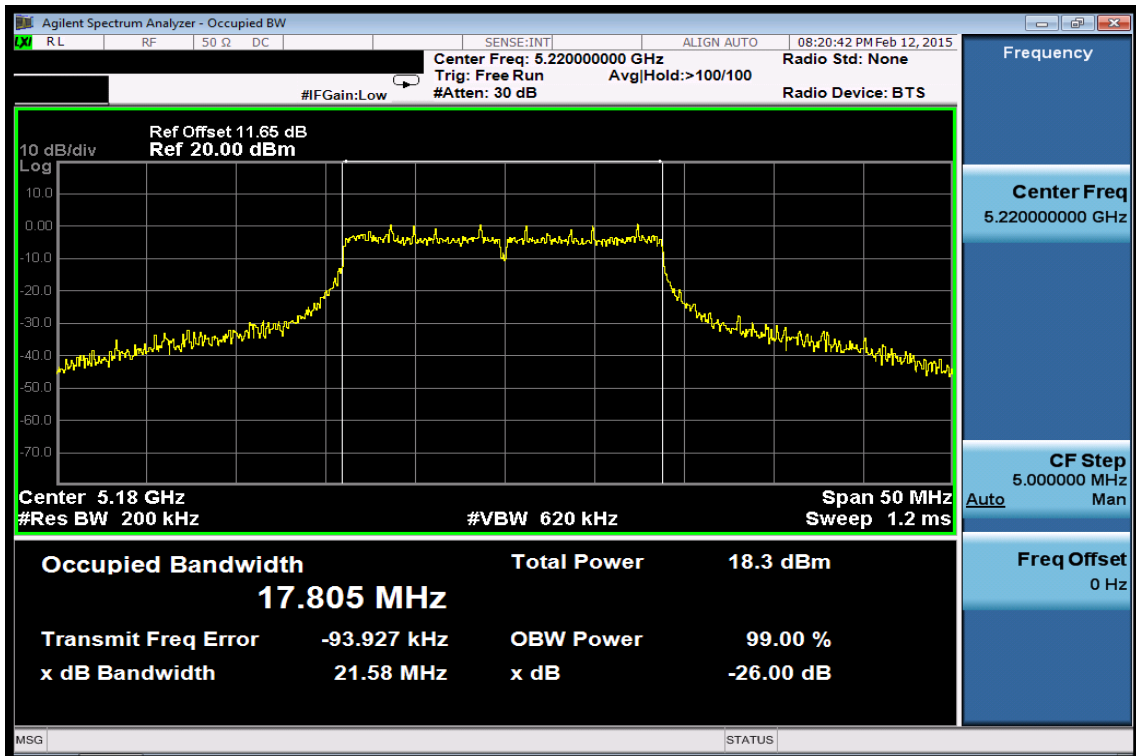
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### 802.11n HT20, 5150~5250 MHz 26dB Band Width Test Data CH-Low (5180 MHz)



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



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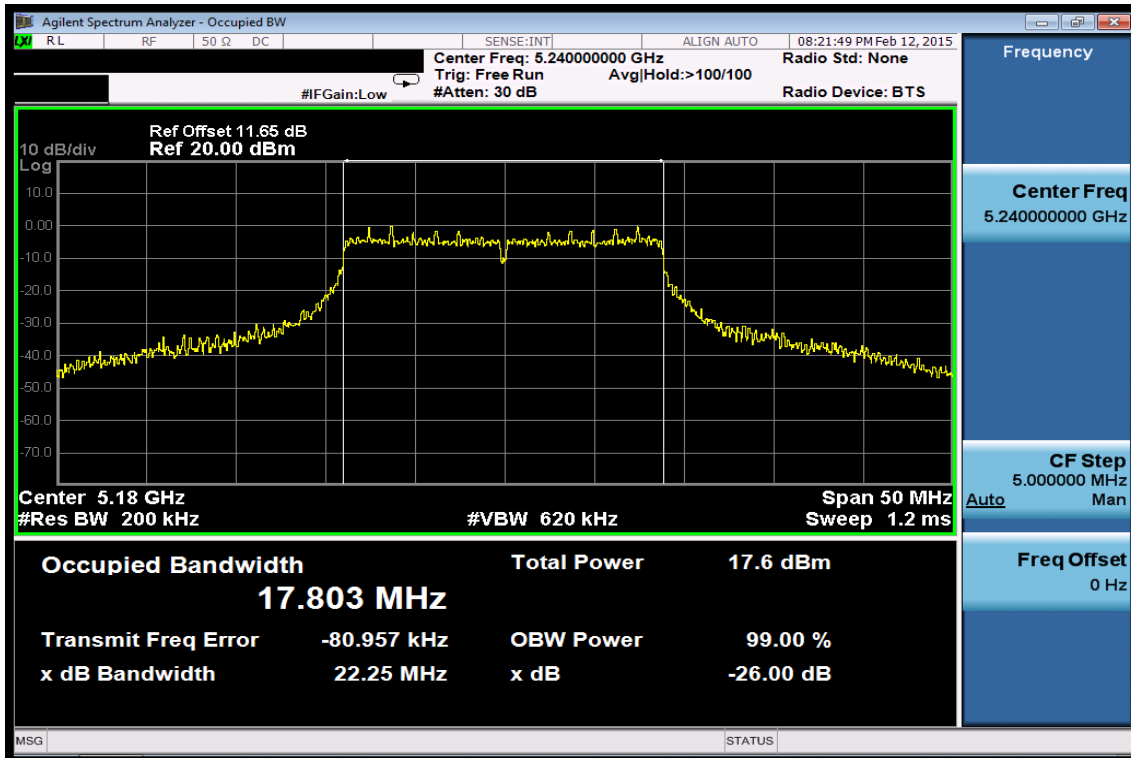
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### 26dB Band Width Test Data CH-High (5240 MHz)



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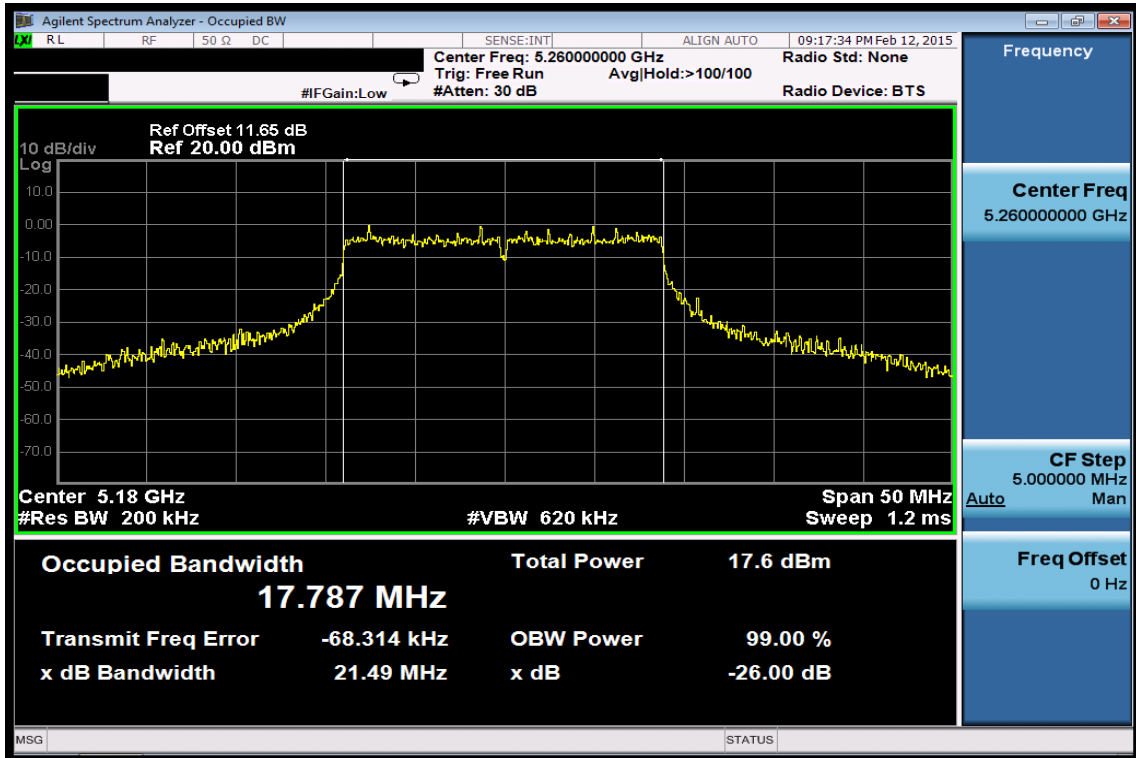
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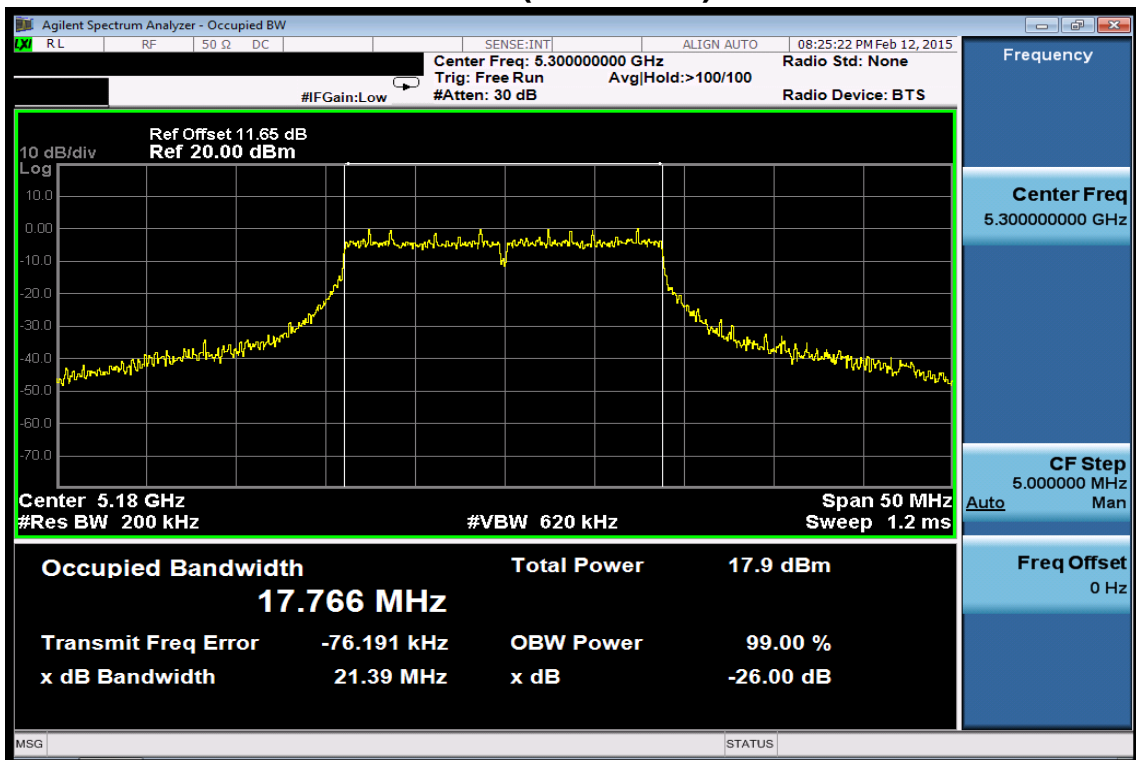
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### 802.11n HT20, 5250~5350 MHz 26dB Band Width Test Data CH-Low (5260 MHz)



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



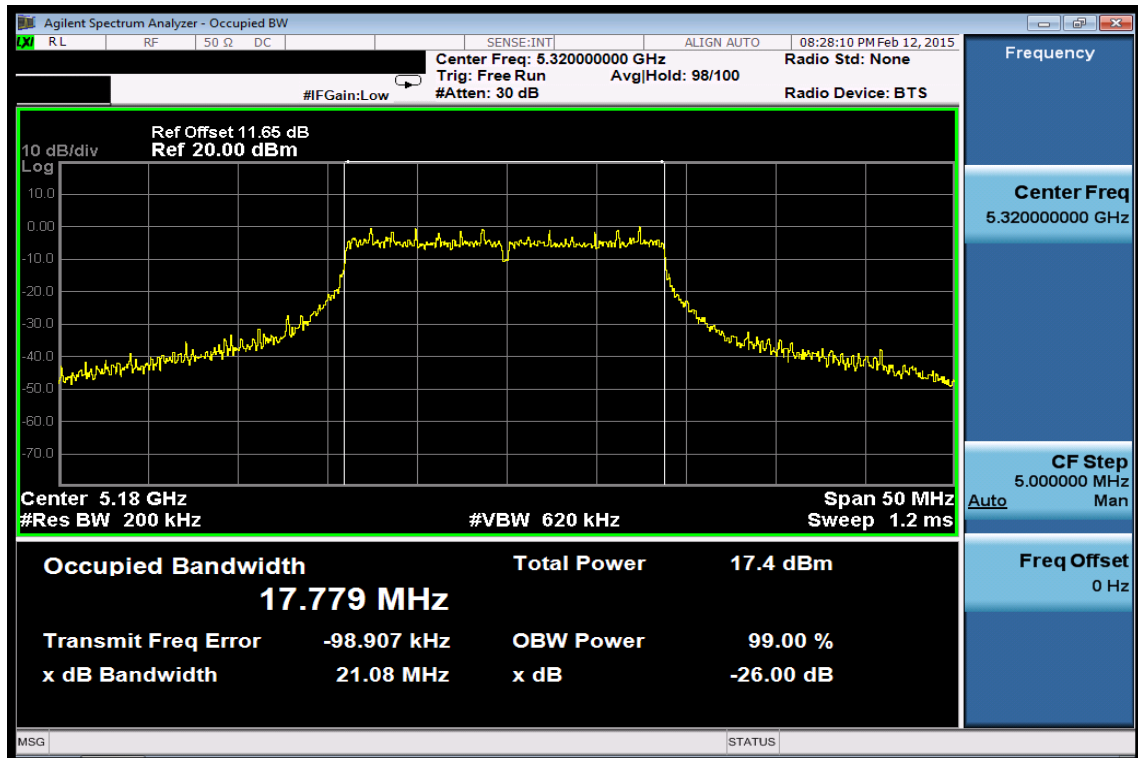
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## 26dB Band Width Test Data CH-High (5320 MHz)



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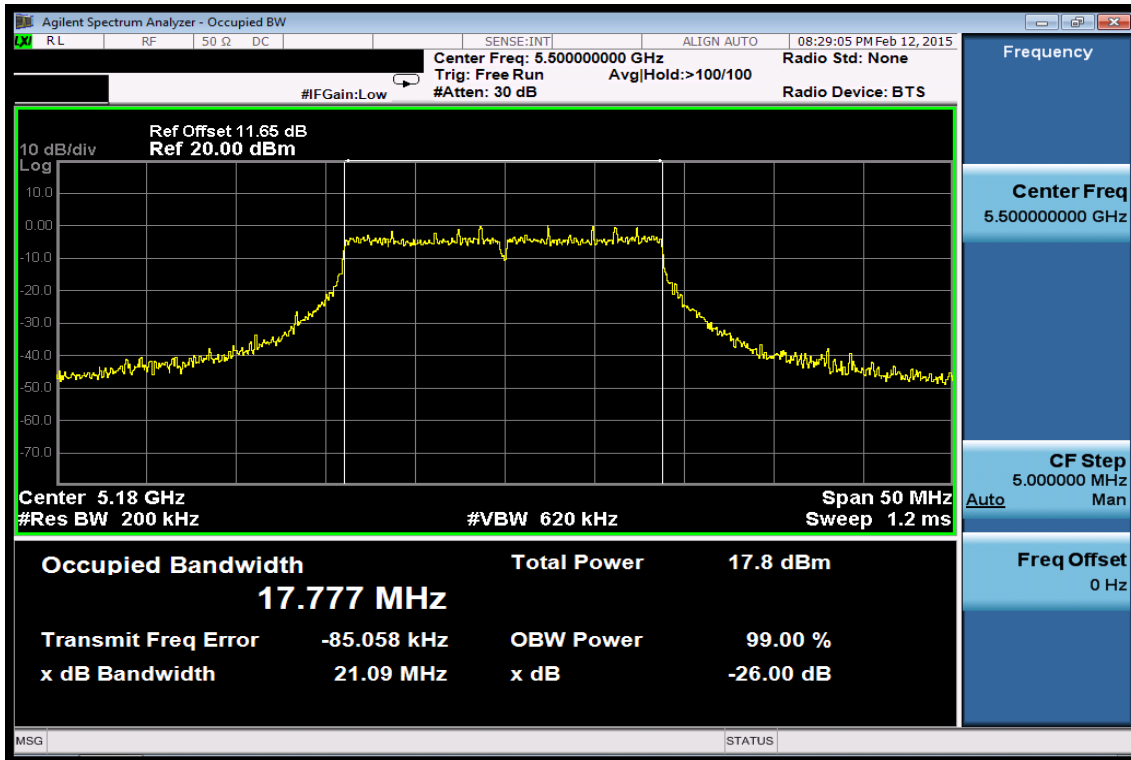
t (886-2) 2299-3279

f (886-2) 2298-0488

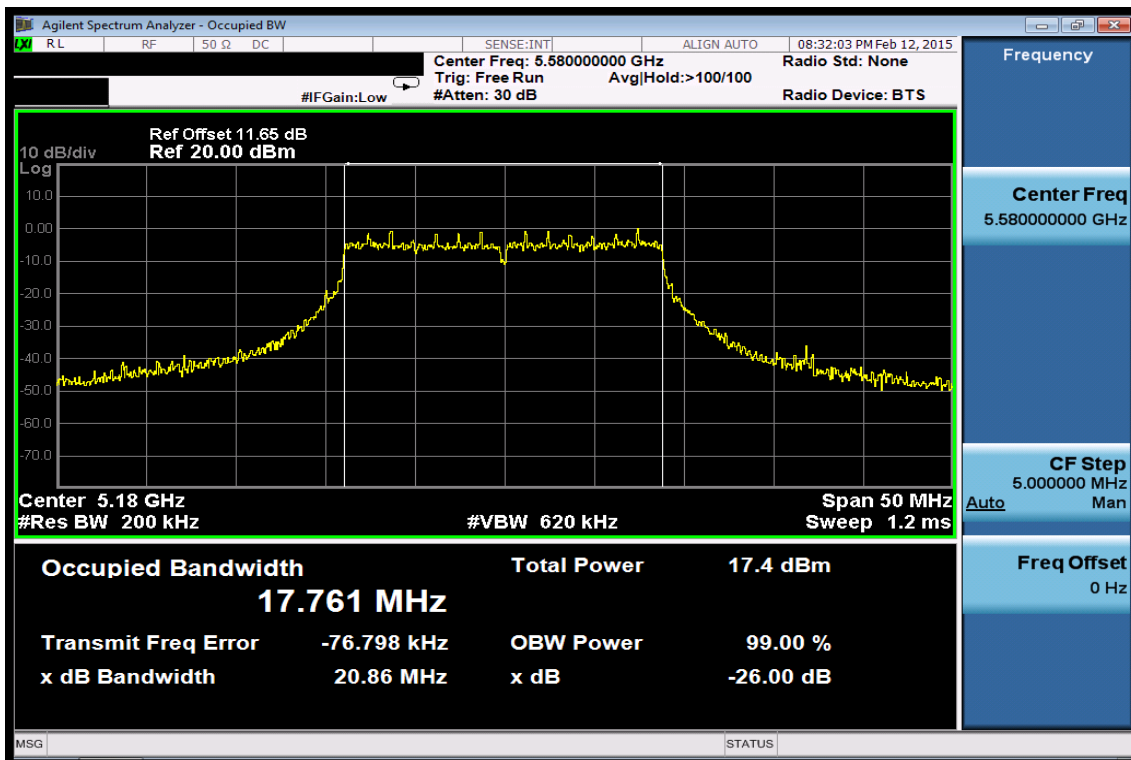
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### 802.11n HT20, 5470~5725 MHz 26dB Band Width Test Data CH-Low (5500 MHz)



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



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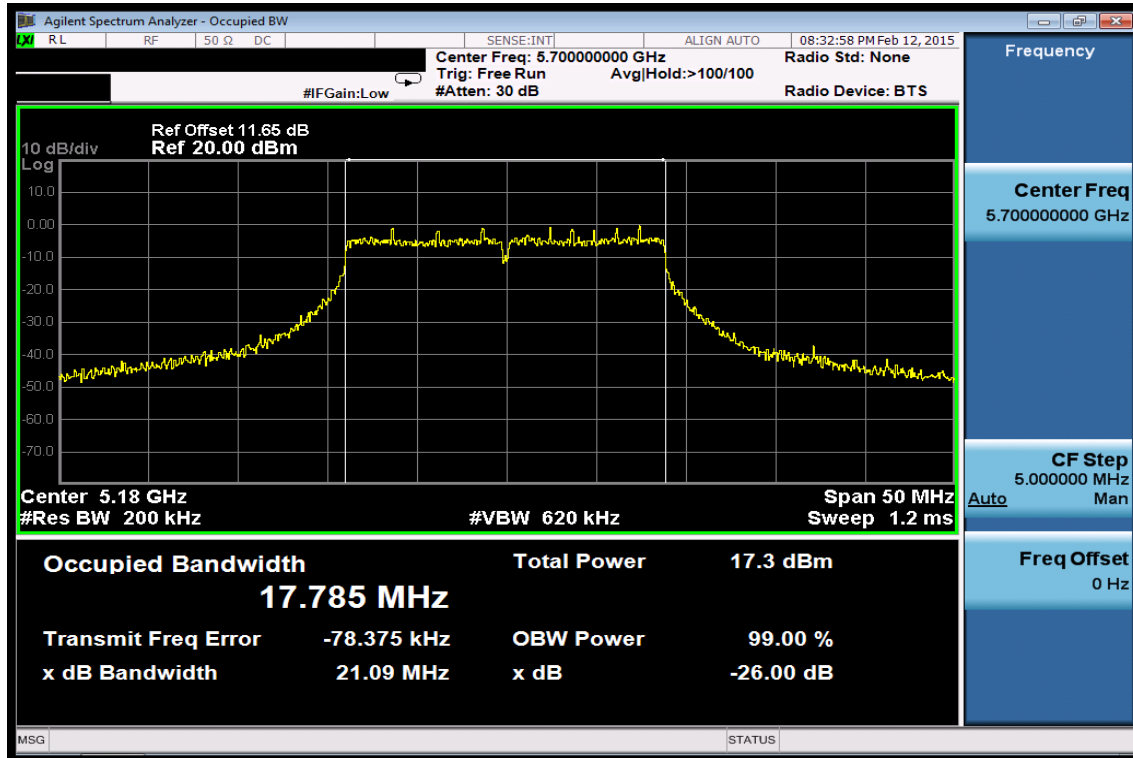
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### 26dB Band Width Test Data CH-High (5700 MHz)



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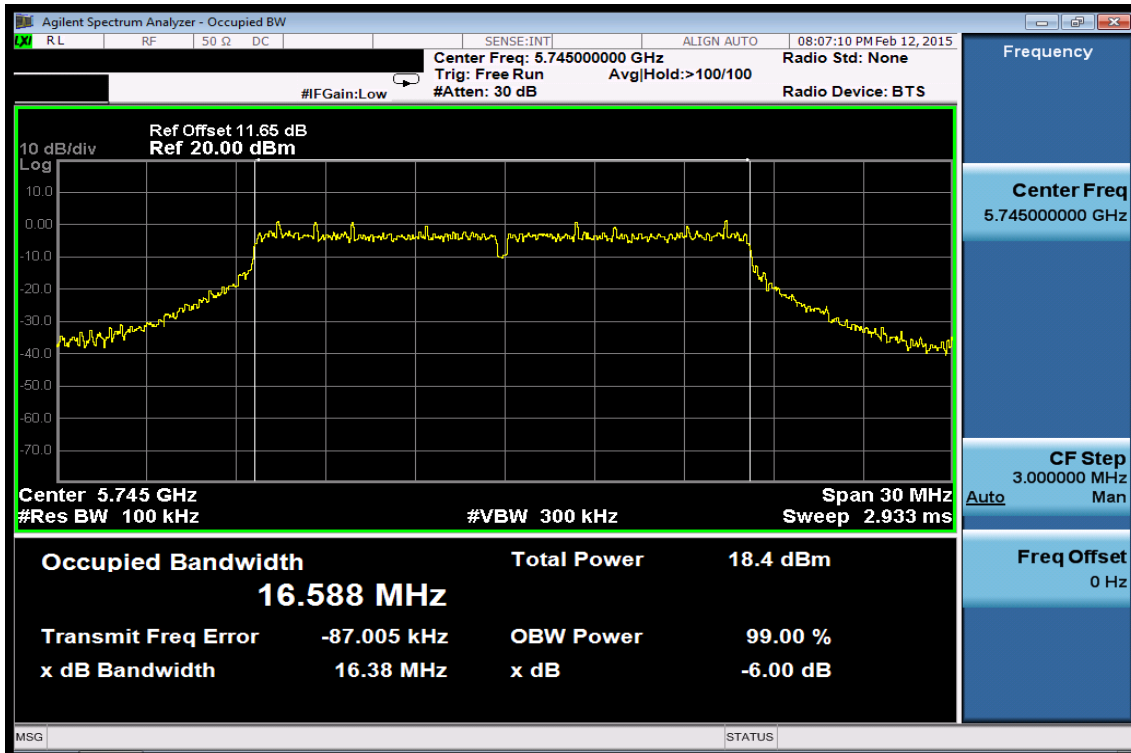
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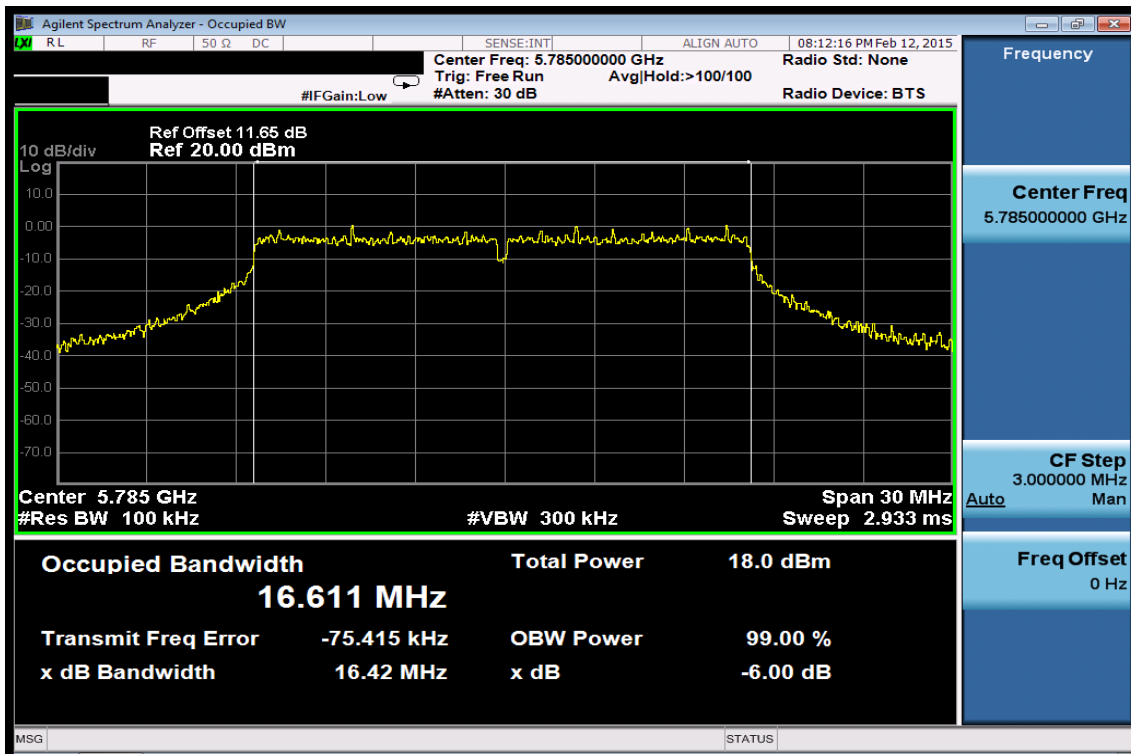
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### 802.11a, 5725~5850 MHz 6dB Band Width Test Data CH-Low (5745 MHz)



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



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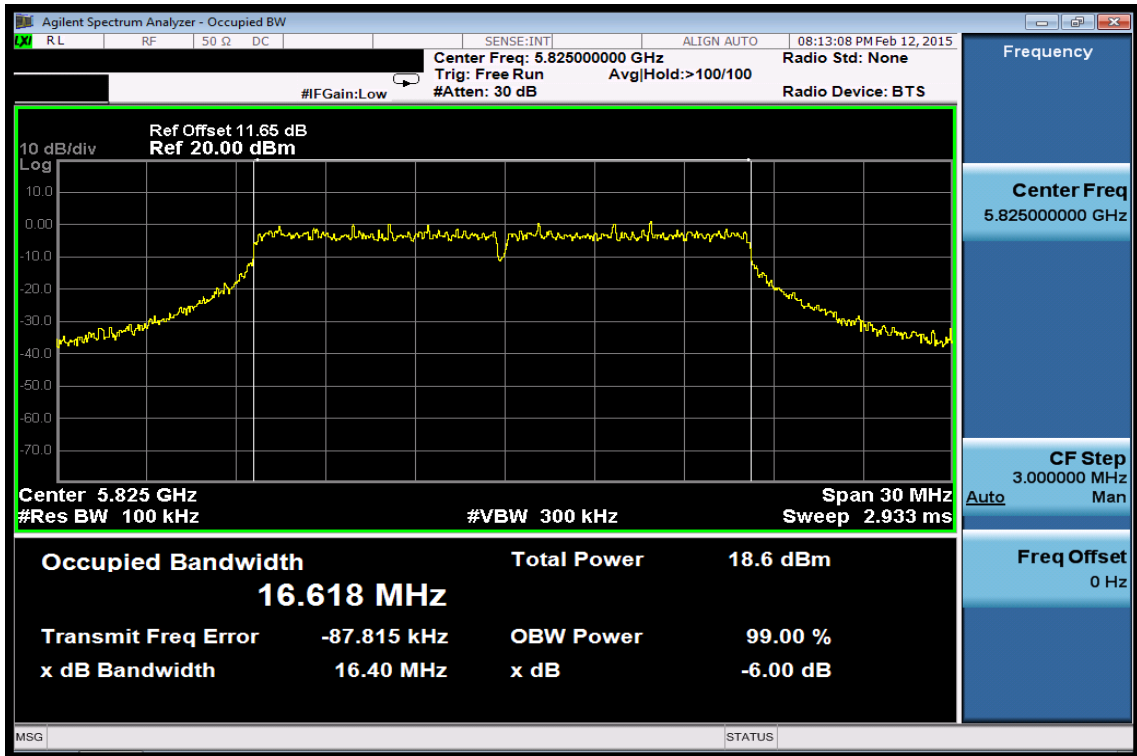
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### 6dB Band Width Test Data CH-High (5825 MHz)



