Application for FCC Certification
On behalf of

Jiaxing Shufude Electric Bed Co., Ltd.

Product Name: WIFI

Model No.: WIFI-Adjustable Bed

FCC ID: WKZSFD-WF

Prepared For: Jiaxing Shufude Electric Bed Co., Ltd.
East No. 07 Provincial Road, Tengyun Village,
Wangjiangjing Development Area, Jiaxing,
Zhejiang, China

Prepared By: Audix Technology (Shanghai) Co., Ltd.
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Report No. : ACI-F14192
Date of Test : Nov 25, 2014 - Jan 27, 2015
Date of Report : Jan 27, 2015

TABLE OF CONTENTS

Page

TEST REPORT FOR FCC CERTIFICATE

Applicant	:	Jiaxing Shufude Electric Bed Co., Ltd.
Manufacturer	:	Shenzhen Silicontra Technology Co., Ltd.
EUT Description	:	WIFI
		(A) Model No. : WIFI-Adjustable Bed
		(B) Power Supply : DC 5V (USB power)

Test Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART C OCTOBER 2013 AND ANSI C63.4-2003

The device described above is tested by Audix Technology (Shanghai) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits.

The test results are contained in this test report and Audix Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. This report also shows that the EUT (M/N: Refer to Sec2.1), which was tested on Nov 25, 2014 - Jan 27, 2015 is technically compliance with the FCC limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shanghai) Co., Ltd.

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Date of Test : Nov. 25 – 26, 2014 **Date of Report :** Nov 26, 2014

Producer : Alan He
ALAN HE / Assistant

Review : Sammy Chen
SAMMY CHEN/ Deputy Manager

For and on behalf of
Audix Technology (Shanghai) Co., Ltd.

Signatory : Byron Kwo
Authorized Signature EMC **BYRON KWO/Assistant General Manager**

1 SUMMARY OF STANDARDS AND RESULTS

1.1 Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

Description / Test Item	Test Standard	Results	Meets Limit
EMISSION			
Conducted Emission	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2013 AND ANSI C63.4:2003 AND KDB558074 D01 v03r01	Pass	15.207(a)
Radiated Emission	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2013 AND ANSI C63.4:2003 AND KDB558074 D01 v03r01	Pass	15.209(a) 15.205(a)(c)
6 dB Bandwidth Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2013 AND ANSI C63.4:2003 AND KDB558074 D01 v03r01	Pass	15.247(a)(2)
Maximum Peak Output Power Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2013 AND ANSI C63.4:2003 AND KDB558074 D01 v03r01	Pass	15.247(b)(3)
Emission Limitations Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2013 AND ANSI C63.4:2003 AND KDB558074 D01 v03r01	Pass	15.247(d)
Band Edge Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2013 AND ANSI C63.4:2003 AND KDB558074 D01 v03r01	Pass	15.247(d)
Power Spectral Density Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2013 AND ANSI C63.4:2003 AND KDB558074 D01 v03r01	Pass	15.247(e)
N/A is an abbreviation for Not Applicable.			

2 GENERAL INFORMATION

2.1 Description of Equipment Under Test

Description	:	WIFI
Type of EUT		☑ Production ☐ Pre-product ☐ Pro-type
Model Number	:	WIFI-Adjustable Bed
Radio Tech	:	IEEE 802.11b/g/n (802.11n is 2.4GHz HT20 only)
Freq. Band	:	2412MHz ~ 2462MHz (Ch1-Ch11)
Tested Freq.	:	2412MHz (Ch1), 2437MHz (Ch6), 2462MHz (Ch11)
Modulation	:	DSSS for 802.11b OFDM for 802.11g/n
Transmit data rate	:	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n HT20: (MCS0-MCS7) 6.5, 13, 19.5, 26, 39, 52, 58.5, 65Mbps After testing, the highest peak output power of the EUT was at **1Mbps** in 802.11b mode, **6Mbps** in 802.11g mode, **6.5Mbps** in 802.11n mode. So data rate mentioned above were representative selected to test in this report.
Antenna Gain	:	1.5 dBi
Test Mode	:	The EUT was set at continuous TX with duty cycle 100% during all the test in the report
Test Setting	:	The power setting in the software as below: 802.11b: 18, 802.11g: 25, 802.11n: 25
Applicant	:	Jiaxing Shufude Electric Bed Co., Ltd. East No. 07 Provincial Road, Tengyun Village, Wangjiangjing Development Area, Jiaxing, Zhejiang, China
Manufacturer	:	Shenzhen Silicontra Technology Co., Ltd. B1120-1122 yousong Technology Building, Longhuadonghuan Road, Baoan District, Shenzhen

2.2 Peripherals

2.2.1 Main Controller Box

Manufacturer	:	Jiaxing Shufude Electric Bed Co., Ltd.
Model Number	:	SFD-K-14-2
Adapter	:	SP2-A2 Input: AC 100V-240V 50/60Hz 1.5A Output: DC 29V 2A

2.2.2 Notebook PC

Manufacturer	:	DELL
Model Number	:	PP38L
Serial Number	:	DK7VDD1
Certificate	:	CE/EMC, FCC DoC, VCCI, MIC

2.3 Description of Test Facility

Site Description : Sept. 17, 1998 file on
(Semi-Anechoic Chamber) Mar 16, 2012 Renewed
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046, USA

Name of Firm : Audix Technology (Shanghai) Co., Ltd.

Site Location : 3F 34 Bldg 680 Guiping Rd.,
Caohejing Hi-Tech Park,
Shanghai 200233, China

FCC registration Number : 91789

Accredited by NVLAP, Lab Code : 200371-0

2.4 Measurement Uncertainty

Conducted Emission Expanded Uncertainty :
U = 2.77dB

Radiated Emission Expanded Uncertainty (30-200MHz):
U = 4.40dB (Horizontal)
U = 4.40dB (Vertical)

Radiated Emission Expanded Uncertainty (200M-1GHz):
U = 4.40dB (Horizontal)
U = 5.40dB (Vertical)

Radiated Emission Expanded Uncertainty (Above 1GHz):
U= 4.68 dB (Horizontal)
U= 4.87 dB (Vertical)

6 dB Bandwidth Expanded Uncertainty : U = $\pm 1 \times 10^{-8}$ MHz
Maximum Peak Output Power Expanded Uncertainty: U = ±1.56 dB
Emission Limitations Expanded Uncertainty : U = ±1.20 dB
Band Edge Expanded Uncertainty : U = ±1.20 dB

Power Spectral Density Expanded Uncertainty : U = ±1.20 dB

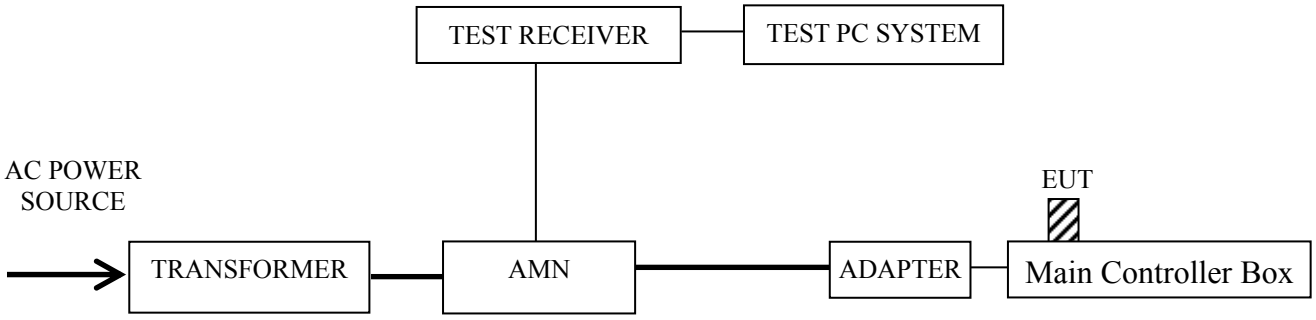
3 CONDUCTED EMISSION TEST

3.1 Test Equipment

The following test equipments are used during the conducted emission test in a shielded room:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101303	Sep 11, 2014	Sep 10, 2015
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 27, 2014	Jun 26, 2015
3.	50Ω Coaxial Switch	Anritsu	MP59B	6200426389	Sep 18, 2014	Mar 17, 2015
4.	Software	Audix	E3	6.111206	--	--

3.2 Conducted Disturbance Test Setup



—— : Signal Line
—— : Power Line
▬ : 50 ohm Terminator

3.3 Conducted Emission Limit [FCC Part 15 Subpart B 15.207(a)]

Frequency Range (MHz)	Limits dB (μV)	
	Quasi-peak	Average
0.15 ~ 0.5	66~56	56~46
0.5 ~ 5	56	46
5 ~ 30	60	50
NOTE 1 – The lower limit shall apply at the transition frequencies. NOTE 2 – The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz~0.50 MHz		

3.4 Test Configuration

The EUT (listed in Sec.2.1) and the peripherals (listed in Sec 2.2) were installed as shown on Sec.3.2 to meet FCC requirement and operating in a manner that tends to maximize its emission level in a normal application.

3.5 Operating Condition of EUT

3.5.1 Setup the EUT as shown in Sec. 3.2.

3.5.2 Turn on the power of all equipment.

3.5.3 Turn the EUT on the test mode, and then test.

3.6 Test Procedures

The EUT and peripherals were connected to the power mains through an Artificial Mains Network (AMN). This provided a 50 ohm coupling impedance for the measuring equipment.

Both sides of AC line (Line & Neutral) were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed or manipulated according to ANSI C63.4:2003 during conducted emission test.

The bandwidth of R&S Test Receiver ESCI was set at 9 kHz.

The frequency range from 150 kHz to 30 MHz was checked.

The test modes were done on conducted disturbance test and all the test results are listed in Sec. 3.7.

3.7 Test Results

< PASS >

The frequency and amplitude of the highest conducted emission relative to the limit is reported. All emissions not reported below are too low against the prescribed limits.

NOTE 1 – Factor = Cable Loss + AMN Factor.
NOTE 2 – Emission Level = Meter Reading + Factor.
NOTE 3 – "QP" means "Quasi-Peak" values, "AV" means "Average" values.
NOTE 4 – The worst emission is detected at 0.157MHz (Quasi-Peak Value) with corrected signal level of 47.67 dB (μV) (limit is 65.60 dB (μV)), when the Line of the EUT is connected to AMN.

EUT	:	WIFI	Temperature :	25℃	
Model No.	:	WIFI-Adjustable Bed	Humidity :	45%RH	
Test Mode	:	Transmitting	Date of Test :	Jan 27, 2015	

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	**0.157**	**37.10**	**10.57**	**47.67**	**65.60**	**17.93**	QP
	0.178	34.20	10.56	44.76	64.58	19.82	
	0.198	32.00	10.54	42.54	63.71	21.17	
	0.515	14.30	10.44	24.74	56.00	31.26	
	2.412	8.10	10.44	18.54	56.00	37.46	
	9.565	9.80	10.51	20.31	60.00	39.69	
	0.157	22.40	10.57	32.97	55.60	22.63	AV
	0.178	19.80	10.56	30.36	54.58	24.22	
	0.198	17.80	10.54	28.34	53.71	25.37	
	0.515	7.80	10.44	18.24	46.00	27.76	
	2.412	1.90	10.44	12.34	46.00	33.66	
	9.565	5.10	10.51	15.61	50.00	34.39	
Neutral	0.158	36.89	10.58	47.47	65.56	18.09	QP
	0.178	34.10	10.55	44.65	64.57	19.92	
	0.198	31.90	10.53	42.43	63.70	21.27	
	0.554	12.90	10.43	23.33	56.00	32.67	
	2.295	9.41	10.46	19.87	56.00	36.13	
	9.503	8.60	10.58	19.18	60.00	40.82	
	0.158	22.29	10.58	32.87	55.56	22.69	AV
	0.178	19.90	10.55	30.45	54.57	24.12	
	0.198	18.00	10.53	28.53	53.70	25.17	
	0.554	12.30	10.43	22.73	46.00	23.27	
	2.295	4.51	10.46	14.97	46.00	31.03	
	9.503	3.41	10.58	13.99	50.00	36.01	

TEST ENGINEER: WENCY YANG

4 RADIATED EMISSION TEST

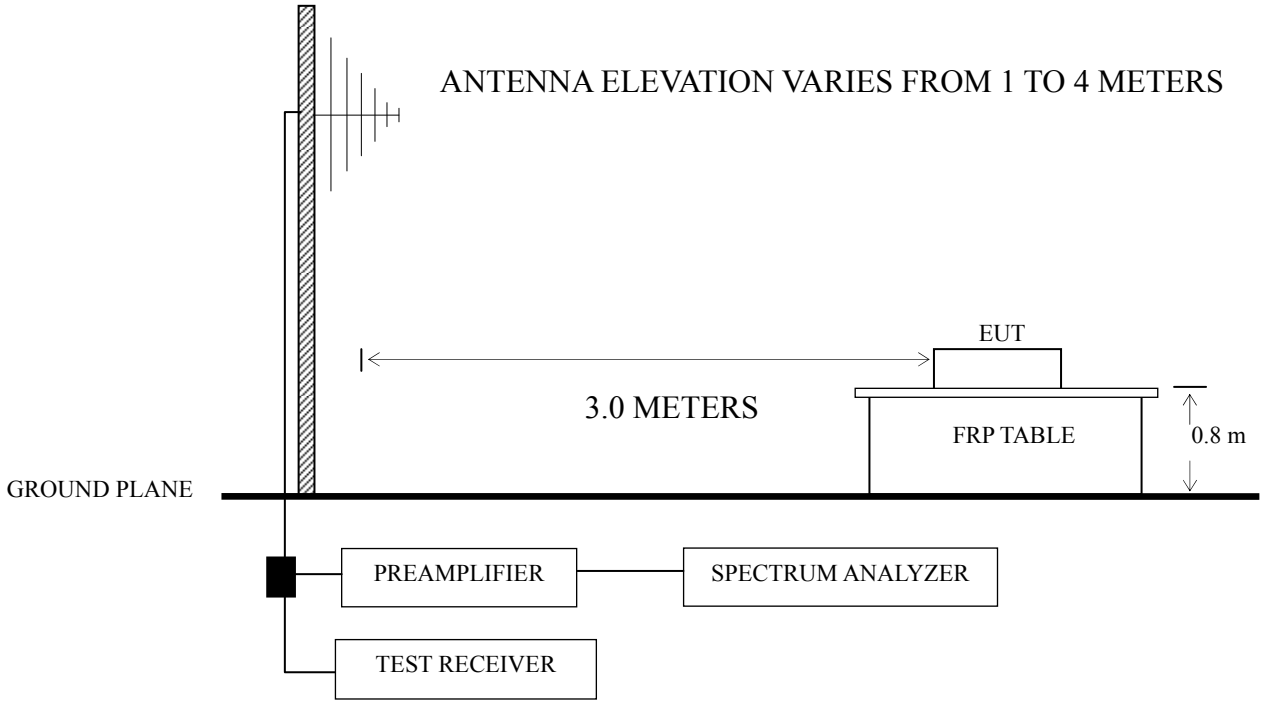
4.1 Test Equipment

The following test equipment are used during the radiated emission test in a semi-anechoic chamber:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Pre-Amplifier	Agilent	8447D	2944A10548	Sep 18, 2014	Mar 17, 2015
2.	Pre-Amplifier	Agilent	8449B	3008A00864	Mar 20, 2014	Mar 19, 2015
3.	Spectrum Analyzer	Agilent	N9010A	MY52221182	Jun 14, 2014	Jun 13, 2015
4.	Test Receiver	R&S	ESCI	101302	Sep 03, 2014	Sep 02, 2015
5.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 03, 2014	May 02, 2015
6.	Horn Antenna	EMCO	3115	9607-4878	Jun 16, 2014	Jun 15, 2015
7.	Horn Antenna	EMCO	3116	00062643	Jul 21, 2014	Jul 21, 2015
8.	50Ω Coaxial Switch	Anritsu	MP59B	6200426390	Sep 18, 2014	Mar 17, 2015
9.	50Ω Terminator	Audix	BNC	001	Mar 20, 2014	Mar 19, 2015
10.	Software	Audix	E3	SET00200 9912M295-2	--	--

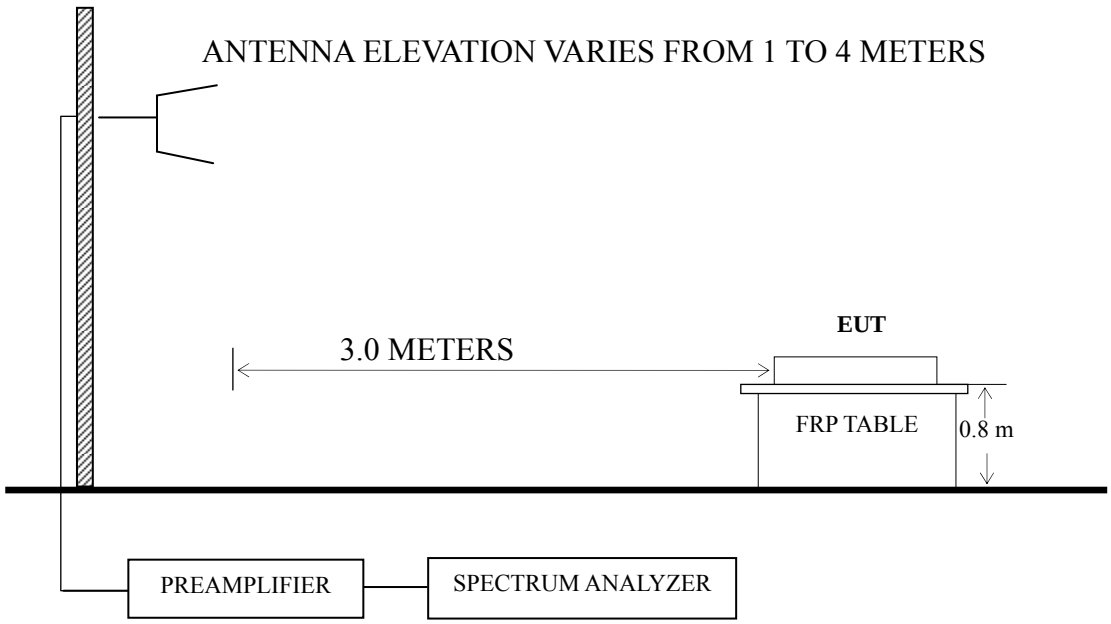
4.2 Block Diagram of Test Setup

4.2.1 Below 1GHz



■ : 50 ohm Coaxial Switch

4.2.2 Above 1GHz



4.3 Radiated Emission Limit [FCC Part 15 Subpart C 15.209]

Frequency (MHz)	Distance (m)	Field strength limits (μV/m)	
		(μV/m)	dB(μV/m)
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0

NOTE 1 - Emission Level dB (μV/m) = 20 log Emission Level (μV/m)
NOTE 2 - The tighter limit applies at the band edges.
NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
NOTE 4 - The limits shown are based on Quasi-peak value detector below or equal to 1GHz and Average value detector above 1GHz.
NOTE 5 - Above 1 GHz, the limit on peak emission is 20 dB above the maximum permitted average emission limit applicable to the EUT

4.4 Test Configuration

The configuration of the EUT and peripherals are same as those used in conducted emission test.

Please refer to Sec.3.4.

4.5 Operating Condition of EUT

Same as conducted emission test which is listed in Sec.3.5, except for the test setup replaced by Sec.4.2.

4.6 Test Procedures

Radiated emission test applies to harmonics/spurs that fall in the restricted bands listed in Section 15.205. The maximum permitted average field strength is listed in Section 15.209. A pre-amp is necessary for this measurement. For measurement above 1 GHz, set RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation.

The EUT was placed on a turntable that is 0.8 meter above ground. The turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (Calibrated Bilog Antenna) or Horn antenna was used as receiving antenna. Both horizontal and vertical polarizations of the antenna were set on measurement. In order to find the maximum emission, all of the interference cables were manipulated according to ANSI C63.4:2003 requirements during radiated emission test.

The bandwidth of Test Receiver R&S ESCI was set at 120 kHz from 30MHz to 1000MHz.

The bandwidth of the VBW was set at 1MHz and RBW was set at 1MHz for peak emission measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emission above 1GHz for Spectrum Agilent E7405A.

The frequency range from 30 MHz to 25 GHz (Up to 10^{th} harmonics from fundamental frequency) was checked.

All the test results are listed in Sec.3.7.

4.7 Test Results

<PASS>

The frequency and amplitude of the highest radiated emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

No.	Operation	Modulation	Channel	Frequency	Data Page	
1.	Transmitting	Worst case emission < 1GHz			P16	
2.		802.11b	01	2412 MHz	P17-18	
3.			06	2437 MHz		
4.			11	2462 MHz		
5.		802.11g	01	2412 MHz	P19	
6.			06	2437 MHz		
7.			11	2462 MHz		
8.		802.11n	01	2412 MHz	P20	
9.			06	2437 MHz		
10.			11	2462 MHz		
11.	Receiving	--	--		P21	
12.	Transmitting	--	Cabinet Emission		P22	
13.		802.11b	01	2412 MHz	Restricted Frequency bands	P24
14.			11	2462 MHz		P25
15.		802.11g	01	2412 MHz		P26
16.			11	2462 MHz		P27
17.		802.11n	01	2412 MHz		P28
18.			11	2462 MHz		P29

NOTE 1 – Level = Read Level + Antenna Factor + Cable Loss (<1GHz)
NOTE 2 – Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor (>1GHz)
NOTE 3 – All reading are Quasi-Peak values below or equal to 1GHz, Peak and Average values above 1GHz.
For above 1GHz test, if the peak measured value complies with the average limit, it is unnecessary to perform an average measurement.

