



RF TEST REPORT

Report No.: SET2016-18250

Product Name: LTE Ufi

FCC ID: SRQ-R218

Model No. : R218

Applicant: ZTE Corporation

Address: ZTE Plaza, Keji Road South, Shenzhen, China

Test Date: 10/10/2016 — 10/17/2016

Issued by: CCIC-SET

Lab Location: Building 28/29, East of Shigu, Xili Industrial Zone, Xili Road,
Nanshan District, Shenzhen, Guangdong, China

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Test Report

Product Name : LTE Ufi

Brand Name : ZTE

Trade Name : ZTE

Applicant : ZTE Corporation

Applicant Address : ZTE Plaza, Keji Road South, Shenzhen, China

Manufacturer : ZTE Corporation

Manufacturer Address : ZTE Plaza, Keji Road South, Shenzhen, China

Test Standards : 47 CFR Part 15 Subpart C: Radio Frequency Devices

Test Result : PASS

Tested by :

Candy Liu

2016.10.18

Candy Liu, Test Engineer

Reviewed by :

Zhu Qi

2016.10.18

Zhu Qi, Senior Engineer

Approved by :

Wu Lian

2016.10.18

Wu Lian, Manager

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Change History		
Issue	Date	Reason for change
1.0	2016.10.18	First edition

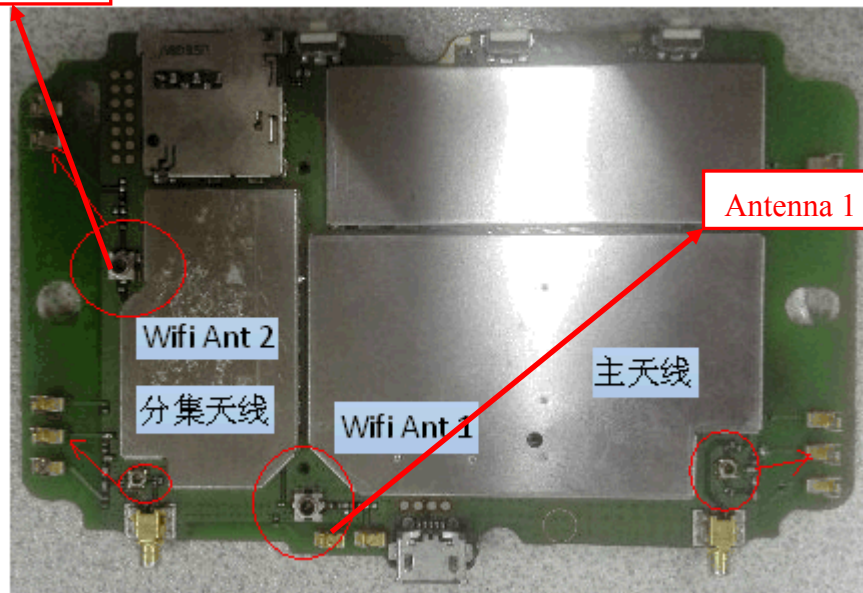
1. General Information

1.1. EUT Description

EUT Type	LTE Ufi
Hardware Version	Ver.B(T2)
Software Version	BD_R218V2.1
EUT supports Radios application	GPRS/EDGE/WCDMA/HSPA/LTE WLAN2.4GHz 802.11b/g/n (HT20/40)
Modulation technology	DSSS, OFDM
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM,16QAM, QPSK, BPSK for OFDM
Transfer Rate	2.4GHz: 802.11b: 11/5.5/2/1 Mbps 802.11g: 54/48/36/24/18/12/9/6 Mbps 802.11n: up to 300 Mbps
Frequency Range	2.4GHz: 802.11b, 802.11g, 802.11n(20MHz): 2412~2462MHz 802.11n(40MHz): 2422~2452MHz
Channel Number	2.4GHz: 802.11b/g/n-20MHz: 11 802.11n-40MHz: 7
Antenna Type	Internal Antenna
Antenna Gain	Antenna 1: 2.7dBi Antenna 2: 2.4dBi ;
Product Type	Refer to note
Output Power (Max.)	802.11b: 18.72dBm 802.11g: 18.36dBm 802.11n(20MHz): 18.11dBm 802.11n(40MHz): 17.16dBm

Frequency	Modulation Mode	TX / RX Function
2.4GHz	802.11b	1TX / 1RX or 2TX / 2RX
	802.11g	1TX / 1RX or 2TX / 2RX
	802.11n (HT20)	1TX / 1RX or 2TX / 2RX
	802.11n (HT40)	1TX / 1RX or 2TX / 2RX

Antenna 2 for 2.4G



Antenna 1 for 2.4G

Wifi Ant 2

分集天线

Wifi Ant 1

主天线

1.2. Test Standards and Results

No.	Identity	Document Title
1	47 CFR Part 15 Subpart C (10-1-14 Edition)	Miscellaneous Wireless Communications Services
2	ANSI C63.10 2013	American National Standard for Testing Unlicensed Wireless Devices
3	KDB Publication 6629911 D01 v02r01	Emission Testing of Transmitters with Multiple Outputs in the same Band(e.g., MIMO, Smart Antenna, etc)

Test detailed items/section required by FCC rules and results are as below:

No.	FCC Rules	Description	Result
1	15.203	Antenna Requirement	PASS
2	15.247(b)	Output Power	PASS
3	15.247(a)	Bandwidth	PASS
4	15.247(d)	Conducted Band Edges and Spurious Emission	PASS
5	15.247(e)	Power spectral density (PSD)	PASS
6	15.207	Conducted Emission	PASS
7	15.209 15.247(d)	Radiated Band Edges and Spurious Emission	PASS

1.3. Channel list

WLAN 2.4GHz

11 channels are provided for 802.11b, 802.11g, and 802.11n (20MHz)

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

7 channels are provided for 802.11n (40MHz)

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

1.4. Test environment and mode

Operating Environment	
Temperature	24°C
Humidity	57 % RH
Atmospheric Pressure	1010 mbar
Test mode:	
Continuously transmitting mode	Keeps the EUT in 100% duty cycle transmitting with modulation in SISO and MIMO mode, duty cycle factor is not required.

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:

Test Items	Mode	Data Rate	Channel
Peak Conducted Output Power Power Spectral Density Bandwidth Conducted and Spurious Emission Radiated and Spurious Emission	11b/DSSS	1 Mbps	1/6/11
	11g/OFDM	6 Mbps	1/6/11
	11n(20MHz)/OFDM	MCS 0	1/6/11
	11n(40MHz)/OFDM	MCS 0	3/6/9
Band Edge	11b/DSSS	1 Mbps	1/11
	11g/OFDM	6 Mbps	1/11
	11n(20MHz)/OFDM	MCS 0	1/11
	11n(40MHz)/OFDM	MCS 0	3/9

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation modes or test configuration modes mentioned above was evaluated respectively.

Pretest Test Mode	Description
Mode 1	TX B Mode / CH1, CH6, CH11
Mode 2	TX G Mode / CH1, CH6, CH11
Mode 3	TX N20 Mode / CH1, CH6, CH11
Mode 4	TX N40 Mode / CH3, CH6, CH9
Mode 5	TX Mode

The EUT system operated these modes were found to be the worst case during the pre-scanning test as following:

For Conducted Test	
Final Test Mode	Description
Mode 5	TX Mode

For Radiated Test	
Final Test Mode	Description
Mode 1	TX B Mode / CH1, CH6, CH11
Mode 2	TX G Mode / CH1, CH6, CH11
Mode 3	TX N20 Mode / CH1, CH6, CH11
Mode 4	TX N40 Mode / CH3, CH6, CH9

1.5. Laboratory Facilities

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories

(identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories, Date of Registration: February 28, 2015. Valid time is until February 27, 2018.

FCC-Registration No.: 317478

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 317478, Renewal date Jul. 18, 2014, valid time is until Jul. 18, 2017.

IC-Registration No.: 5377B

Two 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377B on Dec.03, 2014, valid time is until Dec.03, 2017.

2. 47 CFR Part 15C Requirements

2.1. Antenna requirement

2.1.1. Applicable Standard

According to FCC 15.203, 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 shall be considered sufficient to comply with the provisions of this section.

And according to FCC 47 CFR Section 15.247(c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

2.1.2. Antenna Information

Antenna System	Cyclic Delay Diversity(CDD)
	2 antennas are uncorrelated with each other
Antenna Type	Internal Antenna

A Internal antenna was soldered to the antenna port of EUT via an adaptor cable can't be removed.

2.1.3. Antenna Gain

Antenna	Gain(dBi)
1	2.7
2	2.4
1+2	2.7

Note: 1. Directional gain = $G_{ANTMAX} + 10 \log(N_{ANT}/N_{SS})$ dBi $N_{SS}=2$, Gain set equal to the gain of the antenna having the highest gain.

2.1.4. Result: comply

The EUT has a permanently and irreplaceable attached antenna. Please refer to the EUT internal photos.

2.2. Output Power

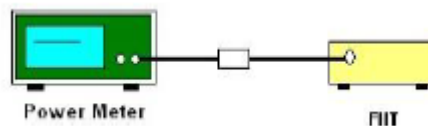
2.2.1. Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for output power is 30dBm. If transmitting antenna of directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

2.2.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.2.3. Test Setup



2.2.4. Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB 558074 D01 v03r05.
2. The RF output of EUT was connected to the broadband average RF power meter 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.

2.2.5. Test Result

802.11b mode

Channel	Frequency (MHz)	Output Power(dBm)			Limits (dBm)	Result
		Ant. 1	Ant. 2	Ant. 1+2		
1	2412	14.26	14.86	17.58	30	PASS
6	2437	15.64	15.78	18.72	30	PASS
11	2462	13.82	13.73	16.79	30	PASS

802.11g Test mode

Channel	Frequency (MHz)	Output Power(dBm)			Limits (dBm)	Result
		Ant. 1	Ant. 2	Ant. 1+2		
1	2412	13.98	14.21	17.11	30	PASS
6	2437	15.22	15.47	18.36	30	PASS
11	2462	13.63	13.67	16.66	30	PASS

802.11n-20MHz Test mode

Channel	Frequency (MHz)	Output Power(dBm)			Limits (dBm)	Result
		Ant. 1	Ant. 2	Ant. 1+2		
1	2412	13.67	13.93	16.81	30	PASS
6	2437	15.11	15.08	18.11	30	PASS
11	2462	13.73	13.54	16.65	30	PASS

802.11n-40MHz Test mode

Channel	Frequency (MHz)	Output Power(dBm)			Limits (dBm)	Result
		Ant. 1	Ant. 2	Ant. 1+2		
3	2422	13.75	13.92	16.85	30	PASS
6	2437	14.01	14.28	17.16	30	PASS
9	2452	13.37	13.61	16.50	30	PASS

Note: All data rates are testing, but the worse case data rate was record in the report.

2.3. Bandwidth

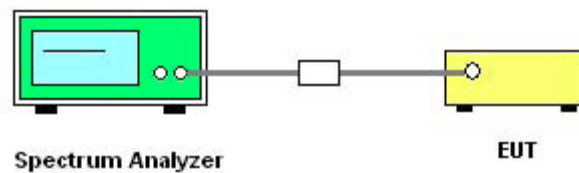
2.3.1. Limit of 6dB Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

2.3.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.3.3. Test Setup



2.3.4. Test Procedures

1. The testing follows FCC KDB558074 D01 v03r05.

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) = 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.

5. For 99% Bandwidth Measurement, the RBW shall be set to 1% to 5% of OBW.

6. Measure and record the results in the test report.

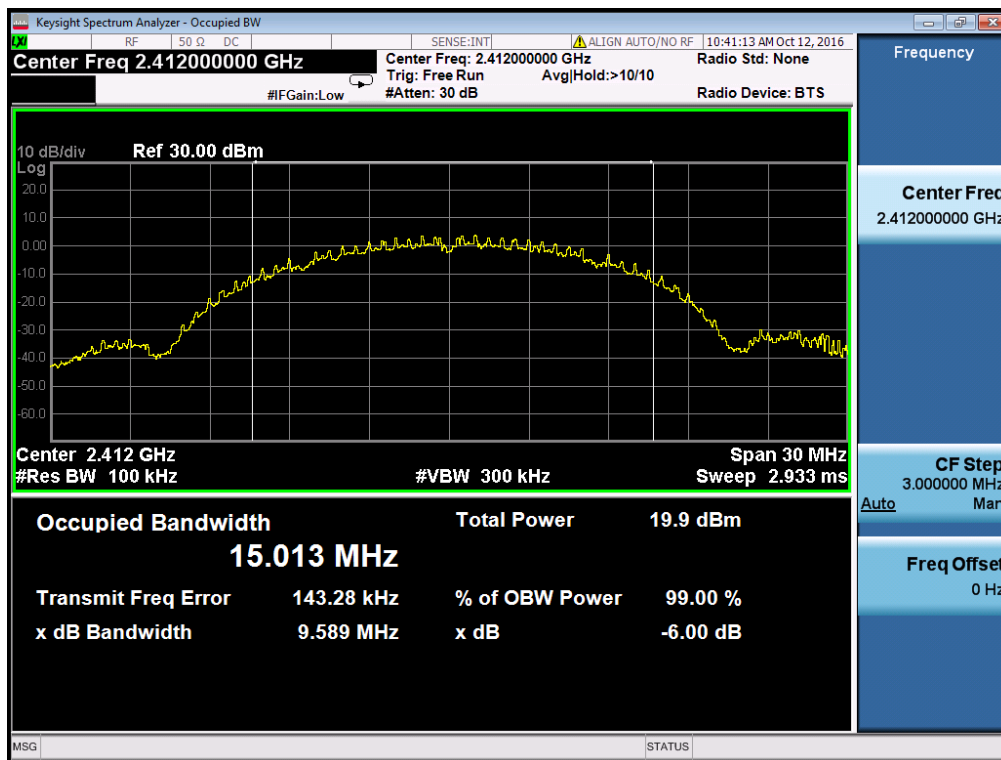
2.3.5. Test Results of 6dB Bandwidth

Antenna	Test mode	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits (MHz)
Antenna 1	802.11b	1	2412	9.59	≥0.5
		6	2437	9.07	
		11	2462	9.08	
	802.11g	1	2412	16.45	
		6	2437	16.47	
		11	2462	16.49	
	802.11n20	1	2412	17.59	
		6	2437	17.73	
		11	2462	17.75	
	802.11n40	3	2422	35.44	
		6	2437	35.42	
		9	2452	36.08	

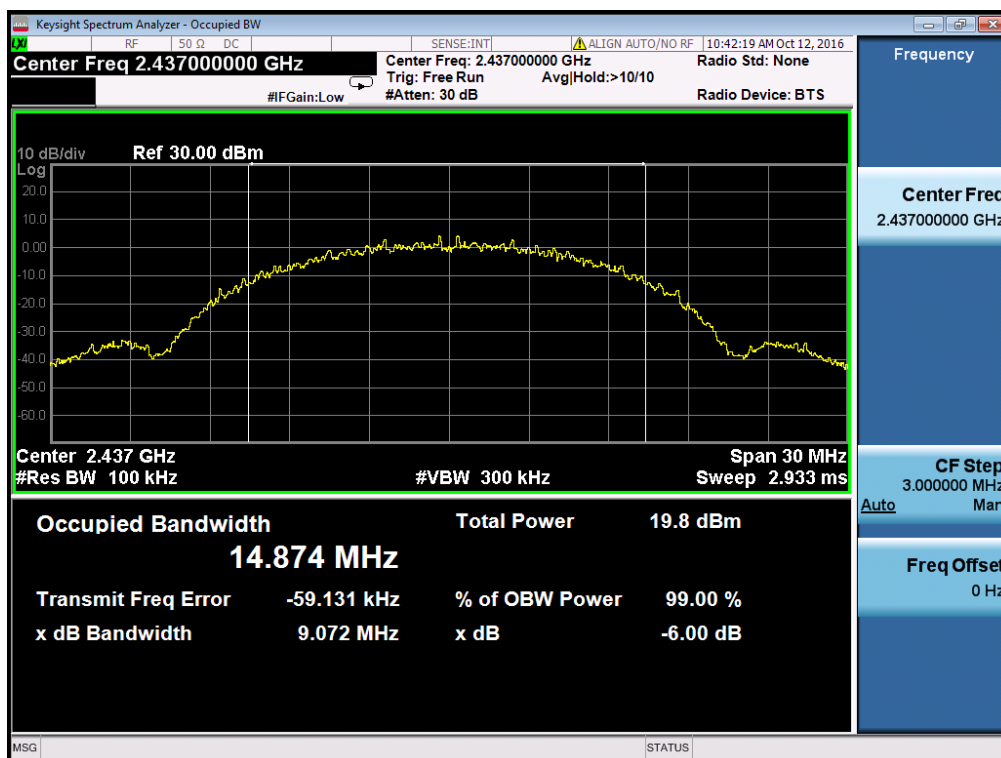
Antenna	Test mode	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limits (MHz)
Antenna 2	802.11b	1	2412	8.32	≥0.5
		6	2437	9.06	
		11	2462	9.09	
	802.11g	1	2412	16.44	
		6	2437	16.47	
		11	2462	16.47	
	802.11n20	1	2412	17.32	
		6	2437	17.74	
		11	2462	17.73	
	802.11n40	3	2422	35.78	
		6	2437	35.43	
		9	2452	35.79	

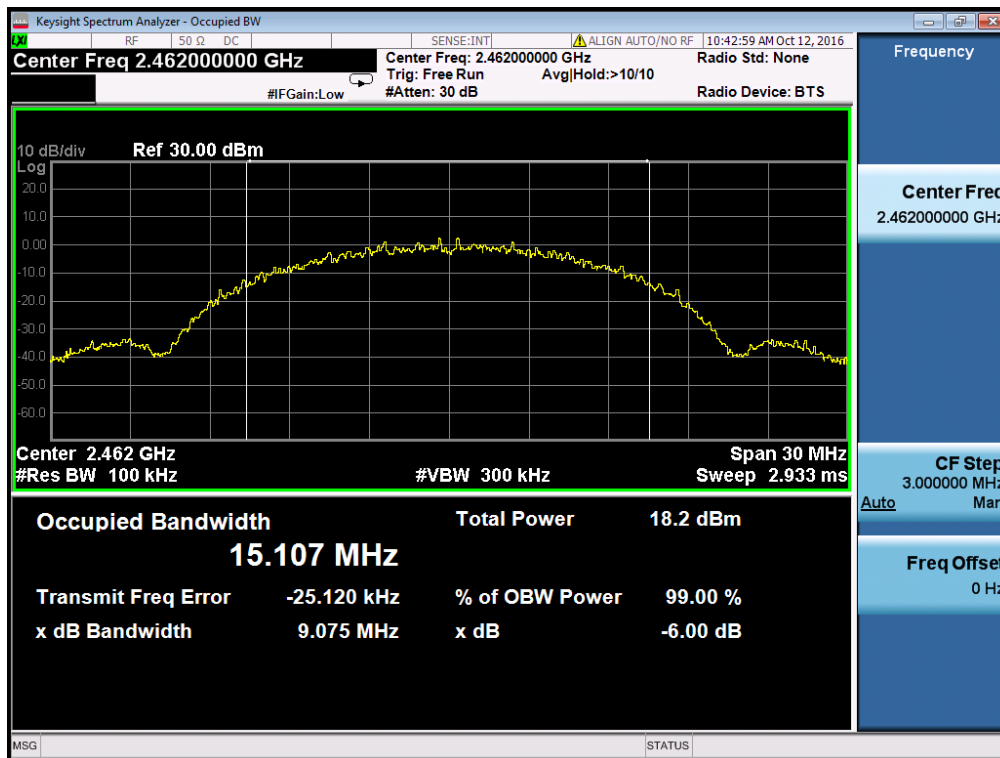
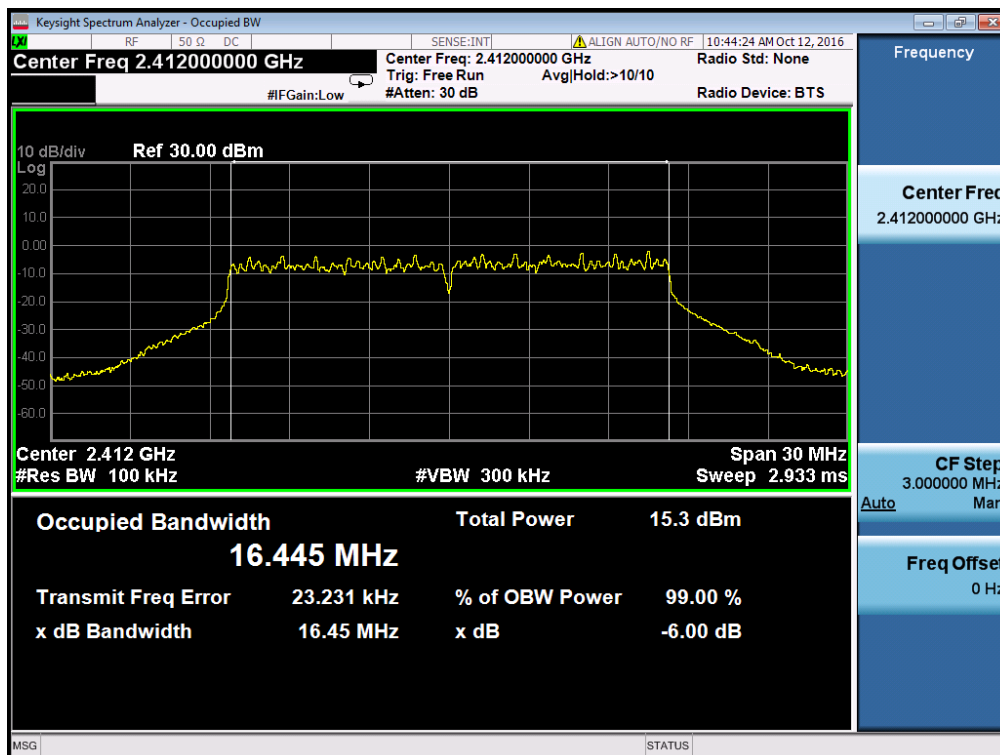
2.3.6. Test Results (plots) of Bandwidth

Antenna 1- 802.11b – Bandwidth – L channel

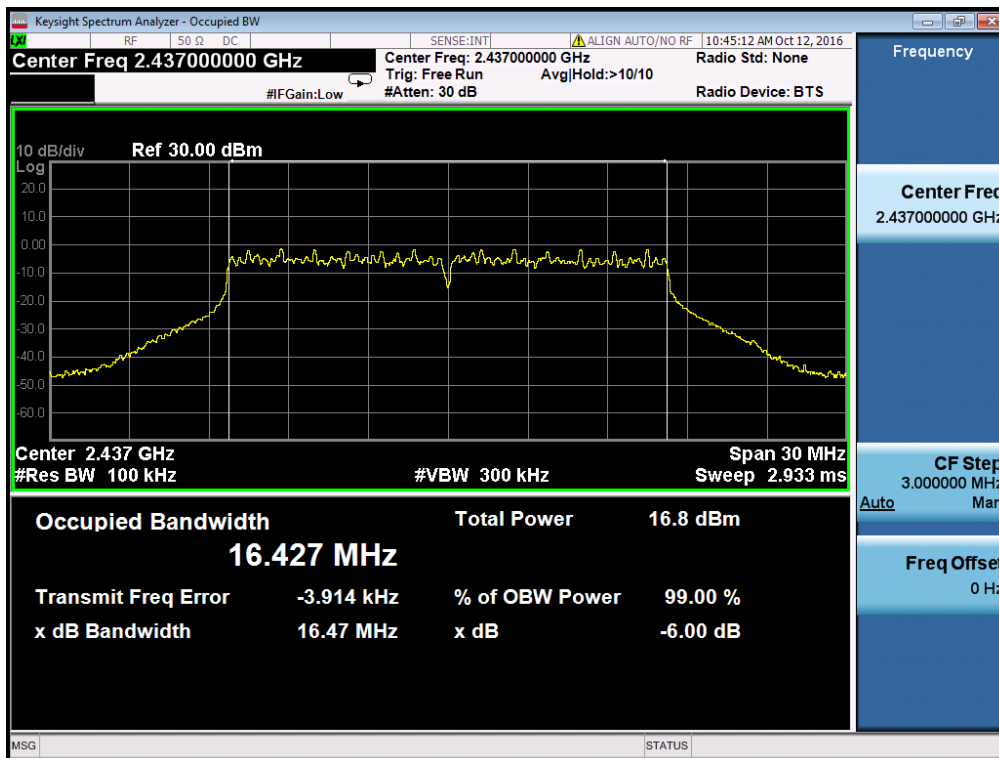


Antenna 1- 802.11b - Bandwidth – M channel

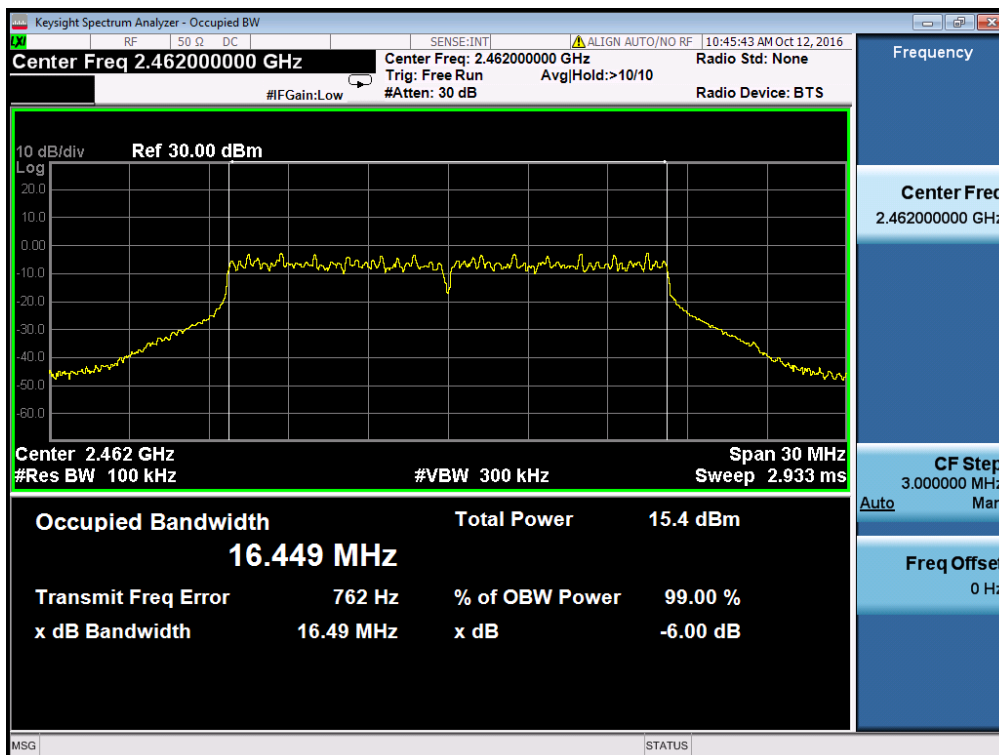


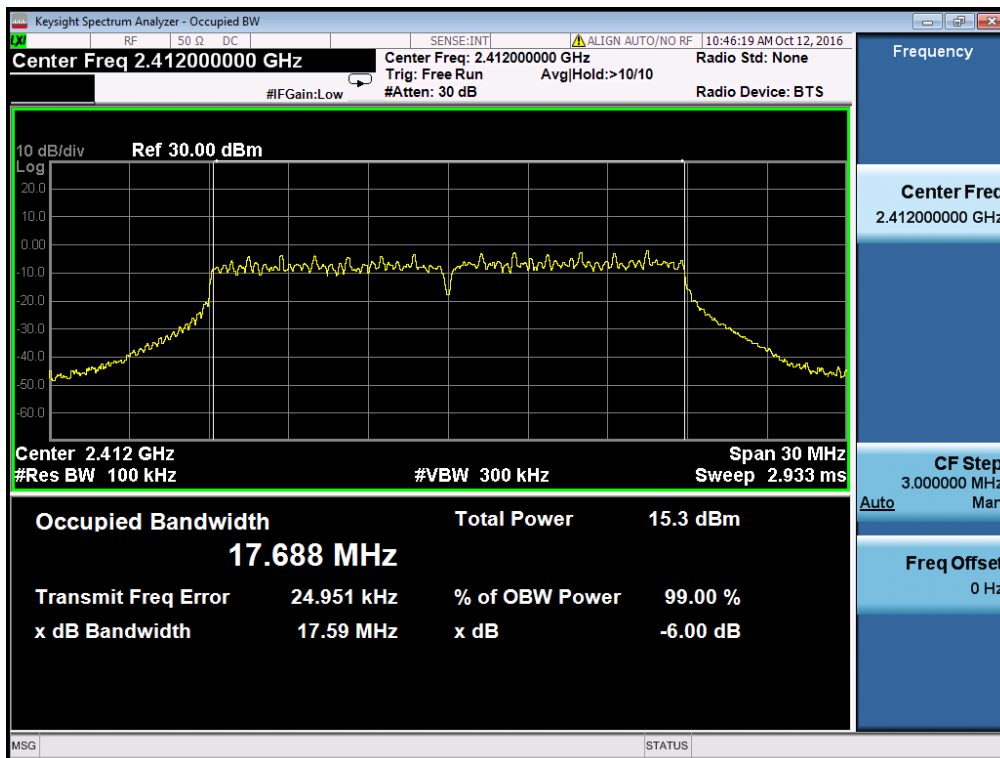
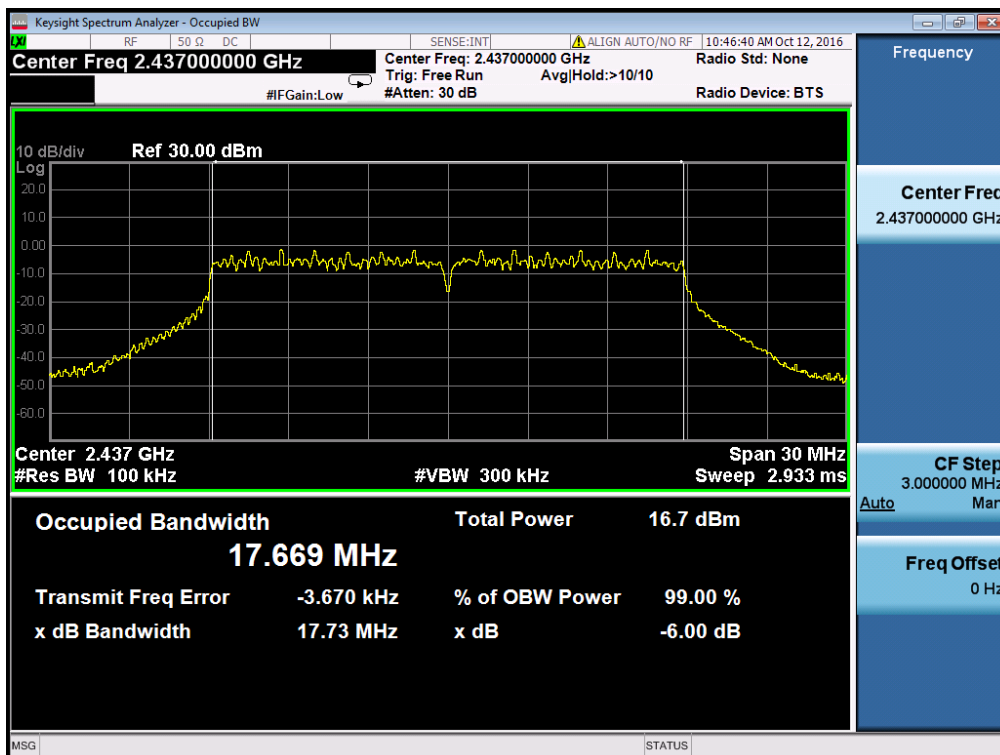
**Antenna 1- 802.11b - Bandwidth – H channel****Antenna 1- 802.11g - Bandwidth – L channel**