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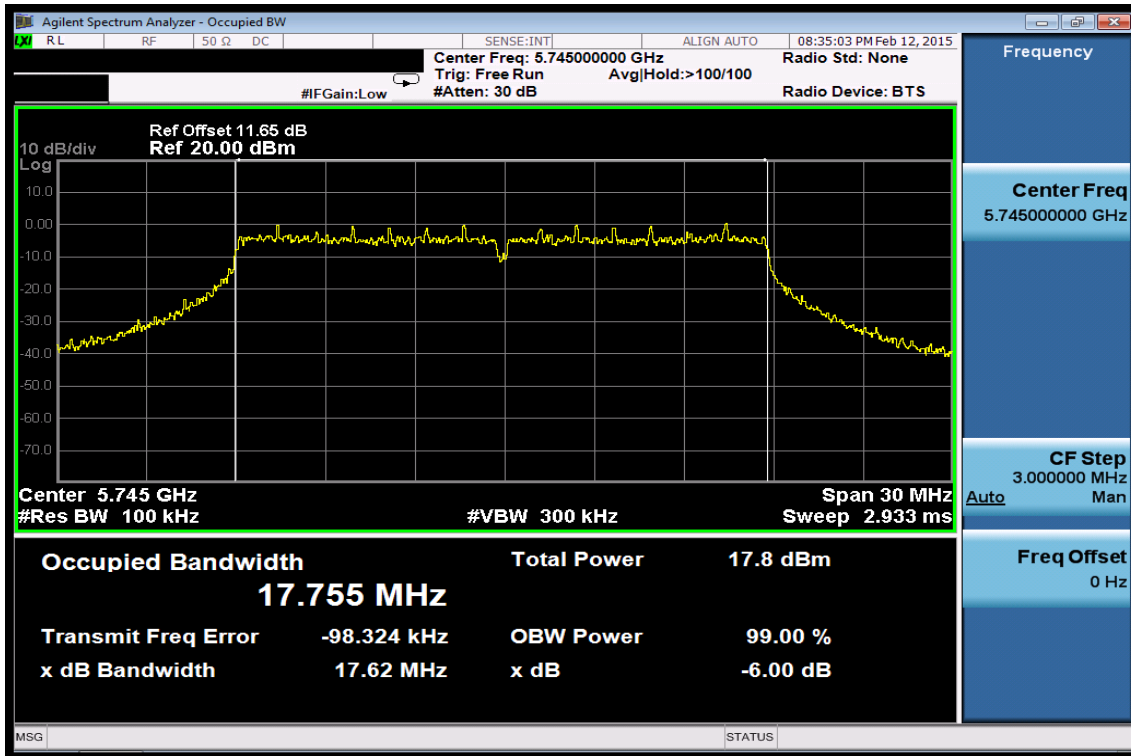
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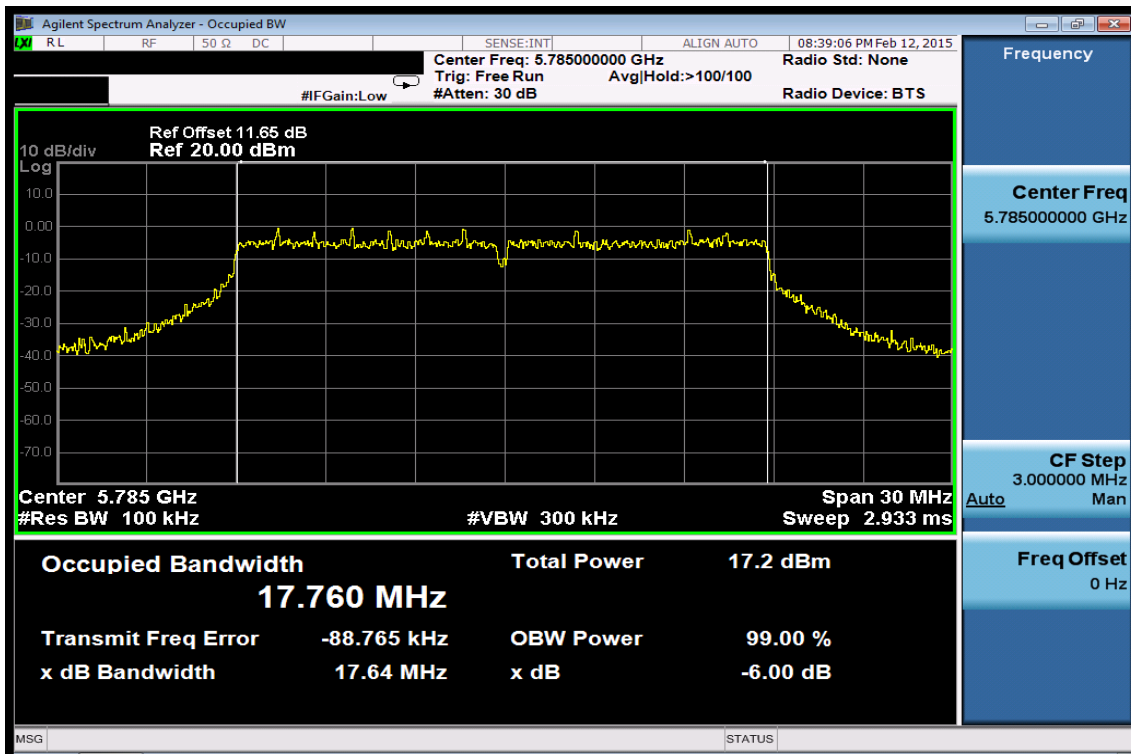
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### 802.11n HT20, 5725~5850 MHz 6dB Band Width Test Data CH-Low (5745 MHz)



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



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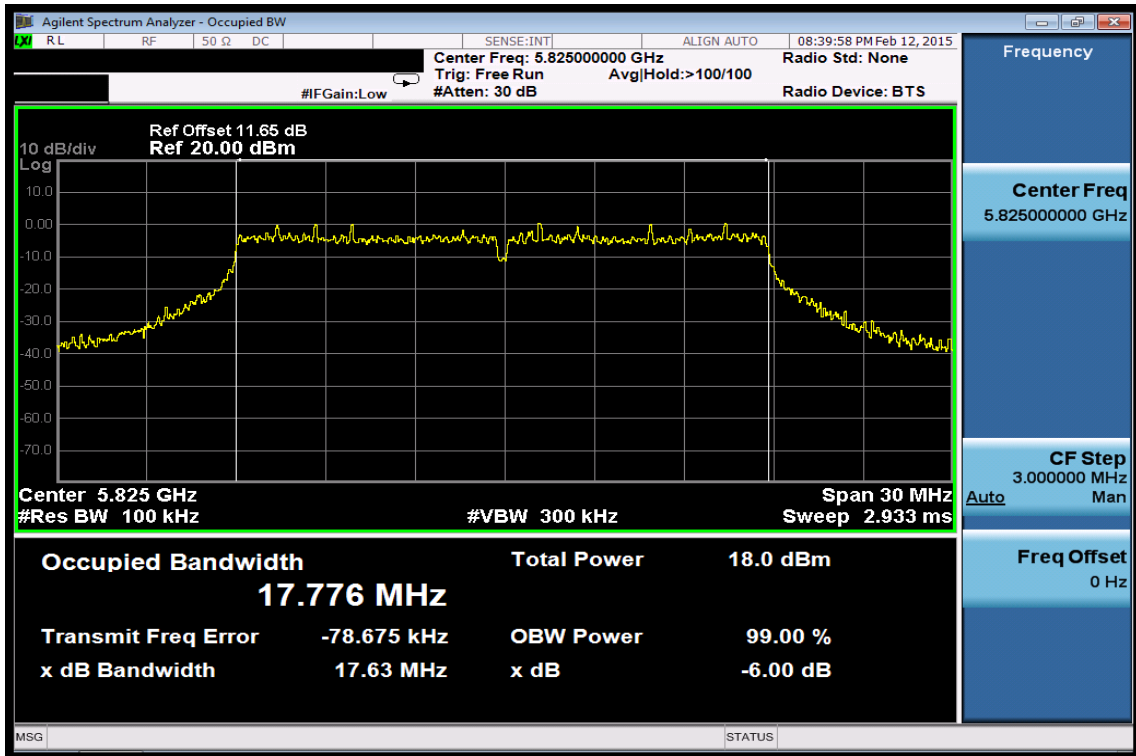
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### 6dB Band Width Test Data CH-High (5825 MHz)



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## 8 THE MAXIMUM OUTPUT POWER MEASUREMENT

### 8.1 Standard Applicable

According to §15.407(a)

1. For the band 5.150-5.250 GHz, the maximum conducted power over the frequency of operation shall not exceed the lesser of 250mW (23.98dBm).
2. For the band 5.25-5.35 GHz and 5.47-5.725GHz, the maximum conducted power over the frequency of operation shall not exceed the lesser of 250 mW (23.98dBm) or 11 dBm + 10log B.
3. For the band 5.725-5.850 GHz, the maximum conducted power over the frequency of operation shall not exceed the lesser of 1W (30dBm)

### 8.2 Measurement Procedure

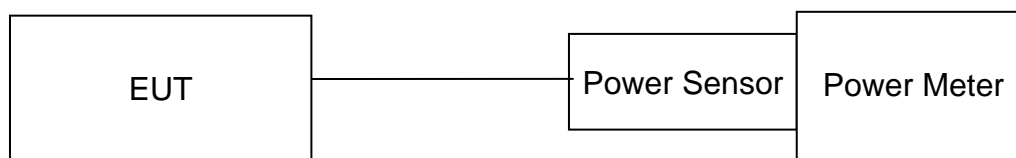
1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter
3. Set the offset  $10 \cdot \log(1/x)$ ,  $a=0.06$ ,  $n_{HT20}=0.07$
4. Record the max. reading.
5. Repeat above procedures until all frequency (low, middle, and high channel) measured were complete.

Note: For EIRP/ERP measurement, the formula as deduced in 1.3.2 of KDB 412172 D01 is used to calculate.  $ERP/EIRP = P_t + G_t - L_c$ , where  $P_t$  = transmitter output power measured directly at antenna port, expressing in dBm, and  $G_t$  = gain of the transmitting antenna in dBi that can be referred in antenna spec provided by the manufacturer in section 1.1,  $L_c$  = signal attenuation in the cable between the transmitting port and antenna.

### 8.3 Measurement Equipment Used:

Refer to section 7.3 for details.

### 8.4 Test Set-up:



### 8.5 Measurement Result

802.11a

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The Maximum Output Power			
CH	Frequency (MHz)	Data Rate	Required Limit
		6	
36	5180	13.84	23.98dBm
44	5220	13.86	23.98dBm
48	5240	13.72	23.98dBm
52	5260	13.97	23.98dBm or $11+10\log(B) = 23.22\text{dBm}$
60	5300	13.64	23.98dBm or $11+10\log(B) = 23.21\text{dBm}$
64	5320	13.74	23.98dBm or $11+10\log(B) = 23.21\text{dBm}$
100	5500	13.97	23.98dBm or $11+10\log(B) = 23.20\text{dBm}$
116	5580	13.84	23.98dBm or $11+10\log(B) = 23.22\text{dBm}$
140	5700	13.7	23.98dBm or $11+10\log(B) = 23.21\text{dBm}$
149	5745	13.78	30dBm
157	5785	13.9	30dBm
165	5825	13.97	30dBm

Note: Limit is re-adjusted in terms of dBm

$10*\log(250\text{mW})=23.98\text{dBm}$  for the limit on the band of 5260~5320Mz, &5470~5725MHz

Note: Cable loss is 11.65dB is set as the offset on the spectrum to compensate the loss causing by cable

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802.11n HT20

The Maximum Output Power			
CH	Frequency (MHz)	Data Rate	Required Limit
		MCS0	
36	5180	12.91	23.98dBm
44	5220	12.97	23.98dBm
48	5240	12.71	23.98dBm
52	5260	12.83	23.98dBm or $11+10\log(B) = 23.50\text{dBm}$
60	5300	12.76	23.98dBm or $11+10\log(B) = 23.50\text{dBm}$
64	5320	12.83	23.98dBm or $11+10\log(B) = 23.50\text{dBm}$
100	5500	12.97	23.98dBm or $11+10\log(B) = 23.50\text{dBm}$
116	5580	12.95	23.98dBm or $11+10\log(B) = 23.49\text{dBm}$
140	5700	12.76	23.98dBm or $11+10\log(B) = 23.50\text{dBm}$
149	5745	12.79	30dBm
157	5785	12.96	30dBm
165	5825	12.96	30dBm

Note: Offset 11.65dB

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## 9 PEAK POWER SPECTRAL DENSITY

### 9.1 Standard Applicable

According to §15.407(a)

1. For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 11 dBm in any 1 MHz band.
2. For the band 5.25-5.35 GHz, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band.
3. For the band 5.725-5.850 GHz and 5.47-5.725GHz, the peak power spectral density shall not exceed 30 dBm in any 500KHz band.

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.

### 9.2 Measurement Procedure (following procedure F, & E) d) method SA-2 in KDB789033 D02)

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Spectrum.
3. Set RBW=1MHz, VBW=3MHz, Span=50MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto (1001 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)
4. Use the cursor on spectrum to peak search the highest level of trace
5. Add offset, duty factor a=0.06, n\_HT20=0.07.
6. Record the max. reading.
7. Repeat above procedures until all default test channel (low, middle, and high) was complete.

### 9.3 Measurement Equipment Used:

Refer to section 7.3 for details.

### 9.4 Test Set-up:

Refer to section 7.4 for details.

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## 9.5 Measurement Result

802.11a, 5150~5250 MHz

Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
5180	-0.03	11.00	-11.03
5220	-0.84	11.00	-11.84
5240	-1.38	11.00	-12.38

802.11a, 5250~5350 MHz

Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
5260	-1.21	11.00	-12.21
5300	-0.62	11.00	-11.62
5320	-0.77	11.00	-11.77

802.11a, 5470~5725 MHz

Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
5500	-0.38	11.00	-11.38
5580	-1.22	11.00	-12.22
5700	-1.31	11.00	-12.31

802.11a, 5725~5850 MHz

Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
5745	-2.84	30.00	-32.84
5785	-3.12	30.00	-33.12
5825	-3.02	30.00	-33.02

Note: Offset 11.65dB, where = cable loss + attenuator + duty factor

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802.11n HT20, 5150~5250 MHz

Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
5180	-1.15	4.00	-5.15
5220	-1.49	4.00	-5.49
5240	-2.69	4.00	-6.69

802.11n HT20, 5250~5350 MHz

Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
5260	-2.58	11.00	-13.58
5300	-1.87	11.00	-12.87
5320	-2.19	11.00	-13.19

802.11n HT20, 5470~5725 MHz

Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
5500	-2.00	11.00	-13.00
5580	-2.54	11.00	-13.54
5700	-2.62	11.00	-13.62

802.11n HT20, 5725~5850 MHz

Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
5745	-4.52	30.00	-34.52
5785	-4.25	30.00	-34.25
5825	-4.27	30.00	-34.27

Note: Offset 11.65dB, where = cable loss + attenuator + duty factor

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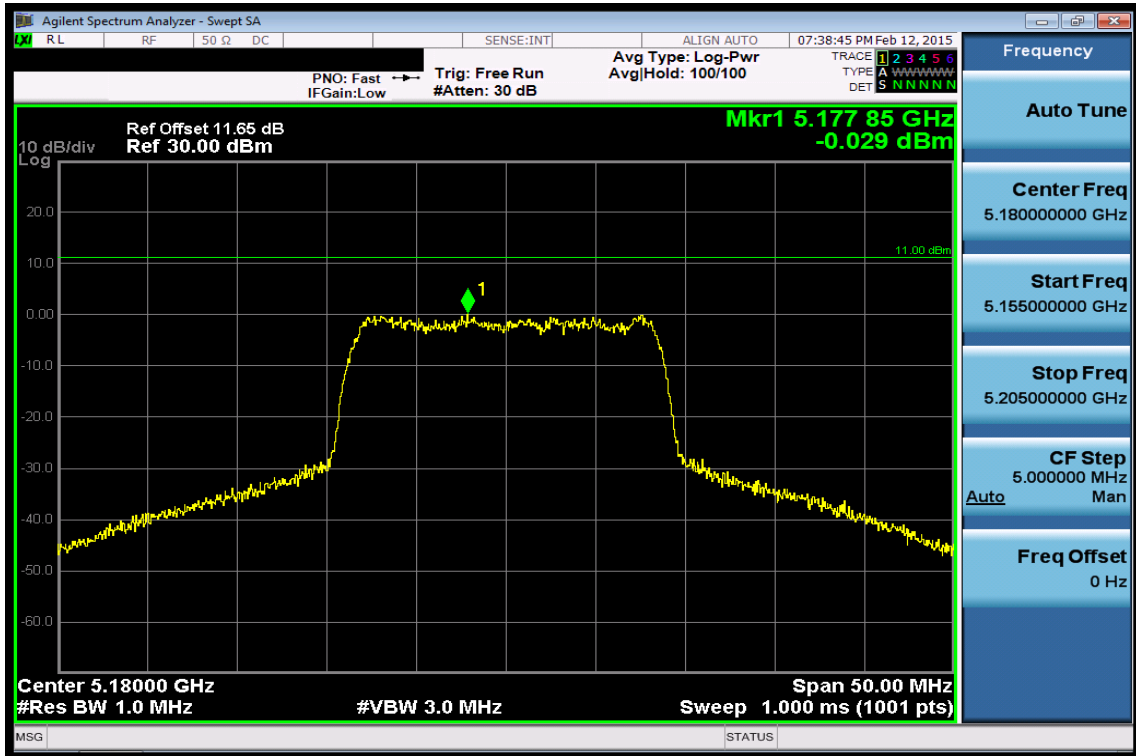
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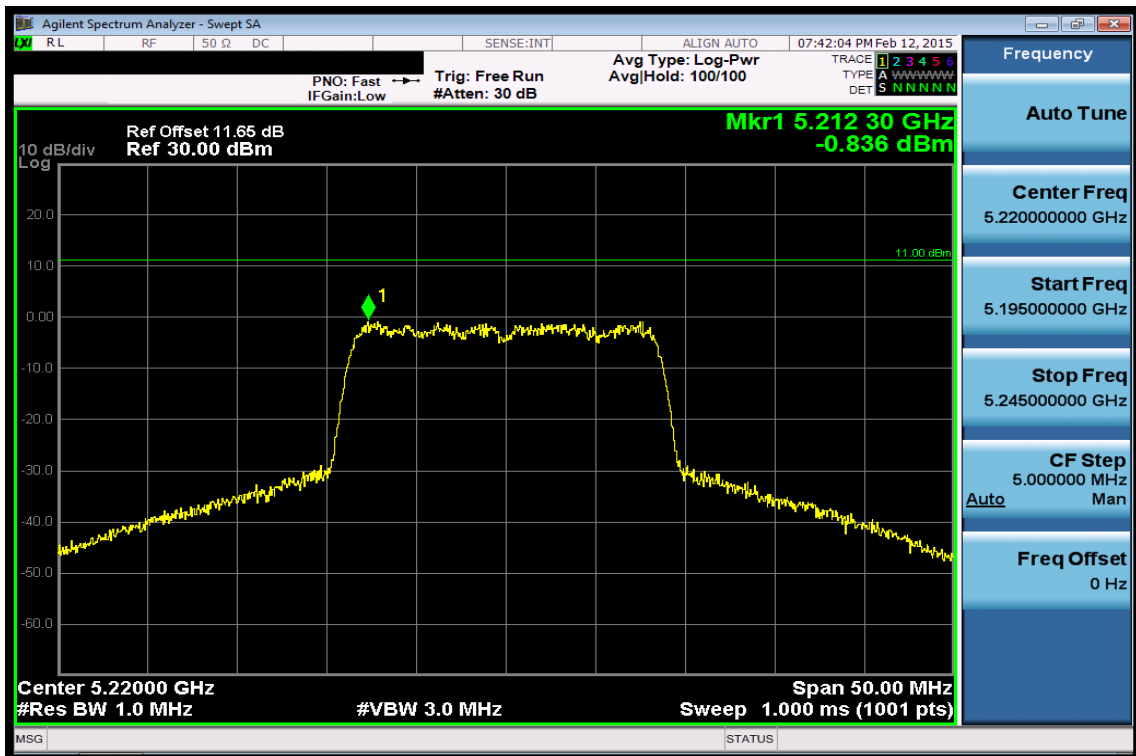
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### 802.11a, 5150~5250 MHz

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



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



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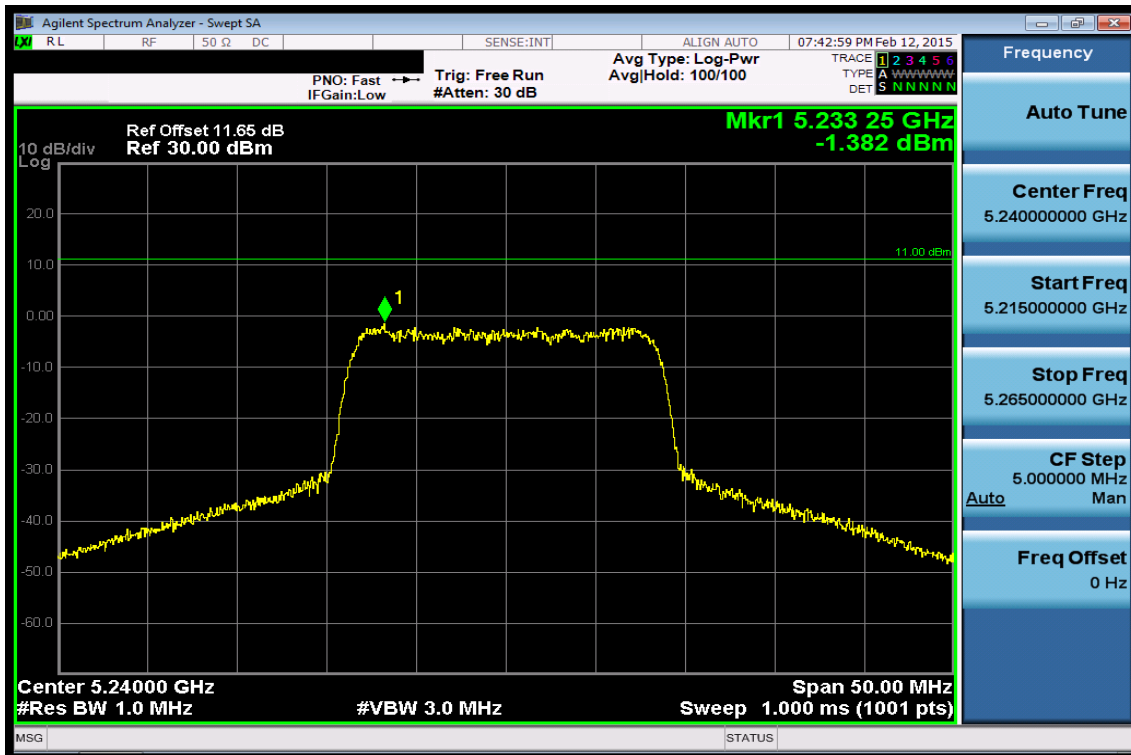
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### Peak Power Spectral Density Data Plot (CH High 5240 MHz)



### 802.11a, 5250~5350 MHz

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



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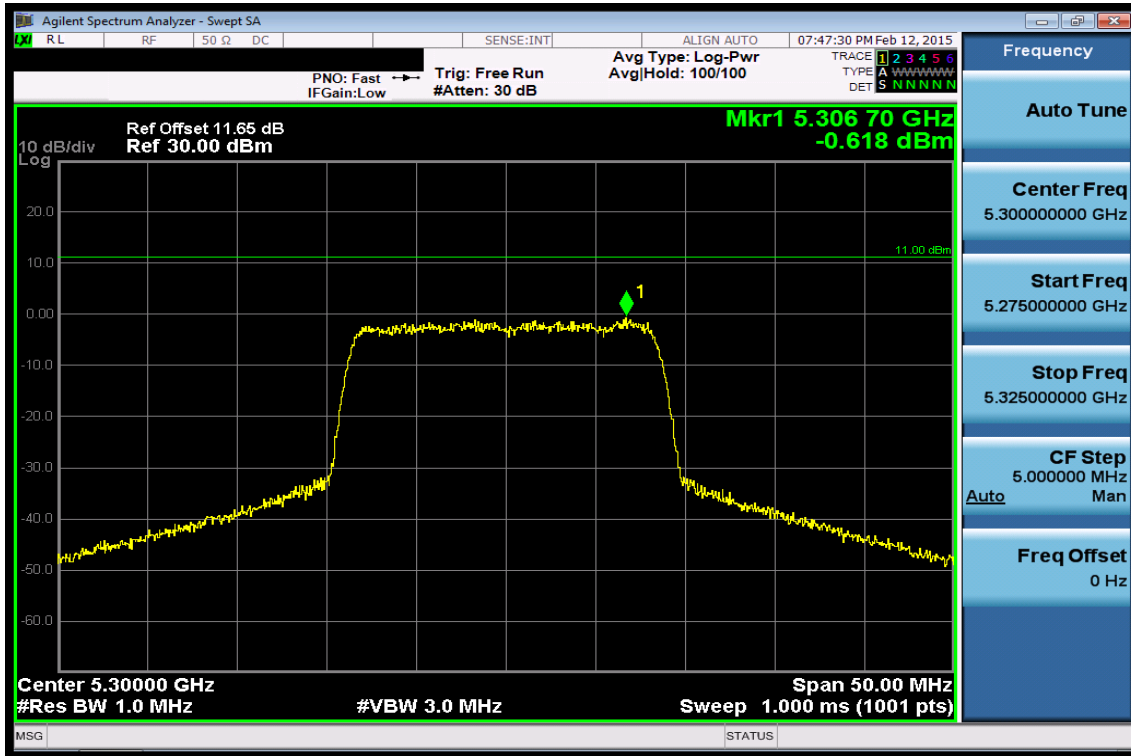
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### Peak Power Spectral Density Data Plot (CH Mid 5300 MHz)



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



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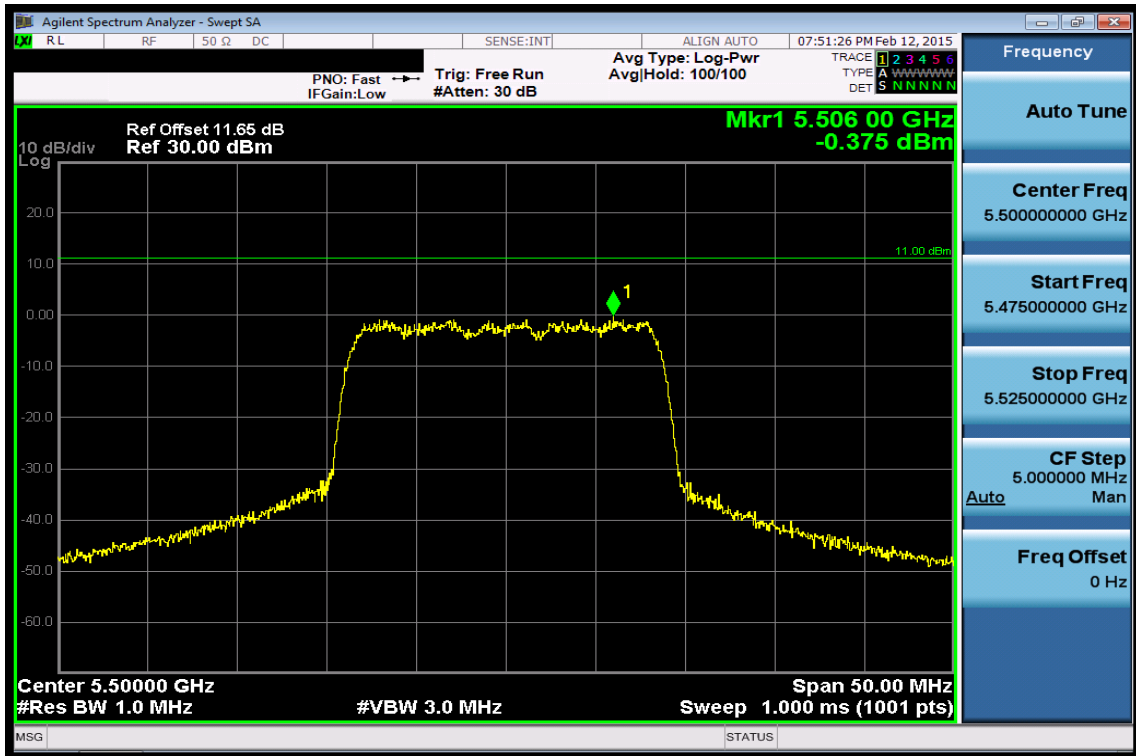
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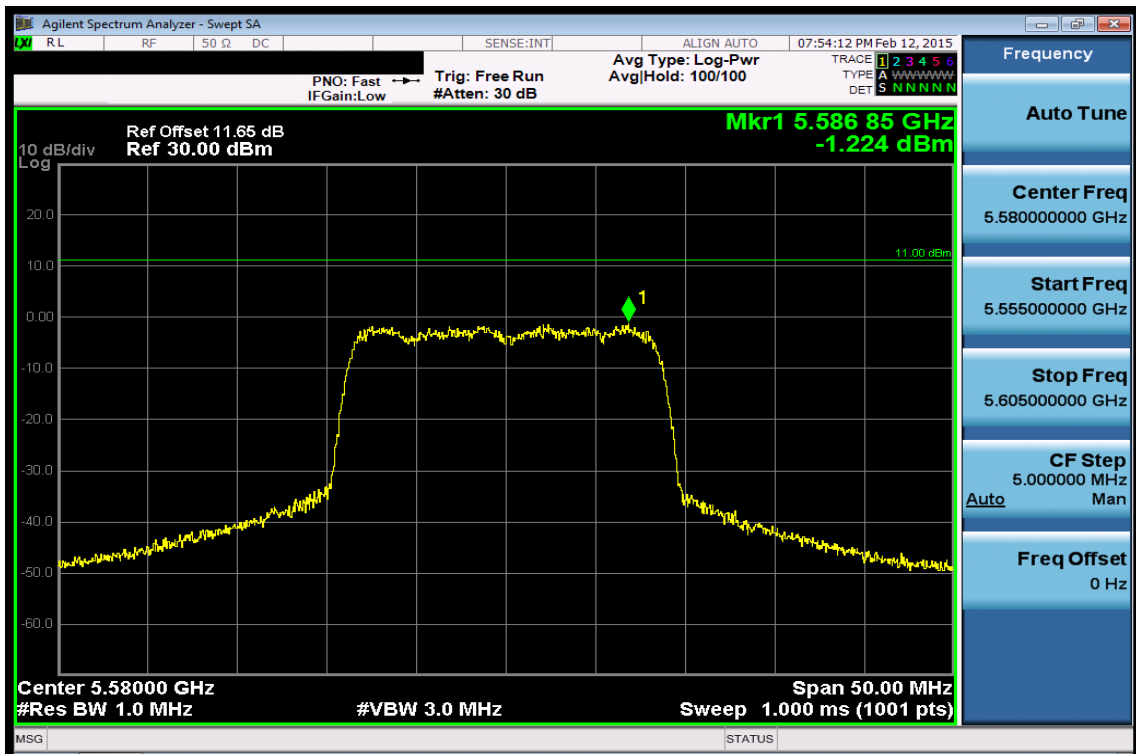