Worst case emission < 1GHz

EUT	:	WIFI	Temperature :	25℃
Model No.	:	WIFI-Adjustable Bed	Humidity :	45%RH
Test Mode	:	Transmitting	Date of Test :	Nov 26, 2014

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	52.03	8.66	6.60	0.70	15.96	40.00	24.04	QP
	166.65	9.34	8.96	1.30	19.60	43.50	23.90	
	300.37	13.42	12.47	1.79	27.68	46.00	18.32	
	332.52	8.89	14.71	1.88	25.48	46.00	20.52	
	497.68	**10.70**	**16.98**	**2.26**	**29.94**	**46.00**	**16.06**	
	566.62	3.48	19.88	2.43	25.79	46.00	20.21	
Vertical	73.88	11.70	7.08	0.85	19.63	40.00	20.37	QP
	151.07	13.70	10.30	1.24	25.24	43.50	18.26	
	300.37	11.03	12.47	1.79	25.29	46.00	20.71	
	387.99	7.47	14.95	2.03	24.45	46.00	21.55	
	533.83	**10.16**	**18.30**	**2.36**	**30.82**	**46.00**	**15.18**	
	663.47	7.32	19.55	2.64	29.51	46.00	16.49	

TEST ENGINEER: BILL WU

Radiated Emission > 1GHz

EUT	:	WIFI	Temperature :	25℃
Model No.	:	WIFI-Adjustable Bed	Humidity :	45%RH
Test Mode	:	802.11b Transmitting	Date of Test :	Nov 26, 2014

Ch01

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	1361.45	50.11	25.19	3.78	36.11	42.97	74.00	31.03	Peak
	4824.00	53.46	33.50	7.75	34.87	59.84	74.00	14.16	Peak
	4824.00	42.84	33.52	7.75	34.87	49.24	54.00	4.76	Average
	7236.00	46.70	36.90	9.14	35.15	57.59	74.00	16.41	Peak
	7236.00	31.93	36.90	9.14	35.15	42.82	54.00	11.18	Average
Vertical	1352.07	51.26	25.14	3.78	36.13	44.05	74.00	29.95	Peak
	4824.00	54.30	33.50	7.75	34.87	60.68	74.00	13.32	Peak
	4824.00	44.61	33.52	7.75	34.87	51.01	54.00	2.99	Average
	7236.00	46.12	36.90	9.14	35.15	57.01	74.00	16.99	Peak
	7236.00	31.52	36.90	9.14	35.15	42.41	54.00	11.59	Average

Ch06

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	1361.45	49.97	25.19	3.78	36.11	42.83	74.00	31.17	Peak
	4874.00	40.34	33.58	7.82	34.88	46.86	54.00	7.14	Average
	4874.00	50.09	33.58	7.82	34.88	56.61	74.00	17.39	Peak
	7311.00	46.49	37.00	9.30	35.16	57.63	74.00	16.37	Peak
	7311.00	33.55	37.00	9.30	35.16	44.69	54.00	9.31	Average
Vertical	1361.45	51.29	25.19	3.78	36.11	44.15	74.00	29.85	Peak
	4874.00	42.28	33.58	7.82	34.88	48.80	54.00	5.20	Average
	4874.00	51.94	33.58	7.82	34.88	58.46	74.00	15.54	Peak
	7311.00	32.84	37.00	9.30	35.16	43.98	54.00	10.02	Average
	7311.00	46.89	37.00	9.30	35.16	58.03	74.00	15.97	Peak

Ch11

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	1733.80	51.32	26.55	4.26	35.53	46.60	74.00	27.40	Peak
	4924.00	52.35	33.61	7.88	34.89	58.95	74.00	15.05	Peak
	4924.00	43.36	33.61	7.88	34.89	49.96	54.00	4.04	Average
	7386.00	45.95	37.14	9.46	35.18	57.37	74.00	16.63	Peak
	7386.00	33.07	37.14	9.46	35.18	44.49	54.00	9.51	Average
Vertical	1361.45	53.34	25.19	3.78	36.11	46.20	74.00	27.80	Peak
	4924.00	50.43	33.61	7.88	34.89	57.03	74.00	16.97	Peak
	4924.00	40.94	33.61	7.88	34.89	47.54	54.00	6.46	Average
	7386.00	45.84	37.14	9.46	35.18	57.26	74.00	16.74	Peak
	7386.00	32.99	37.14	9.46	35.18	44.41	54.00	9.59	Average

TEST ENGINEER: BILL WU

EUT	:	WIFI	Temperature :	25℃	
Model No.	:	WIFI-Adjustable Bed	Humidity :	45%RH	
Test Mode	:	802.11g Transmitting	Date of Test :	Nov 26, 2014	

Ch01

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	2208.01	46.35	27.84	4.79	35.32	43.66	74.00	30.34	Peak
	4824.00	44.68	33.50	7.75	34.87	51.06	74.00	22.94	Peak
	7236.00	46.59	36.90	9.14	35.15	57.48	74.00	16.52	Peak
	7236.00	33.34	36.90	9.14	35.15	44.23	54.00	9.77	Average
Vertical	1807.17	46.22	26.84	4.35	35.46	41.95	74.00	32.05	Peak
	4824.00	45.23	33.50	7.75	34.87	51.61	74.00	22.39	Peak
	7236.00	46.64	36.90	9.14	35.15	57.53	74.00	16.47	Peak
	7236.00	33.34	36.90	9.14	35.15	44.23	54.00	9.77	Average

Ch06

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	1267.65	49.92	24.72	3.64	36.28	42.00	74.00	32.00	Peak
	4874.00	44.56	33.56	7.82	34.88	51.06	74.00	22.94	Peak
	7311.00	46.10	37.00	9.30	35.16	57.24	74.00	16.76	Peak
	7311.00	33.71	37.00	9.30	35.16	44.85	54.00	9.15	Average
Vertical	1465.55	47.22	25.59	3.92	35.90	40.83	74.00	33.17	Peak
	4874.00	43.77	33.56	7.82	34.88	50.27	74.00	23.73	Peak
	7311.00	45.58	37.00	9.30	35.16	56.72	74.00	17.28	Peak
	7311.00	33.86	37.00	9.30	35.16	45.00	54.00	9.00	Average

Ch11

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	1527.57	47.59	25.80	4.01	35.80	41.60	74.00	32.40	Peak
	4924.00	44.62	33.63	7.88	34.89	51.24	74.00	22.76	Peak
	7386.00	45.68	37.14	9.46	35.18	57.10	74.00	16.90	Peak
	7386.00	32.79	37.14	9.46	35.18	44.21	54.00	9.79	Average
Vertical	1233.11	46.96	24.50	3.58	36.34	38.70	74.00	35.30	Peak
	4924.00	43.85	33.63	7.88	34.89	50.47	74.00	23.53	Peak
	7386.00	45.04	37.14	9.46	35.18	56.46	74.00	17.54	Peak
	7386.00	32.47	37.14	9.46	35.18	43.89	54.00	10.11	Average

TEST ENGINEER: BILL WU

EUT	:	WIFI	Temperature :	25℃	
Model No.	:	WIFI-Adjustable Bed	Humidity :	45%RH	
Test Mode	:	802.11n Transmitting	Date of Test :	Nov 26, 2014	

Ch01

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	2009.09	46.73	27.41	4.55	35.30	43.39	74.00	30.61	Peak
	4824.00	43.91	33.50	7.75	34.87	50.29	74.00	23.71	Peak
	7236.00	45.78	36.90	9.14	35.15	56.67	74.00	17.33	Peak
	7236.00	33.30	36.90	9.14	35.15	44.19	54.00	9.81	Average
Vertical	1465.55	47.93	25.59	3.92	35.90	41.54	74.00	32.46	Peak
	4824.00	43.54	33.50	7.75	34.87	49.92	74.00	24.08	Peak
	7236.00	45.37	36.90	9.14	35.15	56.26	74.00	17.74	Peak
	7236.00	31.79	36.90	9.14	35.15	42.68	54.00	11.32	Average

Ch06

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	1333.52	47.03	25.07	3.75	36.16	39.69	74.00	34.31	Peak
	4874.00	44.45	33.56	7.82	34.88	50.95	74.00	23.05	Peak
	7311.00	45.69	37.00	9.30	35.16	56.83	74.00	17.17	Peak
	7311.00	34.23	37.00	9.30	35.16	45.37	54.00	8.63	Average
Vertical	1241.65	46.24	24.56	3.61	36.33	38.08	74.00	35.92	Peak
	4874.00	43.78	33.56	7.82	34.88	50.28	74.00	23.72	Peak
	7311.00	46.60	37.00	9.30	35.16	57.74	74.00	16.26	Peak
	7311.00	34.45	37.00	9.30	35.16	45.59	54.00	8.41	Average

Ch11

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	1667.25	47.42	26.29	4.18	35.61	42.28	74.00	31.72	Peak
	4924.00	44.79	33.63	7.88	34.89	51.41	74.00	22.59	Peak
	7386.00	45.83	37.14	9.46	35.18	57.25	74.00	16.75	Peak
	7386.00	32.34	37.14	9.46	35.18	43.76	54.00	10.24	Average
Vertical	2123.24	48.53	27.66	4.71	35.31	45.59	74.00	28.41	Peak
	4924.00	44.40	33.63	7.88	34.89	51.02	74.00	22.98	Peak
	7386.00	45.94	37.14	9.46	35.18	57.36	74.00	16.64	Peak
	7386.00	32.31	37.14	9.46	35.18	43.73	54.00	10.27	Average

TEST ENGINEER: BILL WU

EUT	:	WIFI	Temperature :	25℃	
Model No.	:	WIFI-Adjustable Bed	Humidity :	45%RH	
Test Mode	:	Receiving	Date of Test :	Nov 26, 2014	

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	97.12	0.59	10.35	0.98	--	11.92	43.50	31.58	QP
	173.21	3.90	8.49	1.32	--	13.71	43.50	29.79	
	278.07	6.21	12.30	1.72	--	20.23	46.00	25.77	
	344.39	1.06	14.33	1.91	--	17.30	46.00	28.70	
	580.70	-0.70	19.38	2.45	--	21.13	46.00	24.87	
	839.18	**0.65**	**21.40**	**2.95**	--	**25.00**	**46.00**	**21.00**	
	1573.98	46.99	25.95	4.06	35.73	41.27	74.00	32.73	PK
	2426.61	46.74	28.29	5.08	35.35	44.76	74.00	29.24	
	4345.10	44.25	32.98	7.29	34.77	49.75	74.00	24.25	
Vertical	**38.89**	**9.92**	**14.14**	**0.61**	--	**24.67**	**40.00**	**15.33**	QP
	126.33	4.08	12.13	1.13	--	17.34	43.50	26.16	
	193.77	6.44	7.97	1.39	--	15.80	43.50	27.70	
	422.06	5.30	16.90	2.10	--	24.30	46.00	21.70	
	550.95	1.02	18.80	2.39	--	22.21	46.00	23.79	
	804.60	0.78	20.67	2.89	--	24.34	46.00	21.66	
	1258.93	48.26	24.67	3.64	36.30	40.27	74.00	33.73	PK
	2904.02	46.03	30.51	5.57	35.39	46.72	74.00	27.28	
	3971.92	45.14	32.65	6.89	34.71	49.97	74.00	24.03	

TEST ENGINEER: BILL WU

Emissions in restricted frequency bands
Using Antenna-port conducted measurements:

According to the KDB 558074 D01 DTS Meas Guidance v03r02 12.2, antenna-port conducted measurements is also be permitted as an alternative to radiated measurements in the restricted frequency bands.

The transmitter output was connected to the Test Receiver. The EUT was set to transmit continuously (≥ 98% duty cycle).

The test procedure is defined in KDB558074 v03r02:2014
(12.2.4 Peak power measurement procedure & the 12.2.5 Average power measurement procedures (12.2.5.1 Trace averaging with continuous EUT transmission at full power)):

Note1 – The additional radiated test was performed to prove that the cabinet emissions (transmit antenna be replaced with a termination matching the impedance of the antenna) also comply with the applicable limits.

Cabinet Emission (Radiated with antenna terminated):

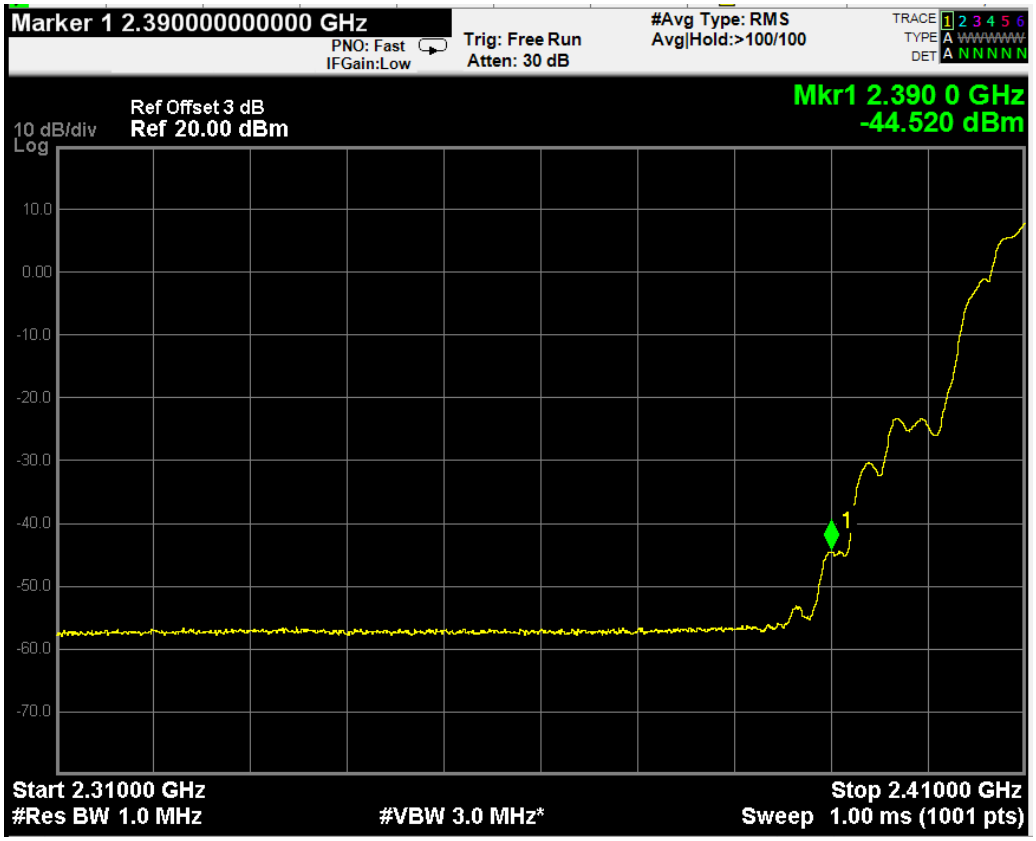
Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	2378.90	46.94	28.20	5.04	35.34	44.84	74.00	29.16	Peak
	2390.00	45.13	28.21	5.04	35.34	43.04	74.00	30.96	Peak
	2373.57	34.03	28.19	5.00	35.34	31.88	54.00	22.12	Average
	2390.00	33.85	28.21	5.04	35.34	31.76	54.00	22.24	Average
	2483.50	44.76	28.38	5.12	35.35	42.91	74.00	31.09	Peak
	2494.78	46.01	28.39	5.16	35.36	44.20	74.00	29.80	Peak
	2483.50	33.65	28.38	5.12	35.35	31.80	54.00	22.20	Average
	2484.84	**33.82**	**28.38**	**5.16**	**35.35**	**32.01**	**54.00**	**21.99**	**Average**
Vertical	2353.92	46.70	28.15	5.00	35.34	44.51	74.00	29.49	Peak
	2390.00	44.22	28.21	5.04	35.34	42.13	74.00	31.87	Peak
	2373.91	**34.06**	**28.19**	**5.00**	**35.34**	**31.91**	**54.00**	**22.09**	**Average**
	2390.00	33.87	28.21	5.04	35.34	31.78	54.00	22.22	Average
	2483.50	42.77	28.38	5.12	35.35	40.92	74.00	33.08	Peak
	2486.96	46.33	28.38	5.16	35.35	44.52	74.00	29.48	Peak
	2483.50	33.60	28.38	5.12	35.35	31.75	54.00	22.25	Average
	2484.69	33.60	28.38	5.16	35.35	31.79	54.00	22.21	Average

The frequency range 2310-2390MHz & 2483.5-2500MHz were tested, and the maximum emission frequency was recorded above.

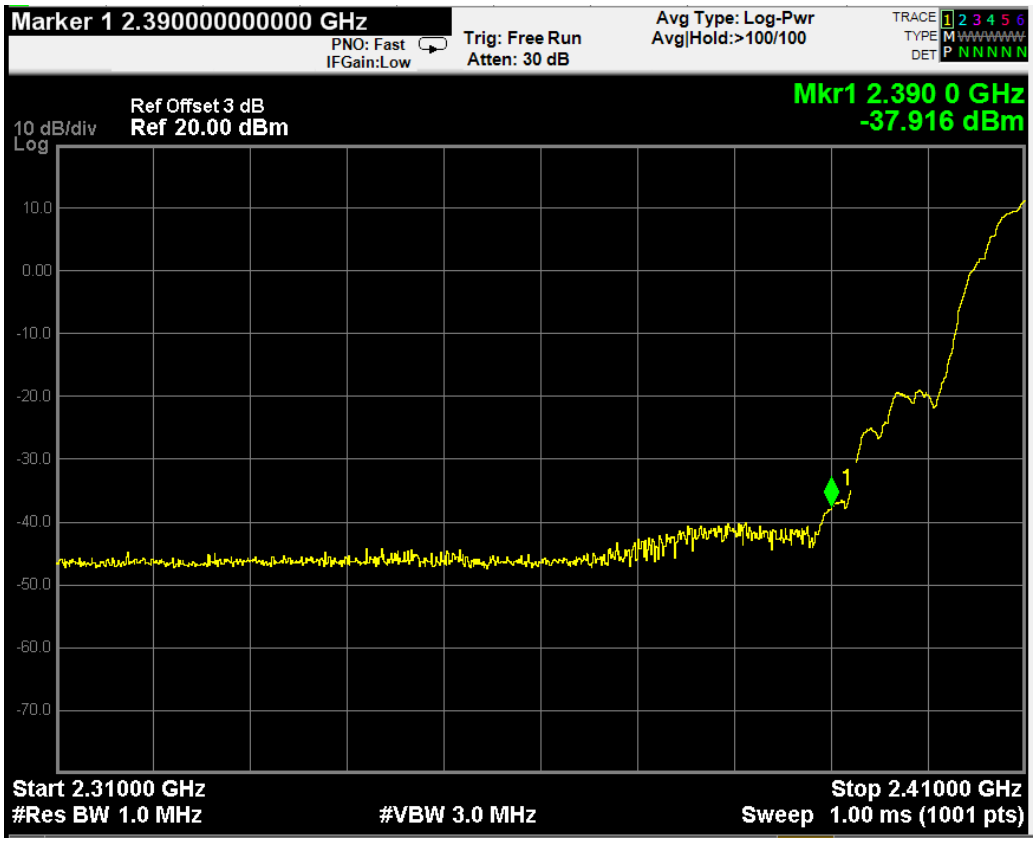
Note2 – The antenna gain (1.5dBi, as 2 dBi) and cable loss (1dB) were set as offset (3dB) in the spectrum.
(According to KDB558074 v03r02:2014 Sec. 12.2.6, when determining the EIRP from the measured conducted power, the upper bound on antenna gain for a device with a signal RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2 dBi, whichever is greater.)

Note3 – EIRP = E + 20logD – 104.8
Where: EIRP = equivalent isotropic radiated power in dBm,
E = electric field strength in dBμV/m,
D = specified measurement distance in meters.
The Average Power limit = -41.2 dBm
The Peak Power limit = -21.2 dBm

