TCT 通测检测 TESTING CENTRE TECHNOLOGY

TEST REPORT

FCC ID: 2AG5B-WD03

Product: WiFi hotspot + Power bank

Model No.: WD03

Additional Model No.: MIFI 3G MOBILE WIFI ROUTER

Trade Mark: Unitone/alldayinternet/wolder/ekko/HTM

Report No.: TCT151225E011

Issued Date: Jan. 13, 2016

Issued for:

Shenzhen Unitone Electronics co., Ltd
13-14 Floor, Pengji Bussiness Mansion, No.50,Bagua 1 Road, Futian District, Shenzhen, China

Issued By:

Shenzhen Tongce Testing Lab.
1F, Leinuo Watch Building, Fuyong Town, Baoan Dist, Shenzhen, China
TEL: +86-755-27673339
FAX: +86-755-27673332

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1. Test Certification

Product:	WiFi hotspot + Power bank
Model No.:	WD03
Additional Model No.:	MIFI 3G MOBILE WIFI ROUTER
Applicant:	Shenzhen Unitone Electronics co., Ltd
Address:	13-14 Floor, Pengji Bussiness Mansion, No.50,Bagua 1 Road, Futian District, Shenzhen, China
Manufacturer:	Shenzhen Unitone Electronics co., Ltd
Address:	13-14 Floor, Pengji Bussiness Mansion, No.50,Bagua 1 Road, Futian District, Shenzhen, China
Date of Test:	Dec. 25, 2015 - Jan. 12, 2016
Applicable Standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.247 KDB 558074 D01 DTS Meas Guidance v03r04

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:	Sky Luo	***Date:***	***Jan. 12, 2016***
	Sky Luo		
Reviewed By:	Joe Zhou	***Date:***	***Jan. 13, 2016***
	Joe Zhou		
Approved By:	Tomsin	***Date:***	***Jan. 13, 2016***
	Tomsin		

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2. Test Result Summary

Requirement	CFR 47 Section	Result
Antenna requirement	§15.203/§15.247 (c)	PASS
AC Power Line Conducted Emission	§15.207	PASS
Conducted Peak Output Power	§15.247 (b)(3)	PASS
6dB Emission Bandwidth	§15.247 (a)(2)	PASS
Power Spectral Density	§15.247 (e)	PASS
Band Edge	1§5.247(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.

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3. EUT Description

Product Name:	WiFi hotspot + Power bank
Model :	WD03
Additional Model:	MIFI 3G MOBILE WIFI ROUTER
Trade Mark:	**Unitone/alldayinternet/wolder/ekko/HTM**
Hardware Version:	M633_V1.1
Software Version:	WD03_D01_151217
Operation Frequency:	2412MHz~2462MHz (802.11b/802.11g/802.11n(HT20))
Channel Separation:	5MHz
Number of Channel:	11 for 802.11b/802.11g/802.11n(HT20)
Modulation Technology: (IEEE 802.11b)	Direct Sequence Spread Spectrum (DSSS)
Modulation Technology: (IEEE 802.11g/802.11n)	Orthogonal Frequency Division Multiplexing(OFDM)
Data speed (IEEE 802.11b):	1Mbps, 2Mbps, 5.5Mbps, 11Mbps
Data speed (IEEE 802.11g):	6Mbps, 9Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps,54Mbps
Data speed (IEEE 802.11n):	Up to 135Mbps
Antenna Type:	Internal antenna
Antenna Gain:	-1dBi
Power Supply:	Adapter Information: Input: AC 100-240V, 50/60Hz, 0.2A Output: DC 5V, 1A
Remark:	All models above are identical in interior structure, electrical circuits and components, and just model names and the color of appearance are different for the marketing requirement.

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		

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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

TX output power setting

Mode	Power setting (dBm)
802.11b for all channel setting	13
802.11g for all channel setting	10
802.11n(H20) for all channel setting	9

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 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. For the full battery state and The output power to the maximum state.	
Test software:	
Executed command fixed test channel under DOS.	

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
Final Test Mode:	
Operation mode:	Keep the EUT in continuous transmitting with modulation
1. For WIFI function, the engineering test program was provided and enabled to make EUT continuous transmit/receive. 2.According to ANSI C63.10 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.

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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
Adapter	FC-108	/	/	TCT

Adapter：Input: AC 100 -240, 50/60Hz 0.2A Output: DC 5.0V, 1A

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

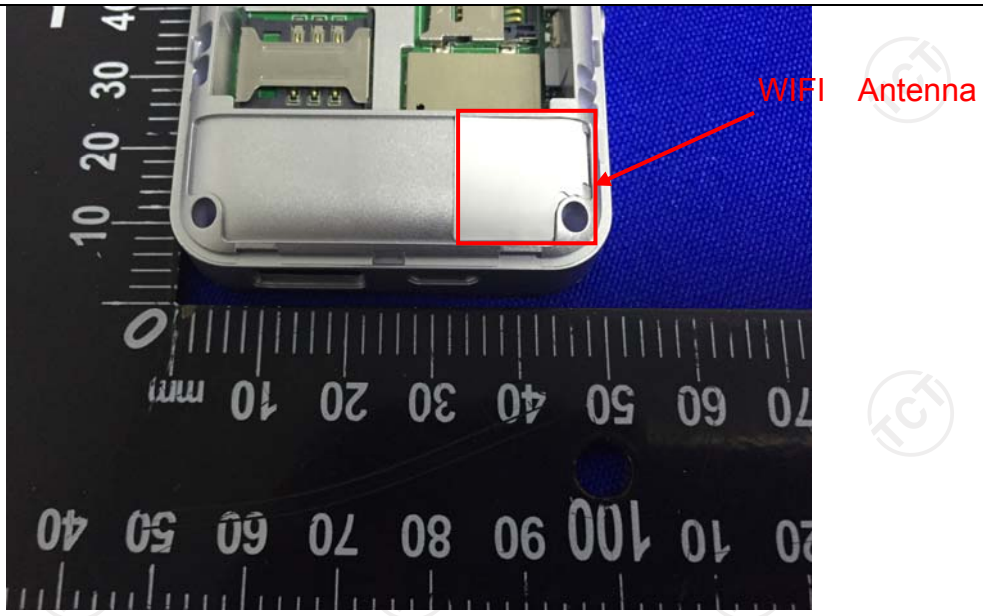
The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	±2.56dB
2	RF power, conducted	±0.12dB
3	Spurious emissions, conducted	±0.11dB
4	All emissions, radiated(<1G)	±3.92dB
5	All emissions, radiated(>1G)	±4.28dB
6	Temperature	±0.1°C
7	Humidity	±1.0%

6. Test Results and Measurement Data

6.1. Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
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. 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.	
E.U.T Antenna:	
The WIFI antenna is a internal antenna which permanently attached, and the best case gain of the antenna is -1dBi.	



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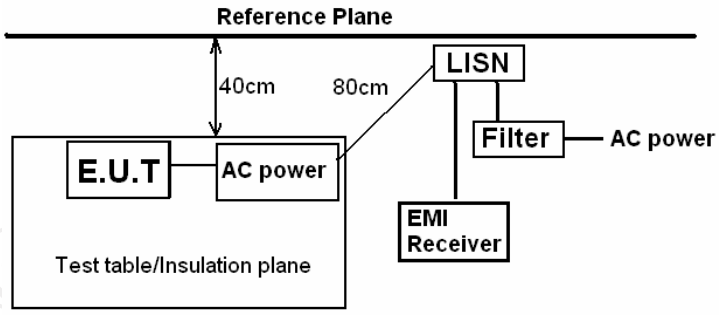
6.2. Conducted Emission

6.2.1. Test Specification

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.207</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10:2013</td></tr>
<tr><td>Frequency Range:</td><td>150 kHz to 30 MHz</td></tr>
<tr><td>Receiver setup:</td><td>RBW=9 kHz, VBW=30 kHz, Sweep time=auto</td></tr>
<tr><td>Limits:</td><td>
<table>
<tr><td rowspan="2">Frequency range (MHz)</td><td colspan="2">Limit (dBuV)</td></tr>
<tr><td>Quasi-peak</td><td>Average</td></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>
</td></tr>
<tr><td>Test Setup:</td><td> 

Remark:
E.U.T: Equipment Under Test
LISN: Line Impedence Stabilization Network
Test table height=0.8m</td></tr>
<tr><td>Test Mode:</td><td>Charging + transmitting with modulation</td></tr>
<tr><td>Test Procedure:</td><td>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.
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).
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 C63.10: 2013 on conducted measurement.</td></tr>
<tr><td>Test Result:</td><td>PASS</td></tr>
</table>

6.2.2. Test Instruments

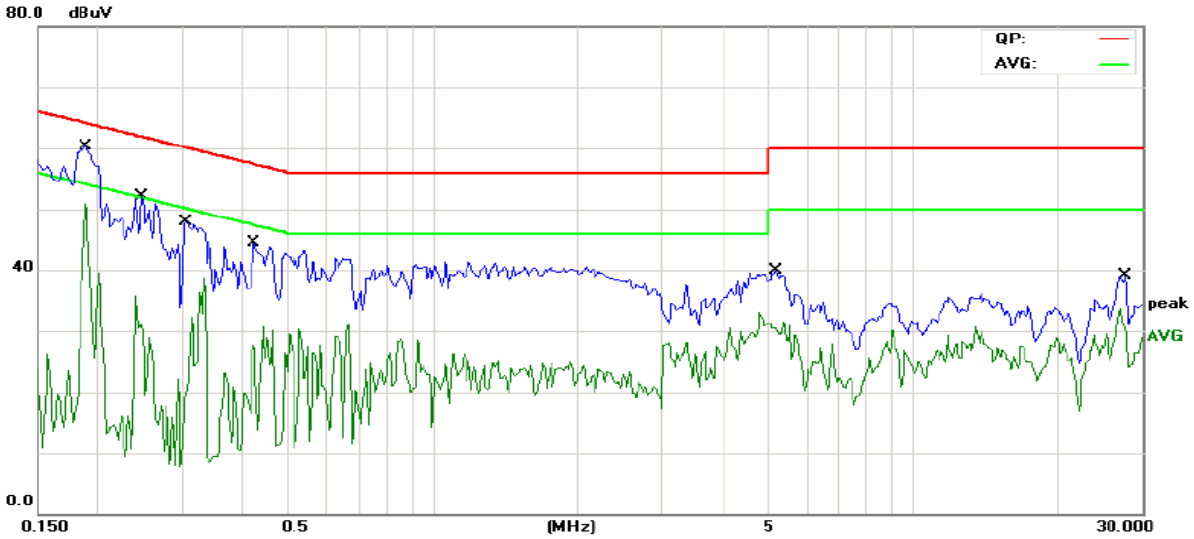
Conducted Emission Shielding Room Test Site (843)				
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI Test Receiver	R&S	ESCS30	100139	Sep. 11, 2016
LISN	Schwarzbeck	NSLK 8126	8126453	Sep. 16, 2016
Coax cable	TCT	CE-05	N/A	Sep. 11, 2016
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

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

6.2.3. Test data

Please refer to following diagram for individual

Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)



Site Chamber #2 Phase: *L1* Temperature: 25 (C)

Limit: FCC PART15 Conduction(QP) Power: AC 120V/60Hz Humidity: 56 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1891	45.84	11.47	57.31	64.07	-6.76	QP	
2		0.1891	28.85	11.47	40.32	54.07	-13.75	AVG	
3		0.2477	36.93	11.44	48.37	61.83	-13.46	QP	
4		0.2477	20.31	11.44	31.75	51.83	-20.08	AVG	
5		0.3063	33.28	11.41	44.69	60.07	-15.38	QP	
6		0.3063	17.86	11.41	29.27	50.07	-20.80	AVG	
7		0.4234	27.85	11.34	39.19	57.38	-18.19	QP	
8		0.4234	11.19	11.34	22.53	47.38	-24.85	AVG	
9		5.1913	24.38	10.64	35.02	60.00	-24.98	QP	
10		5.1913	13.82	10.64	24.46	50.00	-25.54	AVG	
11		27.7930	16.92	10.63	27.55	60.00	-32.45	QP	
12		27.7930	7.97	10.63	18.60	50.00	-31.40	AVG	

Note:

Freq. = Emission frequency in MHz

Reading level (dBμV) = Receiver reading

Corr. Factor (dB) = Antenna factor + Cable loss

Measurement (dBμV) = Reading level (dBμV) + Corr. Factor (dB)

Limit (dBμV) = Limit stated in standard

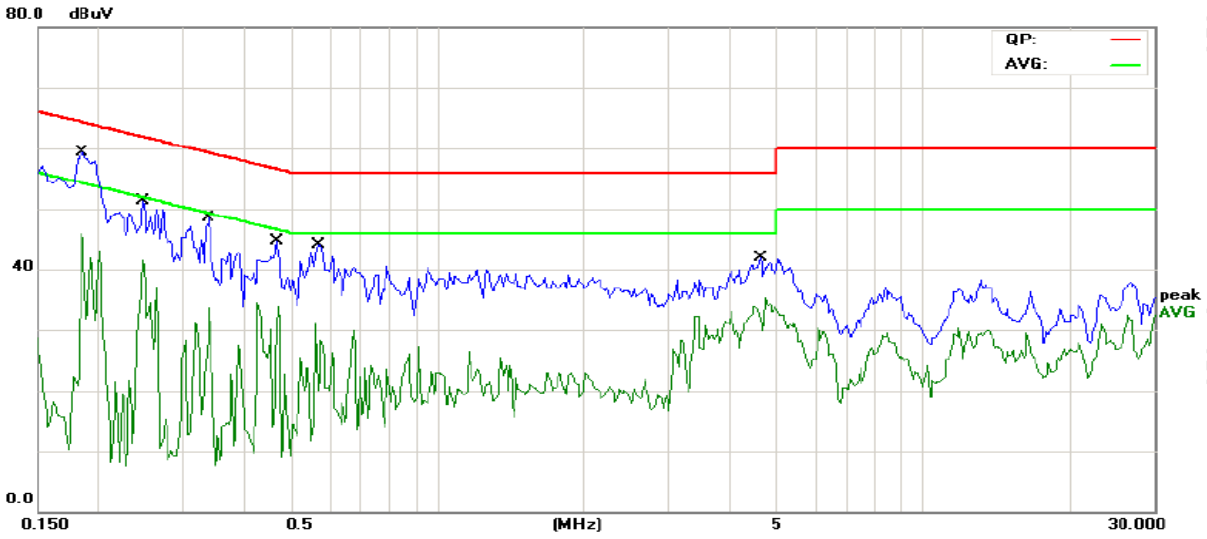
Margin (dB) = Measurement (dBμV) – Limits (dBμV)

Q.P. =Quasi-Peak

AVG =average

** is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.*

Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)



Site Chamber #2 Phase: *N* Temperature: 25 (C)

Limit: FCC PART15 Conduction(QP) Power: AC 120V/60Hz Humidity: 56 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1852	44.85	11.48	56.33	64.24	-7.91	QP	
2		0.1852	28.03	11.48	39.51	54.24	-14.73	AVG	
3		0.2477	36.97	11.44	48.41	61.83	-13.42	QP	
4		0.2477	20.63	11.44	32.07	51.83	-19.76	AVG	
5		0.3375	31.79	11.39	43.18	59.26	-16.08	QP	
6		0.3375	13.49	11.39	24.88	49.26	-24.38	AVG	
7		0.4664	29.46	11.32	40.78	56.58	-15.80	QP	
8		0.4664	14.07	11.32	25.39	46.58	-21.19	AVG	
9		0.5680	27.84	11.27	39.11	56.00	-16.89	QP	
10		0.5680	12.26	11.27	23.53	46.00	-22.47	AVG	
11		4.6328	25.72	10.74	36.46	56.00	-19.54	QP	
12		4.6328	14.34	10.74	25.08	46.00	-20.92	AVG	

Note:

Freq. = Emission frequency in MHz

Reading level (dBμV) = Receiver reading

Corr. Factor (dB) = Antenna factor + Cable loss

Measurement (dBμV) = Reading level (dBμV) + Corr. Factor (dB)

Limit (dBμV) = Limit stated in standard

Margin (dB) = Measurement (dBμV) – Limits (dBμV)

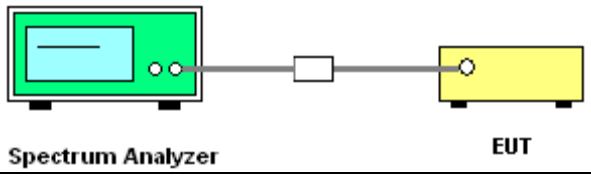
Q.P. =Quasi-Peak

AVG =average

** is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.*

6.2.4. Maximum Conducted (Average) Output Power

6.2.5. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	KDB 558074 D01 DTS Meas Guidance v03r04
Limit:	30dBm
Test Setup:	
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v03r04. 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. 3. Set to the maximum power setting and enable the EUT transmit continuously. 4. Measure the conducted output power and record the results in the test report.
Test Result:	PASS