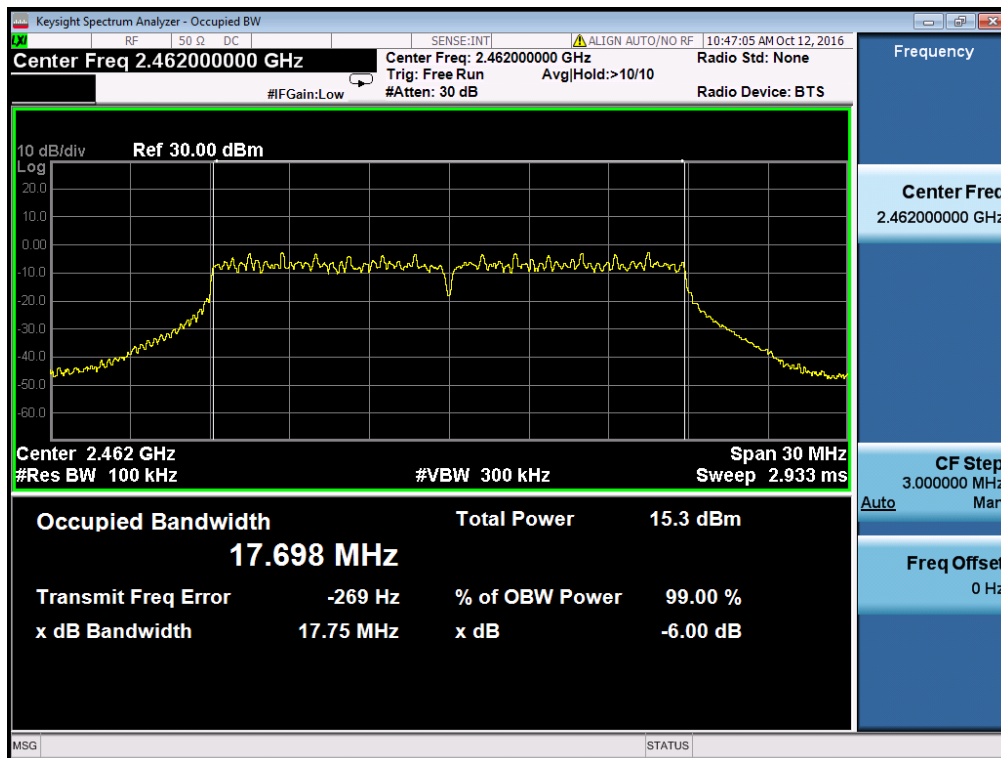
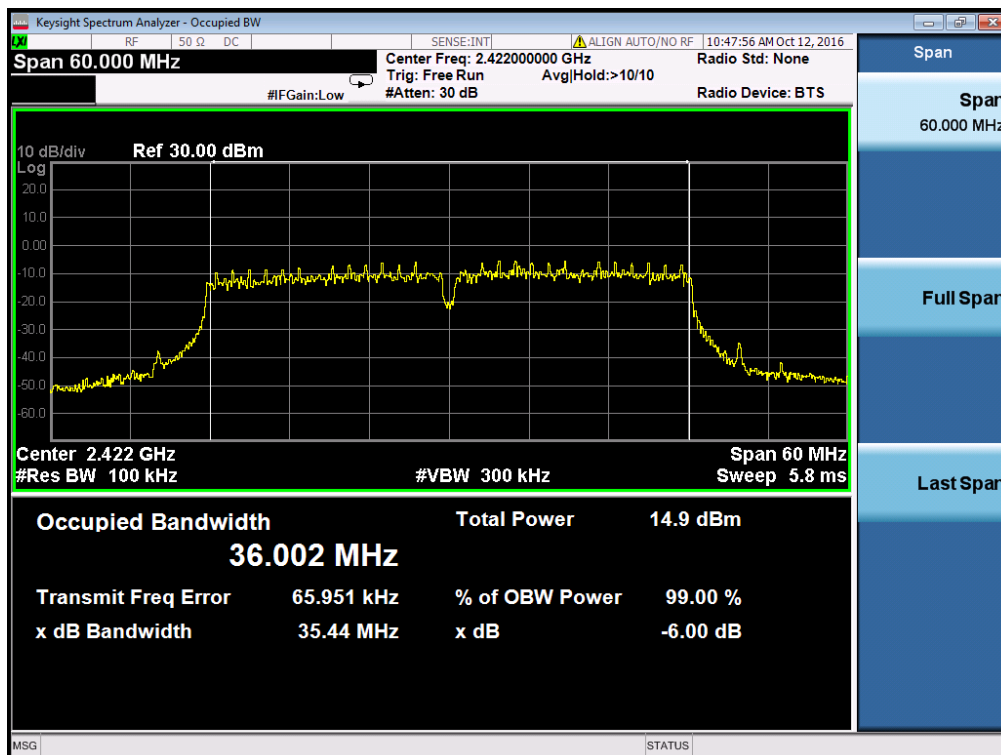
Antenna 1- 802.11g - Bandwidth – M channel



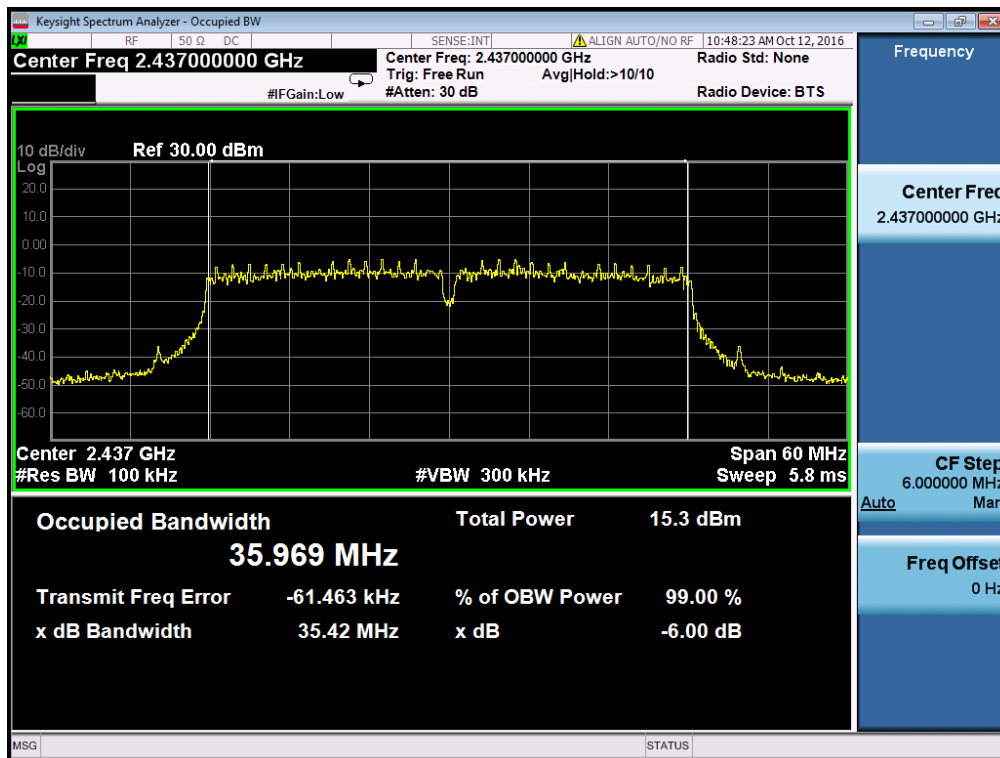
Antenna 1- 802.11g - Bandwidth – H channel



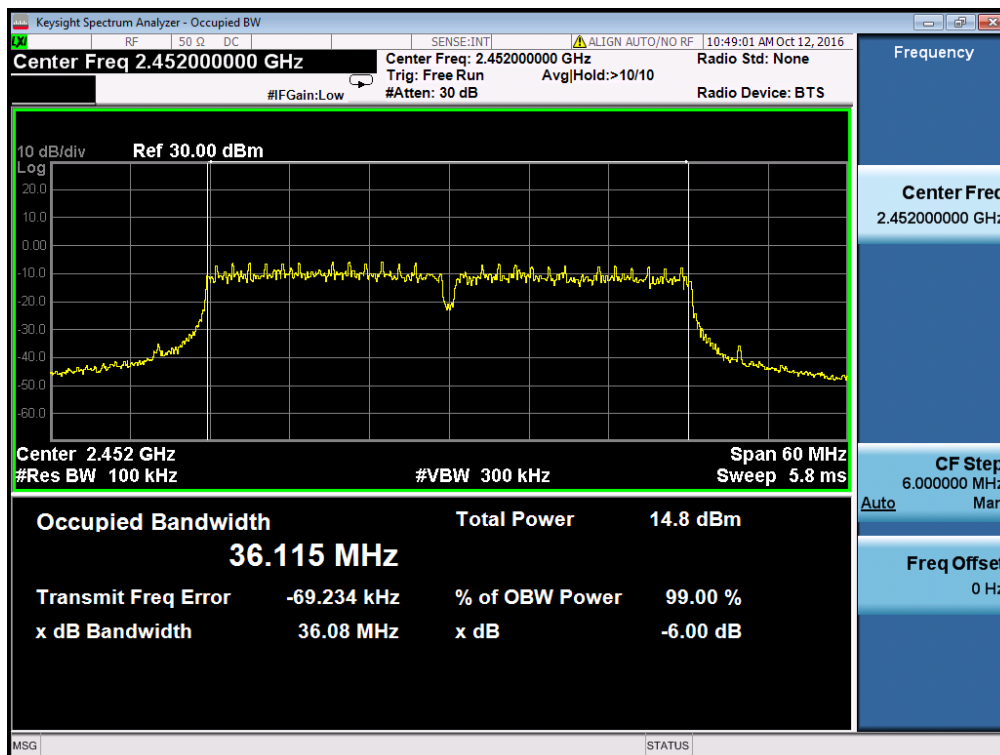
**Antenna 1- 802.11n20 - Bandwidth – L channel****Antenna 1- 802.11n20 - Bandwidth – M channel**

**Antenna 1- 802.11n20 - Bandwidth – H channel****Antenna 1- 802.11n40 - Bandwidth – L channel**

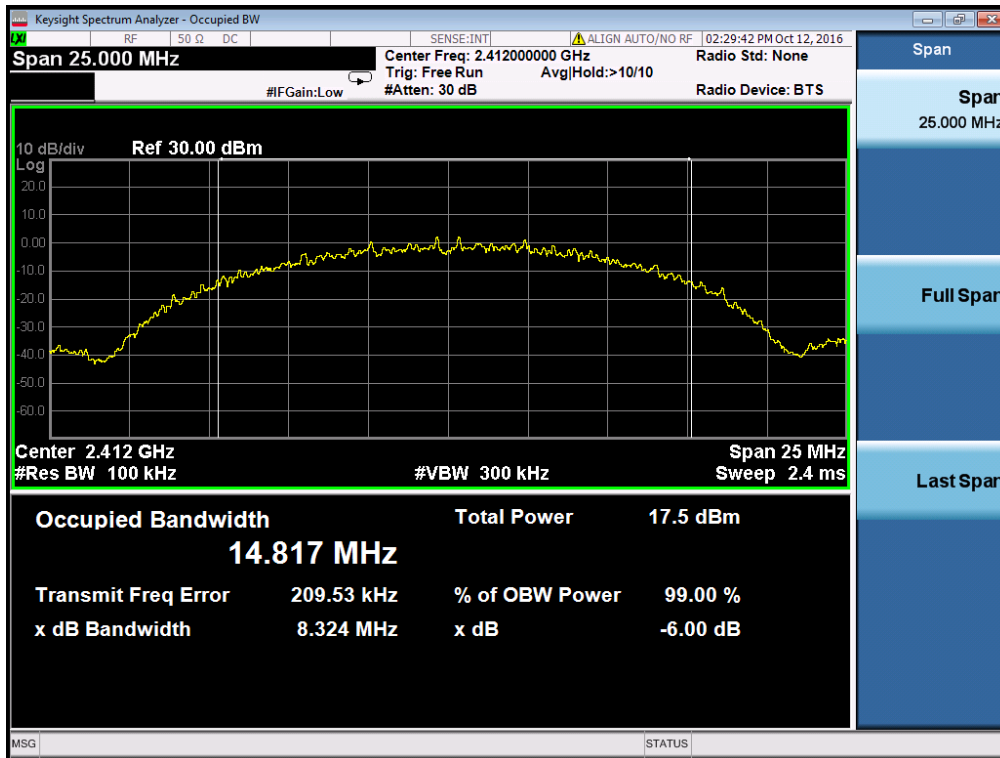
Antenna 1- 802.11n40 - Bandwidth – M channel



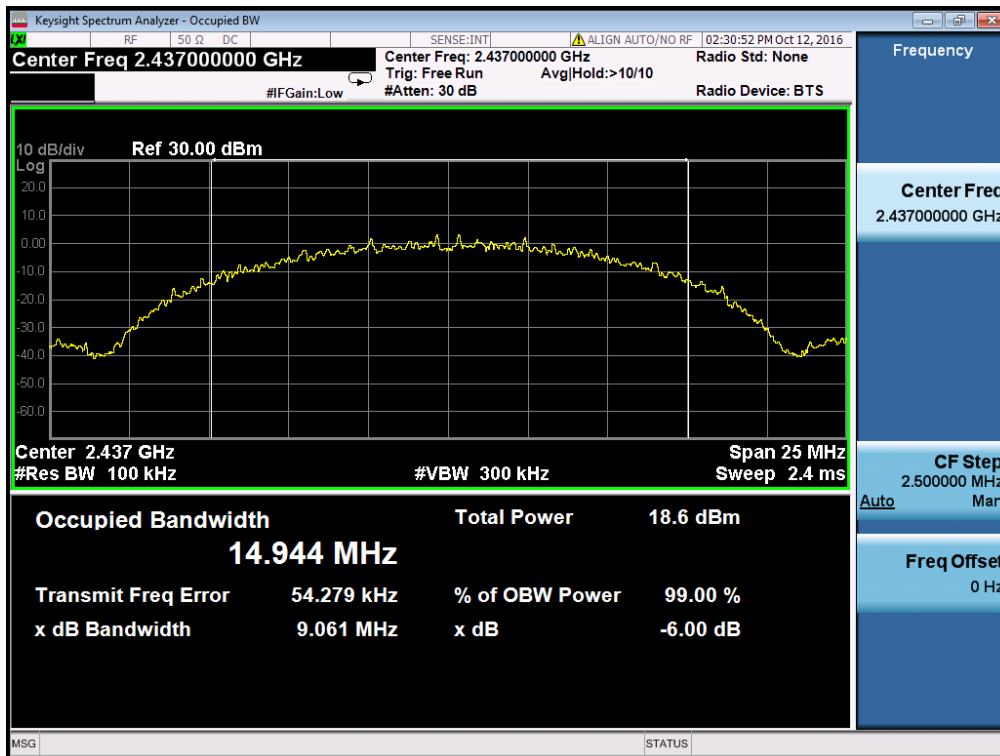
Antenna 1- 802.11n40 - Bandwidth – H channel

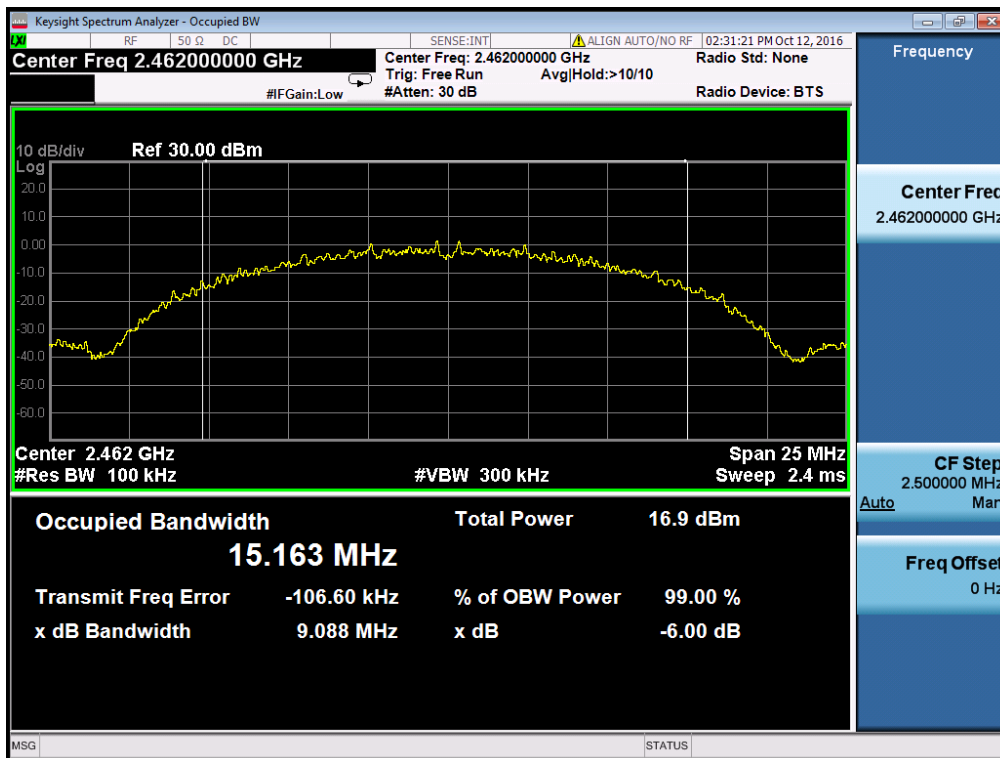
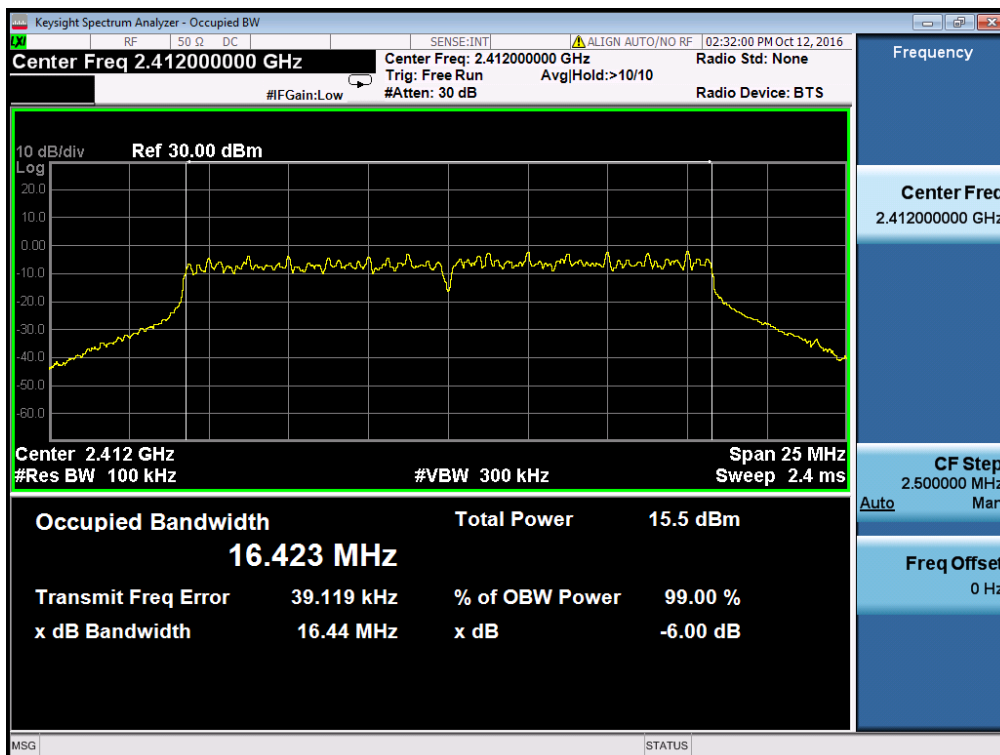


Antenna 2- 802.11b – Bandwidth – L channel

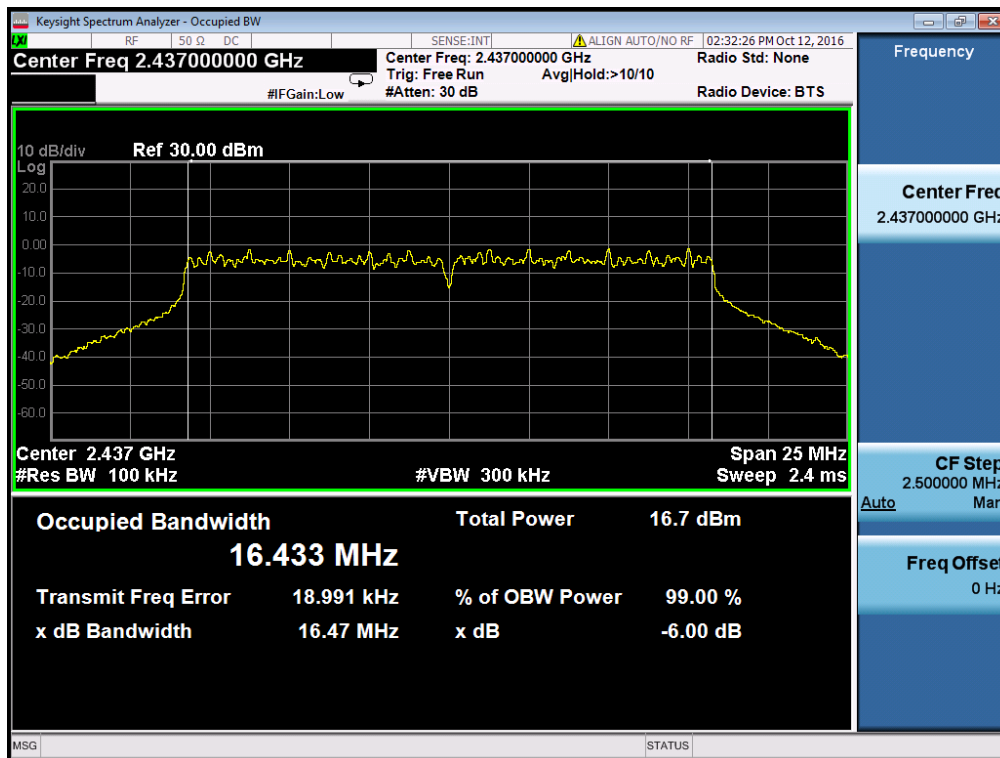


Antenna 2- 802.11b - Bandwidth – M channel

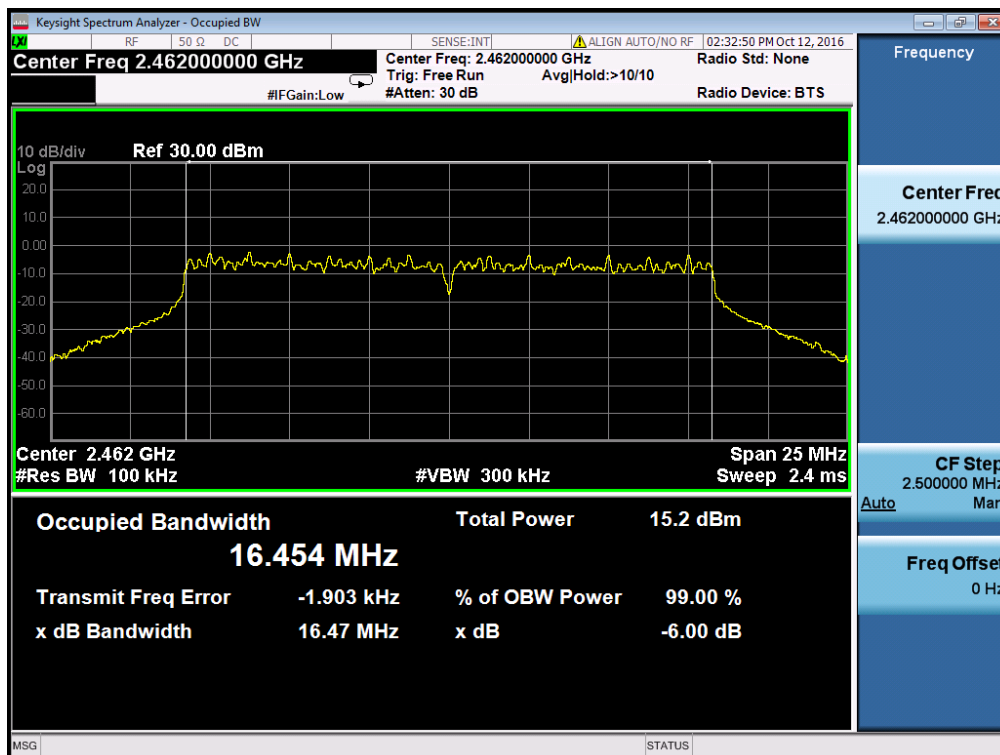


**Antenna 2- 802.11b - Bandwidth – H channel****Antenna 2- 802.11g - Bandwidth – L channel**

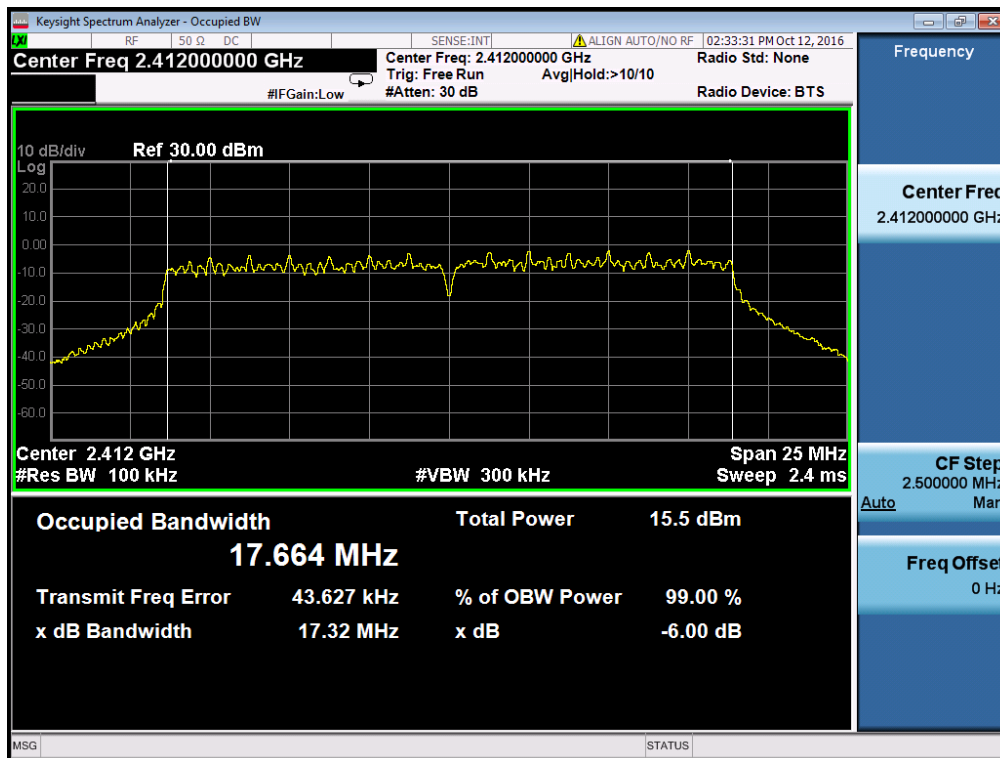
Antenna 2- 802.11g - Bandwidth – M channel



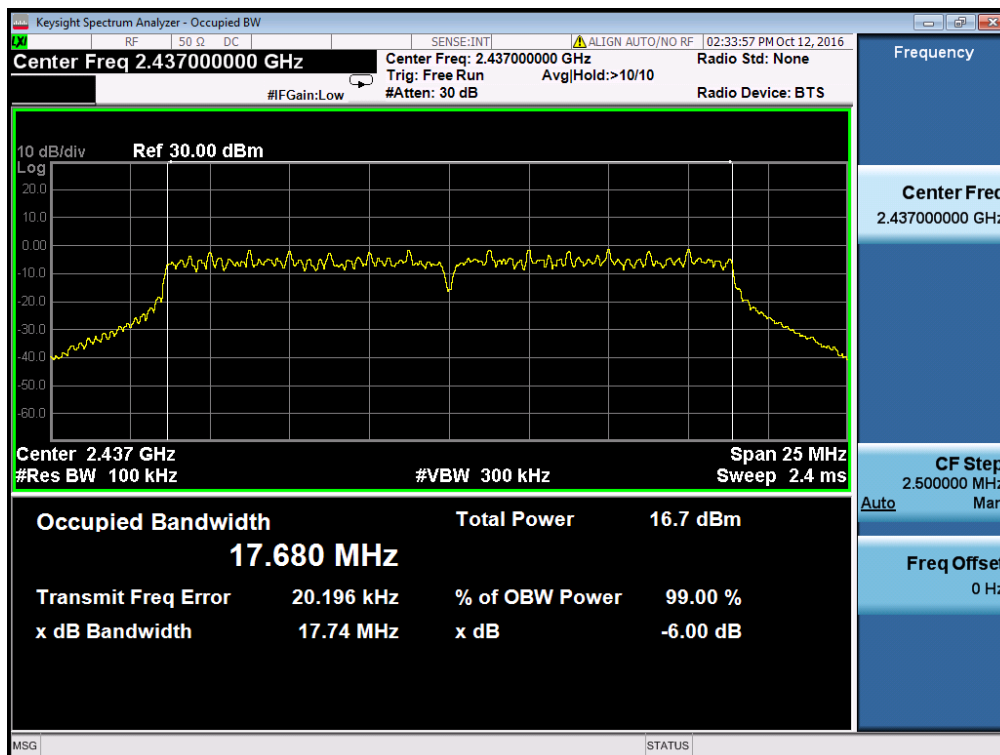
Antenna 2- 802.11g - Bandwidth – H channel



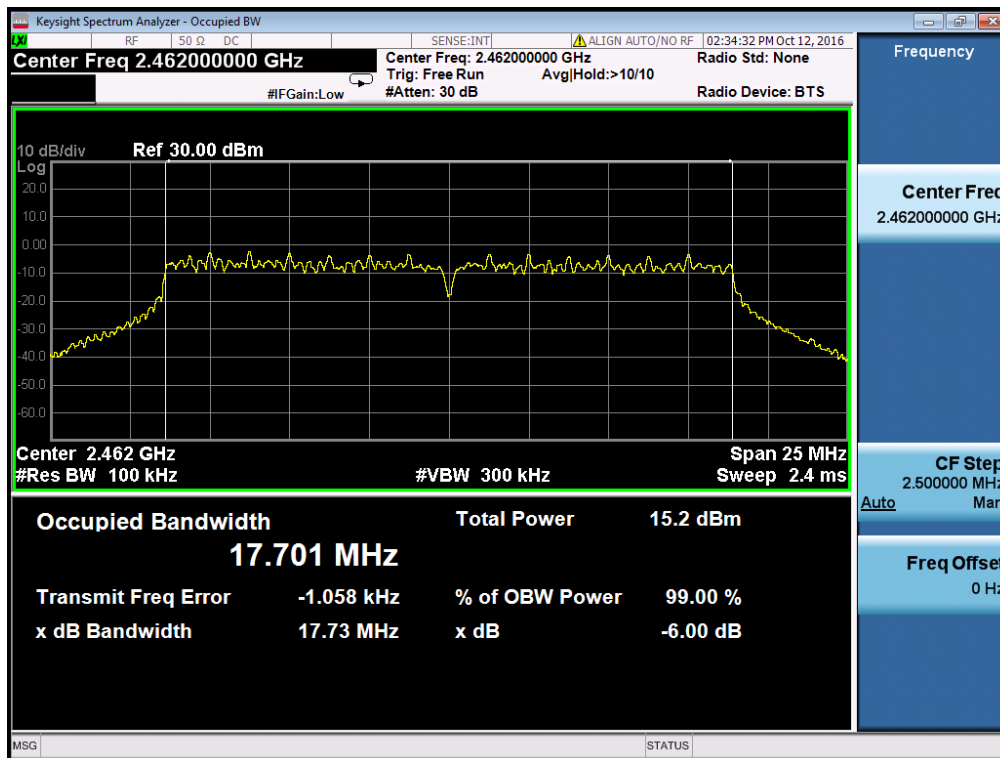
Antenna 2- 802.11n20 - Bandwidth – L channel



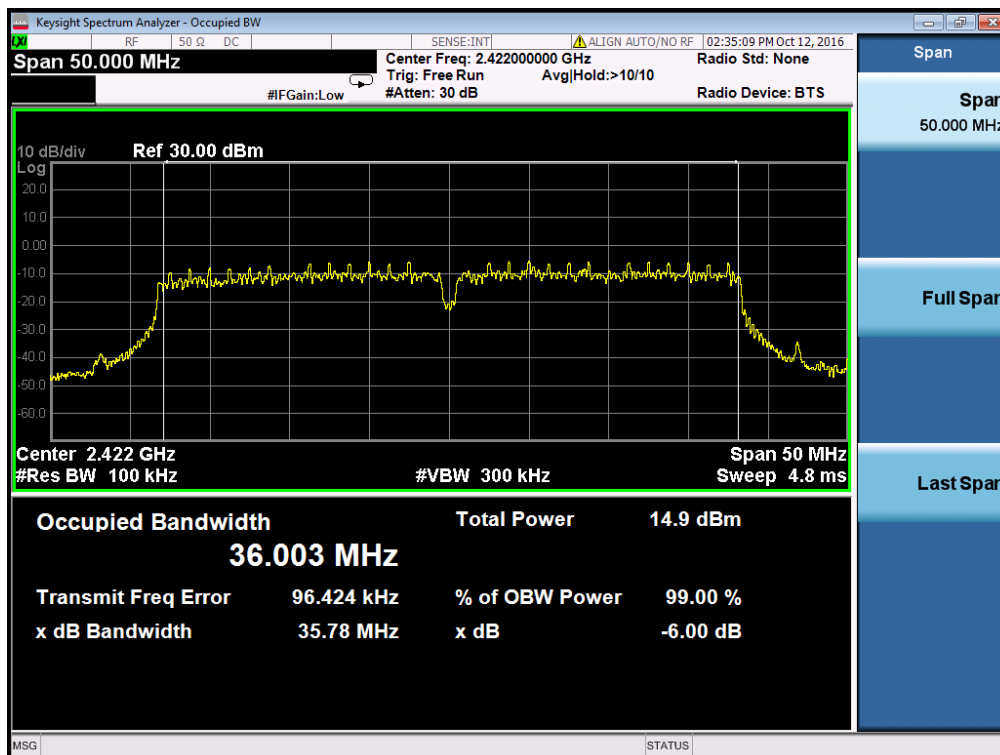
Antenna 2- 802.11n20 - 6 dB Bandwidth – M channel



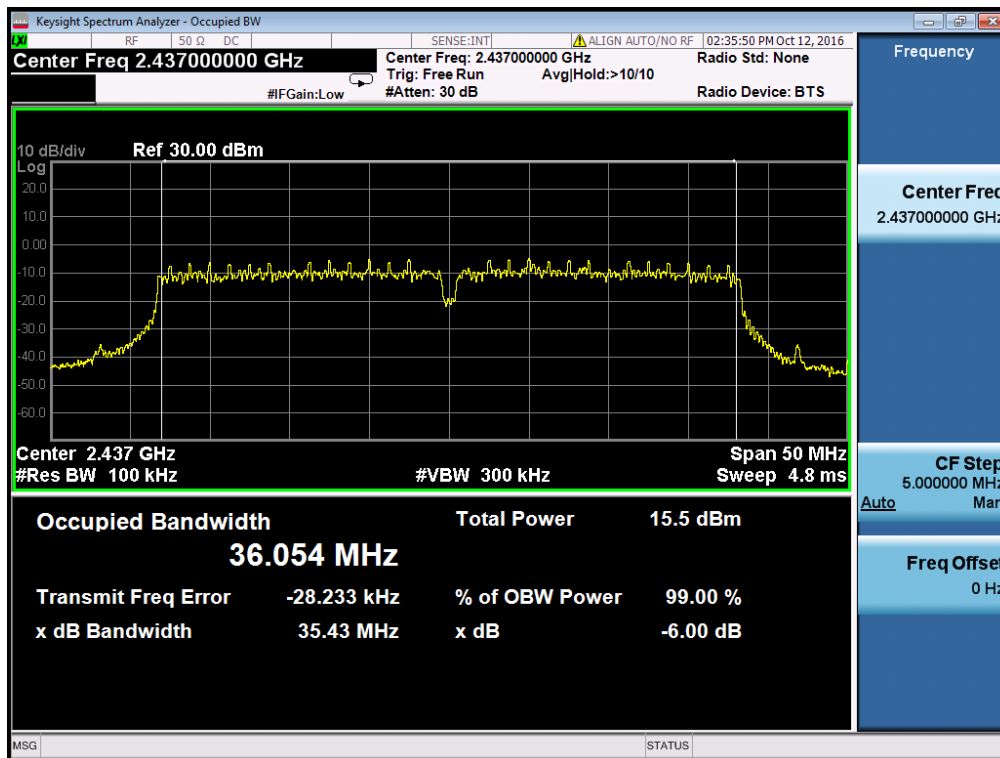
Antenna 2- 802.11n20 - 6 dB Bandwidth – H channel



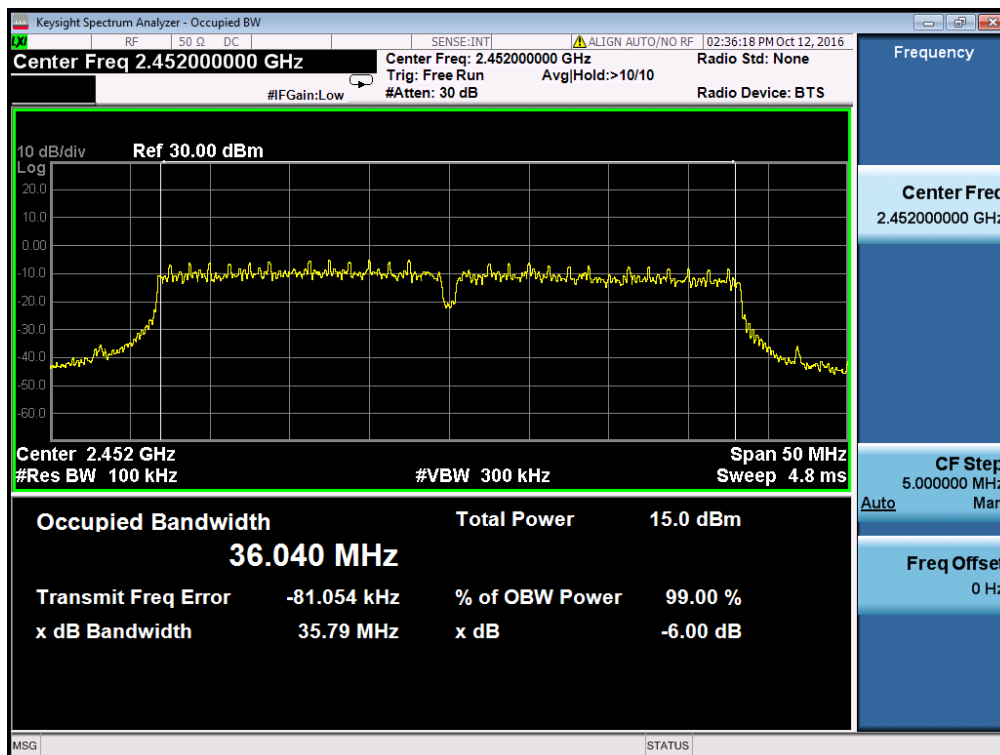
Antenna 2- 802.11n40 - 6 dB Bandwidth – L channel



Antenna 2 802.11n40 - 6 dB Bandwidth – M channel



Antenna 2- 802.11n40 - 6 dB Bandwidth – H channel



2.4. Conducted Band Edges and Spurious Emissions

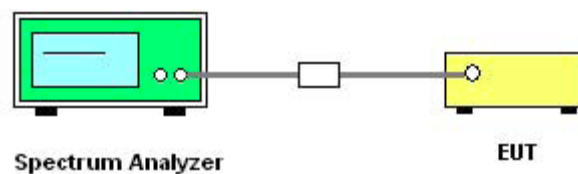
2.4.1. Limit of Conducted Band Edges and Spurious Emissions

All harmonics/spurious must be at least 20 dB down from the highest emission level within the authorized band.