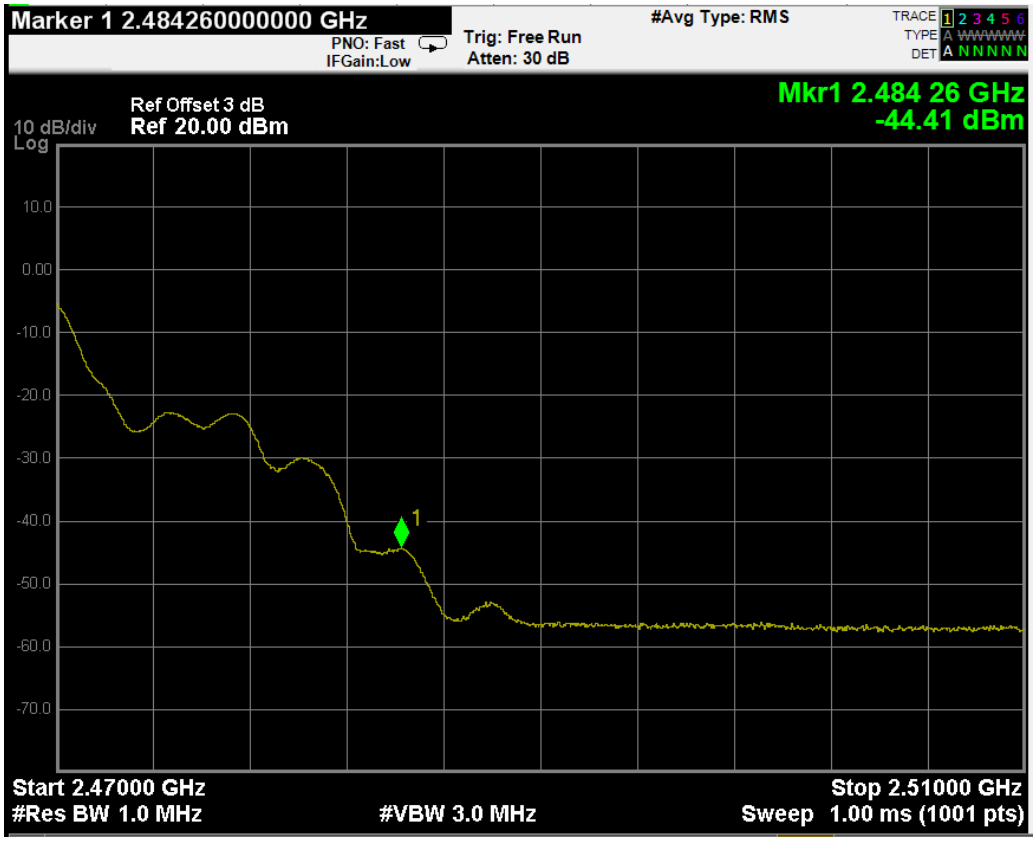
AV Result on 802.11b Ch 01



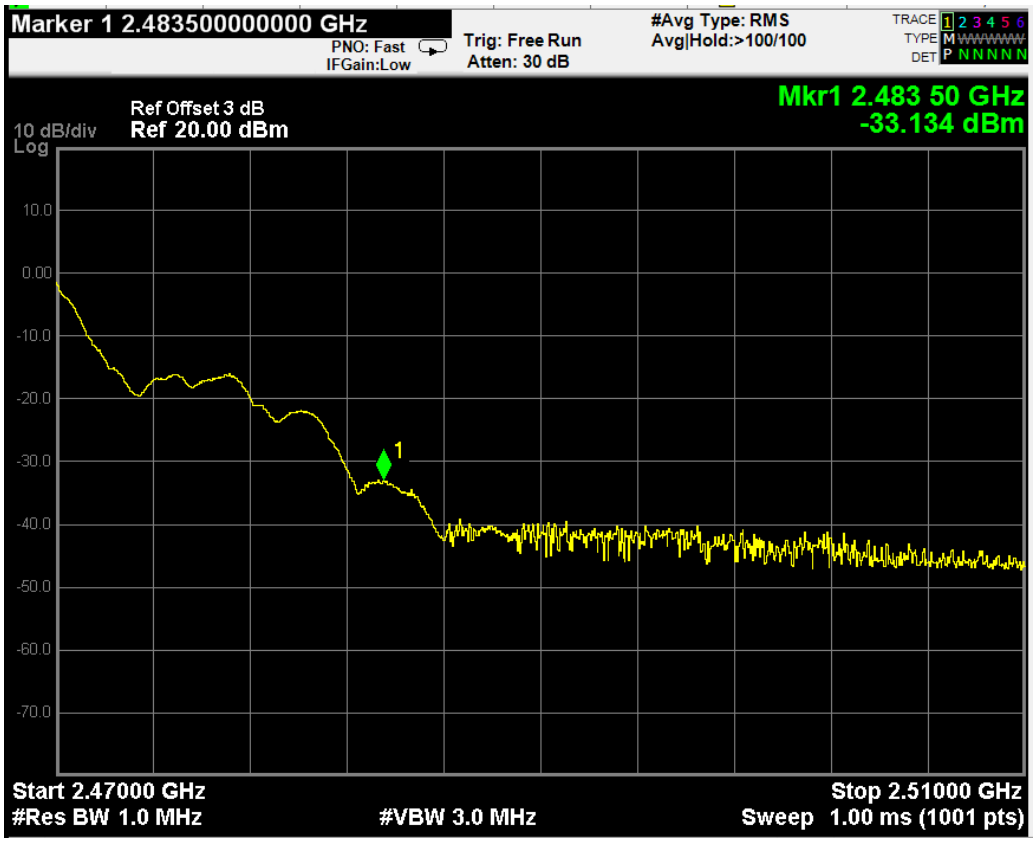
PK Result on 802.11b Ch 01



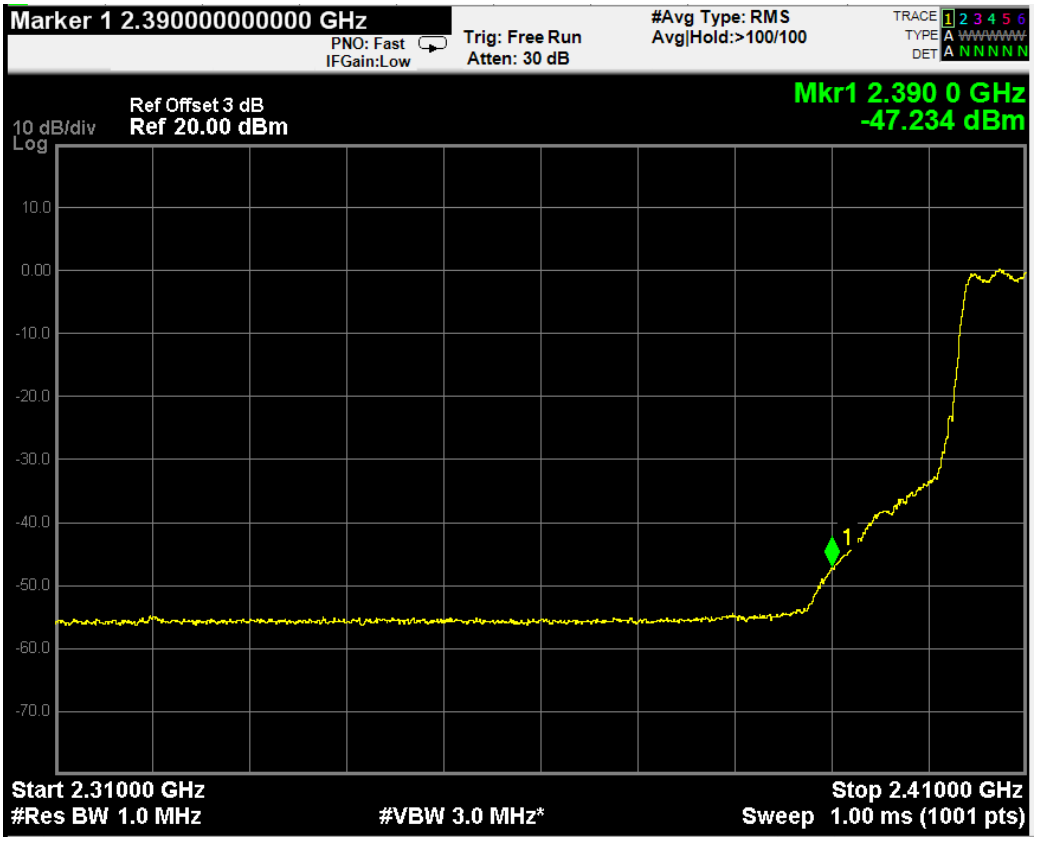
AV Result on 802.11b Ch 11



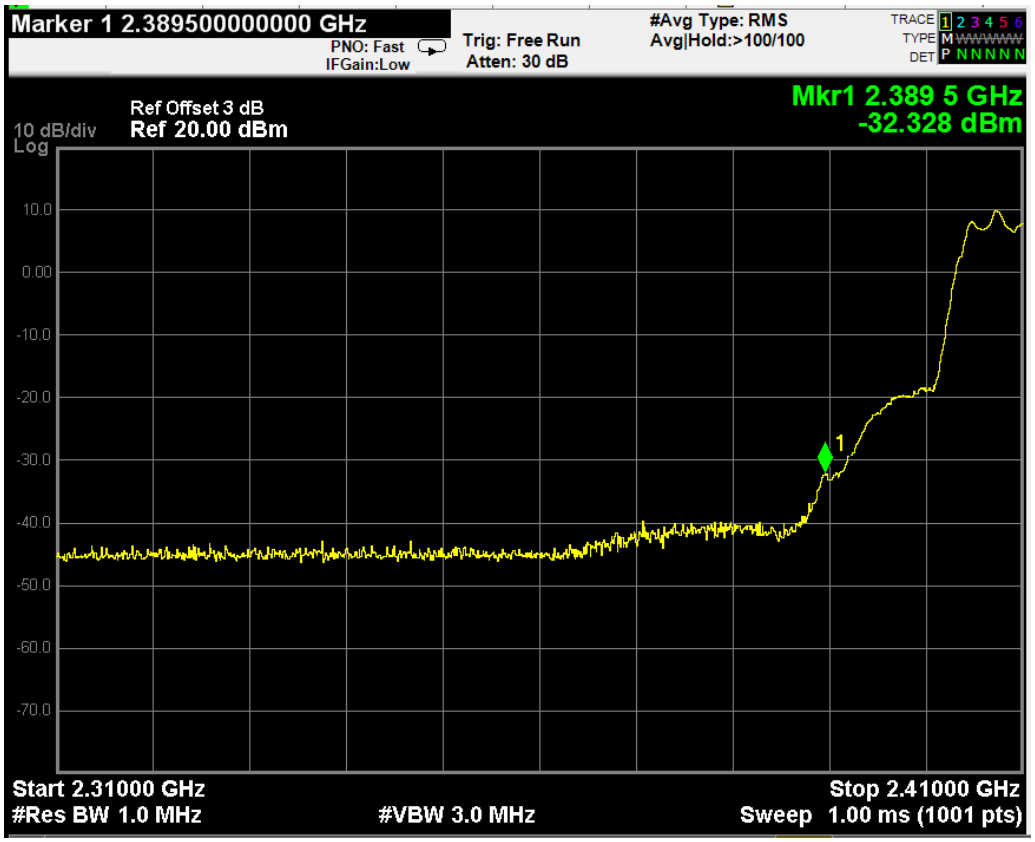
PK Result on 802.11b Ch 11



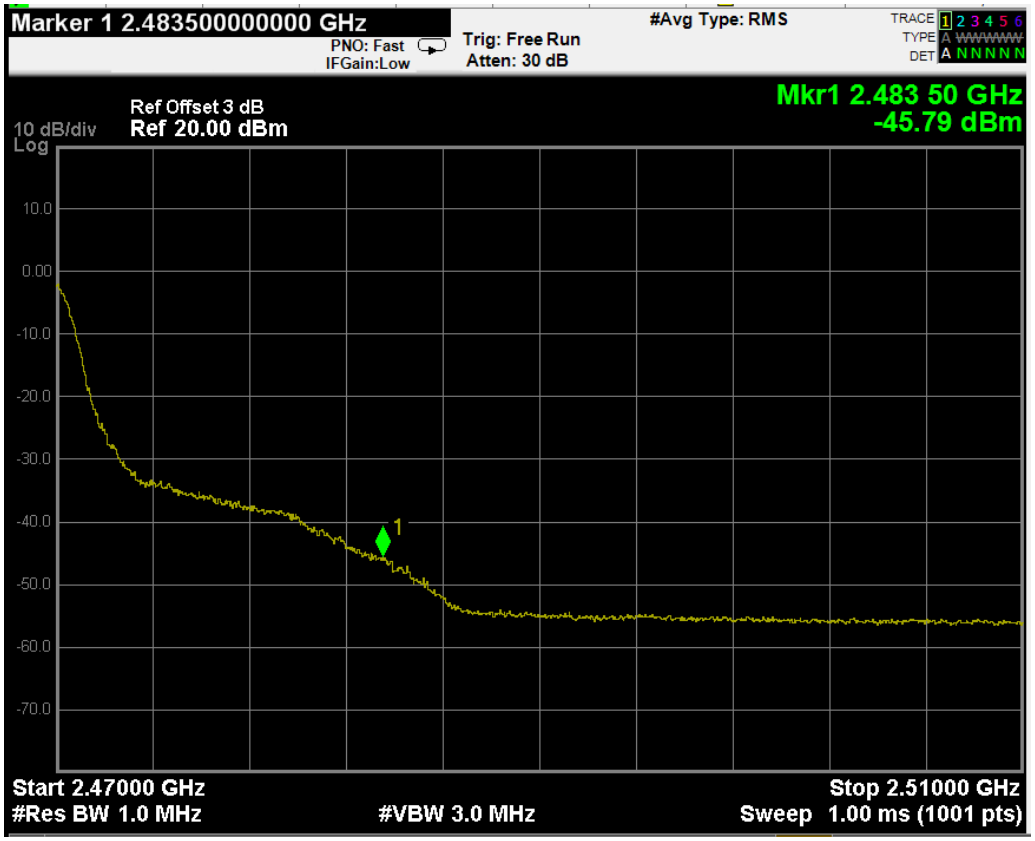
AV Result on 802.11g Ch 01



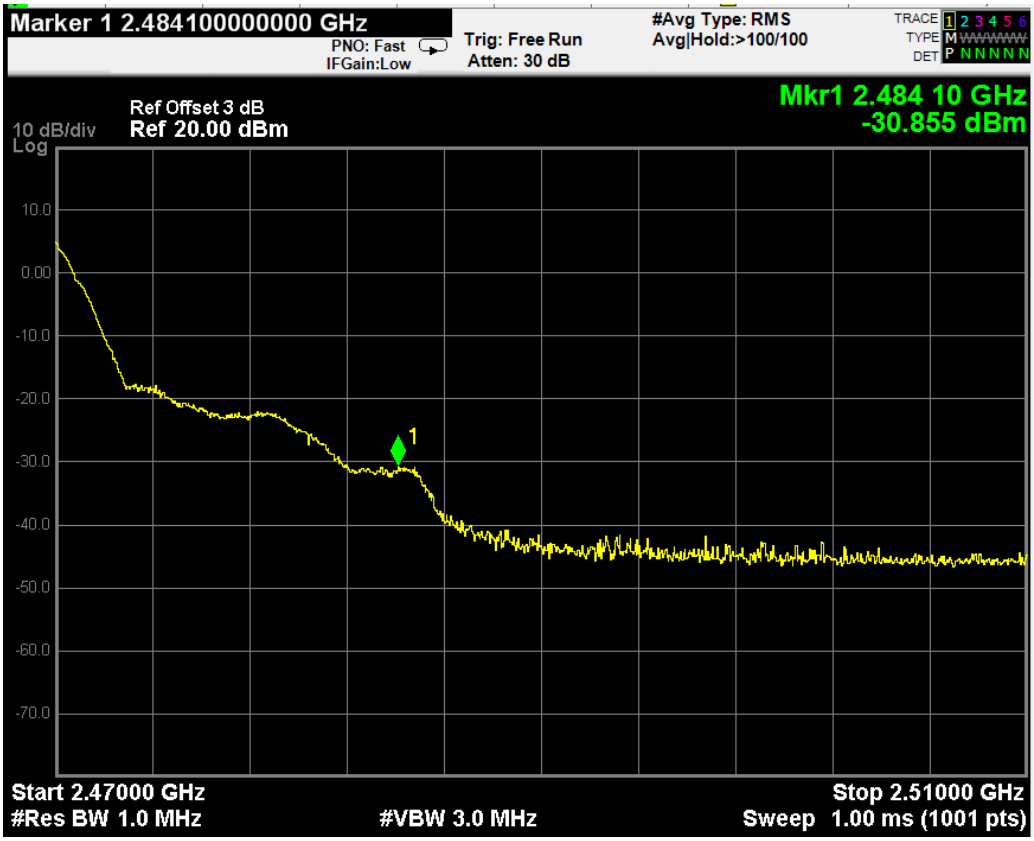
PK Result on 802.11g Ch 01



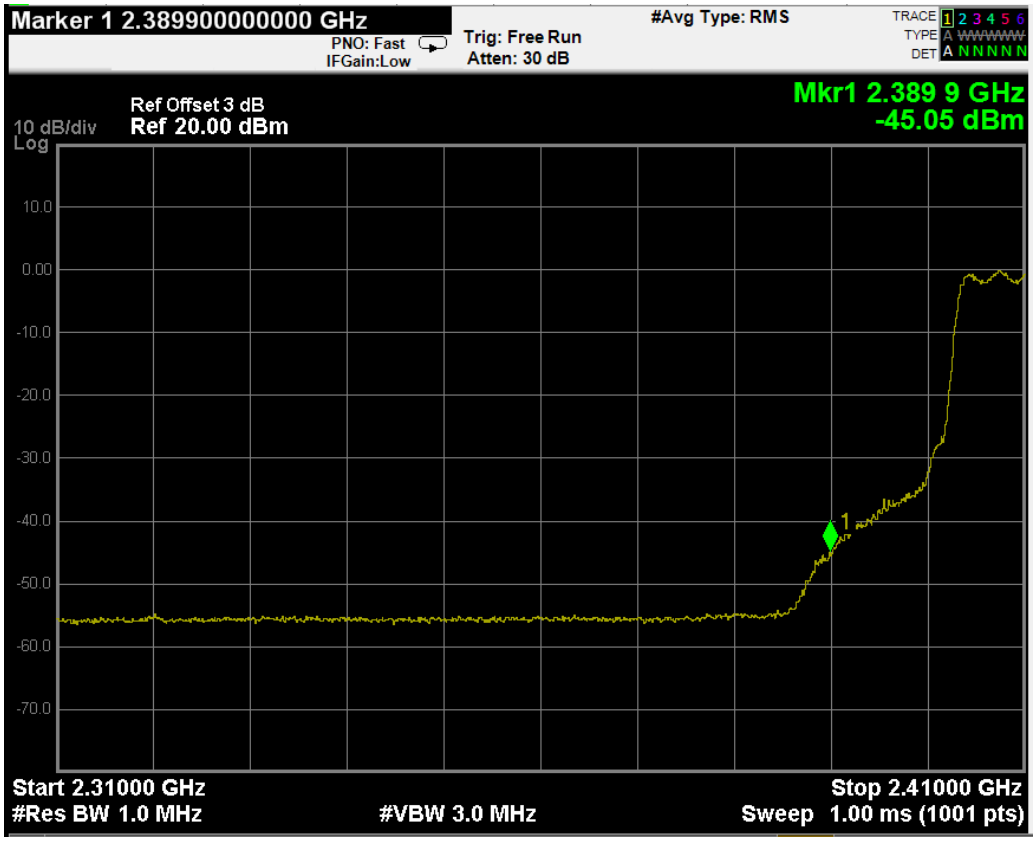
AV Result on 802.11g Ch 11



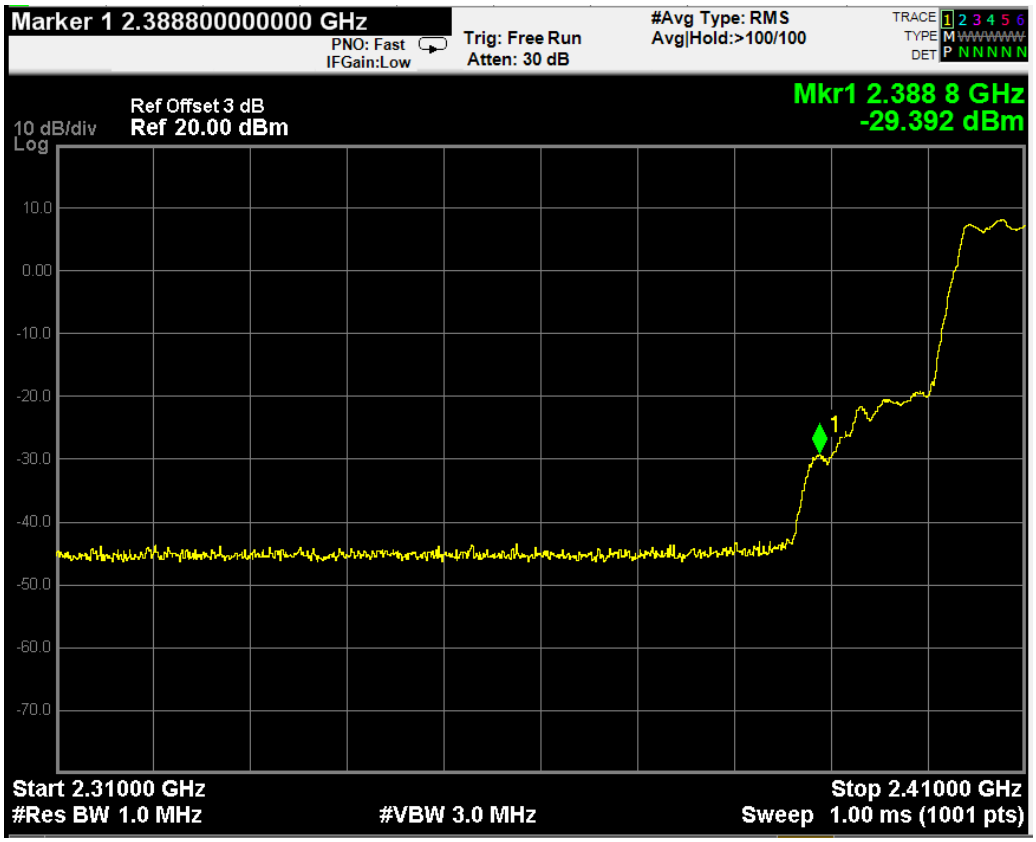
PK Result on 802.11g Ch 11



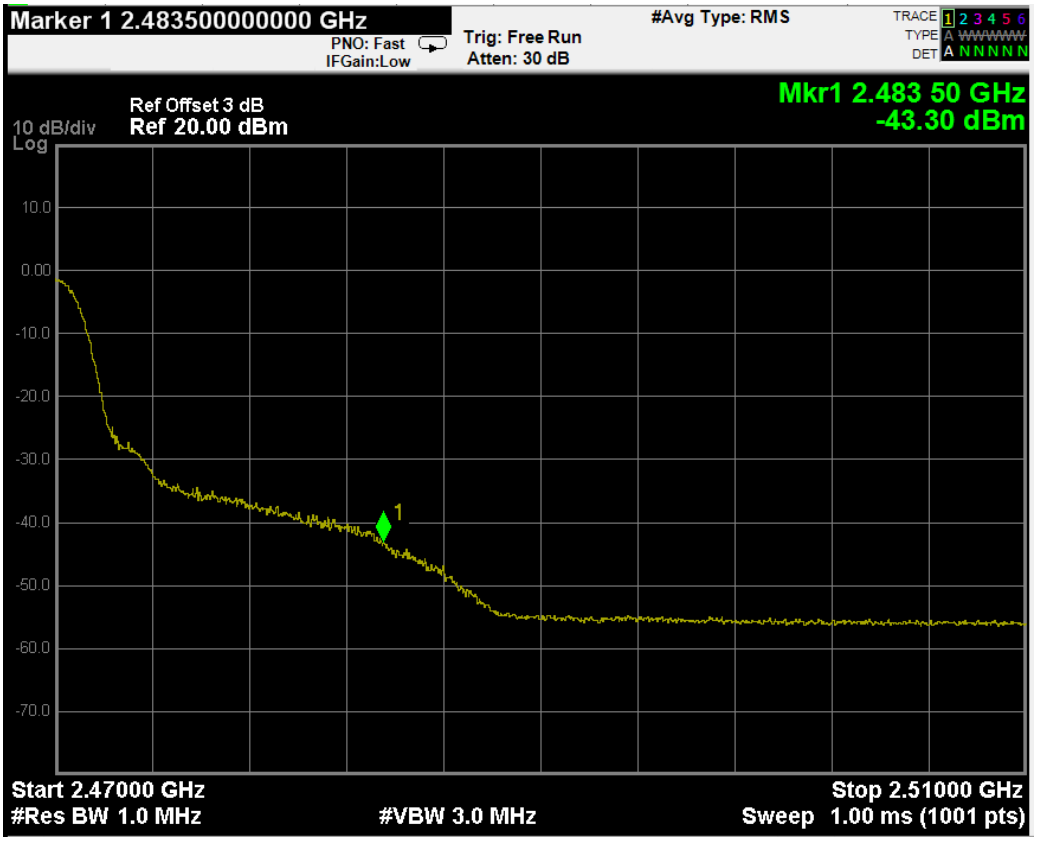
AV Result on 802.11n Ch 01



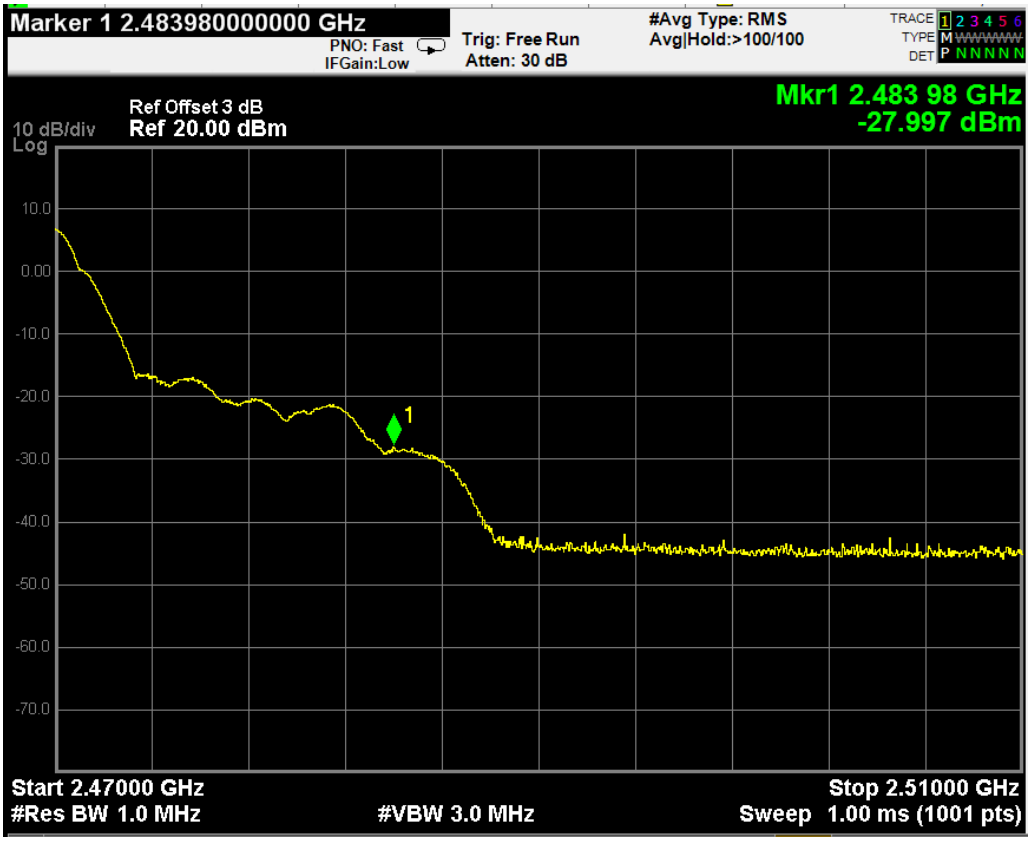
PK Result on 802.11n Ch 01



AV Result on 802.11n Ch 11



PK Result on 802.11n Ch 11



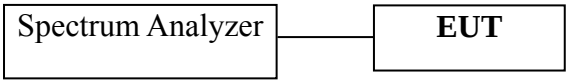
5 6 dB BANDWIDTH MEASUREMENT

5.1 Test Equipment

The following test equipment was used during the Emission Bandwidth measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9010A	MY52221182	Jun 14, 2014	Jun 13, 2015

5.2 Block Diagram of Test Setup



5.3 Specification Limits (§15.247(a)(2))

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

5.4 Operating Condition of EUT