6.2.6. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 12, 2016
RF cable	TCT	RE-06	N/A	Sep. 12, 2016
Antenna Connector	TCT	RFC-01	N/A	Sep. 12, 2016

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

6.3. Emission Bandwidth

6.3.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	KDB 558074 D01 DTS Meas Guidance v03r04
Limit:	>500kHz
Test Setup:	
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v03r04. 2. Set to the maximum power setting and enable the EUT transmit continuously. 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. 4. Measure and record the results in the test report.
Test Result:	PASS

6.3.2. Test Instruments

RF Test Room				
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 12, 2016
RF cable	TCT	RE-06	N/A	Sep. 12, 2016
Antenna Connector	TCT	RFC-01	N/A	Sep. 12, 2016

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

6.4. Power Spectral Density

6.4.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	KDB 558074 D01 DTS Meas Guidance v03r04
Limit:	The average power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.
Test Setup:	
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. The testing follows Measurement Procedure 10.3 Method AVGPSD of FCC KDB Publication No.558074 D01 DTS Meas. Guidance v03r04 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. 3. Set to the maximum power setting and enable the EUT transmit continuously. 4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW): 3 kHz ≤ RBW ≤ 100 kHz. Video bandwidth VBW ≥ 3 x RBW. Set the span to at least 1.5 times the OBW. 5. Detector = RMS, Sweep time = auto couple. 6. Employ trace averaging (RMS) mode over a minimum of 100 traces. Use the peak marker function to determine the maximum power level. 6. Measure and record the results in the test report.
Test Result:	PASS

6.4.2. Test Instruments

RF Test Room				
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 12, 2016
RF cable	TCT	RE-06	N/A	Sep. 12, 2016
Antenna Connector	TCT	RFC-01	N/A	Sep. 12, 2016

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

6.5. Conducted Band Edge and Spurious Emission Measurement

6.5.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.10:2013
Limit:	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).
Test Setup:	
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r04. 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. 3. Set to the maximum power setting and enable the EUT transmit continuously. 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). 5. Measure and record the results in the test report. 6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
Test Result:	PASS

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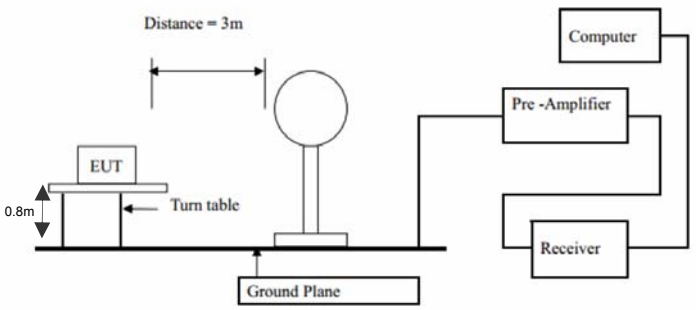
6.5.2. Test Instruments

RF Test Room				
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 12, 2016
RF cable	TCT	RE-06	N/A	Sep. 12, 2016
Antenna Connector	TCT	RFC-01	N/A	Sep. 12, 2016

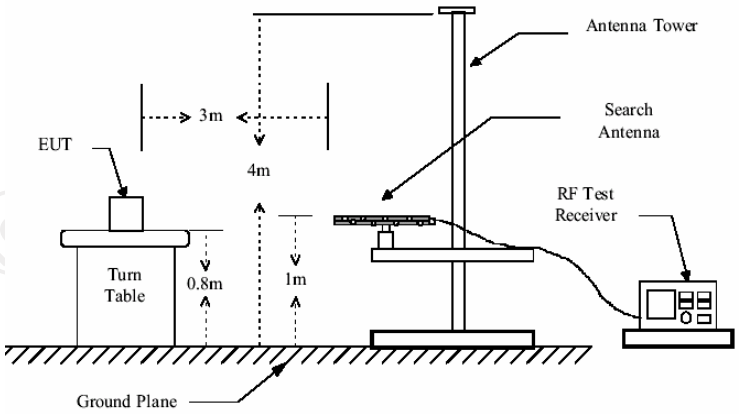
Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.6. Radiated Spurious Emission Measurement

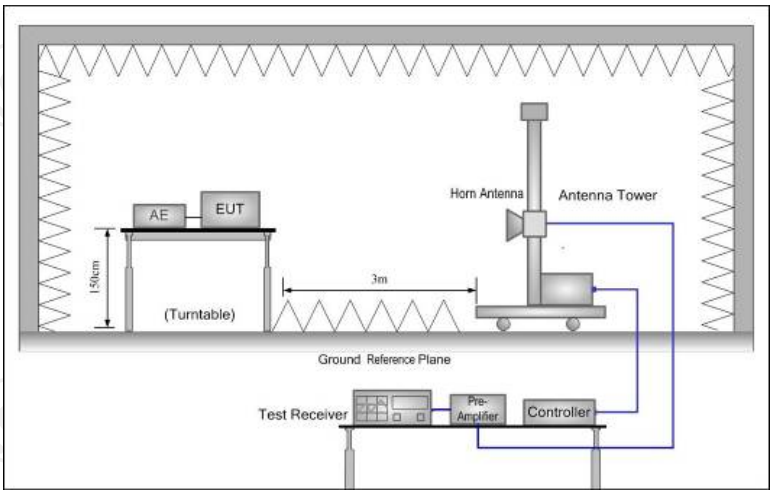
6.6.1. Test Specification

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.209</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10: 2013</td></tr>
<tr><td>Frequency Range:</td><td>9 kHz to 25 GHz</td></tr>
<tr><td>Measurement Distance:</td><td>3 m</td></tr>
<tr><td>Antenna Polarization:</td><td>Horizontal & Vertical</td></tr>
<tr><td>Operation mode:</td><td>Transmitting mode with modulation</td></tr>
<tr><td>Receiver Setup:</td><td>
<table>
<tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></tr>
<tr><td>9kHz- 150kHz</td><td>Quasi-peak</td><td>200Hz</td><td>1kHz</td><td>Quasi-peak Value</td></tr>
<tr><td>150kHz-30MHz</td><td>Quasi-peak</td><td>9kHz</td><td>30kHz</td><td>Quasi-peak Value</td></tr>
<tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>100KHz</td><td>300KHz</td><td>Quasi-peak Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr>
<tr><td>Peak</td><td>1MHz</td><td>10Hz</td><td>Average Value</td></tr>
</table>
</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><td>Frequency</td><td>Field Strength (microvolts/meter)</td><td>Measurement Distance (meters)</td></tr>
<tr><td>0.009-0.490</td><td>2400/F(KHz)</td><td>300</td></tr>
<tr><td>0.490-1.705</td><td>24000/F(KHz)</td><td>30</td></tr>
<tr><td>1.705-30</td><td>30</td><td>30</td></tr>
<tr><td>30-88</td><td>100</td><td>3</td></tr>
<tr><td>88-216</td><td>150</td><td>3</td></tr>
<tr><td>216-960</td><td>200</td><td>3</td></tr>
<tr><td>Above 960</td><td>500</td><td>3</td></tr>
</table>
<table>
<tr><td>Frequency</td><td>Field Strength (microvolts/meter)</td><td>Measurement Distance (meters)</td><td>Detector</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>500</td><td>3</td><td>Average</td></tr>
<tr><td>5000</td><td>3</td><td>Peak</td></tr>
</table>
</td></tr>
<tr><td>Test setup:</td><td>For radiated emissions below 30MHz
 

30MHz to 1GHz</td></tr>
</table>



Above 1GHz



Test Procedure:

1. For the radiated emission test below 1GHz:
The EUT was placed on a turntable with 0.8 meter above ground. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high PASS filter are used for the test in order to get better signal level.
For the radiated emission test above 1GHz:
Place the measurement antenna on a turntable with 1.5 meter above ground, which is away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for

	receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. 3. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level 4. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported. 5. Use the following spectrum analyzer settings: (1) Span shall wide enough to fully capture the emission being measured; (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥RBW; Sweep = auto; Detector function = peak; Trace = max hold; (3) Set RBW = 1 MHz, VBW= 3MHz for f 1 GHz for peak measurement. For average measurement: VBW = 10 Hz, when duty cycle is no less than 98 percent. VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
Test results:	PASS

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6.6.2. Test Instruments

Radiated Emission Test Site (966)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
ESPI Test Receiver	ROHDE&SCHWARZ	ESVD	100008	Sep. 11, 2016
Spectrum Analyzer	ROHDE&SCHWARZ	FSEM	848597/001	Sep. 11, 2016
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 12, 2016
Pre-amplifier	EM Electronics Corporation CO.,LTD	EM30265	07032613	Sep. 11, 2016
Pre-amplifier	HP	8447D	2727A05017	Sep. 11, 2016
Loop antenna	ZHINAN	ZN30900A	12024	Sep. 13, 2016
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 13, 2016
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Sep. 13, 2016
Horn Antenna	Schwarzbeck	BBHA 9170	373	Sep. 13, 2016
Coax cable	TCT	RE-low-01	N/A	Sep. 11, 2016
Coax cable	TCT	RE-high-02	N/A	Sep. 11, 2016
Coax cable	TCT	RE-low-03	N/A	Sep. 11, 2016
Coax cable	TCT	RE-High-04	N/A	Sep. 11, 2016
Antenna Mast	CCS	CC-A-4M	N/A	Sep. 12, 2016
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

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

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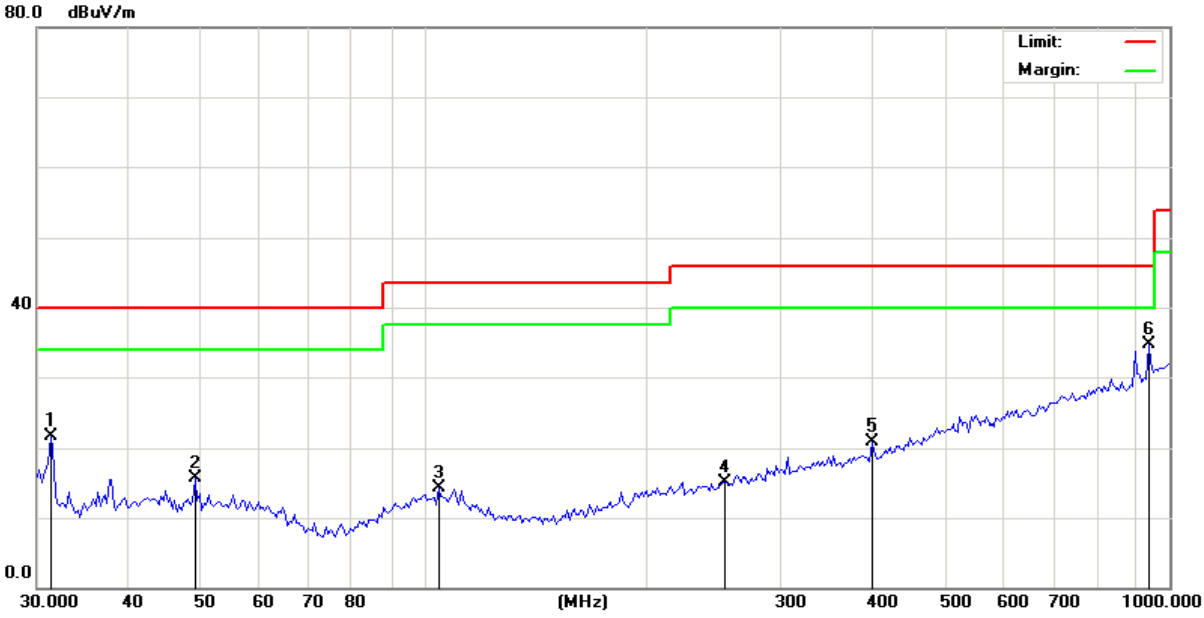
6.6.3. Test Data

Please refer to following diagram for individual

Below 1GHz

Horizontal:



Site

Limit: FCC Part 15B Class B RE_3 m

Polarization: *Horizontal*

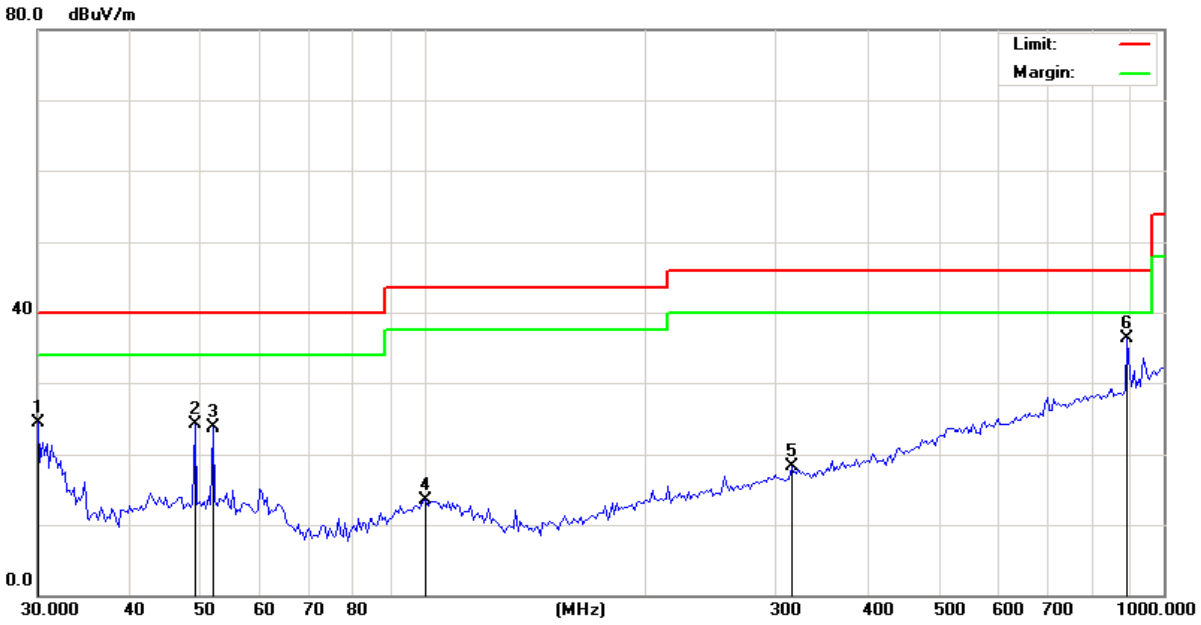
Power: DC 3.7V

Temperature: 23

Humidity: 54 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		31.2918	35.33	-13.56	21.77	40.00	-18.23	peak		0	
2		49.0626	27.86	-12.08	15.78	40.00	-24.22	peak		0	
3		104.0640	25.91	-11.66	14.25	43.50	-29.25	peak		0	
4		254.0312	24.88	-9.83	15.05	46.00	-30.95	peak		0	
5		398.2961	27.10	-6.23	20.87	46.00	-25.13	peak		0	
6	*	938.7138	30.74	3.99	34.73	46.00	-11.27	peak		0	

Vertical:



Site | Polarization: *Vertical* | Temperature: 23

Limit: FCC Part 15B Class B RE_3 m | Power: DC 3.7V | Humidity: 54 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		30.0000	38.11	-13.72	24.39	40.00	-15.61	peak		0	
2		49.0627	36.12	-12.08	24.04	40.00	-15.96	peak		0	
3		51.8998	35.79	-12.18	23.61	40.00	-16.39	peak		0	
4		100.4712	25.04	-11.46	13.58	43.50	-29.92	peak		0	
5		313.6482	26.19	-7.96	18.23	46.00	-27.77	peak		0	
6	*	893.6557	33.64	2.60	36.24	46.00	-9.76	peak		0	

Note: *1.The low frequency, which started from 9KHz~30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported*

2. Measurements were conducted in all three channels (high, middle, low) and all modulation(802.11b, 802.11g, 802.11n(HT20)), and the worst case Mode (Highest channel and 802.11b) was submitted only.