2.4.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

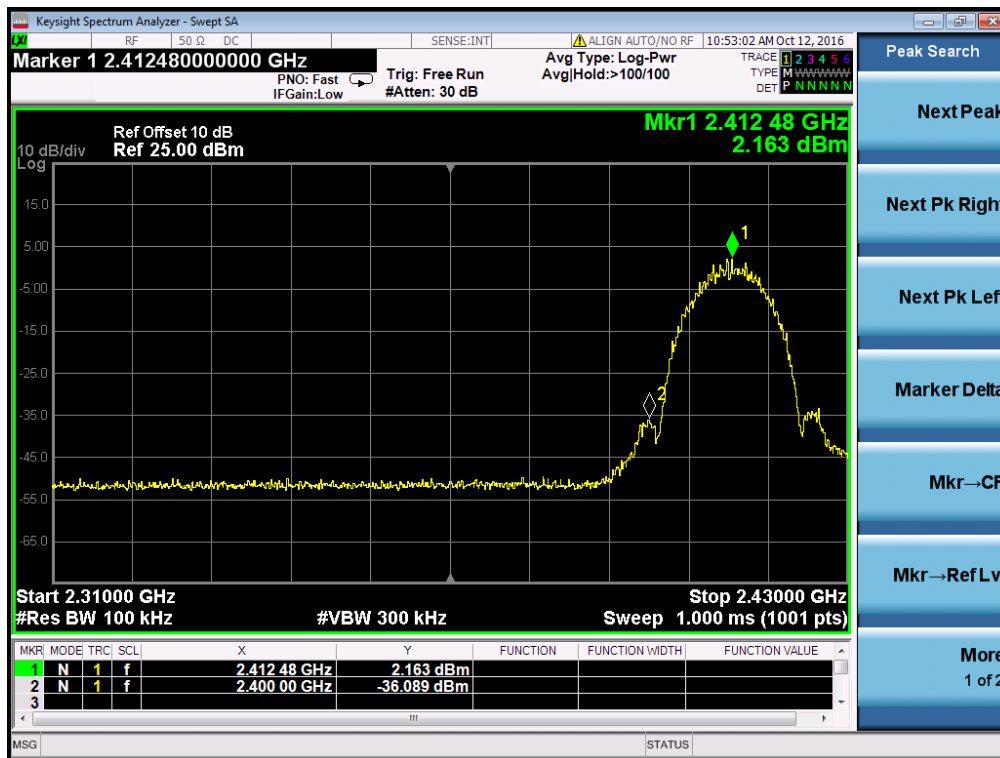
2.4.3. Test Setup



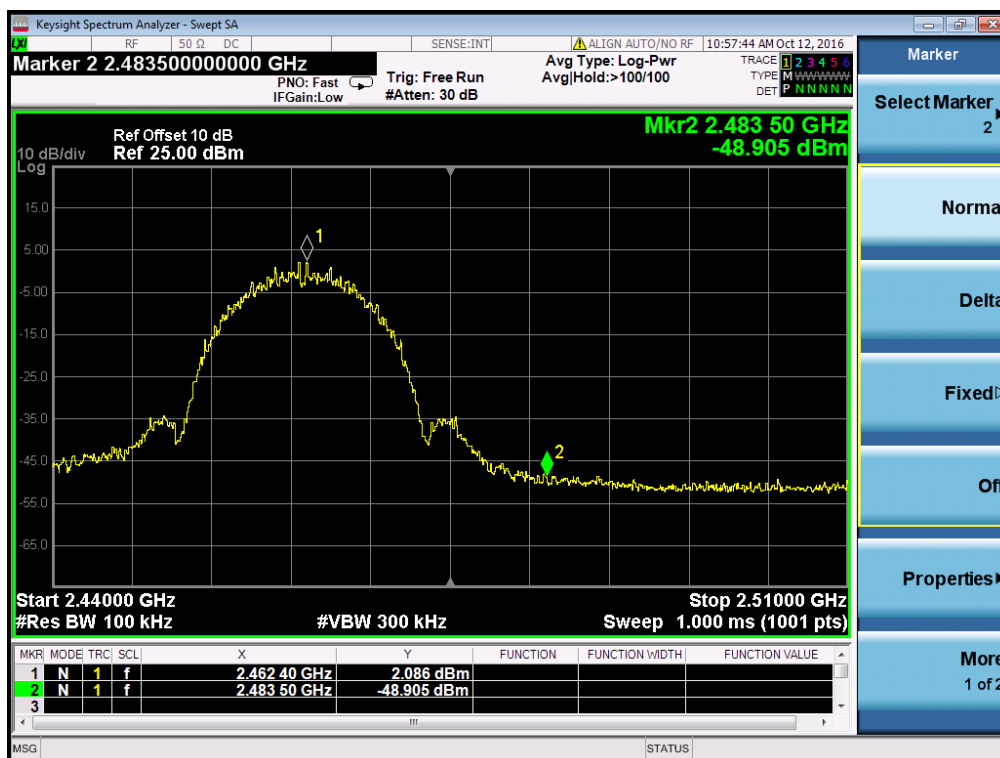
2.4.4. Test Procedure

1. The testing follows FCC KDB558074 D01 v03r05.
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 100kHz 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.

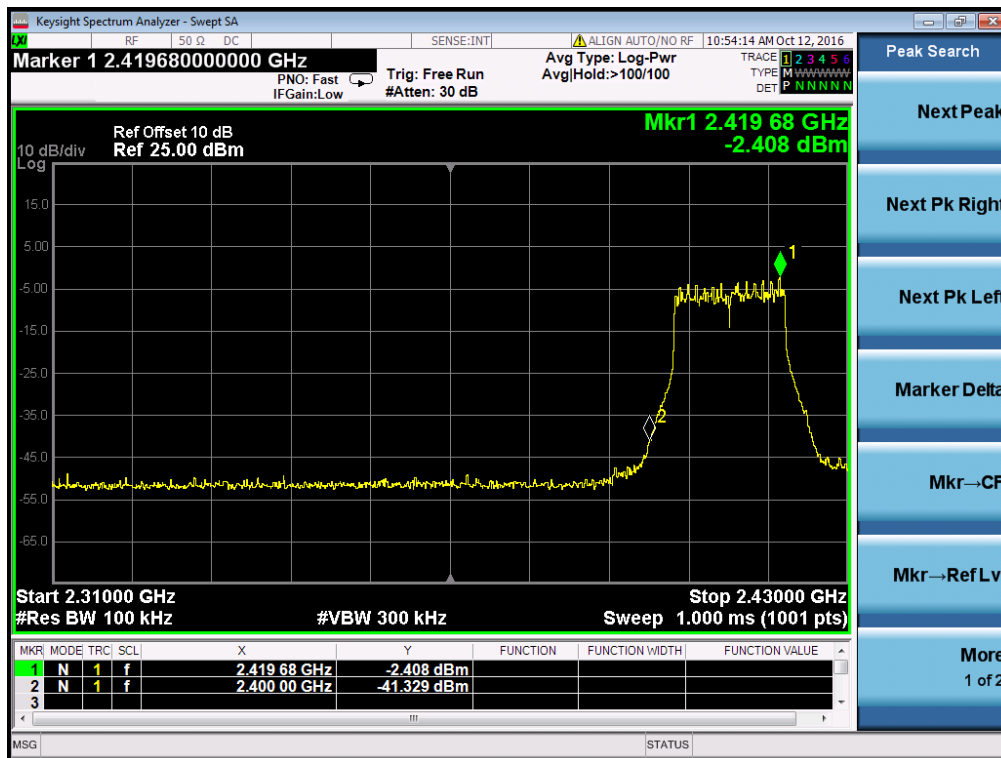
2.4.5. Test Results of Conducted Band Edges



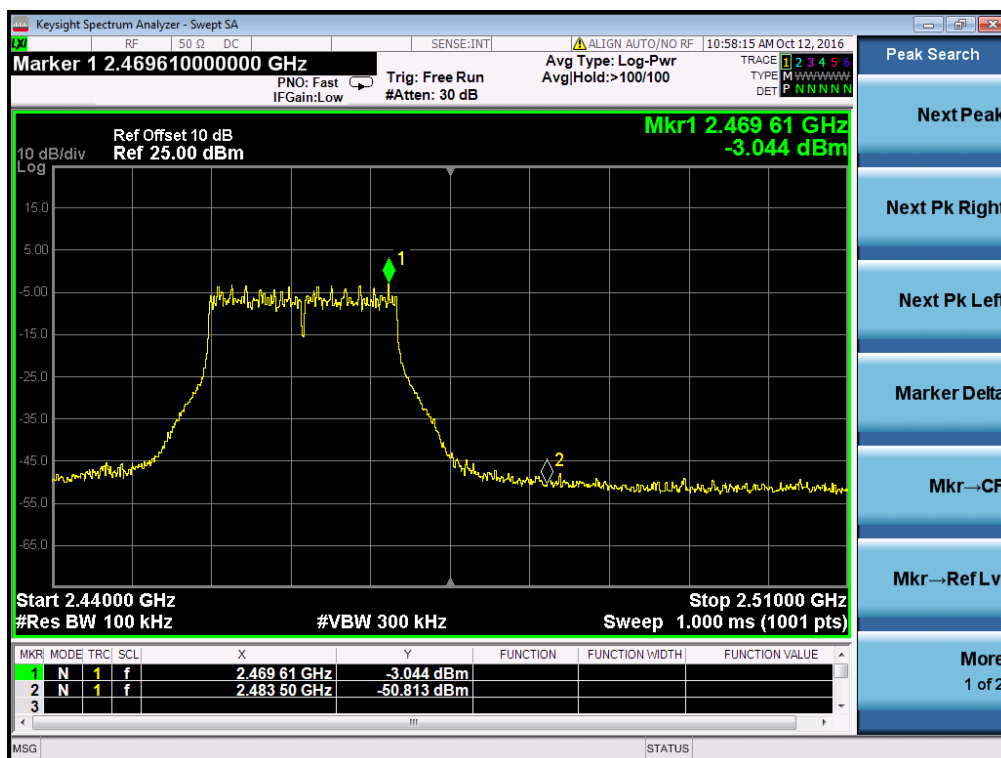
Antenna 1- 802.11b - Low Band Edge Plot on Channel 1



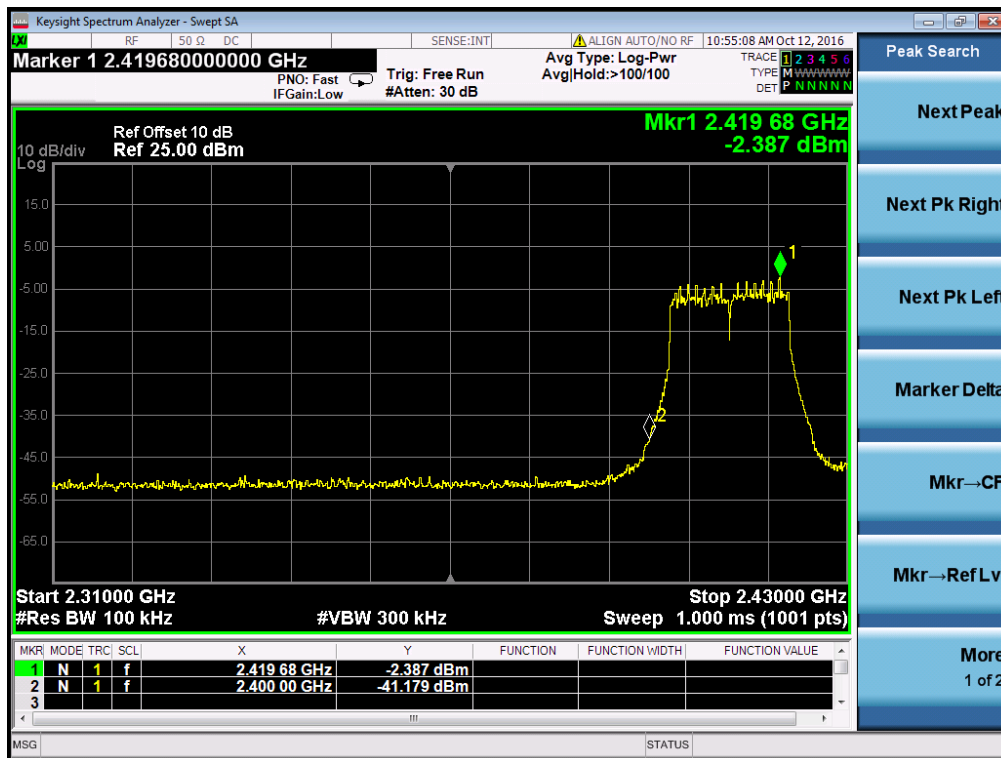
Antenna 1- 802.11b - High Band Edge Plot on Channel 11



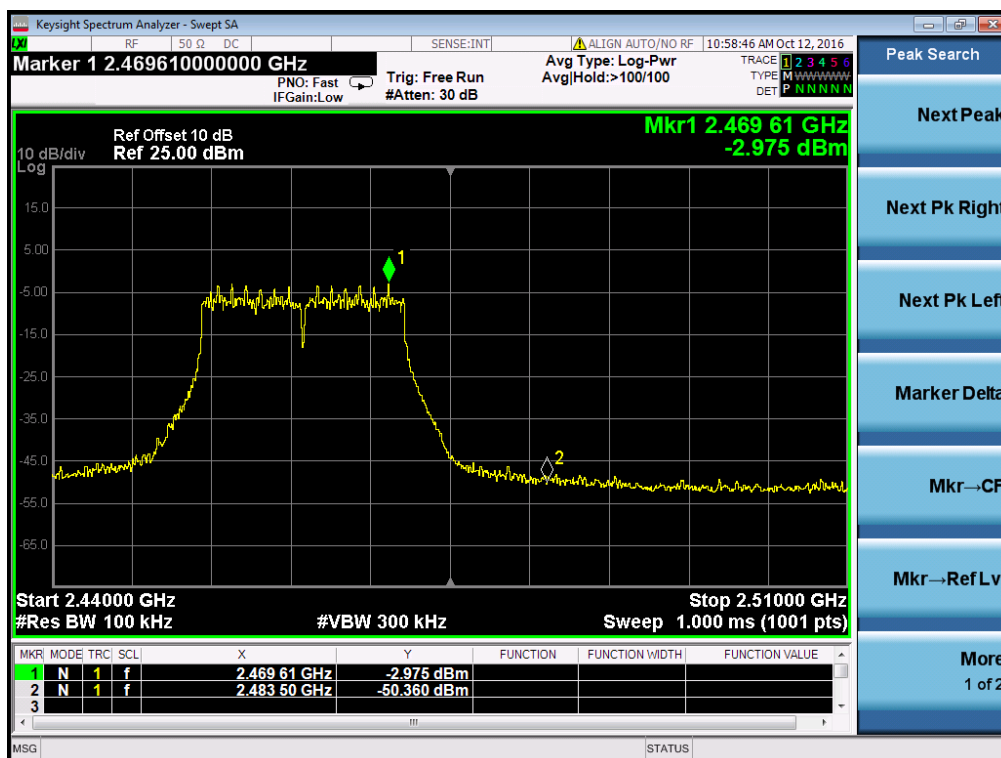
Antenna 1- 802.11g - Low Band Edge Plot on Channel 1



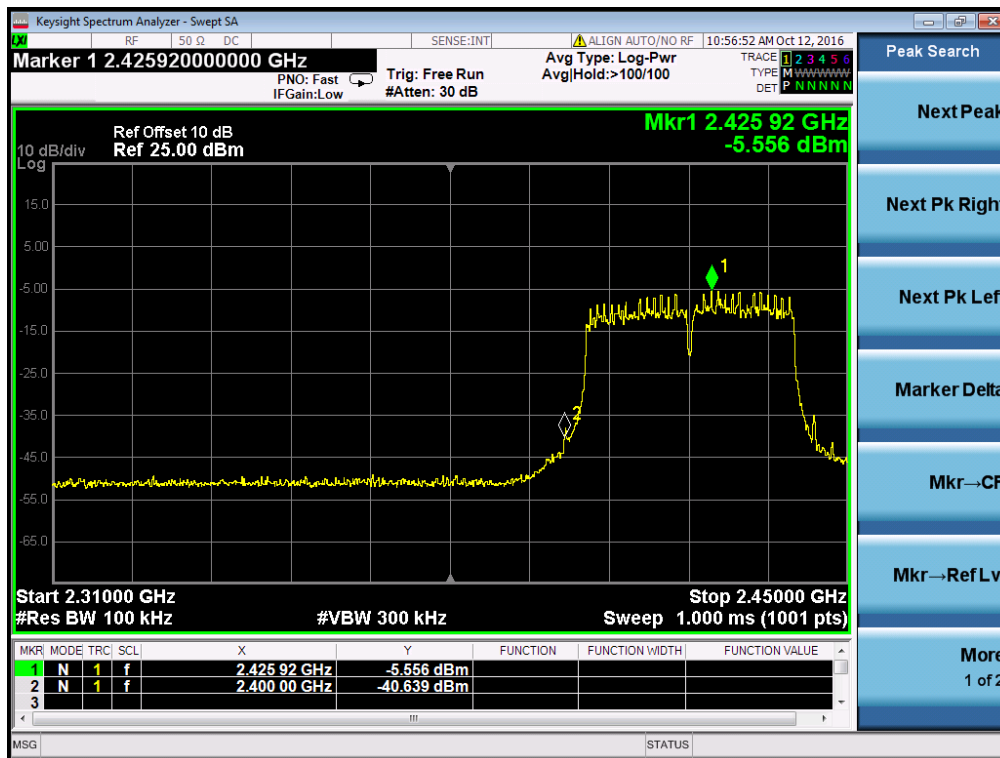
Antenna 1- 802.11g - High Band Edge Plot on Channel 11



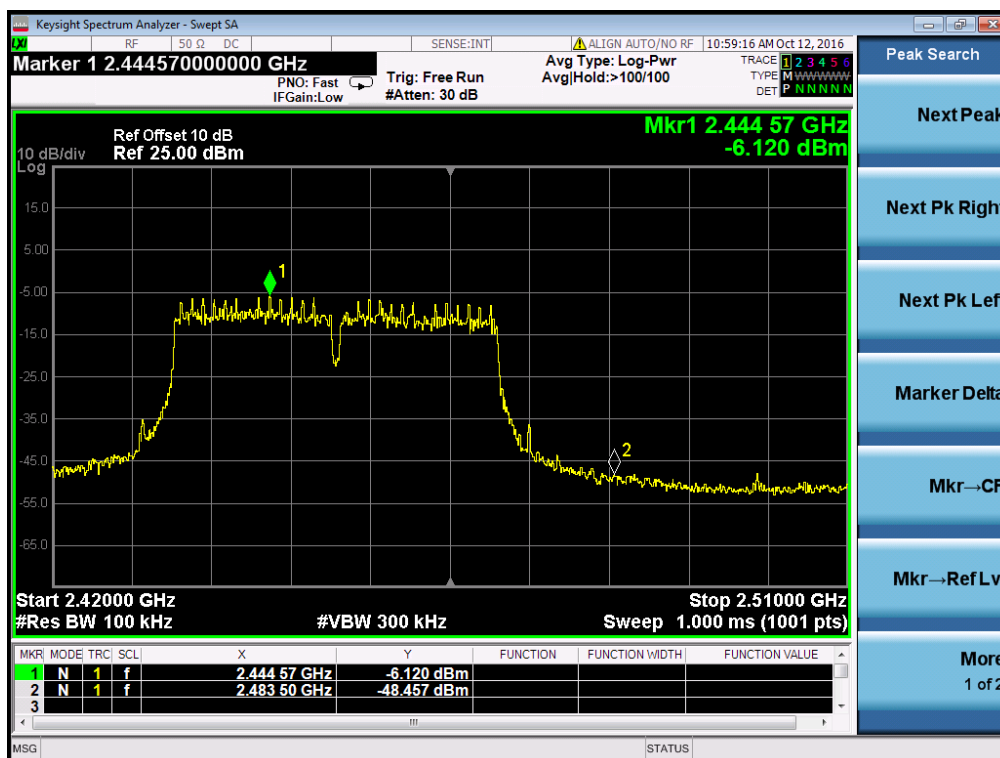
Antenna 1- 802.11n20 - Low Band Edge Plot on Channel 1



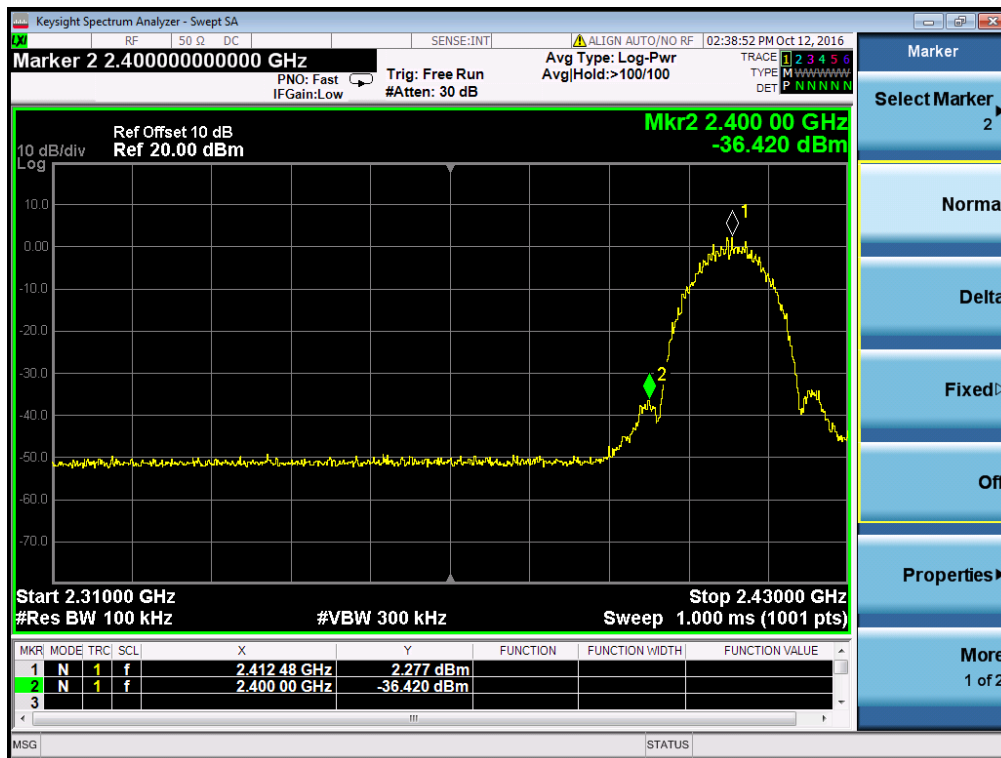
Antenna 1- 802.11n20 - High Band Edge Plot on Channel 11



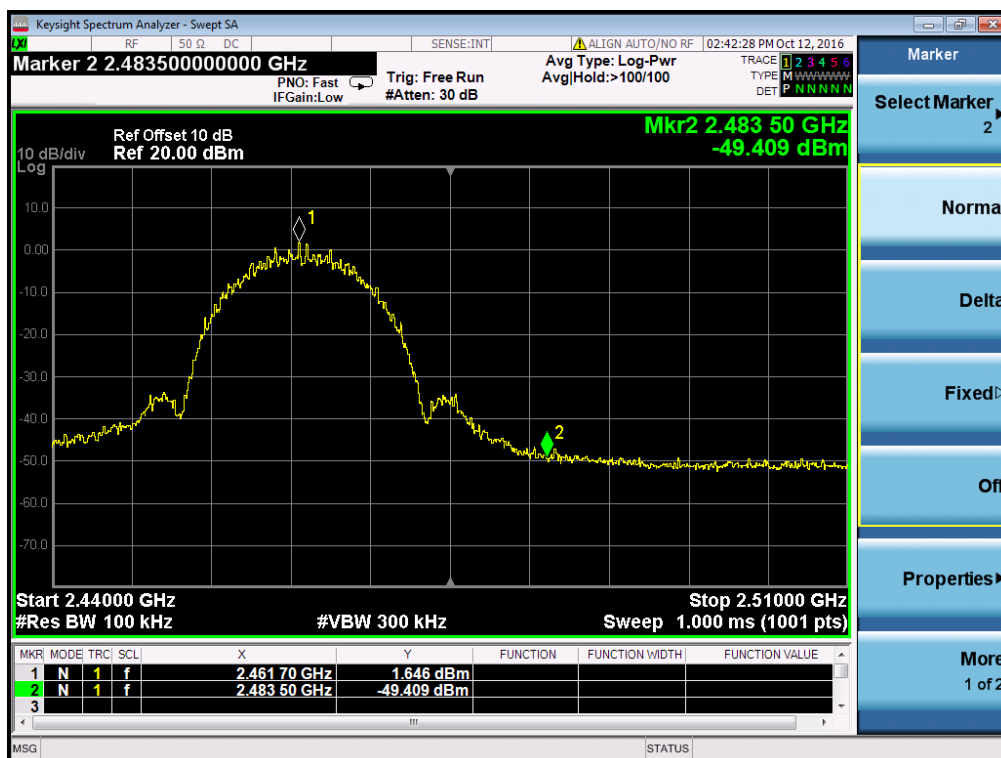
Antenna 1- 802.11n40 - Low Band Edge Plot on Channel 3



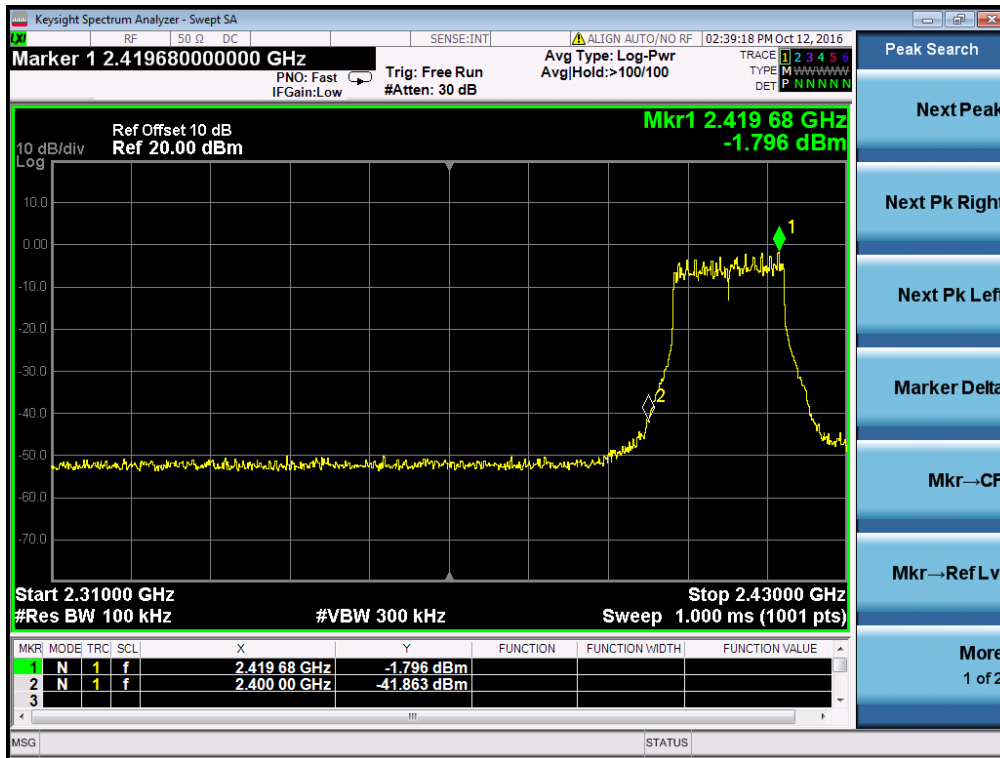
Antenna 1- 802.11n40 - High Band Edge Plot on Channel 9



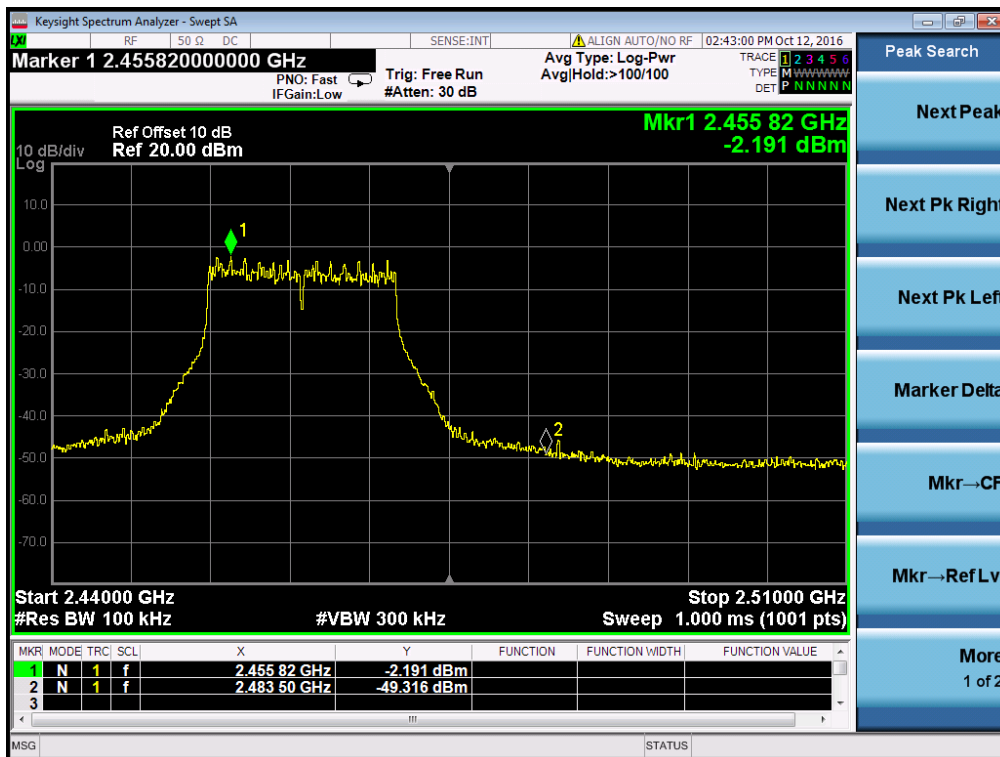
Antenna 2- 802.11b - Low Band Edge Plot on Channel 1