The test program "SecureCRT" was used to enable the EUT to transmit data at different channel frequency individually.

5.5 Test Procedure

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with 100 kHz RBW / 300 kHz VBW.

The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB.

The test procedure is defined in KDB558074 D01 v03r02 (the 8.2 Measurement Procedure "Option 2" was used).

5.6 Test Results

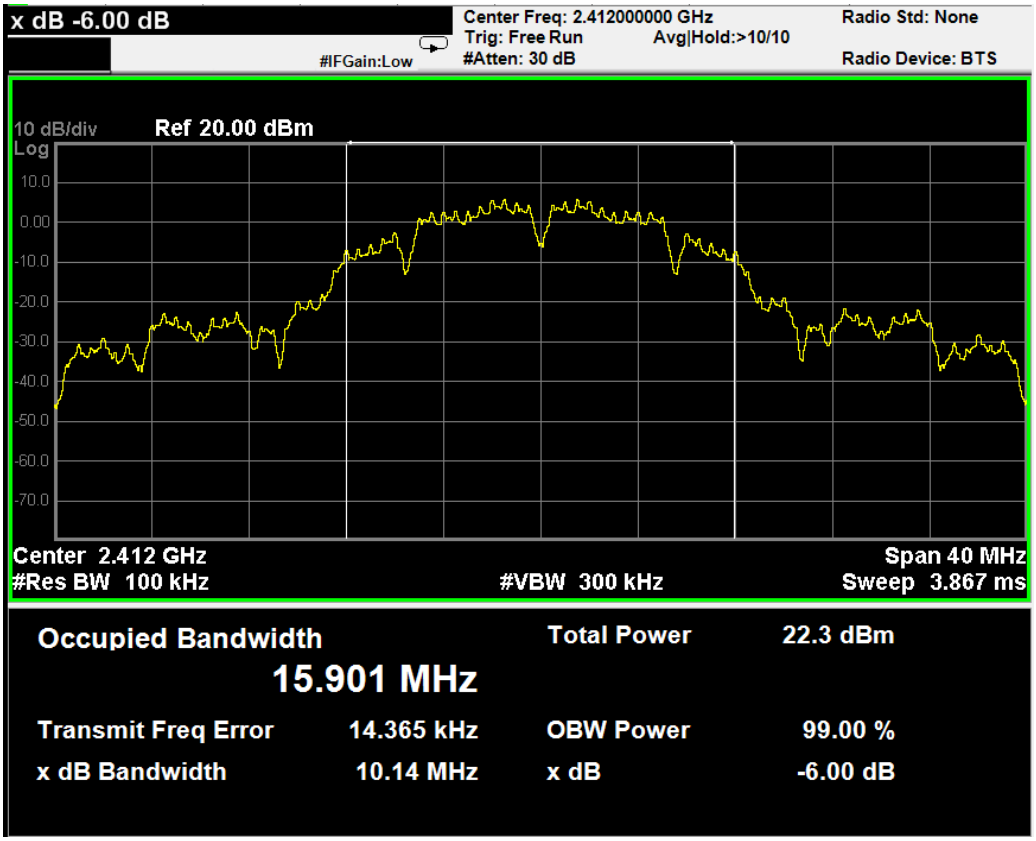
PASSED.

All the test results are attached in next pages.

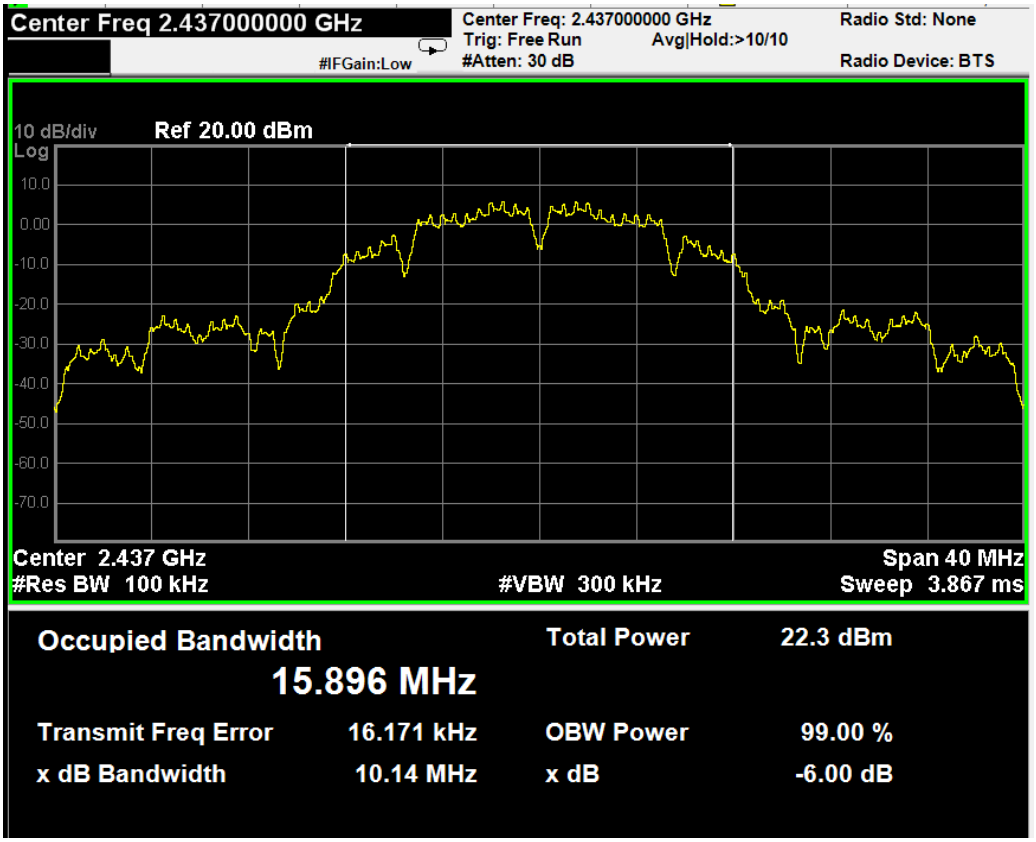
(Test Date: Nov. 25, 2014 Temperature: 20℃ Humidity: 44 %)

Modulation	Channel	Frequency	**6dB Bandwidth**
802.11b	01	2412 MHz	**10.14 MHz**
	06	2437 MHz	**10.14 MHz**
	11	2462 MHz	**10.13 MHz**
802.11g	01	2412 MHz	**16.35MHz**
	06	2437 MHz	**16.34 MHz**
	11	2462 MHz	**16.35 MHz**
802.11n	01	2412 MHz	**17.03 MHz**
	06	2437 MHz	**17.02 MHz**
	11	2462 MHz	**17.02 MHz**

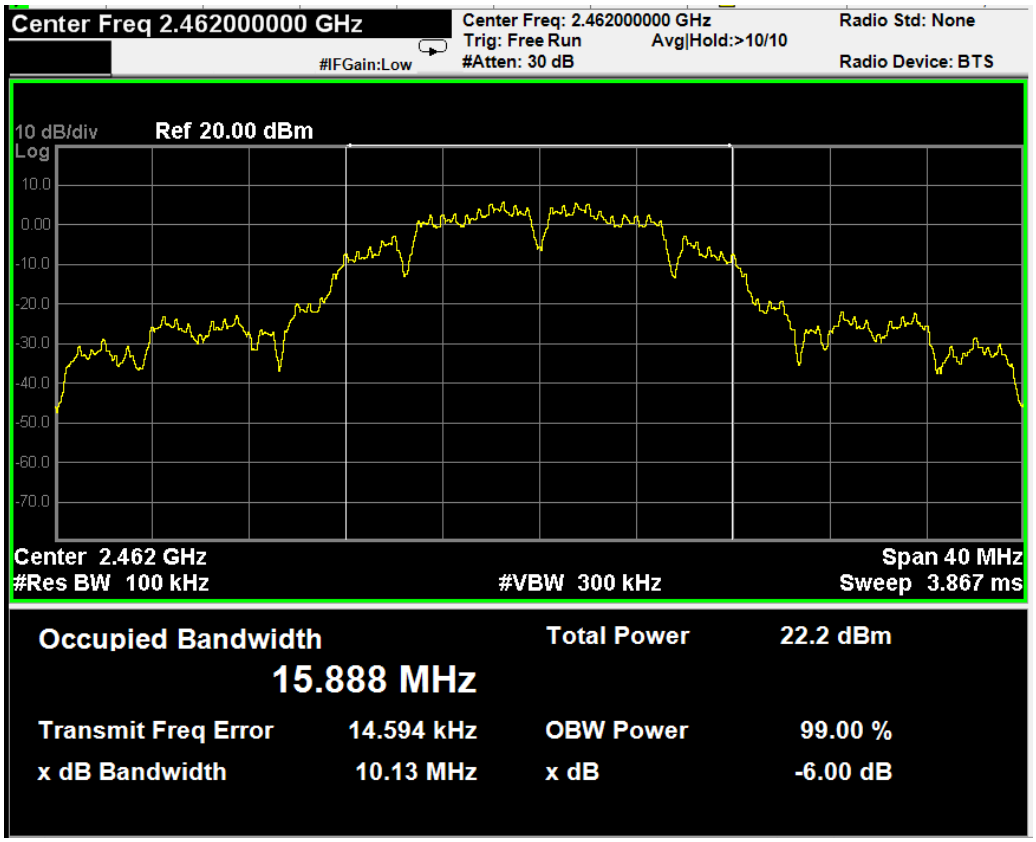
802.11b Ch 01 (2412 MHz)



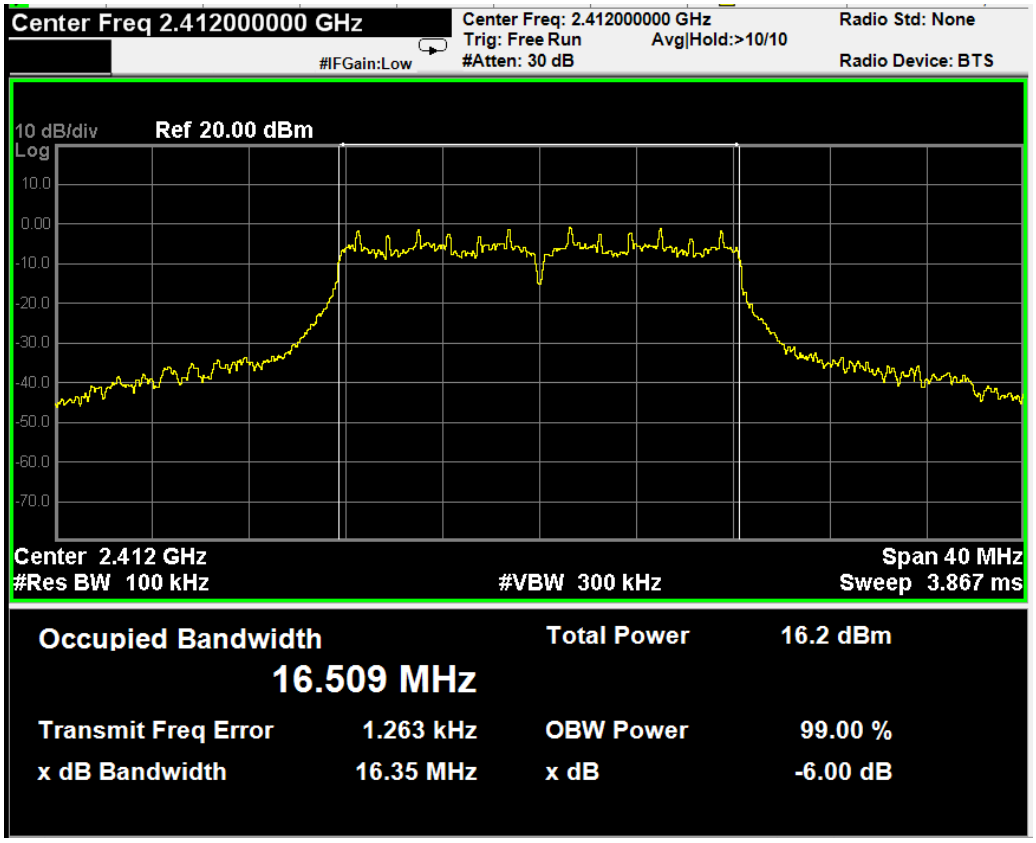
802.11b Ch 06 (2437 MHz)



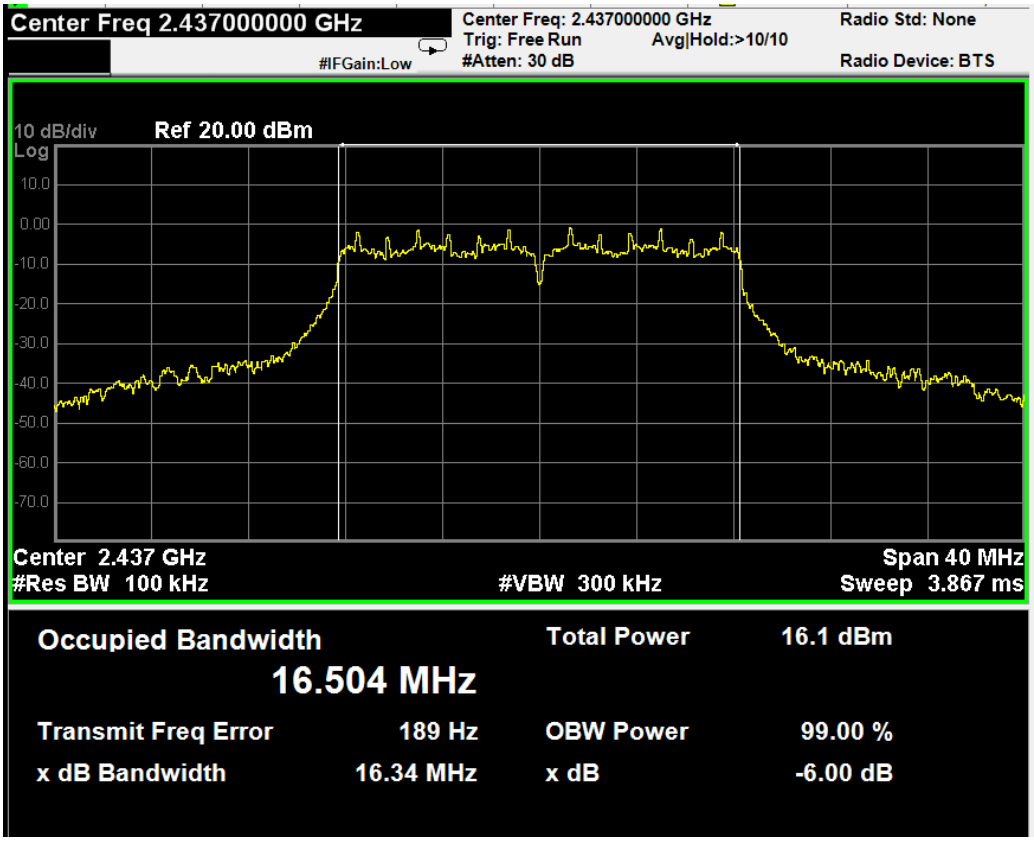
802.11b Ch 11 (2462 MHz)



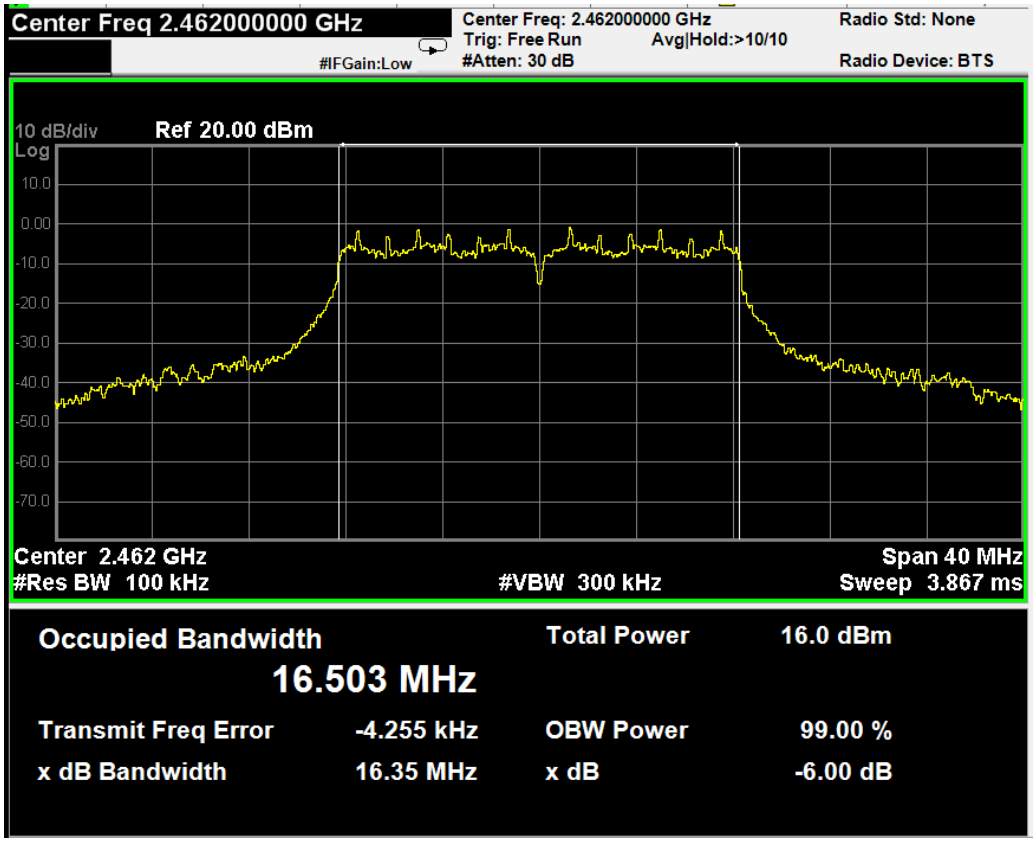
802.11g Ch 01 (2412 MHz)



