

# TEST REPORT

FCC ID: SZRHD5-600

Product: Digital Video Recorder

Model No.: HD5-600

Additional Model No.: N/A

Trade Mark:



Report No.: TCT161117E010

Issued Date: Dec. 09, 2016

Issued for:

**Radio Engineering Industries Inc.**

**6534 L Street Omaha, Nebraska 68117, United States**

Issued By:

**Shenzhen Tongce Testing Lab.**

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## 1. Test Certification

<b>Product:</b>	Digital Video Recorder
<b>Model No.:</b>	HD5-600
<b>Additional Model No.:</b>	N/A
<b>Applicant:</b>	Radio Engineering Industries Inc.
<b>Address:</b>	6534 L Street Omaha, Nebraska 68117, United States
<b>Manufacturer:</b>	Radio Engineering Industries Inc.
<b>Address:</b>	6534 L Street Omaha, Nebraska 68117, United States
<b>Date of Test:</b>	Nov. 17 – Dec. 08, 2016
<b>Applicable Standards:</b>	FCC CFR Title 47 Part 15 Subpart C Section 15.247 KDB 558074 D01 DTS Meas Guidance v03r05 KDB 662911 D01 Multiple Transmitter Output v02r01

*The above equipment has been tested by Shenzhen Tongce Testing Lab. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.*

Tested By:



Jin Wang

Date:

Dec. 08, 2016

Reviewed By:



Joe Zhou

Date:

Dec. 09, 2016

Approved By:



Tomsin

Date:

Dec. 09, 2016


## 2. Test Result Summary

Requirement	CFR 47 Section	Result
Antenna requirement	§15.203/§15.247 (c)	PASS
AC Power Line Conducted Emission	§15.207	N/A
Conducted Output Power	§15.247 (b)(3)	PASS
6dB Emission Bandwidth	§15.247 (a)(2)	PASS
Power Spectral Density	§15.247 (e)	PASS
Band Edge	§15.247(d)	PASS
Spurious Emission	§15.205/§15.209	PASS

**Note:**

1. PASS: Test item meets the requirement.
2. Fail: Test item does not meet the requirement.
3. N/A: Test case does not apply to the test object.
4. The test result judgment is decided by the limit of test standard.

### 3. EUT Description

<b>Product Name:</b>	Digital Video Recorder
<b>Model :</b>	HD5-600
<b>Additional Model:</b>	N/A
<b>Trade Mark:</b>	
<b>Trade Mark:</b>	N/A
<b>Operation Frequency:</b>	2412MHz~2462MHz (802.11b/802.11g/802.11n(HT20)) 2422MHz~2452MHz (802.11n(HT40))
<b>Channel Separation:</b>	5MHz
<b>Number of Channel:</b>	11 for 802.11b/802.11g/802.11n(HT20) 7 for 802.11n(HT40)
<b>Modulation Technology: (IEEE 802.11b)</b>	Direct Sequence Spread Spectrum (DSSS)
<b>Modulation Technology: (IEEE 802.11g/802.11n)</b>	Orthogonal Frequency Division Multiplexing(OFDM)
<b>Data speed (IEEE 802.11b):</b>	1Mbps, 2Mbps, 5.5Mbps, 11Mbps
<b>Data speed (IEEE 802.11g):</b>	6Mbps, 9Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps, 54Mbps
<b>Data speed (IEEE 802.11n):</b>	Up to 300Mbps
<b>Antenna Type:</b>	External antenna
<b>Antenna Gain:</b>	4.5dBi
<b>Power Supply:</b>	DC 12V

#### Operation Frequency each of channel For 802.11b/g/n(HT20)

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		

#### Operation Frequency each of channel For 802.11n (HT40)

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
--	--	4	2427MHz	7	2442MHz	--	--
--	--	5	2432MHz	8	2447MHz	--	--
3	2422MHz	6	2437MHz	9	2452MHz		

**Note:**

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

**802.11b/802.11g/802.11n (HT20)**

Channel	Frequency
The lowest channel	2412MHz
The middle channel	2437MHz
The Highest channel	2462MHz

**802.11n (HT40)**

Channel	Frequency
The lowest channel	2422MHz
The middle channel	2437MHz
The Highest channel	2452MHz

## 4. Genera Information

### 4.1. Test environment and mode

#### Operating Environment:

Temperature:	25.0 °C
Humidity:	56 % RH
Atmospheric Pressure:	1010 mbar

#### Test Mode:

Engineering mode:	Keep the EUT in continuous transmitting by select channel and modulations (The value of duty cycle is 98.46%)
-------------------	---

The sample was placed (0.8m below 1GHz, 1.5m above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

**Per-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.**

Mode	Data rate
802.11b	1Mbps
802.11g	6Mbps
802.11n(H20)	6.5Mbps
802.11n(H40)	13.5Mbps

#### Final Test Mode:

Operation mode:	Keep the EUT in continuous transmitting with modulation
-----------------	---

According to ANSI C63.4 standards, the test results are both the “worst case” and “worst setup” 1Mbps for 802.11b, 6Mbps for 802.11g, 6.5Mbps for 802.11n(H20). Duty cycle setting during the transmission is 98.5% with maximum power setting for all modulations.

## 4.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
Lead-acid Battery	DC12VED	/	/	/

**Note:**

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
3. For conducted measurements (Output Power, 6dB Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.



## 5. Facilities and Accreditations

### 5.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

- FCC - Registration No.: 572331

Shenzhen Tongce Testing Lab

The 3m Semi-anechoic chamber has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- IC - Registration No.: 10668A-1

The 3m Semi-anechoic chamber of Shenzhen TCT Testing Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

- CNAS - Registration No.: CNAS L6165

Shenzhen TCT Testing Technology Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6165.

### 5.2. Location

Shenzhen Tongce Testing Lab

Address: 1F, Leinuo Watch Building, Fuyong Town, Baoan Dist, Shenzhen, China

Tel: 86-755-36638142

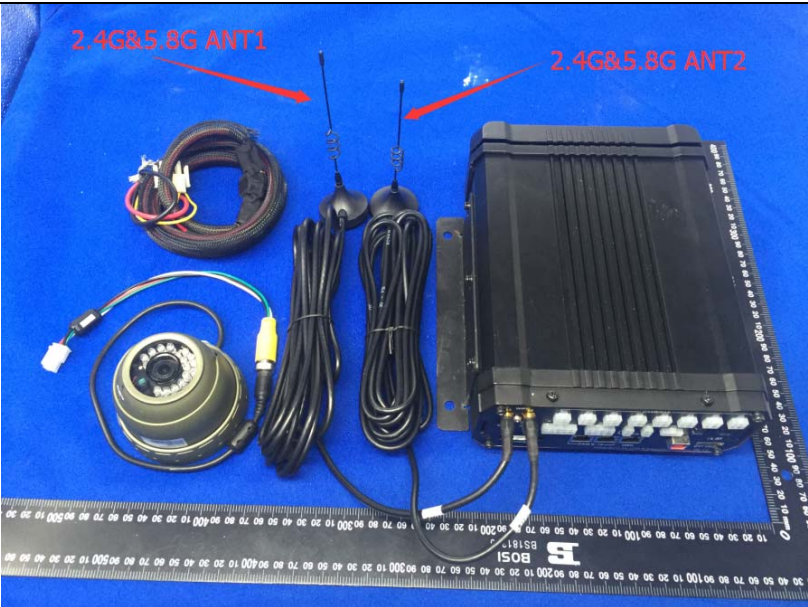
### 5.3. Measurement Uncertainty

The reported uncertainty of measurement  $y \pm U$ , where expended uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	$\pm 2.56\text{dB}$
2	RF power, conducted	$\pm 0.12\text{dB}$
3	Spurious emissions, conducted	$\pm 0.11\text{dB}$
4	All emissions, radiated(<1G)	$\pm 3.92\text{dB}$
5	All emissions, radiated(>1G)	$\pm 4.28\text{dB}$
6	Temperature	$\pm 0.1^{\circ}\text{C}$
7	Humidity	$\pm 1.0\%$

## 6. Test Results and Measurement Data

### 6.1. Antenna requirement

<b>Standard requirement:</b>	FCC Part15 C Section 15.203 /247(c)
<p>15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</p> <p>15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.</p>	
<b>E.U.T Antenna:</b>	
<p>The EUT has two external antennas which is only the antenna type used, and the best case gains of the both antennas are 4.5dBi.</p>	
	

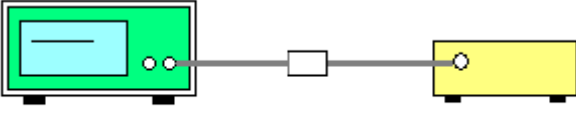
## 6.2. Conducted Emission

### 6.2.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.207														
Test Method:	ANSI C63.4:2014														
Frequency Range:	150 kHz to 30 MHz														
Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto														
Limits:	<table><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBuV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>5-30</td><td>60</td><td>50</td></tr></table>	Frequency range (MHz)	Limit (dBuV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dBuV)														
	Quasi-peak	Average													
0.15-0.5	66 to 56*	56 to 46*													
0.5-5	56	46													
5-30	60	50													
Test Setup:	<div><p>Reference Plane</p><p>40cm 80cm</p><p>E.U.T AC power LISN Filter AC power EMI Receiver</p><p>Test table/Insulation plane</p><p>Remark E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p></div>														
Test Mode:	Charging + transmitting with modulation														
Test Procedure:	<div><div>1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.</div><div>2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).</div><div>3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.</div></div>														
Test Result:	N/A														

### 6.3. Maximum Conducted (Average) Output Power

#### 6.3.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	KDB558074, KDB662911
Limit:	30dBm
Test Setup:	 Spectrum Analyzer                      EUT
Test Mode:	Transmitting mode with modulation
Test Procedure:	<ol style="list-style-type: none"><li>1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v03r02.</li><li>2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.</li><li>3. Set to the maximum power setting and enable the EUT transmit continuously.</li><li>4. Measure the conducted output power and record the results in the test report.</li></ol>
Test Result:	PASS

#### 6.3.2. Test Instruments

RF Test Room				
Equipment	Manufacturer	Model	Date of Cal.	Due Date
Spectrum Analyzer	Agilent	N9020A	Aug. 13, 2016	Aug. 12, 2017
RF cable	TCT	RE-06	Aug. 13, 2016	Aug. 12, 2017
Antenna Connector	TCT	RFC-01	Aug. 13, 2016	Aug. 12, 2017

**Note:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

### 6.3.3. Test Data

Configuration IEEE 802.11b/ Antenna 1+Antenna 2				
Test channel	Maximum Conducted (Average) Output Power (dBm)		Limit (dBm)	Result
	Antenna 1	Antenna 2		
Lowest	12.38	12.22	30	PASS
Middle	12.15	10.85	30	PASS
Highest	12.27	10.83	30	PASS

Configuration IEEE 802.11g/ Antenna 1+Antenna 2				
Test channel	Maximum Conducted (Average) Output Power (dBm)		Limit (dBm)	Result
	Antenna 1	Antenna 2		
Lowest	9.95	10.44	30	PASS
Middle	9.98	9.75	30	PASS
Highest	9.43	9.73	30	PASS

Configuration IEEE 802.11n(H20)/ Antenna 1+Antenna 2					
Test channel	Maximum Conducted (Average) Output Power (dBm)			Limit (dBm)	Result
	Antenna 1	Antenna 2	Total		
Lowest	8.61	10.19	12.48	28.49	PASS
Middle	8.35	9.54	12.00	28.49	PASS
Highest	8.6	9.62	12.15	28.49	PASS

Configuration IEEE 802.11n(H40)/ Antenna 1+Antenna 2					
Test channel	Maximum Conducted (Average) Output Power (dBm)			Limit (dBm)	Result
	Antenna 1	Antenna 2	Total		
Lowest	8.73	10.09	12.47	28.49	PASS
Middle	8.84	9.84	12.38	28.49	PASS
Highest	8.96	10.12	12.59	28.49	PASS