Test Result of Radiated Spurious at Band edges

Modulation Type: 802.11b

Low channel: 2412 MHz						
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	Correction Factor (dB/m)	Peak Final Emission Level	Peak limit (dBμV/m)	AV limit (dBμV/m)
2310	H	45.83	-4.20	41.63	74.00	54.00
2377.38	H	48.37	-4.10	44.27	74.00	54.00
2390	H	53.40	-3.94	49.46	74.00	54.00
2310	V	44.22	-4.20	40.02	74.00	54.00
2377.38	V	54.25	-4.10	50.15	74.00	54.00
2390	V	55.77	-3.94	51.83	74.00	54.00

Modulation Type: 802.11b

High channel: 2462 MHz						
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	Correction Factor (dB/m)	Peak Final Emission Level	Peak limit (dBμV/m)	AV limit (dBμV/m)
2483.5	H	51.14	-3.60	47.54	74.00	54.00
2487.09	H	47.83	-3.50	44.33	74.00	54.00
2500	H	45.23	-3.34	41.89	74.00	54.00
2483.5	V	54.86	-3.60	51.26	74.00	54.00
2487.09	V	47.24	-3.50	43.74	74.00	54.00
2500	V	42.56	-3.34	39.22	74.00	54.00

Modulation Type: 802.11g

Low channel: 2412 MHz						
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	Correction Factor (dB/m)	Peak Final Emission Level	Peak limit (dBμV/m)	AV limit (dBμV/m)
2310	H	43.06	-4.20	38.86	74.00	54.00
2388.96	H	50.89	-4.12	46.77	74.00	54.00
2390	H	53.42	-3.94	49.48	74.00	54.00
2310	V	45.74	-4.20	41.54	74.00	54.00
2388.96	V	49.69	-4.12	45.57	74.00	54.00
2390	V	54.17	-3.94	50.23	74.00	54.00

Modulation Type: 802.11g

High channel: 2462 MHz						
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	Correction Factor (dB/m)	Peak Final Emission Level	Peak limit (dBμV/m)	AV limit (dBμV/m)
2483.5	H	52.34	-3.60	48.74	74.00	54.00
2487.59	H	50.05	-3.52	46.53	74.00	54.00
2500	H	46.78	-3.34	43.44	74.00	54.00
2483. 5	V	51.62	-3.60	48.02	74.00	54.00
2487.59	V	47.73	-3.52	44.21	74.00	54.00
2500	V	47.5	-3.34	44.16	74.00	54.00

Modulation Type: 802.11n(20MHz)

Low channel: 2412 MHz						
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	Correction Factor (dB/m)	Peak Final Emission Level	Peak limit (dBμV/m)	AV limit (dBμV/m)
2310	H	46.51	-4.20	42.31	74.00	54.00
2388.01	H	53.68	-4.10	49.58	74.00	54.00
2390	H	54.76	-3.94	50.82	74.00	54.00
2310	V	48.06	-4.20	43.86	74.00	54.00
2388.01	V	54.28	-4.10	50.18	74.00	54.00
2390	V	55.53	-3.94	51.59	74.00	54.00

Modulation Type: 802.11n(20MHz)

High channel: 2462 MHz						
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	Correction Factor (dB/m)	Peak Final Emission Level	Peak limit (dBμV/m)	AV limit (dBμV/m)
2483.5	H	52.60	-3.60	49.00	74.00	54.00
2392.55	H	51.57	-3.50	48.07	74.00	54.00
2500	H	47.77	-3.34	44.43	74.00	54.00
2483. 5	V	53.22	-3.60	49.62	74.00	54.00
2392.55	V	50.79	-3.50	47.29	74.00	54.00
2500	V	48.64	-3.34	45.30	74.00	54.00

Note:

1. *Peak Final Emission Level=Peak Reading + Correction Factor;*
2. *Correction Factor= Antenna Factor + Cable loss – Pre-amplifier*

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Above 1GHz

Modulation Type: 802.11b

Low channel: 2412 MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBuV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
4824	H	50.74	---	0.75	51.49	---	74	54	-2.51
7236	H	41.46	---	9.87	51.33	---	74	54	-2.67
---	H	---	---	---	---	---	---	---	---
4824	V	49.78	---	0.75	50.53	---	74	54	-3.47
7236	V	41.58	---	9.87	51.45	---	74	54	-2.55
---	V	---	---	---	---	---	---	---	---

Middle channel: 2437MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
4874	H	49.59	---	0.97	50.56	---	74	54	-3.44
7311	H	41.12	---	9.83	50.95	---	74	54	-3.05
---	H	---	---	---	---	---	---	---	---
4874	V	49.45	---	0.97	50.42	---	74	54	-3.58
7311	V	40.96	---	9.83	50.79	---	74	54	-3.21
---	V	---	---	---	---	---	---	---	---

High channel: 2462 MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
4924	H	49.57	---	1.18	50.75	---	74	54	-3.25
7386	H	39.65	---	10.07	49.72	---	74	54	-4.28
---	H	---	---	---	---	---	---	---	---
4924	V	49.99	---	1.18	51.17	---	74	54	-2.83
7386	V	40.53	---	10.07	50.60	---	74	54	-3.40
---	V	---	---	---	---	---	---	---	---

Note:

1. *Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier*
2. *Margin (dB) = Emission Level (Peak) (dBμV/m)-Average limit (dBμV/m)*
3. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
4. *Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency. The highest test frequency is 25GHz.*
5. *Data of measurement shown "---"in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.*

Modulation Type: 802.11g

Low channel: 2412 MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBuV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
4824	H	49.36	---	0.75	50.11	---	74	54	-3.89
7236	H	40.61	---	9.87	50.48	---	74	54	-3.52
---	H	---	---	---	---	---	---	---	---
4824	V	47.57	---	0.75	48.32	---	74	54	-5.68
7236	V	40.68	---	9.87	50.55	---	74	54	-3.45
---	V	---	---	---	---	---	---	---	---

Middle channel: 2437MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
4874	H	48.15	---	0.97	49.12	---	74	54	-4.88
7311	H	40.17	---	9.83	50.00	---	74	54	-4.00
---	H	---	---	---	---	---	---	---	---
4874	V	47.32	---	0.97	48.29	---	74	54	-5.71
7311	V	40.58	---	9.83	50.41	---	74	54	-3.59
---	V	---	---	---	---	---	---	---	---

High channel: 2462 MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
4924	H	47.76	---	1.18	48.94	---	74	54	-5.06
7386	H	39.94	---	10.07	50.01	---	74	54	-3.99
---	H	---	---	---	---	---	---	---	---
4924	V	46.57	---	1.18	47.75	---	74	54	-6.25
7386	V	40.20	---	10.07	50.27	---	74	54	-3.73
---	V	---	---	---	---	---	---	---	---

Note:

3. *Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier*
4. *Margin (dB) = Emission Level (Peak) (dBμV/m)-Average limit (dBμV/m)*
5. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
6. *Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency. The highest test frequency is 25GHz.*
7. *Data of measurement shown "---"in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.*

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Modulation Type: 802.11n (HT20)

Low channel: 2412 MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBuV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
4824	H	49.07	---	0.75	49.82	---	74	54	-4.18
7236	H	40.60	---	9.87	50.47	---	74	54	-3.53
---	H	---	---	---	---	---	---	---	---
4824	V	47.59	---	0.75	48.34	---	74	54	-5.66
7236	V	40.24	---	9.87	50.11	---	74	54	-3.89
---	V	---	---	---	---	---	---	---	---

Middle channel: 2437MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
4874	H	47.29	---	0.97	48.26	---	74	54	-5.74
7311	H	40.47	---	9.83	50.3	---	74	54	-3.70
---	H	---	---	---	---	---	---	---	---
4874	V	47.42	---	0.97	48.39	---	74	54	-5.61
7311	V	40.03	---	9.83	49.86	---	74	54	-4.14
---	V	---	---	---	---	---	---	---	---

High channel: 2462 MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
4924	H	48.16	---	1.18	49.34	---	74	54	-4.66
7386	H	40.64	---	10.07	50.71	---	74	54	-3.29
---	H	---	---	---	---	---	---	---	---
4924	V	47.00	---	1.18	48.18	---	74	54	-5.82
7386	V	40.28	---	10.07	50.35	---	74	54	-3.65
---	V	---	---	---	---	---	---	---	---

Note:

1. *Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier*
2. *Margin (dB) = Emission Level (Peak) (dBμV/m)-Average limit (dBμV/m)*
3. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
4. *Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency. The highest test frequency is 25GHz.*
5. *Data of measurement shown "---"in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.*

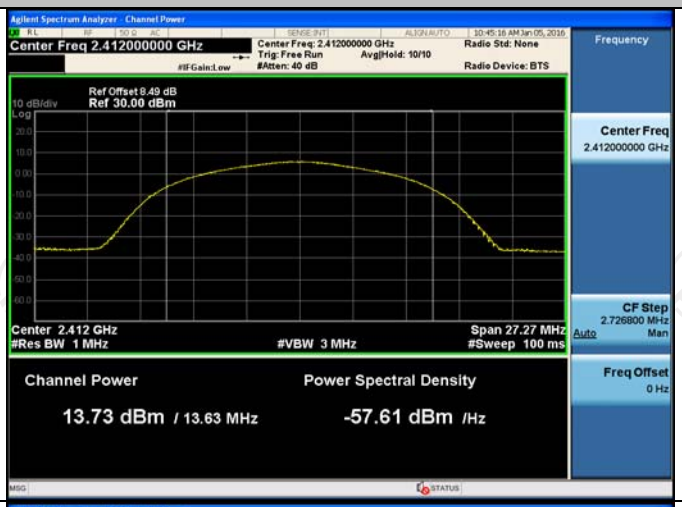
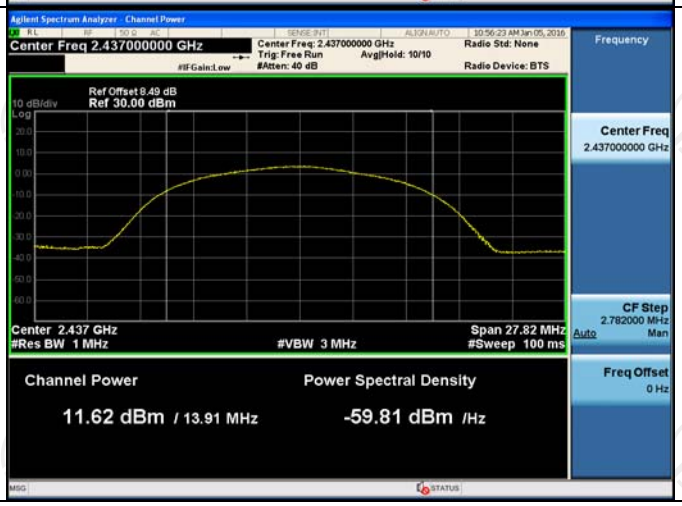
Appendix A: Test Result of Conducted Test

Conducted Average Output Power

Result Table

Mode	Channel	Av.Power [dBm]	Verdict
11B	LCH	13.73	PASS
11B	MCH	11.62	PASS
11B	HCH	14.08	PASS
11G	LCH	10.83	PASS
11G	MCH	8.91	PASS
11G	HCH	11.06	PASS
11N20SISO	LCH	8.81	PASS
11N20SISO	MCH	7.14	PASS
11N20SISO	HCH	9.29	PASS

Test Graph

Graphs			
11B/LCH			
11B/MCH			

11B/HCH			
11G/LCH			
11G/MCH			

11G/HCH			
11N20SISO/LCH			
11N20SISO/MCH			

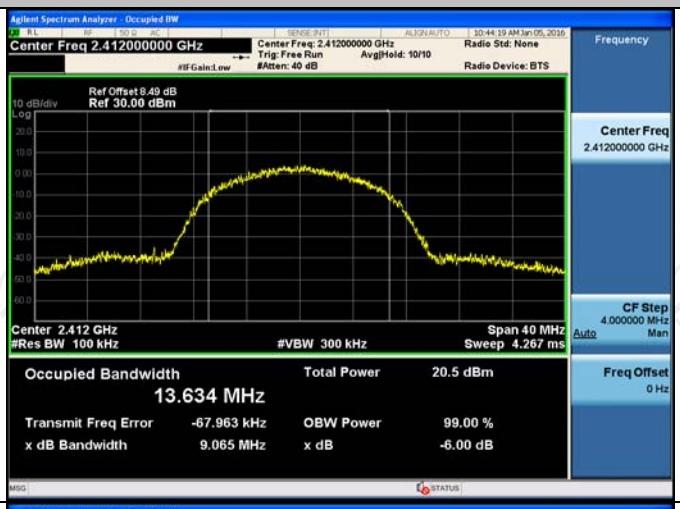
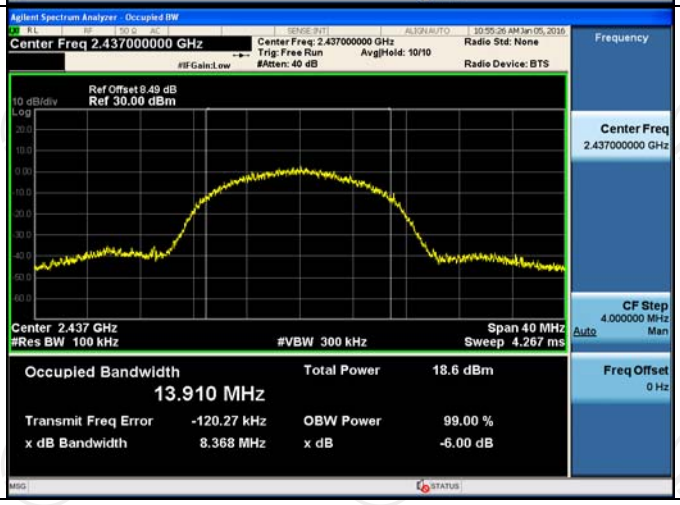
11N20SISO/HCH			

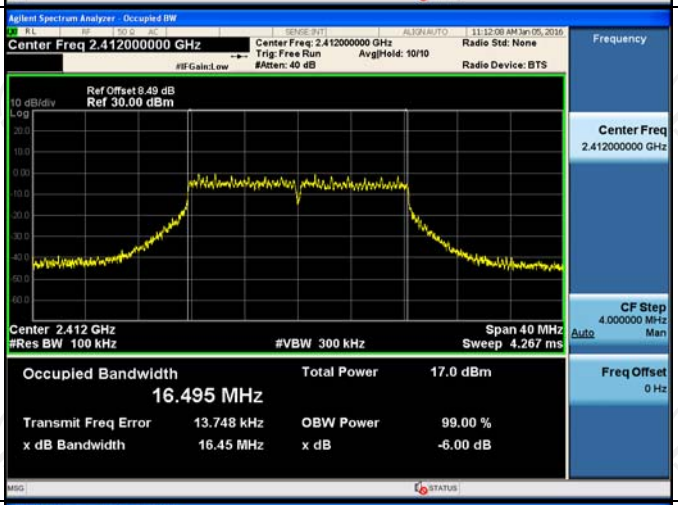
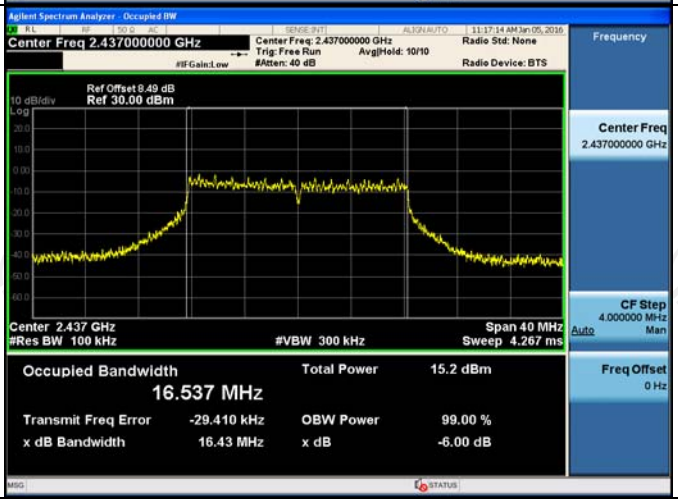
6dB Occupied Bandwidth