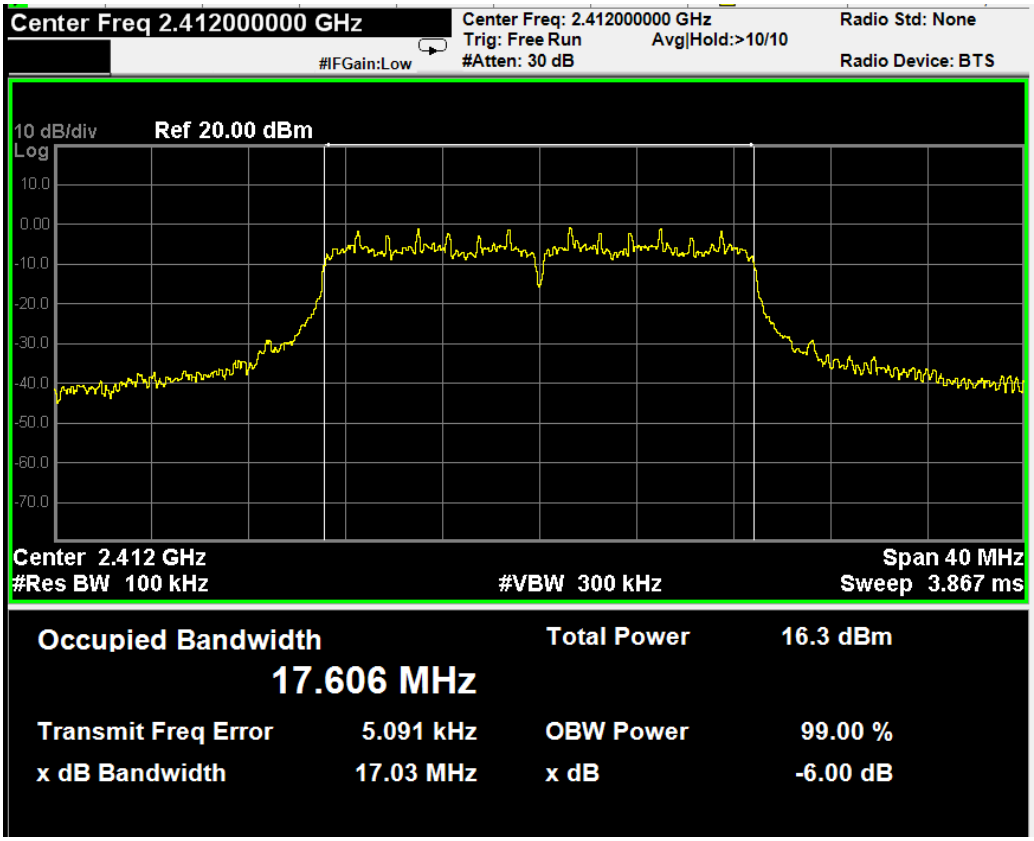
802.11g Ch 06 (2437 MHz)



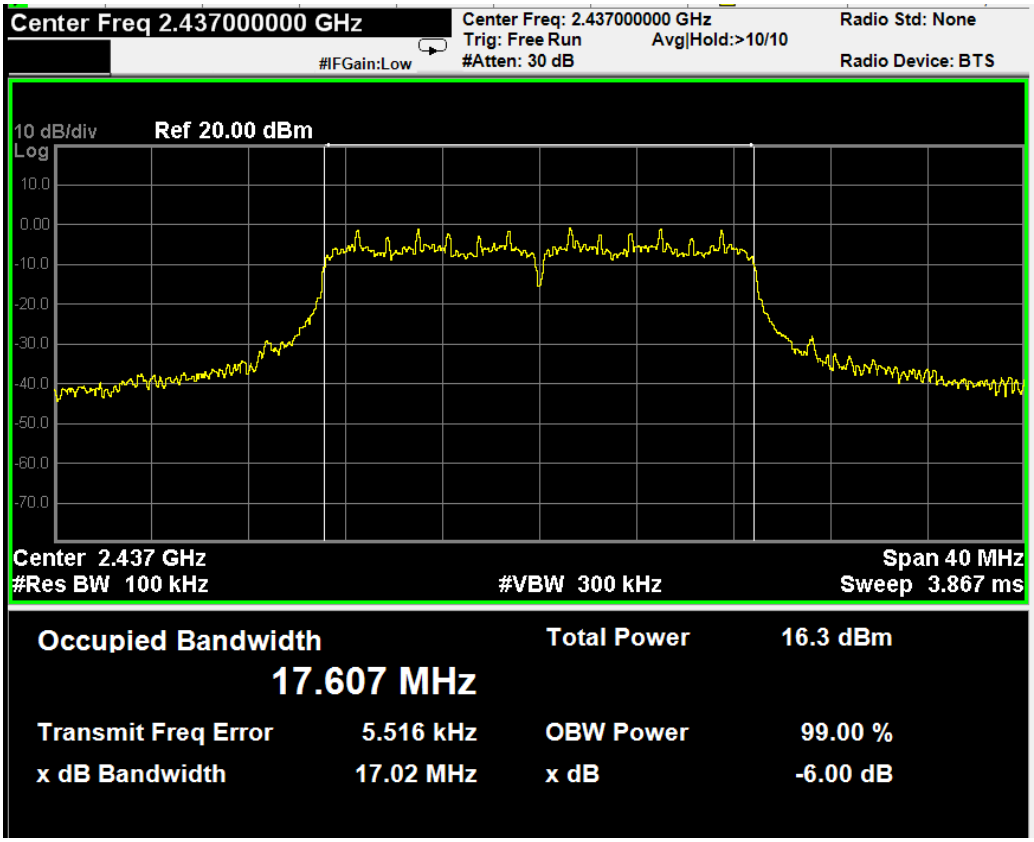
802.11g Ch 11 (2462 MHz)



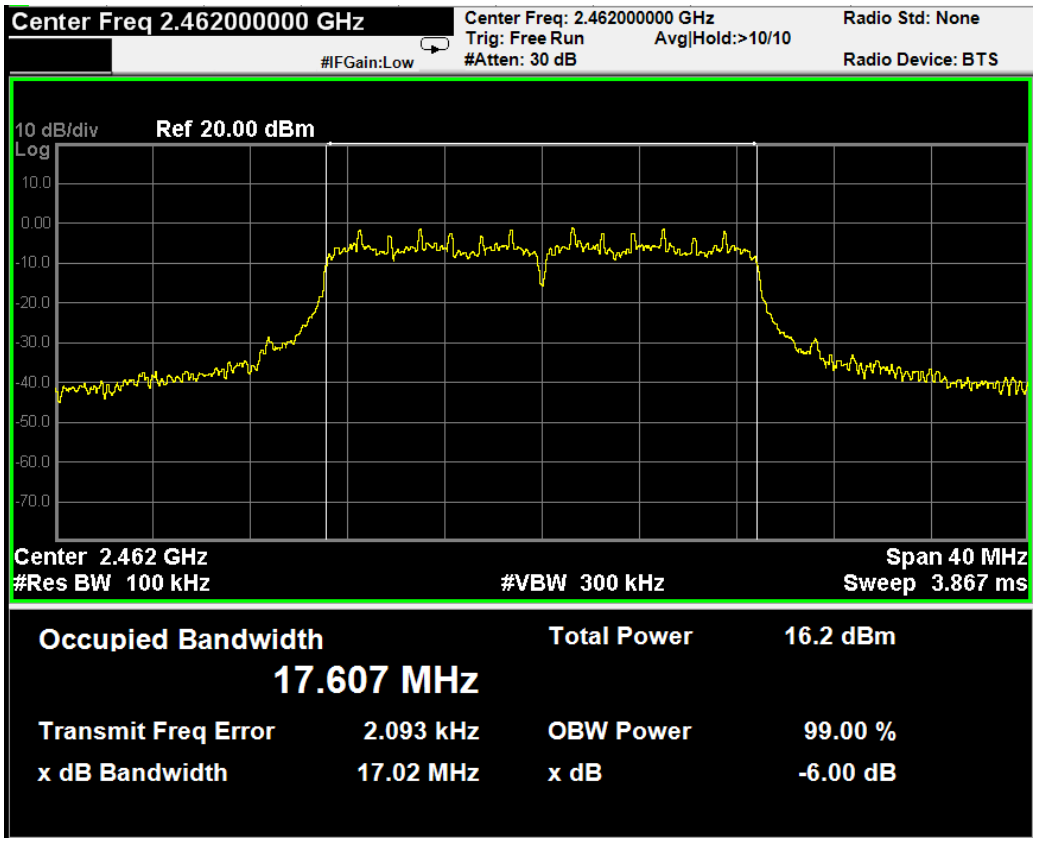
802.11n Ch 01 (2412 MHz)



802.11n Ch 06 (2437 MHz)



802.11n Ch 11 (2462 MHz)



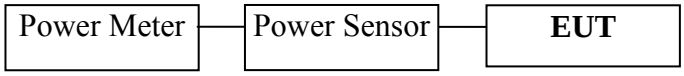
6 MAXIMUM PEAK OUTPUT POWER MEASUREMENT

6.1 Test Equipment

The following test equipment was used during the maximum peak output power measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Power Meter	Anritsu	ML2487A	6K00003245	Mar 20, 2014	Mar 19, 2015
2.	Power Sensor	Anritsu	MA2491A	32489	Mar 20, 2014	Mar 19, 2015

6.2 Block Diagram of Test Setup



6.3 Specification Limits ((§15.247(b)(3))

The Limits of maximum Peak Output Power for digital modulation in 2400-2483.5 MHz is: 1 Watt. (30 dBm)

6.4 Operating Condition of EUT

The test program "SecureCRT" was used to enable the EUT to transmit data at different channel frequency individually.

6.5 Test Procedure

This is an RF conducted test.

Use a direct connection between the antenna port of the transmitter and the power meter, through suitable attenuation. We use Peak power meter method to measure the power output. The transmitter output was connected to the power meter that was designed to detect peak value automatically.
Note: The bandwidth of the power meter is 20MHz.

The test procedure is defined in KDB558074 D01 v03r02 (the 9.1.2 Measurement Procedure "Integration band power method)" was used).

6.6 Test Results

PASSED. All the test results are listed below.

(Test Date: Jan 27, 2015 Temperature: 20℃ Humidity: 45 %)

Modulation	Channel	Frequency	**Peak Output Power**	Limit
802.11b	01	2412 MHz	**17.32 dBm**	30 dBm
	06	2437 MHz	**17.05 dBm**	30 dBm
	11	2462 MHz	**16.92 dBm**	30 dBm
802.11g	01	2412 MHz	**17.53 dBm**	30 dBm
	06	2437 MHz	**18.23 dBm**	30 dBm
	11	2462 MHz	**17.07 dBm**	30 dBm
802.11n	01	2412 MHz	**17.16 dBm**	30 dBm
	06	2437 MHz	**16.91 dBm**	30 dBm
	11	2462 MHz	**16.73 dBm**	30 dBm

7 EMISSION LIMITATIONS MEASUREMENT

7.1 Test Equipment

The following test equipment was used during the emission limitations test：

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9010A	MY52221182	Jun 14, 2014	Jun 13, 2015

7.2 Block Diagram of Test Setup

The same as Section. 5.2.

7.3 Specification Limits (§15.247(d))

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required.

In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (See Section 15.205(c)).(※This test result attaching to Section. 5.7)

7.4 Operating Condition of EUT

The test program "SecureCRT" was used to enable the EUT to transmit data at different channel frequency individually.

7.5 Test Procedure

The transmitter output was connected to the Test Receiver. Set RBW = 100 kHz, VBW ≥ 300 kHz, scan up through 10^{th} harmonic. All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.
The test procedure is defined in KDB558074 D01 v03r02 (the 11.3 Emission Level Measurement was used).

7.6 Test Results

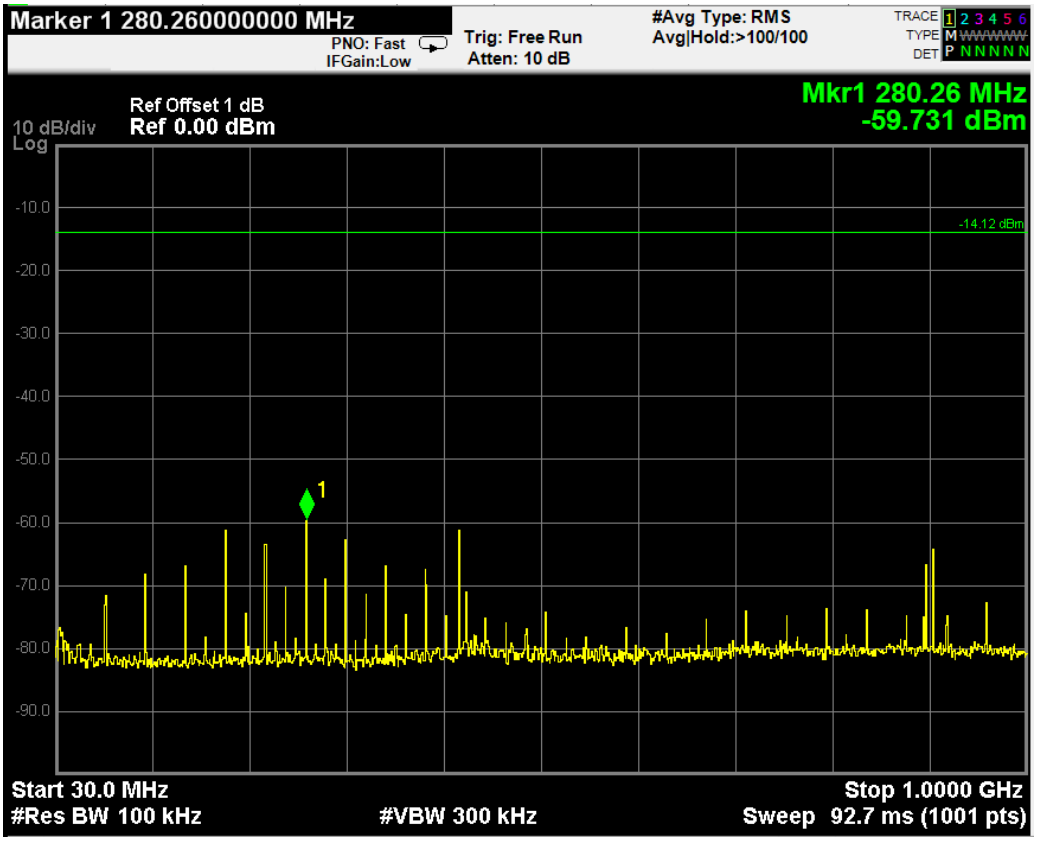
PASSED.

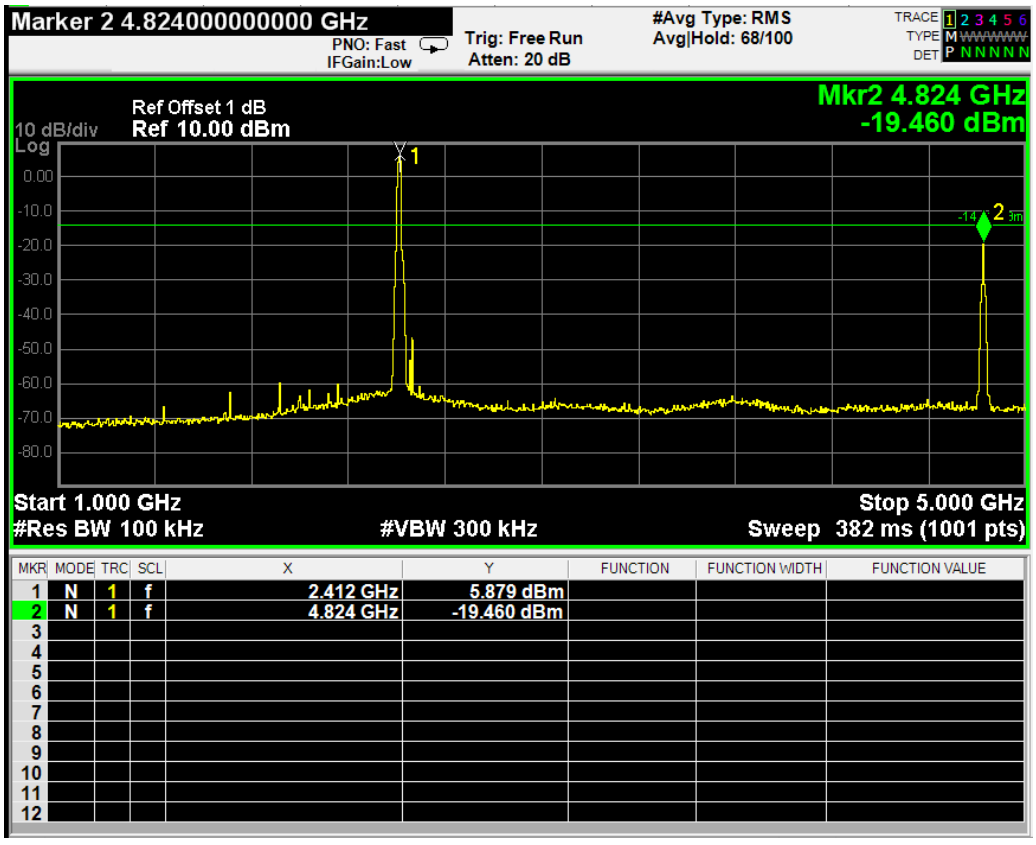
The test data was attached in the next pages.

(Test Date: Nov. 25, 2014 Temperature: 20℃ Humidity: 44 %)

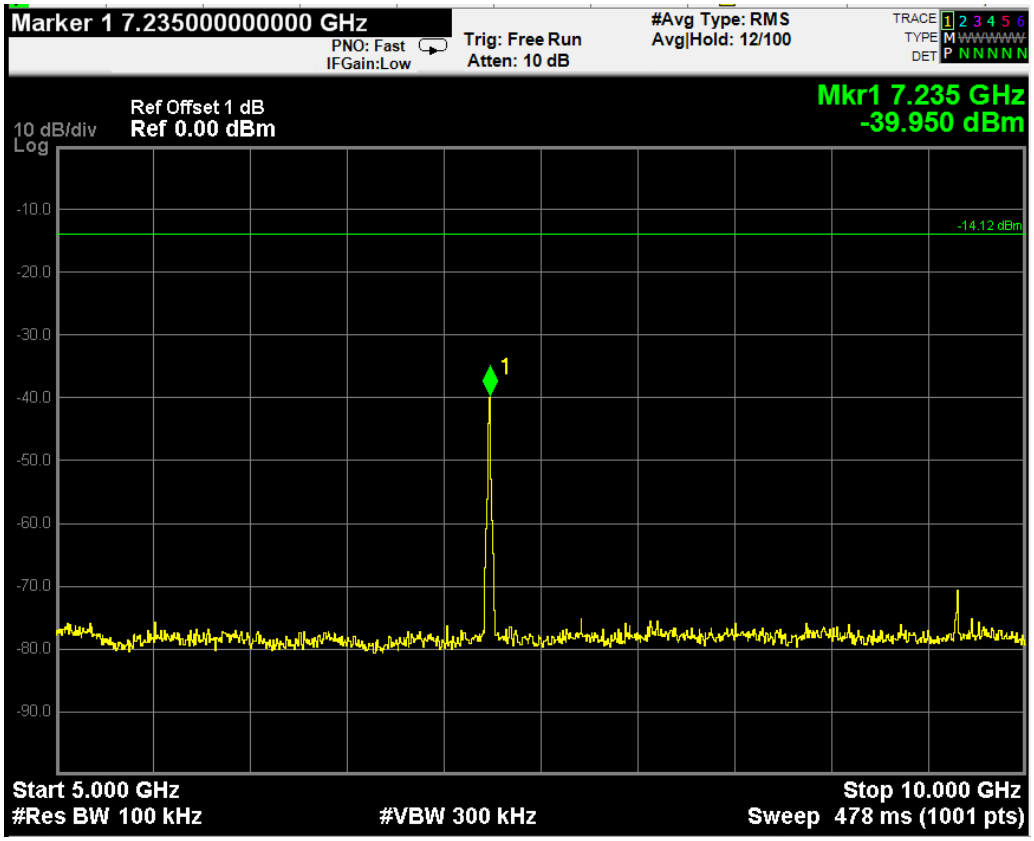
Modulation	Channel	Data Page
802.11b	01	P37-39
	06	P40-42
	11	P43-45
802.11g	01	P46-48
	06	P49-51
	11	P52-54
802.11n	01	P55-57
	06	P58-60
	11	P61-63

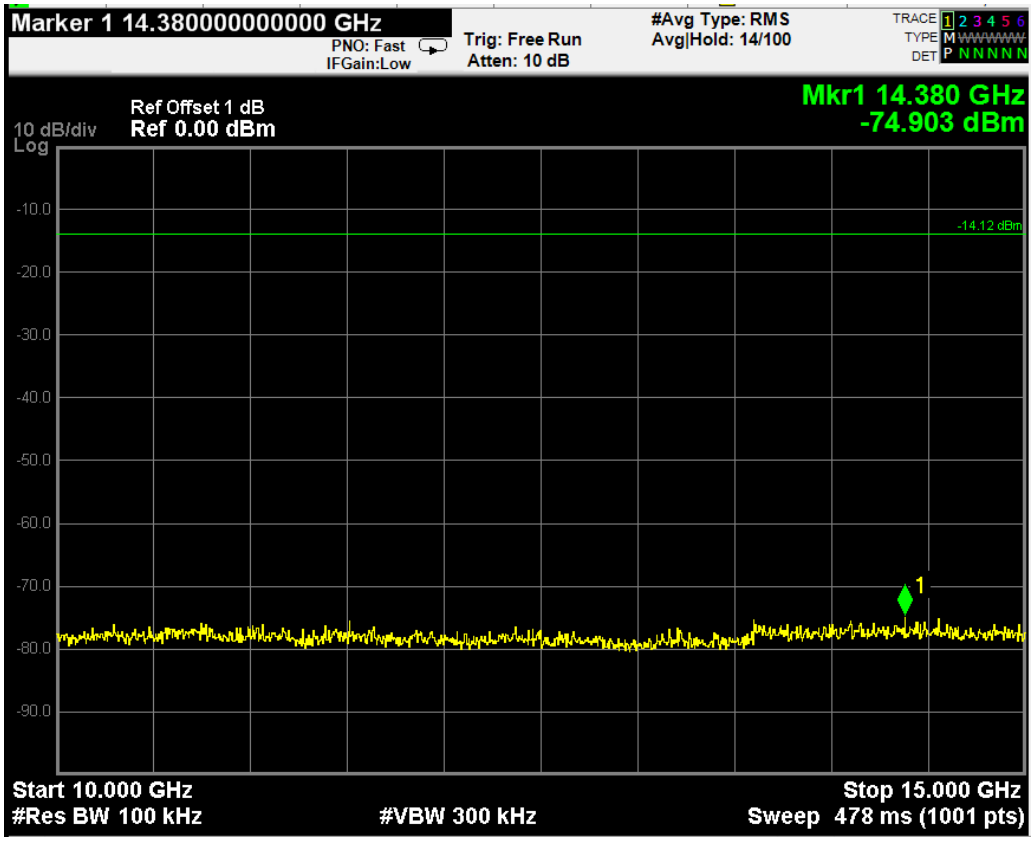
802.11b Ch 01 (2412 MHz)