**Note:** The 802.11n mode supports MIMO,  $G_{ANT}=4.5\text{dBi}$ , Array Gain= $10\log(N_{ANT}/N_{SS})=3.01\text{dBi}$

Directional Gain= $G_{ANT} + \text{Array Gain}=7.51\text{dBi}$ , So limit= $30-(7.51-6)=28.49\text{dBm}$

Test plots as follows:

**Antenna 1:  
802.11b Modulation**

**Lowest channel**



**Middle channel**



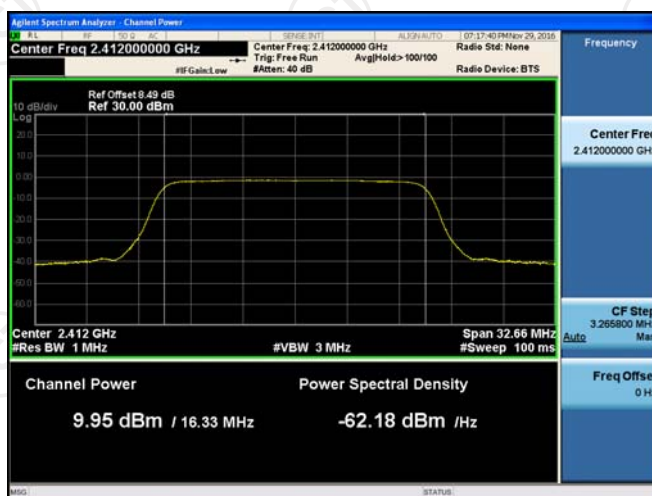
**Highest channel**



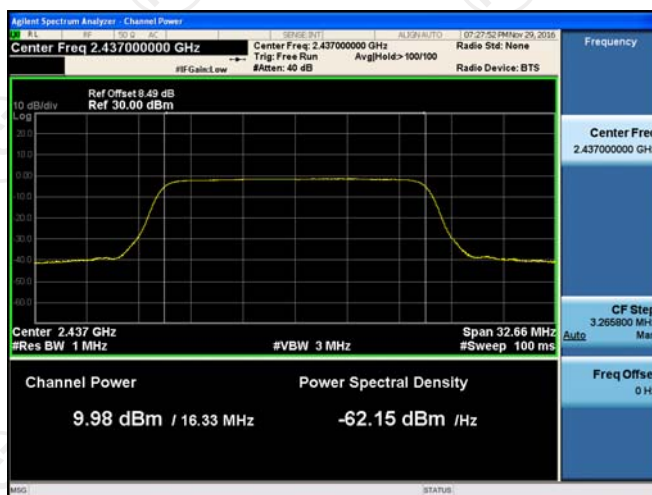


## 802.11g Modulation

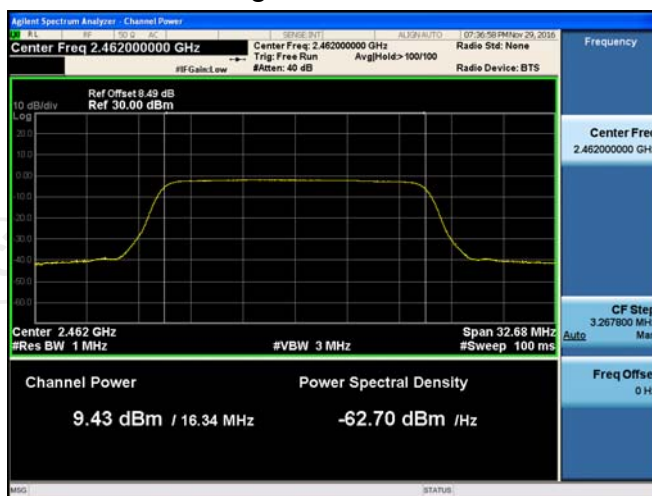
### Lowest channel



### Middle channel



### Highest channel

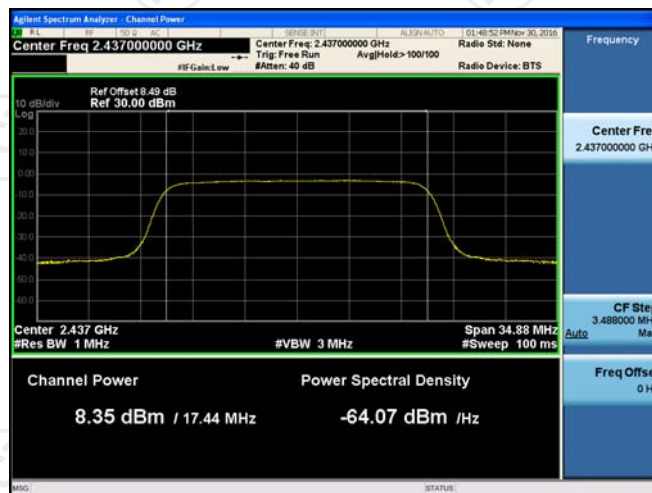


## 802.11n (HT20) Modulation

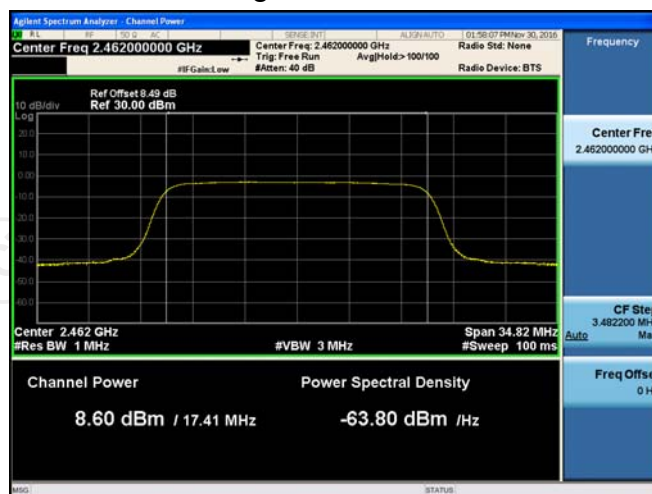
### Lowest channel



### Middle channel



### Highest channel



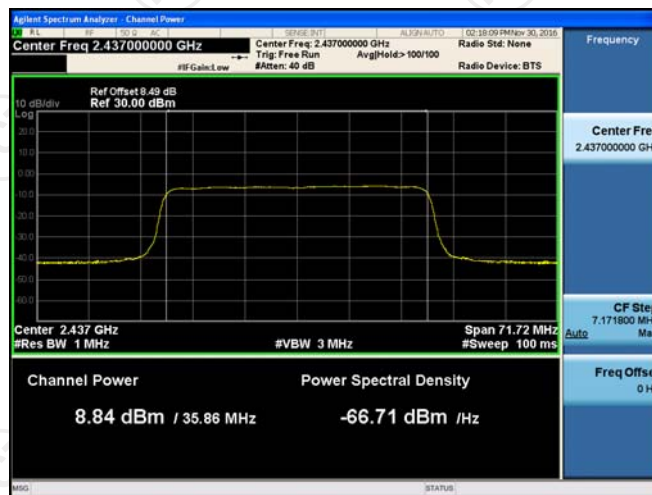


## 802.11n (HT40) Modulation

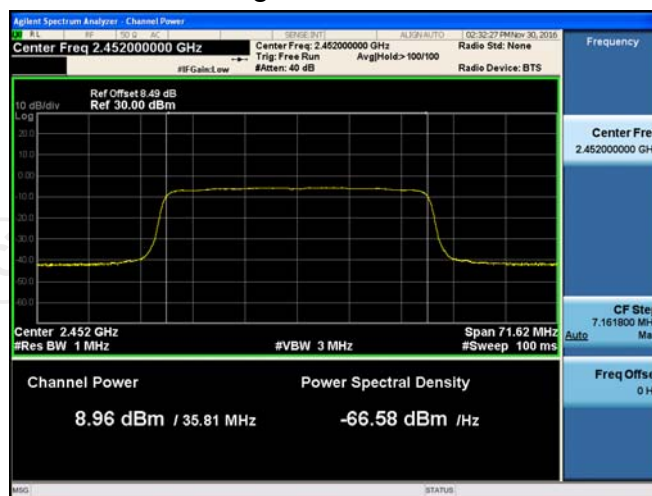
### Lowest channel



### Middle channel

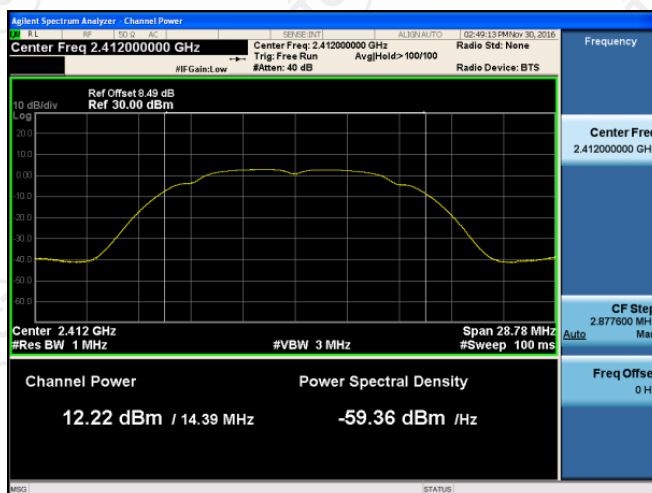


### Highest channel

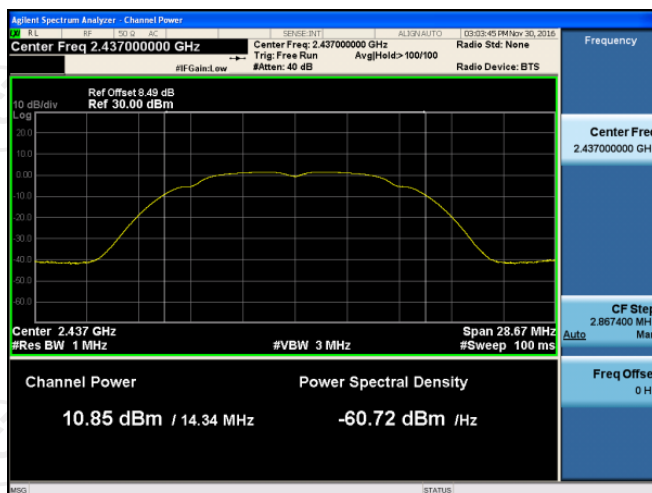


## Antenna 2: 802.11b Modulation

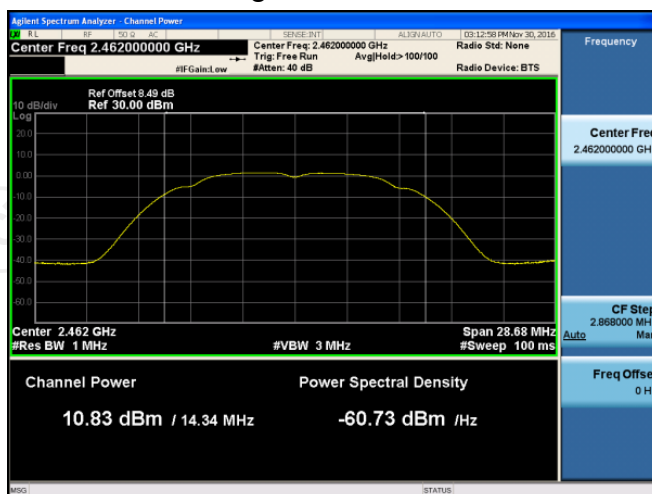
### Lowest channel



### Middle channel

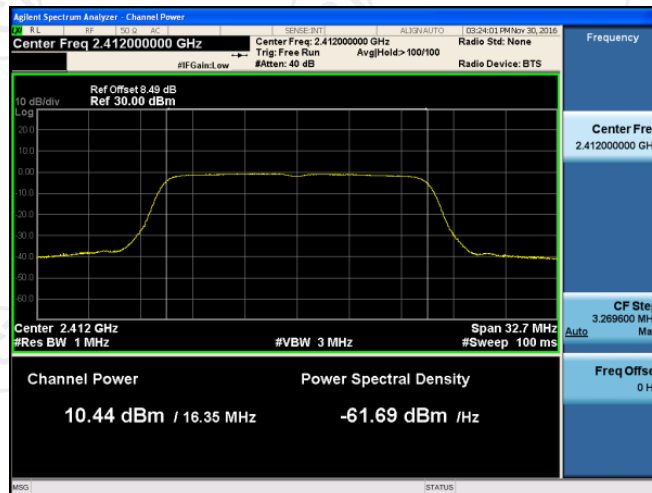


### Highest channel

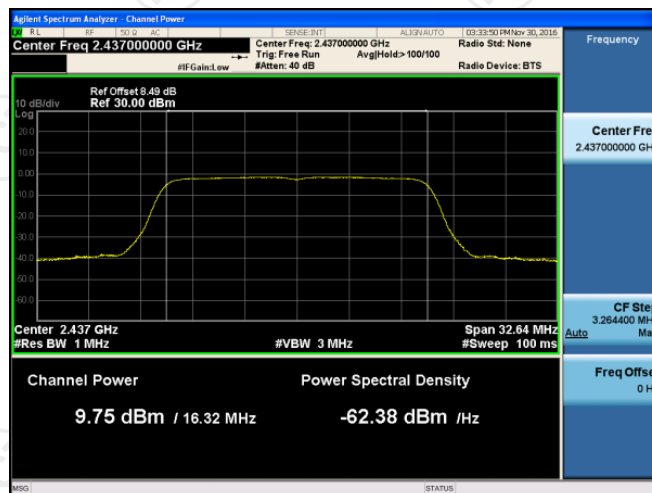


## 802.11g Modulation

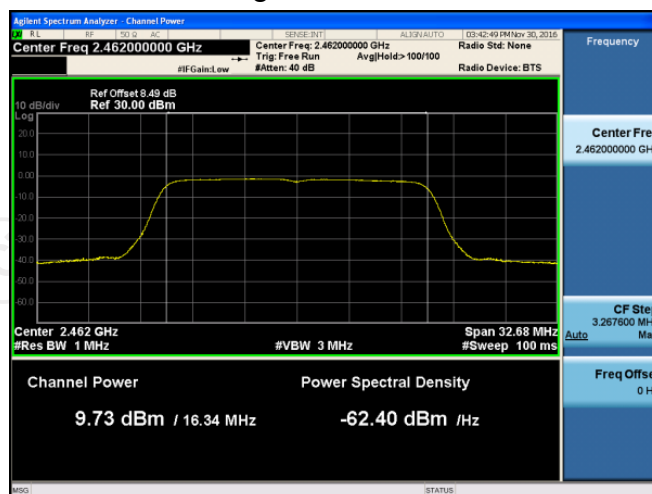
### Lowest channel



### Middle channel

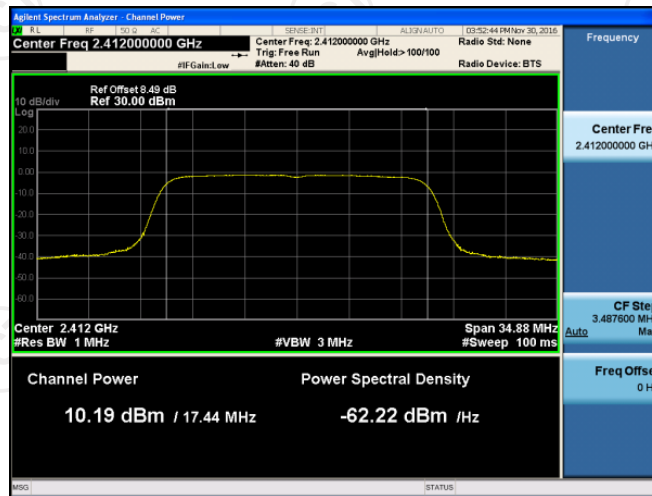


### Highest channel

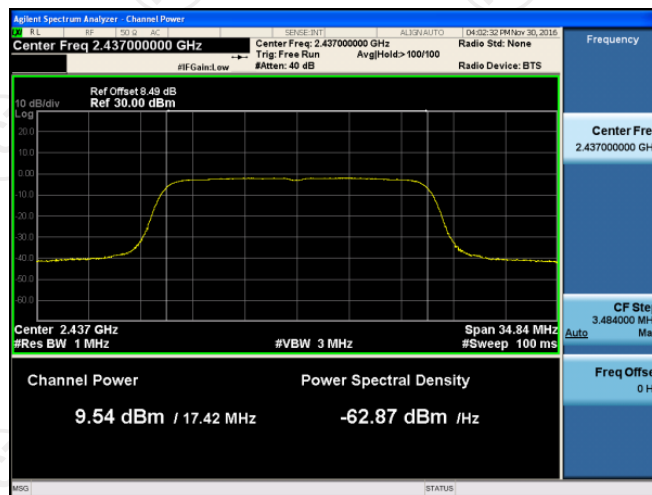


## 802.11n (HT20) Modulation

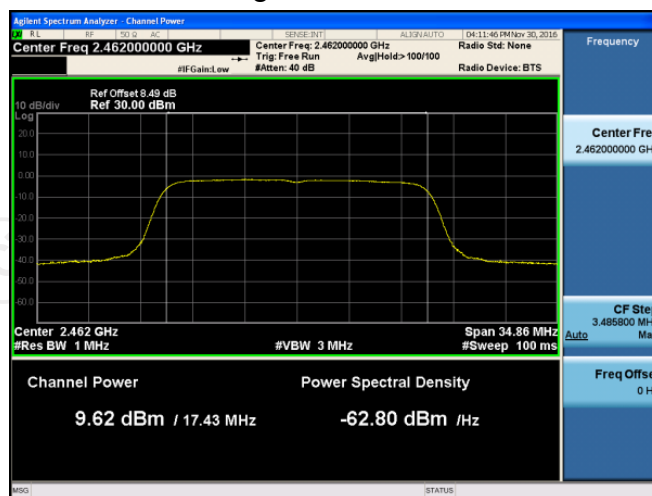
### Lowest channel



### Middle channel

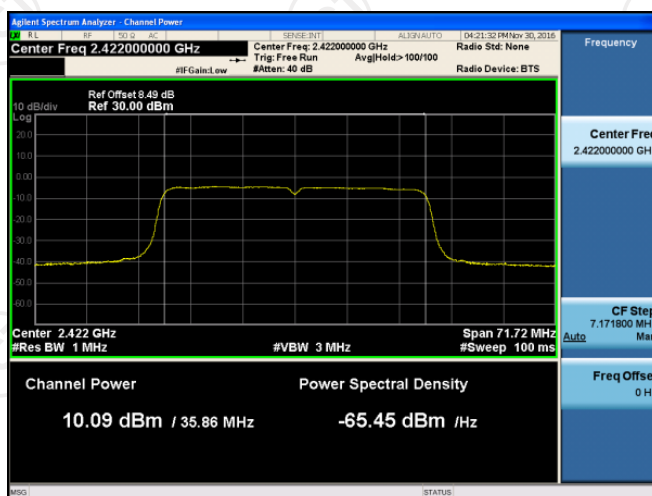


### Highest channel

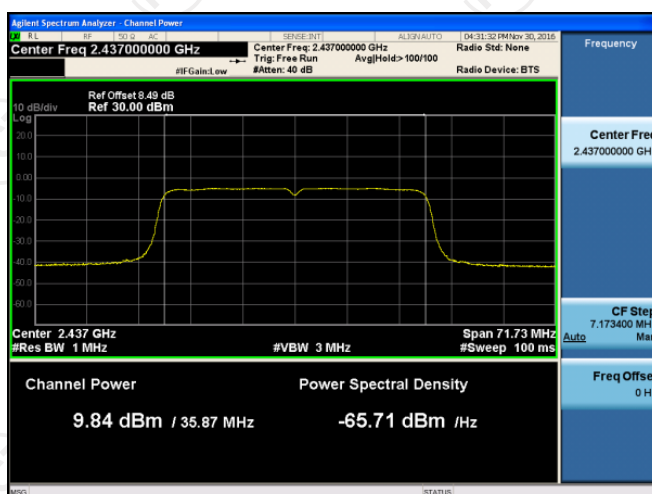