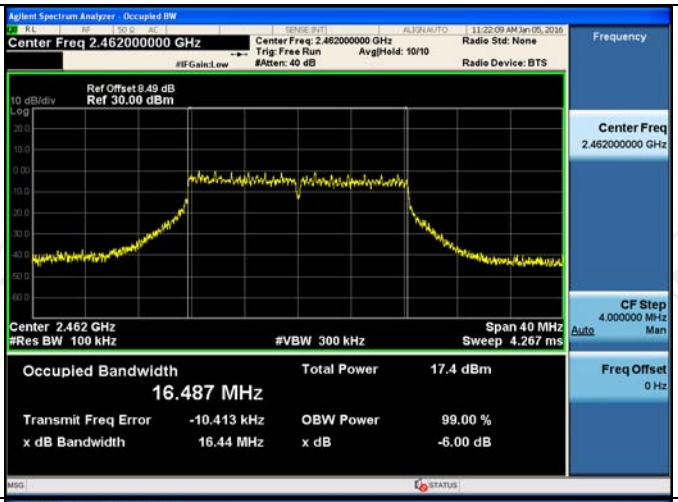
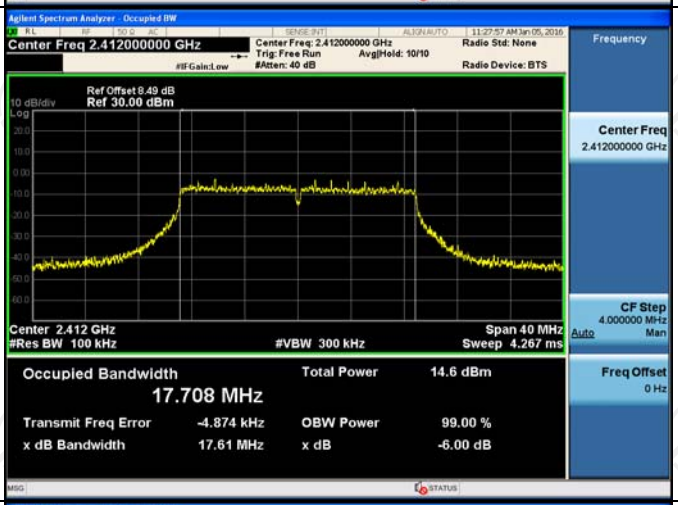
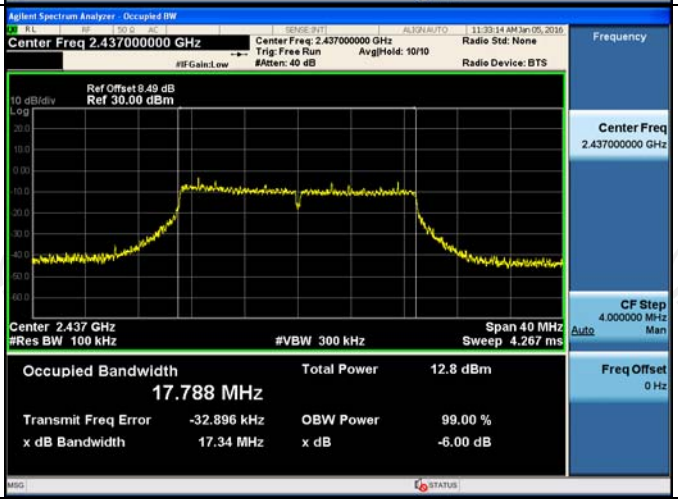
Result Table

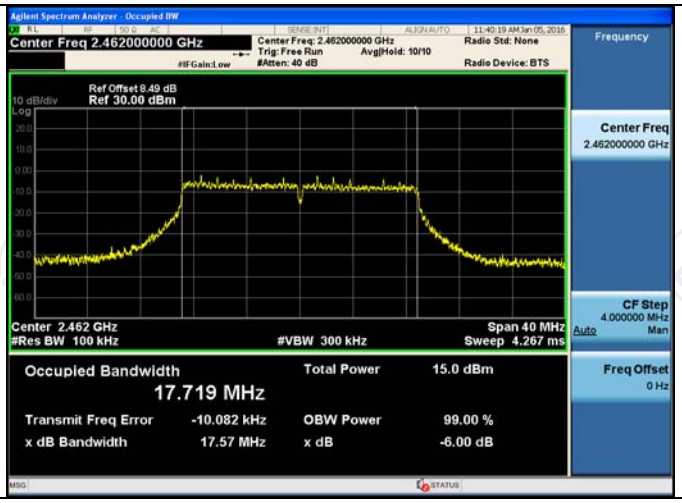
Mode	Channel	6dB Bandwidth [MHz]	99% OBW [MHz]	Verdict
11B	LCH	9.065	13.634	PASS
11B	MCH	8.368	13.910	PASS
11B	HCH	8.882	13.597	PASS
11G	LCH	16.45	16.495	PASS
11G	MCH	16.43	16.537	PASS
11G	HCH	16.44	16.487	PASS
11N20SISO	LCH	17.61	17.708	PASS
11N20SISO	MCH	17.34	17.788	PASS
11N20SISO	HCH	17.57	17.719	PASS

Test Graph

Graphs			
11B/LCH			
11B/MCH			

11B/HCH			
11G/LCH			
11G/MCH			

11G/HCH			
11N20SISO/LCH			
11N20SISO/MCH			

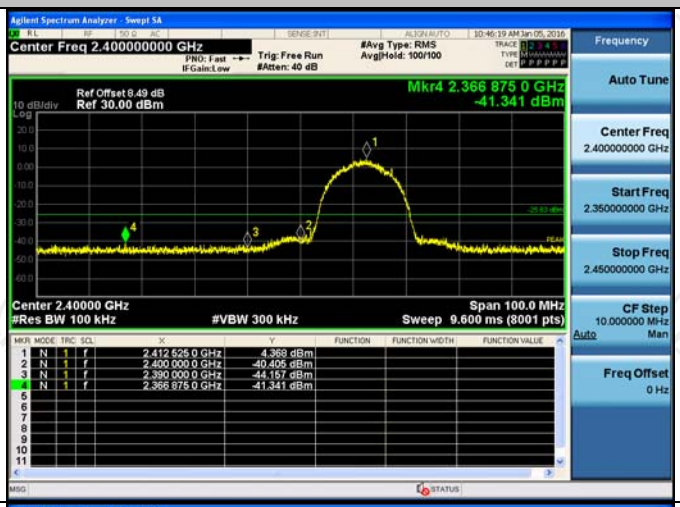
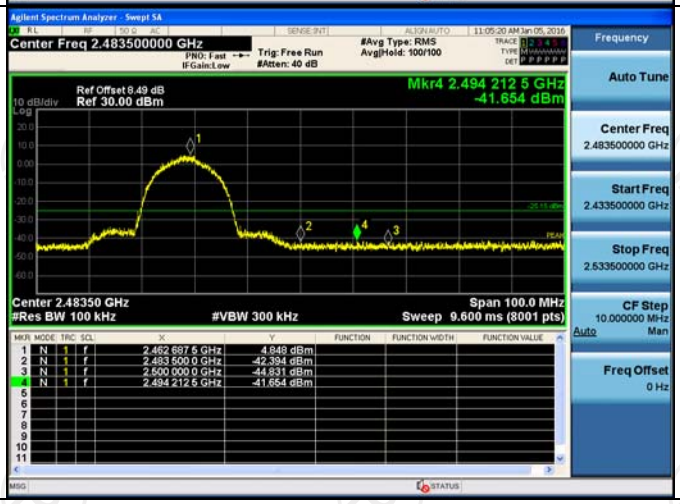
11N20SISO/HCH			

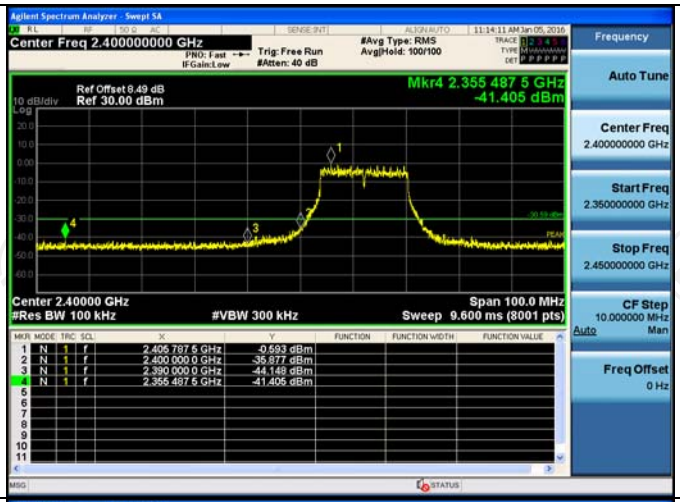
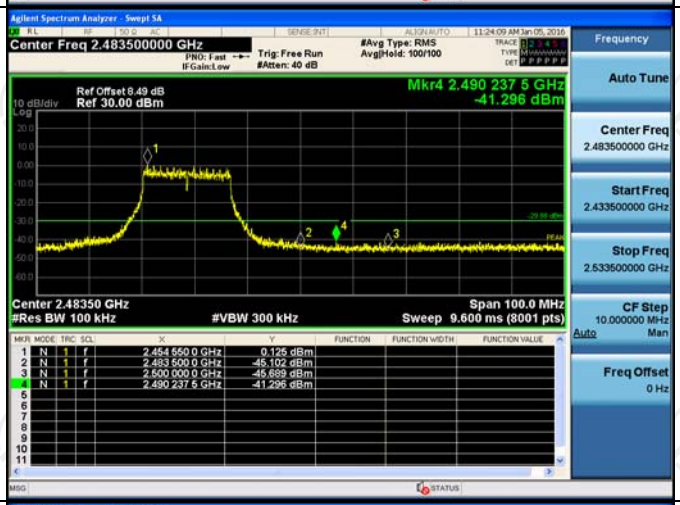
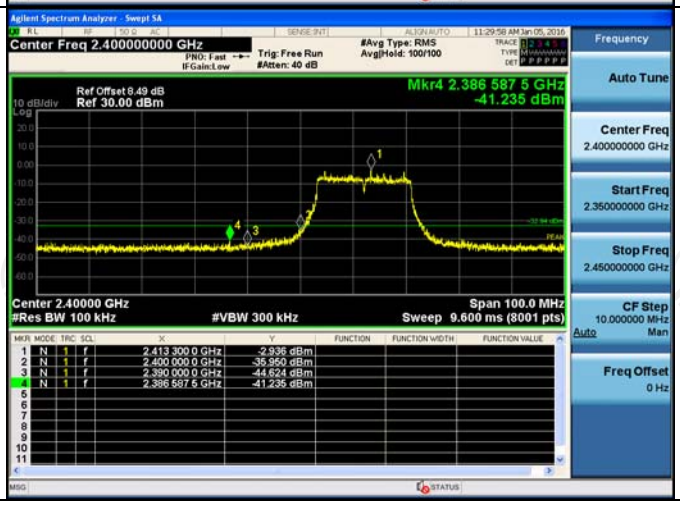
Band-edge for RF Conducted Emissions

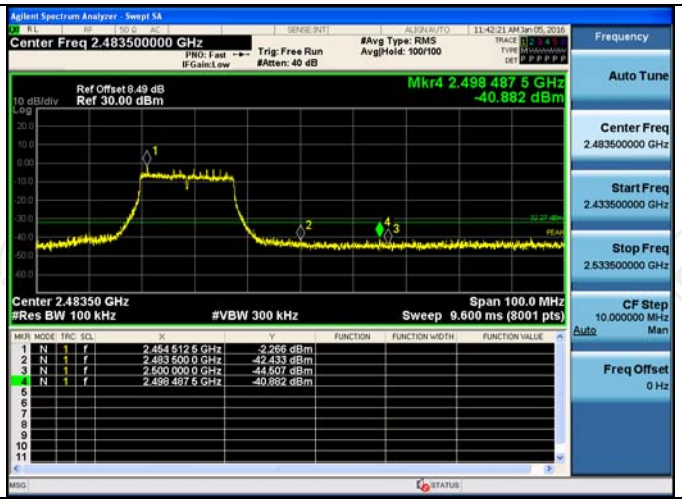
Result Table

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	4.368	-41.341	-25.63	PASS
11B	HCH	4.848	-41.654	-25.15	PASS
11G	LCH	-0.593	-41.405	-30.59	PASS
11G	HCH	0.125	-41.296	-29.88	PASS
11N20SISO	LCH	-2.936	-41.235	-32.94	PASS
11N20SISO	HCH	-2.266	-40.882	-32.27	PASS

Test Graph

Graphs		
11B/LCH		
11B/HCH		

11G/LCH			
11G/HCH			
11N20SISO/LCH			

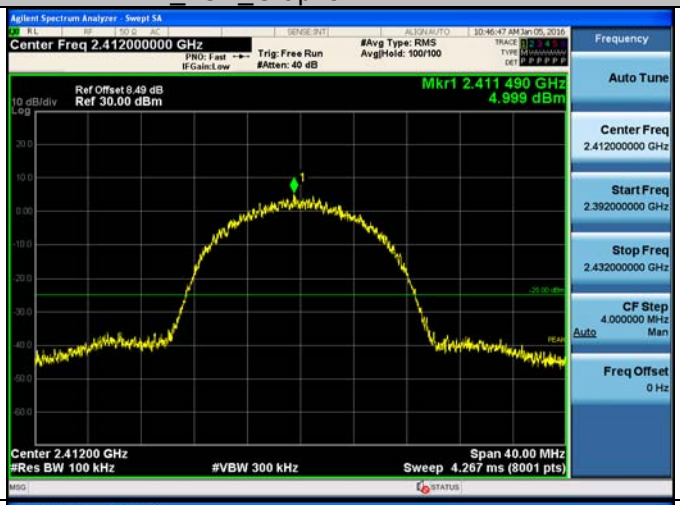
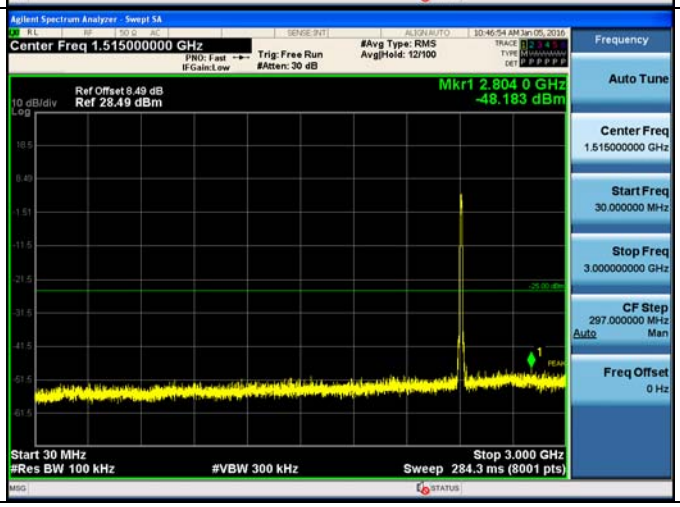
11N20SISO/HCH			

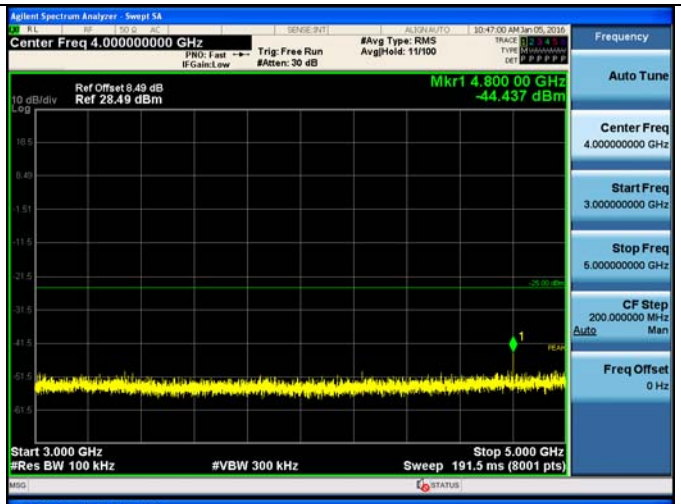
Appendix D): RF Conducted Spurious Emissions