### 802.11a, 5470~5725 MHz

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



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



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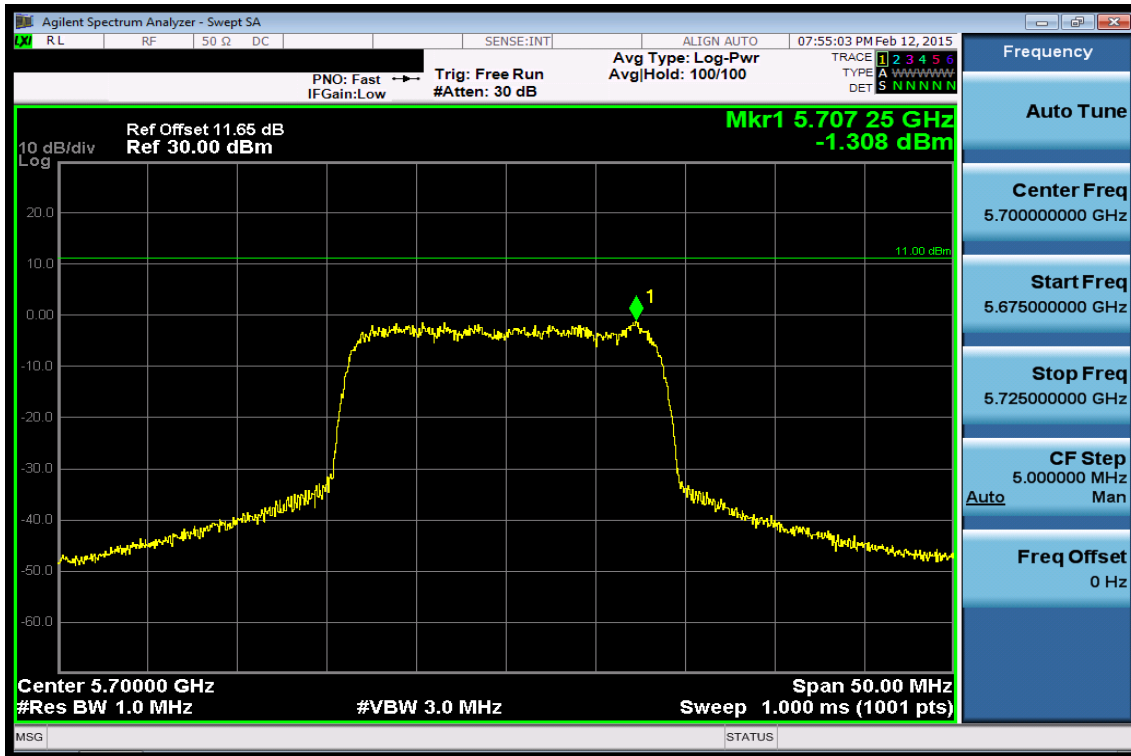
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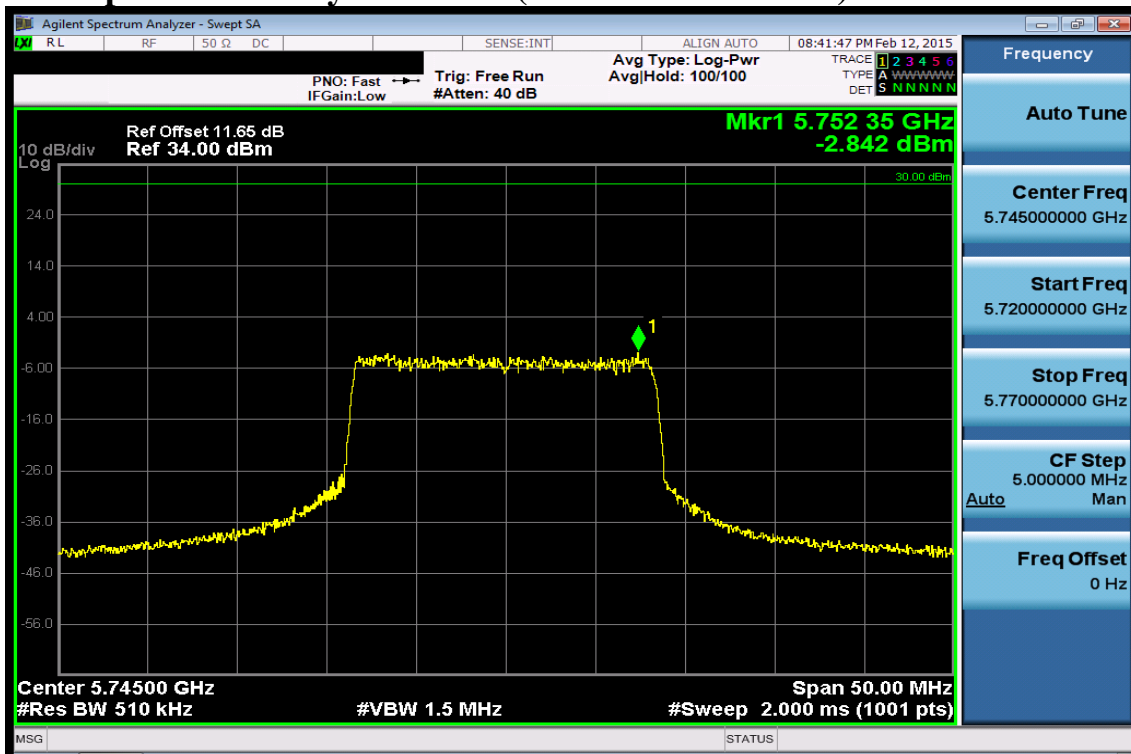
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### Peak Power Spectral Density Data Plot (CH High 5700 MHz)



### 802.11a, 5725~5850 MHz

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



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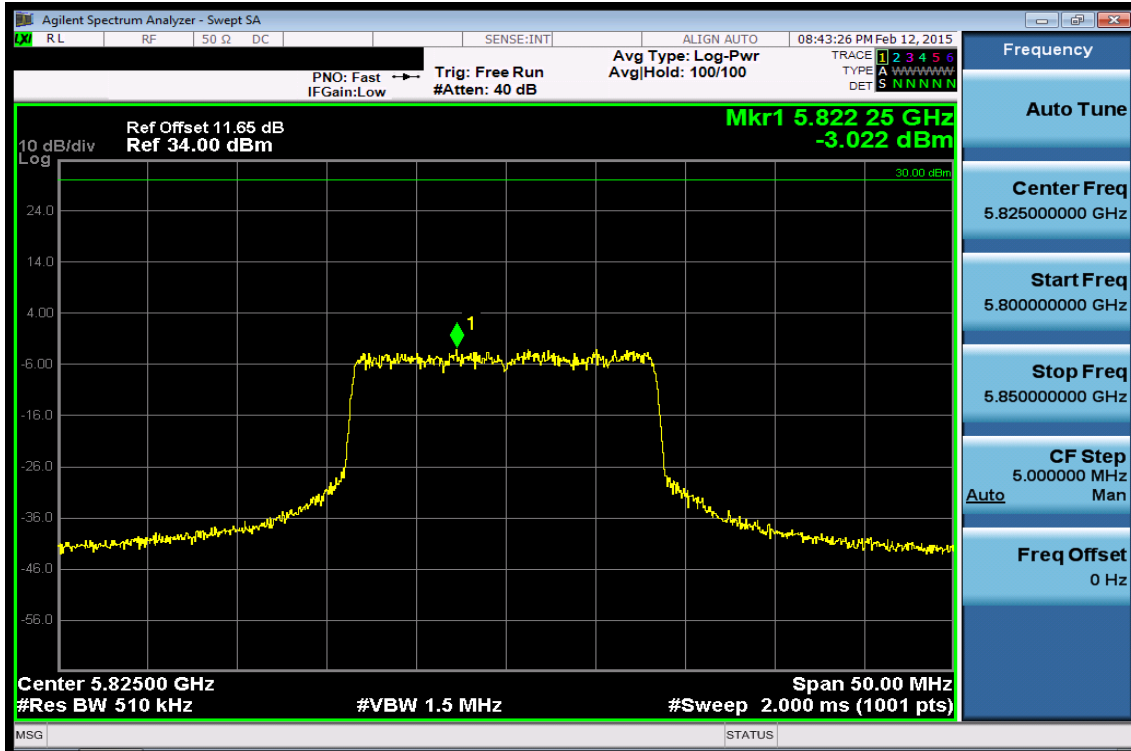
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### Peak Power Spectral Density Data Plot (CH Mid 5785 MHz)



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



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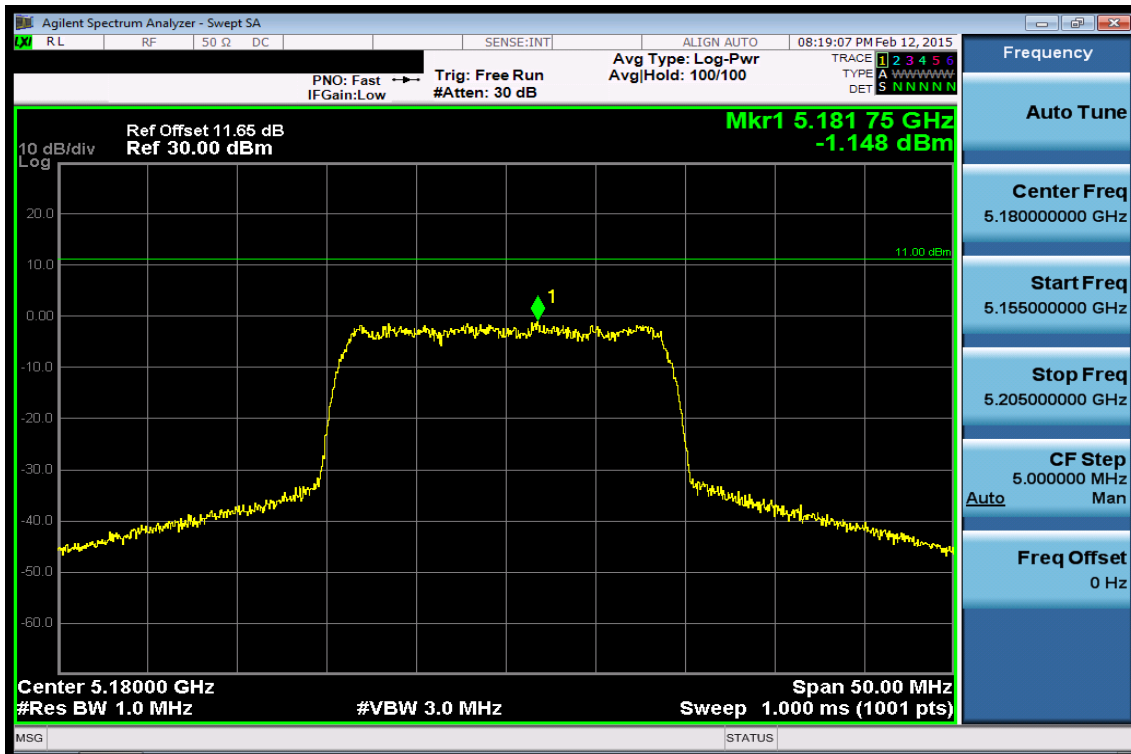
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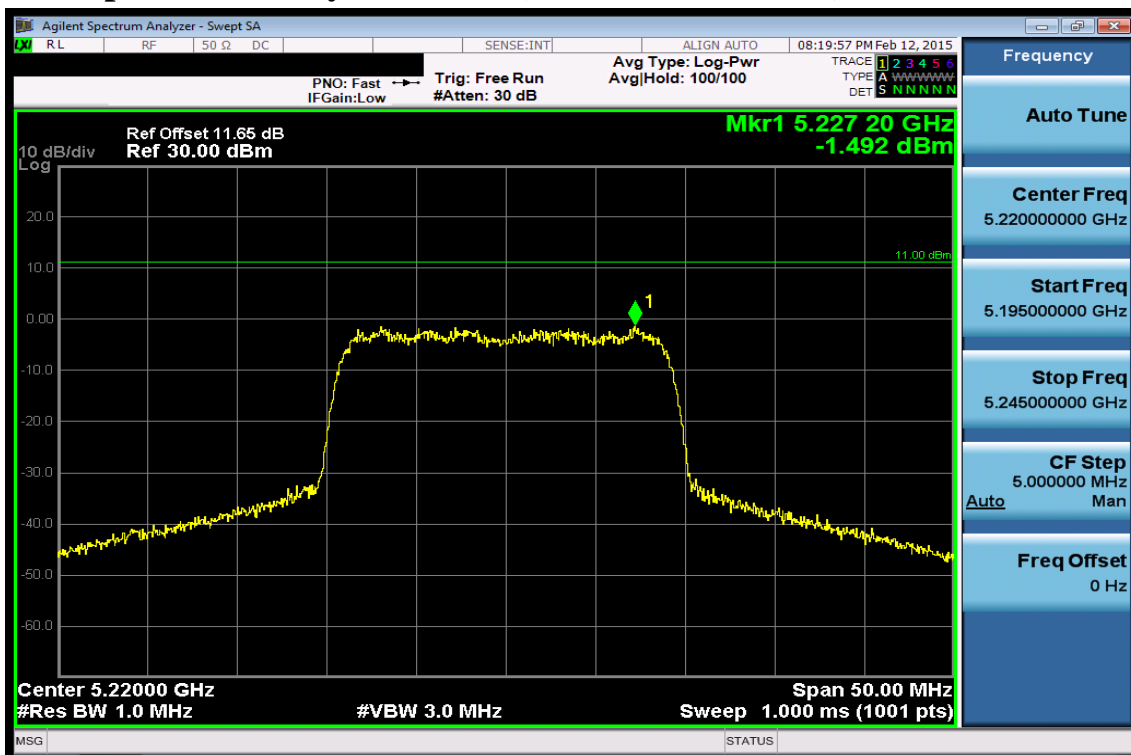
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### 802.11n HT20, 5150~5250 MHz

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



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



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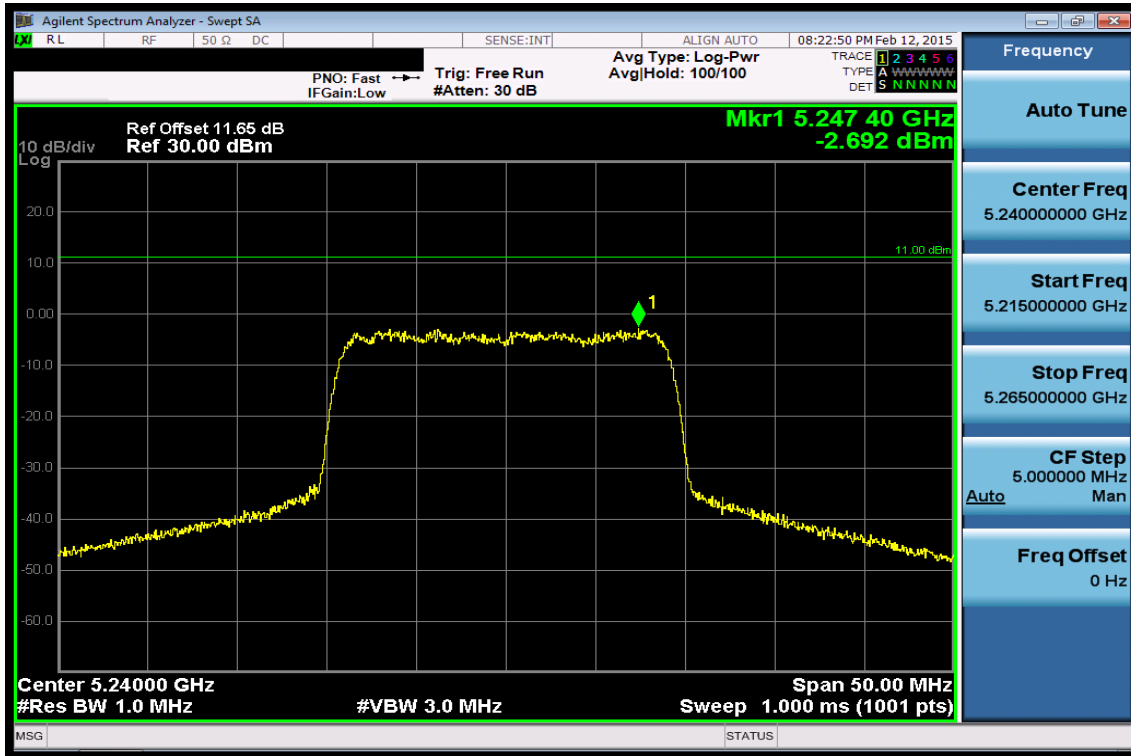
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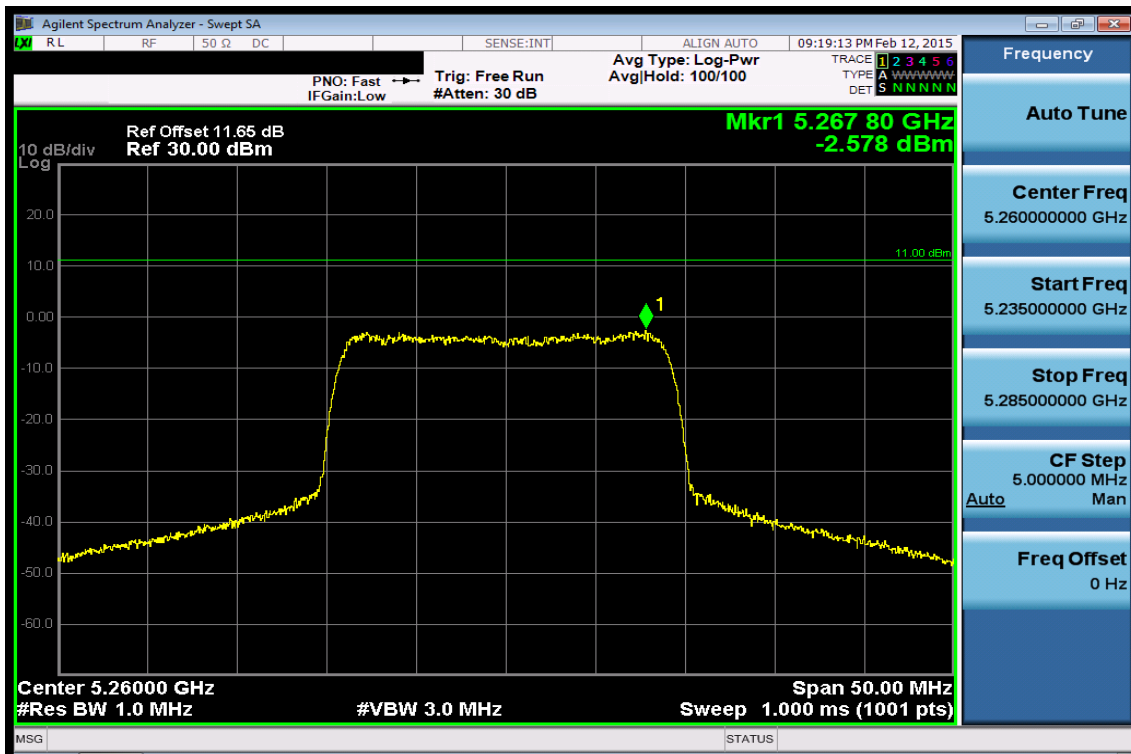
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### Peak Power Spectral Density Data Plot (CH High 5240 MHz)



### 802.11n HT20, 5250~5350 MHz

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



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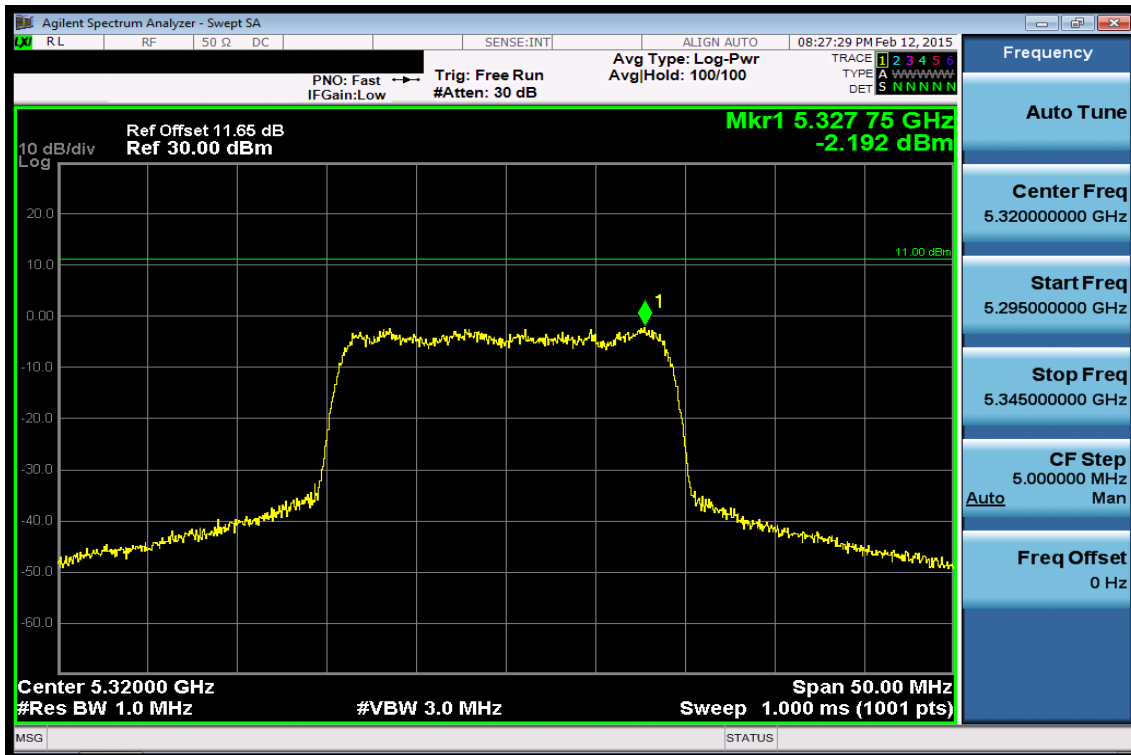
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### Peak Power Spectral Density Data Plot (CH Mid 5300 MHz)



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



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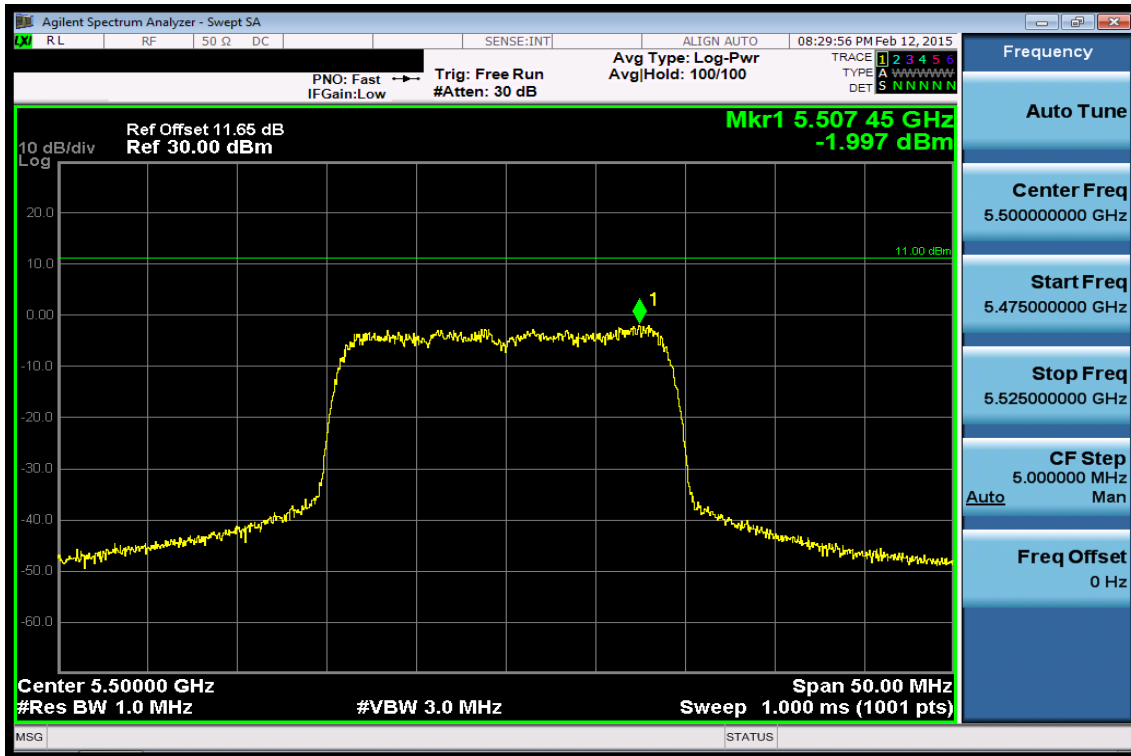
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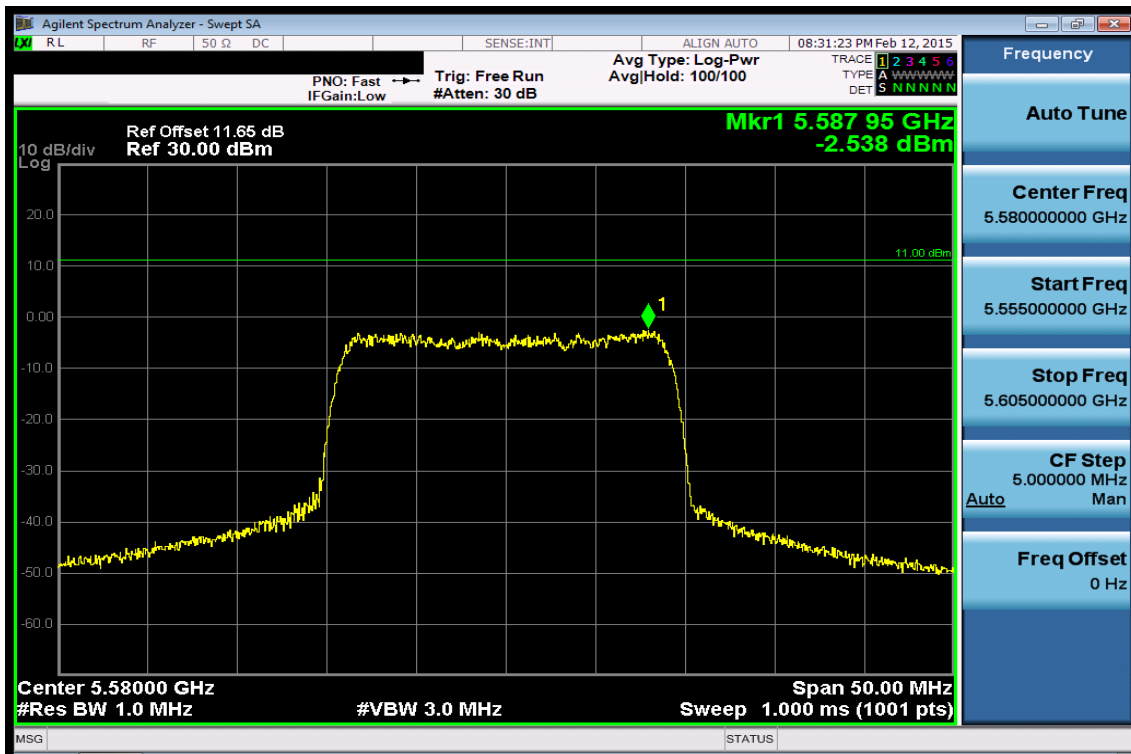
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### 802.11n HT20, 5470~5725 MHz Peak Power Spectral Density Data Plot (CH Low 5500 MHz)



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



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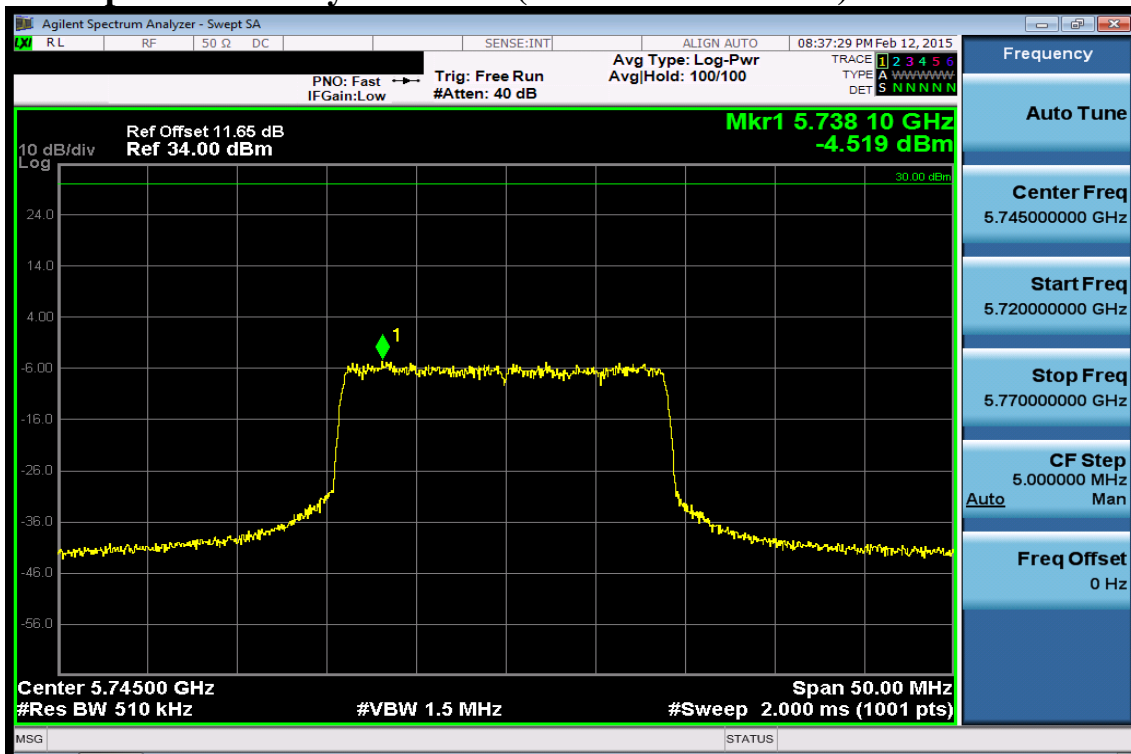
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### Peak Power Spectral Density Data Plot (CH High 5700 MHz)