## 802.11n (HT40) Modulation

### Lowest channel



### Middle channel

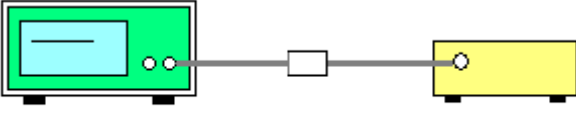


### Highest channel



## 6.4. Emission Bandwidth

### 6.4.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	KDB558074
Limit:	>500kHz
Test Setup:	 <p>Spectrum Analyzer                      EUT</p>
Test Mode:	Transmitting mode with modulation
Test Procedure:	<ol style="list-style-type: none"> <li>1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v03r02.</li> <li>2. Set to the maximum power setting and enable the EUT transmit continuously.</li> <li>3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6dB bandwidth must be greater than 500 kHz.</li> <li>4. Measure and record the results in the test report.</li> </ol>
Test Result:	PASS

### 6.4.2. Test Instruments

RF Test Room				
Equipment	Manufacturer	Model	Date of Cal.	Due Date
Spectrum Analyzer	Agilent	N9020A	Aug. 13, 2016	Aug. 12, 2017
RF cable	TCT	RE-06	Aug. 13, 2016	Aug. 12, 2017
Antenna Connector	TCT	RFC-01	Aug. 13, 2016	Aug. 12, 2017

**Note:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

### 6.4.3. Test data

#### Antenna 1:

Test channel	6dB Emission Bandwidth (MHz)			
	802.11b	802.11g	802.11n(H20)	802.11n(H40)
Lowest	11.11	16.28	15.92	35.33
Middle	12.05	16.3	16.86	35.04
Highest	11.08	16.29	16.05	34.93
Limit:	>500k			
Test Result:	PASS			

#### Antenna 2:

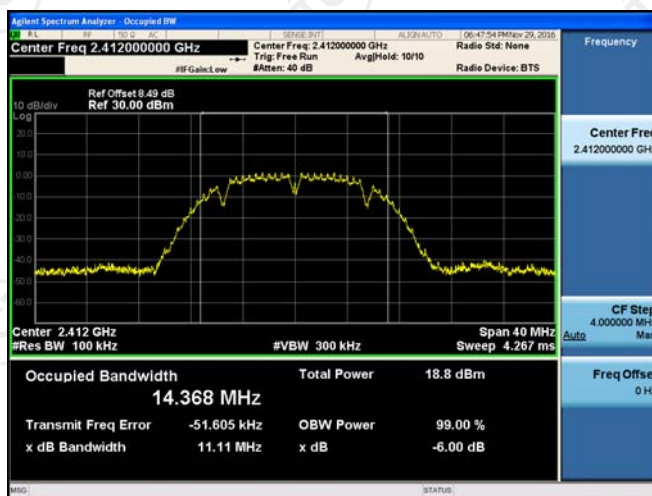
Test channel	6dB Emission Bandwidth (MHz)			
	802.11b	802.11g	802.11n(H20)	802.11n(H40)
Lowest	11.08	16.07	16.39	35.28
Middle	12.04	16.28	16.44	35.24
Highest	11.12	16.03	16.23	34.81
Limit:	>500k			
Test Result:	PASS			

Test plots as follows:

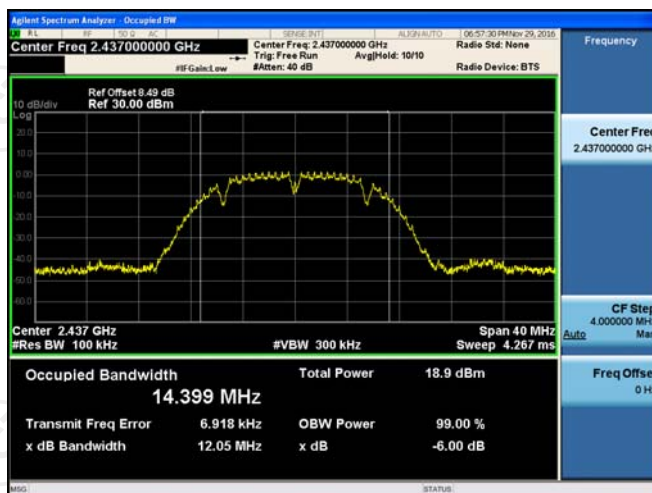


Antenna 1:  
802.11b Modulation

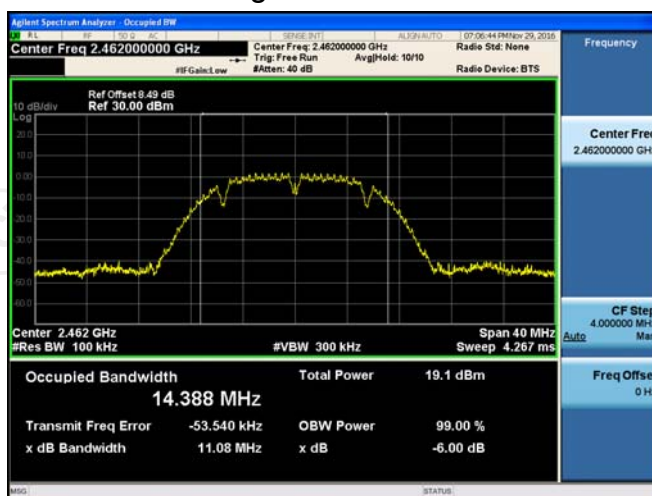
Lowest channel



Middle channel



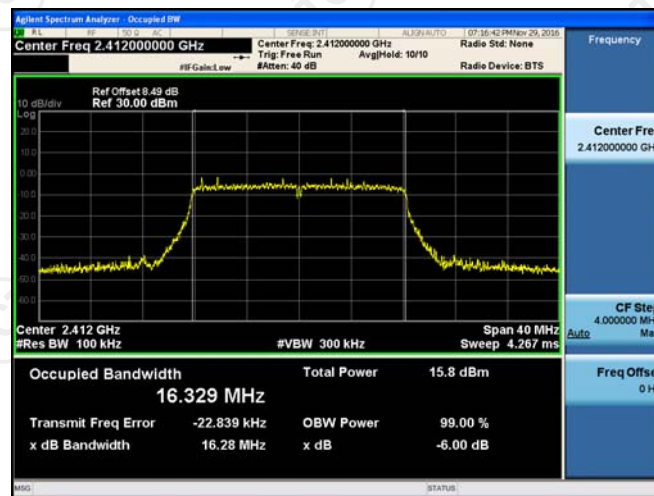
Highest channel



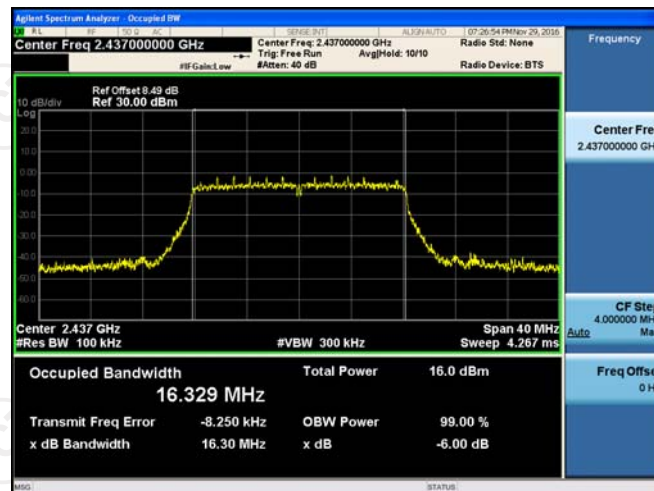


## 802.11g Modulation

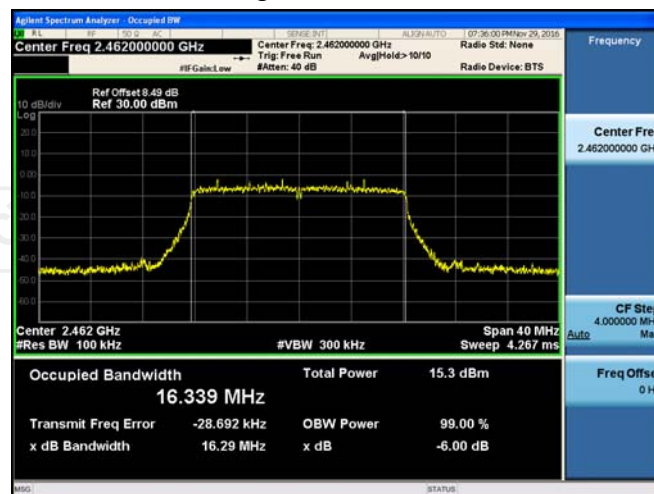
### Lowest channel



### Middle channel

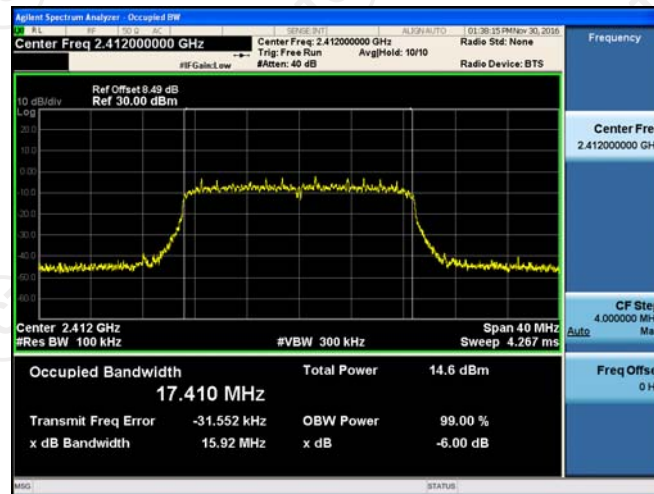


### Highest channel

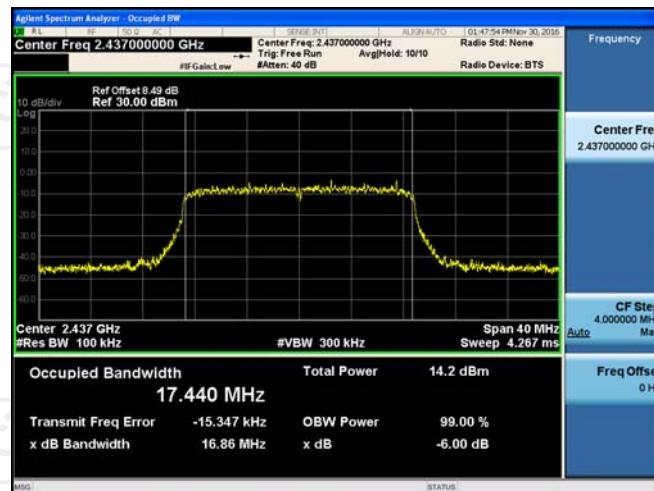


## 802.11n (HT20) Modulation

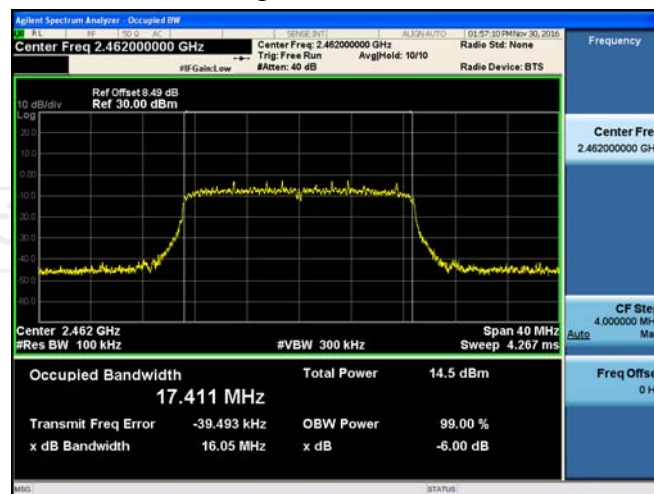
### Lowest channel



### Middle channel

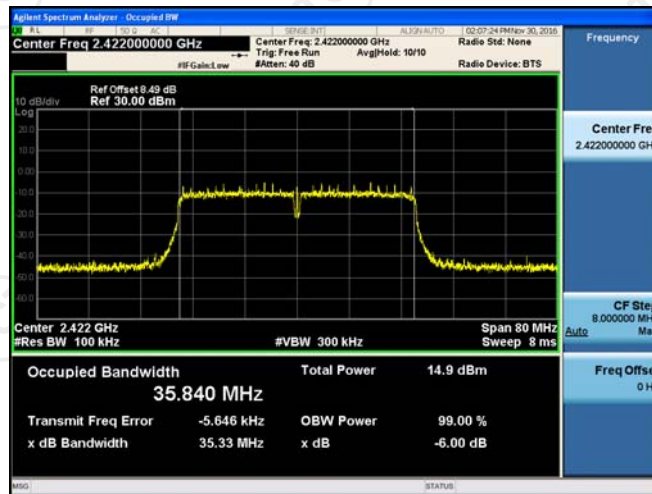


### Highest channel

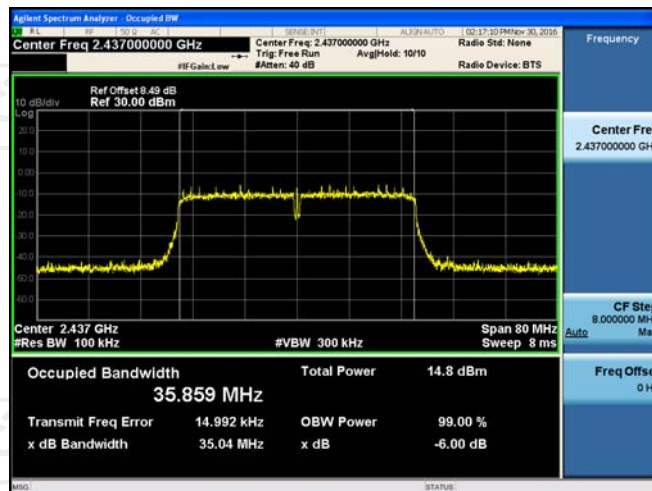


## 802.11n (HT40) Modulation

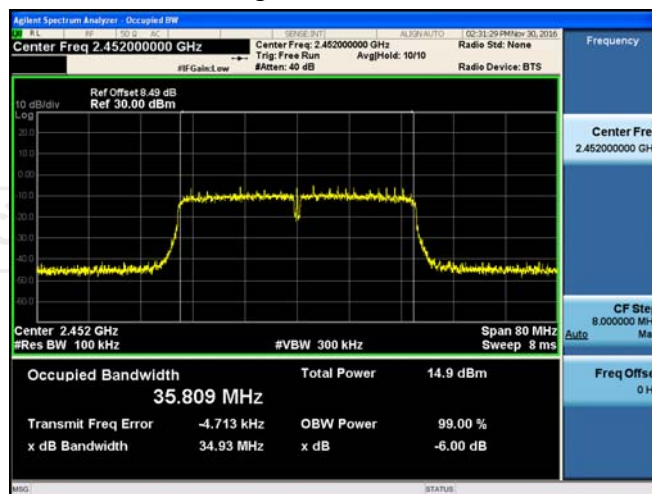
### Lowest channel



### Middle channel

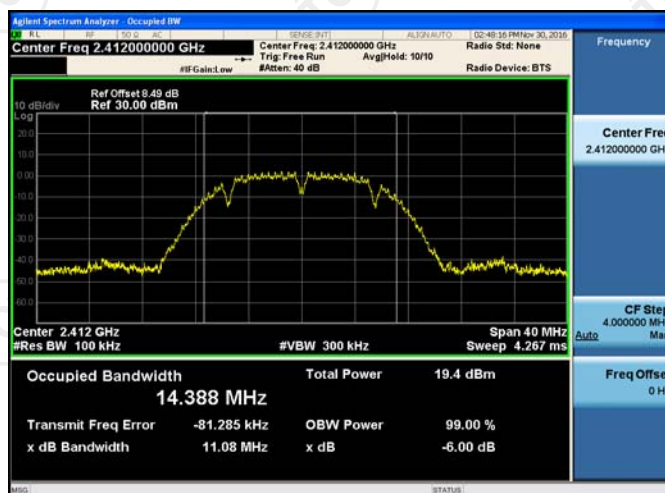


### Highest channel

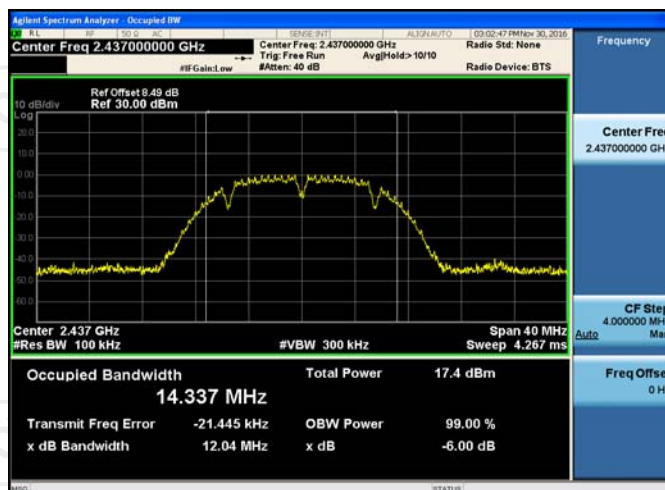


## Antenna 2: 802.11b Modulation

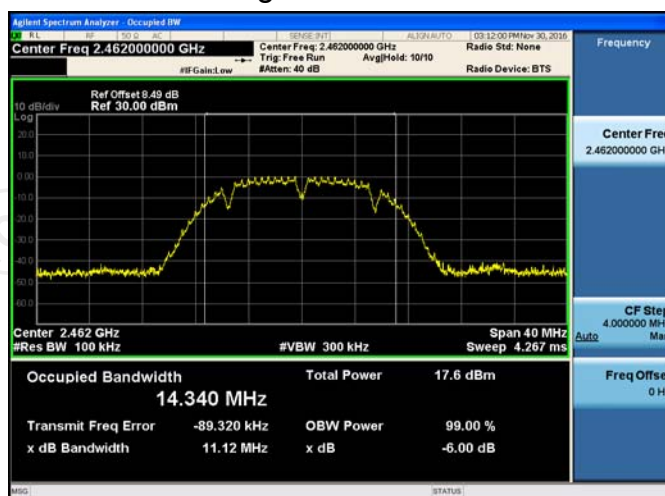
### Lowest channel



### Middle channel



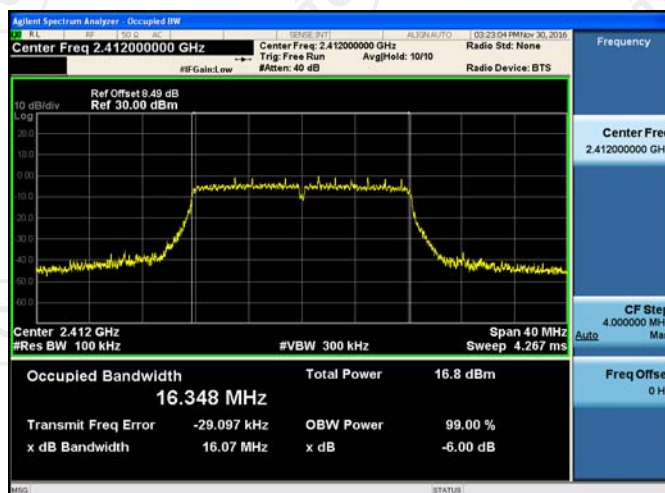
### Highest channel



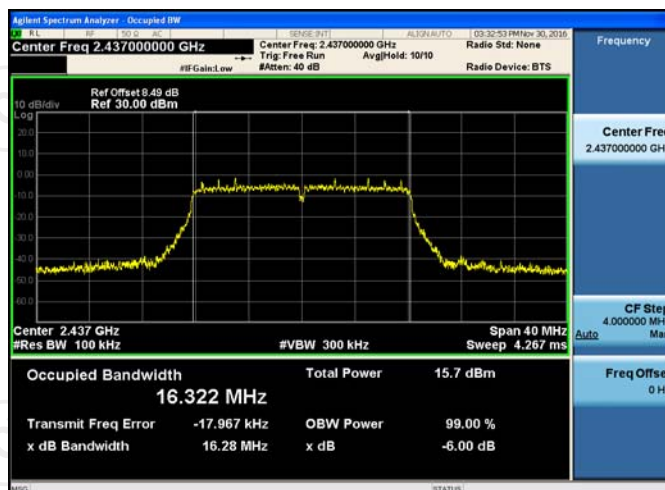


## 802.11g Modulation

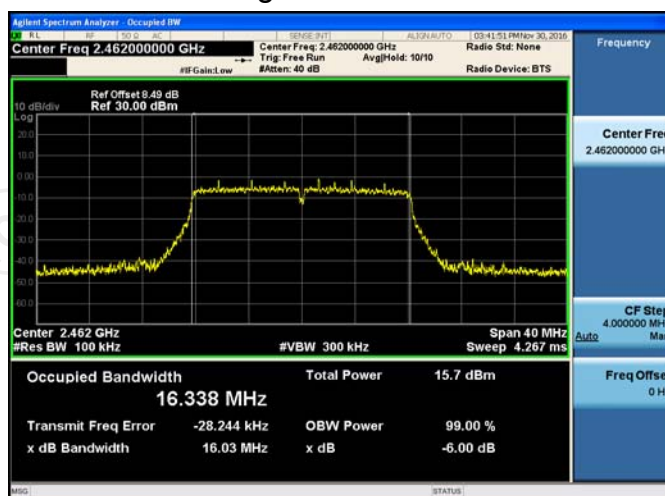
### Lowest channel



### Middle channel

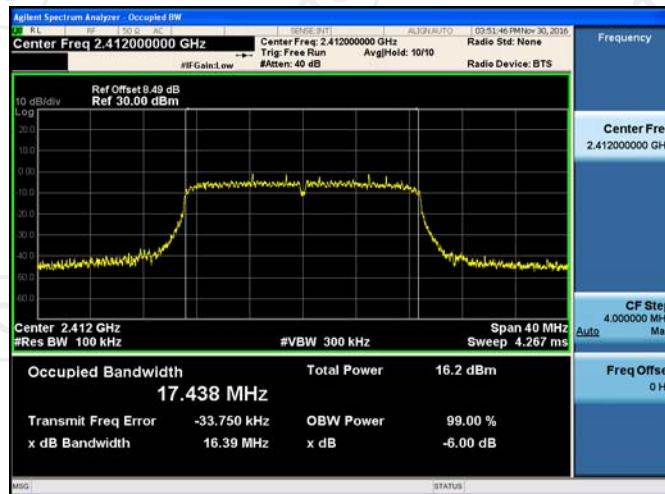


### Highest channel

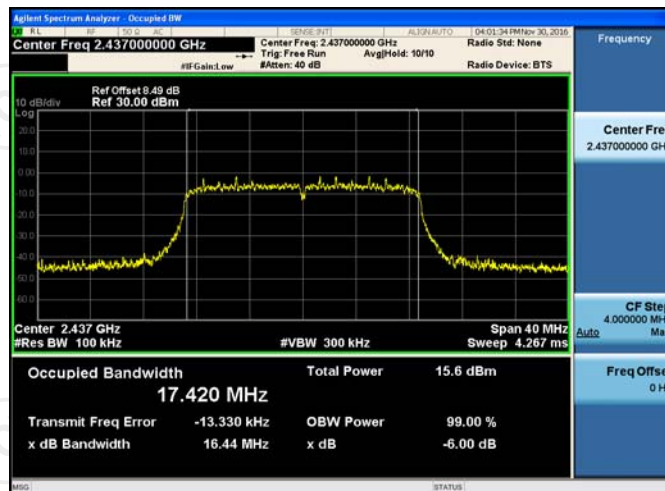


## 802.11n (HT20) Modulation

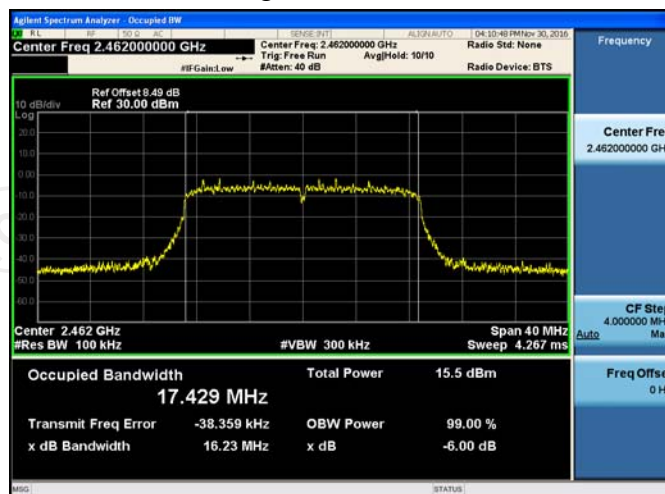
### Lowest channel



### Middle channel

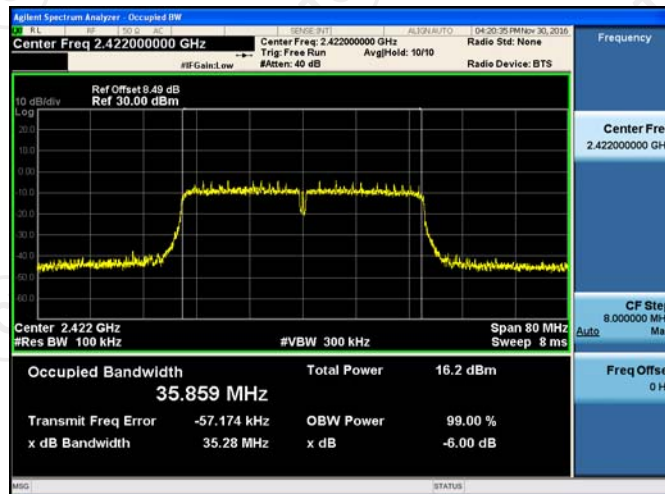


### Highest channel

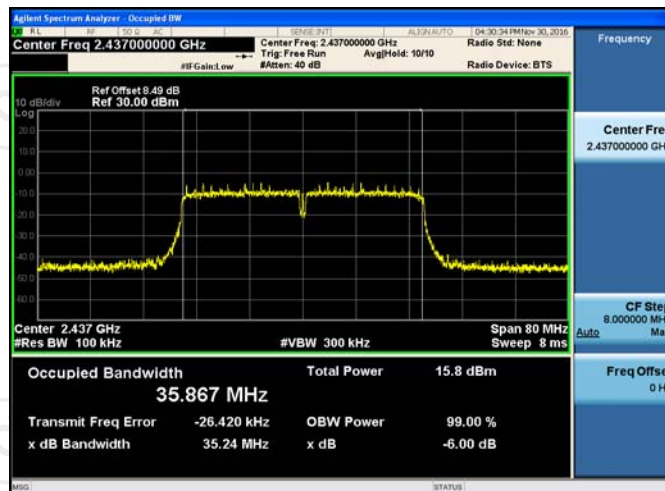