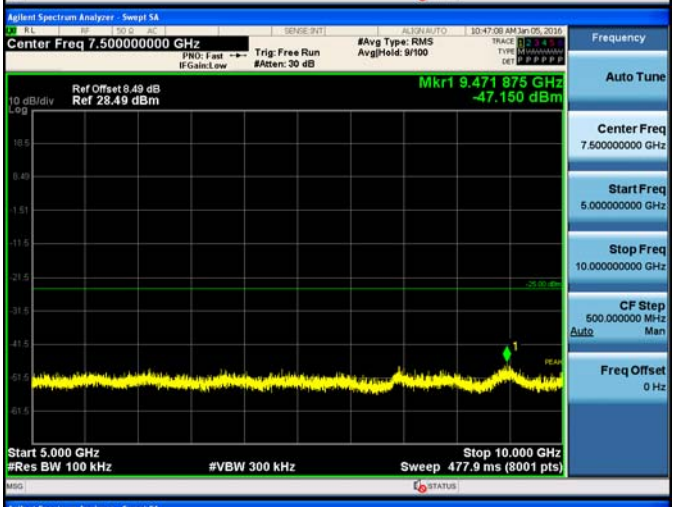
Result Table

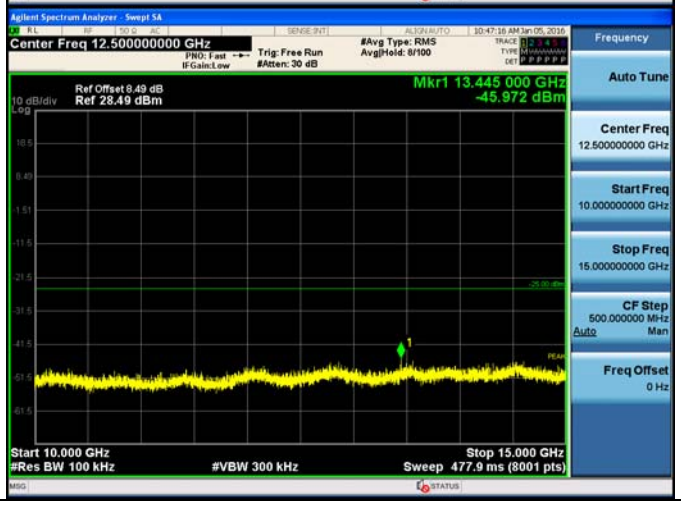
Mode	Channel	Pref [dBm]	Puw[dBm]	Verdict
11B	LCH	4.999	<Limit	PASS
11B	MCH	2.567	<Limit	PASS
11B	HCH	5.662	<Limit	PASS
11G	LCH	-0.663	<Limit	PASS
11G	MCH	-1.235	<Limit	PASS
11G	HCH	0.072	<Limit	PASS
11N20SISO	LCH	-2.755	<Limit	PASS
11N20SISO	MCH	-3.496	<Limit	PASS
11N20SISO	HCH	-2.285	<Limit	PASS

Test Graph

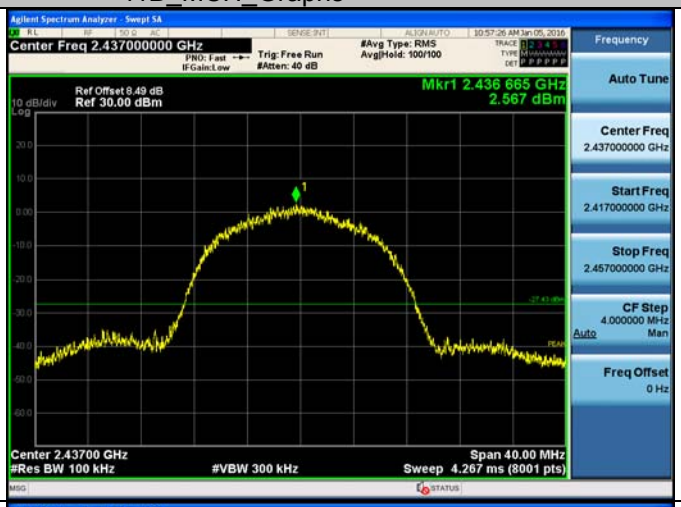
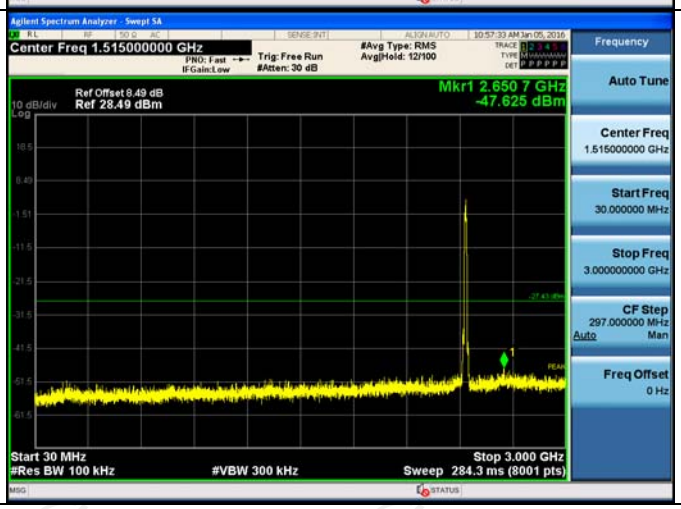
11B_LCH_Graphs			
Pref/11B/LCH			
Puw/11B/LCH			

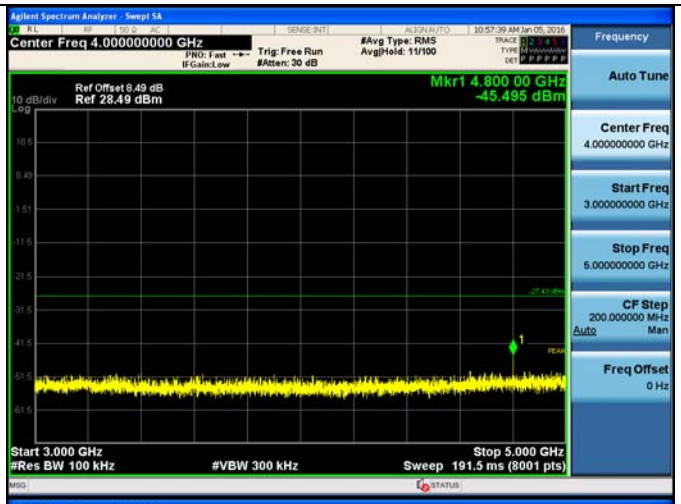

Agilent Spectrum Analyzer - Swept SA
Center Freq 4.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 11/100
10:47:00 AM Jan 05, 2016
Frequency
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Log
Mkr1 4.800 00 GHz
-44.437 dBm
Auto Tune
Center Freq
4.000000000 GHz
Start Freq
3.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
200.000000 MHz
Auto
Man
Freq Offset
0 Hz
Start 3.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 191.5 ms (8001 pts)

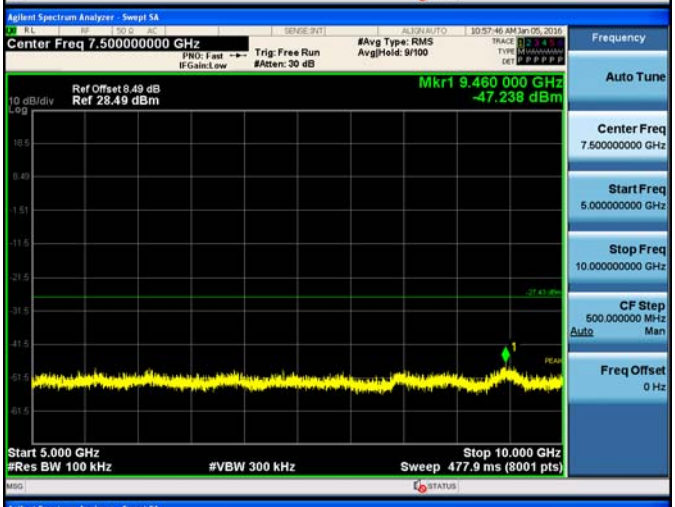

Agilent Spectrum Analyzer - Swept SA
Center Freq 7.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 9/100
10:47:08 AM Jan 05, 2016
Frequency
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Log
Mkr1 9.471 875 GHz
-47.150 dBm
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 477.9 ms (8001 pts)

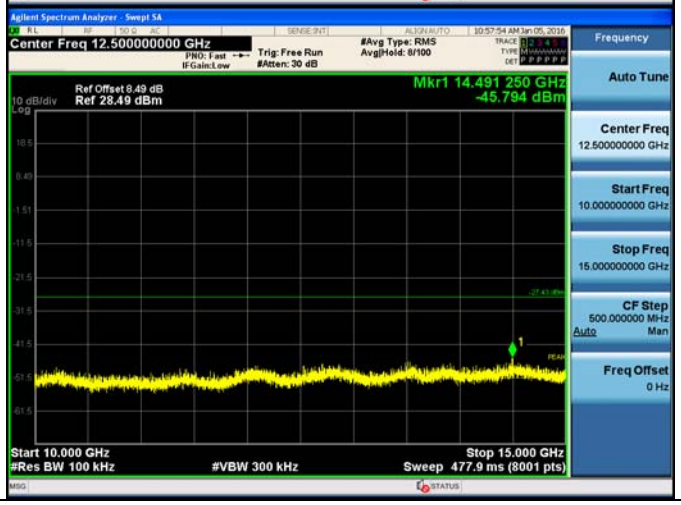

Agilent Spectrum Analyzer - Swept SA
Center Freq 12.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 8/100
10:47:16 AM Jan 05, 2016
Frequency
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Log
Mkr1 13.445 000 GHz
-45.972 dBm
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 477.9 ms (8001 pts)

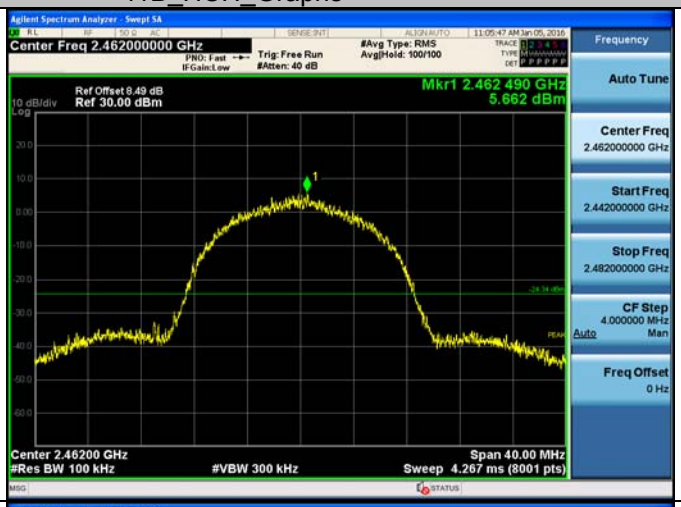
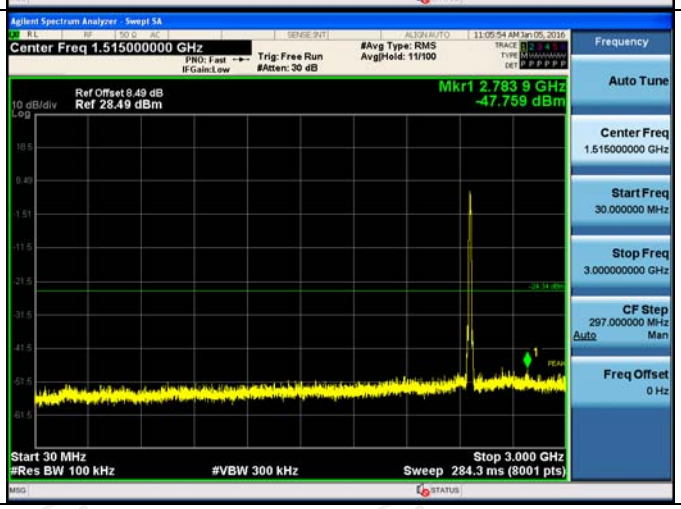
11B_MCH_Graphs			
Pref/11B/MCH			
Puw/11B/MCH			

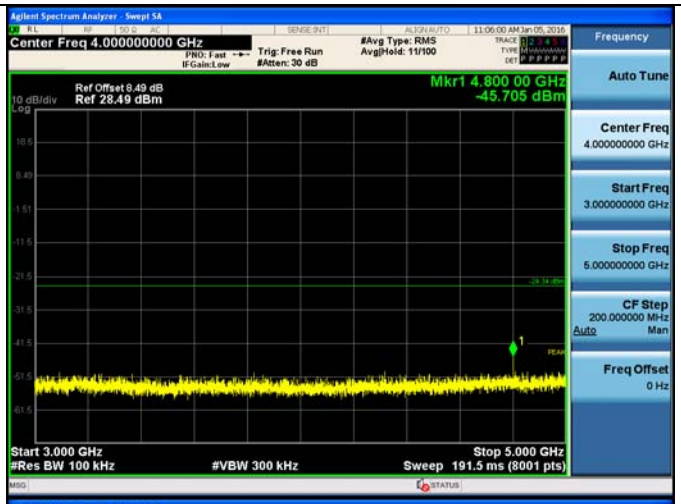

Agilent Spectrum Analyzer - Swept SA
Center Freq 4.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 11/100
10:57:39 AM Jan 05, 2016
Frequency
Auto Tune
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Log
Mkr1 4.800 00 GHz
-45.495 dBm
Center Freq
4.000000000 GHz
Start Freq
3.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
200.000000 MHz
Auto
Man
Freq Offset
0 Hz
Start 3.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 191.5 ms (8001 pts)

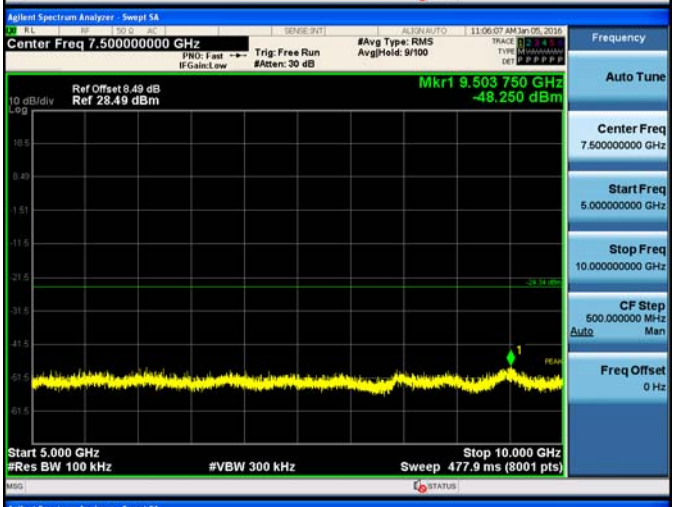

Agilent Spectrum Analyzer - Swept SA
Center Freq 7.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 9/100
10:57:46 AM Jan 05, 2016
Frequency
Auto Tune
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Log
Mkr1 9.460 000 GHz
-47.238 dBm
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 477.9 ms (8001 pts)

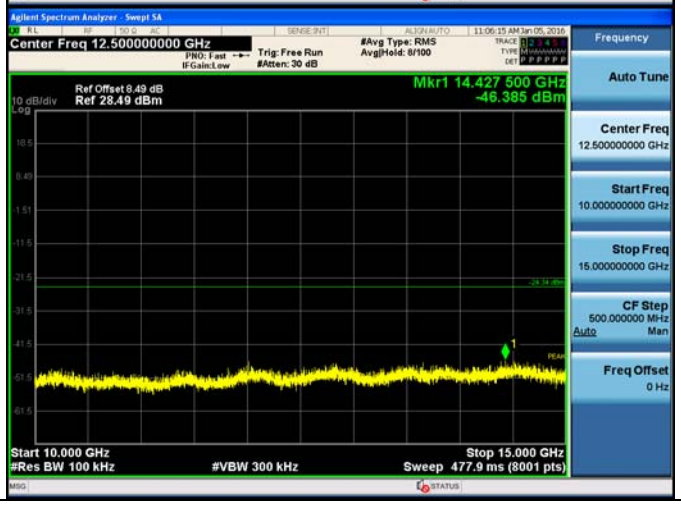

Agilent Spectrum Analyzer - Swept SA
Center Freq 12.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 8/100
10:57:54 AM Jan 05, 2016
Frequency
Auto Tune
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Log
Mkr1 14.491 250 GHz
-45.794 dBm
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 477.9 ms (8001 pts)

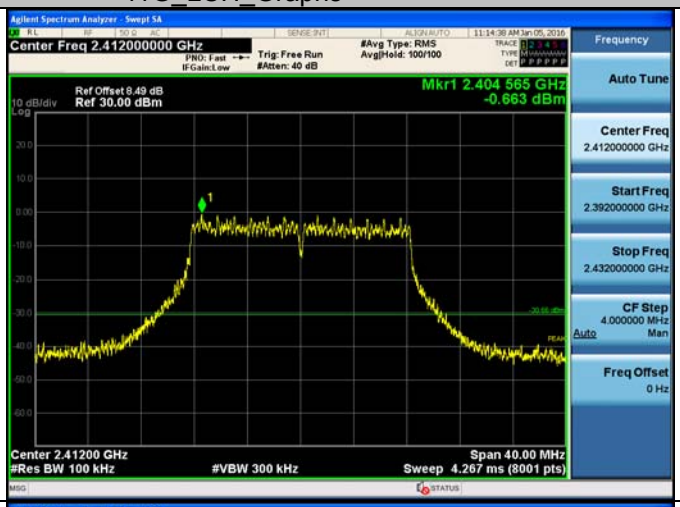
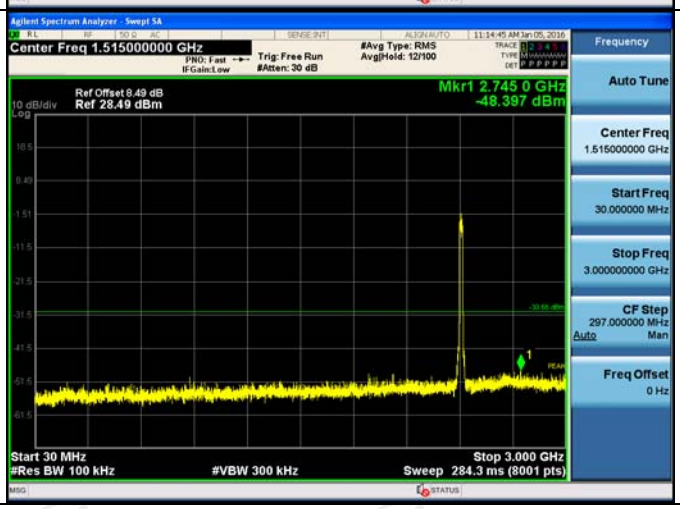
11B_HCH_Graphs			
Pref/11B/HCH			
Puw/11B/HCH			