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



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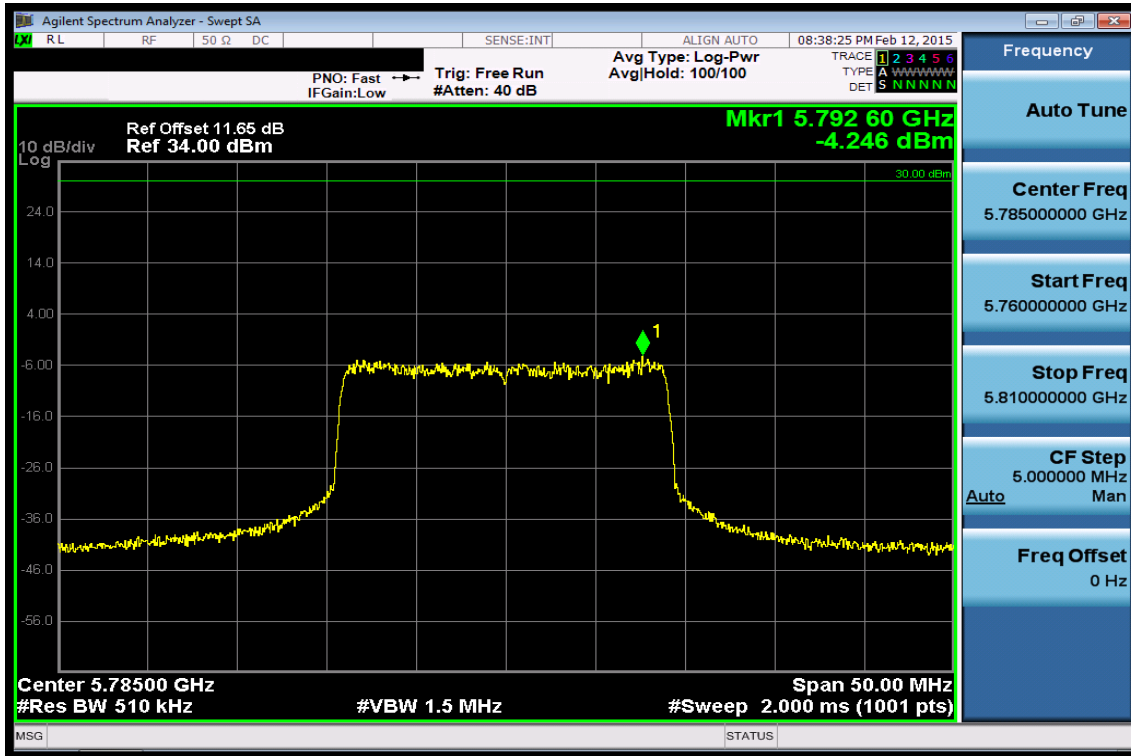
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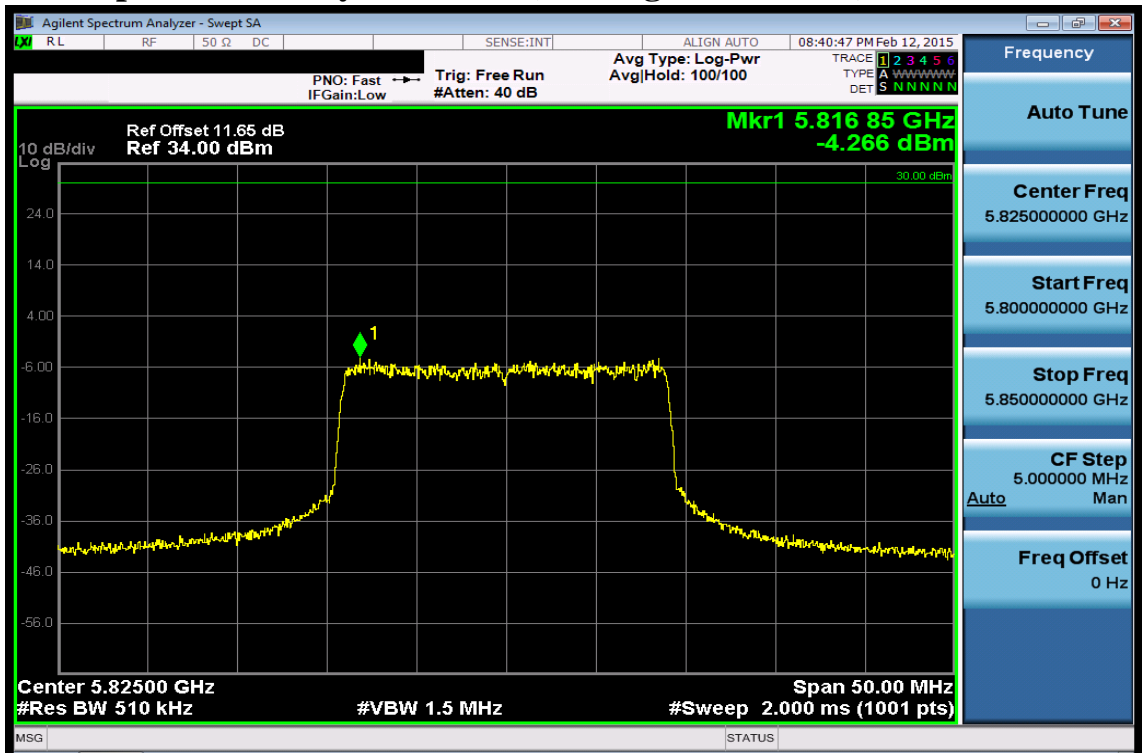
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### Peak Power Spectral Density Data Plot (CH Mid 5785 MHz)



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



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## 10 UNDESIRABLE EMISSION - RADIATED MEASUREMENT

### 10.1 Standard Applicable

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

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

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

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

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

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

**Note:**

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

**10.2 Measurement Procedure**

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

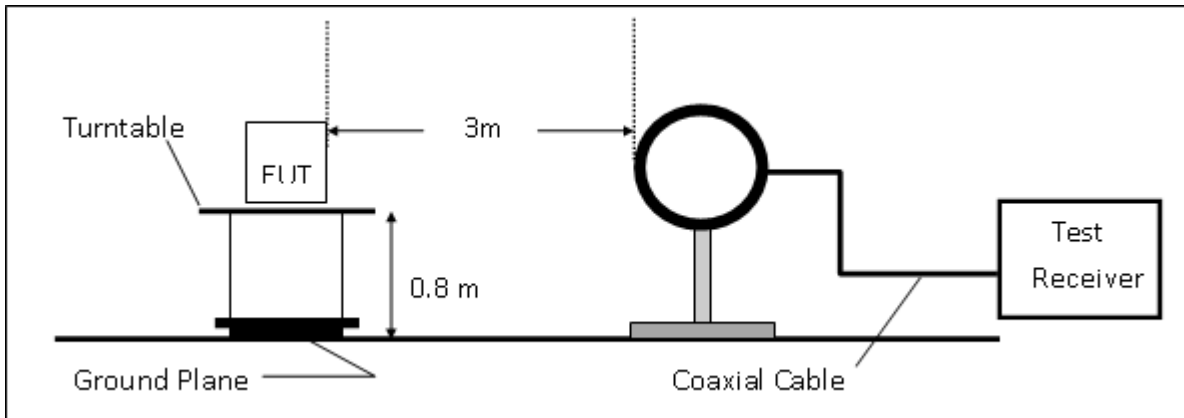
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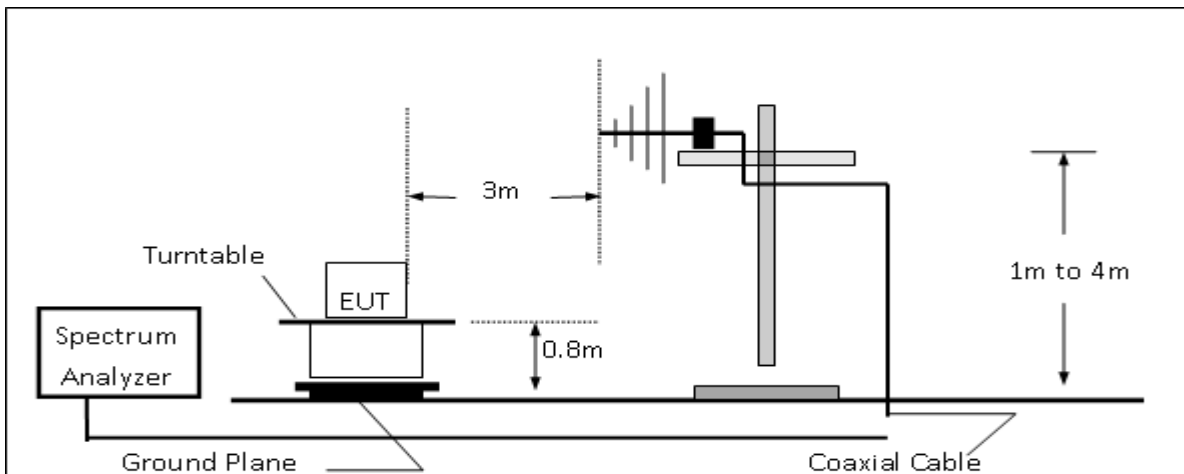
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### 10.3 Test SET-UP (Block Diagram of Configuration)

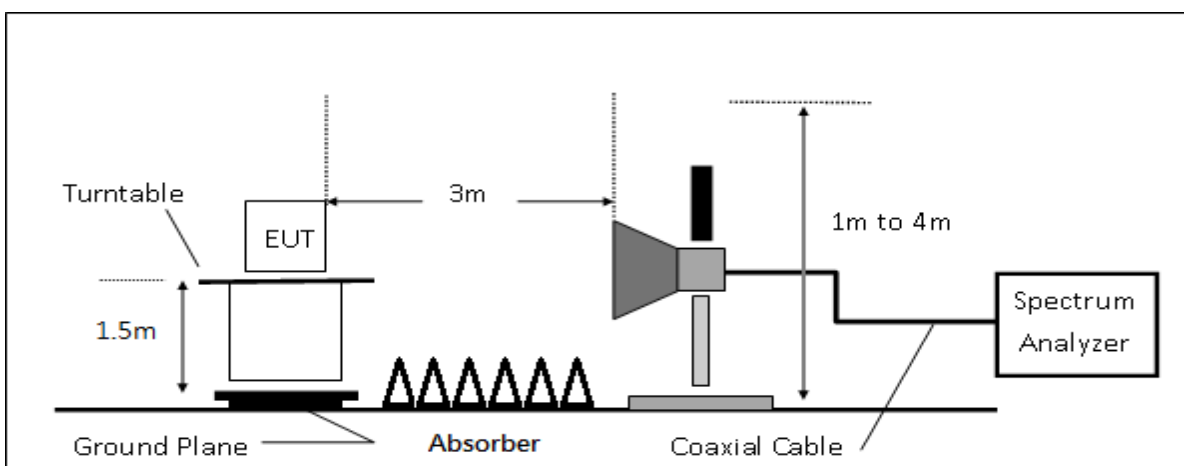
(A) Radiated Emission Test Set-UP Frequency Below 30MHz.



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



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



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### 10.4 Measurement Equipment Used:

966 Chamber					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	R&S	ESU 40	100363	04/12/2014	04/11/2015
Loop Antenna	ETS-Lindgren	6502	00143303	12/09/2014	12/08/2015
Broadband Antenna	TESEQ	CBL 6112D	35240	12/05/2014	12/04/2015
Horn Antenna	ETS-Lindgren	3117	00143272	12/08/2014	12/07/2015
Horn Antenna	ETS-Lindgren	3160-09	00117911	11/13/2014	11/12/2015
Horn Antenna	ETS-Lindgren	3160-10	00117783	11/13/2014	11/12/2015
Pre Amplifier	EMC Instruments	EMC330	980096	12/19/2014	12/18/2015
Pre Amplifier	EMC Instruments	EMC0011830	980199	12/19/2014	12/18/2015
Pre Amplifier	R&S	SCU-18	10204	12/19/2014	12/18/2015
Pre Amplifier	R&S	SCU-26	100780	12/19/2014	12/18/2015
Coaxial Cable	Huber+Suhner	RG 214/U	966Rx 9K-30M	12/19/2014	12/18/2015
Coaxial Cable	Huber+Suhner	RG 214/U SUCOFLEX 104	966Rx 30M-3G	12/19/2014	12/18/2015
Coaxial Cable	Huber+Suhner	SUCOFLEX 104	966Rx 1G-18G	12/19/2014	12/18/2015
Coaxial Cable	Huber+Suhner	mini 141-12 SUCOFLEX 104	966Rx 18G-40G	12/19/2014	12/18/2015
Coaxial Cable	Huber+Suhner	SUCOFLEX 104	966Tx 30M-18G	12/19/2014	12/18/2015
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	966Tx 18G-40G	12/19/2014	12/18/2015
Attenuator	WOKEN	218FS-10	RF27	12/19/2014	12/18/2015
Site NSA	SGS	966 Cham- ber C	SAC-C	03/05/2014	03/04/2015
Site VSWR	SGS	966 Cham- ber C	SAC-C	03/05/2014	03/04/2015
DC Power Supply	HOLA	DP-3003	D7070035	05/31/2014	05/30/2015
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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### 10.5 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	

### 10.6 Measurement Result

Refer to attach tabular data sheets.

#### NOTE:

The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 100kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.

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

Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5180 MHz	Temp./Humi.	:25.5 deg_C / 62 RH
Operation Mode	:TX LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
62.98	Peak	S	49.23	-28.27	20.96	40.00	-19.04
71.71	Peak	S	51.78	-27.63	24.15	40.00	-15.85
101.78	Peak	S	51.73	-23.54	28.19	43.50	-15.31
312.27	Peak	S	38.66	-18.66	19.99	46.00	-26.01
452.92	Peak	S	38.46	-14.83	23.63	46.00	-22.37
528.58	Peak	S	40.68	-13.16	27.52	46.00	-18.48
10360.00	Peak	H	36.46	18.94	55.40	68.30	-12.90
15540.00	Peak	H	-				
20720.00	Peak	H	-				
25900.00	Peak	H	-				
31080.00	Peak	H	-				
36260.00	Peak	H	-				

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Operation Band :802.11 a Test Date :2015-02-22  
 Fundamental Frequency :5180 MHz Temp./Humi. :16.7 deg\_C / 52 RH  
 Operation Mode :TX LOW Engineer :Vito  
 EUT Pol. :E2 Plan Measurement Antenna Pol. :HORIZONTAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	49.99	-27.63	22.36	40.00	-17.64
101.78	Peak	S	52.02	-23.54	28.48	43.50	-15.02
172.59	Peak	S	45.65	-23.96	21.69	43.50	-21.81
312.27	Peak	S	41.06	-18.66	22.40	46.00	-23.60
445.16	Peak	S	40.20	-15.18	25.01	46.00	-20.99
528.58	Peak	S	41.31	-13.16	28.15	46.00	-17.85
10360.00	Peak	H	37.95	18.94	56.89	68.30	-11.41
15540.00	Peak	H	-				
20720.00	Peak	H	-				
25900.00	Peak	H	-				
31080.00	Peak	H	-				
36260.00	Peak	H	-				

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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5220 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX MID	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
80.44	Peak	S	62.14	-26.83	35.31	40.00	-4.69
83.35	Peak	S	61.54	-26.46	35.08	40.00	-4.92
101.78	Peak	S	53.94	-23.54	30.40	43.50	-13.10
452.92	Peak	S	38.51	-14.83	23.68	46.00	-22.32
503.36	Peak	S	37.57	-14.15	23.42	46.00	-22.58
528.58	Peak	S	40.69	-13.16	27.53	46.00	-18.47
10440.00	Peak	H	37.27	19.03	56.29	68.30	-12.01
15660.00	Peak	H	-				
20880.00	Peak	H	-				
26100.00	Peak	H	-				
31320.00	Peak	H	-				
36540.00	Peak	H	-				

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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5220 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX MID	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
71.71	Peak	S	45.45	-27.63	17.82	40.00	-22.18
96.93	Peak	S	44.82	-24.36	20.46	43.50	-23.04
528.58	Peak	S	40.44	-13.16	27.27	46.00	-18.73
600.36	Peak	S	36.45	-12.45	24.00	46.00	-22.00
647.89	Peak	S	35.72	-11.08	24.64	46.00	-21.36
720.64	Peak	S	37.18	-10.77	26.41	46.00	-19.59
10440.00	Peak	H	36.90	19.03	55.93	68.30	-12.37
15660.00	Peak	H	-				
20880.00	Peak	H	-				
26100.00	Peak	H	-				
31320.00	Peak	H	-				
36540.00	Peak	H	-				

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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5240 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX HIGH	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	49.33	-27.63	21.70	40.00	-18.30
101.78	Peak	S	50.91	-23.54	27.37	43.50	-16.13
352.04	Peak	S	38.85	-17.31	21.54	46.00	-24.46
445.16	Peak	S	38.91	-15.18	23.73	46.00	-22.27
503.36	Peak	S	37.31	-14.15	23.16	46.00	-22.84
528.58	Peak	S	40.45	-13.16	27.29	46.00	-18.71
10480.00	Peak	H	37.08	19.13	56.21	68.30	-12.09
15720.00	Peak	H	-				
20960.00	Peak	H	-				
26200.00	Peak	H	-				
31440.00	Peak	H	-				
36680.00	Peak	H	-				

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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5240 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX HIGH	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	48.28	-27.63	20.66	40.00	-19.34
101.78	Peak	S	47.09	-23.54	23.55	43.50	-19.95
528.58	Peak	S	40.82	-13.16	27.65	46.00	-18.35
624.61	Peak	S	40.14	-12.15	27.99	46.00	-18.01
647.89	Peak	S	40.32	-11.08	29.24	46.00	-16.76
672.14	Peak	S	39.61	-11.68	27.92	46.00	-18.08
10480.00	Peak	H	36.73	19.13	55.86	68.30	-12.44
15720.00	Peak	H	-				
20960.00	Peak	H	-				
26200.00	Peak	H	-				
31440.00	Peak	H	-				
36680.00	Peak	H	-				

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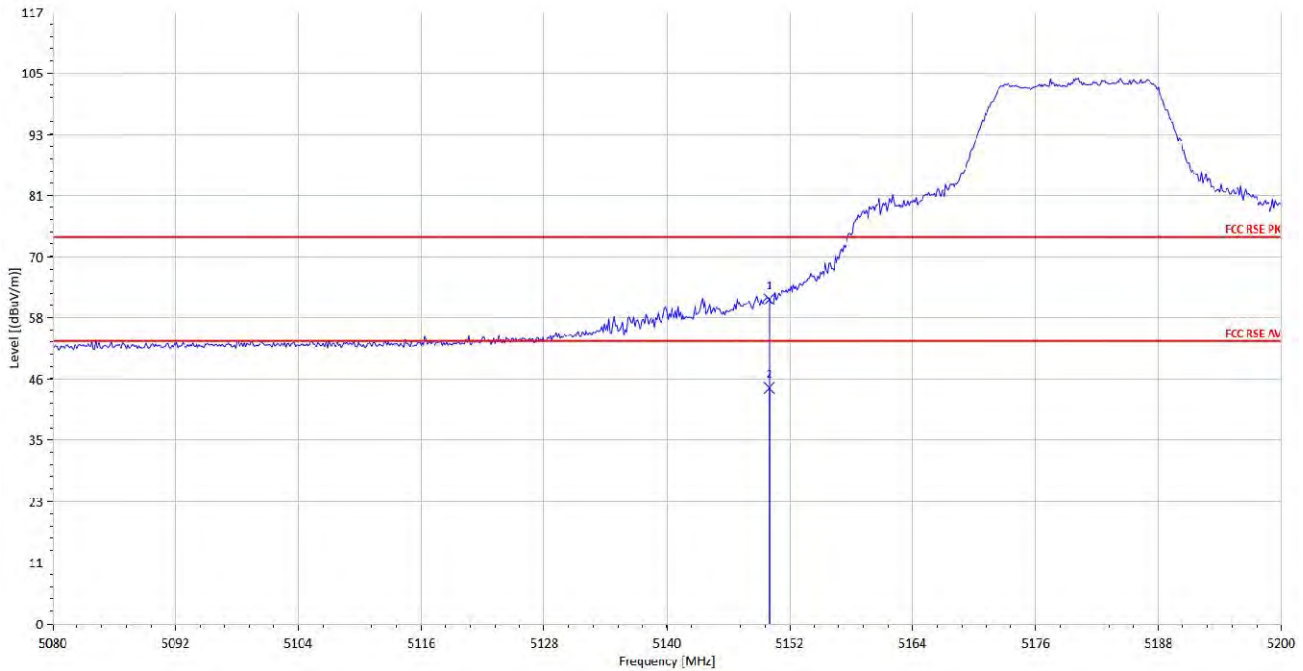
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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5180 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we’ve employed is peak detector.

Freq. MHz	Detector Mode	Note F/H/E/S	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5150.00	Peak	E	50.91	11.14	62.05	74.00	-11.95
5150.00	Average	E	33.95	11.14	45.09	54.00	-8.91

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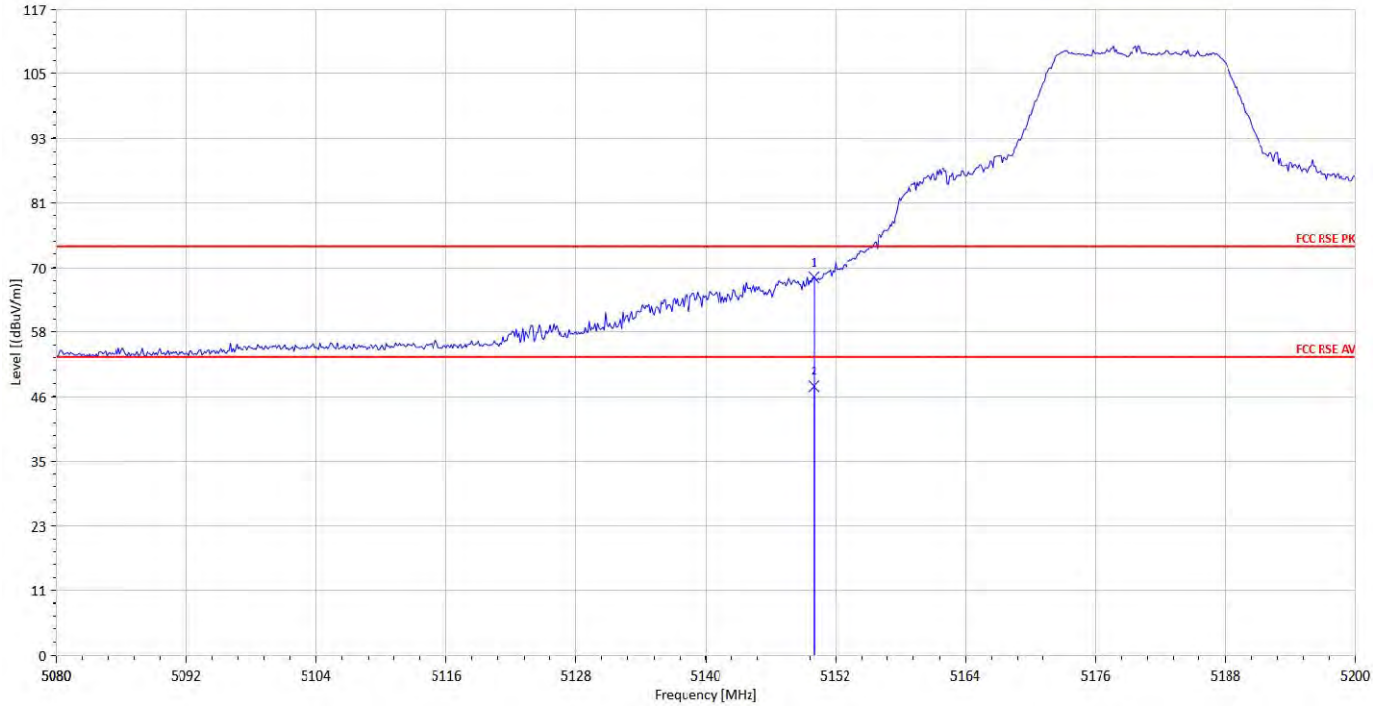
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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5180 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we’ve employed is peak detector.

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
5150.00	Peak	E	57.28	11.14	68.42	74.00	-5.58
5150.00	Average	E	37.58	11.14	48.72	54.00	-5.28

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

Operation Band	:802.11 n20M	Test Date	:2015-02-22
Fundamental Frequency	:5180 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	53.69	-27.63	26.06	40.00	-13.94
101.78	Peak	S	51.36	-23.54	27.82	43.50	-15.68
288.02	Peak	S	41.30	-19.45	21.85	46.00	-24.15
445.16	Peak	S	38.46	-15.18	23.28	46.00	-22.72
503.36	Peak	S	38.81	-14.15	24.66	46.00	-21.34
528.58	Peak	S	39.85	-13.16	26.69	46.00	-19.31
10360.00	Peak	H	37.08	18.94	56.02	68.30	-12.28
15540.00	Peak	H	-				
20720.00	Peak	H	-				
25900.00	Peak	H	-				
31080.00	Peak	H	-				
36260.00	Peak	H	-				

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Operation Band :802.11 n20M Test Date :2015-02-22  
 Fundamental Frequency :5180 MHz Temp./Humi. :16.7 deg\_C / 52 RH  
 Operation Mode :TX LOW Engineer :Vito  
 EUT Pol. :E2 Plan Measurement Antenna Pol. :HORIZONTAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
101.78	Peak	S	50.91	-23.54	27.37	43.50	-16.13
173.56	Peak	S	43.64	-23.99	19.65	43.50	-23.85
528.58	Peak	S	41.28	-13.16	28.12	46.00	-17.88
624.61	Peak	S	39.23	-12.15	27.08	46.00	-18.92
672.14	Peak	S	39.27	-11.68	27.59	46.00	-18.41
905.91	Peak	S	32.55	-7.87	24.68	46.00	-21.32
10360.00	Peak	H	36.30	18.94	55.24	68.30	-13.06
15540.00	Peak	H	-				
20720.00	Peak	H	-				
25900.00	Peak	H	-				
31080.00	Peak	H	-				
36260.00	Peak	H	-				

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Operation Band :802.11 n20M Test Date :2015-02-22  
 Fundamental Frequency :5220 MHz Temp./Humi. :16.7 deg\_C / 52 RH  
 Operation Mode :TX MID Engineer :Vito  
 EUT Pol. :E2 Plan Measurement Antenna Pol. :VERTICAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	49.23	-27.63	21.61	40.00	-18.39
101.78	Peak	S	49.77	-23.54	26.23	43.50	-17.27
352.04	Peak	S	39.22	-17.31	21.90	46.00	-24.10
452.92	Peak	S	37.38	-14.83	22.56	46.00	-23.44
503.36	Peak	S	38.86	-14.15	24.71	46.00	-21.29
528.58	Peak	S	39.44	-13.16	26.28	46.00	-19.72
10440.00	Peak	H	36.92	19.03	55.94	68.30	-12.36
15660.00	Peak	H	-				
20880.00	Peak	H	-				
26100.00	Peak	H	-				
31320.00	Peak	H	-				
36540.00	Peak	H	-				

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Operation Band :802.11 n20M Test Date :2015-02-22  
 Fundamental Frequency :5220 MHz Temp./Humi. :16.7 deg\_C / 52 RH  
 Operation Mode :TX MID Engineer :Vito  
 EUT Pol. :E2 Plan Measurement Antenna Pol. :HORIZONTAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
77.53	Peak	S	56.30	-27.08	29.23	40.00	-10.77
101.78	Peak	S	45.56	-23.54	22.02	43.50	-21.48
528.58	Peak	S	40.75	-13.16	27.59	46.00	-18.41
647.89	Peak	S	40.62	-11.08	29.54	46.00	-16.46
672.14	Peak	S	40.17	-11.68	28.49	46.00	-17.51
720.64	Peak	S	38.28	-10.77	27.51	46.00	-18.49
10440.00	Peak	H	37.06	19.03	56.09	68.30	-12.21
15660.00	Peak	H	-				
20880.00	Peak	H	-				
26100.00	Peak	H	-				
31320.00	Peak	H	-				
36540.00	Peak	H	-				

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Operation Band :802.11 n20M Test Date :2015-02-22  
 Fundamental Frequency :5240 MHz Temp./Humi. :16.7 deg\_C / 52 RH  
 Operation Mode :TX HIGH Engineer :Vito  
 EUT Pol. :E2 Plan Measurement Antenna Pol. :VERTICAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	51.38	-27.63	23.76	40.00	-16.24
101.78	Peak	S	50.75	-23.54	27.21	43.50	-16.29
312.27	Peak	S	40.11	-18.66	21.45	46.00	-24.55
452.92	Peak	S	36.09	-14.83	21.27	46.00	-24.73
503.36	Peak	S	37.91	-14.15	23.77	46.00	-22.23
528.58	Peak	S	37.60	-13.16	24.44	46.00	-21.56
10480.00	Peak	H	36.54	19.13	55.66	68.30	-12.64
15720.00	Peak	H	-				
20960.00	Peak	H	-				
26200.00	Peak	H	-				
31440.00	Peak	H	-				
36680.00	Peak	H	-				

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Operation Band :802.11 n20M Test Date :2015-02-22  
 Fundamental Frequency :5240 MHz Temp./Humi. :16.7 deg\_C / 52 RH  
 Operation Mode :TX HIGH Engineer :Vito  
 EUT Pol. :E2 Plan Measurement Antenna Pol. :HORIZONTAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	49.65	-27.63	22.03	40.00	-17.97
101.78	Peak	S	52.58	-23.54	29.03	43.50	-14.47
352.04	Peak	S	39.25	-17.31	21.94	46.00	-24.06
528.58	Peak	S	42.20	-13.16	29.03	46.00	-16.97
624.61	Peak	S	41.12	-12.15	28.97	46.00	-17.03
672.14	Peak	S	40.21	-11.68	28.52	46.00	-17.48
10480.00	Peak	H	36.55	19.13	55.68	68.30	-12.62
15720.00	Peak	H	-				
20960.00	Peak	H	-				
26200.00	Peak	H	-				
31440.00	Peak	H	-				
36680.00	Peak	H	-				

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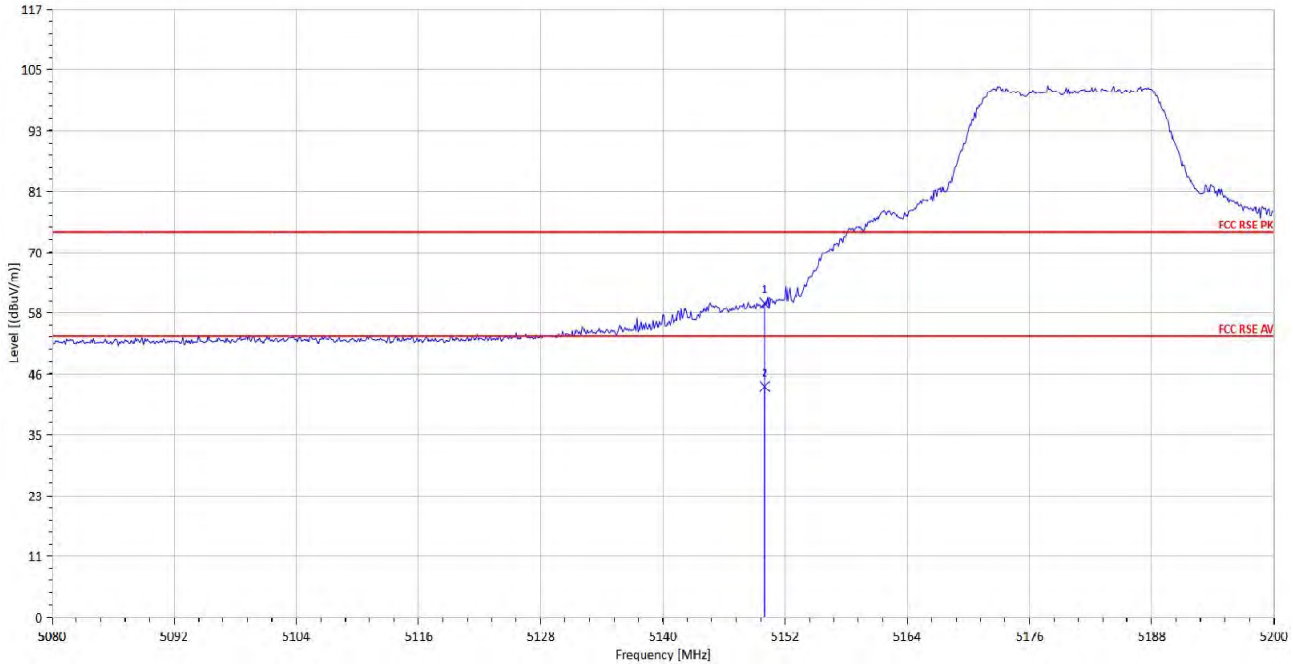
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Operation Band	:802.11 n20M	Test Date	:2015-02-22
Fundamental Frequency	:5180 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we’ve employed is peak detector.