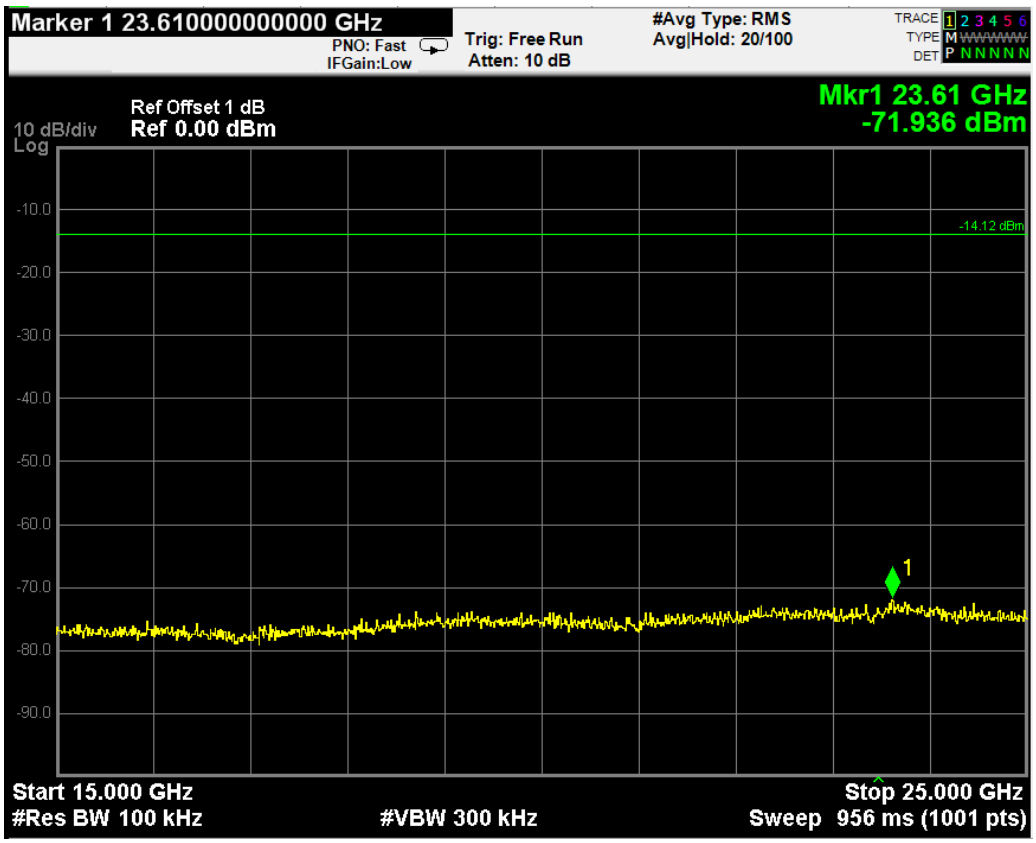




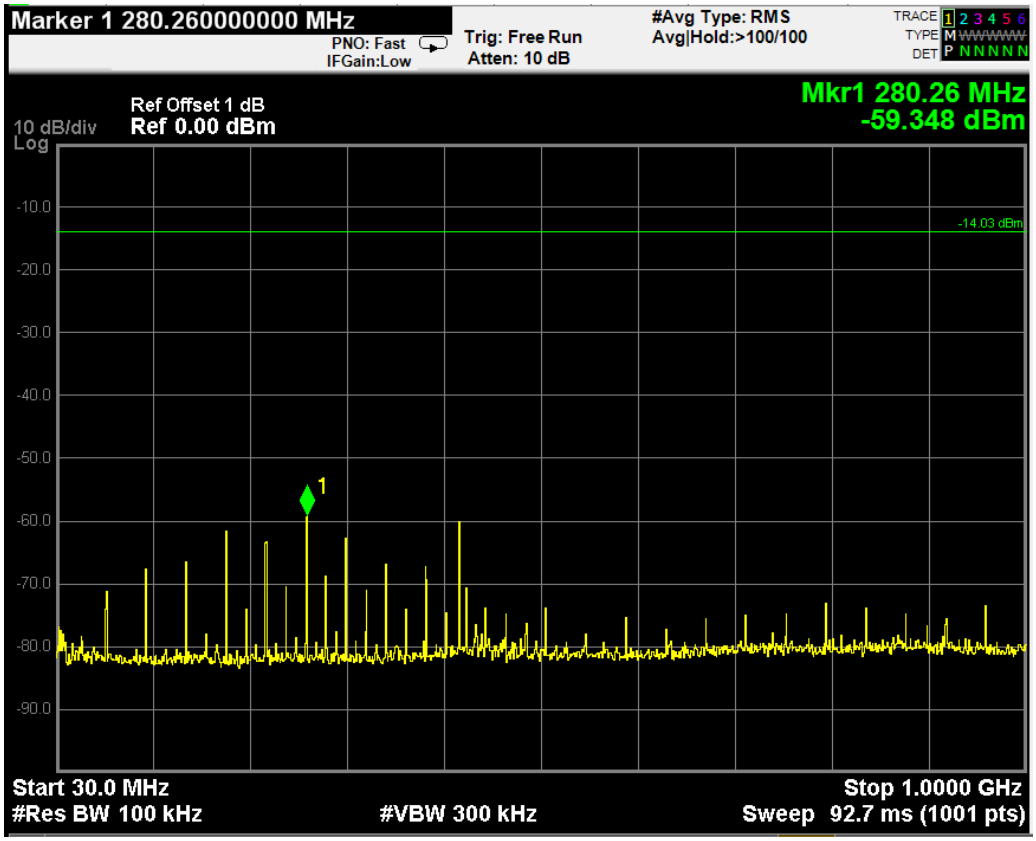
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.412 GHz	5.879 dBm			
2	N	1	f	4.824 GHz	-19.460 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

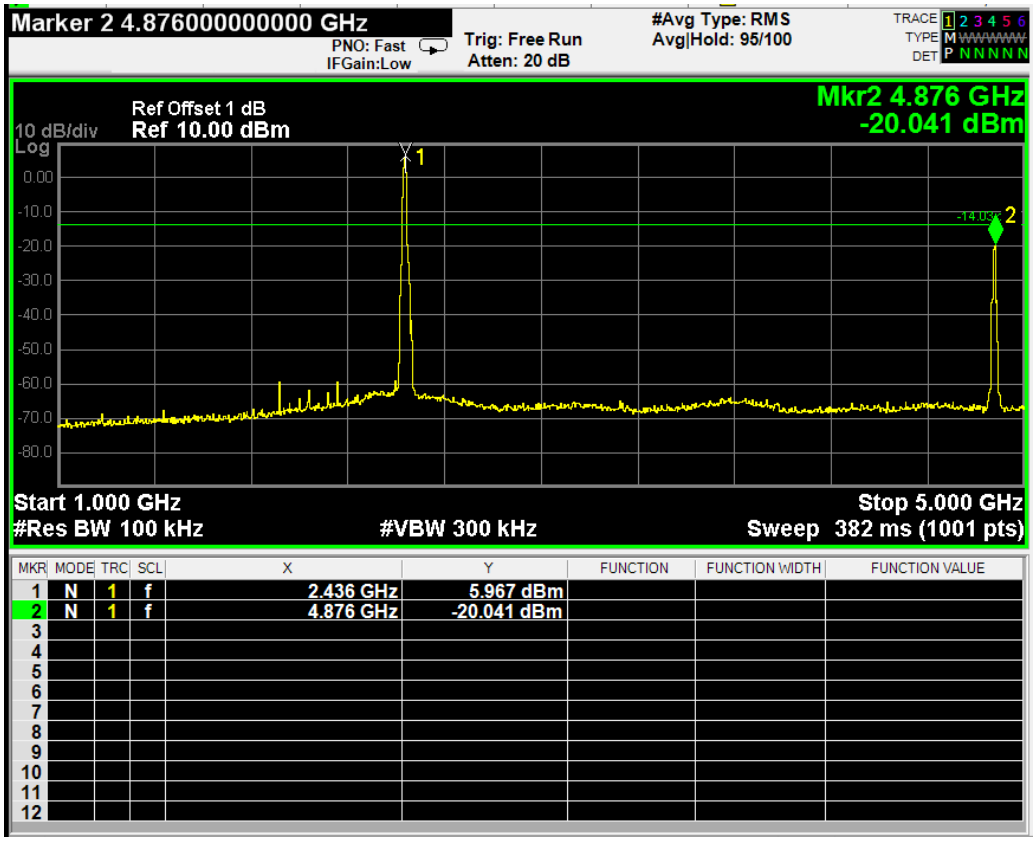

Marker 1 7.235000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 12/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 7.235 GHz
-39.950 dBm
-14.12 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 478 ms (1001 pts)


Marker 1 14.380000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 14/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 14.380 GHz
-74.903 dBm
-14.12 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 478 ms (1001 pts)

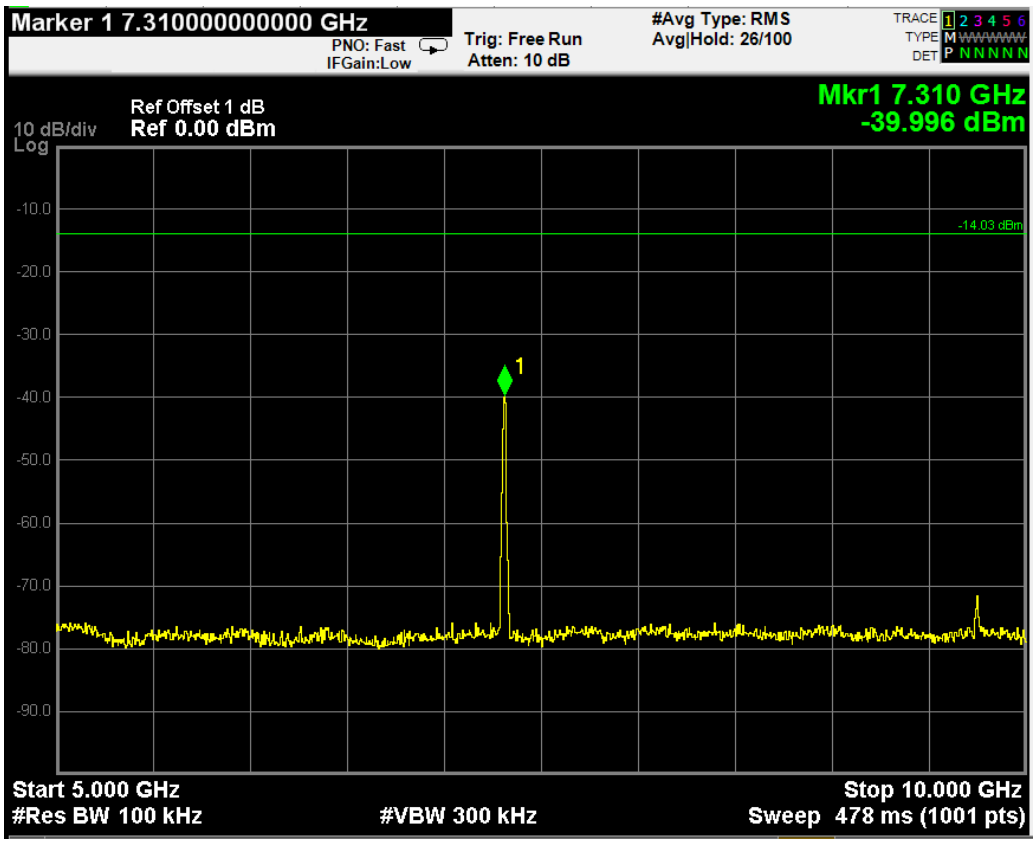

Marker 1 23.610000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 20/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 23.61 GHz
-71.936 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-14.12 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 956 ms (1001 pts)

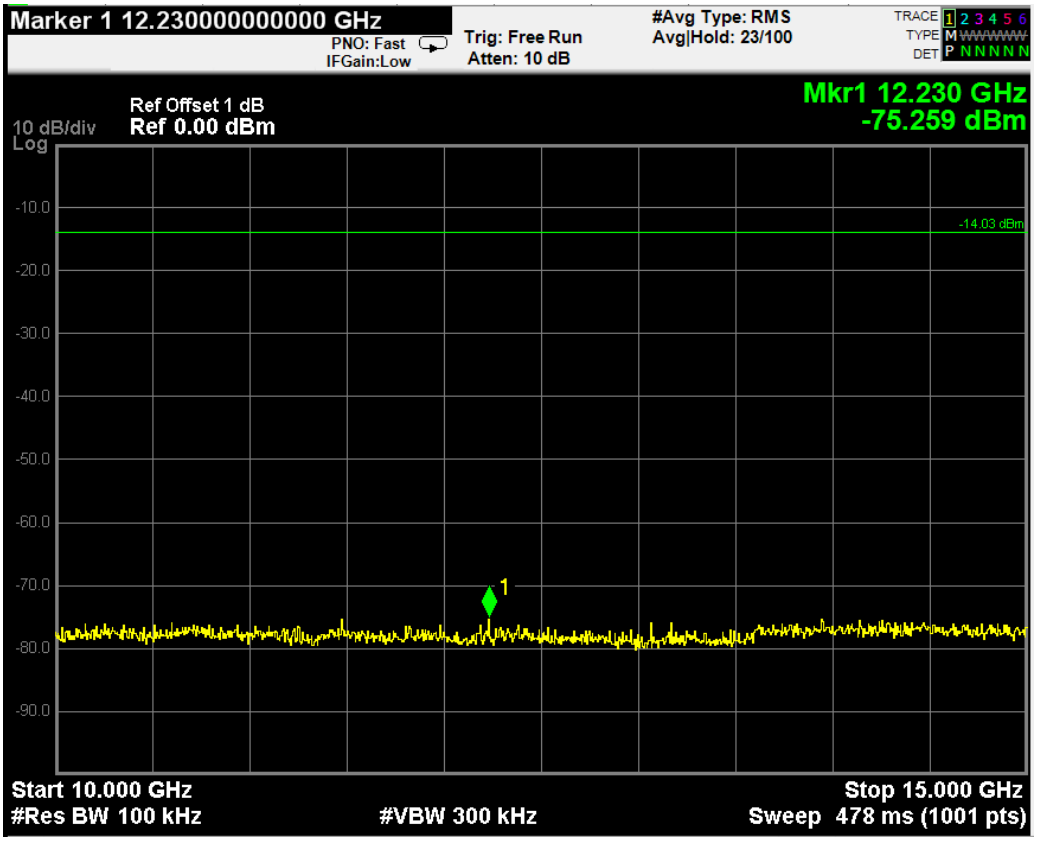
802.11b Ch 06 (2437 MHz)

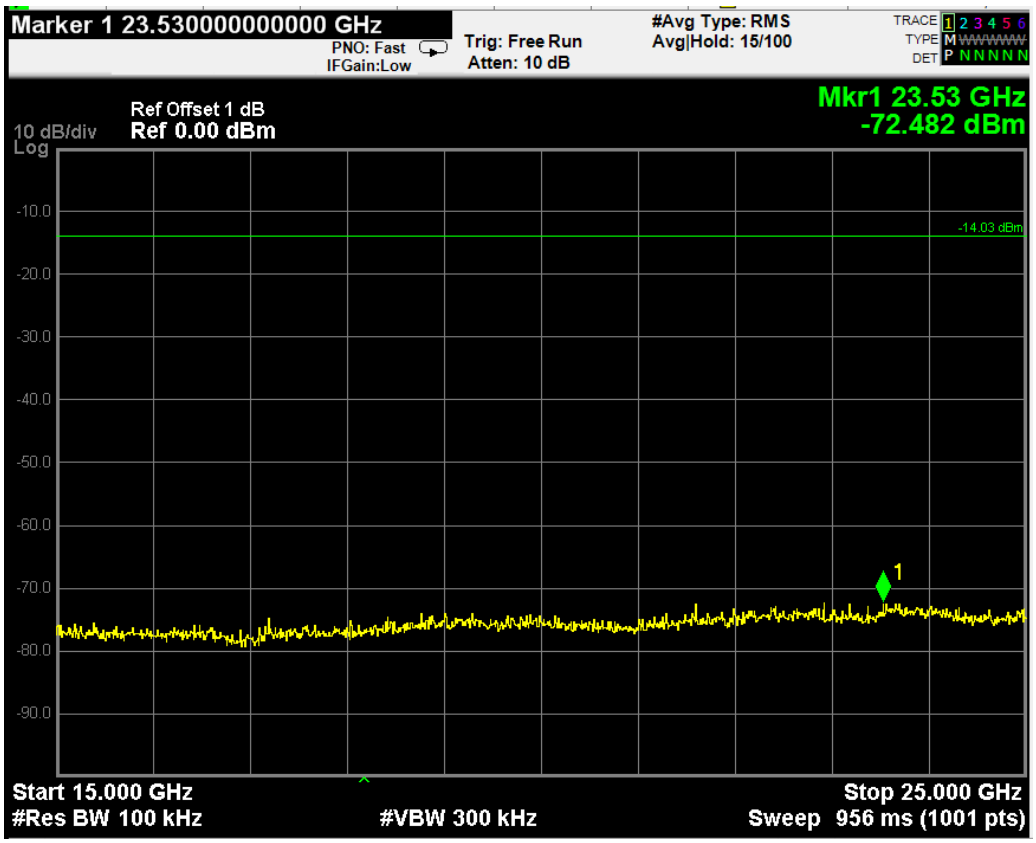




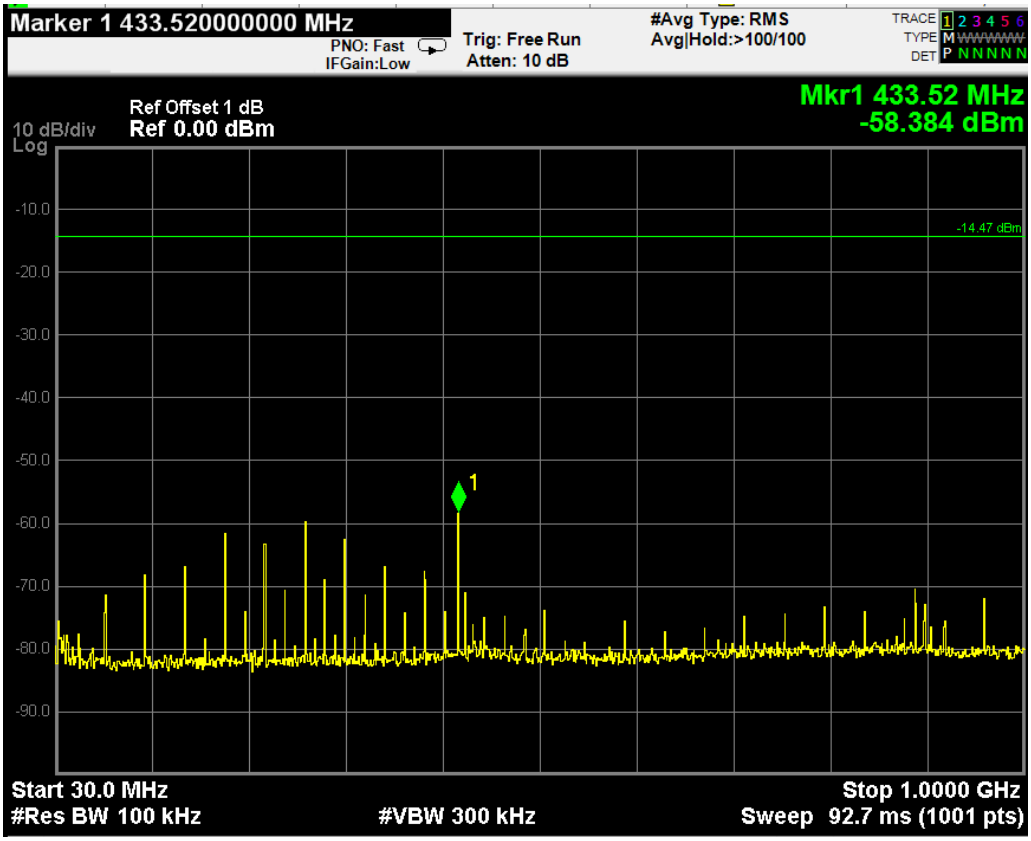
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.436 GHz	5.967 dBm			
2	N	1	f	4.876 GHz	-20.041 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

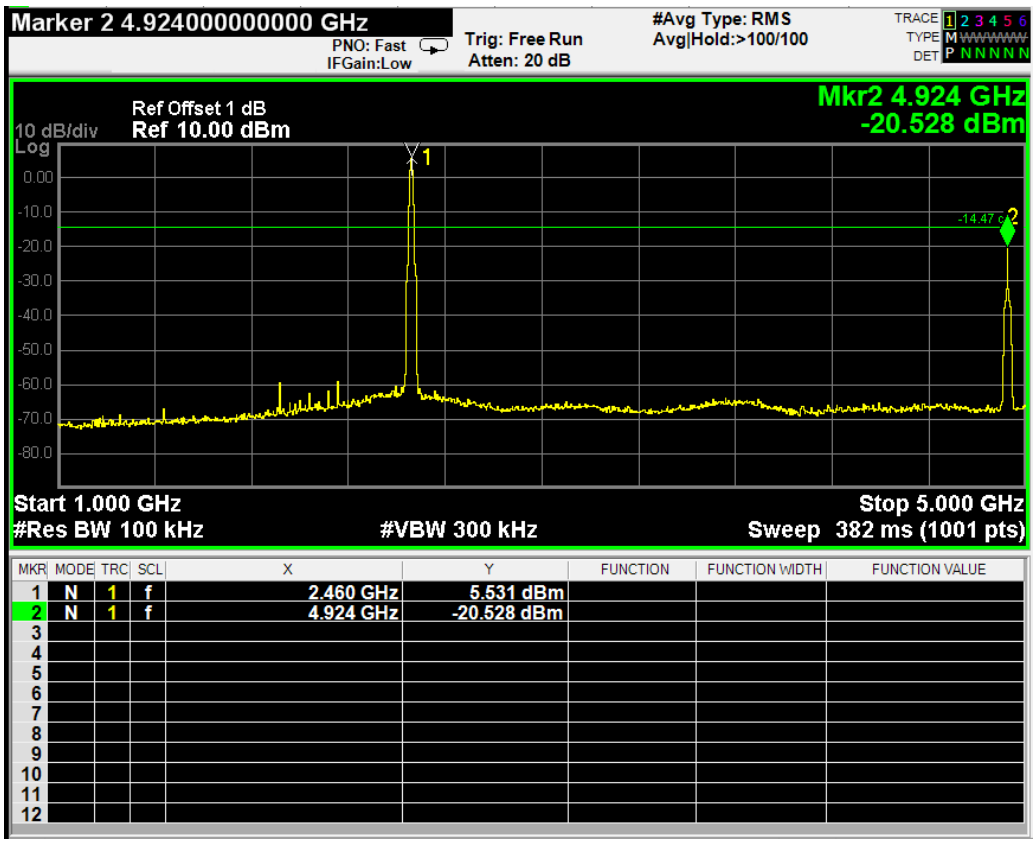

Marker 1 7.310000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 26/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 7.310 GHz
-39.996 dBm
-14.03 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
1
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 478 ms (1001 pts)