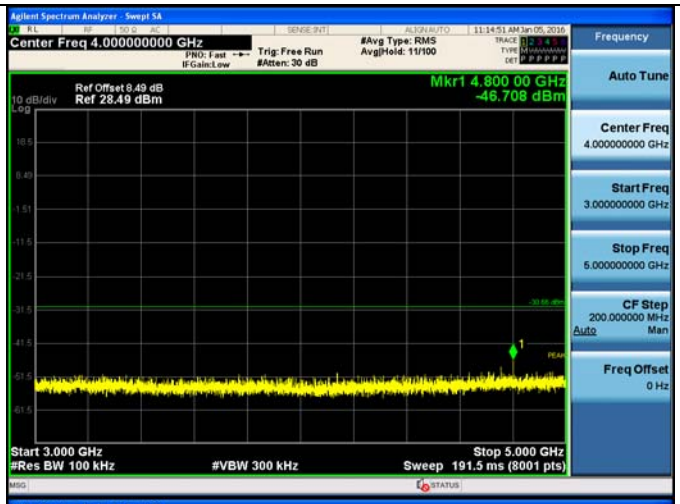

Agilent Spectrum Analyzer - Swept SA
Center Freq 4.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 11/100
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Mkr1 4.800 00 GHz
-45.705 dBm
Start 3.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 191.5 ms (8001 pts)
Frequency
Auto Tune
Center Freq
4.000000000 GHz
Start Freq
3.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
200.000000 MHz
Auto
Man
Freq Offset
0 Hz

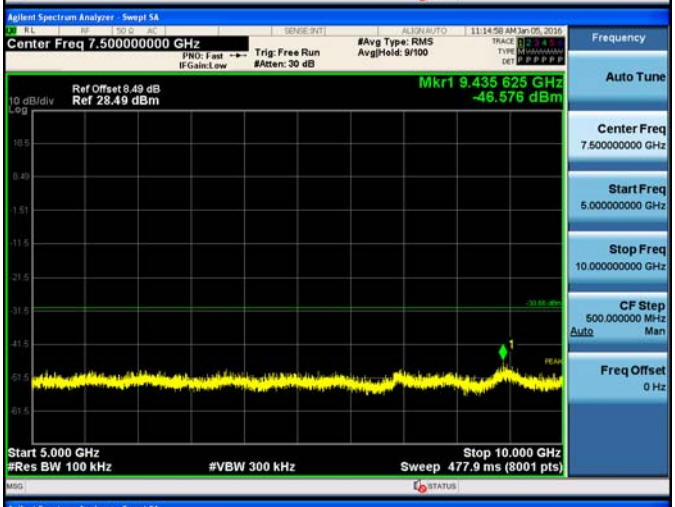

Agilent Spectrum Analyzer - Swept SA
Center Freq 7.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 9/100
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Mkr1 9.503 750 GHz
-48.250 dBm
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 477.9 ms (8001 pts)
Frequency
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz

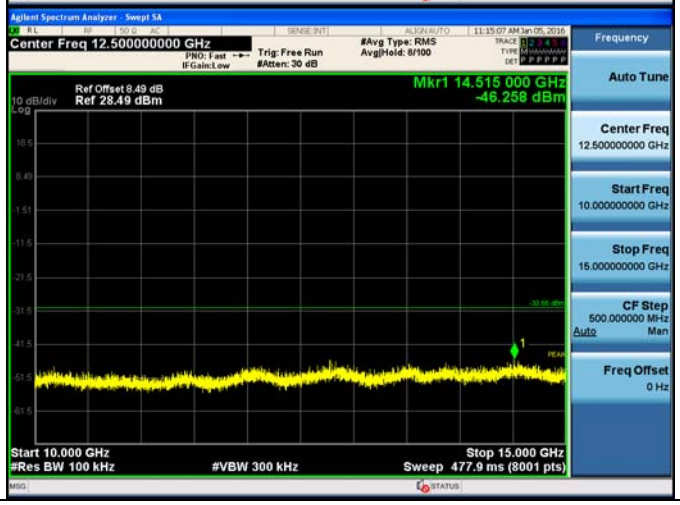

Agilent Spectrum Analyzer - Swept SA
Center Freq 12.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 8/100
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Mkr1 14.427 500 GHz
-46.385 dBm
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 477.9 ms (8001 pts)
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz

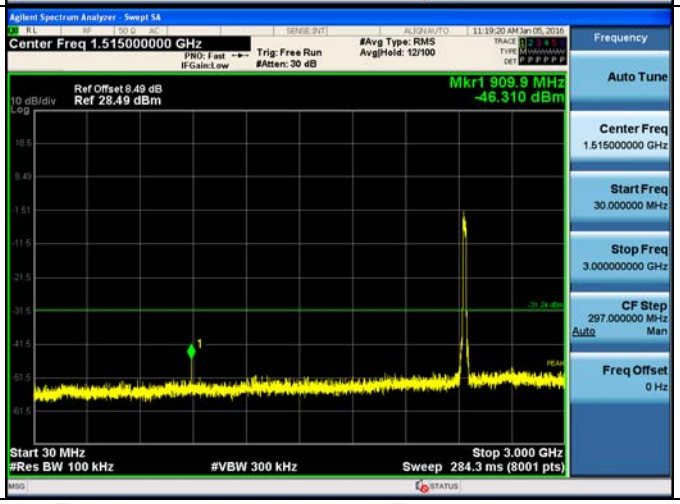
11G_LCH_Graphs			
Pref/11G/LCH			
Puw/11G/LCH			

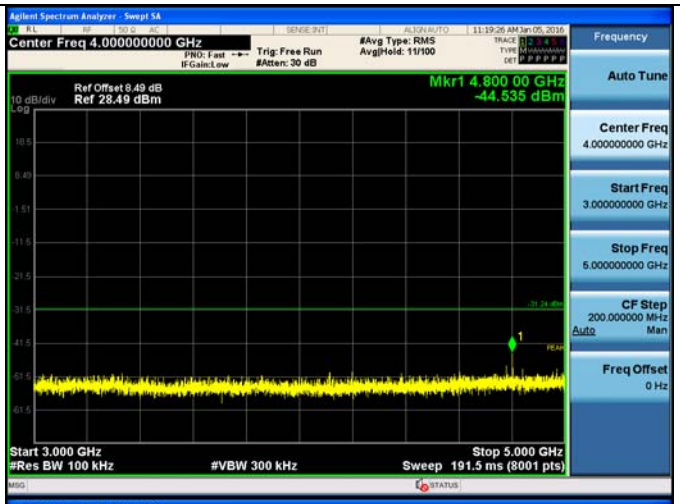

Agilent Spectrum Analyzer - Swept SA
Center Freq 4.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 11/100
11:14:51 AM Jan 05, 2016
Frequency
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Log
Mkr1 4.800 00 GHz
-46.708 dBm
Auto Tune
Center Freq
4.000000000 GHz
Start Freq
3.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
200.000000 MHz
Auto
Man
Freq Offset
0 Hz
Start 3.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 191.5 ms (8001 pts)

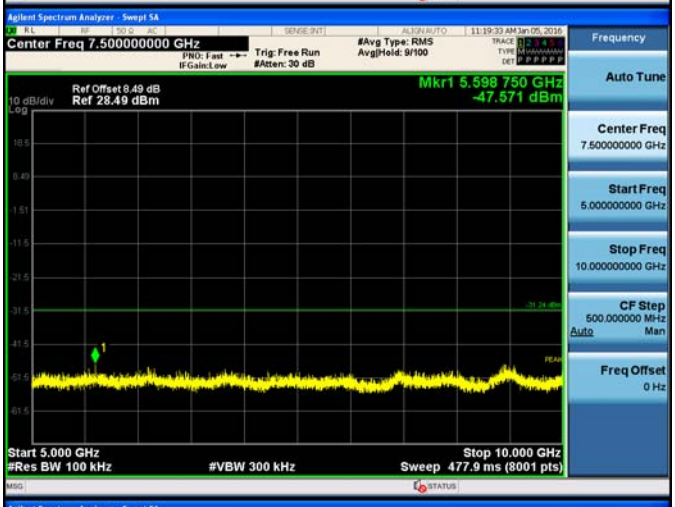

Agilent Spectrum Analyzer - Swept SA
Center Freq 7.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 9/100
11:14:58 AM Jan 05, 2016
Frequency
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Log
Mkr1 9.435 625 GHz
-46.576 dBm
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 477.9 ms (8001 pts)

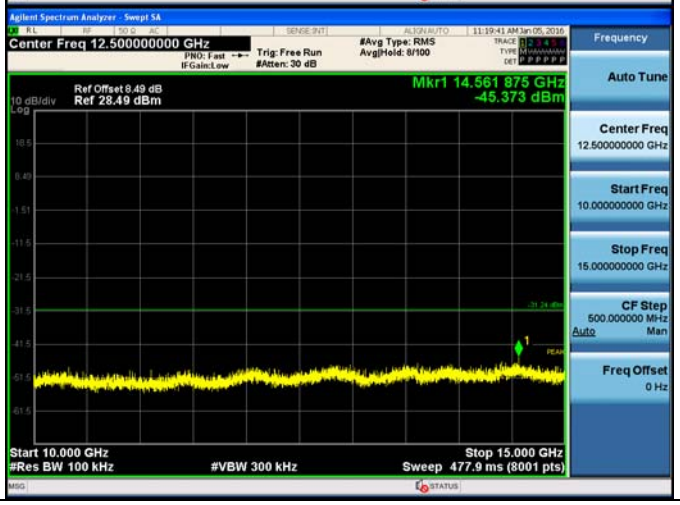

Agilent Spectrum Analyzer - Swept SA
Center Freq 12.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 8/100
11:15:07 AM Jan 05, 2016
Frequency
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Log
Mkr1 14.515 000 GHz
-46.258 dBm
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 477.9 ms (8001 pts)

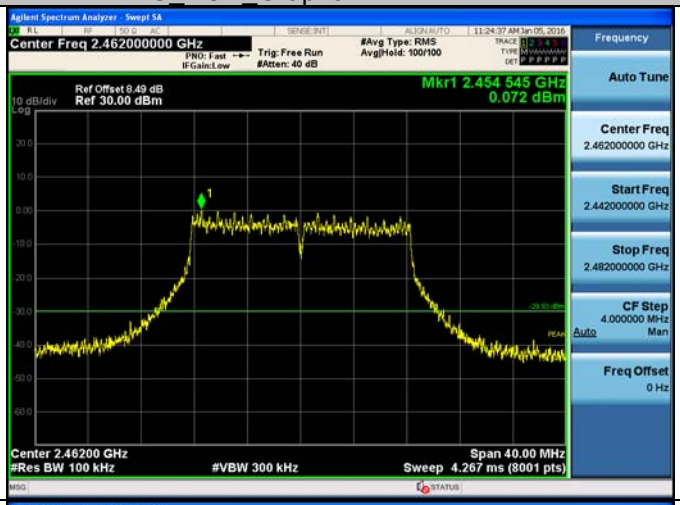
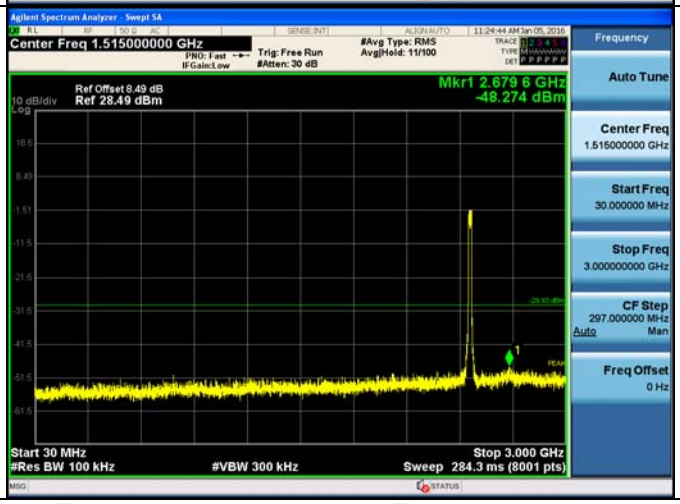
11G_MCH_Graphs			
Pref/11G/MCH			
Puw/11G/MCH			

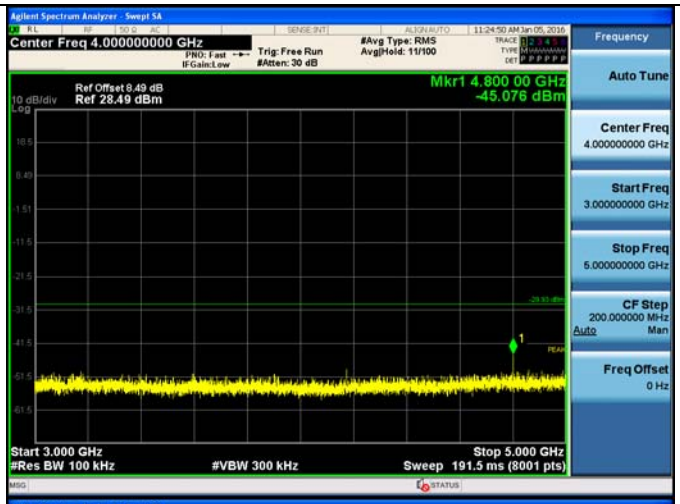

Agilent Spectrum Analyzer - Swept SA
Center Freq 4.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 11/100
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Mkr1 4.800 00 GHz
-44.535 dBm
Start 3.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 191.5 ms (8001 pts)
Frequency
Auto Tune
Center Freq
4.000000000 GHz
Start Freq
3.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
200.000000 MHz
Auto
Man
Freq Offset
0 Hz

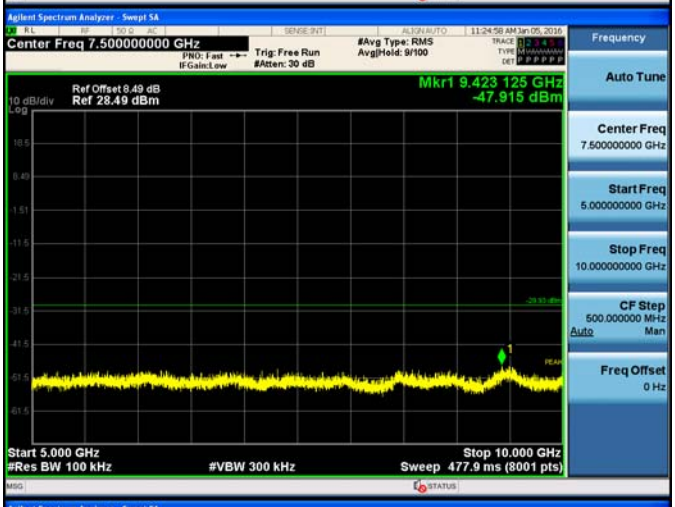

Agilent Spectrum Analyzer - Swept SA
Center Freq 7.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 9/100
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Mkr1 5.598 750 GHz
-47.571 dBm
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 477.9 ms (8001 pts)
Frequency
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz

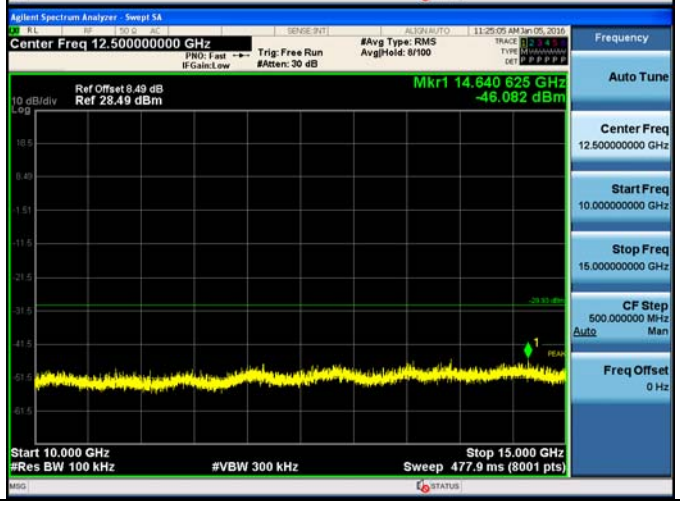

Agilent Spectrum Analyzer - Swept SA
Center Freq 12.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 8/100
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Mkr1 14.561 875 GHz
-45.373 dBm
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 477.9 ms (8001 pts)
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz

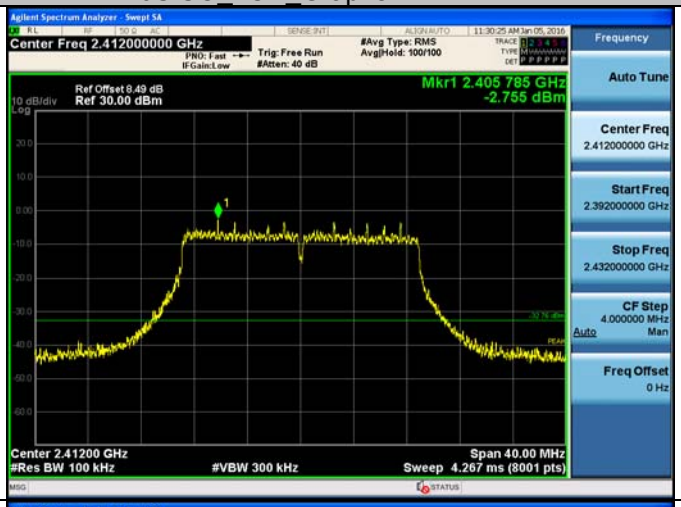
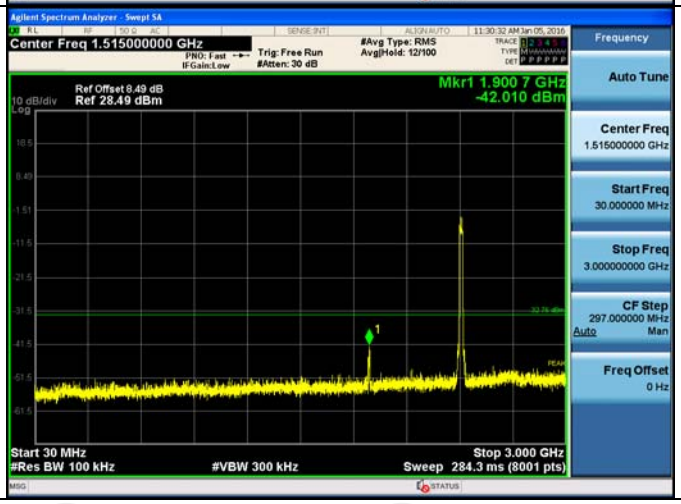
11G_HCH_Graphs			
Pref/11G/HCH			
Puw/11G/HCH			

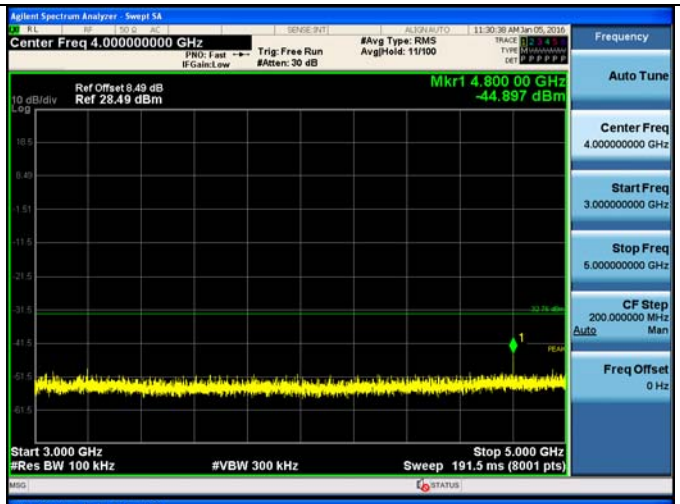

Agilent Spectrum Analyzer - Swept SA
Center Freq 4.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 11/100
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Mkr1 4.800 00 GHz
-45.076 dBm
Start 3.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 191.5 ms (8001 pts)
Frequency
Auto Tune
Center Freq
4.000000000 GHz
Start Freq
3.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
200.000000 MHz
Auto
Man
Freq Offset
0 Hz

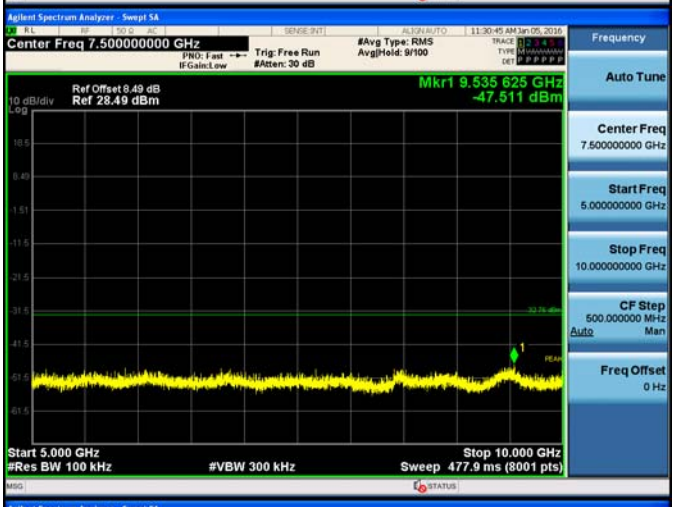

Agilent Spectrum Analyzer - Swept SA
Center Freq 7.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 9/100
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Mkr1 9.423 125 GHz
-47.915 dBm
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 477.9 ms (8001 pts)
Frequency
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz

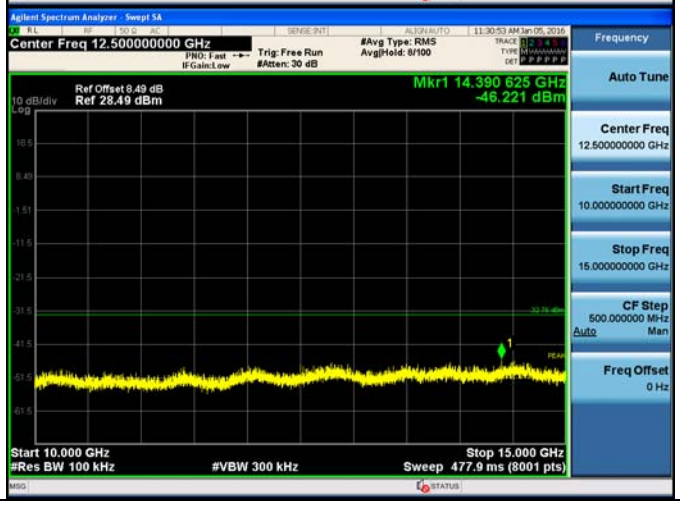

Agilent Spectrum Analyzer - Swept SA
Center Freq 12.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 8/100
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Mkr1 14.640 625 GHz
-46.082 dBm
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 477.9 ms (8001 pts)
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz

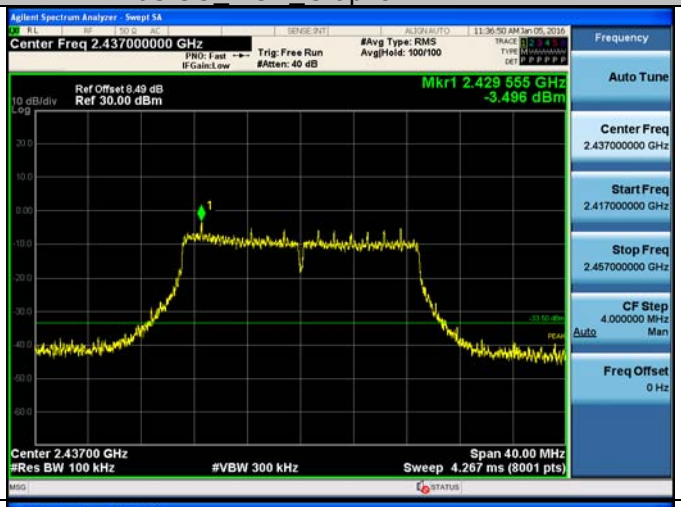
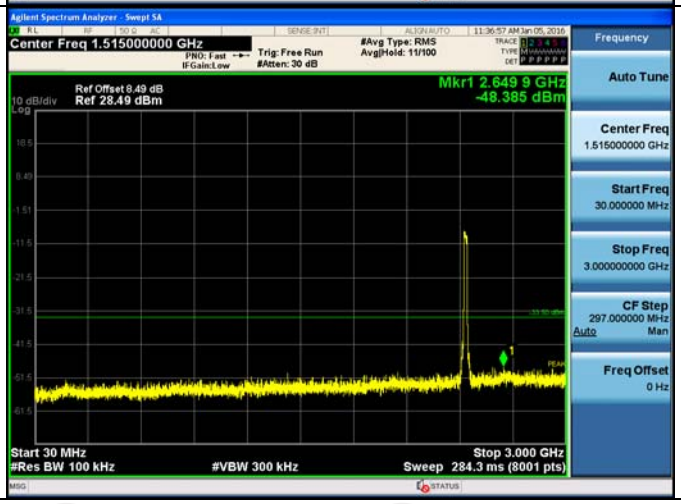
11N20SISO_LCH_Graphs			
Pref/11N20SISO/LCH			
/11N20SISO/LCH			

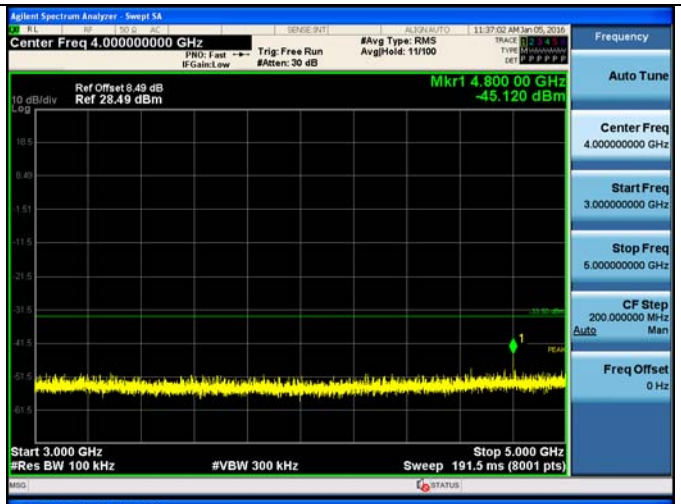

Agilent Spectrum Analyzer - Swept SA
Center Freq 4.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 11/100
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Mkr1 4.800 00 GHz
-44.897 dBm
Start 3.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 191.5 ms (8001 pts)
Frequency
Auto Tune
Center Freq
4.000000000 GHz
Start Freq
3.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
200.000000 MHz
Auto
Man
Freq Offset
0 Hz

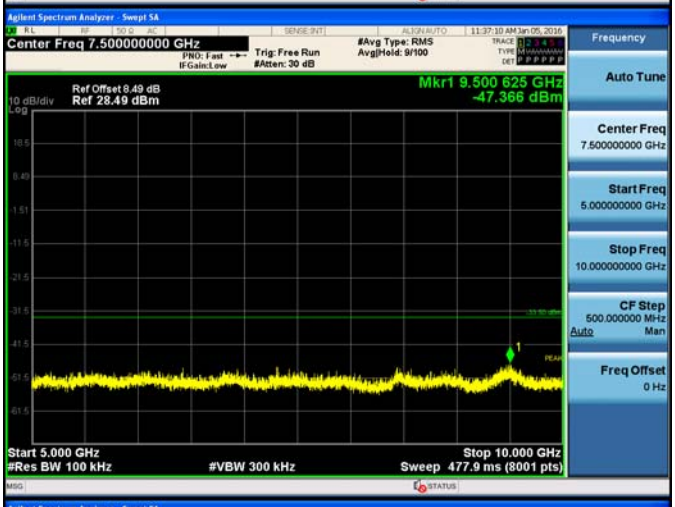

Agilent Spectrum Analyzer - Swept SA
Center Freq 7.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 9/100
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Mkr1 9.535 625 GHz
-47.511 dBm
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 477.9 ms (8001 pts)
Frequency
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz

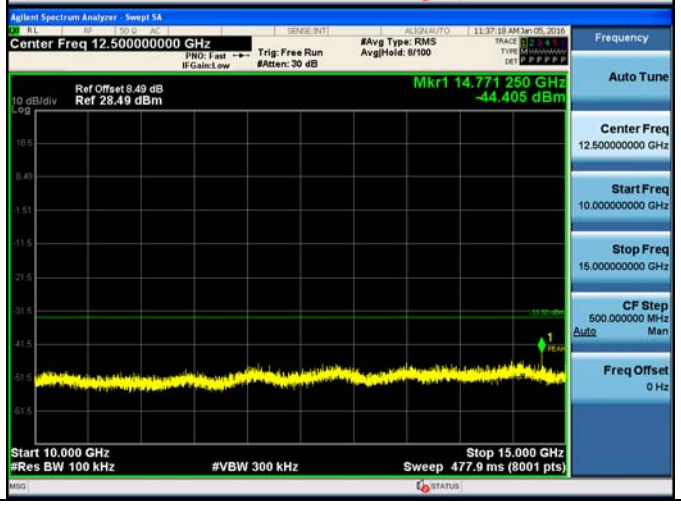

Agilent Spectrum Analyzer - Swept SA
Center Freq 12.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 8/100
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Mkr1 14.390 625 GHz
-46.221 dBm
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 477.9 ms (8001 pts)
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz

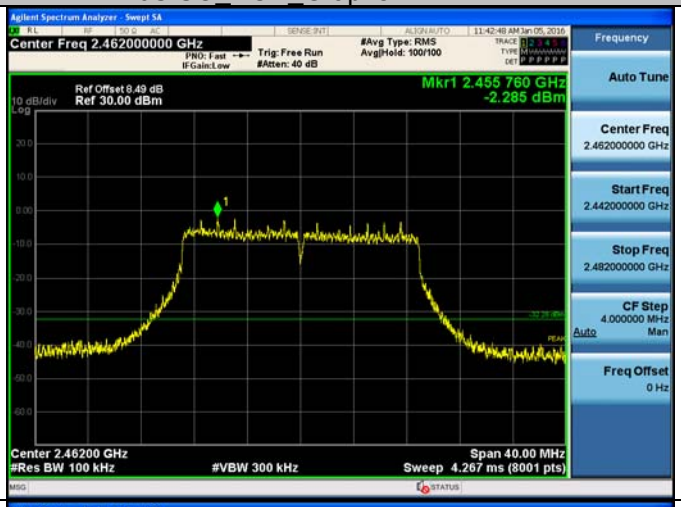
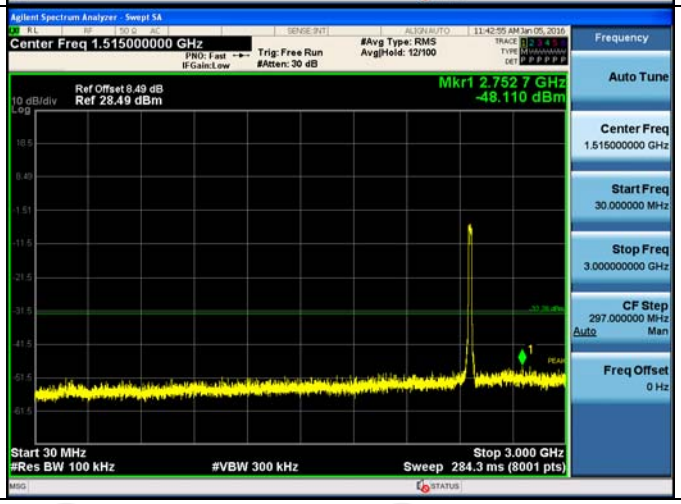
11N20SISO_MCH_Graphs			
Pref/11N20SISO/MCH			
Puw/11N20SISO/MCH			