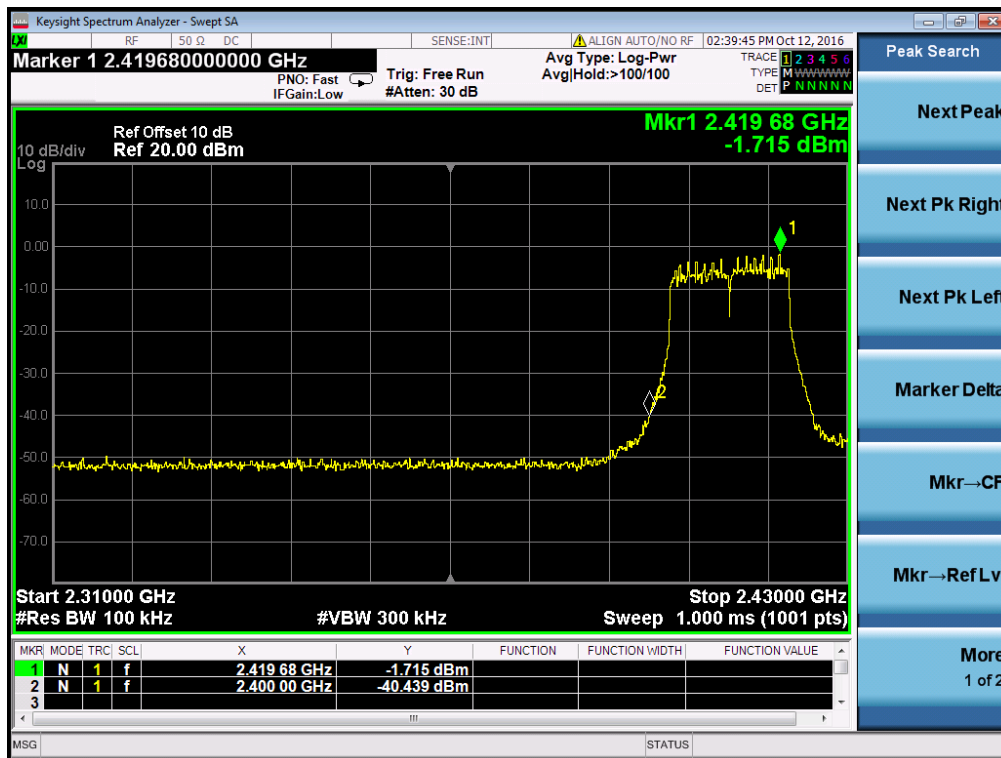
Antenna 2- 802.11b - High Band Edge Plot on Channel 11



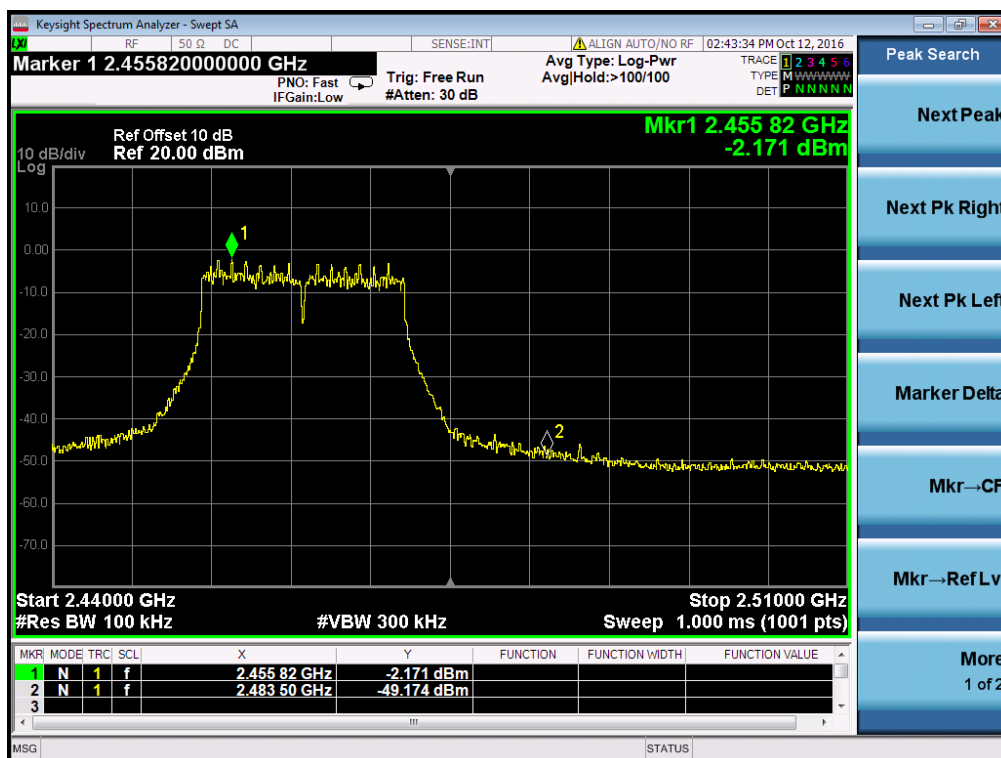
Antenna 2- 802.11g - Low Band Edge Plot on Channel 1



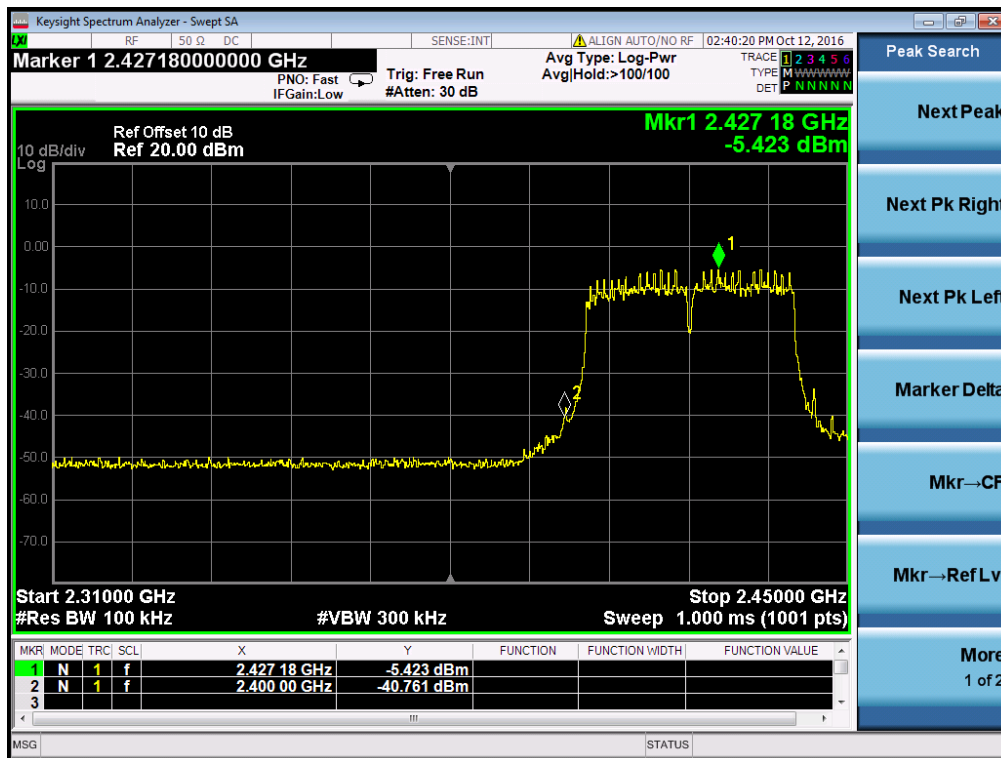
Antenna 2- 802.11g - High Band Edge Plot on Channel 11



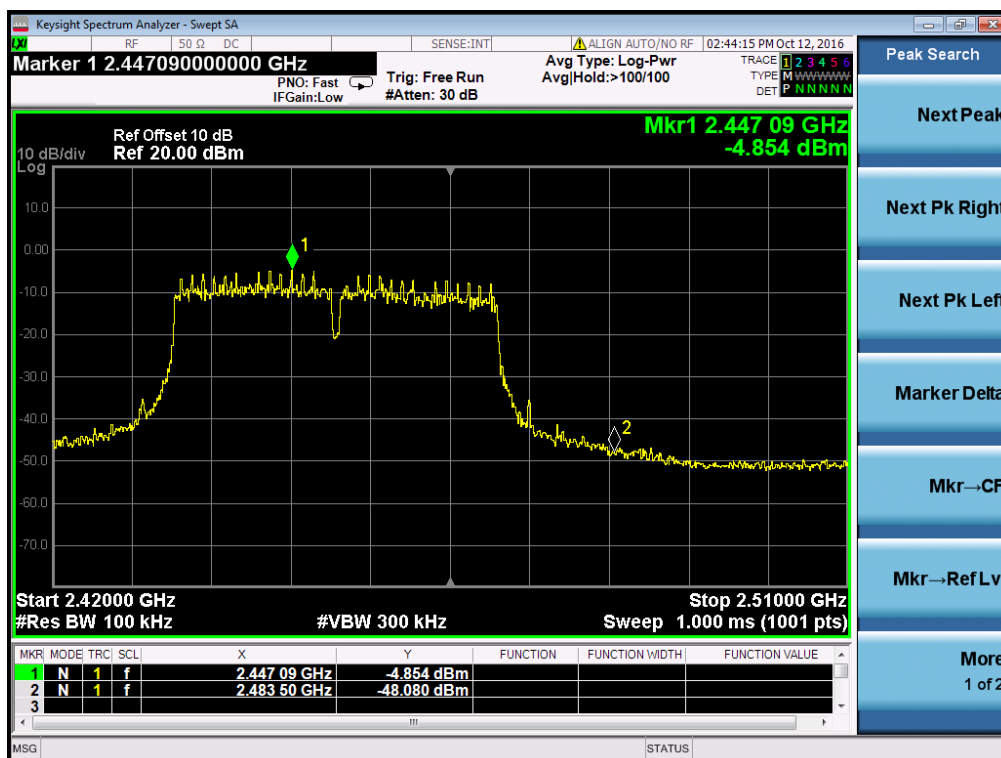
Antenna 2- 802.11n20 - Low Band Edge Plot on Channel 1



Antenna 2- 802.11n20 - High Band Edge Plot on Channel 11



Antenna 2- 802.11n40 - Low Band Edge Plot on Channel 3

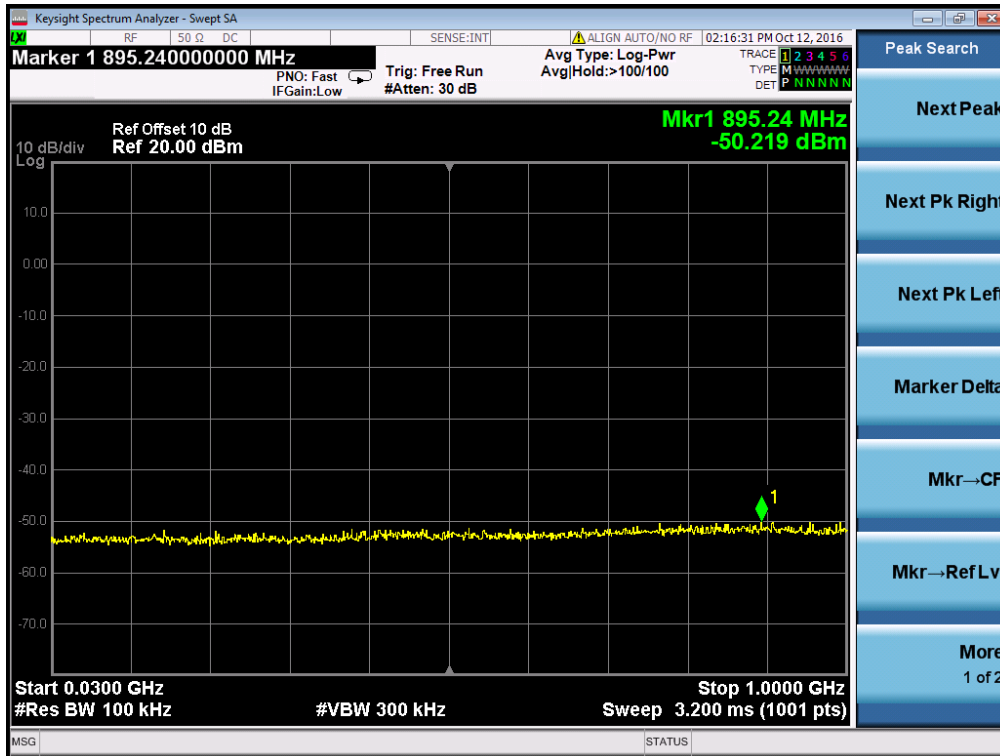


Antenna 2- 802.11n40 - High Band Edge Plot on Channel 9

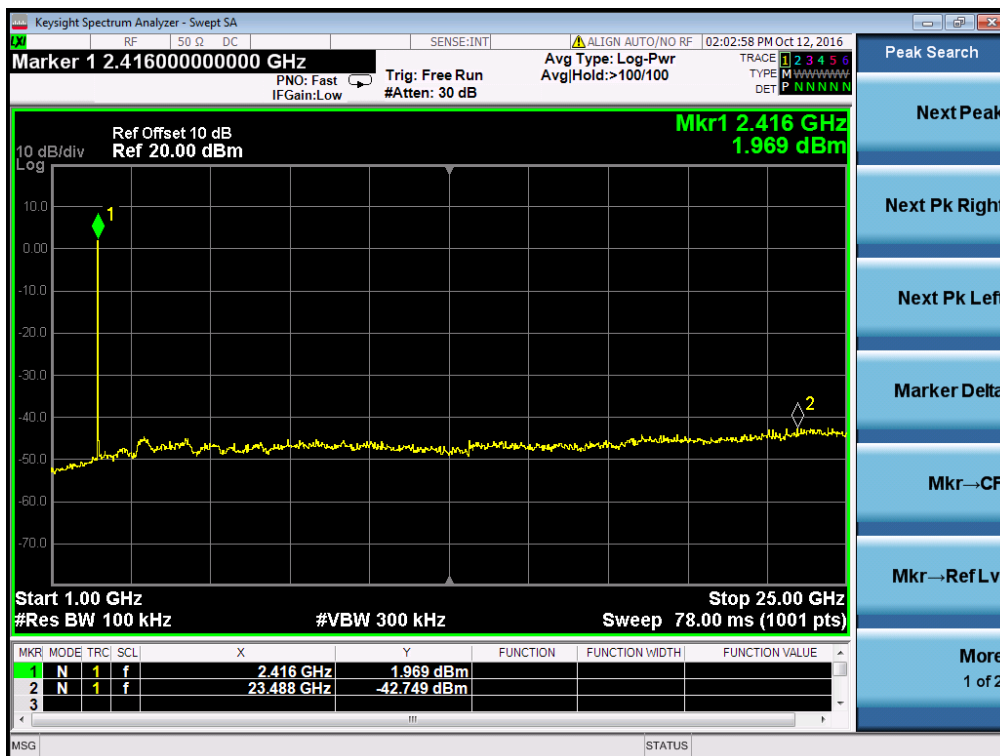
2.4.6. Test Result of Conducted Spurious Emission

NOTE1: Two antenna were tested and found antenna 1 for 802.11b/g/n is the worst mode, the worst results were recorded in this report.