Marker 1 12.230000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 23/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 12.230 GHz
-75.259 dBm
-14.03 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
1
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 478 ms (1001 pts)

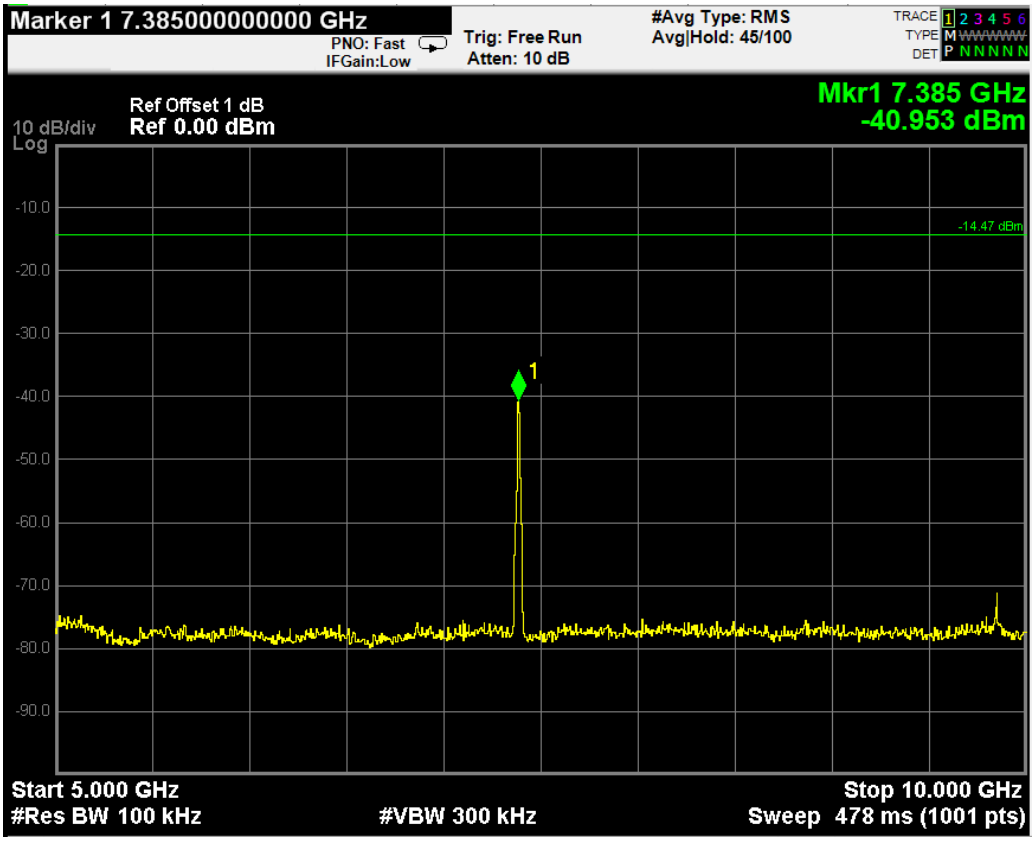

Marker 1 23.530000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 15/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 23.53 GHz
-72.482 dBm
-14.03 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 956 ms (1001 pts)

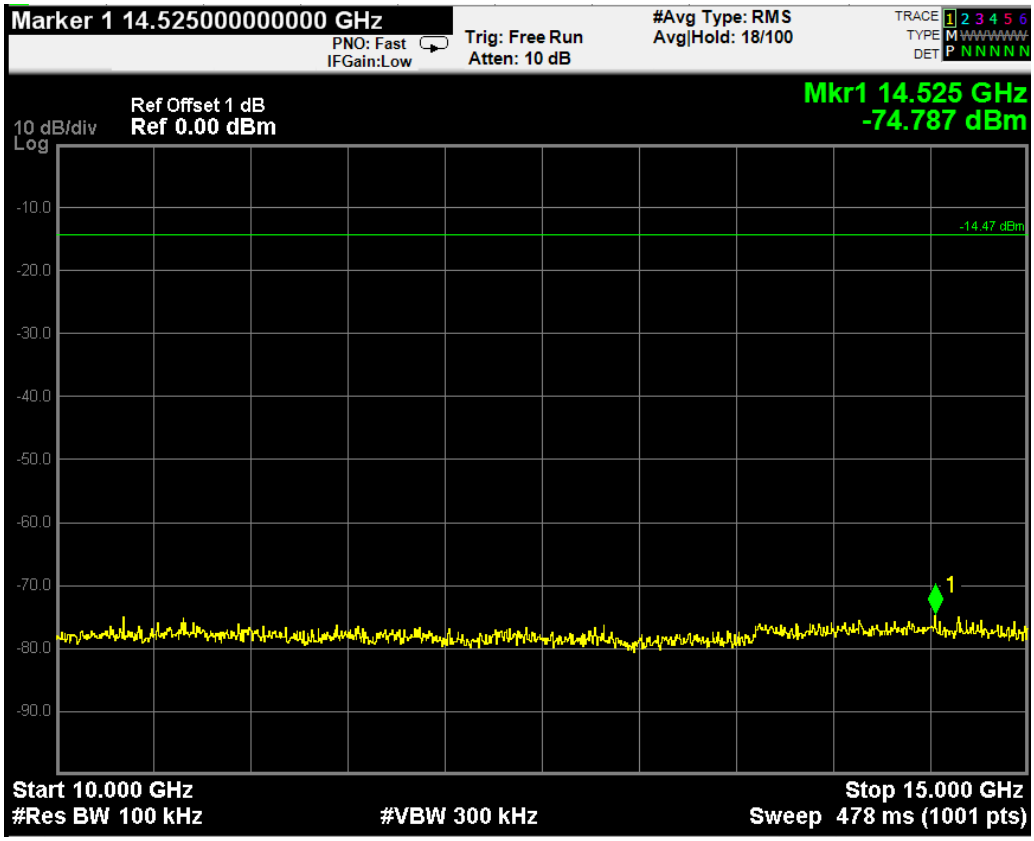
802.11b Ch 11 (2462 MHz)

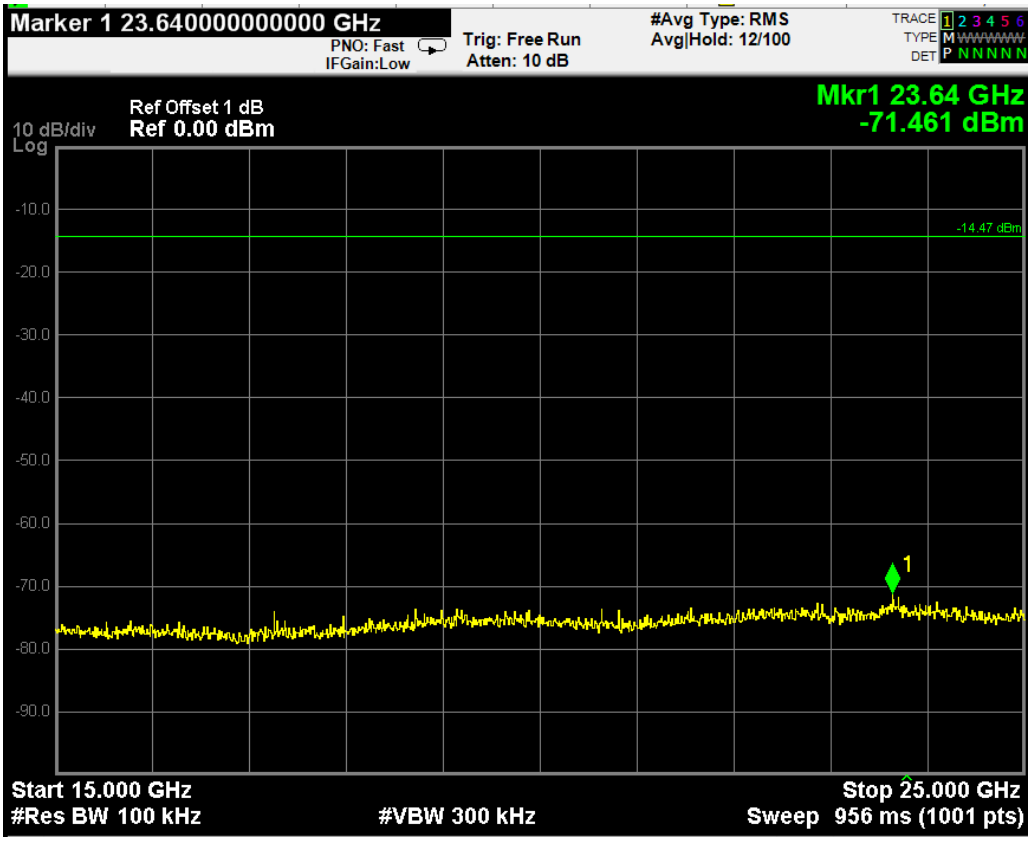




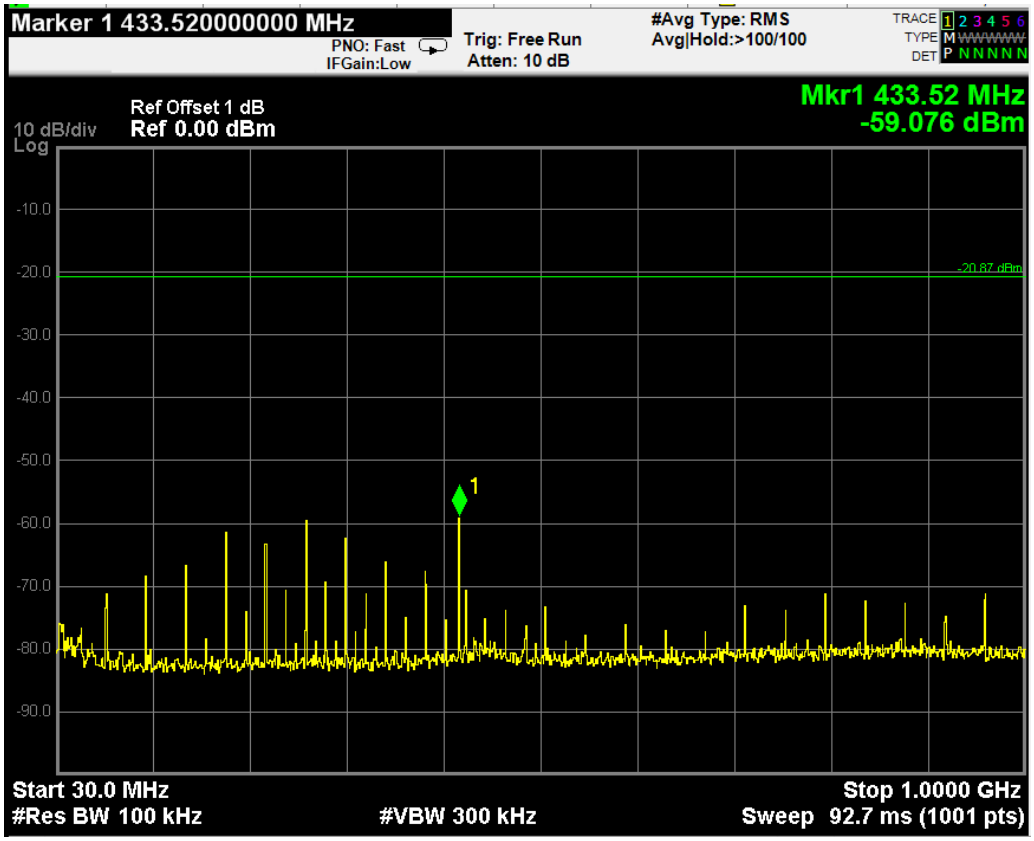
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.460 GHz	5.531 dBm			
2	N	1	f	4.924 GHz	-20.528 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

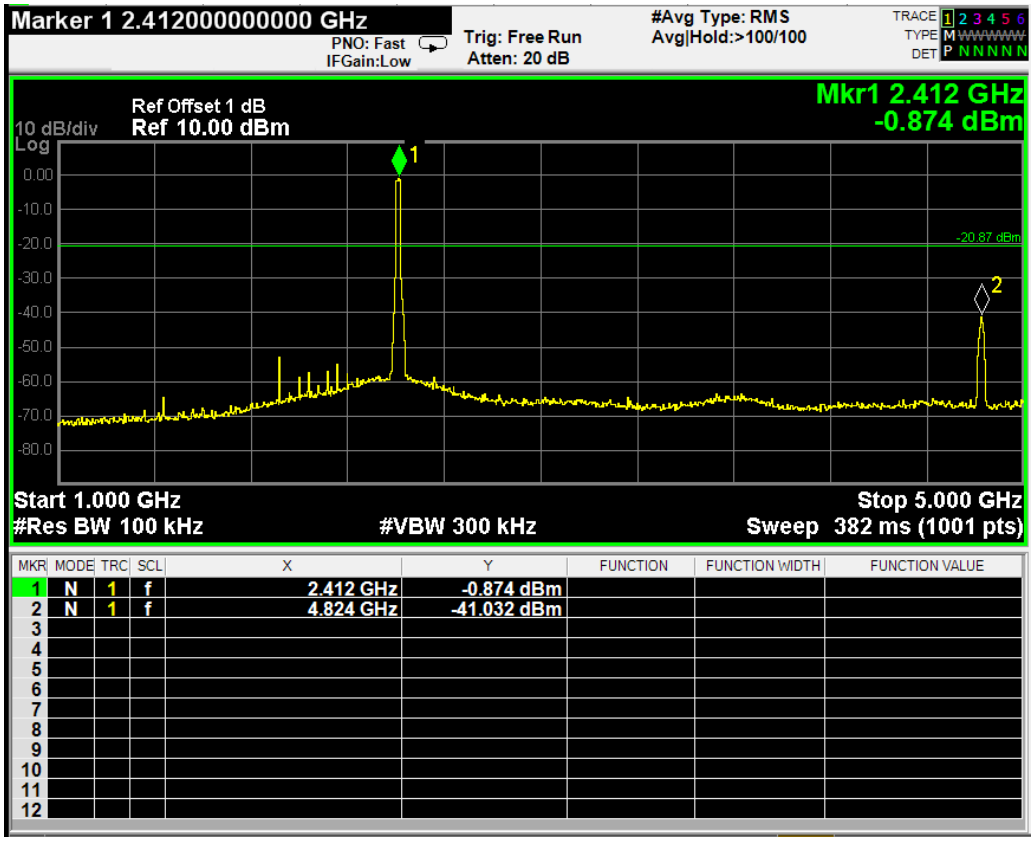

Marker 1 7.385000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 45/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 7.385 GHz
-40.953 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-14.47 dBm
1
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 478 ms (1001 pts)


Marker 1 14.525000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 18/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 14.525 GHz
-74.787 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-14.47 dBm
1
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 478 ms (1001 pts)

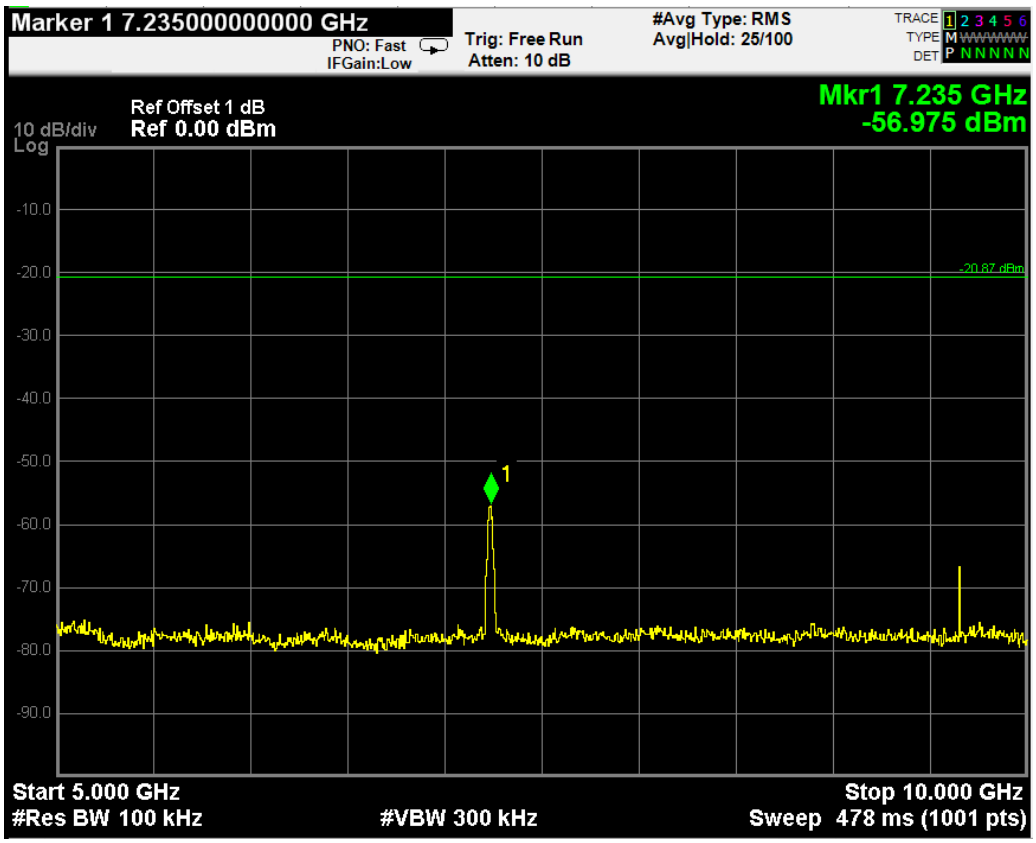

Marker 1 23.640000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 12/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 23.64 GHz
-71.461 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-14.47 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 956 ms (1001 pts)

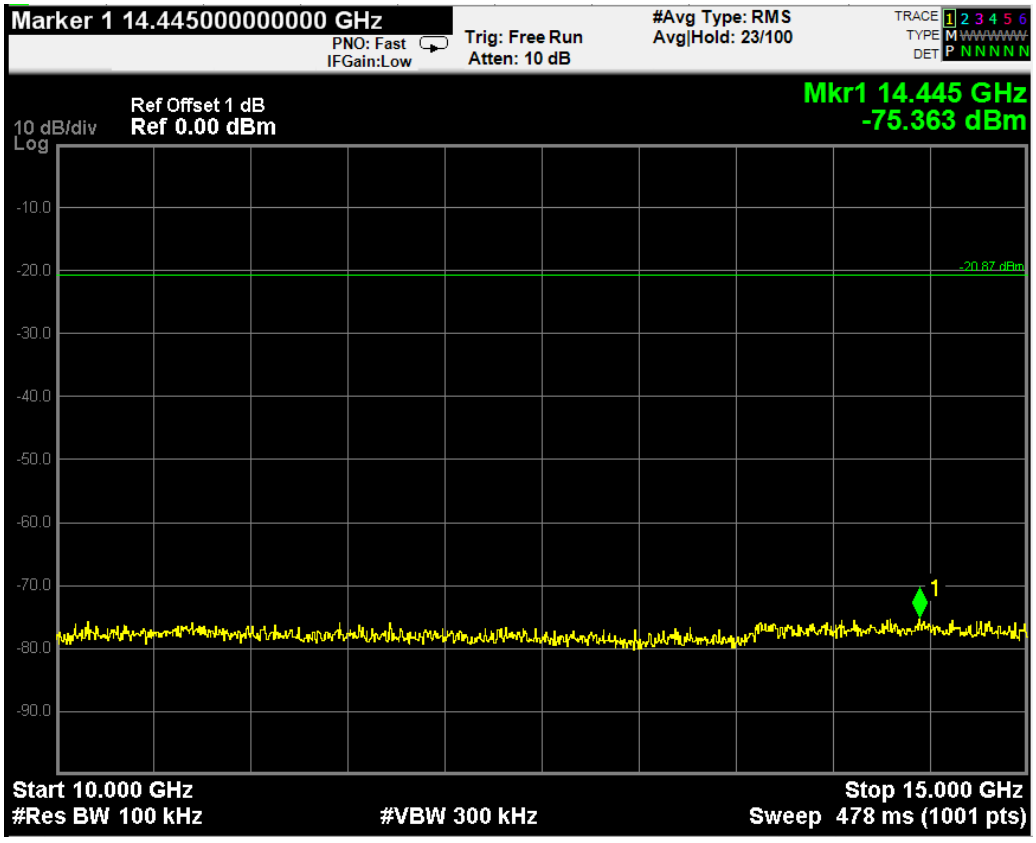
802.11g Ch 01 (2412 MHz)