## 802.11n (HT40) Modulation

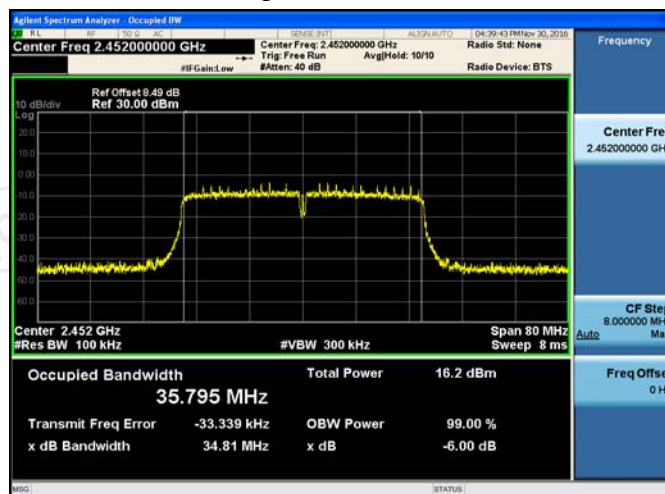
### Lowest channel



### Middle channel




### Highest channel



## 6.5. Power Spectral Density

### 6.5.1. Test Specification

<b>Test Requirement:</b>	FCC Part15 C Section 15.247 (e)
<b>Test Method:</b>	KDB558074, KDB662911
<b>Limit:</b>	The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.
<b>Test Setup:</b>	 <p style="text-align: center;">Spectrum Analyzer                      EUT</p>
<b>Test Mode:</b>	Transmitting mode with modulation
<b>Test Procedure:</b>	<ol style="list-style-type: none"> <li>1. The testing follows Measurement Procedure 10.3 Method AVGPSPD of FCC KDB Publication No.558074 D01 DTS Meas. Guidance v03r02</li> <li>2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.</li> <li>3. Set to the maximum power setting and enable the EUT transmit continuously.</li> <li>4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW): <math>3\text{ kHz} \leq \text{RBW} \leq 100\text{ kHz}</math>. Video bandwidth VBW <math>\geq 3 \times \text{RBW}</math>. Set the span to at least 1.5 times the OBW.</li> <li>5. Detector = RMS, Sweep time = auto couple.</li> <li>6. Employ trace averaging (RMS) mode over a minimum of 100 traces. Use the peak marker function to determine the maximum power level.</li> <li>6. Measure and record the results in the test report.</li> </ol>
<b>Test Result:</b>	PASS

### 6.5.2. Test Instruments

RF Test Room				
Equipment	Manufacturer	Model	Date of Cal.	Due Date
Spectrum Analyzer	Agilent	N9020A	Aug. 13, 2016	Aug. 12, 2017
RF cable	TCT	RE-06	Aug. 13, 2016	Aug. 12, 2017