Freq. MHz	Detector Mode	Note F/H/E/S	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5150.00	Peak	E	49.25	11.14	60.39	74.00	-13.61
5150.00	Average	E	33.22	11.14	44.36	54.00	-9.64

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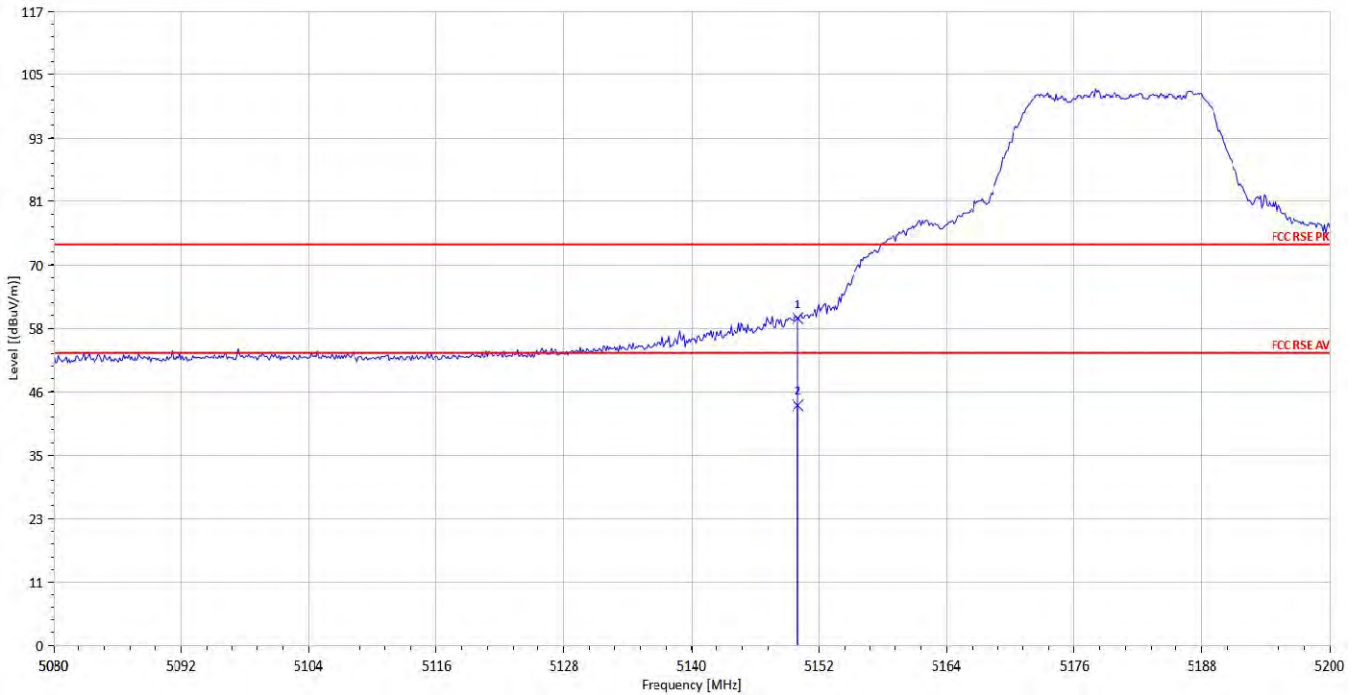
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Operation Band	:802.11 n20M	Test Date	:2015-02-22
Fundamental Frequency	:5180 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we’ve employed is peak detector.

Freq. MHz	Detector Mode	Note F/H/E/S	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5150.00	Peak	E	49.13	11.14	60.27	74.00	-13.73
5150.00	Average	E	33.11	11.14	44.25	54.00	-9.75

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

Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5260 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
36.79	Peak	S	52.49	-16.96	35.53	40.00	-4.47
49.40	Peak	S	52.85	-25.16	27.69	40.00	-12.31
101.78	Peak	S	52.67	-23.54	29.12	43.50	-14.38
288.02	Peak	S	40.82	-19.45	21.37	46.00	-24.63
503.36	Peak	S	38.89	-14.15	24.74	46.00	-21.26
528.58	Peak	S	40.07	-13.16	26.90	46.00	-19.10
10520.00	Peak	H	37.08	19.25	56.33	68.30	-11.97
15780.00	Peak	H	-				
21040.00	Peak	H	-				
26300.00	Peak	H	-				
31560.00	Peak	H	-				
36820.00	Peak	H	-				

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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5260 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	48.63	-27.63	21.01	40.00	-18.99
352.04	Peak	S	40.28	-17.31	22.97	46.00	-23.03
528.58	Peak	S	41.68	-13.16	28.52	46.00	-17.48
647.89	Peak	S	40.15	-11.08	29.08	46.00	-16.92
672.14	Peak	S	40.32	-11.68	28.64	46.00	-17.36
720.64	Peak	S	38.27	-10.77	27.50	46.00	-18.50
10520.00	Peak	H	37.67	19.25	56.92	68.30	-11.38
15780.00	Peak	H	-				
21040.00	Peak	H	-				
26300.00	Peak	H	-				
31560.00	Peak	H	-				
36820.00	Peak	H	-				

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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5300 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX MID	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	51.22	-27.63	23.59	40.00	-16.41
101.78	Peak	S	52.94	-23.54	29.40	43.50	-14.10
288.02	Peak	S	40.55	-19.45	21.10	46.00	-24.90
311.30	Peak	S	40.70	-18.71	21.99	46.00	-24.01
445.16	Peak	S	36.64	-15.18	21.46	46.00	-24.54
503.36	Peak	S	37.83	-14.15	23.68	46.00	-22.32
10600.00	Peak	H	36.78	19.38	56.16	74.00	-17.84
10600.00	Average	H	23.90	19.38	43.28	54.00	-10.72
15900.00	Peak	H	-				
21200.00	Peak	H	-				
26500.00	Peak	H	-				
31800.00	Peak	H	-				
37100.00	Peak	H	-				

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Operation Band :802.11 a Test Date :2015-02-22  
 Fundamental Frequency :5300 MHz Temp./Humi. :16.7 deg\_C / 52 RH  
 Operation Mode :TX MID Engineer :Vito  
 EUT Pol. :E2 Plan Measurement Antenna Pol. :HORIZONTAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	48.13	-27.63	20.51	40.00	-19.49
101.78	Peak	S	49.26	-23.54	25.71	43.50	-17.79
174.53	Peak	S	45.68	-24.02	21.66	43.50	-21.84
528.58	Peak	S	40.70	-13.16	27.54	46.00	-18.46
624.61	Peak	S	39.99	-12.15	27.84	46.00	-18.16
720.64	Peak	S	38.76	-10.77	27.99	46.00	-18.01
10600.00	Peak	H	36.77	19.38	56.15	74.00	-17.85
10600.00	Average	H	23.92	19.38	43.30	54.00	-10.70
15900.00	Peak	H	-				
21200.00	Peak	H	-				
26500.00	Peak	H	-				
31800.00	Peak	H	-				
37100.00	Peak	H	-				

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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5320 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX HIGH	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	51.34	-27.63	23.71	40.00	-16.29
101.78	Peak	S	52.78	-23.54	29.24	43.50	-14.26
352.04	Peak	S	38.72	-17.31	21.40	46.00	-24.60
445.16	Peak	S	38.43	-15.18	23.25	46.00	-22.75
503.36	Peak	S	37.62	-14.15	23.47	46.00	-22.53
528.58	Peak	S	40.05	-13.16	26.89	46.00	-19.11
10640.00	Peak	H	36.61	19.28	55.89	74.00	-18.11
10640.00	Average	H	29.30	19.28	48.58	54.00	-5.42
15960.00	Peak	H	-				
21280.00	Peak	H	-				
26600.00	Peak	H	-				
31920.00	Peak	H	-				
37240.00	Peak	H	-				

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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5320 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX HIGH	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
53.28	Peak	S	53.24	-26.52	26.72	40.00	-13.28
101.78	Peak	S	51.53	-23.54	27.98	43.50	-15.52
173.56	Peak	S	45.11	-23.99	21.12	43.50	-22.38
528.58	Peak	S	41.01	-13.16	27.85	46.00	-18.15
647.89	Peak	S	39.91	-11.08	28.83	46.00	-17.17
720.64	Peak	S	39.07	-10.77	28.29	46.00	-17.71
10640.00	Peak	H	35.99	19.28	55.27	74.00	-18.73
10640.00	Average	H	24.93	19.28	44.21	54.00	-9.79
15960.00	Peak	H	-				
21280.00	Peak	H	-				
26600.00	Peak	H	-				
31920.00	Peak	H	-				
37240.00	Peak	H	-				

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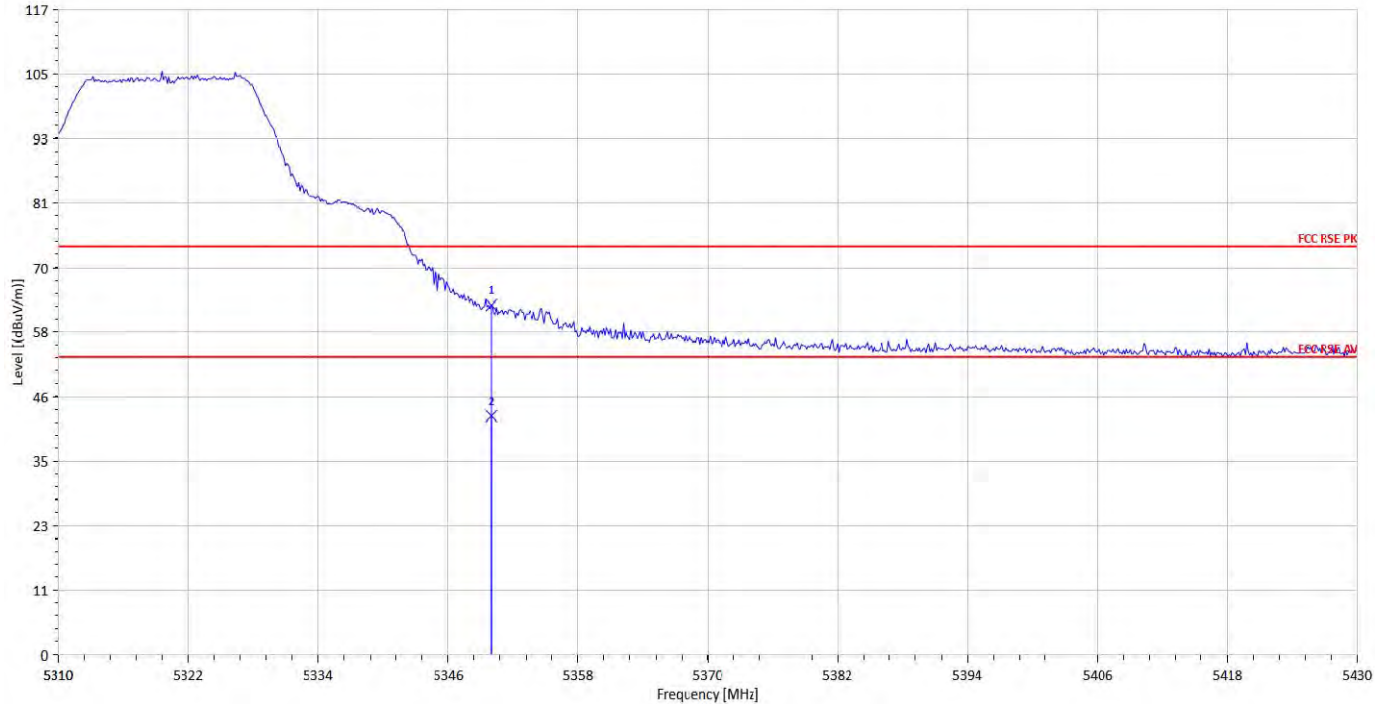
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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5320 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge HIGH	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we’ve employed is peak detector.

Freq. MHz	Detector Mode	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5350.00	Peak	E	52.07	11.30	63.37	74.00	-10.63
5350.00	Average	E	31.95	11.30	43.25	54.00	-10.75

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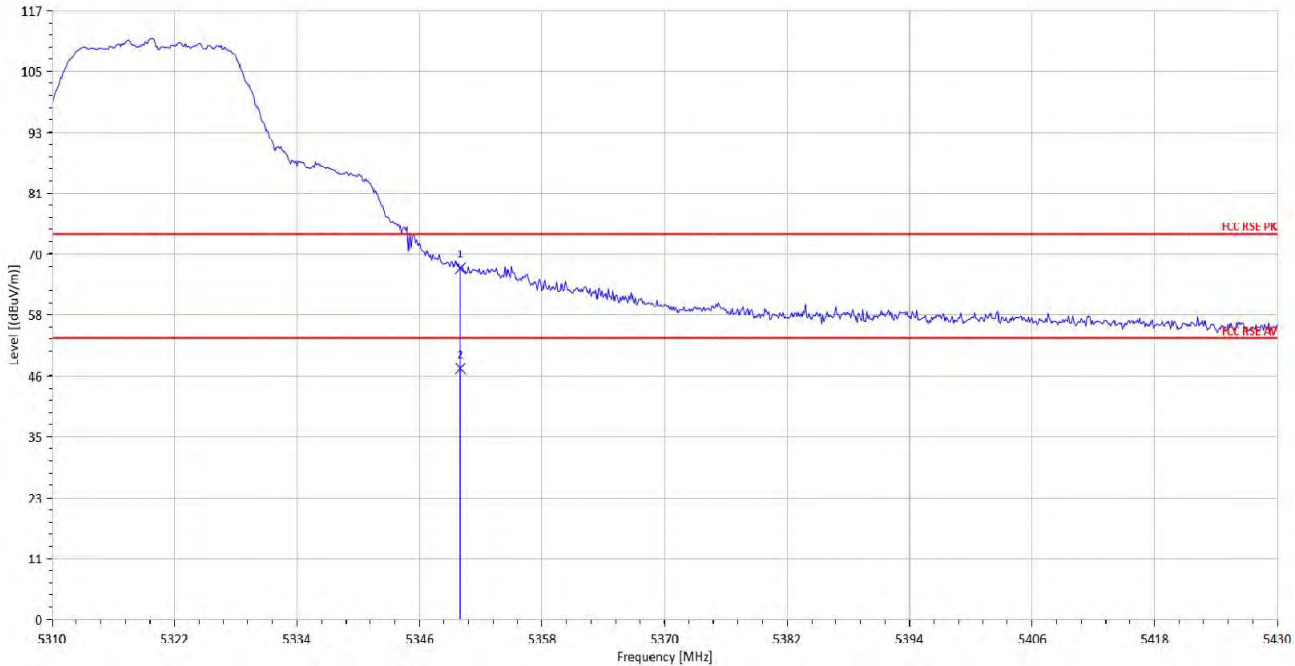
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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5320 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge HIGH	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we’ve employed is peak detector.

Freq. MHz	Detector Mode	Note	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5350.00	Peak	E	56.20	11.30	67.50	74.00	-6.50
5350.00	Average	E	36.88	11.30	48.18	54.00	-5.82

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

Operation Band	:802.11 n20M	Test Date	:2015-02-22
Fundamental Frequency	:5260 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	51.77	-27.63	24.14	40.00	-15.86
101.78	Peak	S	51.83	-23.54	28.29	43.50	-15.21
216.24	Peak	S	38.16	-22.96	15.20	46.00	-30.80
312.27	Peak	S	40.07	-18.66	21.41	46.00	-24.59
452.92	Peak	S	38.88	-14.83	24.06	46.00	-21.94
528.58	Peak	S	41.20	-13.16	28.03	46.00	-17.97
10520.00	Peak	H	36.71	19.25	55.96	68.30	-12.34
15780.00	Peak	H	-				
21040.00	Peak	H	-				
26300.00	Peak	H	-				
31560.00	Peak	H	-				
36820.00	Peak	H	-				

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Operation Band :802.11 n20M Test Date :2015-02-22  
 Fundamental Frequency :5260 MHz Temp./Humi. :16.7 deg\_C / 52 RH  
 Operation Mode :TX LOW Engineer :Vito  
 EUT Pol. :E2 Plan Measurement Antenna Pol. :HORIZONTAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	51.49	-27.63	23.86	40.00	-16.14
352.04	Peak	S	41.03	-17.31	23.71	46.00	-22.29
528.58	Peak	S	40.59	-13.16	27.43	46.00	-18.57
624.61	Peak	S	39.46	-12.15	27.31	46.00	-18.69
672.14	Peak	S	39.87	-11.68	28.19	46.00	-17.81
720.64	Peak	S	38.97	-10.77	28.20	46.00	-17.80
10520.00	Peak	H	37.19	19.25	56.44	68.30	-11.86
15780.00	Peak	H	-				
21040.00	Peak	H	-				
26300.00	Peak	H	-				
31560.00	Peak	H	-				
36820.00	Peak	H	-				

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Operation Band	:802.11 n20M	Test Date	:2015-02-22
Fundamental Frequency	:5300 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX MID	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
100.81	Peak	S	50.34	-23.69	26.66	43.50	-16.84
288.02	Peak	S	41.05	-19.45	21.61	46.00	-24.39
312.27	Peak	S	39.94	-18.66	21.27	46.00	-24.73
445.16	Peak	S	37.30	-15.18	22.12	46.00	-23.88
503.36	Peak	S	38.65	-14.15	24.50	46.00	-21.50
528.58	Peak	S	36.21	-13.16	23.05	46.00	-22.95
10600.00	Peak	H	36.72	19.38	56.10	74.00	-17.90
10600.00	Average	H	24.13	19.38	43.51	54.00	-10.49
15900.00	Peak	H	-				
21200.00	Peak	H	-				
26500.00	Peak	H	-				
31800.00	Peak	H	-				
37100.00	Peak	H	-				

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Operation Band :802.11 n20M Test Date :2015-02-22  
 Fundamental Frequency :5300 MHz Temp./Humi. :16.7 deg\_C / 52 RH  
 Operation Mode :TX MID Engineer :Vito  
 EUT Pol. :E2 Plan Measurement Antenna Pol. :HORIZONTAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	50.35	-27.63	22.72	40.00	-17.28
101.78	Peak	S	46.59	-23.54	23.04	43.50	-20.46
170.65	Peak	S	45.91	-23.79	22.11	43.50	-21.39
528.58	Peak	S	40.35	-13.16	27.19	46.00	-18.81
647.89	Peak	S	39.81	-11.08	28.74	46.00	-17.26
672.14	Peak	S	40.09	-11.68	28.41	46.00	-17.59
10600.00	Peak	H	36.42	19.38	55.79	74.00	-18.21
10600.00	Average	H	24.15	19.38	43.53	54.00	-10.47
15900.00	Peak	H	-				
21200.00	Peak	H	-				
26500.00	Peak	H	-				
31800.00	Peak	H	-				
37100.00	Peak	H	-				

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Operation Band :802.11 n20M Test Date :2015-02-22  
 Fundamental Frequency :5320 MHz Temp./Humi. :16.7 deg\_C / 52 RH  
 Operation Mode :TX HIGH Engineer :Vito  
 EUT Pol. :E2 Plan Measurement Antenna Pol. :VERTICAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	49.74	-27.63	22.12	40.00	-17.88
101.78	Peak	S	54.06	-23.54	30.52	43.50	-12.98
312.27	Peak	S	39.31	-18.66	20.65	46.00	-25.35
359.80	Peak	S	33.31	-17.16	16.15	46.00	-29.85
452.92	Peak	S	36.77	-14.83	21.95	46.00	-24.05
503.36	Peak	S	37.54	-14.15	23.40	46.00	-22.60
10640.00	Peak	H	37.12	19.28	56.40	74.00	-17.60
10640.00	Average	H	24.32	19.28	43.60	54.00	-10.40
15960.00	Peak	H	-				
21280.00	Peak	H	-				
26600.00	Peak	H	-				
31920.00	Peak	H	-				
37240.00	Peak	H	-				

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Operation Band :802.11 n20M Test Date :2015-02-22  
 Fundamental Frequency :5320 MHz Temp./Humi. :16.7 deg\_C / 52 RH  
 Operation Mode :TX HIGH Engineer :Vito  
 EUT Pol. :E2 Plan Measurement Antenna Pol. :HORIZONTAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
101.78	Peak	S	51.35	-23.54	27.81	43.50	-15.69
110.51	Peak	S	51.43	-22.26	29.17	43.50	-14.33
125.06	Peak	S	56.36	-21.38	34.98	43.50	-8.52
528.58	Peak	S	40.57	-13.16	27.41	46.00	-18.59
647.89	Peak	S	37.42	-11.08	26.34	46.00	-19.66
720.64	Peak	S	38.56	-10.77	27.79	46.00	-18.21
10640.00	Peak	H	36.66	19.28	55.94	74.00	-18.06
10640.00	Average	H	24.10	19.28	43.38	54.00	-10.62
15960.00	Peak	H	-				
21280.00	Peak	H	-				
26600.00	Peak	H	-				
31920.00	Peak	H	-				
37240.00	Peak	H	-				

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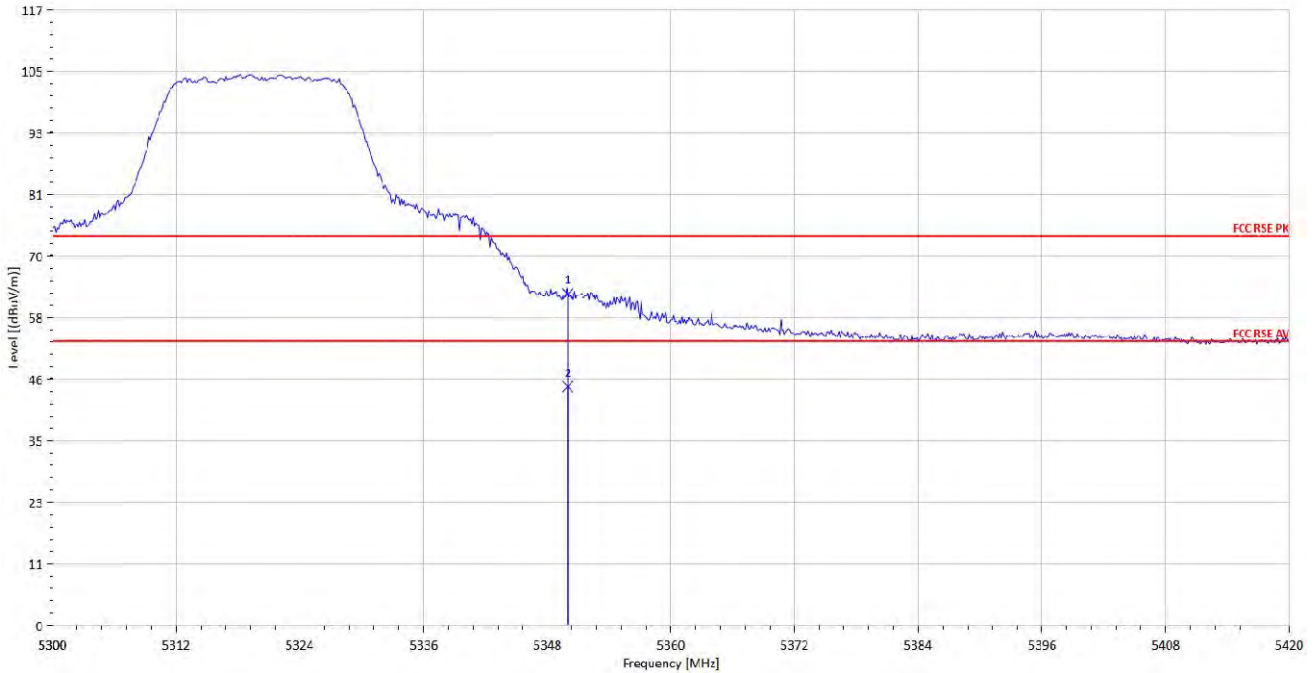
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Operation Band	:802.11 n20M	Test Date	:2015-02-22
Fundamental Frequency	:5320 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge HIGH	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE (radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq. MHz	Detector Mode	Note F/H/E/S	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5350.00	Peak	E	51.70	11.30	63.00	74.00	-11.00
5350.00	Average	E	34.05	11.30	45.35	54.00	-8.65

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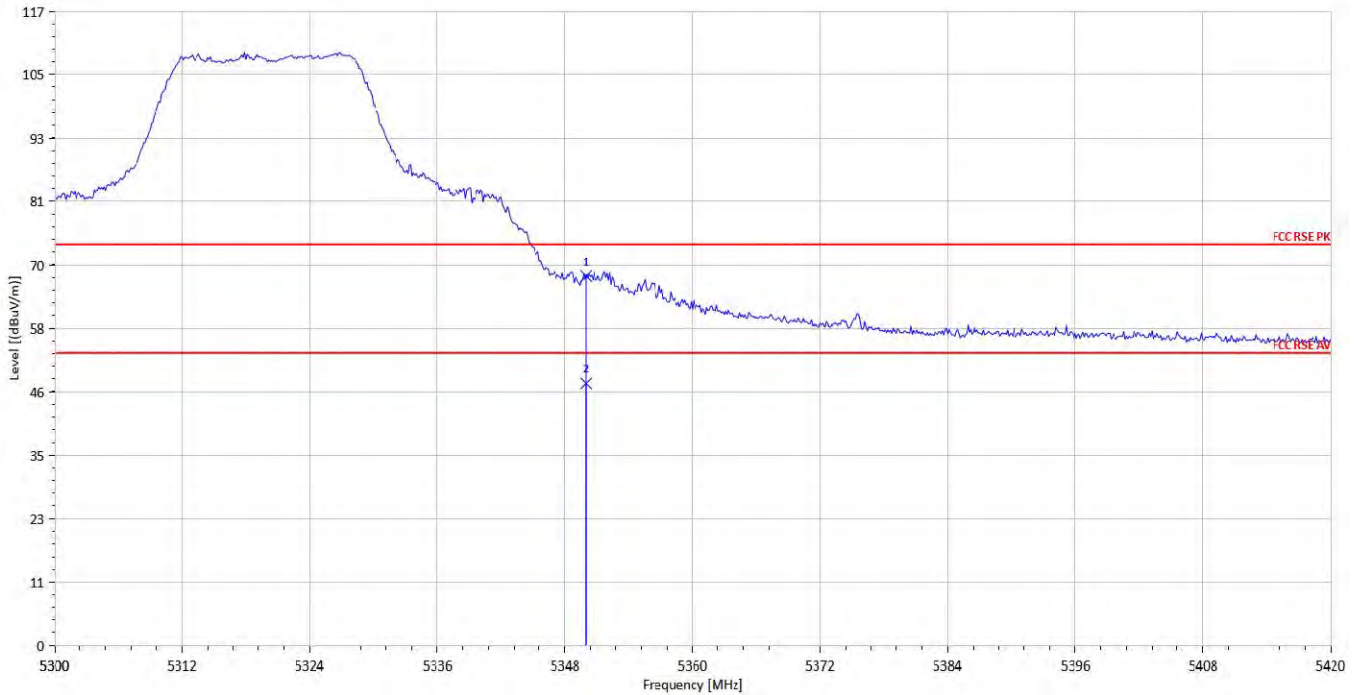
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Operation Band	:802.11 n20M	Test Date	:2015-02-22
Fundamental Frequency	:5320 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge HIGH	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE (radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq. MHz	Detector Mode	Note F/H/E/S	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5350.00	Peak	E	56.81	11.30	68.11	74.00	-5.89
5350.00	Average	E	37.03	11.30	48.33	54.00	-5.67

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

Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5500 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	51.46	-27.63	23.83	40.00	-16.17
101.78	Peak	S	54.34	-23.54	30.79	43.50	-12.71
312.27	Peak	S	37.88	-18.66	19.22	46.00	-26.78
352.04	Peak	S	38.46	-17.31	21.15	46.00	-24.85
445.16	Peak	S	38.86	-15.18	23.68	46.00	-22.32
528.58	Peak	S	40.17	-13.16	27.01	46.00	-18.99
11000.00	Peak	H	36.76	20.02	56.77	74.00	-17.23
11000.00	Average	H	24.66	20.02	44.68	54.00	-9.32
16500.00	Peak	H	-				
22000.00	Peak	H	-				
27500.00	Peak	H	-				
33000.00	Peak	H	-				
38500.00	Peak	H	-				

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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5500 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	50.51	-27.63	22.88	40.00	-17.12
178.41	Peak	S	44.26	-24.30	19.97	43.50	-23.53
312.27	Peak	S	39.42	-18.66	20.76	46.00	-25.24
528.58	Peak	S	37.76	-13.16	24.60	46.00	-21.40
672.14	Peak	S	39.50	-11.68	27.81	46.00	-18.19
720.64	Peak	S	39.19	-10.77	28.42	46.00	-17.58
11000.00	Peak	H	37.19	20.02	57.21	74.00	-16.79
11000.00	Average	H	25.93	20.02	45.95	54.00	-8.05
16500.00	Peak	H	-				
22000.00	Peak	H	-				
27500.00	Peak	H	-				
33000.00	Peak	H	-				
38500.00	Peak	H	-				