802.11b - Conducted Spurious Emission Plot on channel 1

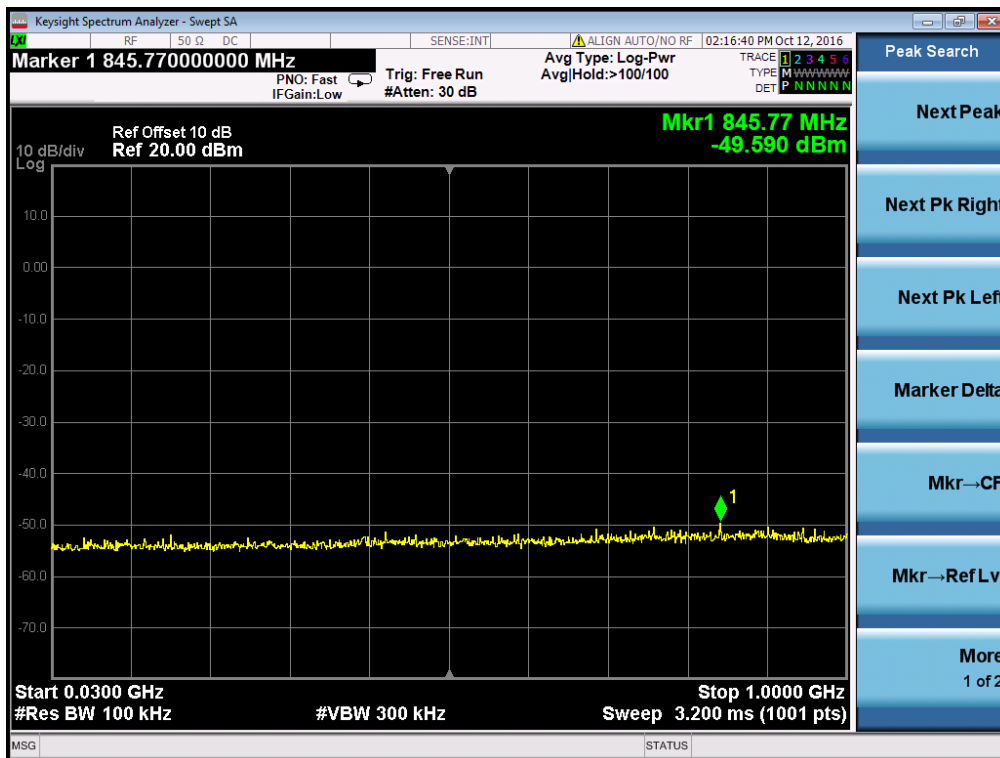


Channel = 1, 30MHz to 1GHz

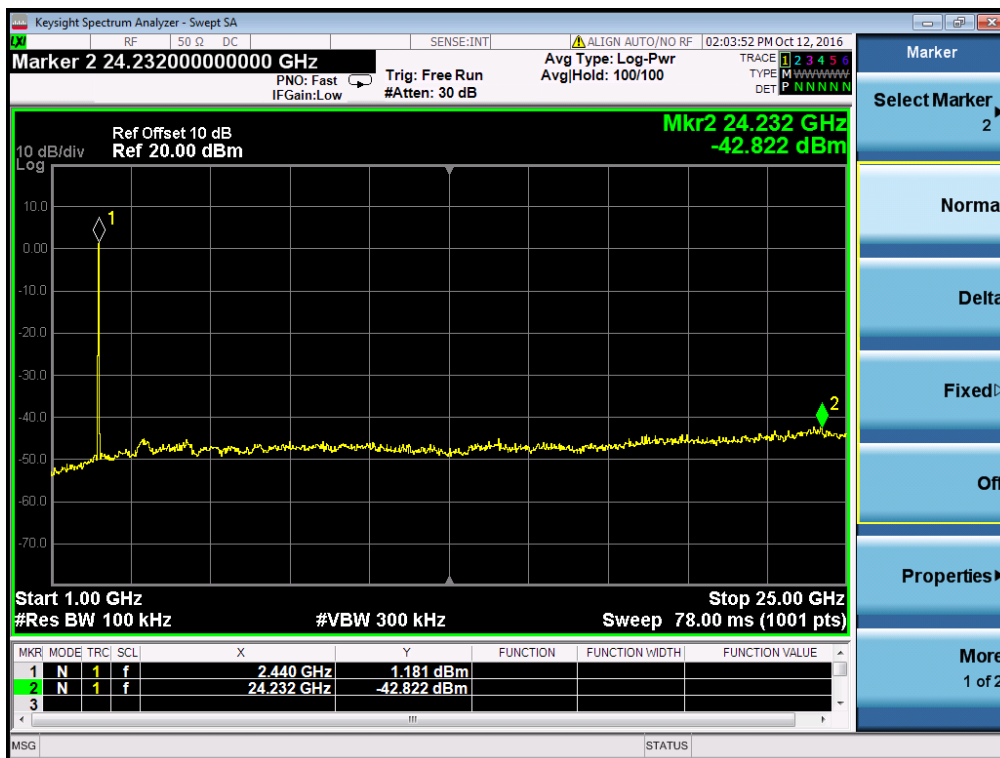


Channel = 1, 1GHz to 25GHz

802.11b - Conducted Spurious Emission Plot on channel 6

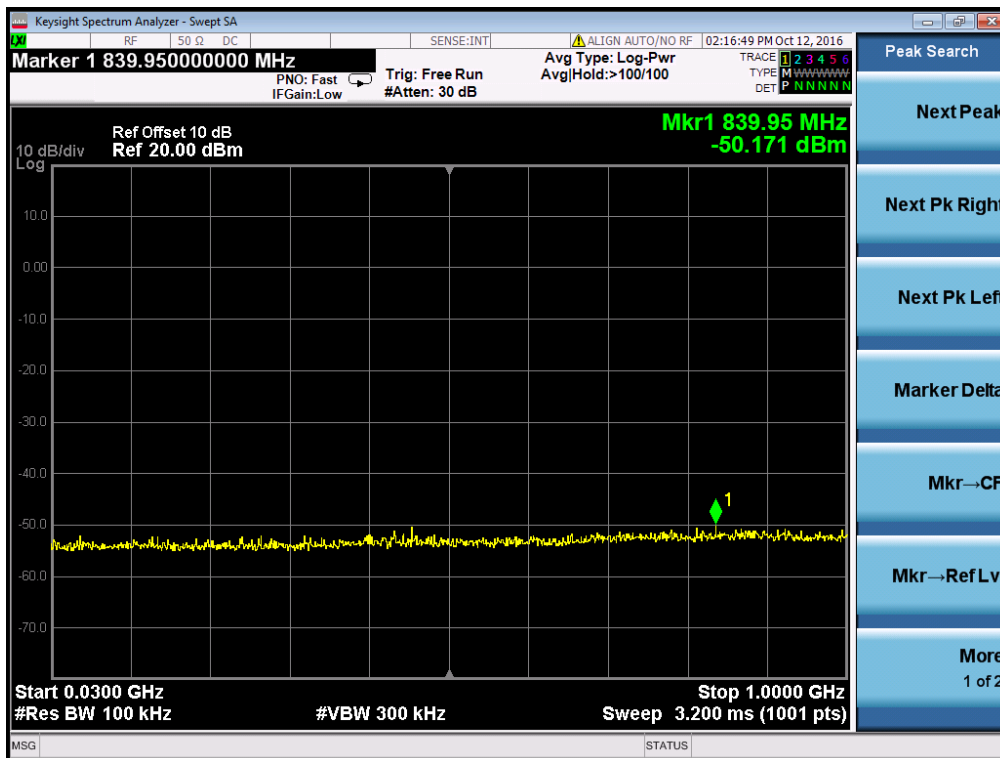


Channel = 6, 30MHz to 1GHz

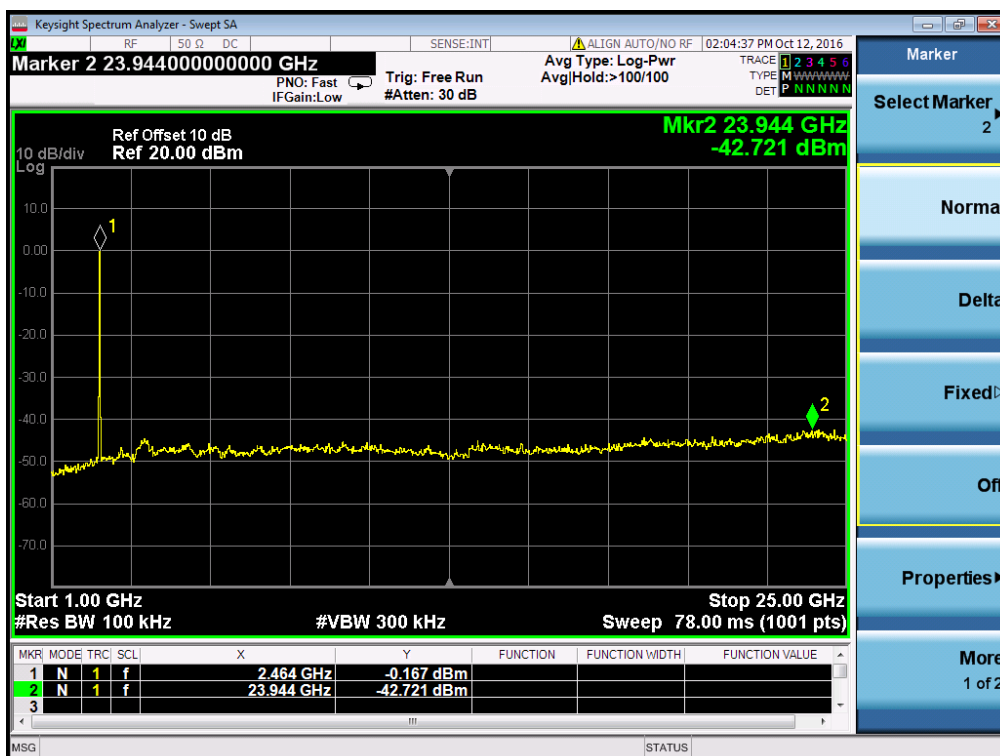


Channel = 6, 1GHz to 25GHz

802.11b - Conducted Spurious Emission Plot on channel 11

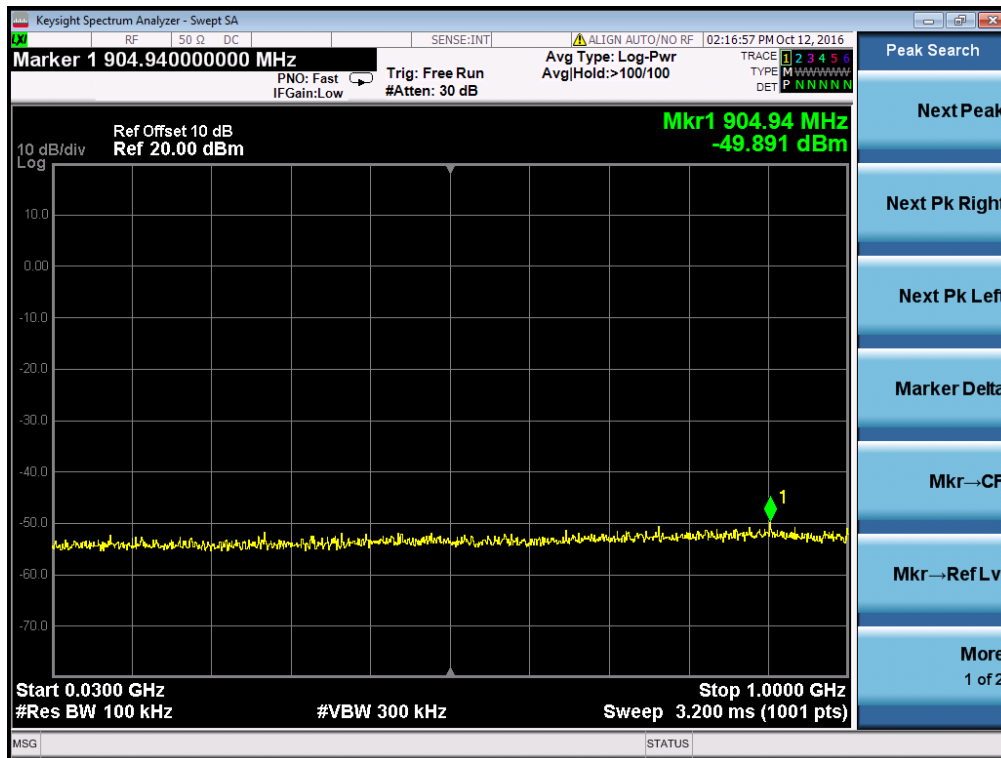


Channel = 11, 30MHz to 25GHz

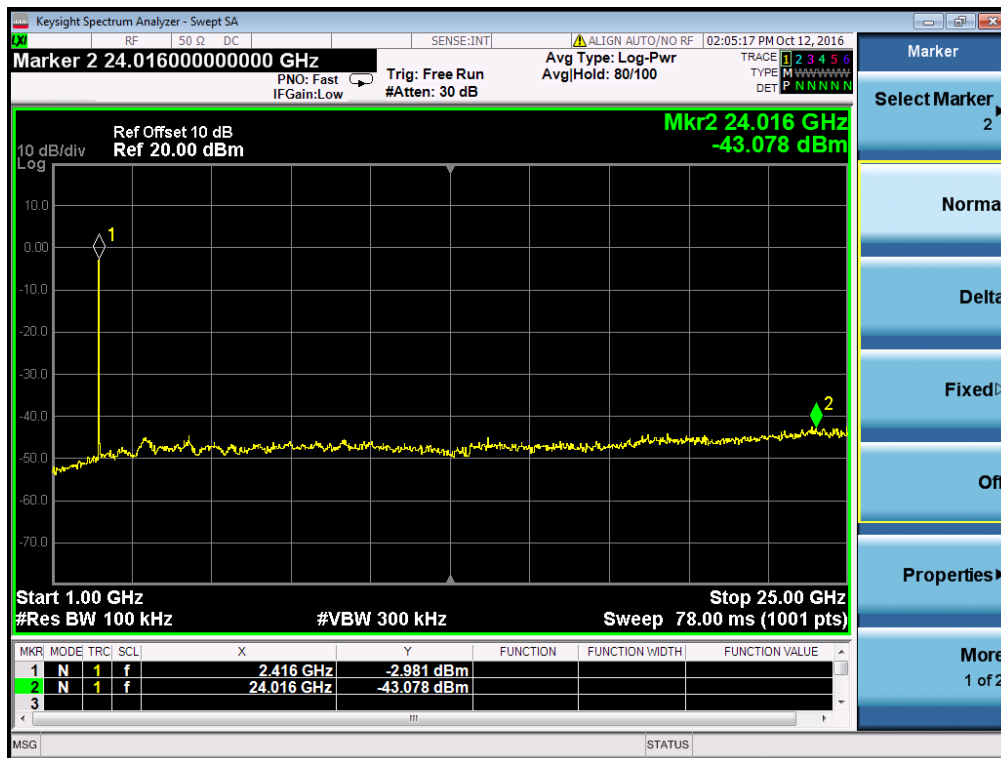


Channel = 11, 30MHz to 25GHz

802.11g - Conducted Spurious Emission Plot on channel 1

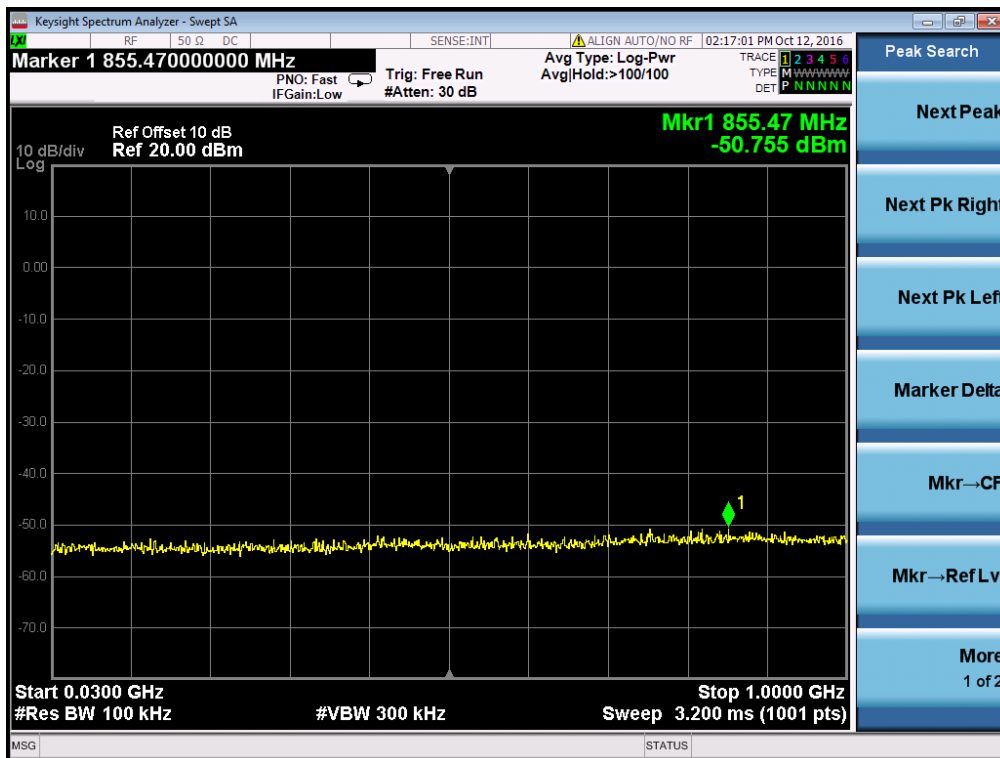


Channel = 1, 30MHz to 1GHz

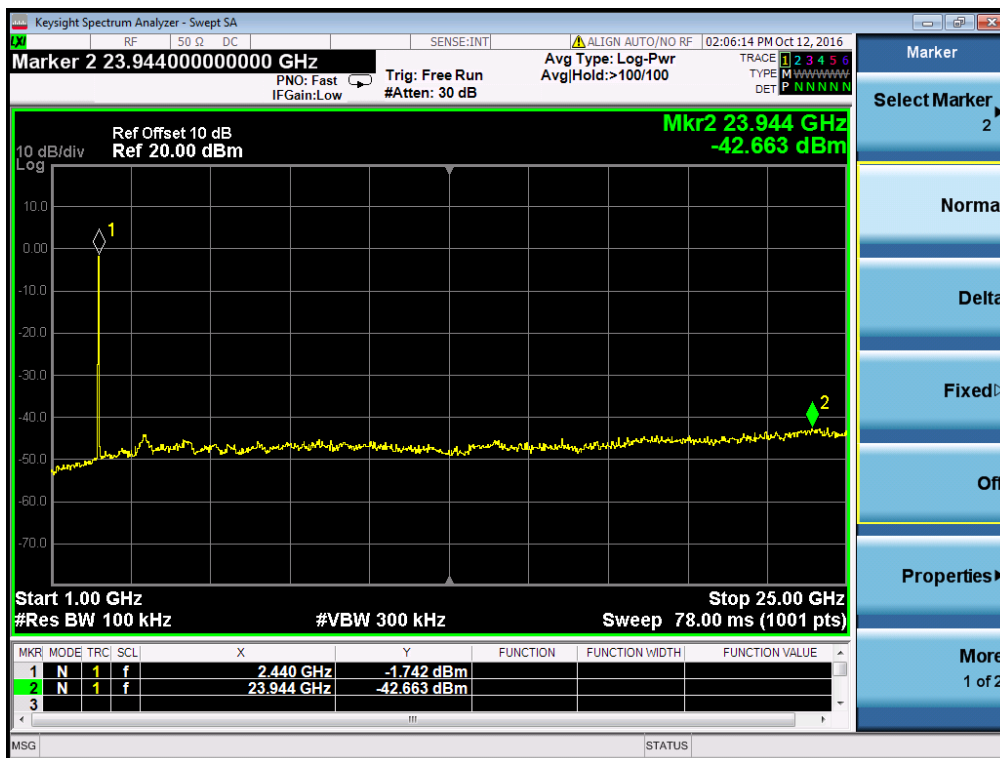


Channel = 1, 1GHz to 25GHz

802.11g - Conducted Spurious Emission Plot on channel 6

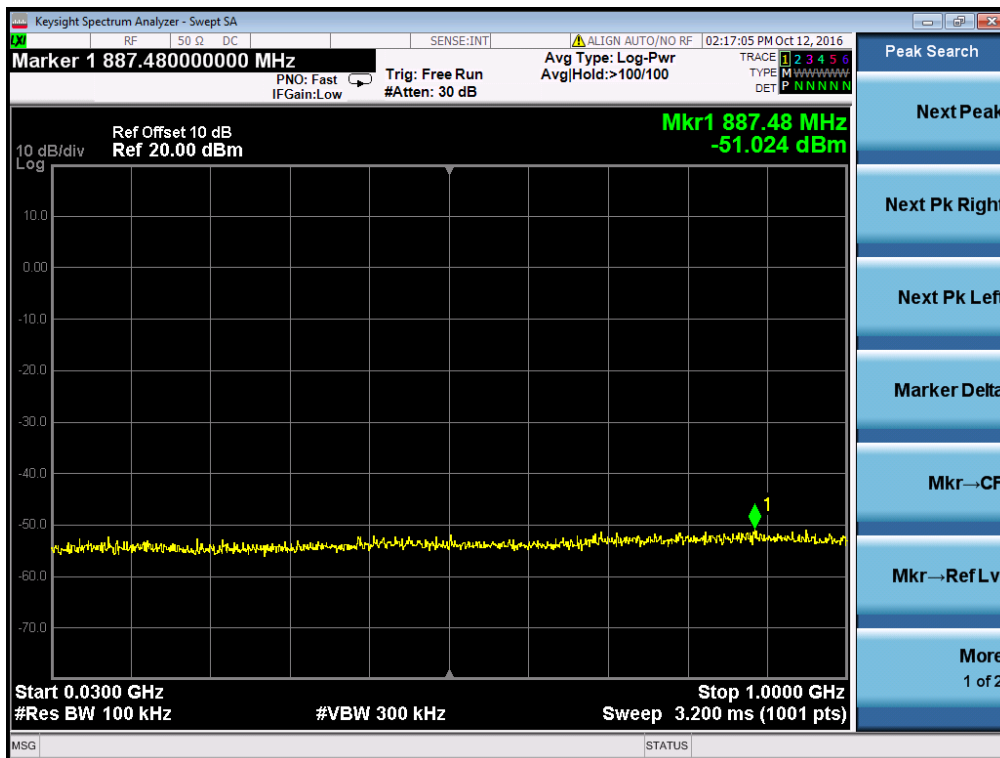


Channel = 6, 30MHz to 1GHz

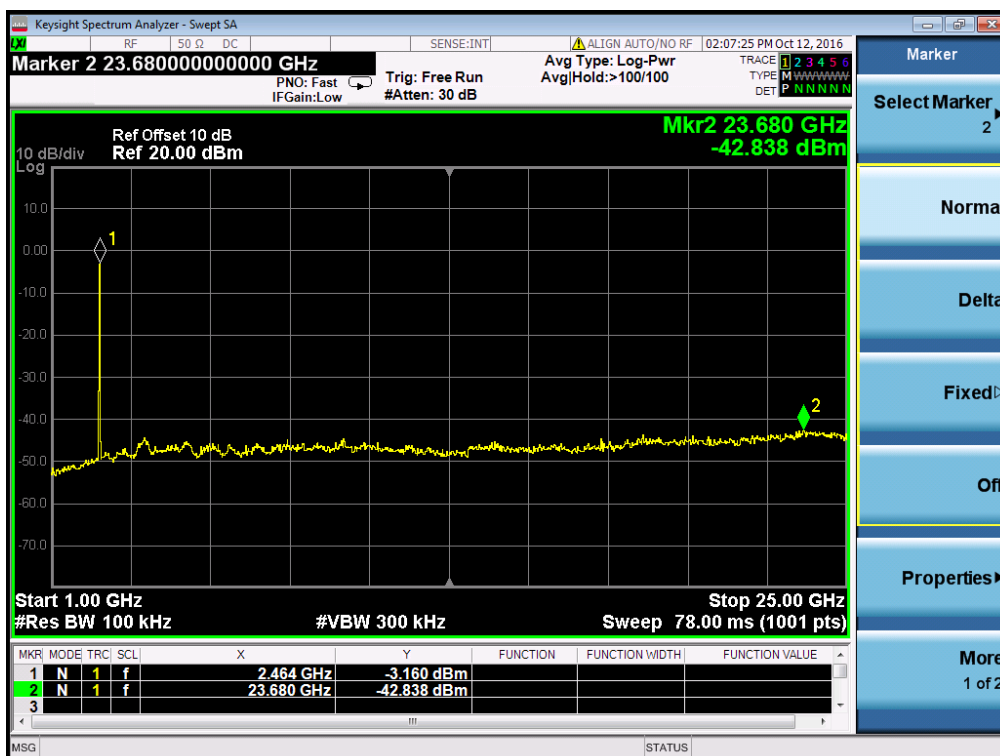


Channel = 6, 1GHz to 25GHz

802.11g - Conducted Spurious Emission Plot on channel 11

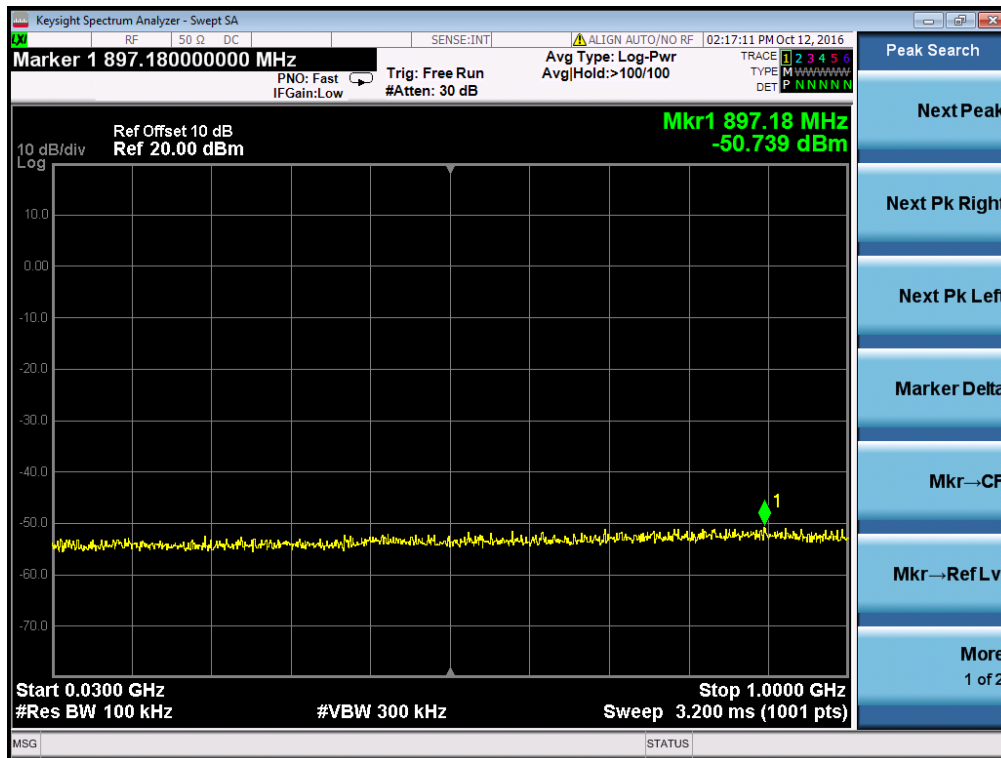


Channel = 11, 30MHz to 25GHz

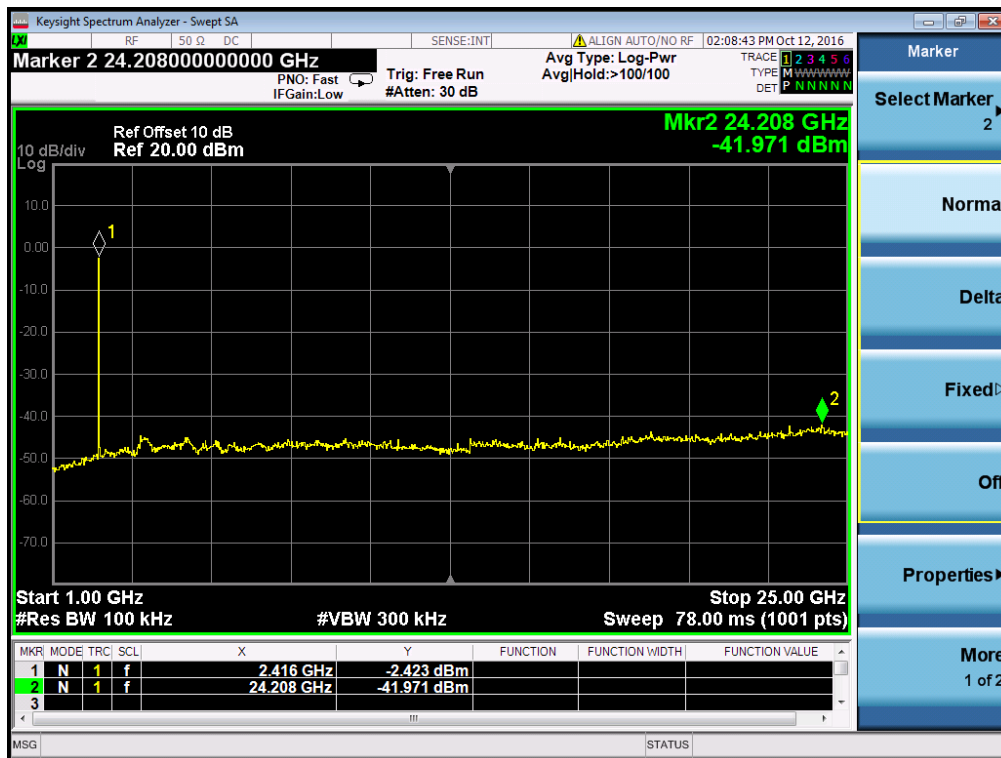


Channel = 11, 30MHz to 25GHz

802.11n20 - Conducted Spurious Emission Plot on channel 1

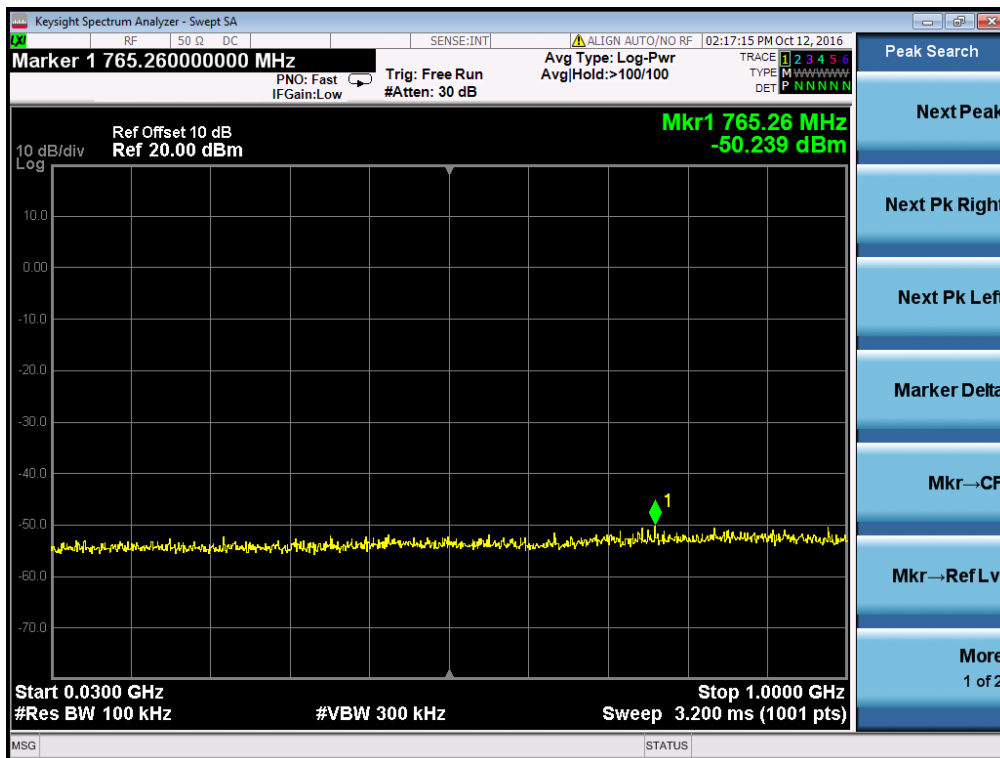


Channel = 1, 30MHz to 1GHz

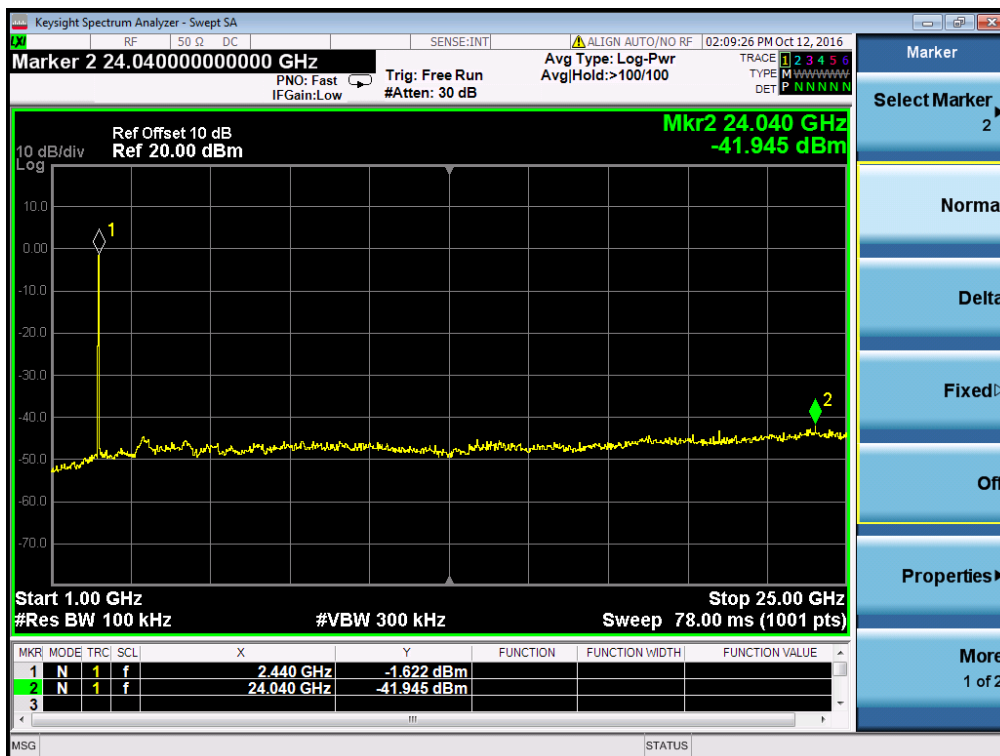


Channel = 1, 1GHz to 25GHz

802.11n20 - Conducted Spurious Emission Plot on channel 6

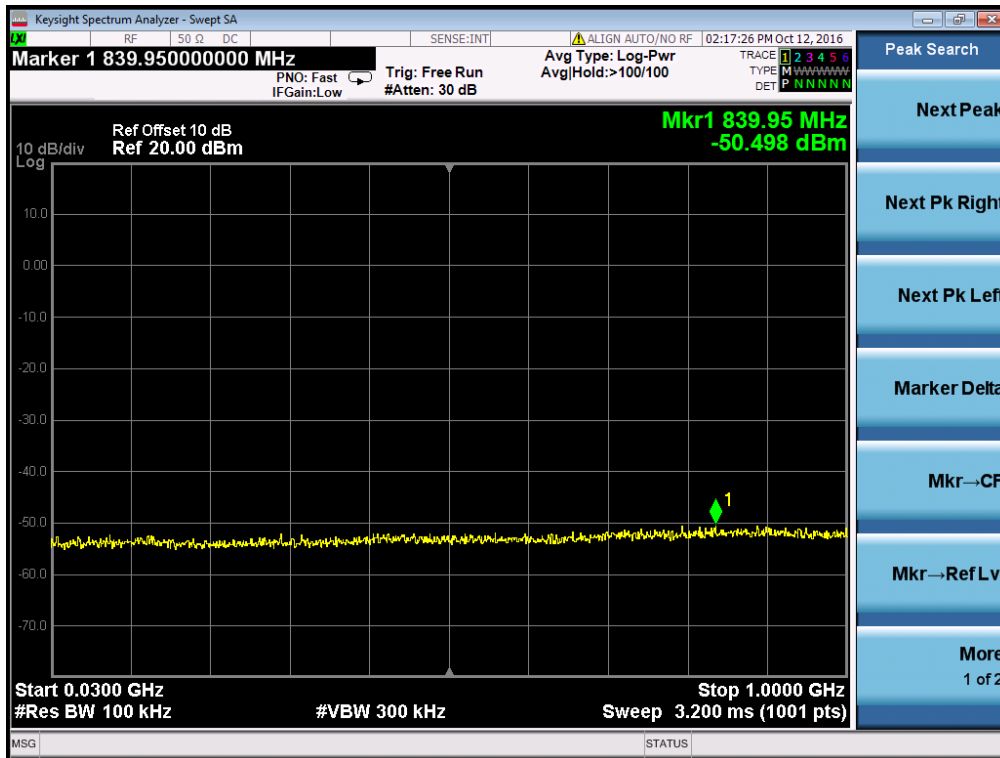


Channel = 6, 30MHz to 1GHz

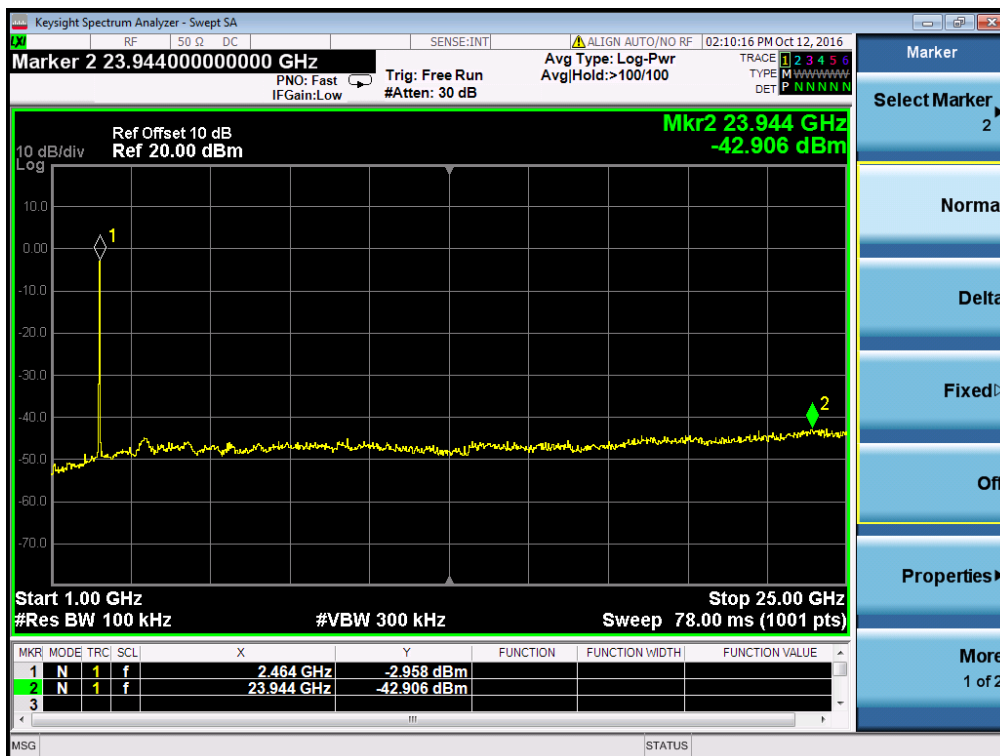


Channel = 6, 1GHz to 25GHz

802.11n20 - Conducted Spurious Emission Plot on channel 11

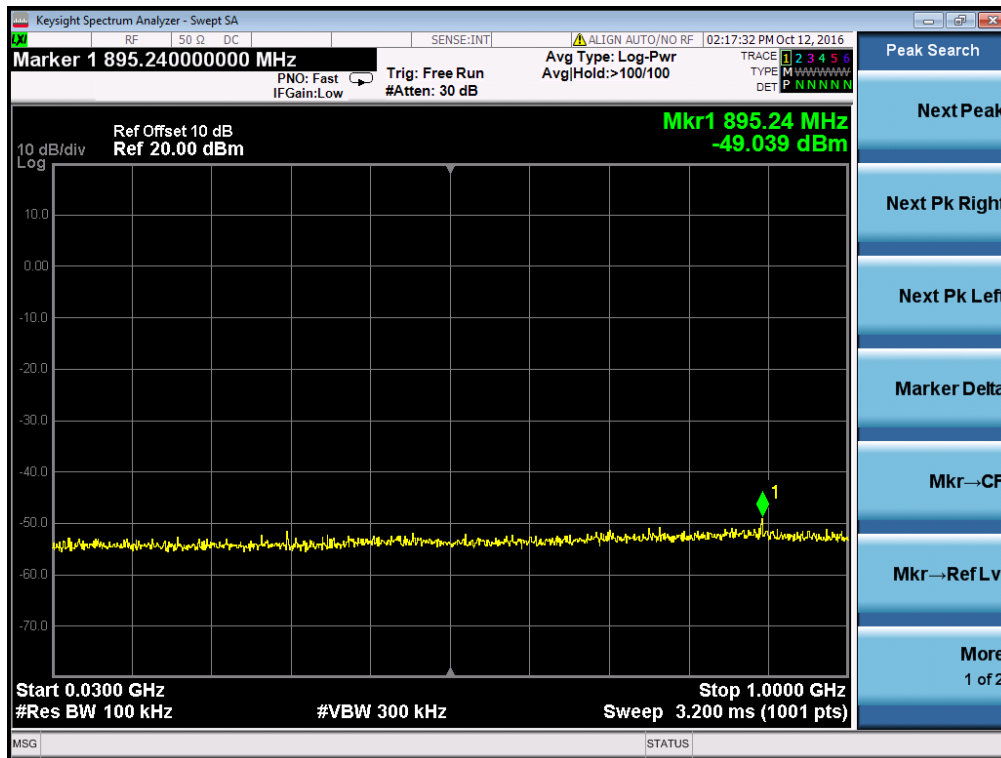


Channel = 11, 30MHz to 25GHz

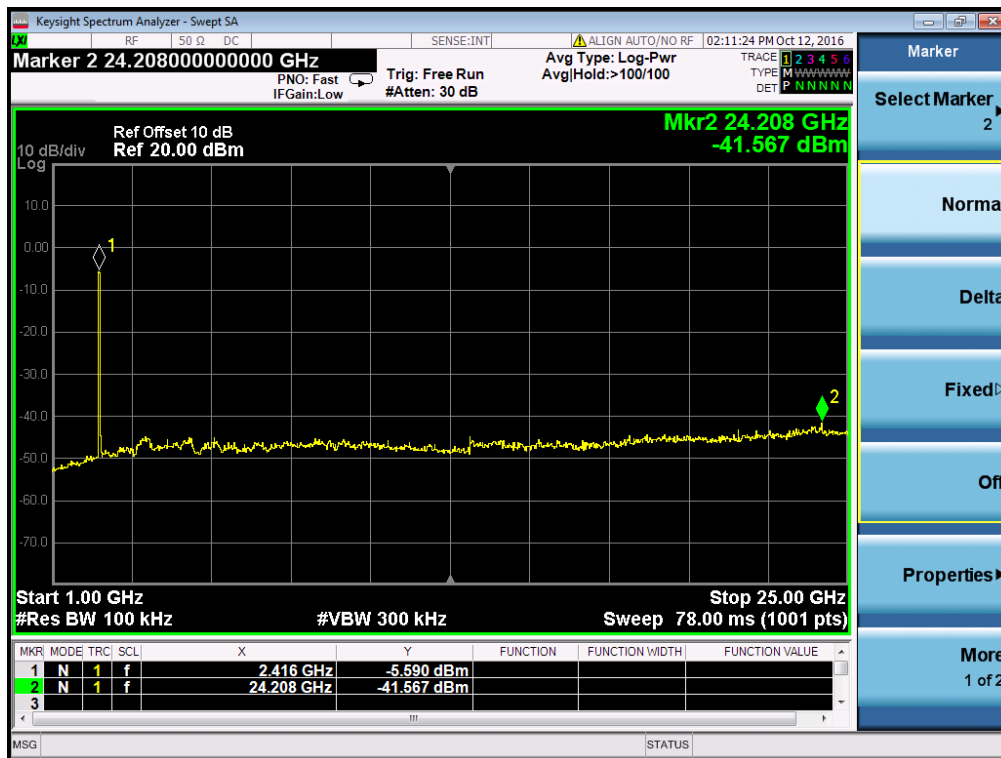


Channel = 11, 30MHz to 25GHz

802.11n40 - Conducted Spurious Emission Plot on channel 3

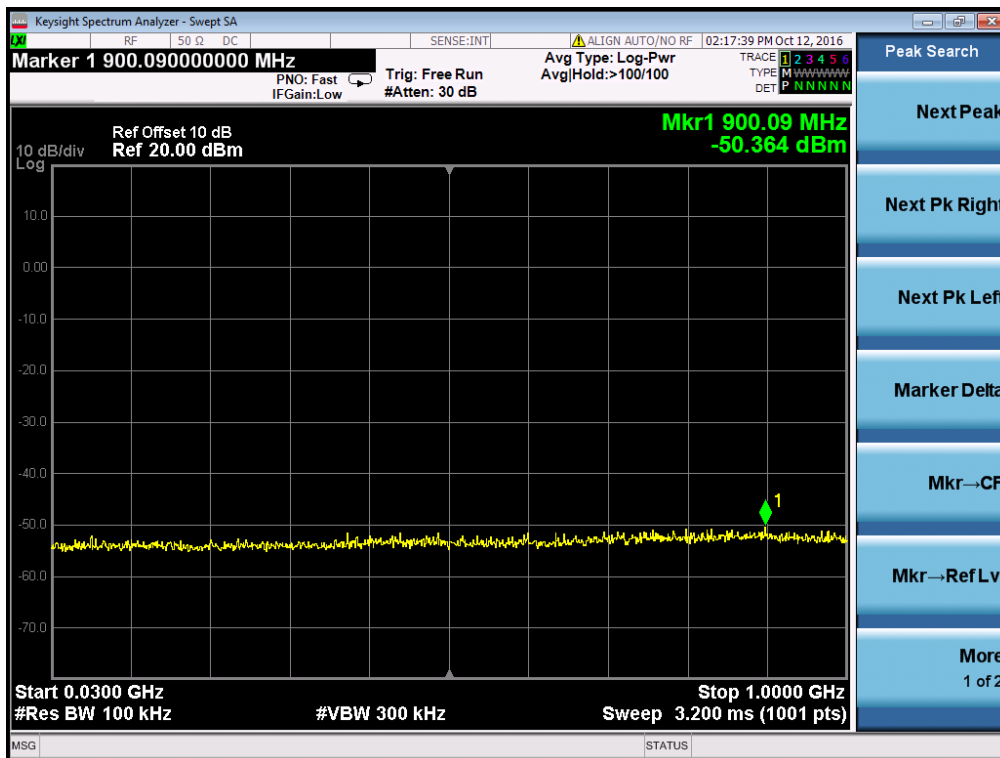


Channel = 3, 30MHz to 1GHz

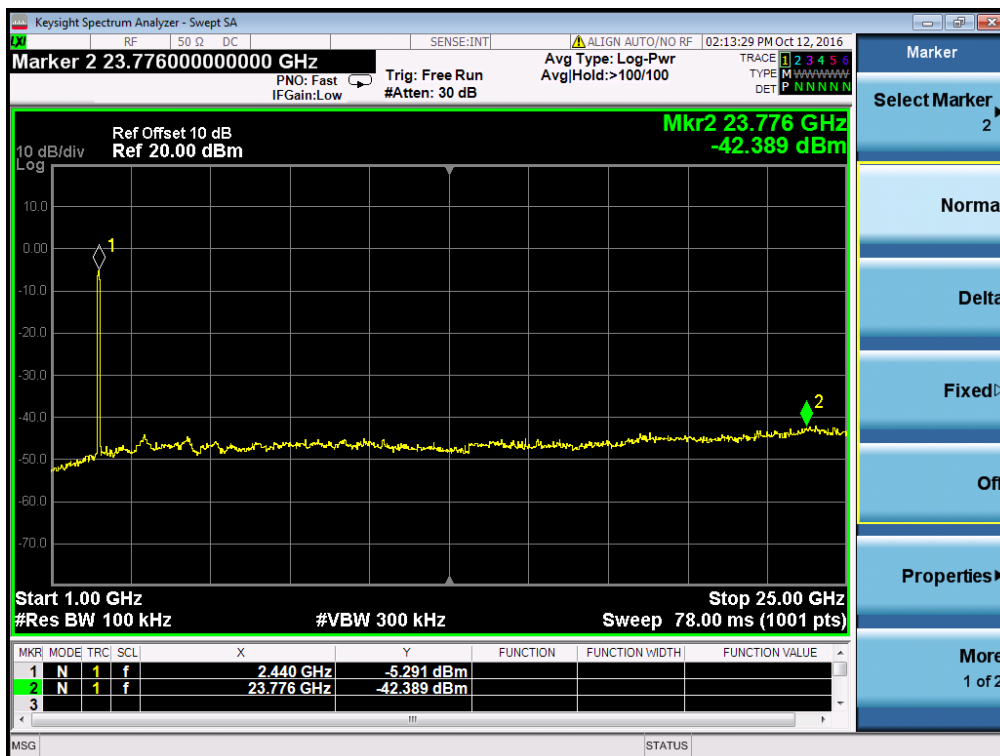


Channel = 3, 1GHz to 25GHz

802.11n40 - Conducted Spurious Emission Plot on channel 6

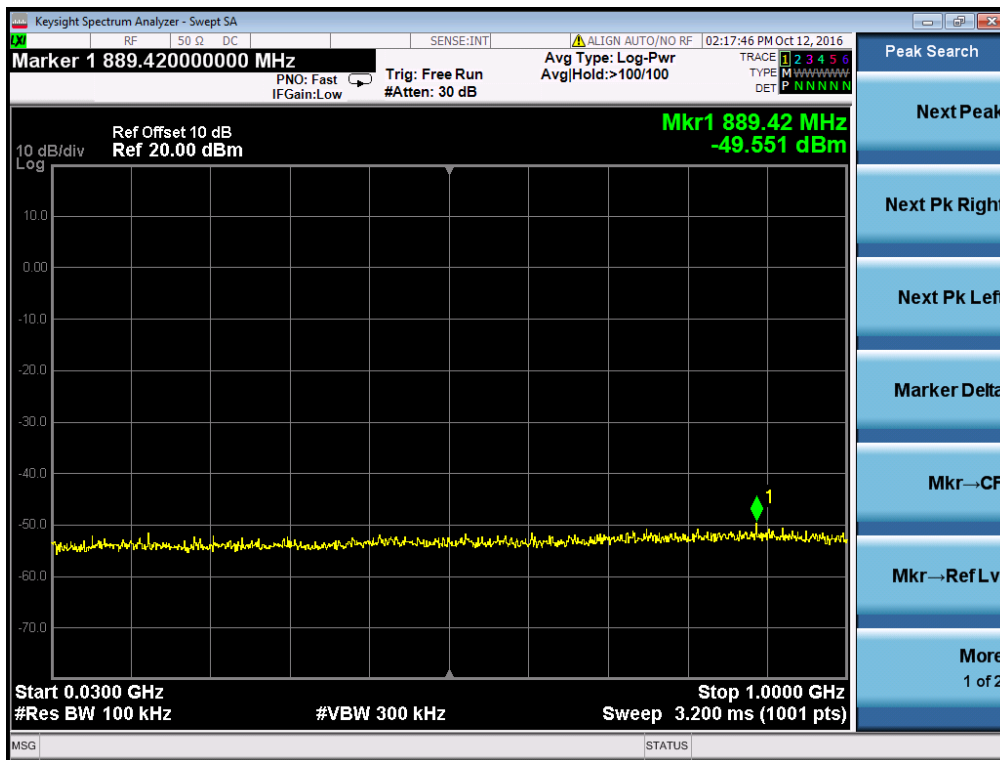


Channel = 6, 30MHz to 1GHz

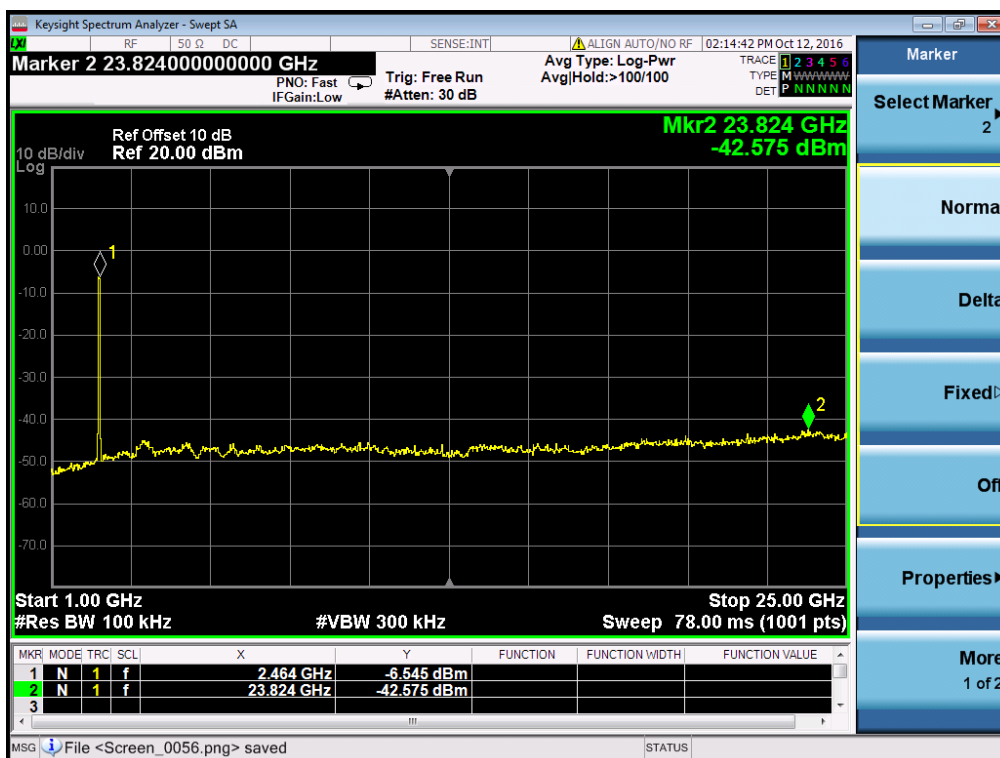


Channel = 6, 1GHz to 25GHz

802.11n40 - Conducted Spurious Emission Plot on channel 9



Channel = 9, 30MHz to 25GHz



Channel = 9, 30MHz to 25GHz

2.5. Power spectral density (PSD)

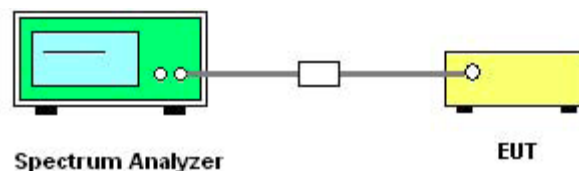
2.5.1. Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

2.5.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.5.3. Test Setup



2.5.4. Test Procedures

1. The testing follows Measurement Procedure 10.2 Method PKPSD of FCC KDB558074 D01 v03r05.

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.

Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)

5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.

6. Measure and record the results in the test report.

7. The Measured power density (dBm)/ 100kHz is a reference level and used as 20dBc down limit line for Conducted Band Edges and Conducted Spurious Emission.

2.5.5. Test Results of Power spectral density

802.11b mode					
Test Frequency (MHz)	Power Spectral Density (dBm/3kHz)			Limit (dBm/3kHz)	Result
	Antenna 1	Antenna 2	Total		
2412	-17.185	-16.931	-14.05	8	PASS
2437	-15.785	-15.897	-12.83	8	PASS
2462	-17.865	-18.437	-15.13	8	PASS

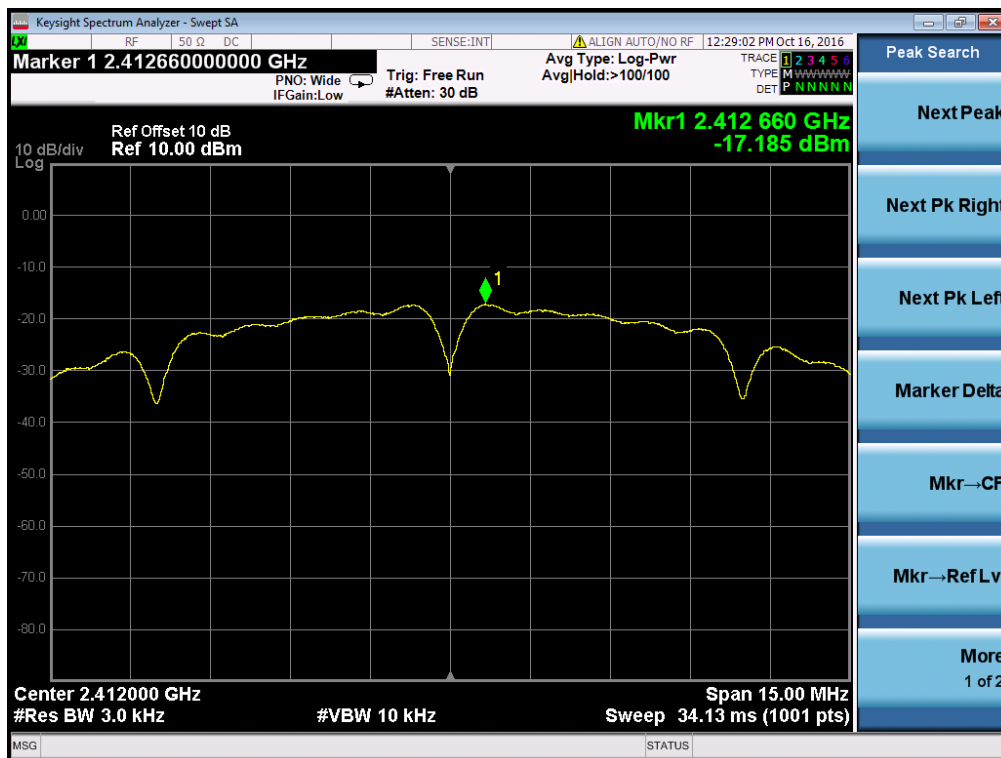
802.11g mode					
Test Frequency (MHz)	Power Spectral Density (dBm/3kHz)			Limit (dBm/3kHz)	Result
	Antenna 1	Antenna 2	Total		
2412	-18.892	-18.908	-15.89	8	PASS
2437	-17.634	-17.960	-14.78	8	PASS
2462	-19.302	-19.729	-16.50	8	PASS

802.11n20 mode					
Test Frequency (MHz)	Power Spectral Density (dBm/3kHz)			Limit (dBm/3kHz)	Result
	Antenna 1	Antenna 2	Total		
2412	-19.168	-19.089	-16.12	8	PASS
2437	-17.936	-18.443	-15.17	8	PASS
2462	-19.617	-19.201	-16.39	8	PASS

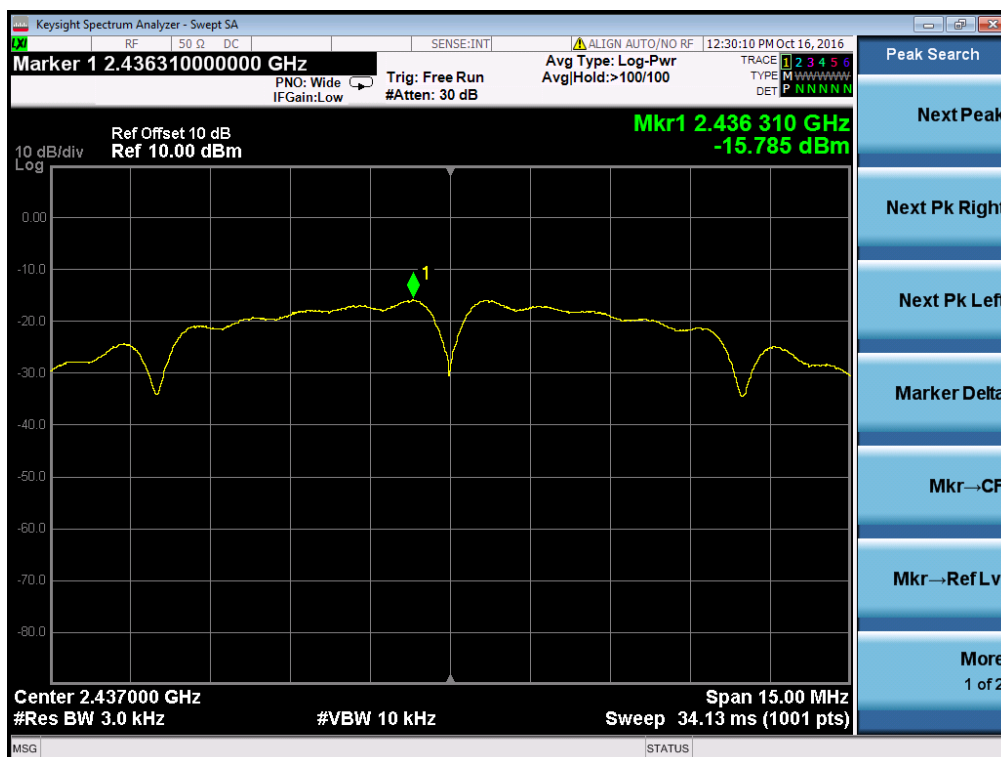
802.11n40 mode					
Test Frequency (MHz)	Power Spectral Density (dBm/3kHz)			Limit (dBm/3kHz)	Result
	Antenna 1	Antenna 2	Total		
2422	-20.706	-20.749	-17.72	8	PASS
2437	-20.494	-20.099	-17.28	8	PASS
2452	-21.100	-20.425	-17.74	8	PASS