Antenna Connector	TCT	RFC-01	Aug. 13, 2016	Aug. 12, 2017



**Note:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

## 6.5.3. Test data

Configuration IEEE 802.11b/ Antenna 1, Antenna 2				
Test channel	AVG Power Spectral Density (dBm/3kHz)		Limit	Result
	Antenna 1	Antenna 2		
Lowest	-13.019	-17.886	8dBm/3kHz	PASS
Middle	-13.456	-19.111	8dBm/3kHz	PASS
Highest	-13.074	-13.541	8dBm/3kHz	PASS

Configuration IEEE 802.11g/ Antenna 1, Antenna 2				
Test channel	AVG Power Spectral Density (dBm/3kHz)		Limit	Result
	Antenna 1	Antenna 2		
Lowest	-11.118	-17.264	8dBm/3kHz	PASS
Middle	-11.659	-18.207	8dBm/3kHz	PASS
Highest	-11.507	-19.963	8dBm/3kHz	PASS

Configuration IEEE 802.11n (HT20)/ Antenna 1, Antenna 2					
Test channel	AVG Power Spectral Density (dBm/3kHz)			Limit	Result
	Antenna 1	Antenna 2	Total		
Lowest	-11.783	-17.550	-10.76	6.49dBm/3kHz	PASS
Middle	-12.833	-17.956	-11.67	6.49dBm/3kHz	PASS
Highest	-12.747	-18.142	-11.65	6.49dBm/3kHz	PASS

Configuration IEEE 802.11n (HT40)/ Antenna 1, Antenna 2					
Test channel	AVG Power Spectral Density (dBm/3kHz)			Limit	Result
	Antenna 1	Antenna 2	Total		
Lowest	-15.371	-20.209	-14.14	6.49dBm/3kHz	PASS
Middle	-16.256	-21.716	-15.17	6.49dBm/3kHz	PASS
Highest	-16.557	-22.498	-15.57	6.49dBm/3kHz	PASS

**Note:** The 802.11n mode supports MIMO,  $G_{ANT}=4.5\text{dBi}$ , Array Gain= $10\log(N_{ANT}/N_{SS})=3.01\text{dBi}$

Directional Gain= $G_{ANT} + \text{Array Gain}=7.51\text{dBi}$ , So limit= $8-(7.51-6)=6.49\text{dBm/3kHz}$

Test plots as follows:

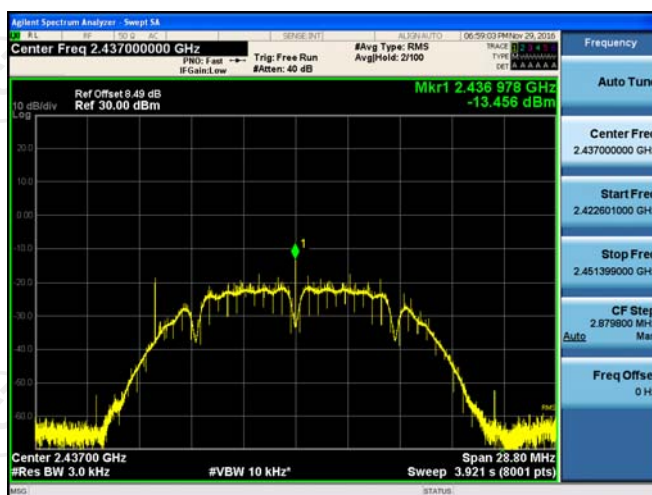
Antenna 1:

802.11b Modulation

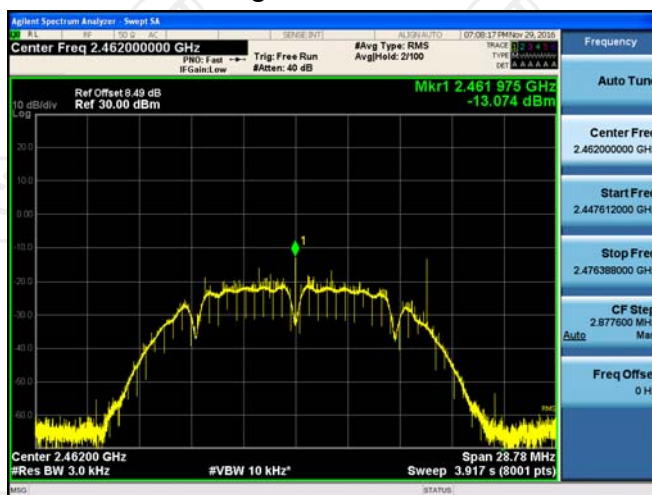
Lowest channel



Middle channel

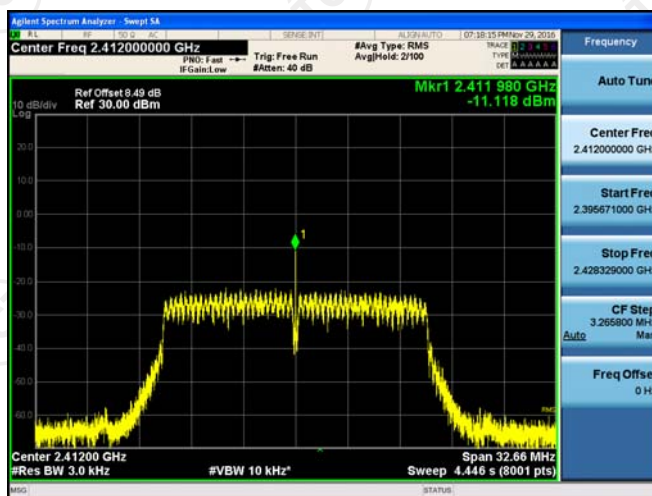


Highest channel

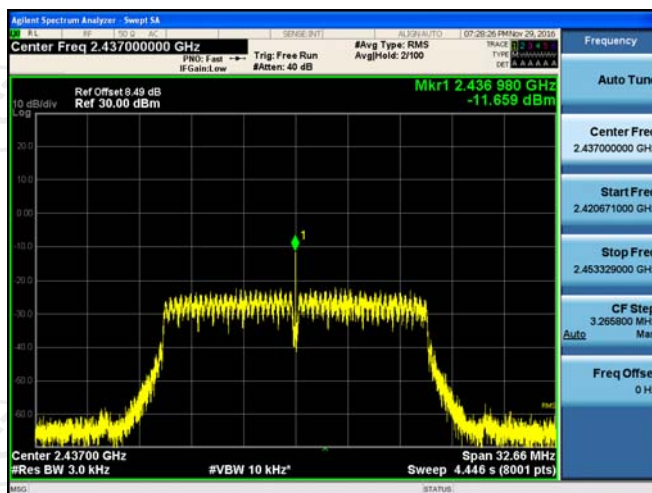


## 802.11g Modulation

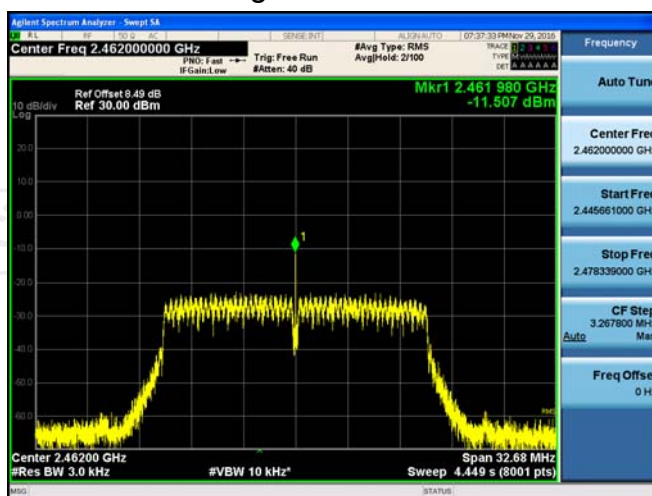
### Lowest channel



### Middle channel

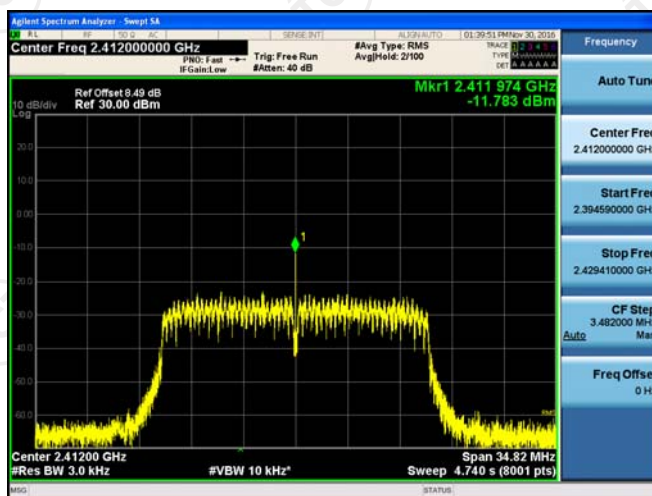


### Highest channel

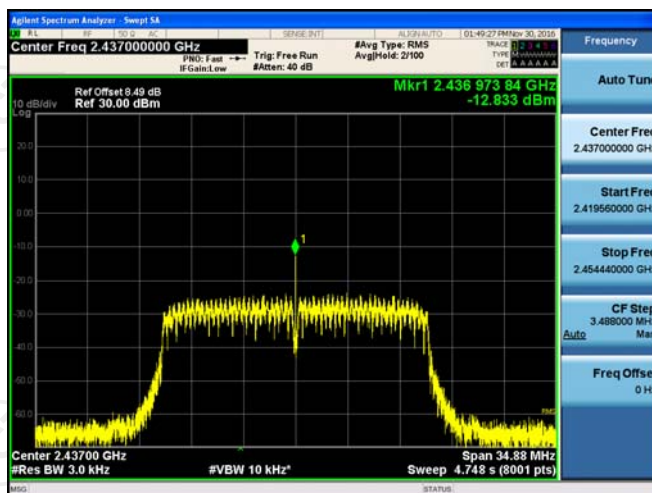


## 802.11n (HT20) Modulation

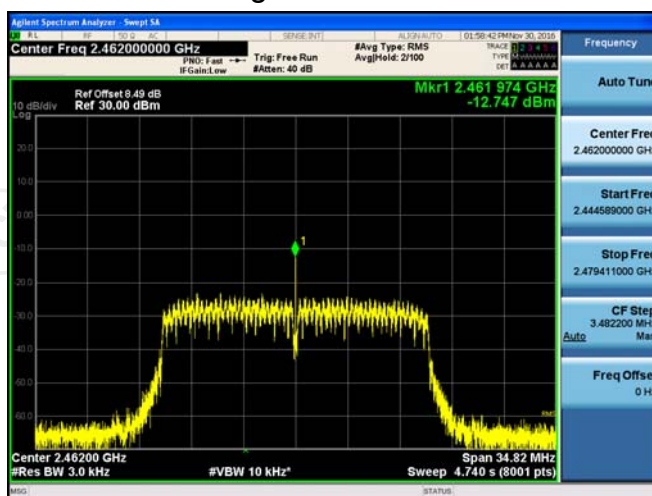
### Lowest channel



### Middle channel



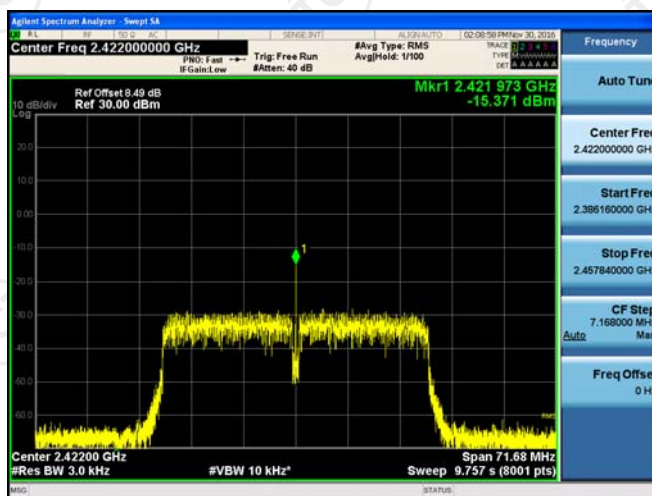
### Highest channel



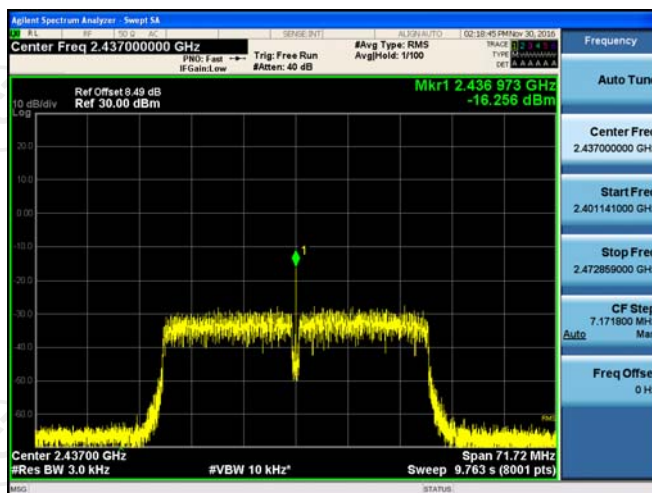


## 802.11n (HT40) Modulation

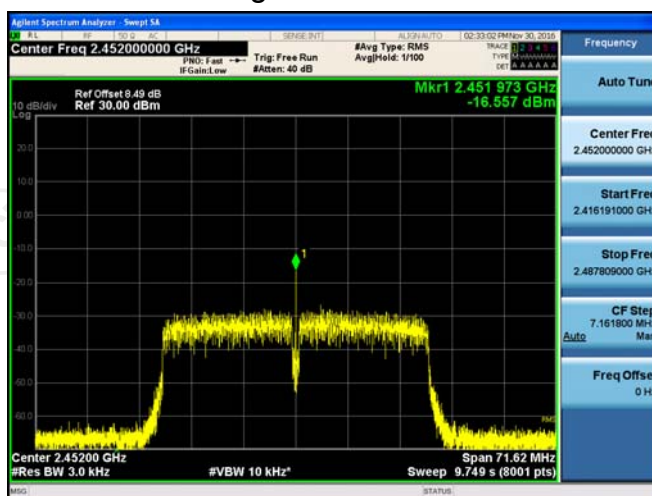
### Lowest channel



### Middle channel

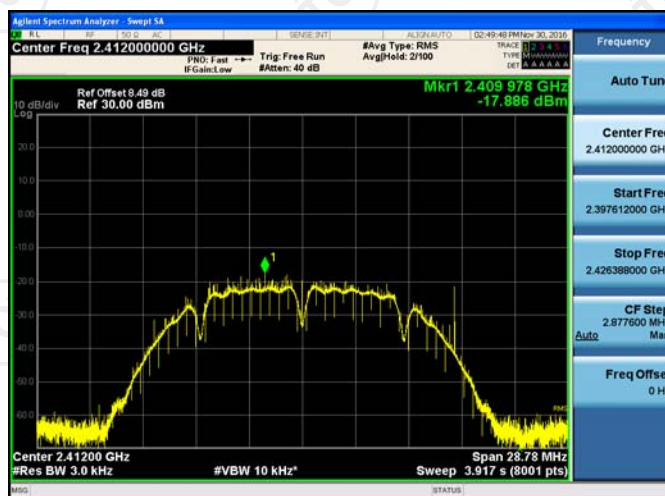


### Highest channel

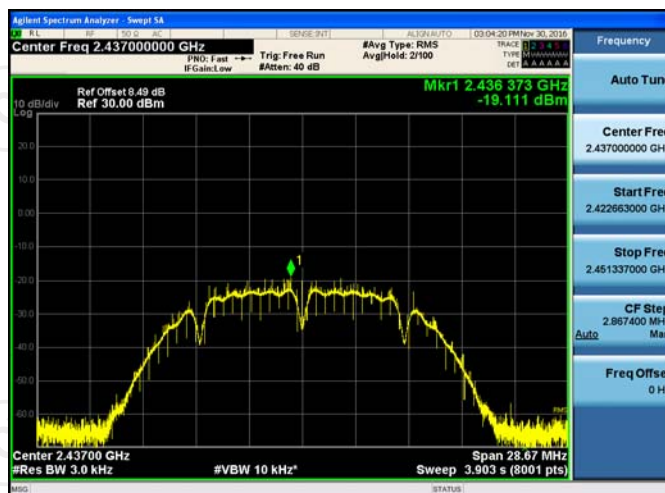


## Antenna 2: 802.11b Modulation

### Lowest channel



### Middle channel

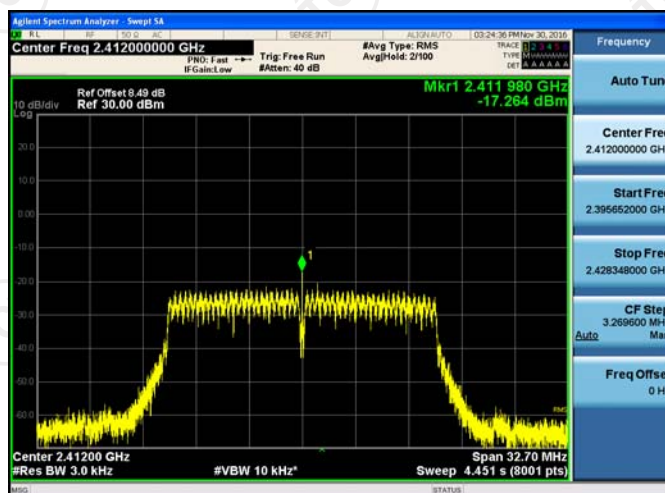


### Highest channel

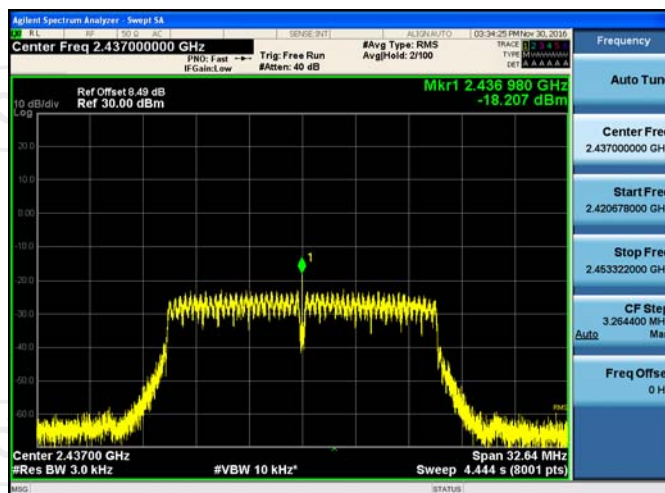


## 802.11g Modulation

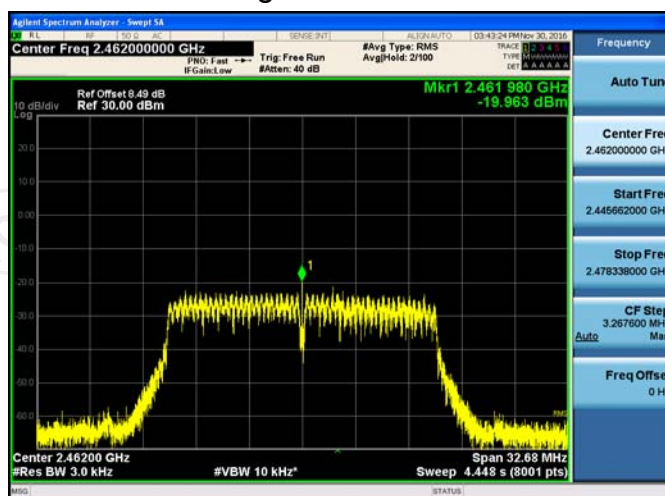
### Lowest channel



### Middle channel

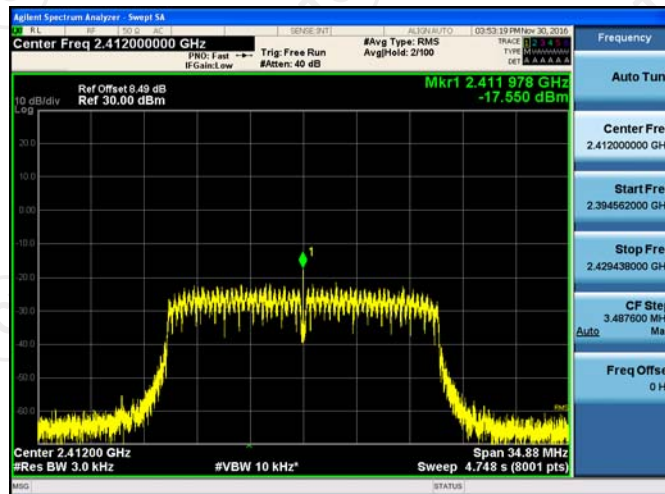


### Highest channel

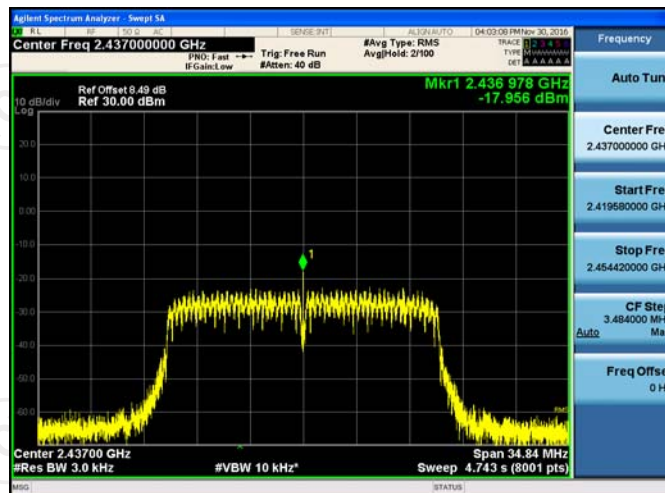


## 802.11n (HT20) Modulation

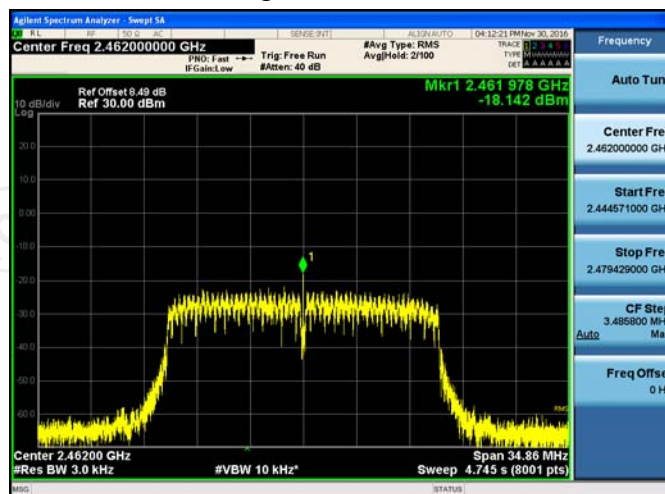
### Lowest channel



### Middle channel



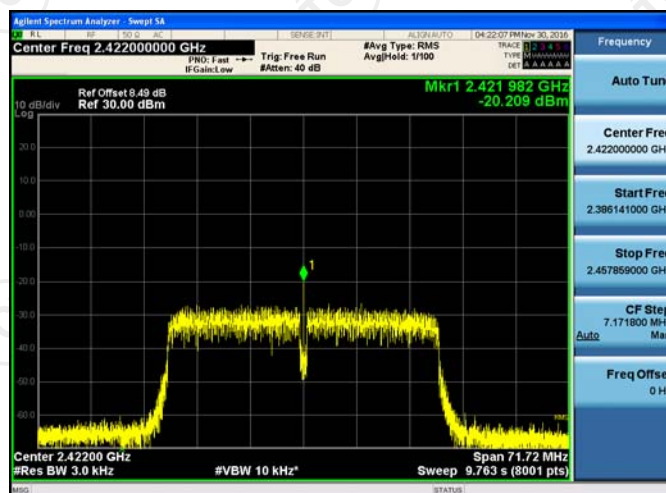
### Highest channel



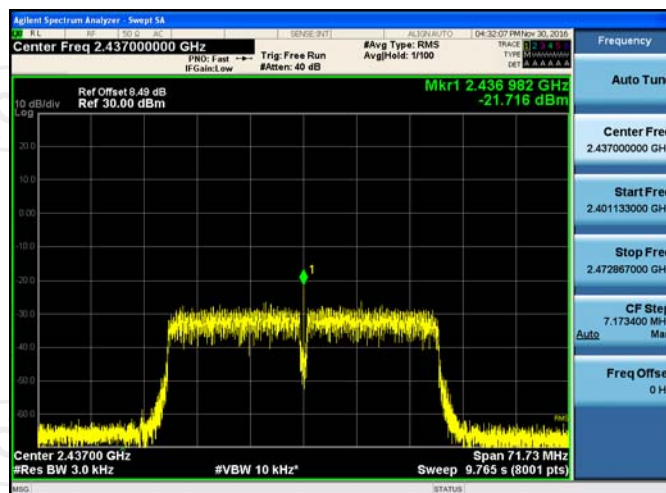


## 802.11n (HT40) Modulation

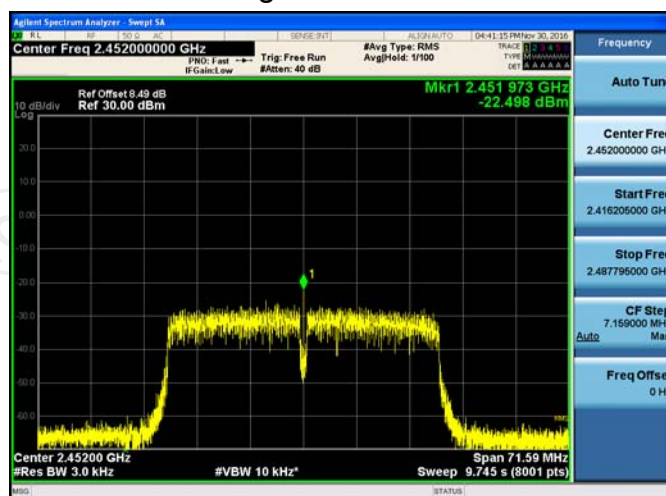