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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5580 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX MID	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	51.94	-27.63	24.31	40.00	-15.69
101.78	Peak	S	52.83	-23.54	29.29	43.50	-14.21
288.02	Peak	S	40.50	-19.45	21.05	46.00	-24.95
312.27	Peak	S	40.29	-18.66	21.63	46.00	-24.37
452.92	Peak	S	36.61	-14.83	21.79	46.00	-24.21
503.36	Peak	S	38.82	-14.15	24.67	46.00	-21.33
11160.00	Peak	H	37.21	20.38	57.59	74.00	-16.41
11160.00	Average	H	24.34	20.38	44.72	54.00	-9.28
16740.00	Peak	H	-				
22320.00	Peak	H	-				
27900.00	Peak	H	-				
33480.00	Peak	H	-				
39060.00	Peak	H	-				

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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5580 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX MID	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	49.94	-27.63	22.32	40.00	-17.68
101.78	Peak	S	52.83	-23.54	29.29	43.50	-14.21
171.62	Peak	S	46.44	-23.88	22.57	43.50	-20.93
528.58	Peak	S	40.25	-13.16	27.09	46.00	-18.91
624.61	Peak	S	39.64	-12.15	27.49	46.00	-18.51
720.64	Peak	S	38.66	-10.77	27.88	46.00	-18.12
11160.00	Peak	H	36.36	20.38	56.74	74.00	-17.26
11160.00	Average	H	24.81	20.38	45.19	54.00	-8.81
16740.00	Peak	H	-				
22320.00	Peak	H	-				
27900.00	Peak	H	-				
33480.00	Peak	H	-				
39060.00	Peak	H	-				

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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5700 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX HIGH	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	53.40	-27.63	25.77	40.00	-14.23
101.78	Peak	S	53.36	-23.54	29.82	43.50	-13.68
187.14	Peak	S	42.53	-24.24	18.29	43.50	-25.21
288.02	Peak	S	40.74	-19.45	21.30	46.00	-24.70
445.16	Peak	S	38.31	-15.18	23.13	46.00	-22.87
528.58	Peak	S	40.64	-13.16	27.48	46.00	-18.52
11400.00	Peak	H	37.47	20.81	58.28	74.00	-15.72
11400.00	Average	H	25.07	20.81	45.88	54.00	-8.12
17100.00	Peak	H	-				
22800.00	Peak	H	-				
28500.00	Peak	H	-				
34200.00	Peak	H	-				
39900.00	Peak	H	-				

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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5700 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX HIGH	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	49.63	-27.63	22.00	40.00	-18.00
101.78	Peak	S	49.69	-23.54	26.15	43.50	-17.35
176.47	Peak	S	44.95	-24.14	20.81	43.50	-22.69
528.58	Peak	S	39.28	-13.16	26.12	46.00	-19.88
647.89	Peak	S	37.92	-11.08	26.84	46.00	-19.16
720.64	Peak	S	38.07	-10.77	27.30	46.00	-18.70
11400.00	Peak	H	36.50	20.81	57.31	74.00	-16.69
11400.00	Average	H	24.90	20.81	45.71	54.00	-8.29
17100.00	Peak	H	-				
22800.00	Peak	H	-				
28500.00	Peak	H	-				
34200.00	Peak	H	-				
39900.00	Peak	H	-				

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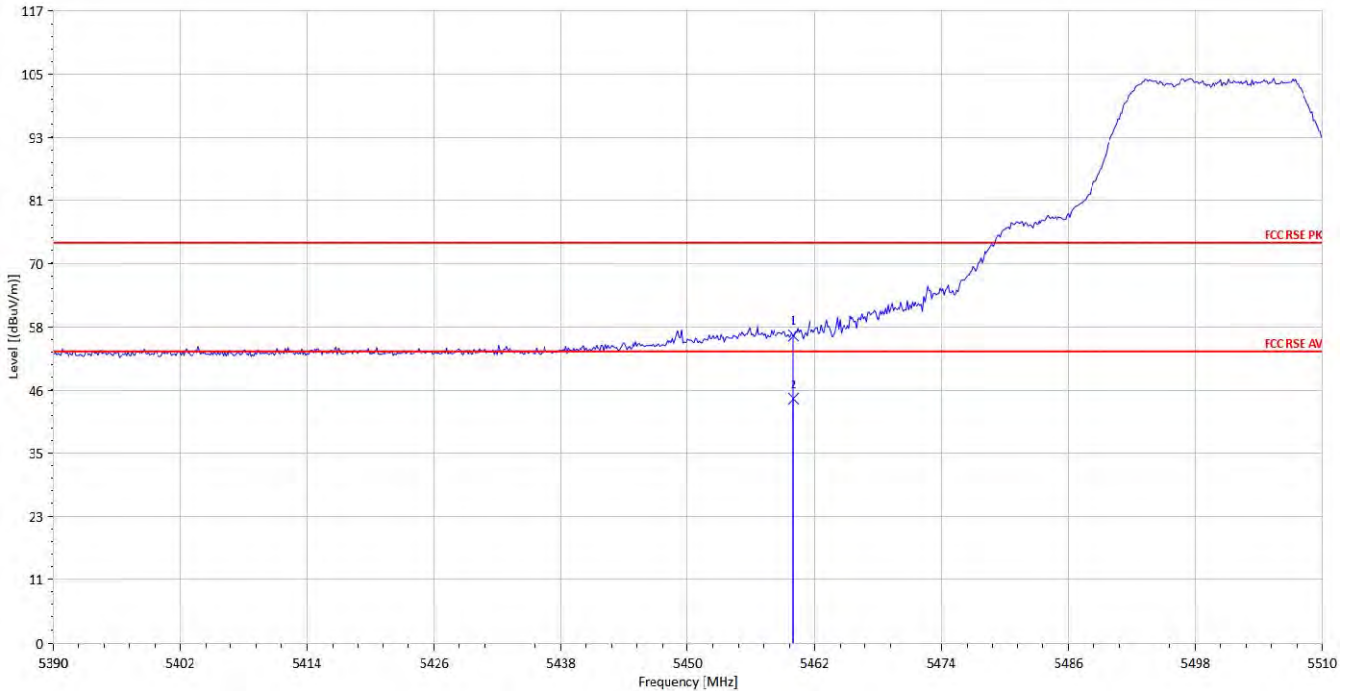
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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5500 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge HIGH	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



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

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

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

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

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we’ve employed is peak detector.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5460.00	Peak	E	45.48	11.46	56.94	74.00	-17.06
5460.00	Average	E	33.76	11.46	45.22	54.00	-8.78
5470.00	Peak	E	50.28	11.46	61.74	68.30	-6.56

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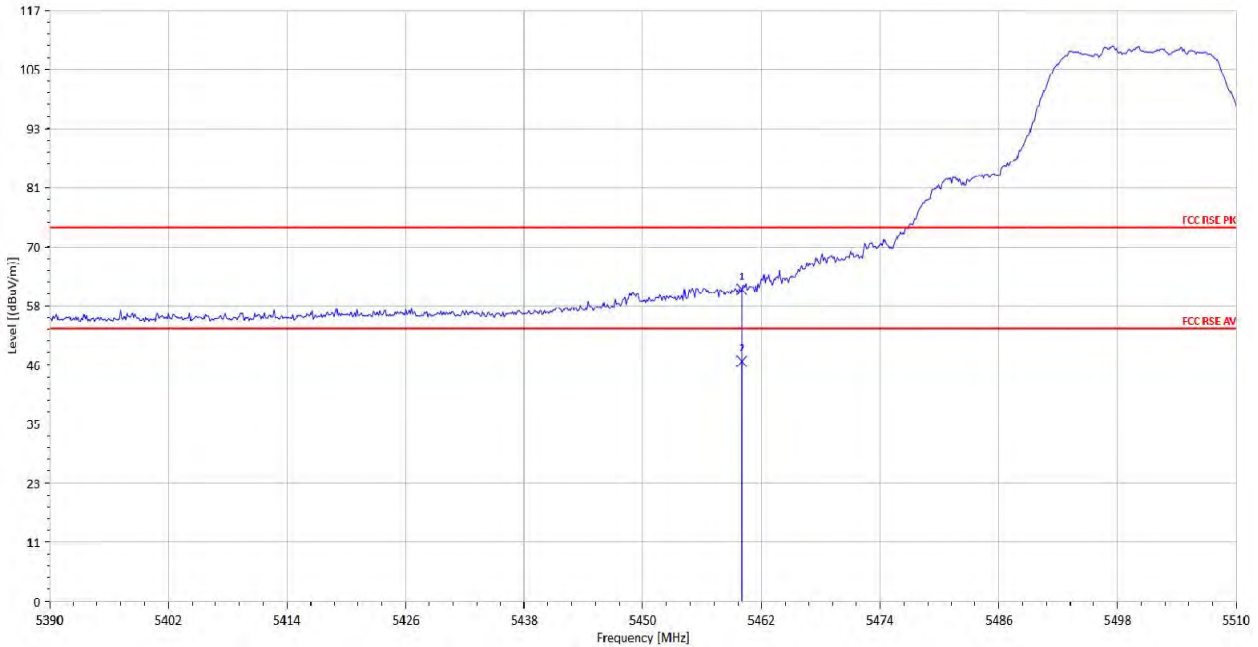
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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5500 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge HIGH	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we’ve employed is peak detector.

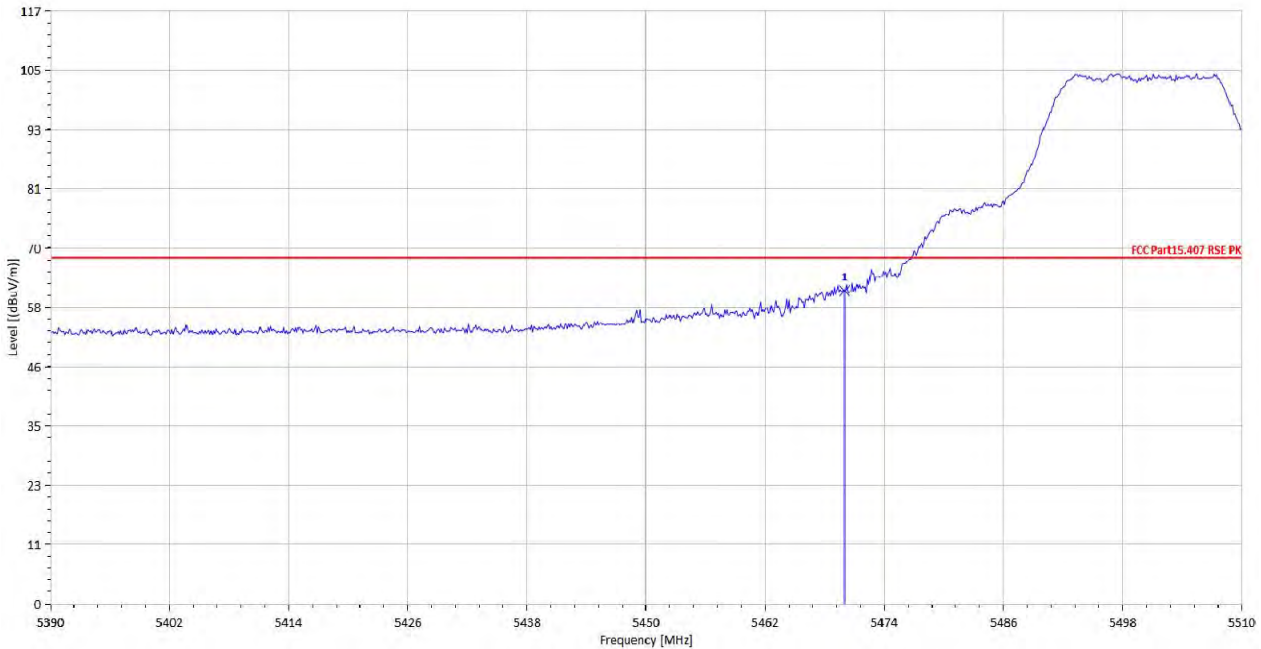
Freq. MHz	Detector Mode	Note F/H/E/S	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5460.00	Peak	E	50.25	11.46	61.71	74.00	-12.29
5460.00	Average	E	36.02	11.46	47.48	54.00	-6.52
5469.08	Peak	S	55.89	11.46	67.34	68.30	-0.96
5470.00	Peak	E	55.10	11.46	66.56	68.30	-1.74

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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5500 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



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

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

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

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

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we’ve employed is peak detector.

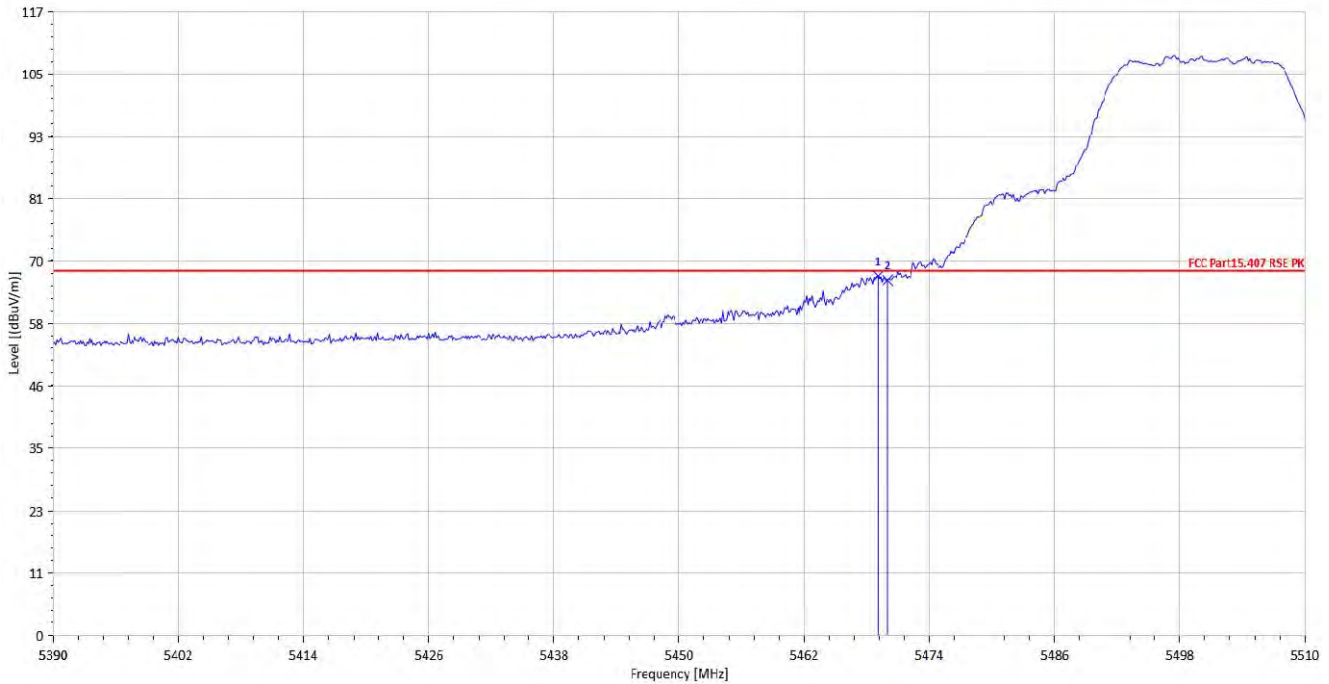
Freq.	Detector Mode	Note	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	F/H/E/S	dBµV	dB	dBµV/m	dBµV/m	dB
5470.00	Peak	E	50.28	11.46	61.74	68.30	-6.56

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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5500 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge HIGH	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we’ve employed is peak detector.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5469.08	Peak	S	55.89	11.46	67.34	68.30	-0.96
5470.00	Peak	E	55.10	11.46	66.56	68.30	-1.74

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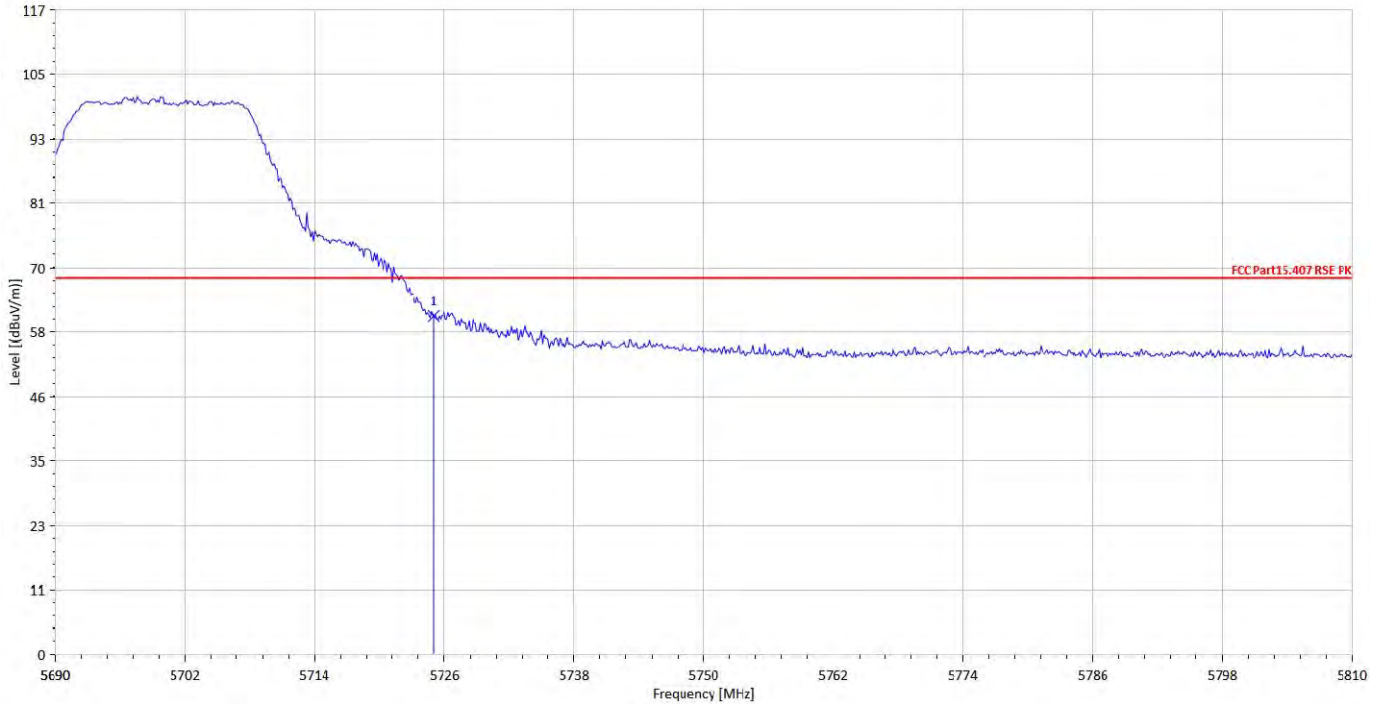
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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5700 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge HIGH	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we’ve employed is peak detector.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5725.00	Peak	E	49.14	12.27	61.41	68.30	-6.89

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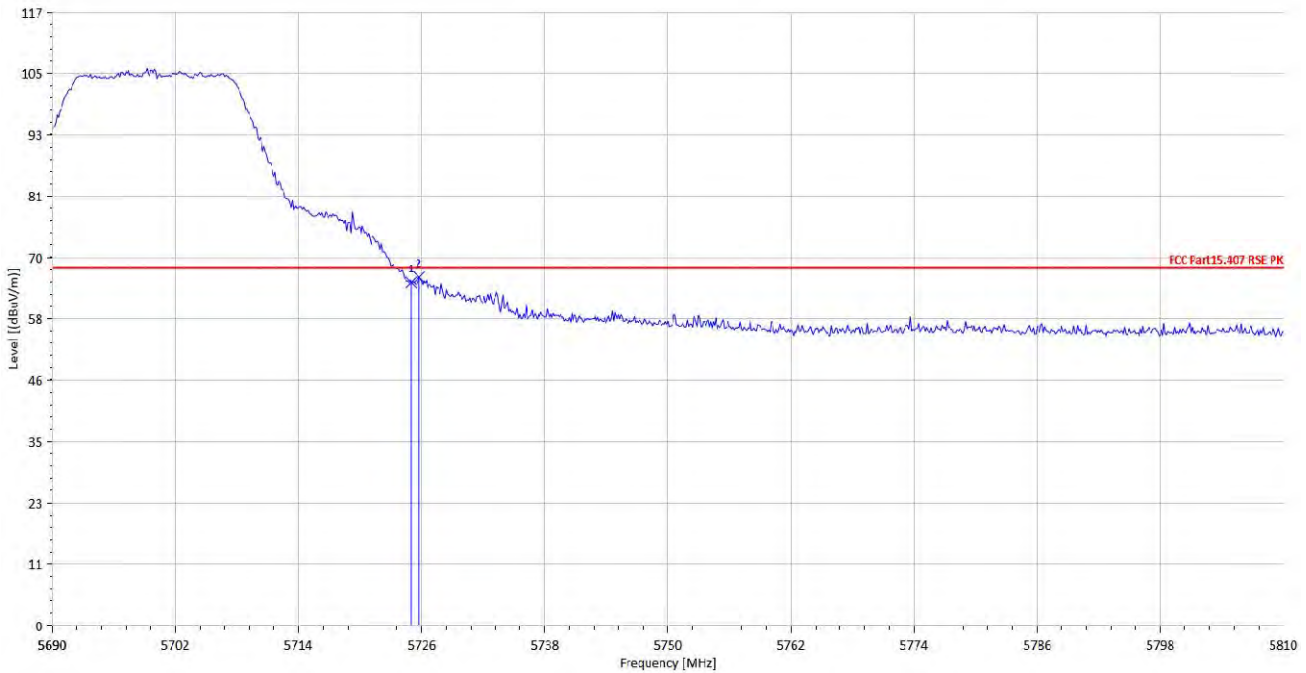
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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5700 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge HIGH	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq. MHz	Detector Mode	Note	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5725.00	Peak	E	53.14	12.27	65.41	68.30	-2.89
5725.76	Peak	S	54.12	12.27	66.39	68.30	-1.91

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

Operation Band	:802.11 n20M	Test Date	:2015-02-22
Fundamental Frequency	:5500 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	50.14	-27.63	22.51	40.00	-17.49
101.78	Peak	S	49.84	-23.54	26.30	43.50	-17.20
216.24	Peak	S	37.84	-22.96	14.88	46.00	-31.12
352.04	Peak	S	38.95	-17.31	21.64	46.00	-24.36
503.36	Peak	S	37.10	-14.15	22.95	46.00	-23.05
528.58	Peak	S	40.47	-13.16	27.31	46.00	-18.69
11000.00	Peak	H	37.33	20.02	57.35	74.00	-16.65
11000.00	Average	H	24.56	20.02	44.58	54.00	-9.42
16500.00	Peak	H	-				
22000.00	Peak	H	-				
27500.00	Peak	H	-				
33000.00	Peak	H	-				
38500.00	Peak	H	-				

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Operation Band :802.11 n20M Test Date :2015-02-22  
 Fundamental Frequency :5500 MHz Temp./Humi. :16.7 deg\_C / 52 RH  
 Operation Mode :TX LOW Engineer :Vito  
 EUT Pol. :E2 Plan Measurement Antenna Pol. :HORIZONTAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	49.53	-27.63	21.91	40.00	-18.09
170.65	Peak	S	45.27	-23.79	21.48	43.50	-22.02
352.04	Peak	S	40.21	-17.31	22.90	46.00	-23.10
528.58	Peak	S	41.73	-13.16	28.56	46.00	-17.44
647.89	Peak	S	40.14	-11.08	29.06	46.00	-16.94
672.14	Peak	S	40.45	-11.68	28.77	46.00	-17.23
11000.00	Peak	H	36.58	20.02	56.59	74.00	-17.41
11000.00	Average	H	24.44	20.02	44.46	54.00	-9.54
16500.00	Peak	H	-				
22000.00	Peak	H	-				
27500.00	Peak	H	-				
33000.00	Peak	H	-				
38500.00	Peak	H	-				

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Operation Band :802.11 n20M Test Date :2015-02-22  
 Fundamental Frequency :5580 MHz Temp./Humi. :16.7 deg\_C / 52 RH  
 Operation Mode :TX MID Engineer :Vito  
 EUT Pol. :E2 Plan Measurement Antenna Pol. :VERTICAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	51.62	-27.63	24.00	40.00	-16.00
101.78	Peak	S	53.72	-23.54	30.18	43.50	-13.32
288.02	Peak	S	39.95	-19.45	20.51	46.00	-25.49
445.16	Peak	S	37.36	-15.18	22.18	46.00	-23.82
503.36	Peak	S	37.74	-14.15	23.60	46.00	-22.40
528.58	Peak	S	37.45	-13.16	24.29	46.00	-21.71
11160.00	Peak	H	38.64	20.38	59.02	74.00	-14.98
11160.00	Average	H	24.26	20.38	44.64	54.00	-9.36
16740.00	Peak	H	-				
22320.00	Peak	H	-				
27900.00	Peak	H	-				
33480.00	Peak	H	-				
39060.00	Peak	H	-				

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Operation Band :802.11 n20M Test Date :2015-02-22  
 Fundamental Frequency :5580 MHz Temp./Humi. :16.7 deg\_C / 52 RH  
 Operation Mode :TX MID Engineer :Vito  
 EUT Pol. :E2 Plan Measurement Antenna Pol. :HORIZONTAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	48.95	-27.63	21.32	40.00	-18.68
101.78	Peak	S	41.63	-23.54	18.09	43.50	-25.41
528.58	Peak	S	40.48	-13.16	27.32	46.00	-18.68
576.11	Peak	S	37.84	-12.45	25.39	46.00	-20.61
647.89	Peak	S	40.90	-11.08	29.82	46.00	-16.18
672.14	Peak	S	40.47	-11.68	28.78	46.00	-17.22
11160.00	Peak	H	37.39	20.38	57.77	74.00	-16.23
11160.00	Average	H	24.57	20.38	44.95	54.00	-9.05
16740.00	Peak	H	-				
22320.00	Peak	H	-				
27900.00	Peak	H	-				
33480.00	Peak	H	-				
39060.00	Peak	H	-				

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Operation Band :802.11 n20M                      Test Date :2015-02-22  
 Fundamental Frequency :5700 MHz                      Temp./Humi. :16.7 deg\_C / 52 RH  
 Operation Mode :TX HIGH                      Engineer :Vito  
 EUT Pol. :E2 Plan                      Measurement Antenna Pol. :VERTICAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
62.98	Peak	S	49.38	-28.27	21.11	40.00	-18.89
71.71	Peak	S	52.05	-27.63	24.43	40.00	-15.57
101.78	Peak	S	53.85	-23.54	30.31	43.50	-13.19
452.92	Peak	S	39.26	-14.83	24.43	46.00	-21.57
503.36	Peak	S	38.27	-14.15	24.12	46.00	-21.88
528.58	Peak	S	41.26	-13.16	28.10	46.00	-17.90
11400.00	Peak	H	37.41	20.81	58.22	74.00	-15.78
11400.00	Average	H	24.59	20.81	45.40	54.00	-8.60
17100.00	Peak	H	-				
22800.00	Peak	H	-				
28500.00	Peak	H	-				
34200.00	Peak	H	-				
39900.00	Peak	H	-				

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Operation Band :802.11 n20M Test Date :2015-02-22  
 Fundamental Frequency :5700 MHz Temp./Humi. :16.7 deg\_C / 52 RH  
 Operation Mode :TX HIGH Engineer :Vito  
 EUT Pol. :E2 Plan Measurement Antenna Pol. :HORIZONTAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	50.04	-27.63	22.41	40.00	-17.59
101.78	Peak	S	50.60	-23.54	27.06	43.50	-16.44
528.58	Peak	S	40.29	-13.16	27.13	46.00	-18.87
624.61	Peak	S	38.53	-12.15	26.38	46.00	-19.62
672.14	Peak	S	39.68	-11.68	27.99	46.00	-18.01
720.64	Peak	S	37.86	-10.77	27.09	46.00	-18.91
11400.00	Peak	H	36.71	20.81	57.52	74.00	-16.48
11400.00	Average	H	24.43	20.81	45.24	54.00	-8.76
17100.00	Peak	H	-				
22800.00	Peak	H	-				
28500.00	Peak	H	-				
34200.00	Peak	H	-				
39900.00	Peak	H	-				

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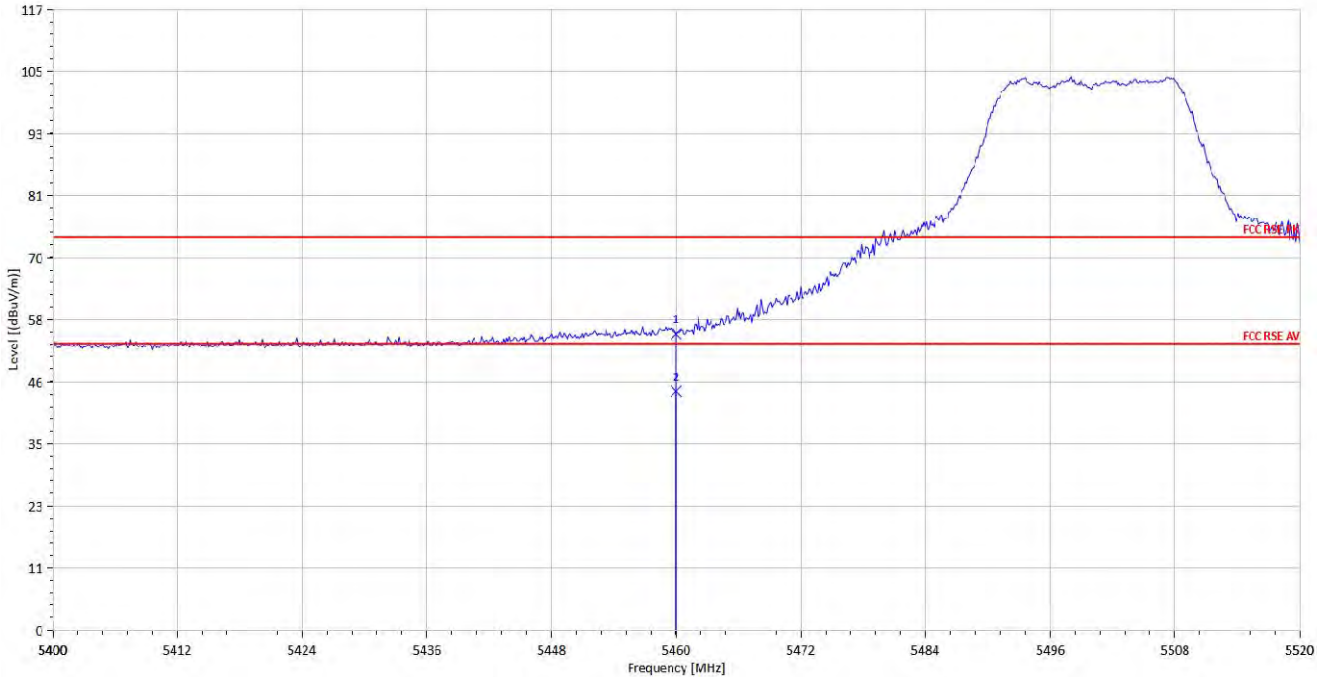
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Operation Band	:802.11 n20M	Test Date	:2015-02-22
Fundamental Frequency	:5500 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE (radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

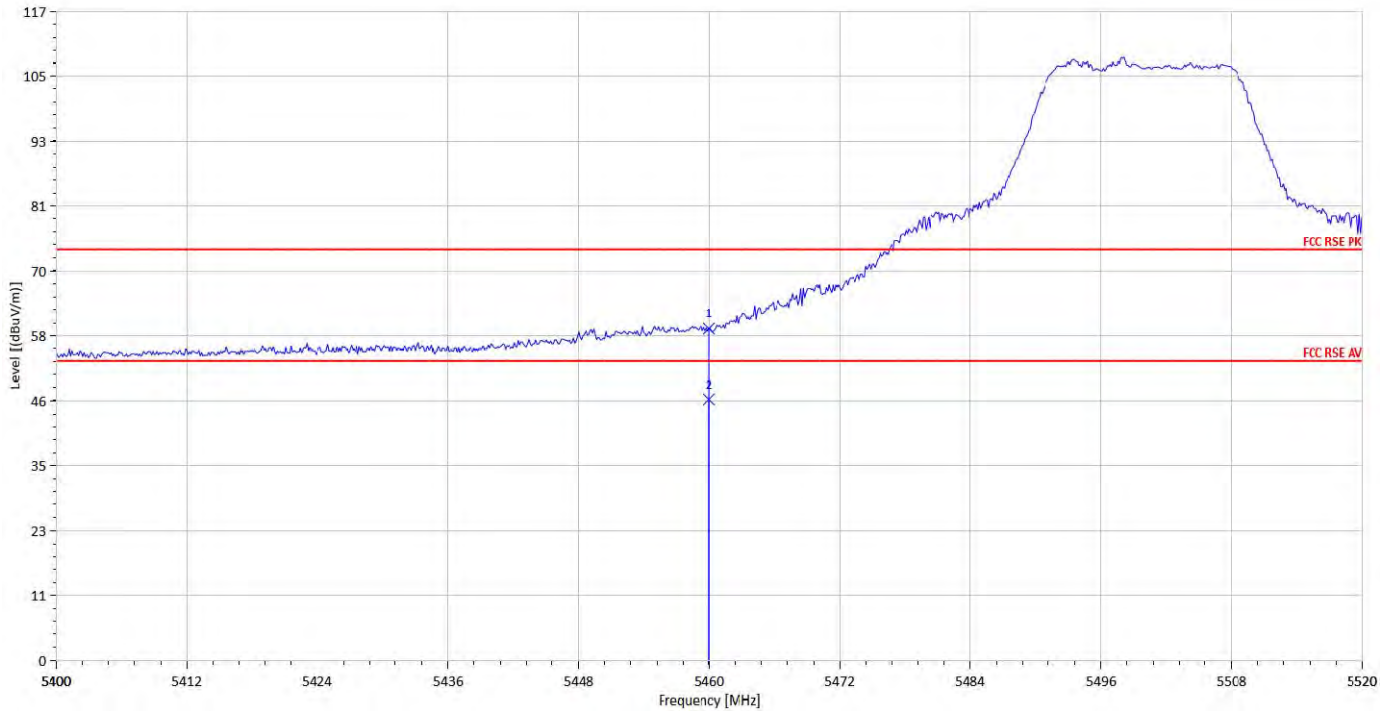
Freq. MHz	Detector Mode	Note F/H/E/S	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5460.00	Peak	E	44.36	11.46	55.82	74.00	-18.18
5460.00	Average	E	33.57	11.46	45.03	54.00	-8.97

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Operation Band	:802.11 n20M	Test Date	:2015-02-22
Fundamental Frequency	:5500 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we’ve employed is peak detector.