2.5.6. Test Results (plots) of Power spectral density

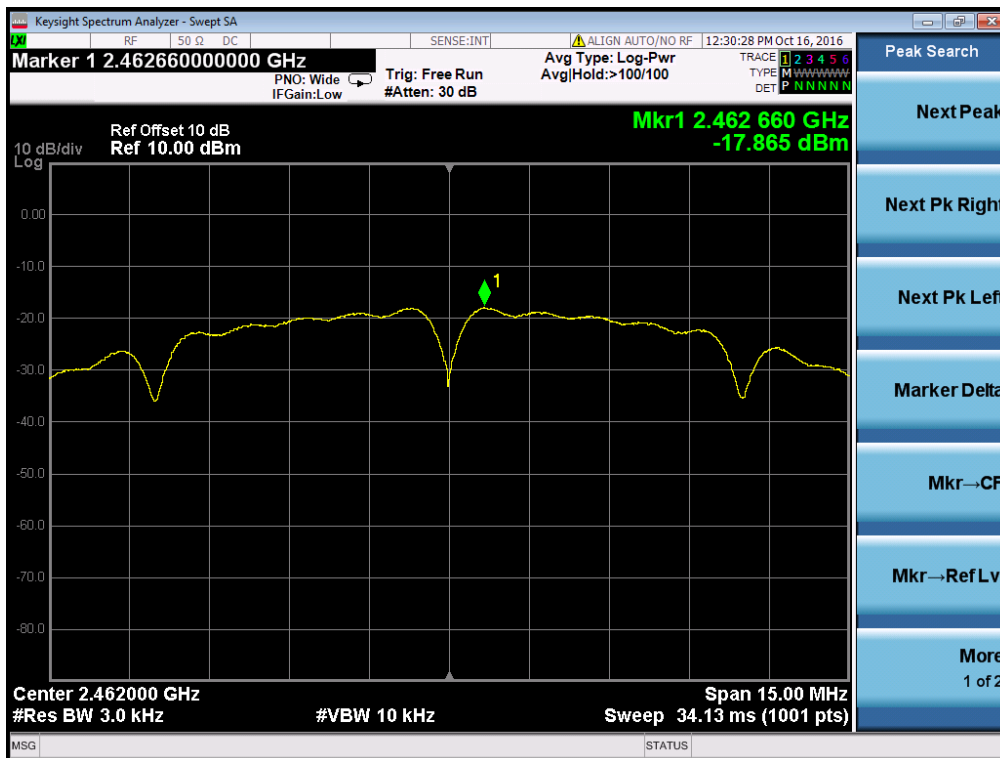
Antenna 1 - 802.11b - Channel 1



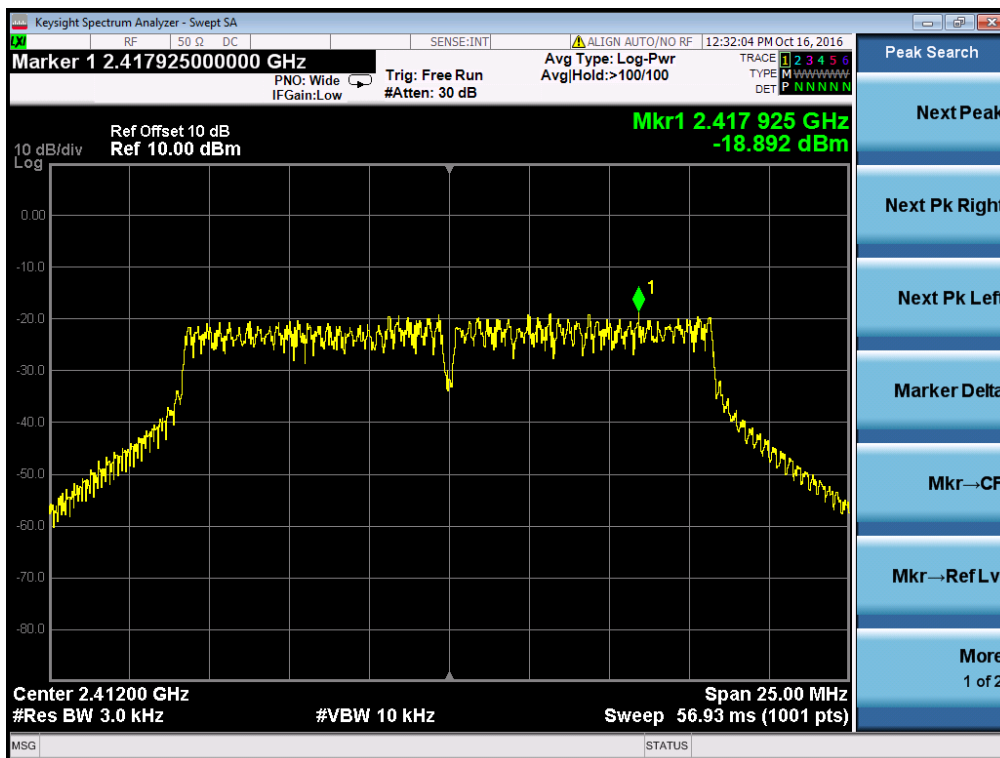
Antenna 1 - 802.11b - Channel 6



Antenna 1 - 802.11b - Channel 11

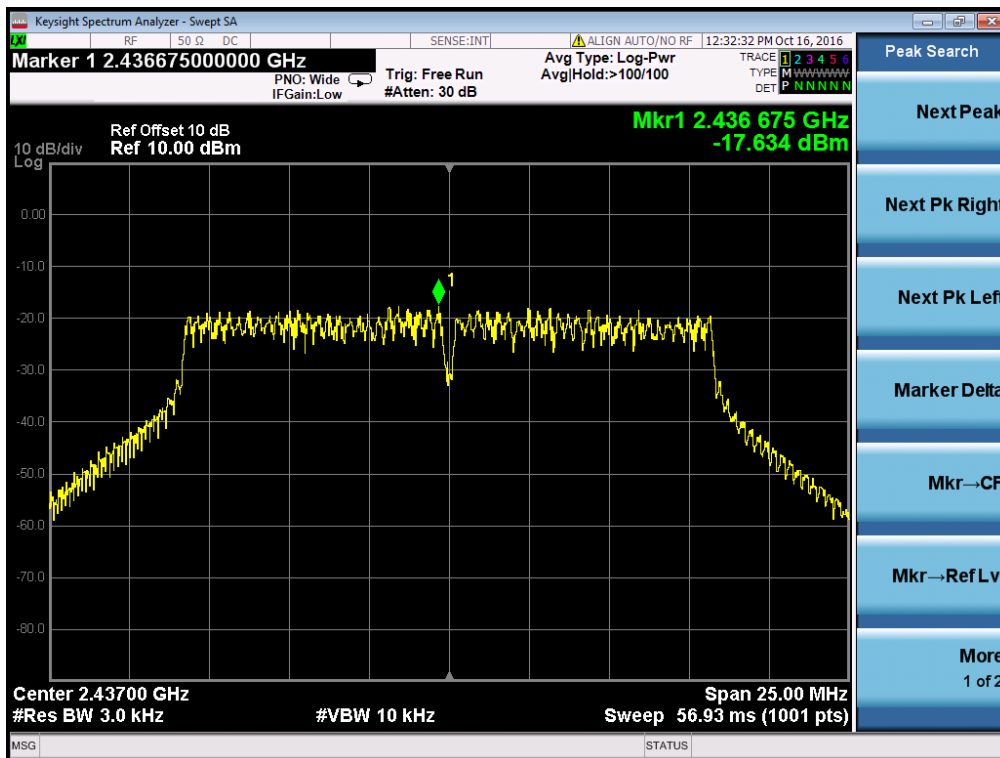


Antenna 1 - 802.11g - Channel 1

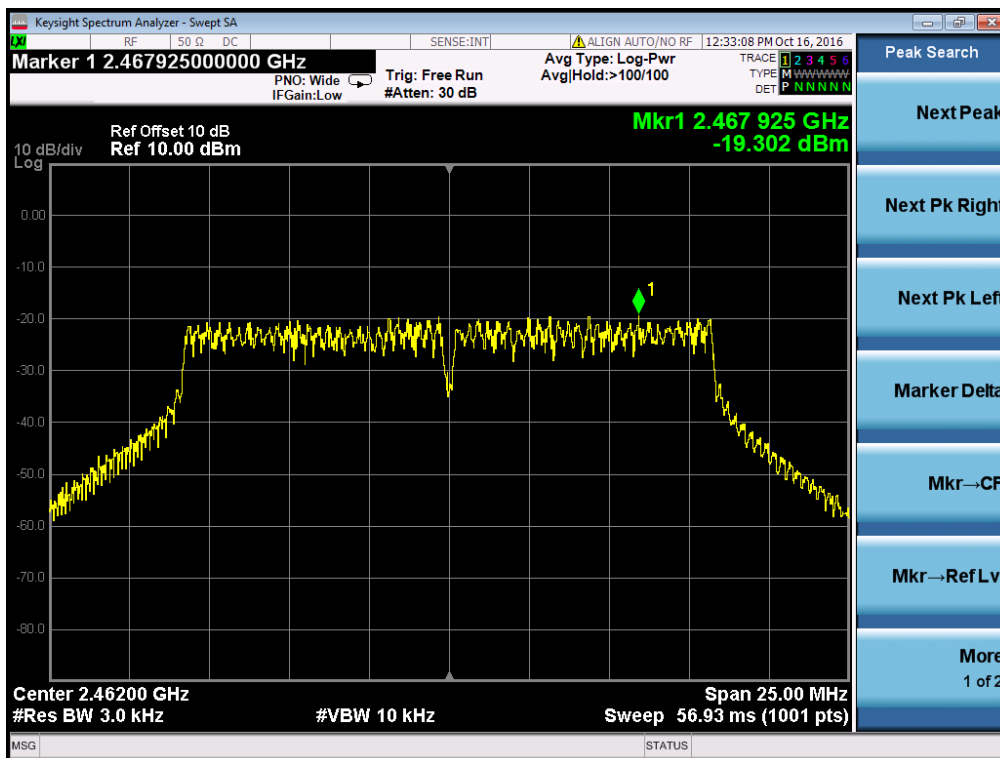




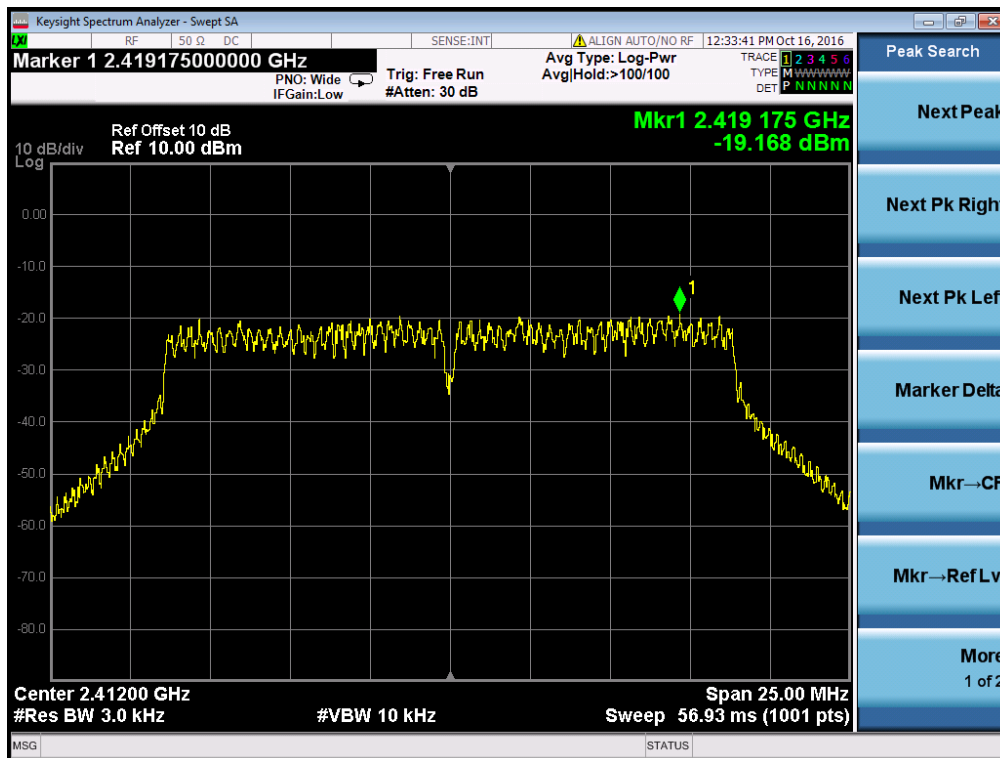
Antenna 1 - 802.11g - Channel 6



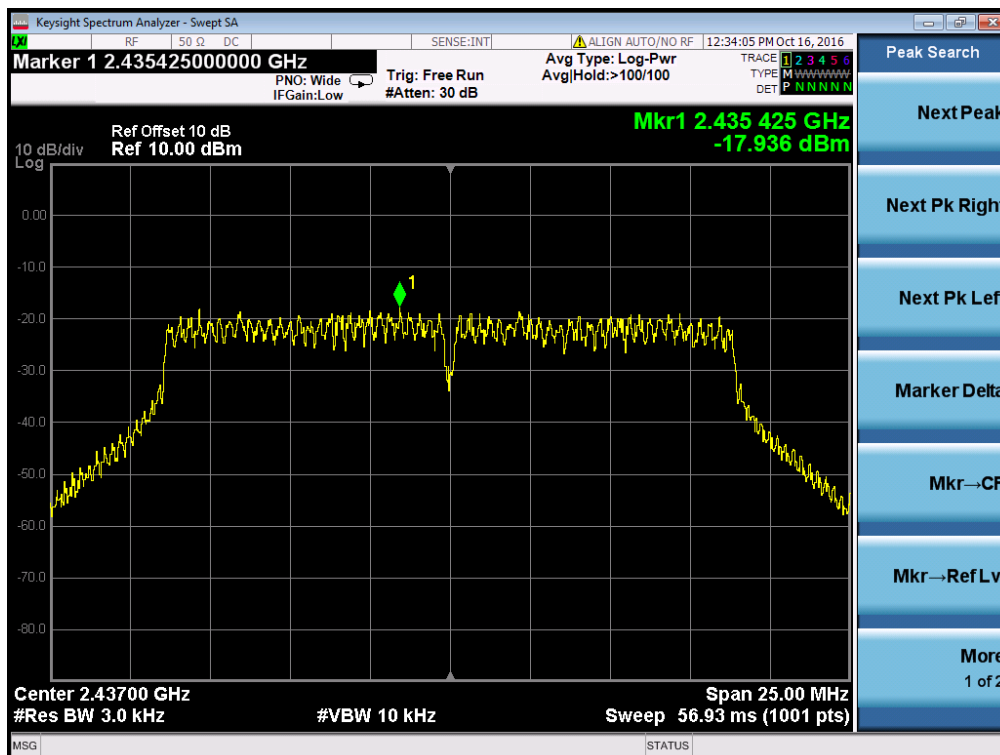
Antenna 1 - 802.11g - Channel 11



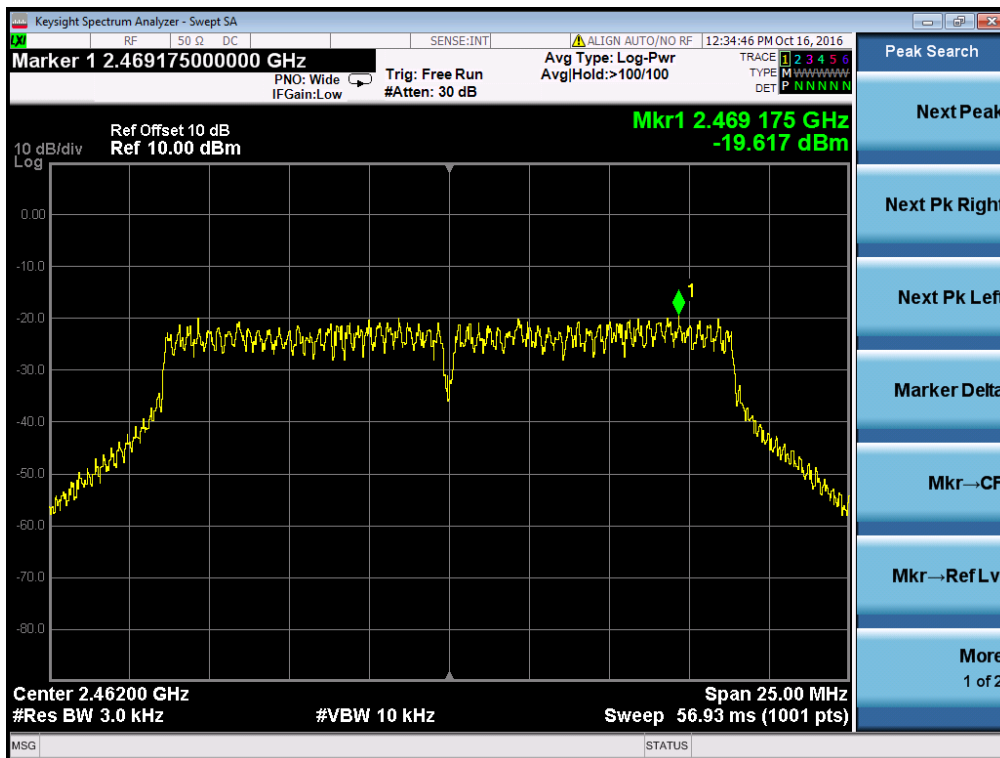
Antenna 1 - 802.11n20 - Channel 1



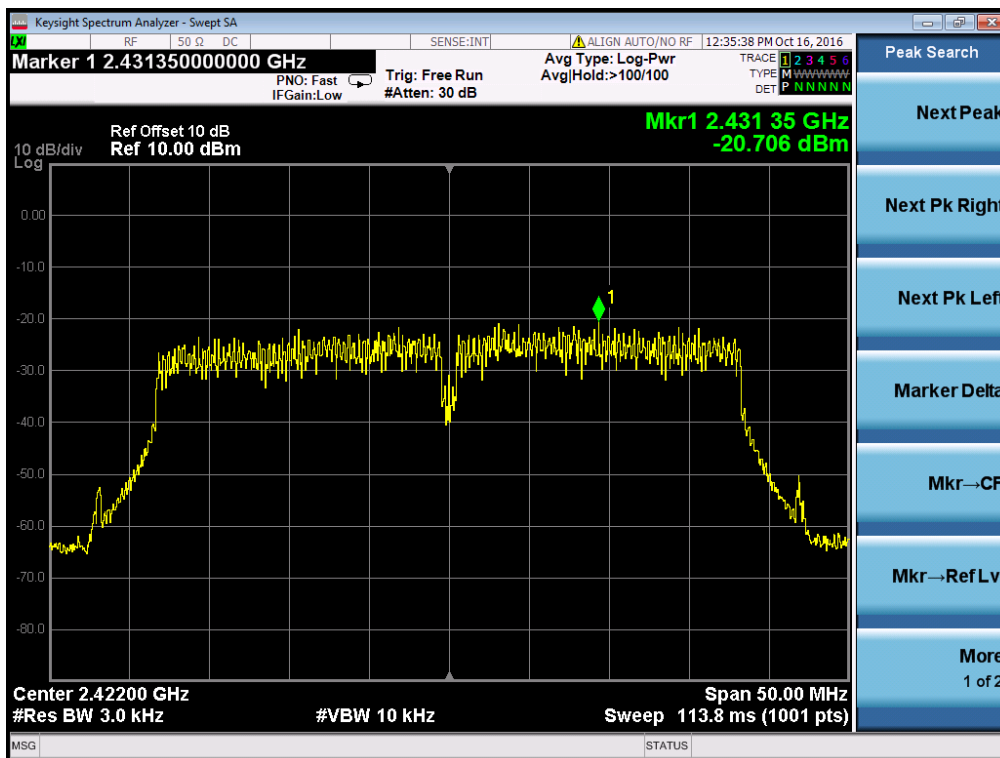
Antenna 1 - 802.11n20 - Channel 6



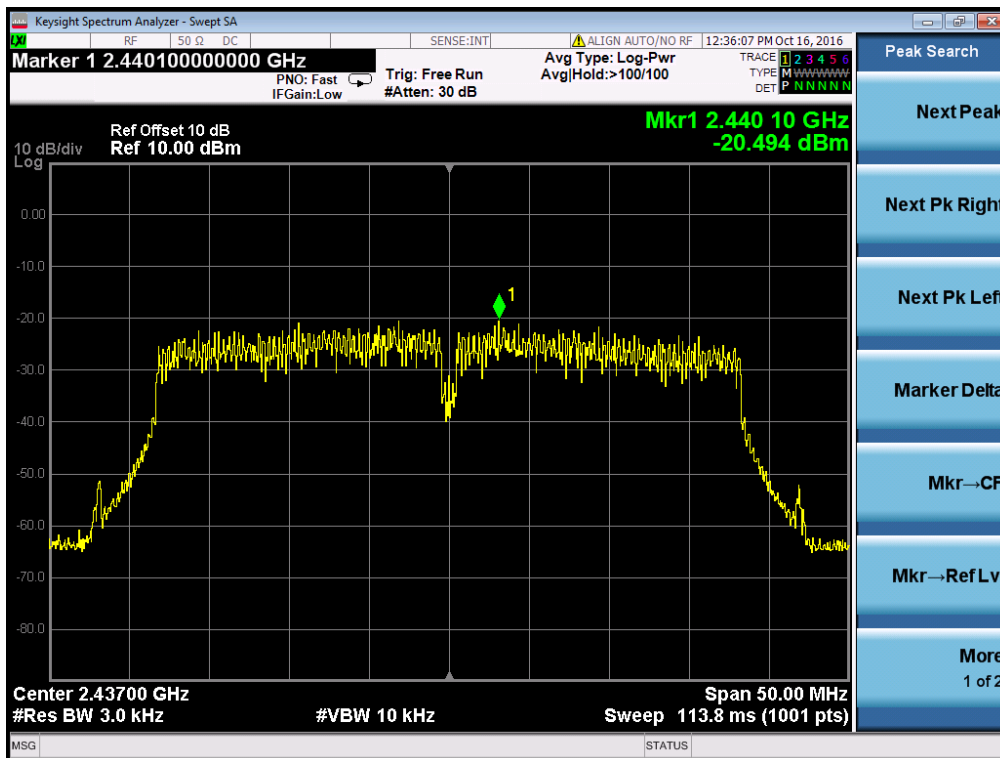
Antenna 1 - 802.11n20 - Channel 11



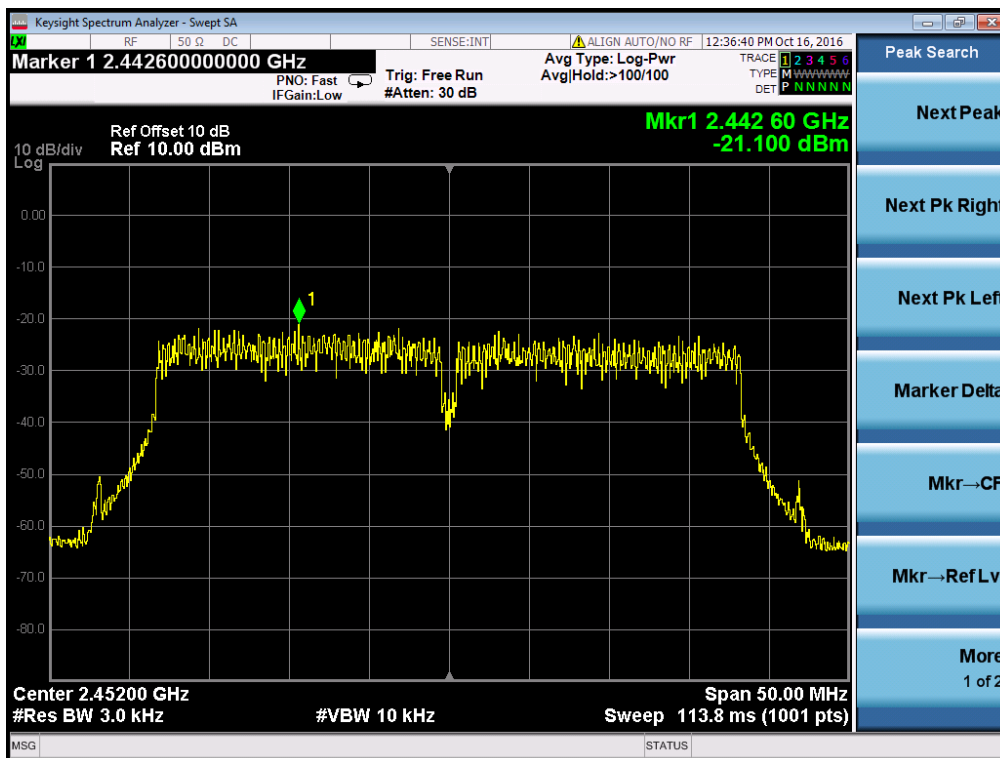
Antenna 1 - 802.11n40 - Channel 3



Antenna 1 - 802.11n40 - Channel 6

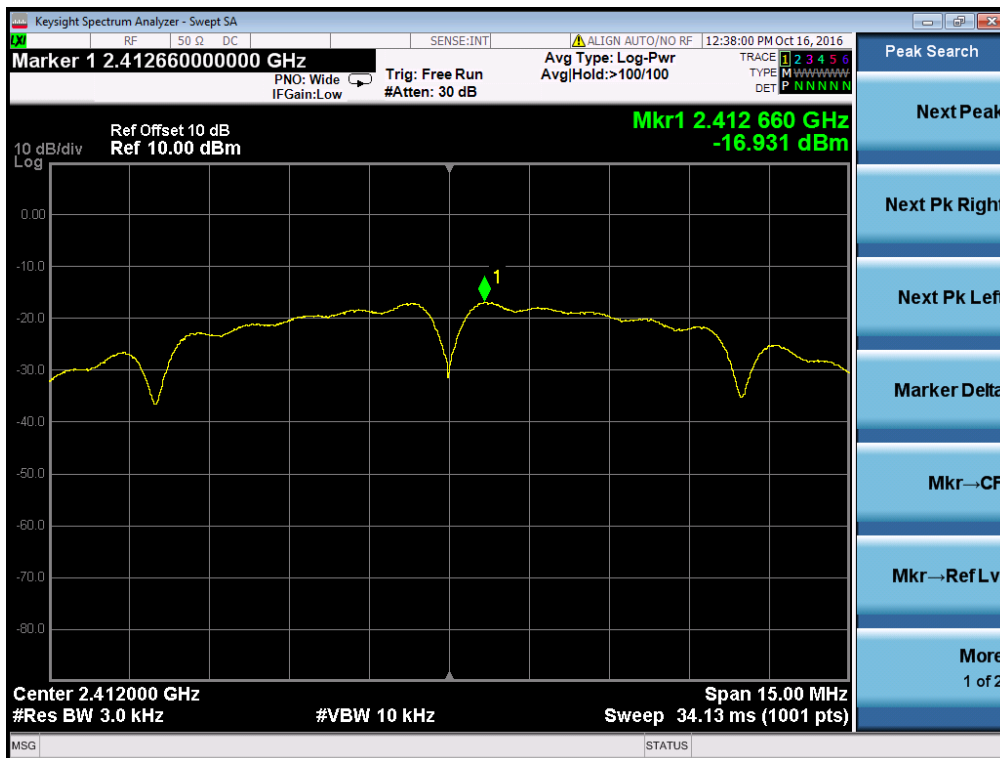


Antenna 1 - 802.11n40 - Channel 9

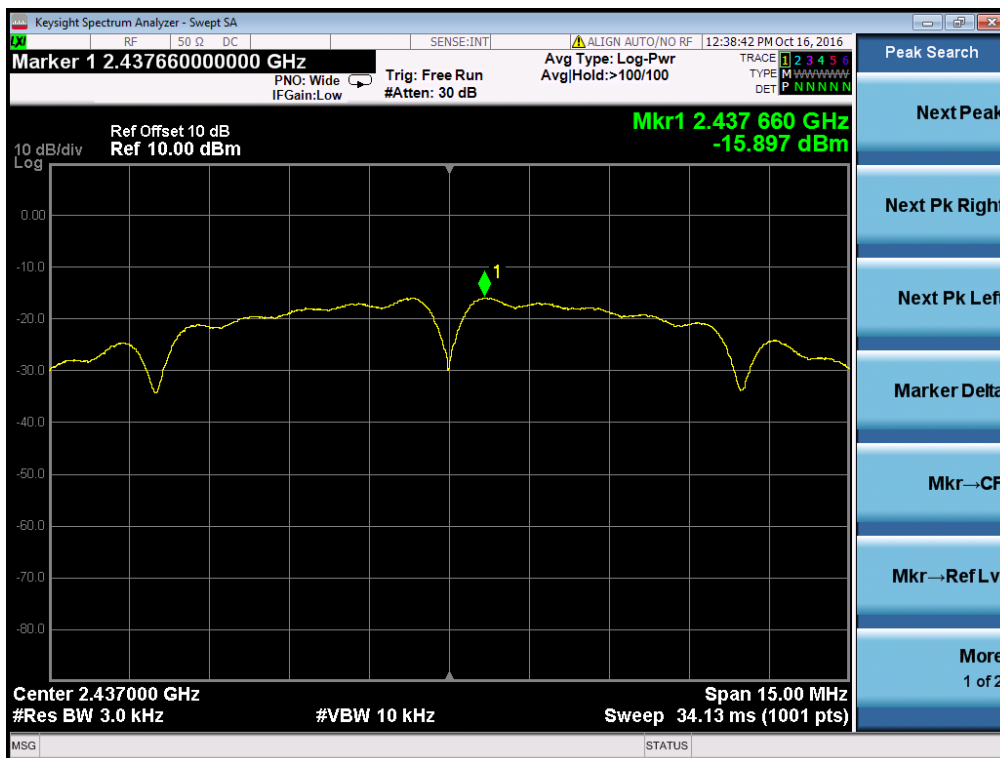




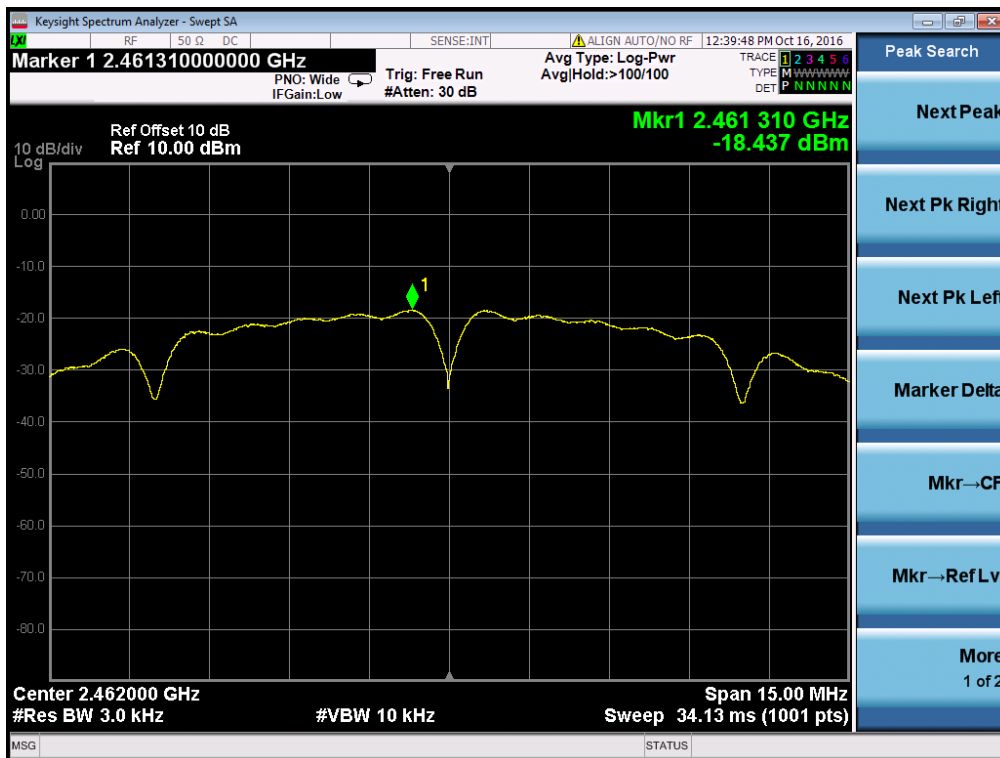
Antenna 2 - 802.11b - Channel 1



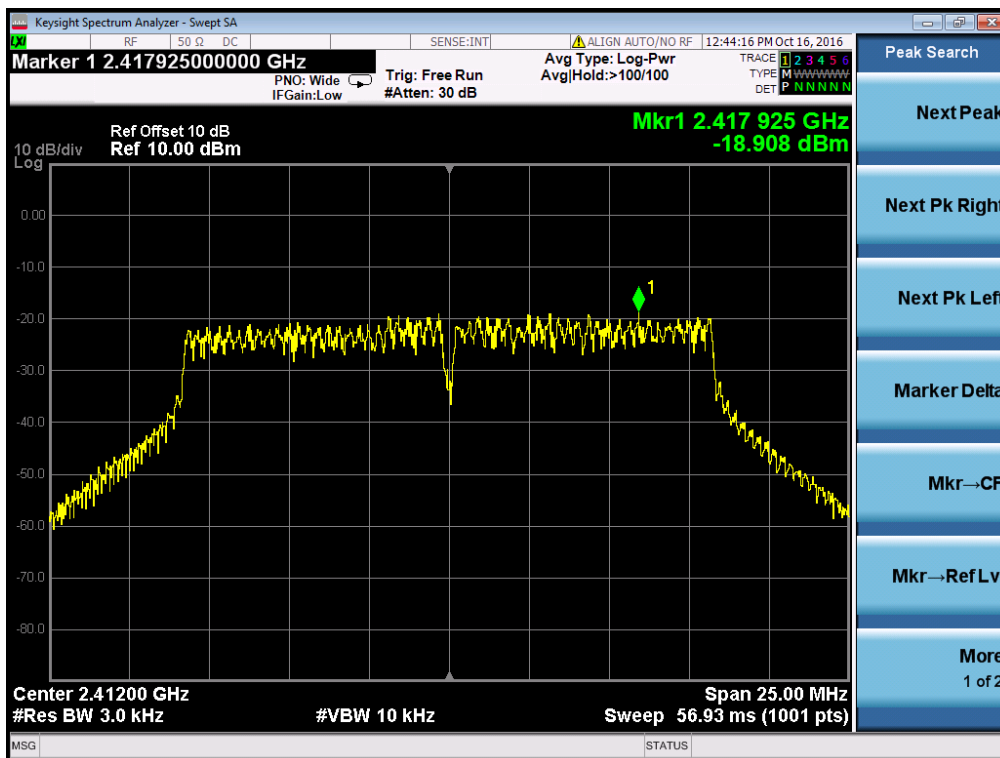
Antenna 2 - 802.11b - Channel 6



Antenna 2 - 802.11b - Channel 11

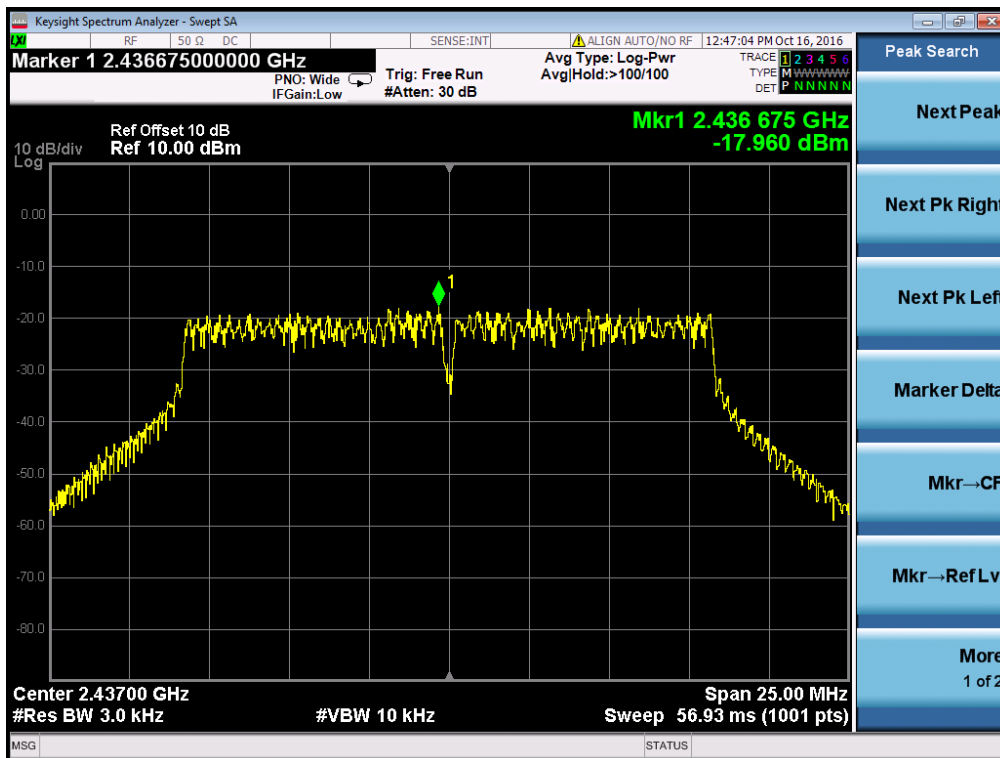


Antenna 2 - 802.11g - Channel 1

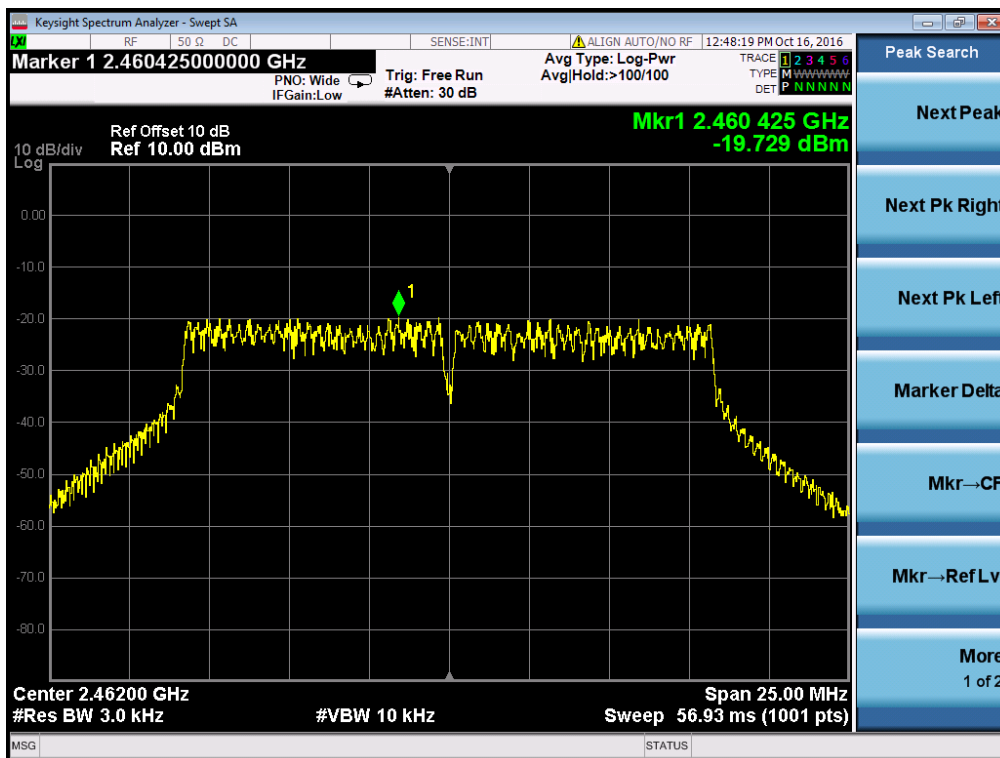




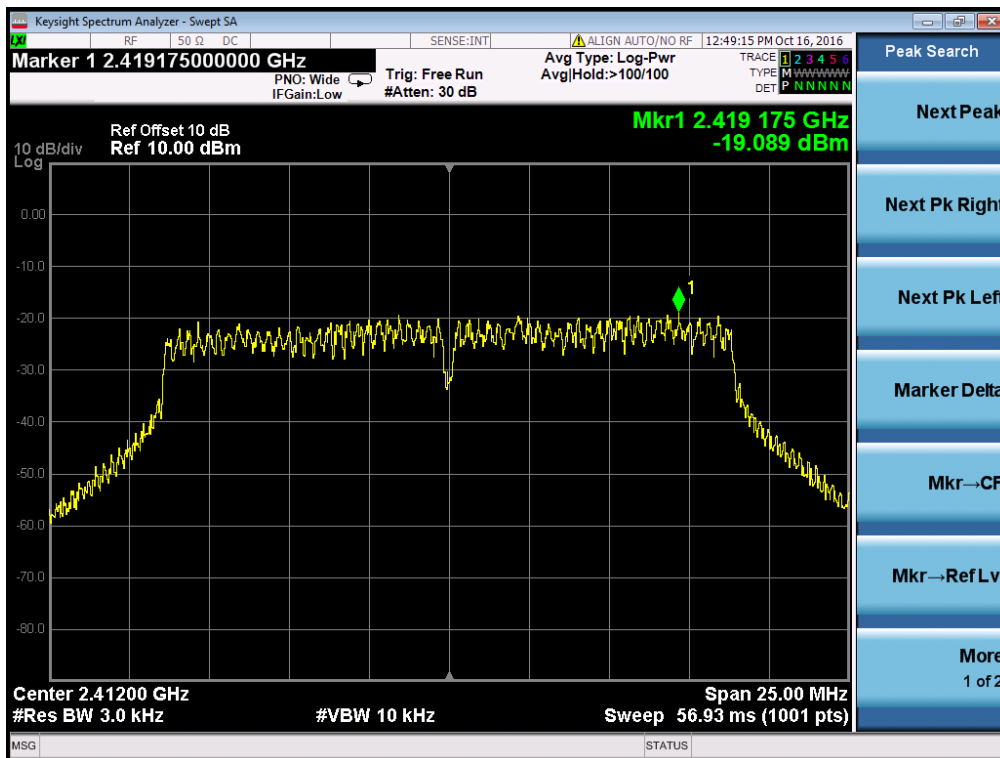
Antenna 2 - 802.11g - Channel 6



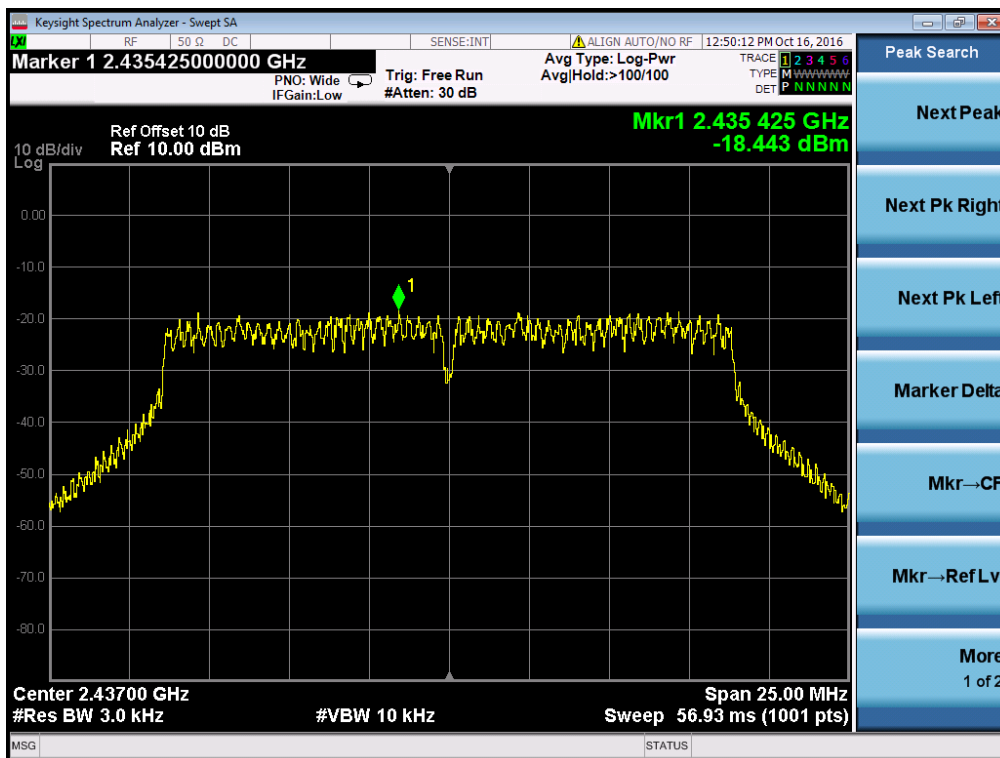
Antenna 2 - 802.11g - Channel 11



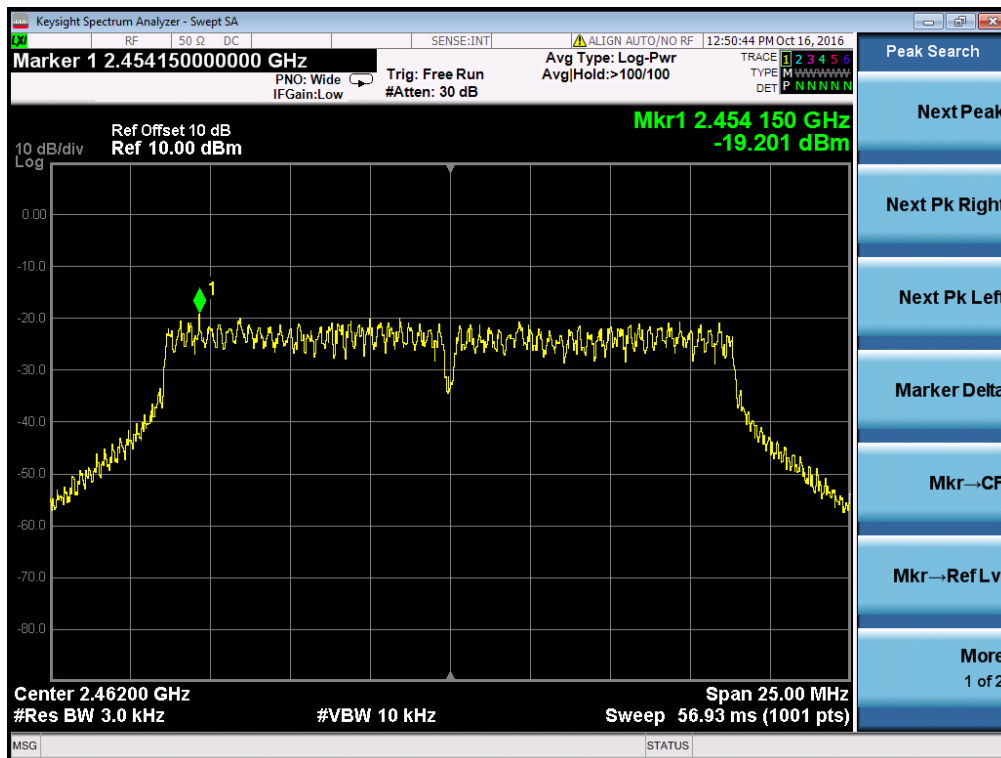
Antenna 2 - 802.11n20 - Channel 1



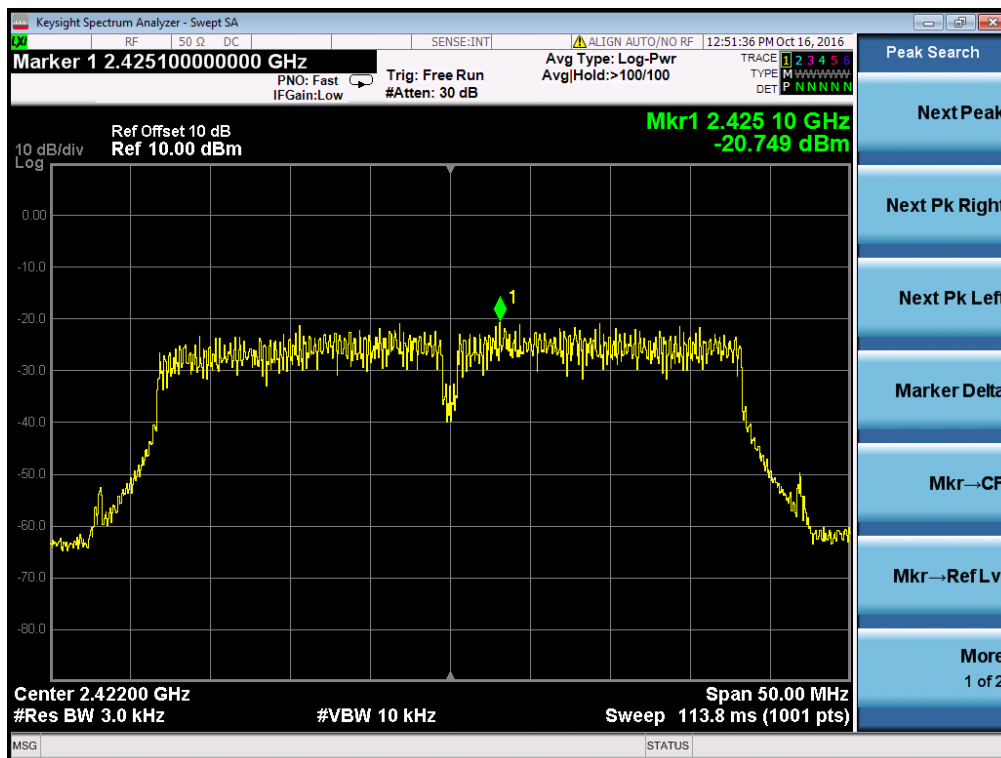
Antenna 2 - 802.11n20 - Channel 6



Antenna 2 - 802.11n20 - Channel 11

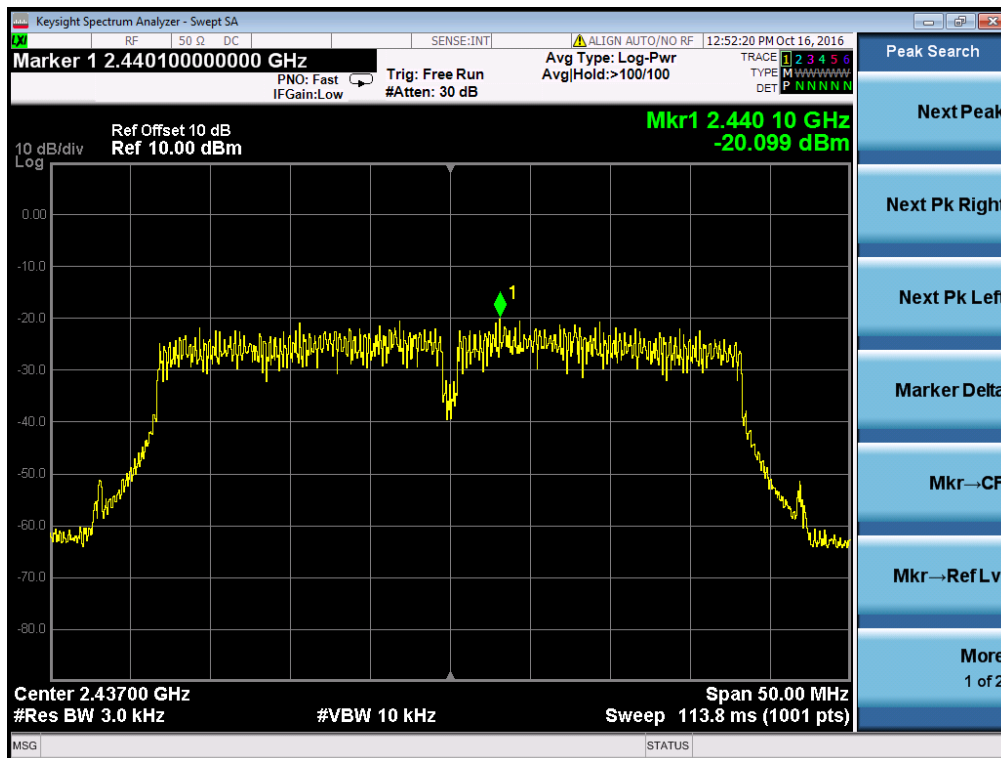


Antenna 2 - 802.11n40 - Channel 3

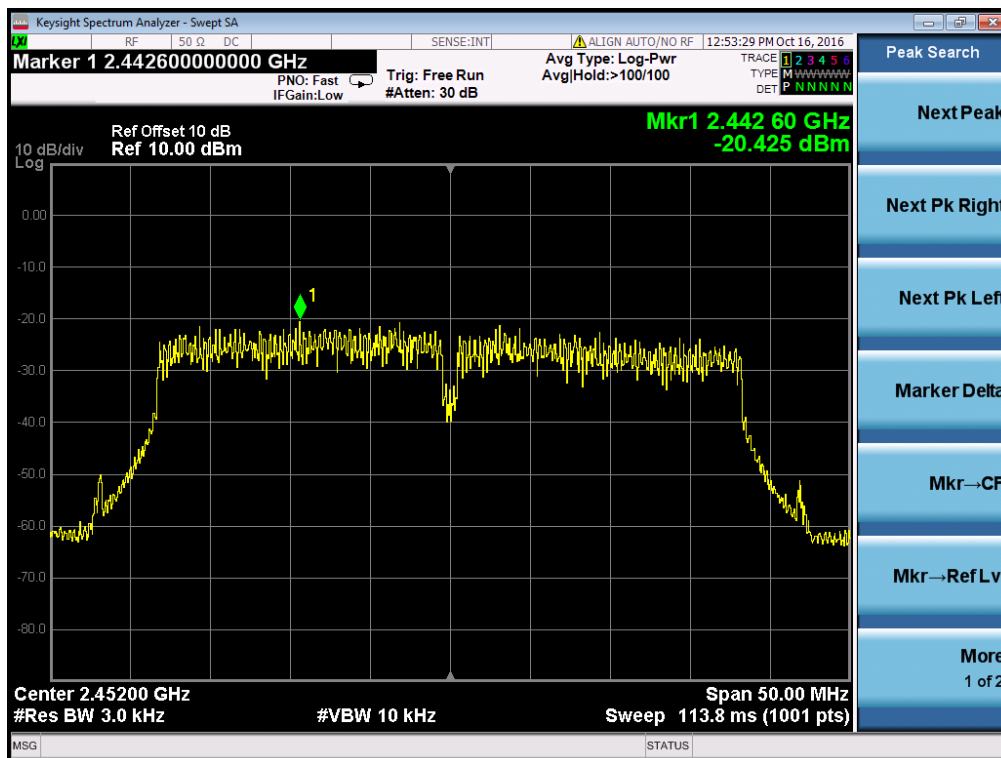




Antenna 2 - 802.11n40 - Channel 6



Antenna 2 - 802.11n40 - Channel 9



2.6. Radiated Band Edge and Spurious Emission

2.6.1. Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

Note: Wireless charger configuration was evaluated.

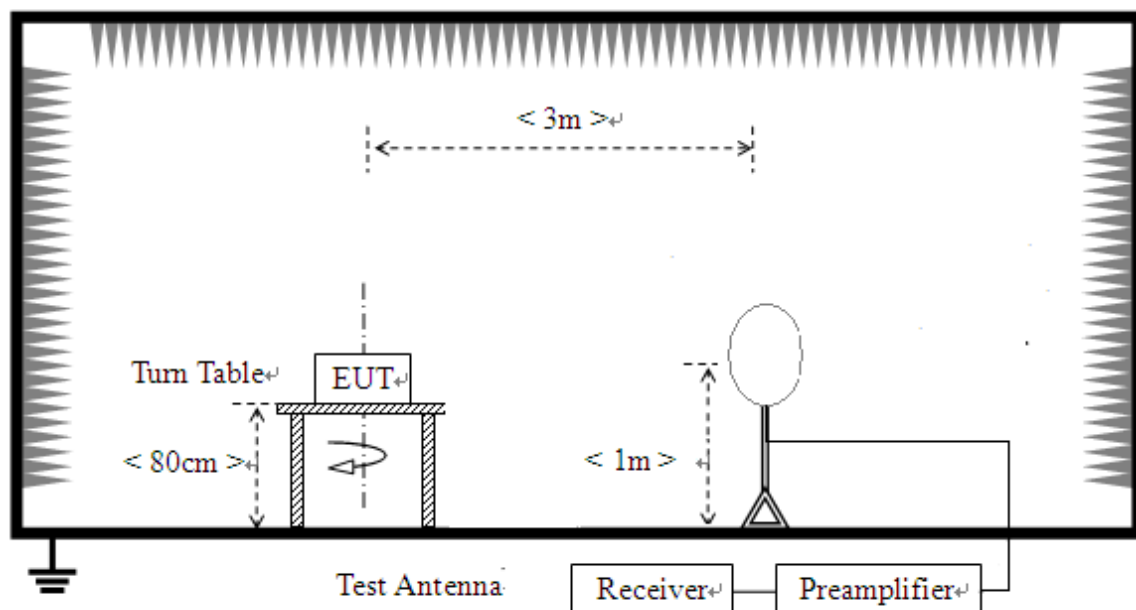
Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009 - 0.490	$2400/F(\text{kHz})$	300
0.490 - 1.705	$24000/F(\text{kHz})$	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

2.6.2. Measuring Instruments

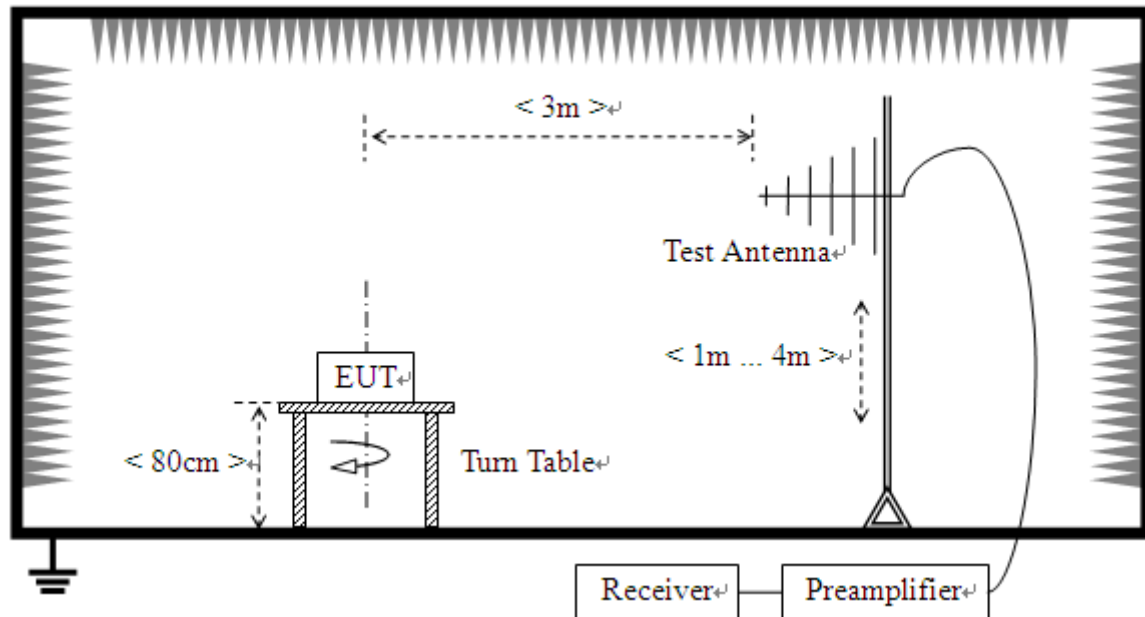
The measuring equipment is listed in the section 3 of this test report.