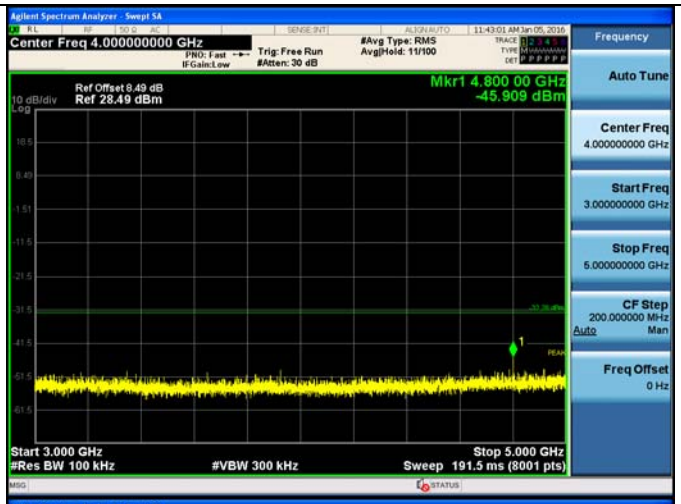

Agilent Spectrum Analyzer - Swept SA
Center Freq 4.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 11/100
11:37:02 AM Jan 05, 2016
Frequency
Auto Tune
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Log
Mkr1 4.800 00 GHz
-45.120 dBm
Center Freq
4.000000000 GHz
Start Freq
3.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
200.000000 MHz
Auto
Man
Freq Offset
0 Hz
Start 3.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 191.5 ms (8001 pts)

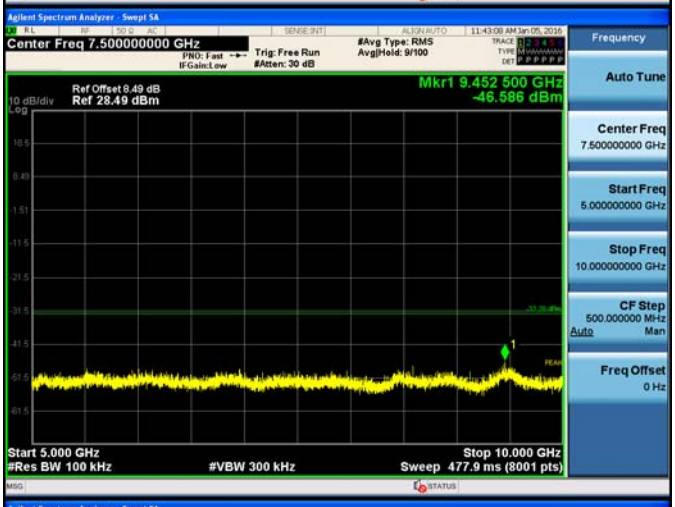

Agilent Spectrum Analyzer - Swept SA
Center Freq 7.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 9/100
11:37:10 AM Jan 05, 2016
Frequency
Auto Tune
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Log
Mkr1 9.500 625 GHz
-47.366 dBm
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 477.9 ms (8001 pts)

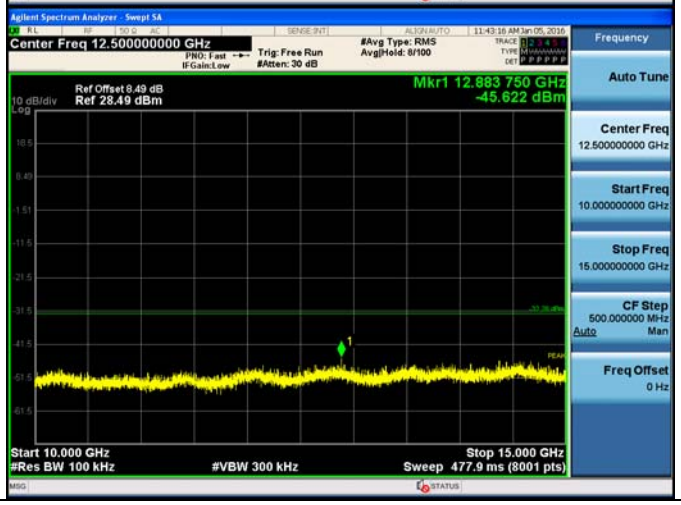

Agilent Spectrum Analyzer - Swept SA
Center Freq 12.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 8/100
11:37:18 AM Jan 05, 2016
Frequency
Auto Tune
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Log
Mkr1 14.771 250 GHz
-44.405 dBm
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 477.9 ms (8001 pts)

11N20SISO_HCH_Graphs			
Pref/11N20SISO/HCH			
Puw/11N20SISO/HCH			


Agilent Spectrum Analyzer - Swept SA
Center Freq 4.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 11/100
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Mkr1 4.800 00 GHz
-45.909 dBm
Start 3.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.000 GHz
Sweep 191.5 ms (8001 pts)
Frequency
Auto Tune
Center Freq
4.000000000 GHz
Start Freq
3.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
200.000000 MHz
Auto
Man
Freq Offset
0 Hz


Agilent Spectrum Analyzer - Swept SA
Center Freq 7.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 9/100
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Mkr1 9.452 500 GHz
-46.586 dBm
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 477.9 ms (8001 pts)
Frequency
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz


Agilent Spectrum Analyzer - Swept SA
Center Freq 12.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 8/100
Ref Offset 8.49 dB
10 dB/div
Ref 28.49 dBm
Mkr1 12.883 750 GHz
-45.622 dBm
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 477.9 ms (8001 pts)
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz

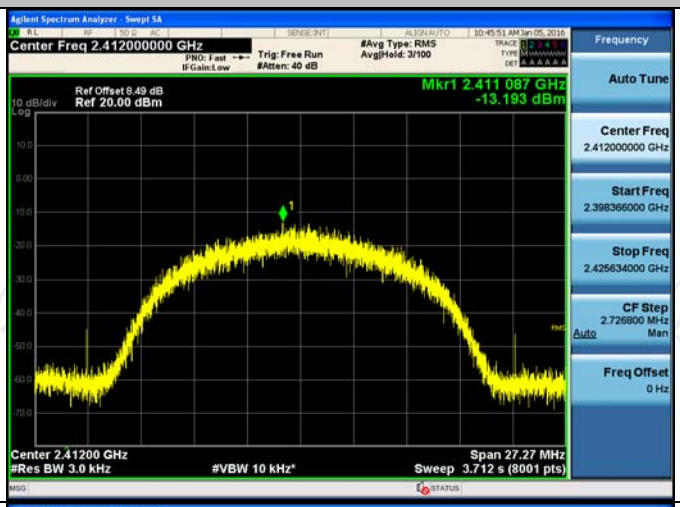
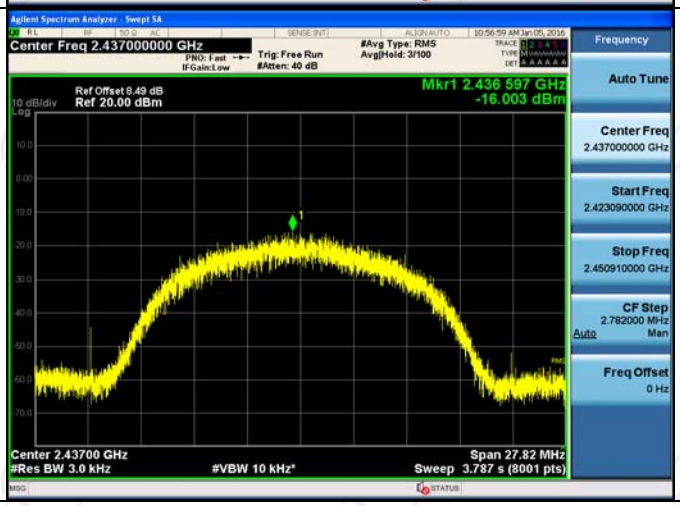
		 Agilent Spectrum Analyzer - Swept SA Center Freq 20.000000000 GHz PNO: Fast IFGain:Low Trig: Free Run #Atten: 32 dB #Avg Type: RMS Avg|Hold: 5/100 11:43:24 AM Jan 05, 2016 Ref Offset 8.49 dB 10 dB/div Ref 30.00 dBm Log Mkr1 24.800 00 GHz -38.832 dBm Start 15.000 GHz #Res BW 100 kHz #VBW 300 kHz Stop 25.000 GHz Sweep 955.7 ms (8001 pts) Frequency Auto Tune Center Freq 20.000000000 GHz Start Freq 15.000000000 GHz Stop Freq 25.000000000 GHz CF Step 1.000000000 GHz Auto Man Freq Offset 0 Hz	

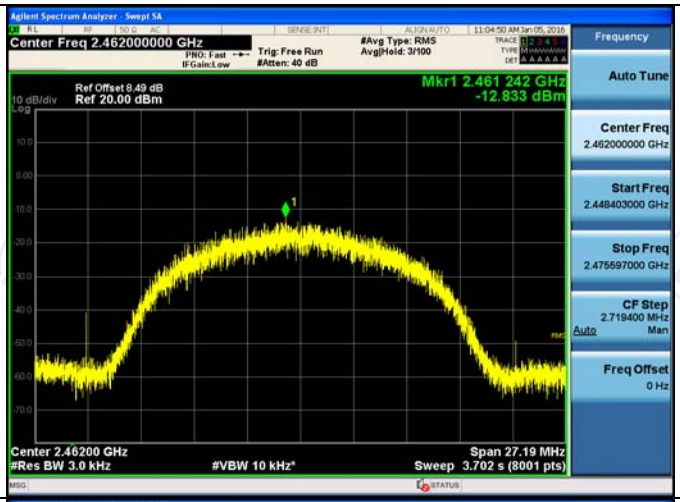
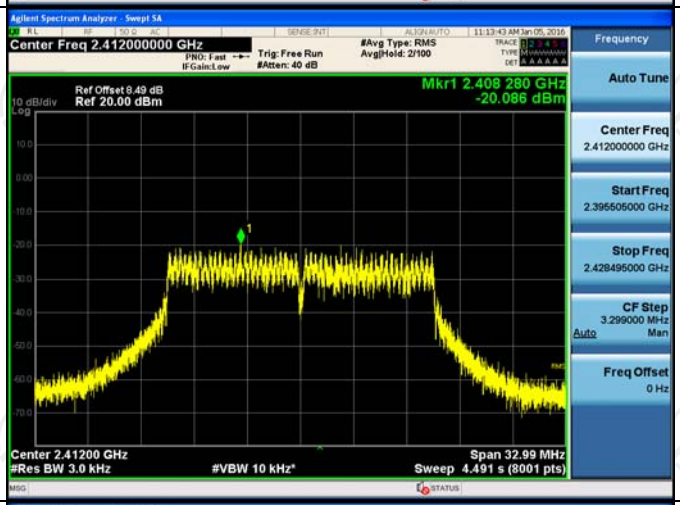
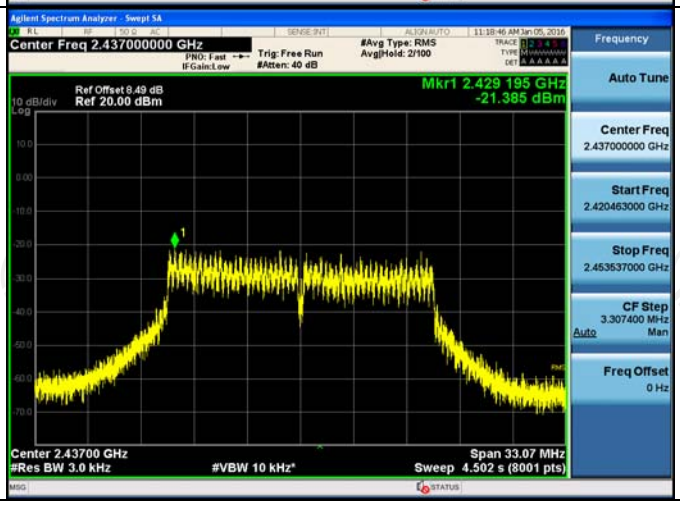
Power Spectral Density

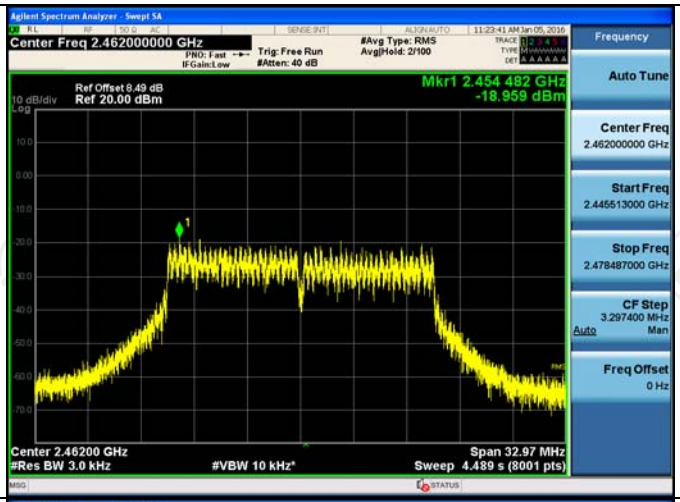
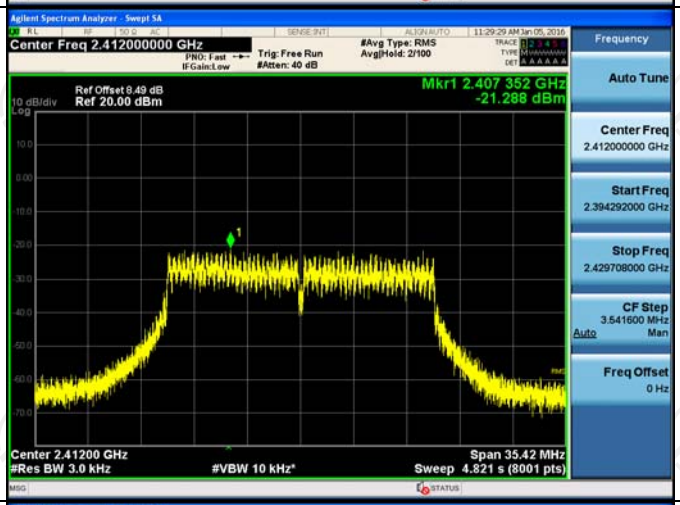
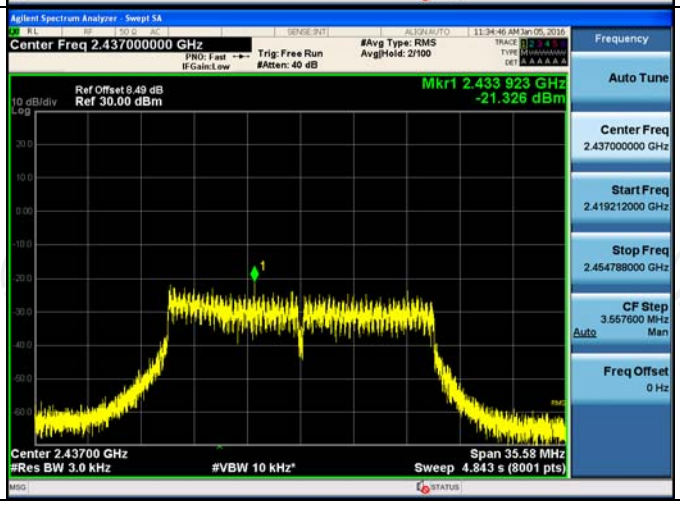
Result Table

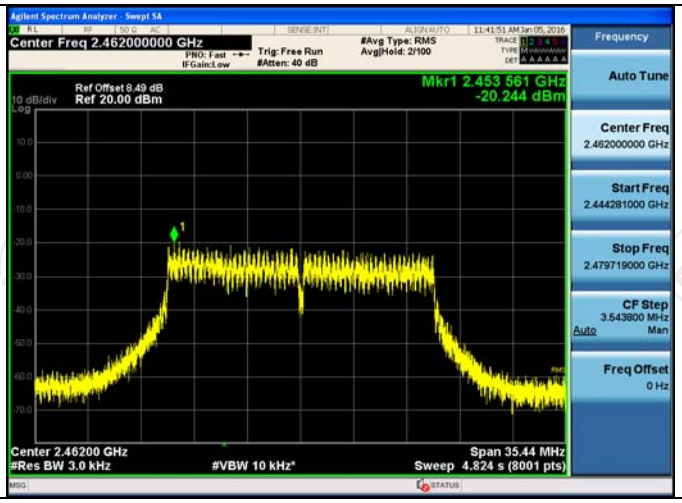
Mode	Channel	Av.PSD [dBm/3kHz]	Verdict
11B	LCH	-13.193	PASS
11B	MCH	-16.003	PASS
11B	HCH	-12.833	PASS
11G	LCH	-20.086	PASS
11G	MCH	-21.385	PASS
11G	HCH	-18.959	PASS
11N20SISO	LCH	-21.288	PASS
11N20SISO	MCH	-21.326	PASS
11N20SISO	HCH	-20.244	PASS

Test Graph

Graphs		
11B/LCH		
11B/MCH		

11B/HCH			
11G/LCH			
11G/MCH			

11G/HCH			
11N20SISO/LCH			
11N20SISO/MCH			

11N20SISO/HCH			

********END OF REPORT********