Freq. MHz	Detector Mode	Note F/H/E/S	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5460.00	Peak	E	48.37	11.46	59.83	74.00	-14.17
5460.00	Average	E	35.56	11.46	47.02	54.00	-6.98

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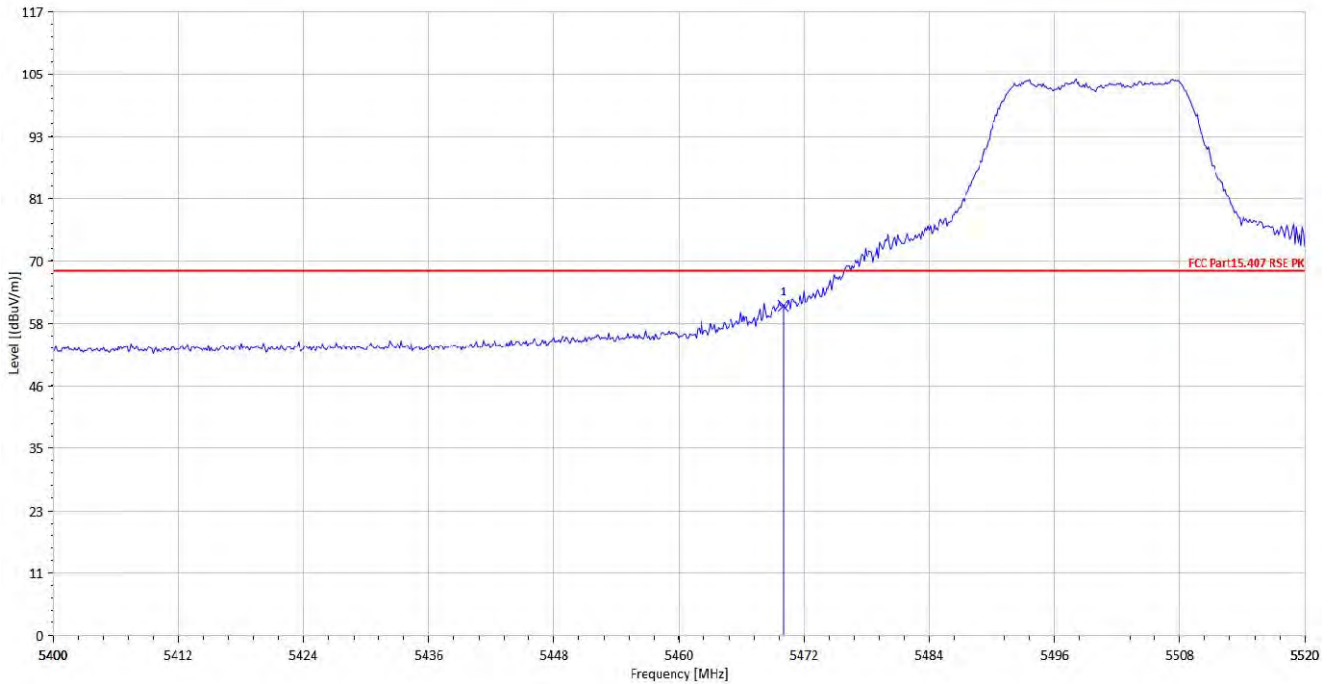
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Operation Band	:802.11 n20M	Test Date	:2015-02-22
Fundamental Frequency	:5500 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE (radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5470.00	Peak	E	50.36	11.46	61.82	68.30	-6.48

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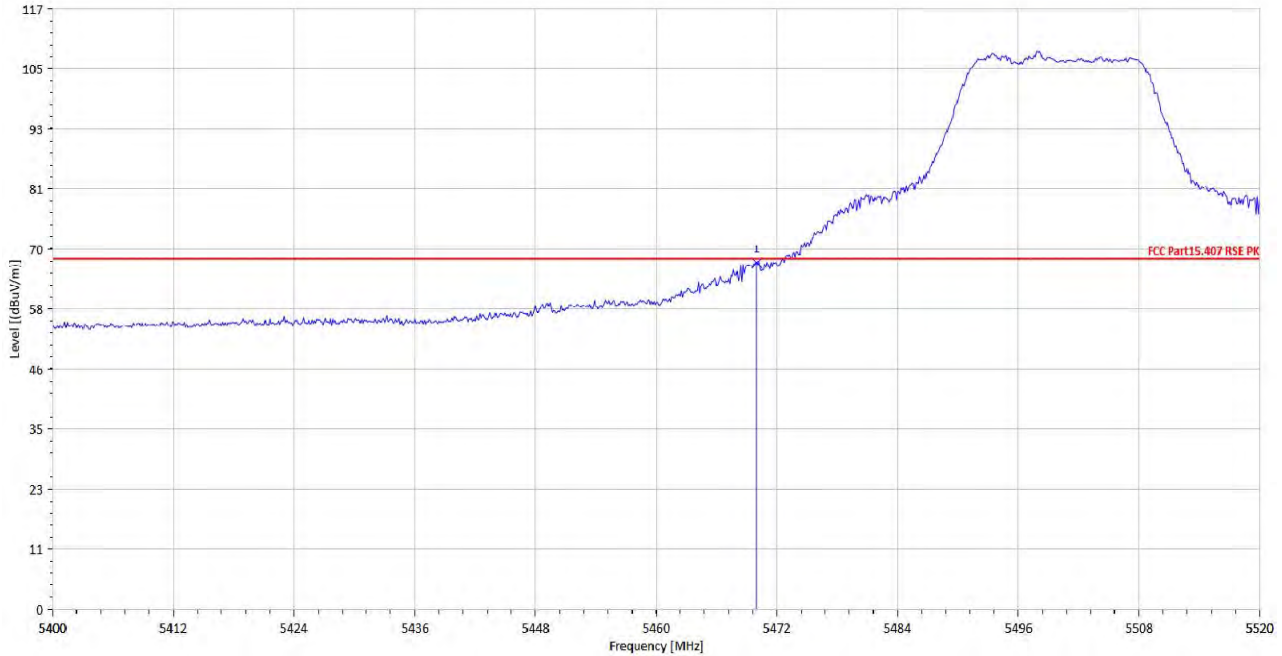
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Operation Band	:802.11 n20M	Test Date	:2015-02-22
Fundamental Frequency	:5500 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE (radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5470.00	Peak	E	56.03	11.46	67.48	68.30	-0.82

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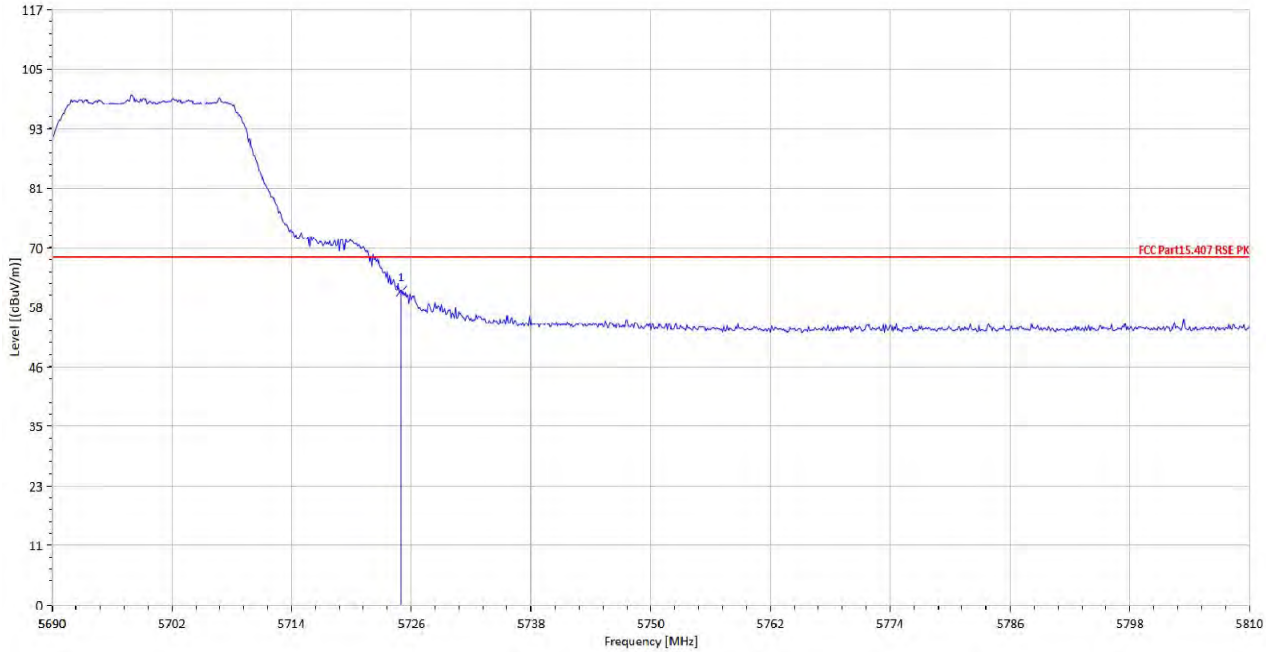
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Operation Band	:802.11 n20M	Test Date	:2015-02-22
Fundamental Frequency	:5700 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge HIGH	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE (radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq. MHz	Detector Mode	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5725.00	Peak	E	49.37	12.27	61.64	68.30	-6.66

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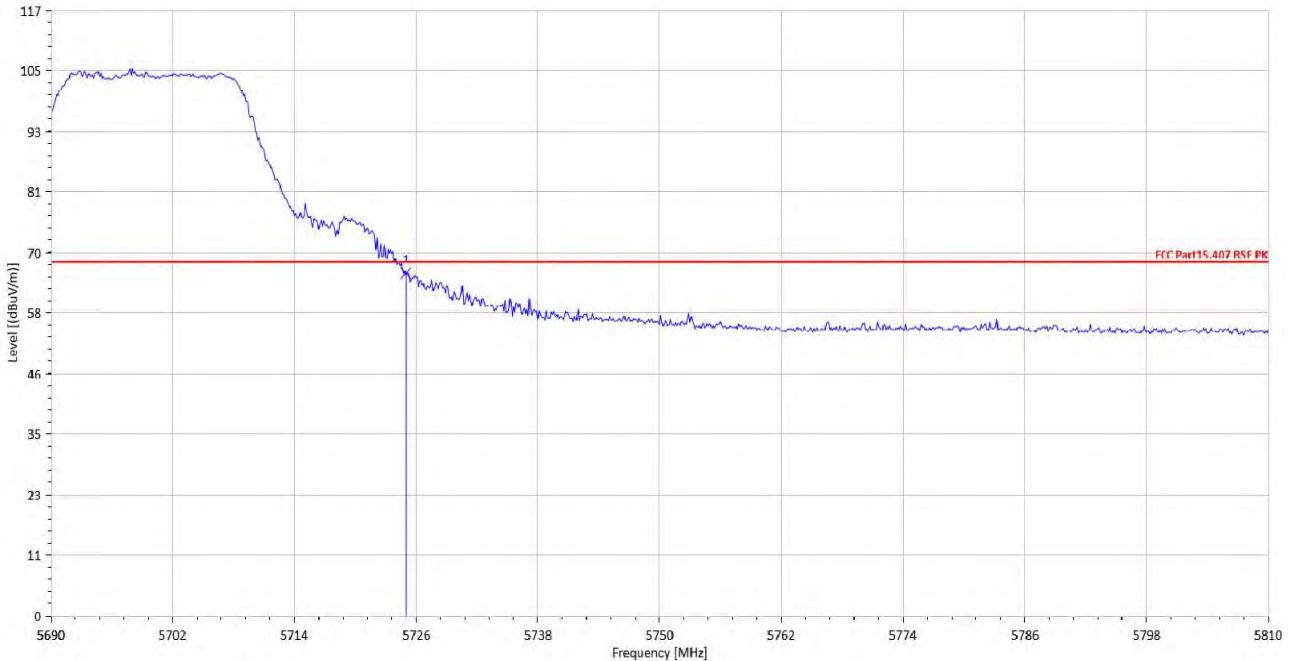
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Fundamental Frequency	:5700 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge HIGH	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE (radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5725.00	Peak	E	53.93	12.27	66.20	68.30	-2.10

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

Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5745 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	52.38	-27.63	24.75	40.00	-15.25
101.78	Peak	S	54.15	-23.54	30.61	43.50	-12.89
312.27	Peak	S	38.92	-18.66	20.26	46.00	-25.74
352.04	Peak	S	39.32	-17.31	22.01	46.00	-23.99
452.92	Peak	S	38.69	-14.83	23.86	46.00	-22.14
528.58	Peak	S	40.39	-13.16	27.23	46.00	-18.77
11490.00	Peak	H	37.12	21.08	58.21	74.00	-15.79
11490.00	Average	H	24.68	21.08	45.76	54.00	-8.24
17235.00	Peak	H	-				
22980.00	Peak	H	-				
28725.00	Peak	H	-				
34470.00	Peak	H	-				

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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5785 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX MID	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	49.84	-27.63	22.21	40.00	-17.79
101.78	Peak	S	53.07	-23.54	29.53	43.50	-13.97
352.04	Peak	S	39.11	-17.31	21.80	46.00	-24.20
445.16	Peak	S	38.92	-15.18	23.74	46.00	-22.26
503.36	Peak	S	37.65	-14.15	23.50	46.00	-22.50
528.58	Peak	S	39.89	-13.16	26.72	46.00	-19.28
11570.00	Peak	H	38.60	21.14	59.74	74.00	-14.26
11570.00	Average	H	24.96	21.14	46.10	54.00	-7.90
17355.00	Peak	H	-				
23140.00	Peak	H	-				
28925.00	Peak	H	-				
34710.00	Peak	H	-				

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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5785 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX MID	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	51.21	-27.63	23.58	40.00	-16.42
101.78	Peak	S	48.23	-23.54	24.69	43.50	-18.81
125.06	Peak	S	49.87	-21.38	28.49	43.50	-15.01
528.58	Peak	S	41.54	-13.16	28.38	46.00	-17.62
647.89	Peak	S	40.61	-11.08	29.54	46.00	-16.46
720.64	Peak	S	39.32	-10.77	28.55	46.00	-17.45
11570.00	Peak	H	37.63	21.14	58.77	74.00	-15.23
11570.00	Average	H	24.87	21.14	46.01	54.00	-7.99
17355.00	Peak	H	-				
23140.00	Peak	H	-				
28925.00	Peak	H	-				
34710.00	Peak	H	-				

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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5825 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX HIGH	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	53.39	-27.63	25.76	40.00	-14.24
101.78	Peak	S	53.19	-23.54	29.65	43.50	-13.85
288.02	Peak	S	40.58	-19.45	21.13	46.00	-24.87
312.27	Peak	S	39.65	-18.66	20.99	46.00	-25.01
445.16	Peak	S	38.10	-15.18	22.91	46.00	-23.09
528.58	Peak	S	41.13	-13.16	27.97	46.00	-18.03
11650.00	Peak	H	37.30	21.27	58.57	74.00	-15.43
11650.00	Average	H	24.97	21.27	46.24	54.00	-7.76
17475.00	Peak	H	-				
23300.00	Peak	H	-				
29125.00	Peak	H	-				
34950.00	Peak	H	-				

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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5825 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX HIGH	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	52.38	-27.63	24.75	40.00	-15.25
101.78	Peak	S	48.04	-23.54	24.50	43.50	-19.00
169.68	Peak	S	43.31	-23.70	19.61	43.50	-23.89
528.58	Peak	S	41.24	-13.16	28.08	46.00	-17.92
647.89	Peak	S	40.39	-11.08	29.32	46.00	-16.68
720.64	Peak	S	39.32	-10.77	28.55	46.00	-17.45
11650.00	Peak	H	37.78	21.27	59.06	74.00	-14.94
11650.00	Average	H	24.92	21.27	46.19	54.00	-7.81
17475.00	Peak	H	-				
23300.00	Peak	H	-				
29125.00	Peak	H	-				
34950.00	Peak	H	-				

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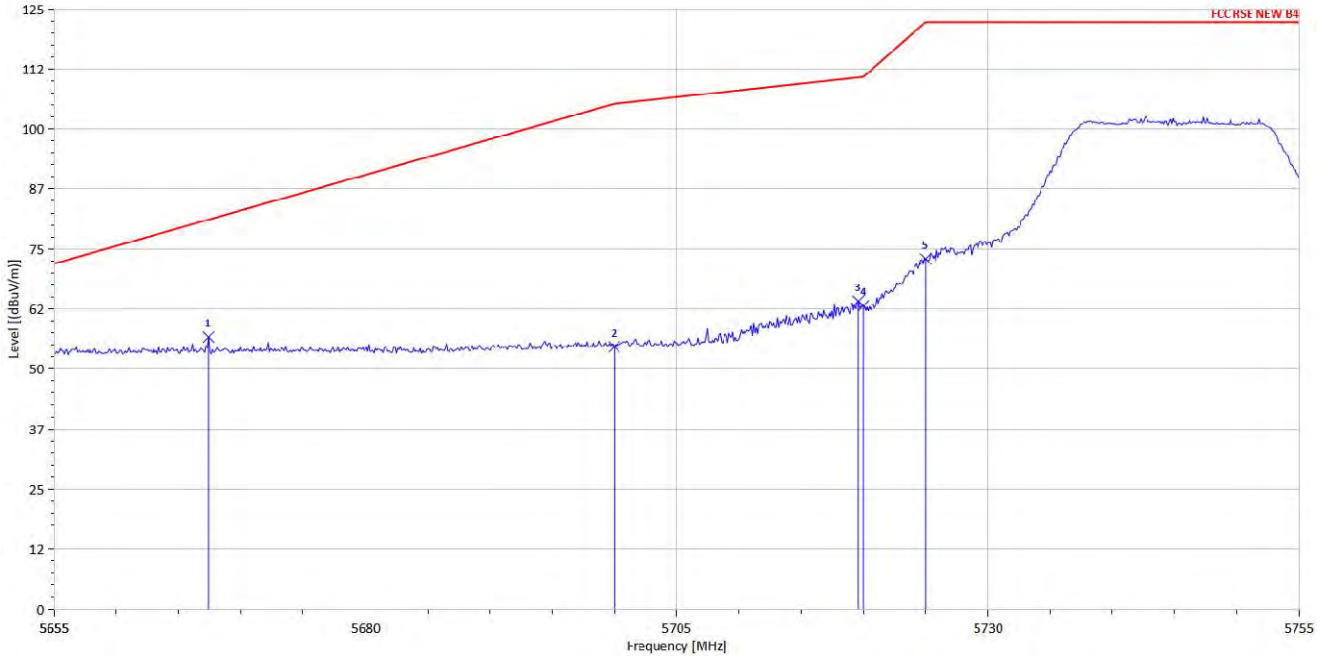
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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5745 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE (radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

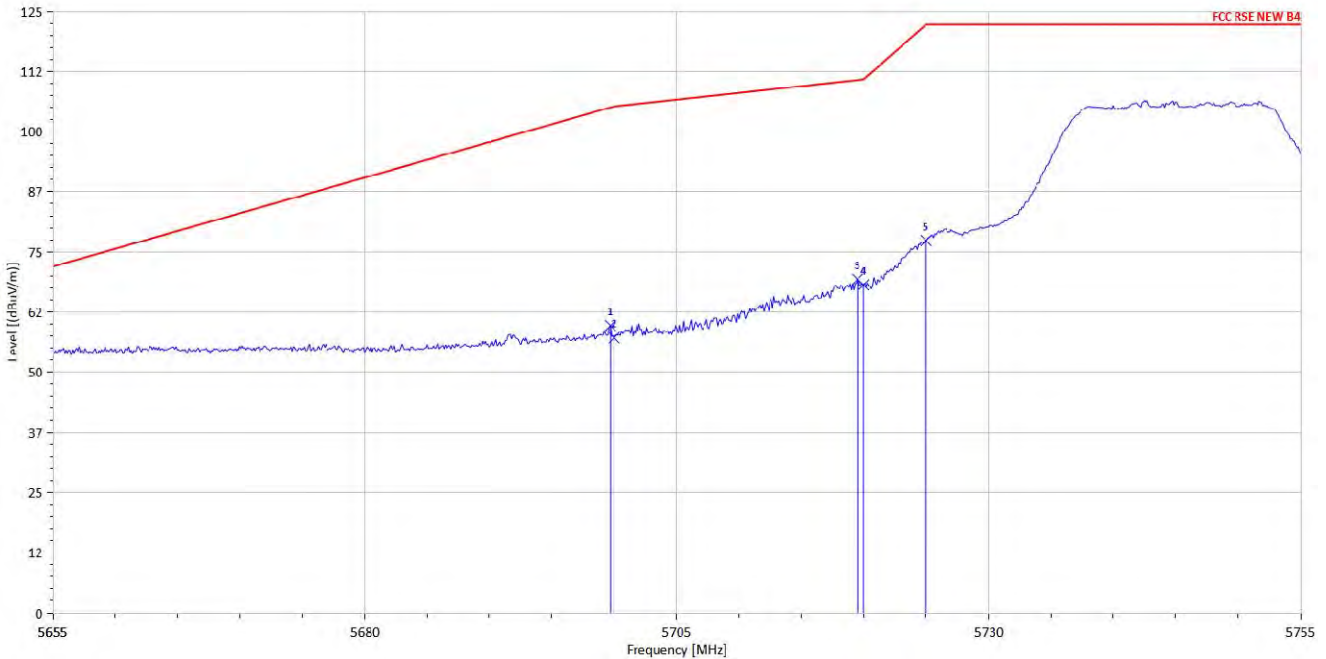
Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5667.40	S	Peak	44.73	11.91	56.64	81.10593	-24.47
5700.00	S	Peak	42.47	12.16	54.63	105.23	-50.60
5719.60	S	Peak	52.12	11.99	64.11	110.718	-46.61
5720.00	S	Peak	51.20	11.99	63.19	110.83	-47.64
5725.00	E	Peak	60.66	12.27	72.93	122.23	-49.30

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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5745 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE (radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

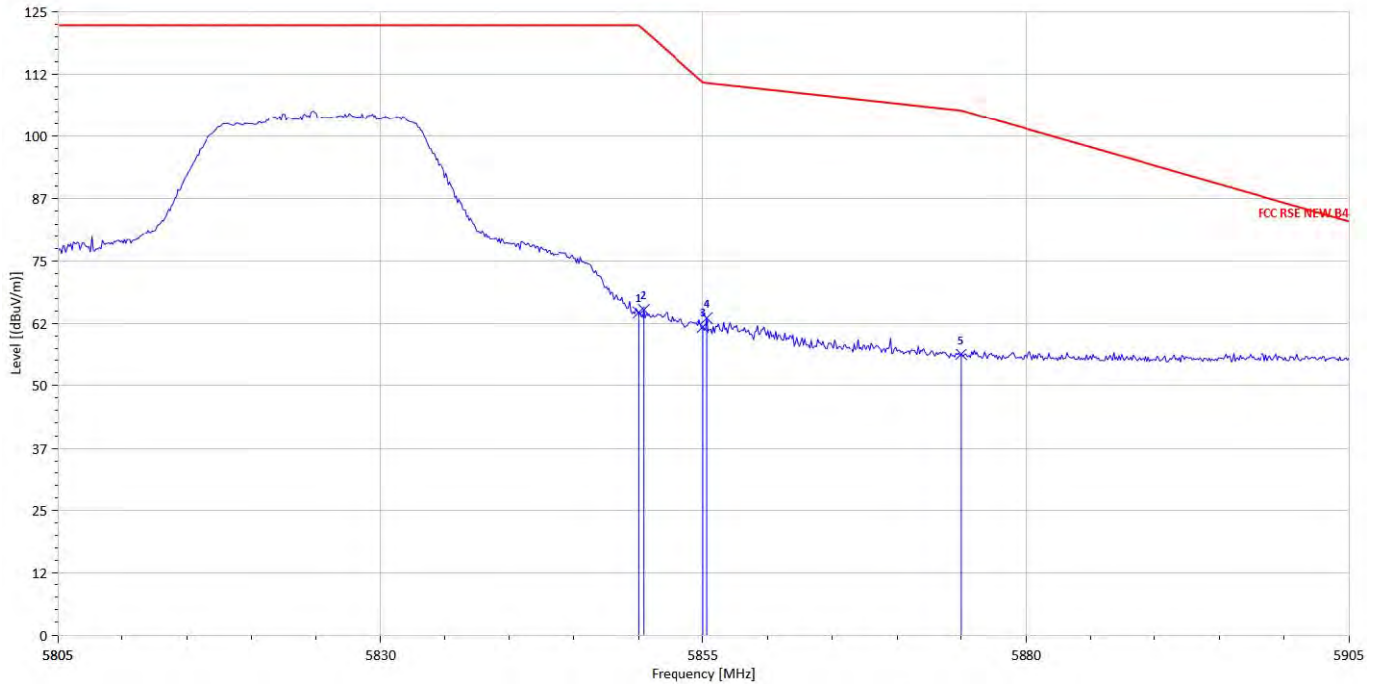
Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5699.70	S	Peak	47.51	12.17	59.68	105.0081	-45.33
5700.00	S	Peak	45.01	12.16	57.17	105.23	-48.06
5719.50	S	Peak	57.29	11.99	69.28	110.69	-41.41
5720.00	S	Peak	56.13	11.99	68.12	110.83	-42.71
5725.00	E	Peak	65.10	12.27	77.37	122.23	-44.86

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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5825 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE (radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5850.00	E	Peak	52.12	12.61	64.73	122.23	-57.50
5850.40	S	Peak	53.10	12.16	65.26	121.3182	-56.06
5855.00	S	Peak	49.62	12.24	61.86	110.83	-48.97
5855.30	S	Peak	51.36	12.24	63.61	110.7461	-47.14
5875.00	S	Peak	43.98	12.28	56.26	105.23	-48.97