### Lowest channel



### Middle channel




### Highest channel



## 6.6. Conducted Band Edge and Spurious Emission Measurement

### 6.6.1. Test Specification

<b>Test Requirement:</b>	FCC Part15 C Section 15.247 (d)
<b>Test Method:</b>	KDB558074
<b>Limit:</b>	In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).
<b>Test Setup:</b>	 <p style="text-align: center;">Spectrum Analyzer                      EUT</p>
<b>Test Mode:</b>	Transmitting mode with modulation
<b>Test Procedure:</b>	<ol style="list-style-type: none"> <li>1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02.</li> <li>2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.</li> <li>3. Set to the maximum power setting and enable the EUT transmit continuously.</li> <li>4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).</li> <li>5. Measure and record the results in the test report.</li> <li>6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.</li> </ol>
<b>Test Result:</b>	PASS

**6.6.2. Test Instruments**

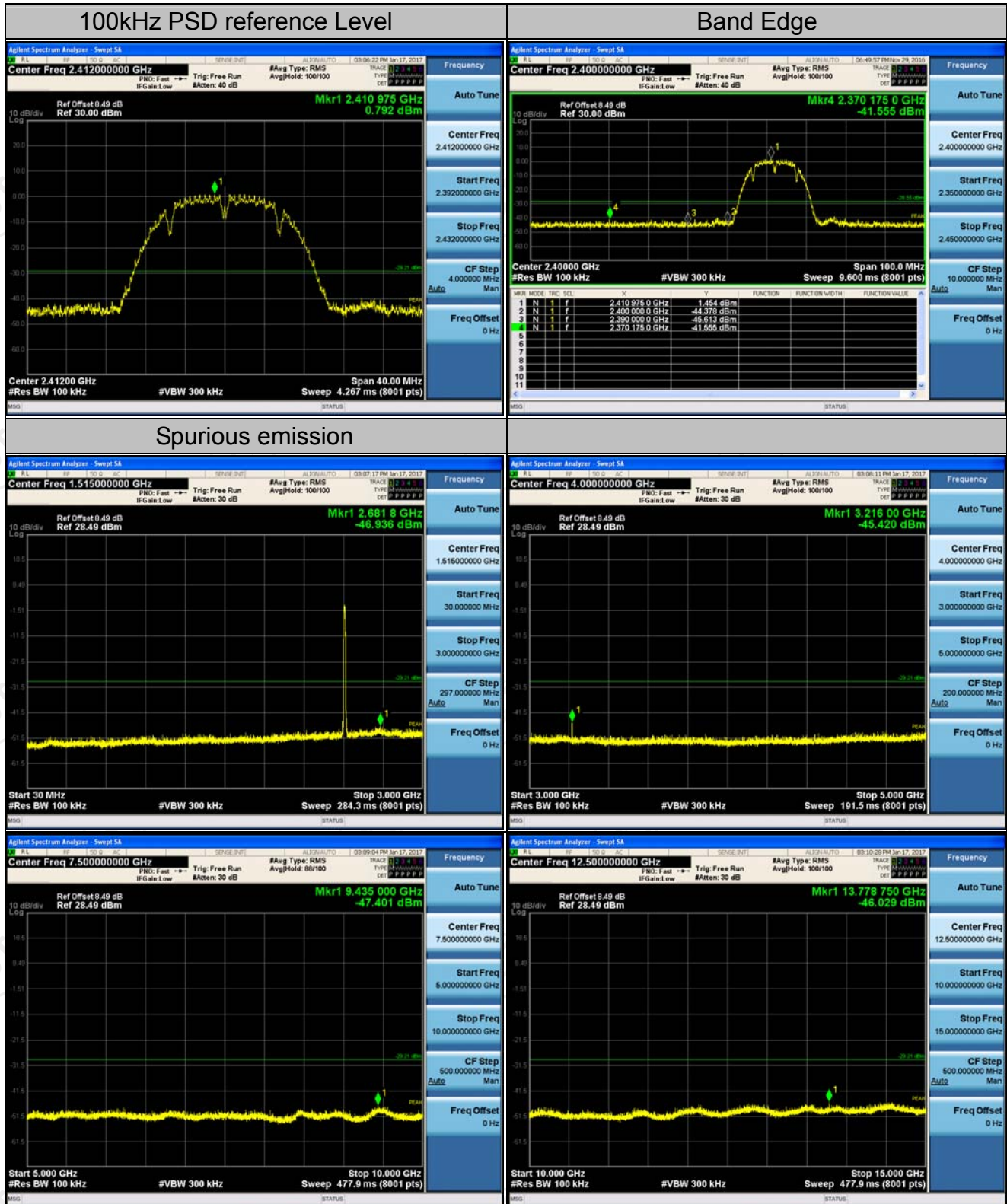
RF Test Room				
Equipment	Manufacturer	Model	Date of Cal.	Due Date
Spectrum Analyzer	Agilent	N9020A	Aug. 13, 2016	Aug. 12, 2017
RF cable	TCT	RE-06	Aug. 13, 2016	Aug. 12, 2017
Antenna Connector	TCT	RFC-01	Aug. 13, 2016	Aug. 12, 2017

**Note:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

## 6.6.3. Test Data

### Antenna 1:

### 802.11b Modulation

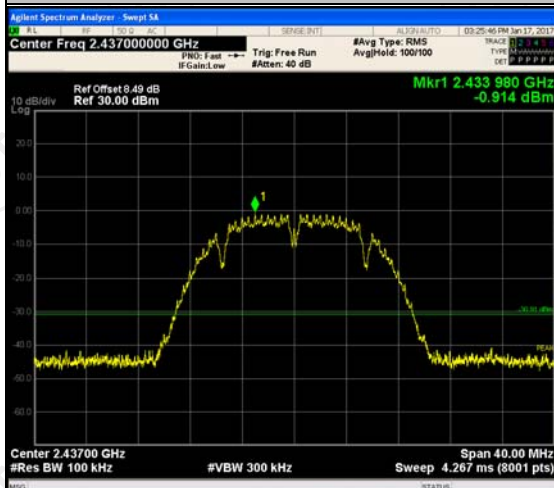






## Lowest Channel

### 100kHz PSD reference Level



### Spurious emission