2.6.3. Test Setup

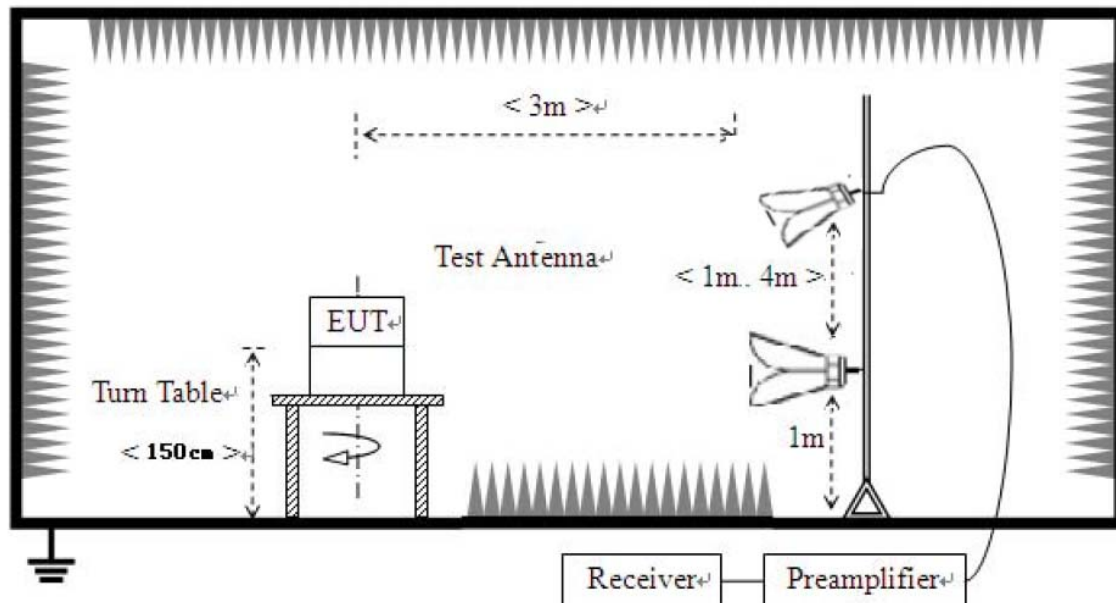
For radiated emissions from 9kHz to 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



2.6.4. Test Procedures

1. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. Height of receiving antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported.

Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE:

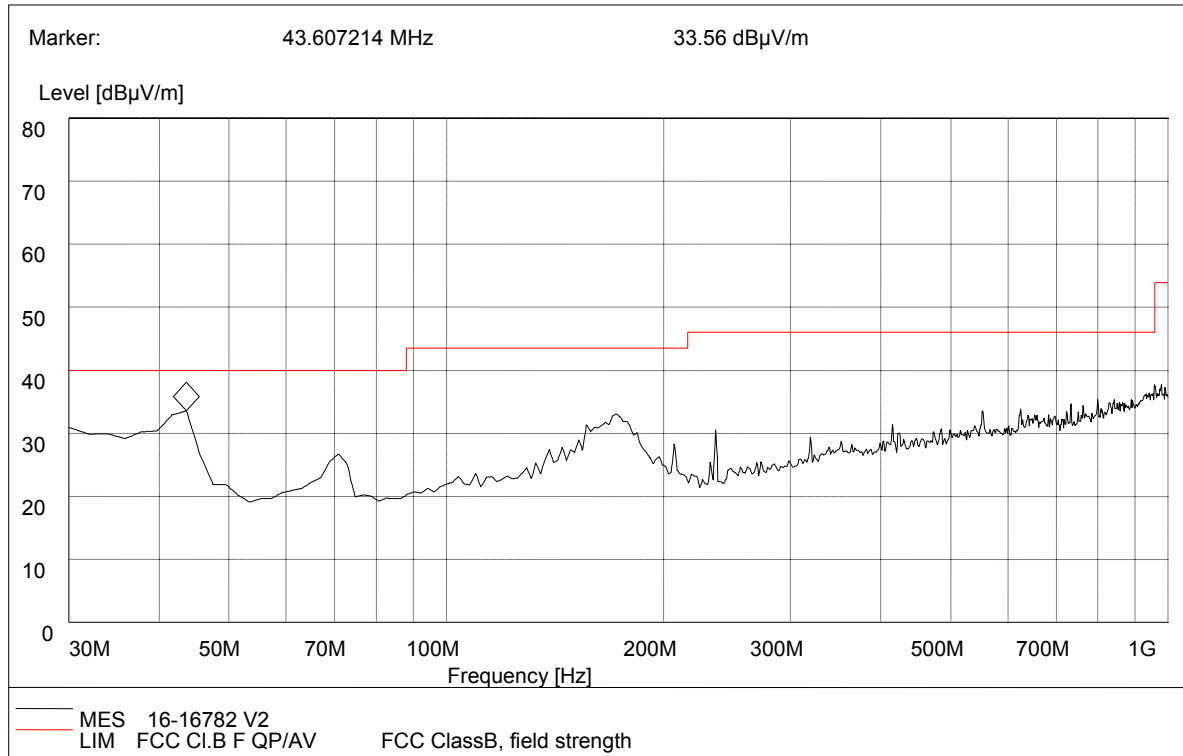
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.

2.6.5. Test Results of Radiated Band Edge and Spurious Emission

For 9 kHz to 30MHz

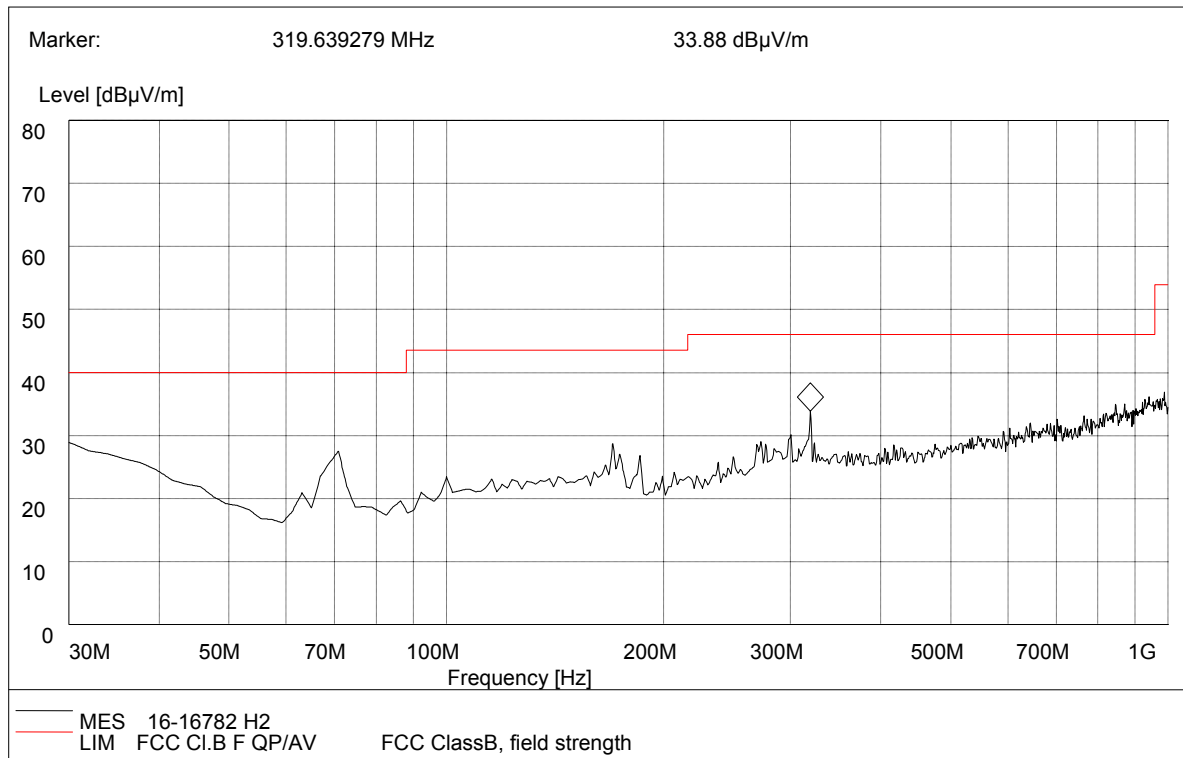
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

For 30MHz to 1000 MHz



30MHz to 1GHz, Antenna Vertical

Frequency (MHz)	QuasiPeak (dBμV/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dBμV/m)	Antenna	Verdict
43.61	33.56	120.000	100.0	40.00	Vertical	Pass



30MHz to 1GHz, Antenna Horizontal

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dB μ V/m)	Antenna	Verdict
319.64	33.88	120.000	100.0	46.0	Horizontal	Pass

For 1GHz to 25 GHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11b_2412MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	2390.00	45.43	PK	74.00	-28.57	1.50 H	18	44.13	1.3
2	2390.00	33.74	AV	54.00	-20.26	1.50 H	18	32.44	1.3
3	*2412.00	85.34	PK	/	/	1.50 H	18	83.34	2
4	*2412.00	78.27	AV	/	/	1.50 H	18	76.27	2
5	4824.00	48.97	PK	74.00	-25.03	1.50 H	0	42.57	6.4
6	4824.00	36.83	AV	54.00	-17.17	1.50 H	0	30.43	6.4

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11b_2412MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	2390.00	46.01	PK	74.00	-27.99	1.50 V	22	44.71	1.3
2	2390.00	33.72	AV	54.00	-20.28	1.50 V	22	32.42	1.3
3	*2412.00	91.65	PK	/	/	1.50 V	22	89.65	2
4	*2412.00	84.26	AV	/	/	1.50 V	22	82.26	2
5	4824.00	47.71	PK	74.00	-26.29	1.50 V	0	41.31	6.4
6	4824.00	36.84	AV	54.00	-17.16	1.50 V	0	30.44	6.4

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11b_2437MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2437.00	87.57	PK	/	/	1.50 H	20	85.47	2.1
2	*2437.00	79.40	AV	/	/	1.50 H	20	77.3	2.1
3	4874.00	48.95	PK	74.00	-25.05	1.50 H	0	42.45	6.5
4	4874.00	37.29	AV	54.00	-16.71	1.50 H	0	30.79	6.5

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11b_2437MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2437.00	83.09	PK	/	/	1.50 V	25	80.99	2.1
2	*2437.00	74.79	AV	/	/	1.50 V	25	72.69	2.1
3	4874.00	50.23	PK	74.00	-23.77	1.50 V	0	43.73	6.5
4	4874.00	37.31	AV	54.00	-16.69	1.50 V	0	30.81	6.5

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11b_2462MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2462.00	88.94	PK	/	/	1.50 H	28	86.64	2.3
2	*2462.00	80.08	AV	/	/	1.50 H	28	77.78	2.3
3	2483.50	46.62	PK	74.00	-27.38	1.50 H	28	44.02	2.6
4	2483.50	34.36	AV	54.00	-19.64	1.50 H	28	31.76	2.6
5	4924.00	50.28	PK	74.00	-23.72	1.50 H	0	43.58	6.7
6	4924.00	37.43	AV	54.00	-16.57	1.50 H	0	30.73	6.7

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11b_2462MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2462.00	81.29	PK	/	/	1.50 V	30	78.99	2.3
2	*2462.00	70.76	AV	/	/	1.50 V	30	68.46	2.3
3	2483.50	46.72	PK	74.00	-27.28	1.50 V	30	44.12	2.6
4	2483.50	34.78	AV	54.00	-19.22	1.50 V	30	32.18	2.6
5	4924.00	50.11	PK	74.00	-23.89	1.50 V	0	43.41	6.7
6	4924.00	37.43	AV	54.00	-16.57	1.50 V	0	30.73	6.7

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11g_2412MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	2390.00	45.90	PK	74.0	-28.1	1.50 H	32	44.60	1.3
2	2390.00	33.75	AV	54.0	-20.25	1.50 H	32	32.45	1.3
3	*2412.00	88.02	PK	/	/	1.50 H	32	86.02	2
4	*2412.00	77.51	AV	/	/	1.50 H	32	75.51	2
5	4824.00	48.87	PK	74.00	-25.13	1.50 H	0	42.47	6.4
6	4824.00	36.83	AV	54.00	-17.17	1.50 H	0	30.43	6.4

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11g_2412MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	2390.00	45.67	PK	74.0	-28.33	1.50 V	35	44.37	1.3
2	2390.00	33.74	AV	54.0	-20.26	1.50 V	35	32.44	1.3
3	*2412.00	88.56	PK	/	/	1.50 V	35	86.56	2
4	*2412.00	77.50	AV	/	/	1.50 V	35	75.50	2
5	4824.00	48.77	PK	74.00	-25.23	1.50 V	0	42.37	6.4
6	4824.00	36.82	AV	54.00	-17.18	1.50 V	0	30.42	6.4

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11g_2437MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2437.00	84.57	PK	/	/	1.50 H	21	82.47	2.1
2	*2437.00	73.00	AV	/	/	1.50 H	21	70.90	2.1
3	4874.00	49.88	PK	74.00	-24.12	1.50 H	0	43.38	6.5
4	4874.00	37.29	AV	54.00	-16.71	1.50 H	0	30.79	6.5

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11g_2437MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2437.00	87.77	PK	/	/	1.50 V	17	85.67	2.1
2	*2437.00	76.16	AV	/	/	1.50 V	17	74.06	2.1
3	4874.00	49.33	PK	74.00	-24.67	1.50 V	0	42.83	6.5
4	4874.00	37.29	AV	54.00	-16.71	1.50 V	0	30.79	6.5

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11g_2462MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2462.00	84.65	PK	/	/	1.50 H	24	82.35	2.3
2	*2462.00	67.20	AV	/	/	1.50 H	24	64.9	2.3
3	2483.50	46.29	PK	74.0	-27.71	1.50 H	24	43.69	2.6
4	2483.50	34.36	AV	54.0	-19.64	1.50 H	24	31.76	2.6
5	4924.00	50.53	PK	74.0	-23.47	1.50 H	0	43.83	6.7
6	4924.00	37.42	AV	54.0	-16.58	1.50 H	0	30.72	6.7

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11g_2462MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2462.00	89.59	PK	/	/	1.50 V	21	87.29	2.3
2	*2462.00	73.14	AV	/	/	1.50 V	21	70.84	2.3
3	2483.50	46.93	PK	74.0	-27.07	1.50 V	21	44.33	2.6
4	2483.50	34.79	AV	54.0	-19.21	1.50 V	21	32.19	2.6
5	4924.00	49.66	PK	74.0	-24.34	1.50 V	0	42.96	6.7
6	4924.00	37.43	AV	54.0	-16.57	1.50 V	0	30.73	6.7

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n20_2412MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	2390.00	45.90	PK	74.00	-28.1	1.50 H	30	44.60	1.3
2	2390.00	33.75	AV	54.00	-20.25	1.50 H	30	32.45	1.3
3	*2412.00	83.14	PK	/	/	1.50 H	30	81.14	2
4	*2412.00	66.47	AV	/	/	1.50 H	30	64.47	2
5	4824.00	49.26	PK	74.00	-24.74	1.50 H	0	42.86	6.4
6	4824.00	36.83	AV	54.00	-17.17	1.50 H	0	30.43	6.4

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n20_2412MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	2390.00	46.01	PK	74.00	-27.99	1.50 V	28	44.71	1.3
2	2390.00	33.74	AV	54.00	-20.26	1.50 V	28	32.44	1.3
3	*2412.00	86.53	PK	/	/	1.50 V	28	84.53	2
4	*2412.00	69.80	AV	/	/	1.50 V	28	67.80	2
5	4824.00	48.37	PK	74.00	-25.63	1.50 V	0	41.97	6.4
6	4824.00	36.84	AV	54.00	-17.16	1.50 V	0	30.44	6.4

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n20_2437MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2437.00	84.24	PK	/	/	1.50 H	24	82.14	2.1
2	*2437.00	74.57	AV	/	/	1.50 H	24	72.47	2.1
3	4874.00	48.01	PK	74.00	-25.99	1.50 H	0	41.51	6.5
4	4874.00	37.29	AV	54.00	-16.71	1.50 H	0	30.79	6.5

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n20_2437MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2437.00	85.38	PK	/	/	1.50 V	28	83.28	2.1
2	*2437.00	75.39	AV	/	/	1.50 V	28	73.29	2.1
3	4874.00	48.75	PK	74.00	-25.25	1.50 V	0	42.25	6.5
4	4874.00	37.31	AV	54.00	-16.69	1.50V	0	30.81	6.5

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n20_2462MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2462.00	80.90	PK	/	/	1.50 H	31	78.60	2.3
2	*2462.00	70.47	AV	/	/	1.50 H	31	68.17	2.3
3	2483.50	47.53	PK	74.00	-26.47	1.50 H	31	44.93	2.6
4	2483.50	35.42	AV	54.00	-18.58	1.50 H	31	32.82	2.6
5	4924.00	49.93	PK	74.00	-24.07	1.50 H	0	43.23	6.7
6	4924.00	37.43	AV	54.00	-16.57	1.50 H	0	30.73	6.7

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n20_2462MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2462.00	85.50	PK	/	/	1.50 V	32	83.20	2.3
2	*2462.00	71.24	AV	/	/	1.50 V	32	68.94	2.3
3	2483.50	47.13	PK	74.00	-26.87	1.50 V	32	44.53	2.6
4	2483.50	35.78	AV	54.00	-18.22	1.50 V	32	33.18	2.6
5	4924.00	48.78	PK	74.00	-25.22	1.50 V	0	42.08	6.7
6	4924.00	37.43	AV	54.00	-16.57	1.50 V	0	30.73	6.7

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n40_2422MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	2390.00	46.14	PK	74.0	-27.86	1.50 H	33	44.84	1.3
2	2390.00	33.74	AV	54.0	-20.26	1.50 H	33	32.44	1.3
3	*2422.00	83.40	PK	/	/	1.50 H	33	81.40	2
4	*2422.00	72.65	AV	/	/	1.50 H	33	70.65	2
5	4844.00	48.58	PK	74.00	-25.42	1.50 H	0	42.18	6.4
6	4844.00	36.84	AV	54.00	-17.16	1.50 H	0	30.44	6.4

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n40_2422MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	2390.00	46.44	PK	74.0	-27.56	1.50 V	28	45.14	1.3
2	2390.00	33.74	AV	54.0	-20.26	1.50 V	28	32.44	1.3
3	*2422.00	82.55	PK	/	/	1.50 V	28	80.55	2
4	*2422.00	72.72	AV	/	/	1.50 V	28	70.72	2
5	4844.00	48.72	PK	74.00	-25.28	1.50 V	0	42.32	6.4
6	4844.00	36.85	AV	54.00	-17.15	1.50 V	0	30.45	6.4

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n40_2437MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2437.00	83.60	PK	/	/	1.50 H	12	81.5	2.1
2	*2437.00	73.56	AV	/	/	1.50 H	12	71.46	2.1
3	4874.00	50.14	PK	74.00	-23.86	1.50 H	0	43.64	6.5
4	4874.00	37.29	AV	54.00	-16.71	1.50 H	0	30.79	6.5

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n40_2437MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2437.00	81.04	PK	/	/	1.50 V	16	78.94	2.1
2	*2437.00	70.81	AV	/	/	1.50 V	16	68.71	2.1
3	4874.00	48.95	PK	74.00	-25.05	1.50 V	0	42.45	6.5
4	4874.00	36.91	AV	54.00	-17.09	1.50 V	0	30.41	6.5

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n40_2452MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2452.00	80.71	PK	/	/	1.50 H	31	78.41	2.3
2	*2452.00	70.39	AV	/	/	1.50 H	31	68.09	2.3
3	2483.50	46.40	PK	74.0	-27.6	1.50 H	31	43.80	2.6
4	2483.50	34.36	AV	54.0	-19.64	1.50 H	31	31.76	2.6
5	4904.00	49.08	PK	74.0	-24.92	1.50 H	0	42.38	6.7
6	4904.00	37.42	AV	54.0	-16.58	1.50 H	0	30.72	6.7

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n40_2452MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)
1	*2452.00	80.79	PK	/	/	1.50 V	35	78.49	2.3
2	*2452.00	69.20	AV	/	/	1.50 V	35	66.90	2.3
3	2483.50	45.96	PK	74.0	-28.04	1.50 V	35	43.36	2.6
4	2483.50	34.34	AV	54.0	-19.66	1.50 V	35	31.74	2.6
5	4904.00	49.83	PK	74.0	-24.17	1.50 V	0	43.13	6.7
6	4904.00	37.41	AV	54.0	-16.59	1.50 V	0	30.71	6.7

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
- Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level - Limit value
5. " * ": Fundamental frequency.

2.7. Conducted Emission

2.7.1. Limit of Conducted Emission

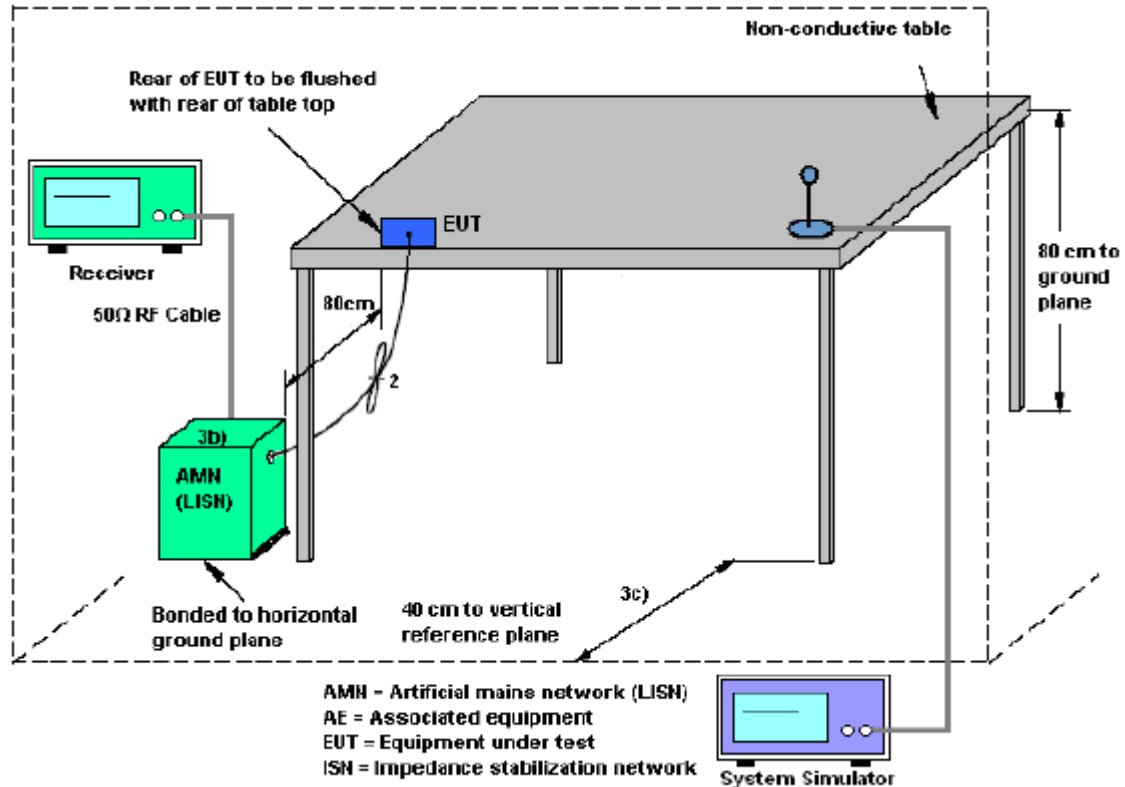
For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency range (MHz)	Conducted Limit (dB μ V)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

2.7.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.7.3. Test Setup



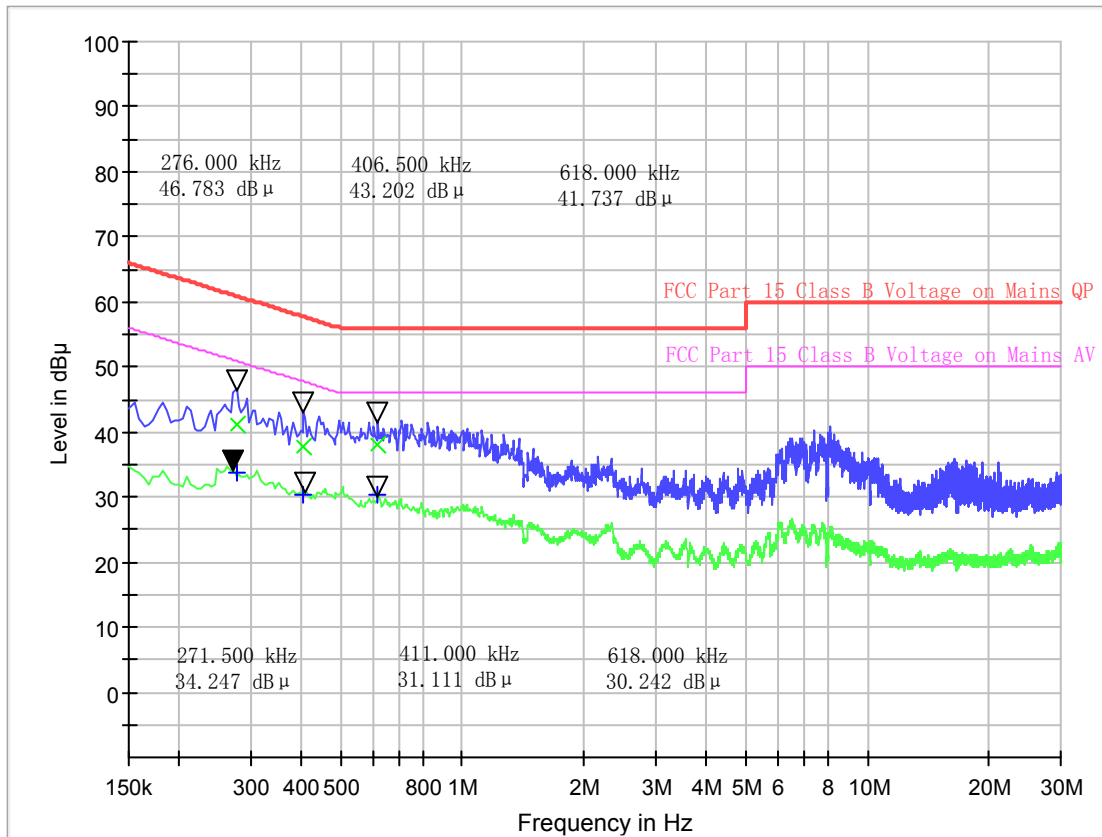
2.7.4. Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

2.7.5. Test Results of Conducted Emission

1. The EUT configuration of the emission tests is WLAN Link + USB Cable (Charging from Adapter).
2. The power adapter support (100~240V AC, 50/60Hz), the EUT was tested at the both available voltages (120, 240V AC), and 60Hz. Only the worst-case mode (120V/60Hz) was record in this report.

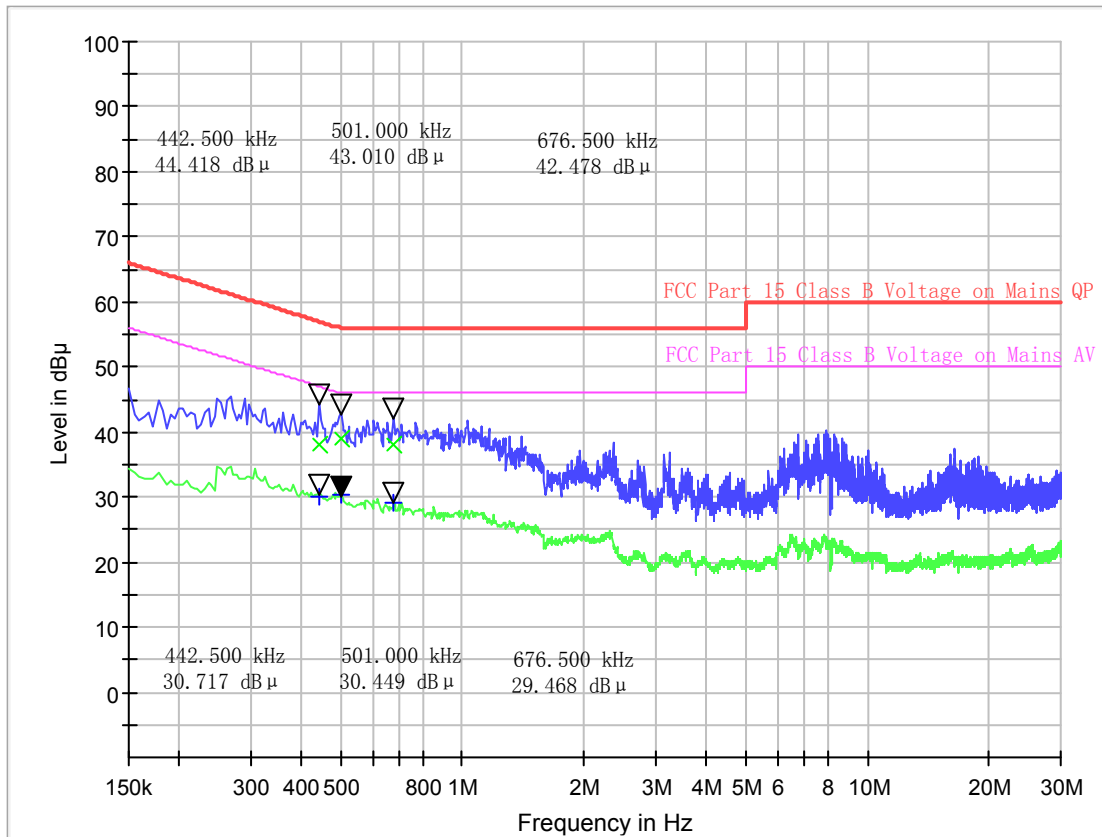
FCC Part 15 Class B Voltage Test



(Plot A: L Phase)

Conducted Disturbance at Mains Terminals					
L Test Data					
QP			AV		
Frequency (MHz)	Limits (dBμV)	Measurement Value (dBμV)	Frequency (MHz)	Limits (dBμV)	Measurement Value (dBμV)
0.276	60.9	46.783	0.272	51.1	34.247
0.407	57.7	43.202	0.411	47.6	31.111
0.618	56.0	41.737	0.618	46.0	30.242

FCC Part 15 Class B Voltage Test



(Plot B: N Phase)

Conducted Disturbance at Mains Terminals					
N Test Data					
QP			AV		
Frequency (MHz)	Limits (dBμV)	Measurement Value (dBμV)	Frequency (MHz)	Limits (dBμV)	Measurement Value (dBμV)
0.443	57.0	44.418	0.443	47.0	30.717
0.501	56.0	43.010	0.501	46.0	30.449
0.677	56.0	42.478	0.677	46.0	29.468

3. List of measuring equipment

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI TEST RECEIVER	RS	ESI 26	100009	2015/11/02
2	RF TEST PANEL	RS	TS / RSP	335015/ 0017	N/A
3	EMI TEST SOFTWARE	RS	ESK1	N/A	N/A
4	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	538	2015/11/08
5	HORN ANTENNA	ShwarzBeck	9120D	1011	2015/11/08
6	Loop Antenna	RS	HZ-9	838622\013	2015/11/08
7	Pre-amplifier	ShwarzBeck	BBV 9743	9743-0022	2015/11/02
8	TURNTABLE	MATURO	TT2.0	N/A	N/A
9	ANTENNA MAST	MATURO	TAM-4.0-P	N/A	N/A
10	EMI TEST SOFTWARE	Audix	E3	N/A	N/A
11	Test cable	Siva Cables Italy	RG 58A/U	W14.02	2015/12/05
12	Climate Chamber	ESPEC	EL-10KA	05107008	2015/11/02
13	Spectrum Analyzer	Kysight	N9030A	ATO-67098	2016/07/19
14	Power Meter	RS	NRP2	1020.1809.02	2016.06.02
15	Power Sensor	RS	NRP-Z81	823.3618.03	2016.06.02
16	SMA Antenna Connector	ARTHUR-YANG	2244-N1TG1	N/A	N/A

4. Uncertainty of Evaluation

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2

Measurement	Frequency	Uncertainty
Conducted emissions	9kHz~30MHz	3.39dB
Radiated emissions	30MHz~1000MHz	4.24dB
	1G~18GHz	5.16dB
	18G~40GHz	5.64dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

**** END OF REPORT ****