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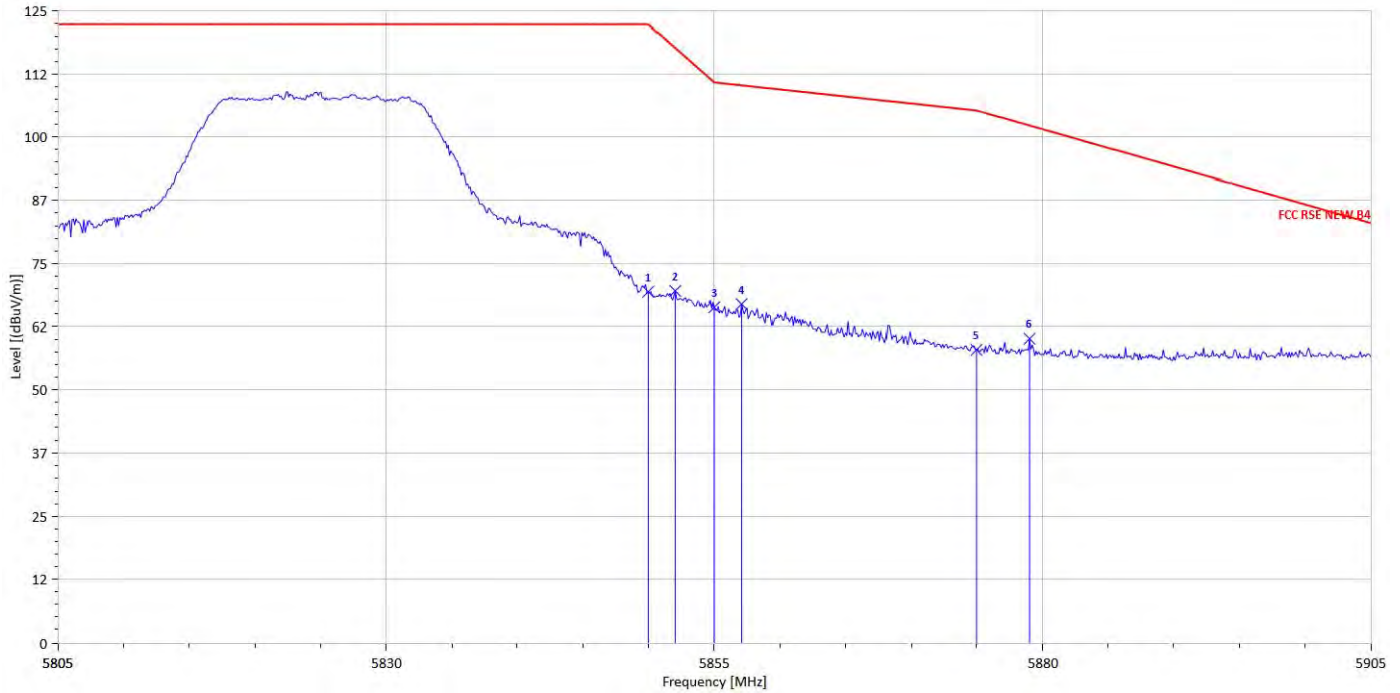
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Operation Band	:802.11 a	Test Date	:2015-02-22
Fundamental Frequency	:5825 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE (radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5850.00	E	Peak	56.76	12.61	69.37	122.23	-52.86
5852.00	S	Peak	57.34	12.18	69.52	117.67	-48.15
5855.00	S	Peak	54.02	12.24	66.26	110.83	-44.57
5857.10	S	Peak	54.61	12.28	66.89	110.242	-43.35
5875.00	S	Peak	45.69	12.28	57.97	105.23	-47.26
5879.00	S	Peak	47.94	12.26	60.19	102.27	-42.08

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**Radiated Spurious Emission Measurement Result 802.11n\_HT20 , 5725~5850 MHz**

Operation Band	:802.11 n20M	Test Date	:2015-02-22
Fundamental Frequency	:5745 MHz	Temp./Humi.	:16.7 deg_C / 52 RH
Operation Mode	:TX LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	52.02	-27.63	24.39	40.00	-15.61
101.78	Peak	S	54.21	-23.54	30.66	43.50	-12.84
312.27	Peak	S	39.70	-18.66	21.04	46.00	-24.96
452.92	Peak	S	39.23	-14.83	24.40	46.00	-21.60
503.36	Peak	S	37.74	-14.15	23.59	46.00	-22.41
528.58	Peak	S	41.46	-13.16	28.30	46.00	-17.70
11490.00	Peak	H	38.21	21.08	59.29	74.00	-14.71
11490.00	Average	H	24.63	21.08	45.71	54.00	-8.29
17235.00	Peak	H	-				
22980.00	Peak	H	-				
28725.00	Peak	H	-				
34470.00	Peak	H	-				

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Operation Band :802.11 n20M Test Date :2015-02-22  
 Fundamental Frequency :5745 MHz Temp./Humi. :16.7 deg\_C / 52 RH  
 Operation Mode :TX LOW Engineer :Vito  
 EUT Pol. :E2 Plan Measurement Antenna Pol. :HORIZONTAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
101.78	Peak	S	46.82	-23.54	23.28	43.50	-20.22
170.65	Peak	S	45.46	-23.79	21.67	43.50	-21.83
528.58	Peak	S	37.22	-13.16	24.06	46.00	-21.94
624.61	Peak	S	38.48	-12.15	26.33	46.00	-19.67
672.14	Peak	S	39.31	-11.68	27.63	46.00	-18.37
720.64	Peak	S	37.26	-10.77	26.49	46.00	-19.51
11490.00	Peak	H	37.65	21.08	58.73	74.00	-15.27
11490.00	Average	H	24.61	21.08	45.69	54.00	-8.31
17235.00	Peak	H	-				
22980.00	Peak	H	-				
28725.00	Peak	H	-				
34470.00	Peak	H	-				

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Operation Band :802.11 n20M Test Date :2015-02-22  
 Fundamental Frequency :5785 MHz Temp./Humi. :16.7 deg\_C / 52 RH  
 Operation Mode :TX MID Engineer :Vito  
 EUT Pol. :E2 Plan Measurement Antenna Pol. :VERTICAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	51.56	-27.63	23.94	40.00	-16.06
101.78	Peak	S	54.98	-23.54	31.43	43.50	-12.07
216.24	Peak	S	39.49	-22.96	16.53	46.00	-29.47
452.92	Peak	S	38.52	-14.83	23.70	46.00	-22.30
503.36	Peak	S	38.68	-14.15	24.54	46.00	-21.46
528.58	Peak	S	40.30	-13.16	27.13	46.00	-18.87
11570.00	Peak	H	38.18	21.14	59.32	74.00	-14.68
11570.00	Average	H	24.90	21.14	46.04	54.00	-7.96
17355.00	Peak	H	-				
23140.00	Peak	H	-				
28925.00	Peak	H	-				
34710.00	Peak	H	-				

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Operation Band :802.11 n20M Test Date :2015-02-22  
 Fundamental Frequency :5785 MHz Temp./Humi. :16.7 deg\_C / 52 RH  
 Operation Mode :TX MID Engineer :Vito  
 EUT Pol. :E2 Plan Measurement Antenna Pol. :HORIZONTAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
77.53	Peak	S	60.84	-27.08	33.76	40.00	-6.24
101.78	Peak	S	52.42	-23.54	28.88	43.50	-14.62
167.74	Peak	S	42.93	-23.65	19.28	43.50	-24.22
288.02	Peak	S	40.66	-19.45	21.21	46.00	-24.79
431.58	Peak	S	41.00	-15.34	25.66	46.00	-20.34
528.58	Peak	S	41.12	-13.16	27.96	46.00	-18.04
11570.00	Peak	H	38.19	21.14	59.32	74.00	-14.68
11570.00	Average	H	24.85	21.14	45.99	54.00	-8.01
17355.00	Peak	H	-				
23140.00	Peak	H	-				
28925.00	Peak	H	-				
34710.00	Peak	H	-				

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Operation Band :802.11 n20M Test Date :2015-02-22  
 Fundamental Frequency :5825 MHz Temp./Humi. :16.7 deg\_C / 52 RH  
 Operation Mode :TX HIGH Engineer :Vito  
 EUT Pol. :E2 Plan Measurement Antenna Pol. :VERTICAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	53.48	-27.63	25.85	40.00	-14.15
83.35	Peak	S	52.76	-26.46	26.30	40.00	-13.70
101.78	Peak	S	52.52	-23.54	28.98	43.50	-14.52
445.16	Peak	S	38.62	-15.18	23.44	46.00	-22.56
503.36	Peak	S	37.76	-14.15	23.61	46.00	-22.39
528.58	Peak	S	40.03	-13.16	26.87	46.00	-19.13
11650.00	Peak	H	37.15	21.27	58.42	74.00	-15.58
11650.00	Average	H	24.92	21.27	46.19	54.00	-7.81
17475.00	Peak	H	-				
23300.00	Peak	H	-				
29125.00	Peak	H	-				
34950.00	Peak	H	-				

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Operation Band :802.11 n20M Test Date :2015-02-22  
 Fundamental Frequency :5825 MHz Temp./Humi. :16.7 deg\_C / 52 RH  
 Operation Mode :TX HIGH Engineer :Vito  
 EUT Pol. :E2 Plan Measurement Antenna Pol. :HORIZONTAL

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

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

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

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

“---” : denotes Noise Floor.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
71.71	Peak	S	45.84	-27.63	18.21	40.00	-21.79
96.93	Peak	S	44.82	-24.36	20.46	43.50	-23.04
352.04	Peak	S	39.25	-17.31	21.93	46.00	-24.07
445.16	Peak	S	39.23	-15.18	24.04	46.00	-21.96
528.58	Peak	S	40.15	-13.16	26.99	46.00	-19.01
647.89	Peak	S	38.57	-11.08	27.50	46.00	-18.50
11650.00	Peak	H	38.02	21.27	59.29	74.00	-14.71
11650.00	Average	H	24.92	21.27	46.19	54.00	-7.81
17475.00	Peak	H	-				
23300.00	Peak	H	-				
29125.00	Peak	H	-				
34950.00	Peak	H	-				

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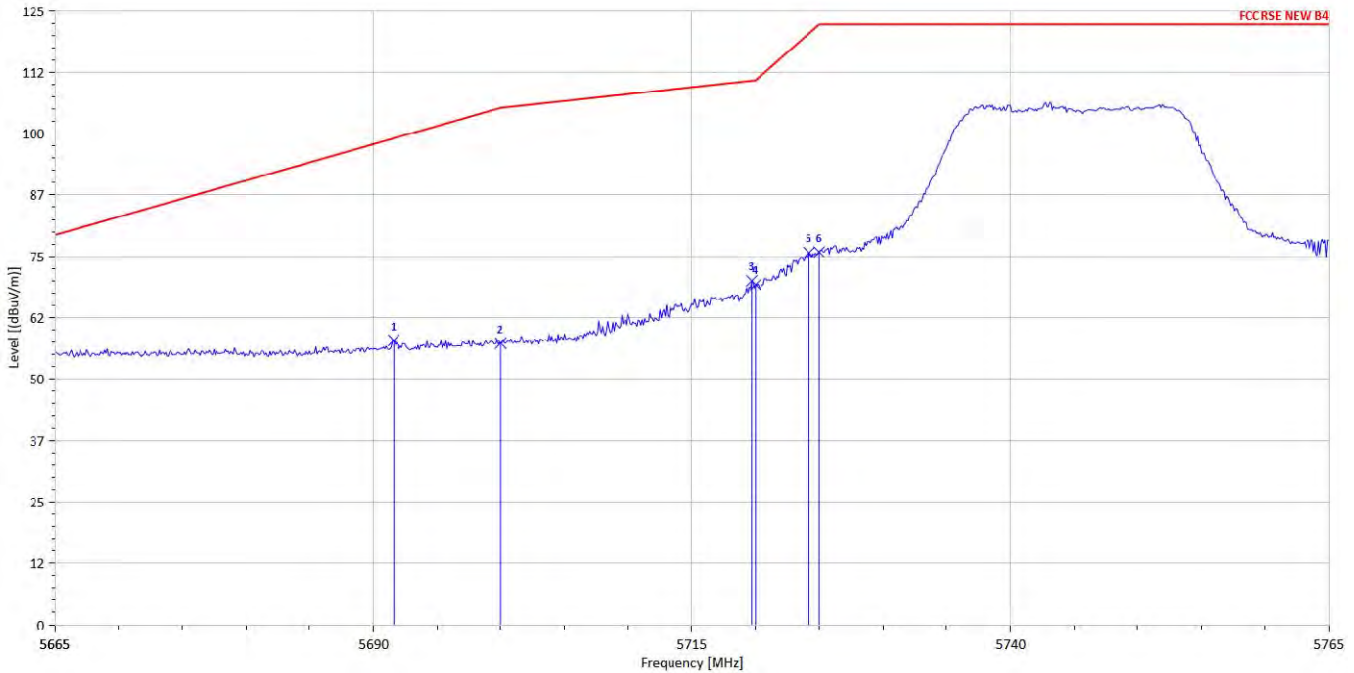
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Operation Band	:802.11 n20 M	Test Date	:2015-02-22
Fundamental Frequency	:5745 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE (radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5700.00	S	Peak	42.48	12.16	54.64	105.23	-50.59
5719.90	S	Peak	51.36	11.99	63.35	110.802	-47.45
5720.00	S	Peak	49.69	11.99	61.69	110.83	-49.14
5724.80	S	Peak	58.75	12.01	70.76	121.7736	-51.02
5725.00	E	Peak	57.80	12.27	70.07	122.23	-52.16

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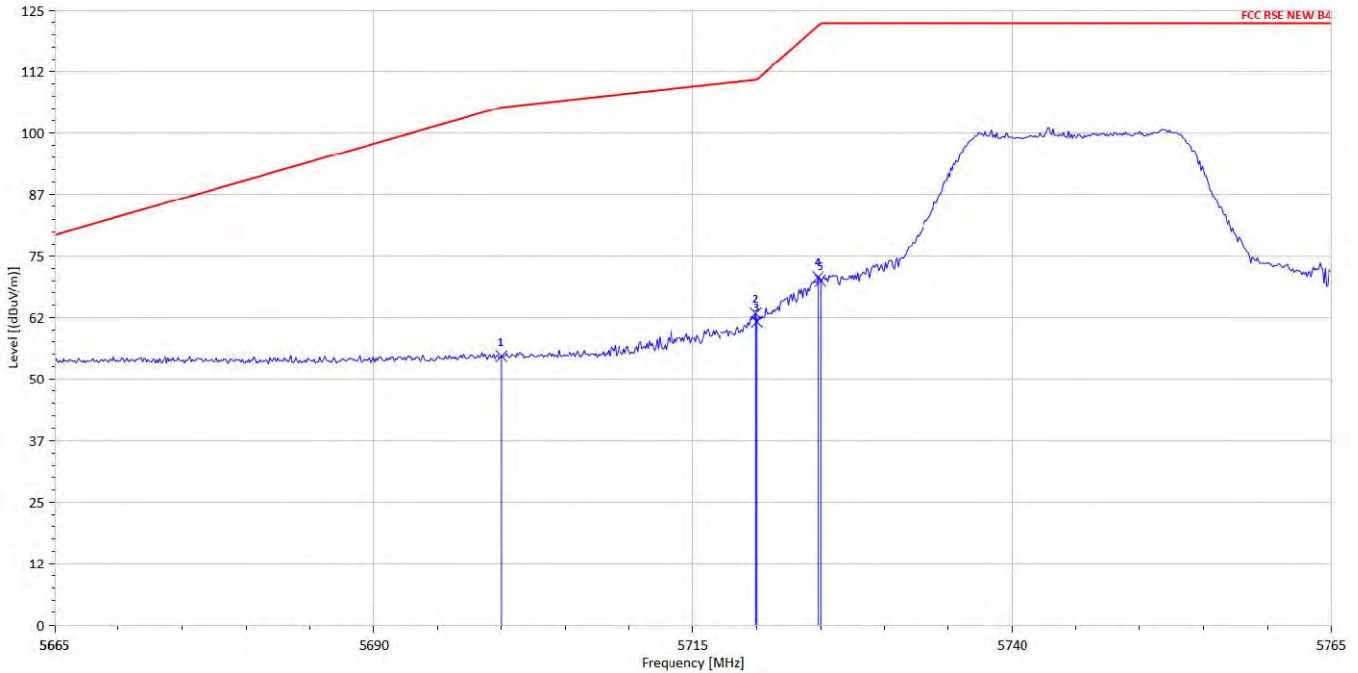
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Operation Band	:802.11 n20 M	Test Date	:2015-02-22
Fundamental Frequency	:5745 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge LOW	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE (radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5691.60	S	Peak	45.56	12.33	57.89	99.01408	-41.12
5700.00	S	Peak	45.17	12.16	57.33	105.23	-47.90
5719.70	S	Peak	58.01	11.99	70.01	110.7461	-40.74
5720.00	S	Peak	57.23	11.99	69.22	110.83	-41.61
5724.20	S	Peak	63.75	12.01	75.76	120.4064	-44.65
5725.00	E	Peak	63.63	12.27	75.90	122.23	-46.33

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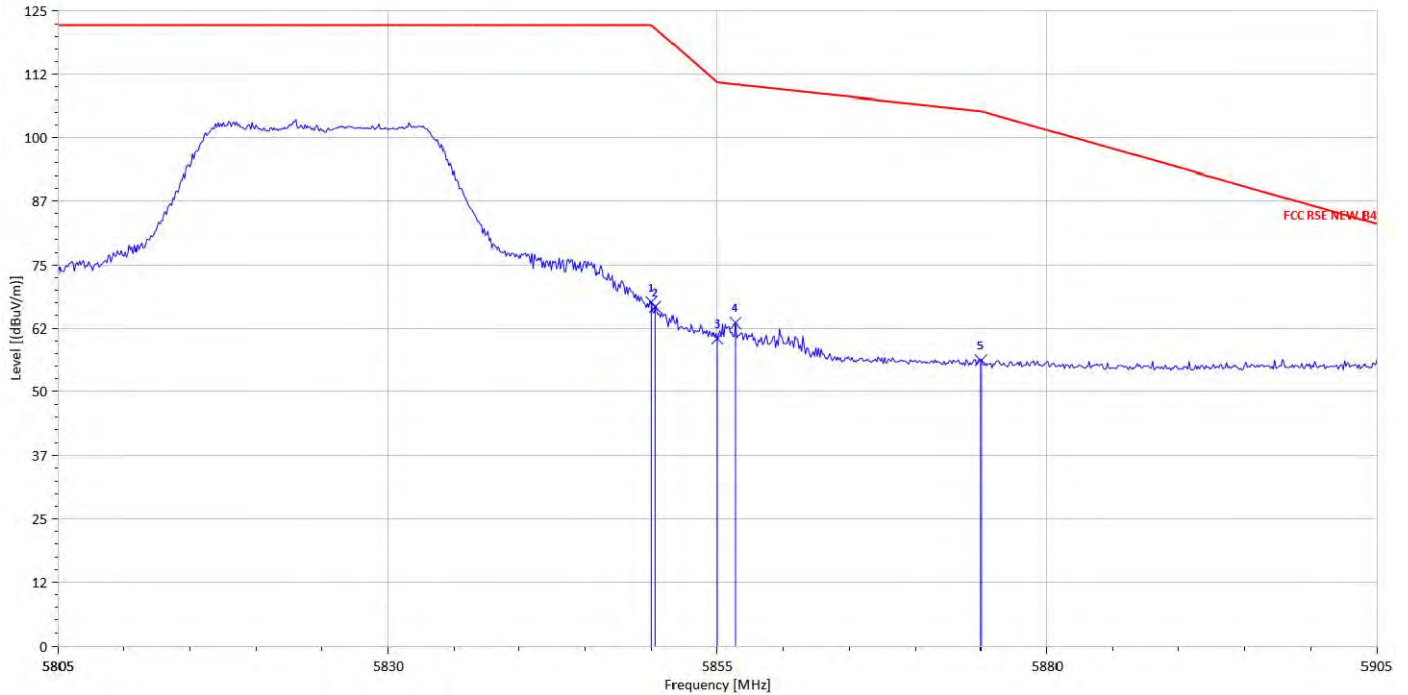
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Operation Band	:802.11 n20 M	Test Date	:2015-02-22
Fundamental Frequency	:5825 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge HIGH	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:VERTICAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE (radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
5850.00	E	Peak	55.01	12.61	67.62	122.23	-54.61
5850.30	S	Peak	54.51	12.15	66.66	121.5464	-54.88
5855.00	S	Peak	48.30	12.24	60.54	110.83	-50.29
5856.40	S	Peak	51.24	12.26	63.50	110.438	-46.94
5875.00	S	Peak	43.95	12.28	56.23	105.23	-49.00

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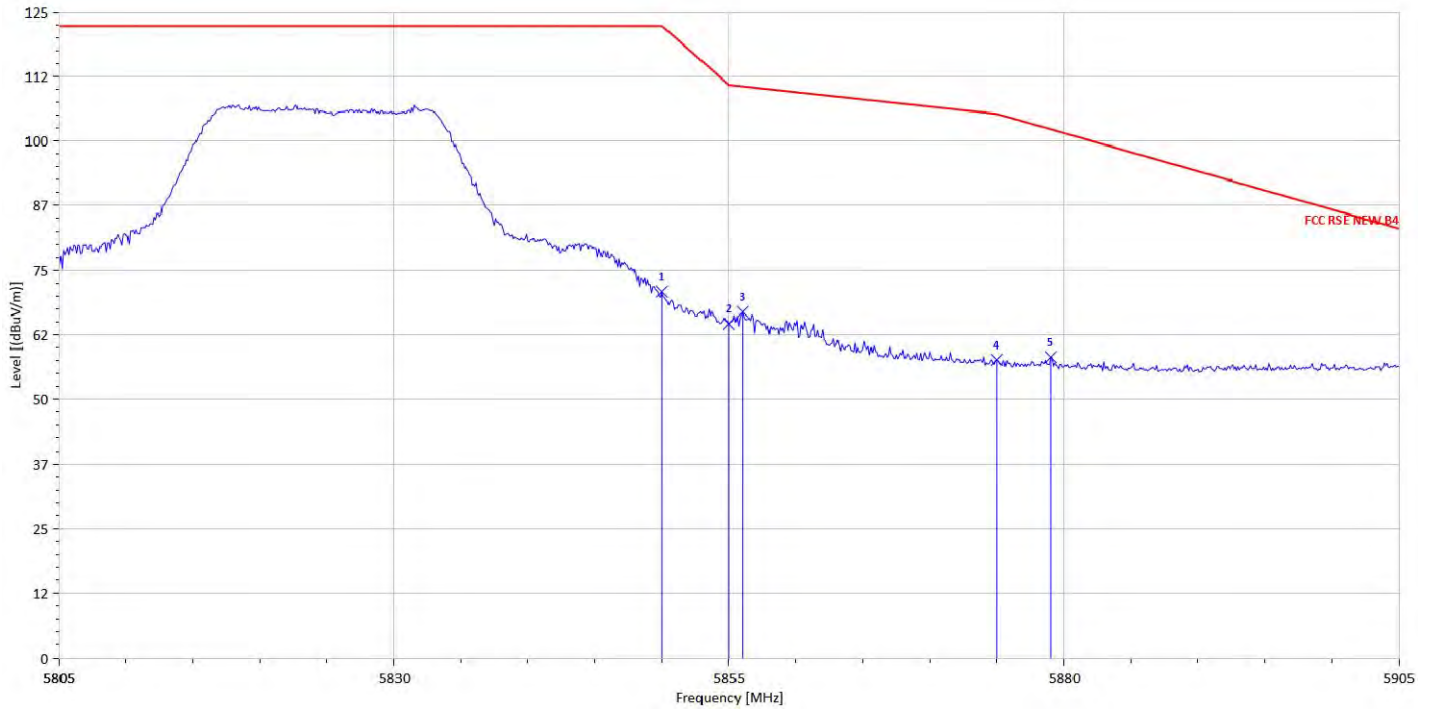
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Operation Band	:802.11 n20 M	Test Date	:2015-02-22
Fundamental Frequency	:5825 MHz	Temp./Humi.	:25.5 deg_C / 63 RH
Operation Mode	:Bandedge HIGH	Engineer	:Vito
EUT Pol.	:E2 Plan	Measurement Antenna Pol.	:HORIZONTAL



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

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

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

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

“---” : denotes Noise Floor.

The trace on RE (radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq. MHz	Detector Mode PK/QP/AV	Note F/H/E/S	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
5850.00	E	Peak	58.27	12.61	70.88	122.23	-51.35
5855.00	S	Peak	52.39	12.24	64.63	110.83	-46.20
5856.00	S	Peak	54.66	12.26	66.92	110.55	-43.63
5875.00	S	Peak	45.37	12.28	57.65	105.23	-47.58
5879.00	S	Peak	45.92	12.26	58.17	102.27	-44.10

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## 11 TRANSMISSION IN THE ABSENCE OF DATA

### 11.1 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.

### 11.2 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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## 12 FREQUENCY STABILITY

### 12.1 Standard Applicable

According to §15.407 (g) 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.

### 12.2 Result:

Refer to next page for plots.

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Operation Mode	802.11 a	Test Date	2015,02,12
Temperature	:24	Test By	Henry
Humidity	:58 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-30	8.51V	36	5180.0000	5,179.880000	0.1200
		44	5220.0000	5,219.880000	0.1200
		48	5240.0000	5,239.850000	0.1500
		52	5260.0000	5,259.830000	0.1700
		60	5300.0000	5,299.850000	0.1500
		64	5320.0000	5,319.910000	0.0900
		100	5500.0000	5,499.820000	0.1800
		116	5580.0000	5,579.860000	0.1400
		140	5700.0000	5,699.820000	0.1800
		149	5745.0000	5,744.891400	0.1086
		157	5785.0000	5,784.820500	0.1795
165	5825.0000	5,824.877600	0.1224		
-30	6.29V	36	5180.0000	5,179.890000	0.1100
		44	5220.0000	5,219.910000	0.0900
		48	5240.0000	5,239.840000	0.1600
		52	5260.0000	5,259.820000	0.1800
		60	5300.0000	5,299.780000	0.2200
		64	5320.0000	5,319.850000	0.1500
		100	5500.0000	5,499.790000	0.2100
		116	5580.0000	5,579.820000	0.1800
		140	5700.0000	5,699.840000	0.1600
		149	5745.0000	5,744.885900	0.1141
		157	5785.0000	5,784.865300	0.1347
165	5825.0000	5,824.847900	0.1521		

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25	7.4V	36	5180.0000	5,179.960000	0.0400
		44	5220.0000	5,219.980000	0.0200
		48	5240.0000	5,239.940000	0.0600
		52	5260.0000	5,259.900000	0.1000
		60	5300.0000	5,299.920000	0.0800
		64	5320.0000	5,319.940000	0.0600
		100	5500.0000	5,499.920000	0.0800
		116	5580.0000	5,579.920000	0.0800
		140	5700.0000	5,699.920000	0.0800
		149	5745.0000	5,744.960000	0.0400
		157	5785.0000	5,784.900000	0.1000
		165	5825.0000	5,824.900000	0.1000
		80	8.51V	36	5180.0000
44	5220.0000			5,219.860000	0.1400
48	5240.0000			5,239.880000	0.1200
52	5260.0000			5,259.830000	0.1700
60	5300.0000			5,299.830000	0.1700
64	5320.0000			5,319.910000	0.0900
100	5500.0000			5,499.770000	0.2300
116	5580.0000			5,579.860000	0.1400
140	5700.0000			5,699.820000	0.1800
149	5745.0000			5,744.889500	0.1105
157	5785.0000			5,784.890900	0.1091
165	5825.0000			5,824.857900	0.1421
80	6.29V			36	5180.0000
		44	5220.0000	5,219.880000	0.1200
		48	5240.0000	5,239.890000	0.1100
		52	5260.0000	5,259.780000	0.2200
		60	5300.0000	5,299.830000	0.1700
		64	5320.0000	5,319.920000	0.0800
		100	5500.0000	5,499.780000	0.2200
		116	5580.0000	5,579.850000	0.1500
		140	5700.0000	5,699.800000	0.2000
		149	5745.0000	5,744.943600	0.0564
		157	5785.0000	5,784.824100	0.1759
		165	5825.0000	5,824.858000	0.1420

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Operation Mode	802.11n_HT20	Test Date	2015,02,12
Temperature	:24	Test By	Henry
Humidity	:58 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
-30	8.51V	36	5180.0000	5,179.940000	0.0600
		44	5220.0000	5,219.900000	0.1000
		48	5240.0000	5,239.770000	0.2300
		52	5260.0000	5,259.960000	0.0400
		60	5300.0000	5,299.880000	0.1200
		64	5320.0000	5,319.850000	0.1500
		100	5500.0000	5,499.890000	0.1100
		116	5580.0000	5,579.790000	0.2100
		140	5700.0000	5,699.860000	0.1400
		149	5745.0000	5,744.842700	0.1573
		157	5785.0000	5,784.869900	0.1301
		165	5825.0000	5,824.865200	0.1348
-30	6.29V	36	5180.0000	5,179.910000	0.0900
		44	5220.0000	5,219.840000	0.1600
		48	5240.0000	5,239.840000	0.1600
		52	5260.0000	5,259.990000	0.0100
		60	5300.0000	5,299.840000	0.1600
		64	5320.0000	5,319.860000	0.1400
		100	5500.0000	5,499.890000	0.1100
		116	5580.0000	5,579.820000	0.1800
		140	5700.0000	5,699.800000	0.2000
		149	5745.0000	5,744.872200	0.1278
		157	5785.0000	5,784.876400	0.1236
		165	5825.0000	5,824.914000	0.0860

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25	7.4V	36	5180.0000	5,179.960000	0.0400
		44	5220.0000	5,219.940000	0.0600
		48	5240.0000	5,239.920000	0.0800
		52	5260.0000	5,260.000000	0.0000
		60	5300.0000	5,299.940000	0.0600
		64	5320.0000	5,319.900000	0.1000
		100	5500.0000	5,499.940000	0.0600
		116	5580.0000	5,579.920000	0.0800
		140	5700.0000	5,699.900000	0.1000
		149	5745.0000	5,744.920000	0.0800
		157	5785.0000	5,784.900000	0.1000
		165	5825.0000	5,824.940000	0.0600
		80	8.51V	36	5180.0000
44	5220.0000			5,219.800000	0.2000
48	5240.0000			5,239.750000	0.2500
52	5260.0000			5,259.880000	0.1200
60	5300.0000			5,299.810000	0.1900
64	5320.0000			5,319.830000	0.1700
100	5500.0000			5,499.790000	0.2100
116	5580.0000			5,579.800000	0.2000
140	5700.0000			5,699.790000	0.2100
149	5745.0000			5,744.874700	0.1253
157	5785.0000			5,784.827500	0.1725
165	5825.0000			5,824.888800	0.1112
80	6.29V			36	5180.0000
		44	5220.0000	5,219.810000	0.1900
		48	5240.0000	5,239.740000	0.2600
		52	5260.0000	5,259.930000	0.0700
		60	5300.0000	5,299.780000	0.2200
		64	5320.0000	5,319.830000	0.1700
		100	5500.0000	5,499.800000	0.2000
		116	5580.0000	5,579.820000	0.1800
		140	5700.0000	5,699.820000	0.1800
		149	5745.0000	5,744.880500	0.1195
		157	5785.0000	5,784.882200	0.1178
		165	5825.0000	5,824.888900	0.1111

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## 13 ANTENNA REQUIREMENT

### 13.1 Standard Applicable

For intentional device, 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.

### 13.2 Antenna Connected Construction

The directional gains of antenna used for transmitting is 2.96dBi (5150MHz– 5250MHz), 2.96dBi (5250MHz– 5350MHz), 2.91dBi (5470MHz– 5725MHz), 2.11dBi (5725MHz– 5850MHz) and the antenna connector is designed with unique type RF connector and no consideration of replacement. Please see EUT photo and antenna spec. for details.

*~ End of Report ~*

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