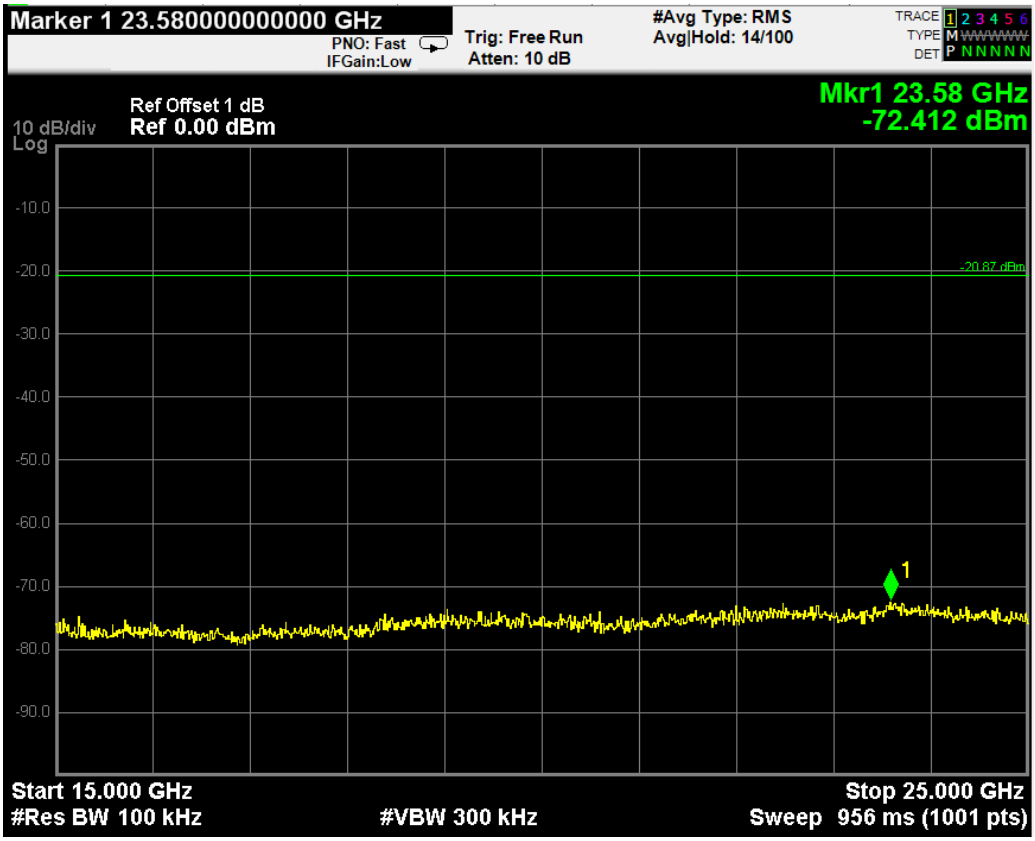




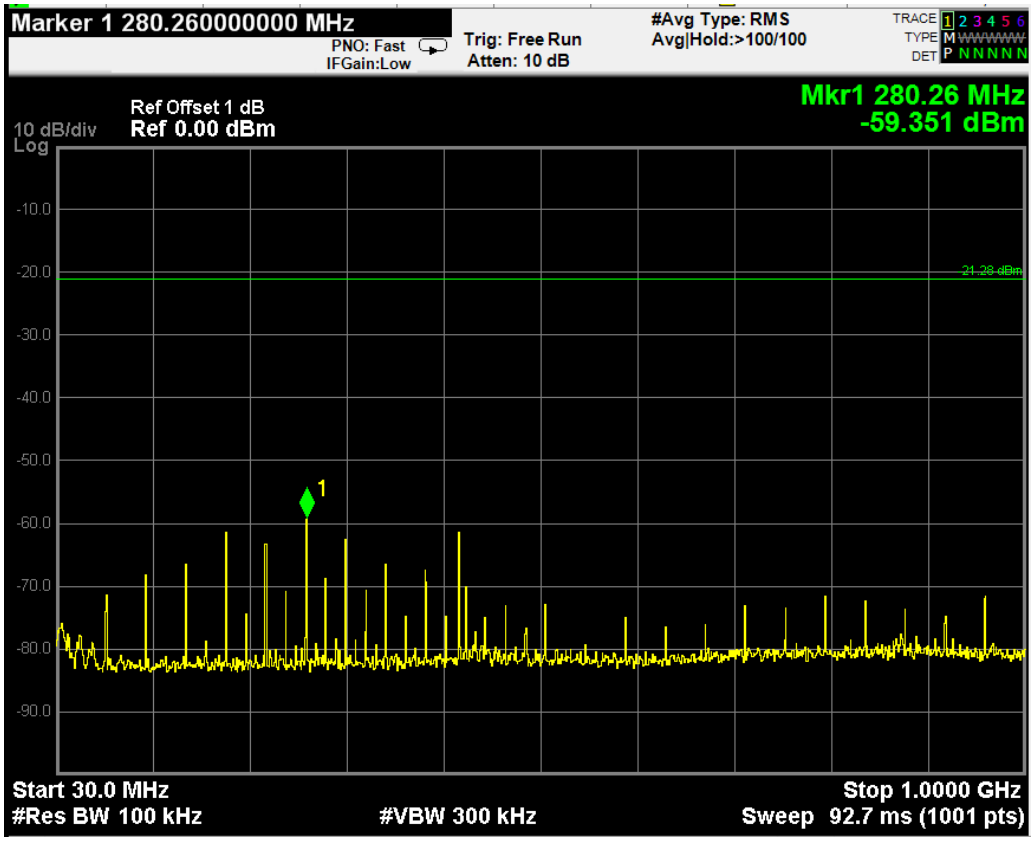
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.412 GHz	-0.874 dBm			
2	N	1	f	4.824 GHz	-41.032 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

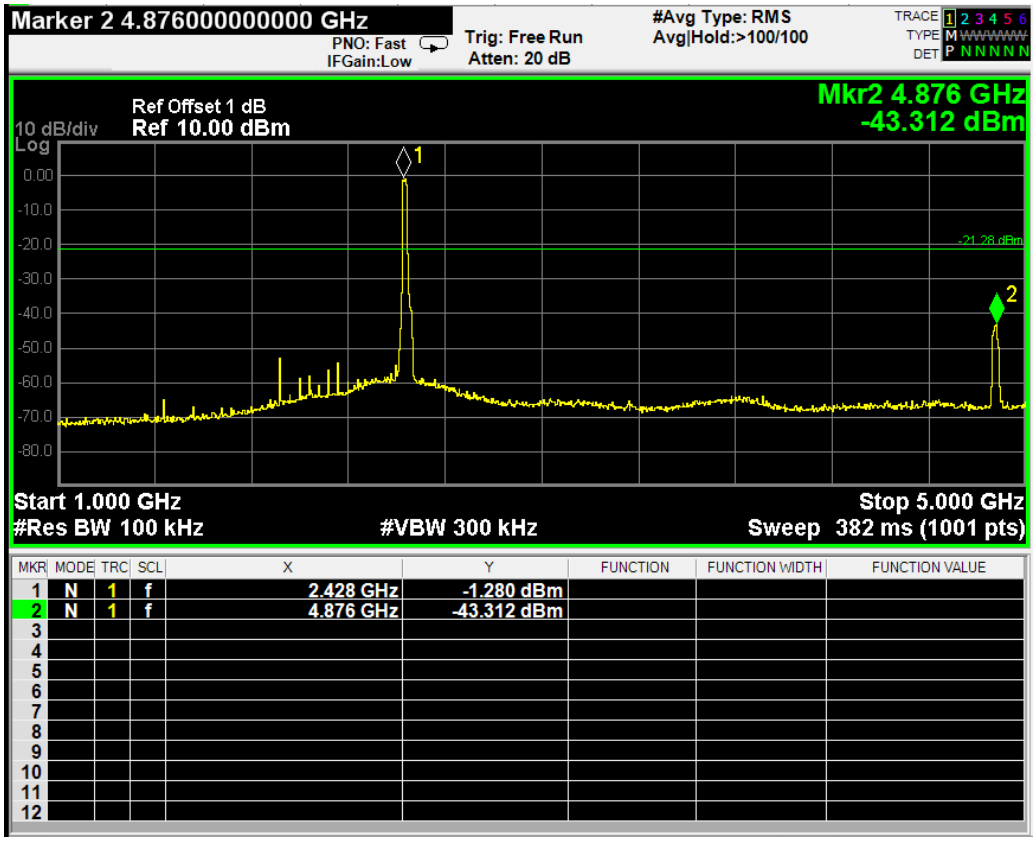

Marker 1 7.235000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 25/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 7.235 GHz
-56.975 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-20.87 dBm
1
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 478 ms (1001 pts)

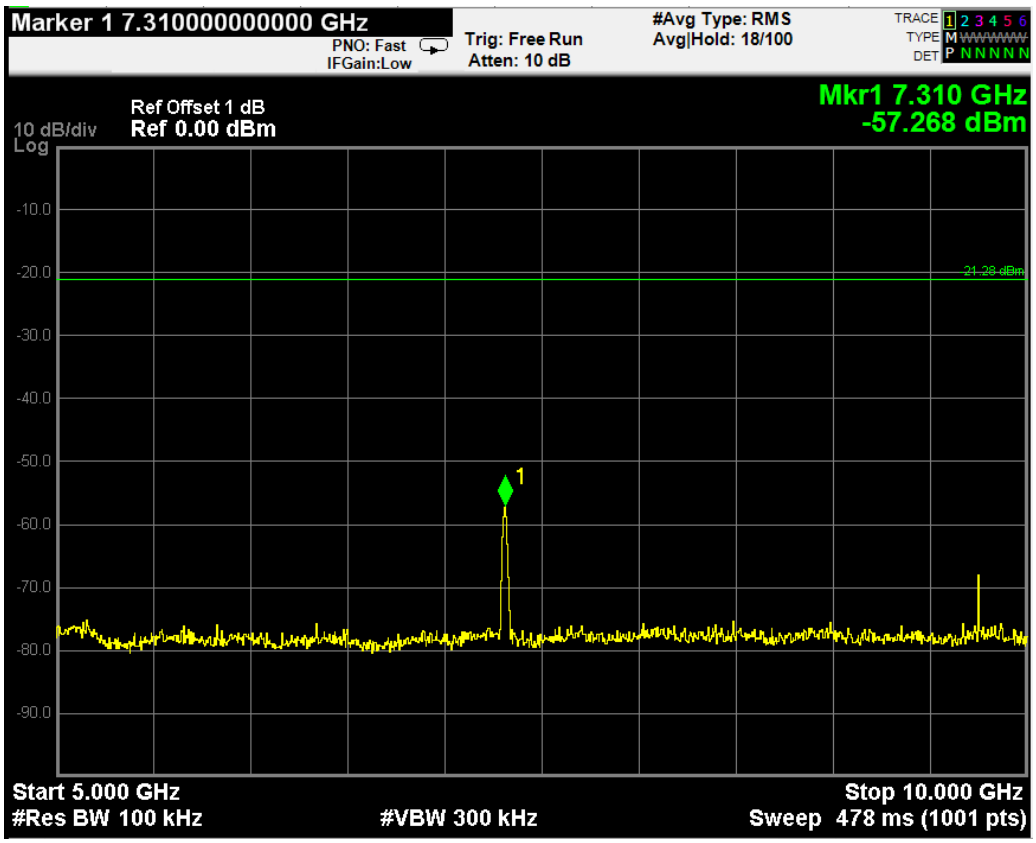

Marker 1 14.445000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 23/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 14.445 GHz
-75.363 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-20.87 dBm
1
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 478 ms (1001 pts)

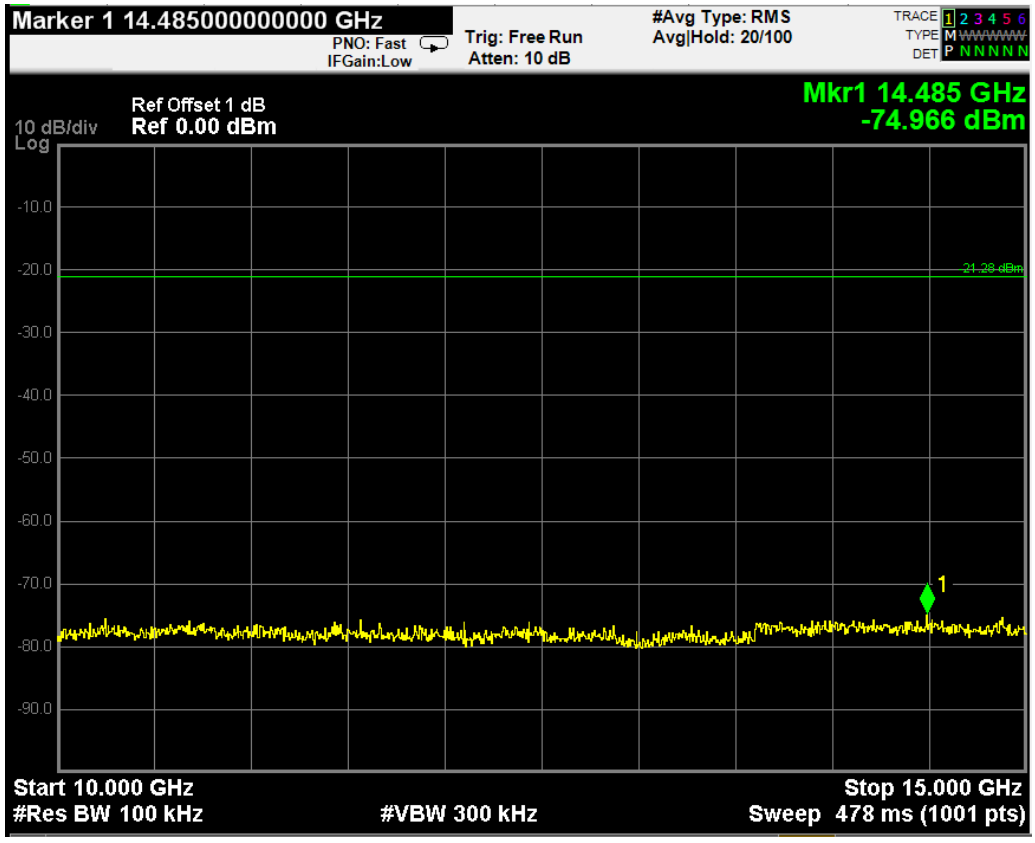

Marker 1 23.580000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 14/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 23.58 GHz
-72.412 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-20.67 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 956 ms (1001 pts)

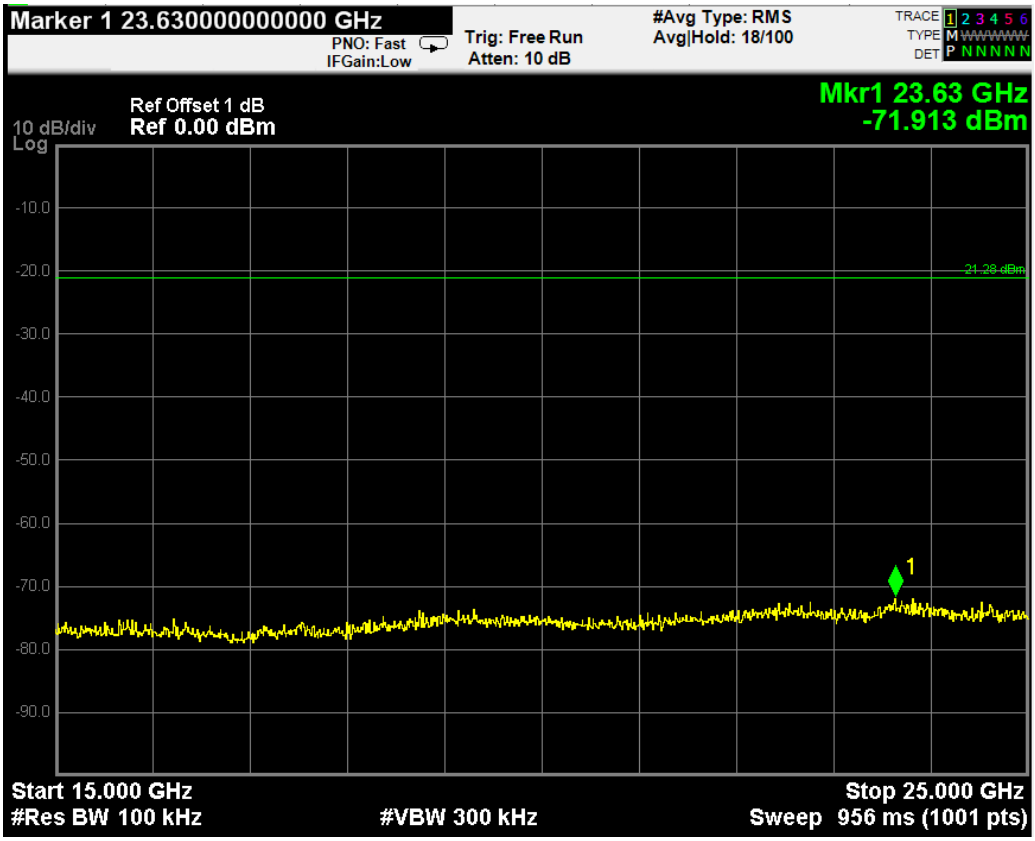
802.11g Ch 06 (2437 MHz)



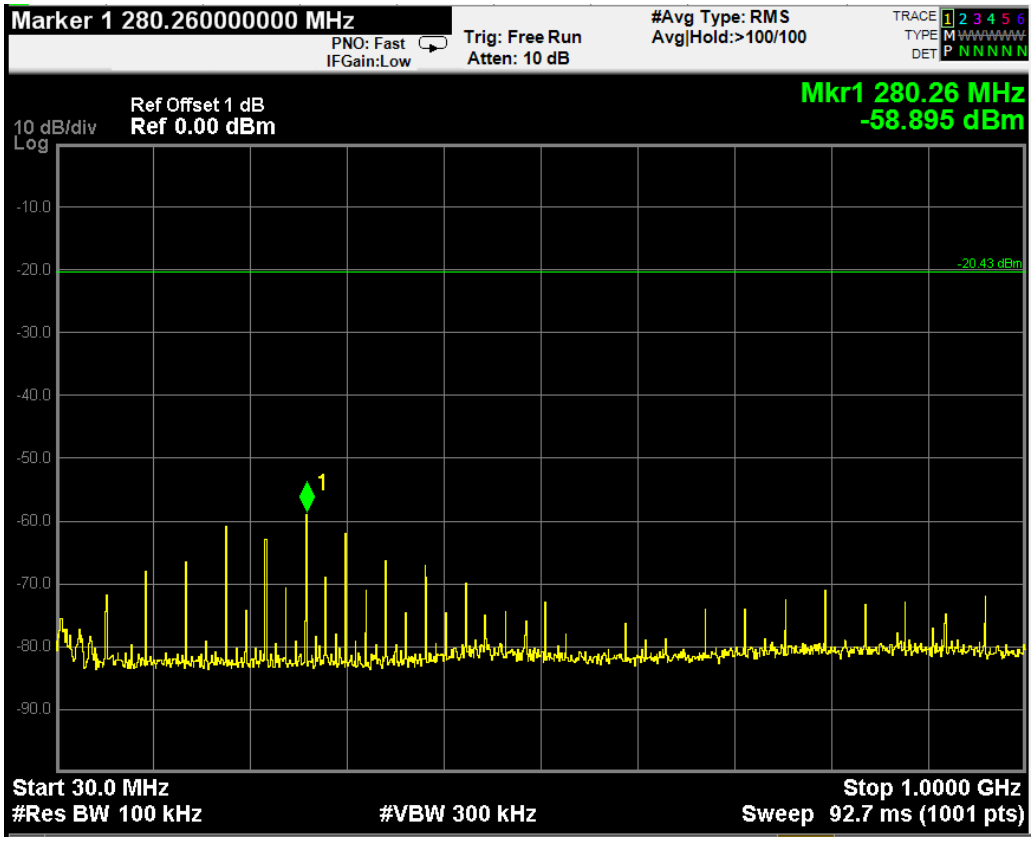


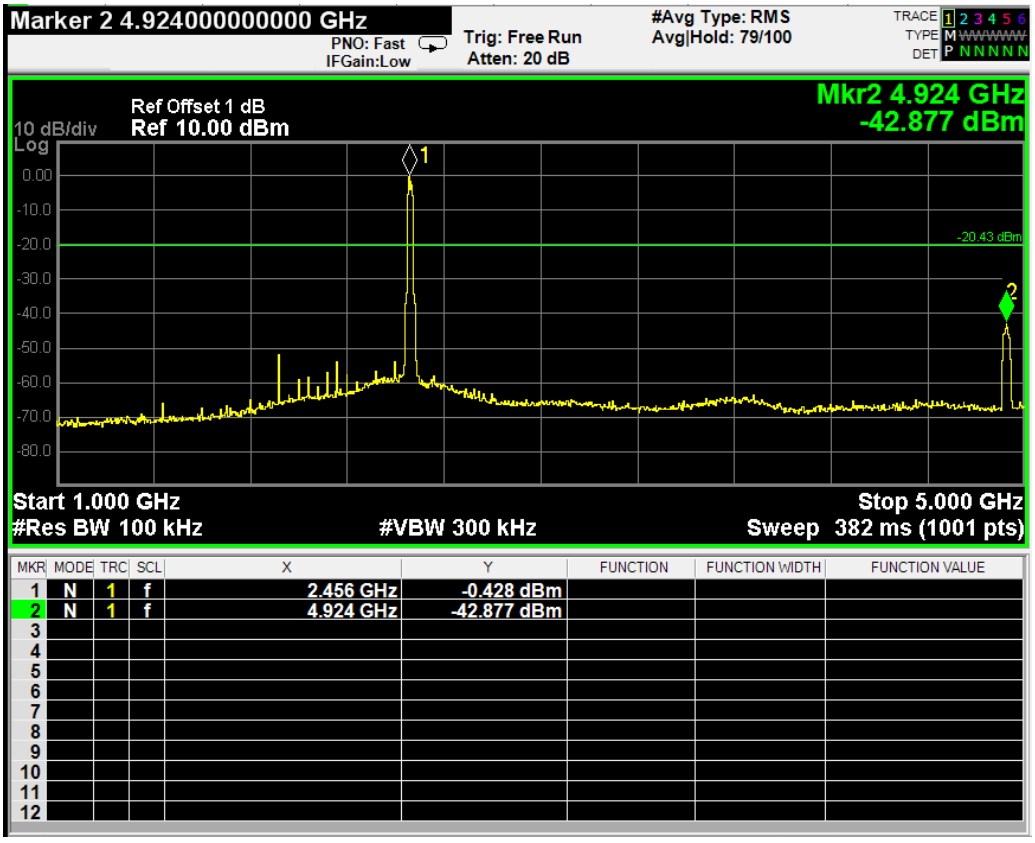

Marker 1 7.310000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 18/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 7.310 GHz
-57.268 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
21.28 dBm
1
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 478 ms (1001 pts)


Marker 1 14.485000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 20/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 14.485 GHz
-74.966 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
21.28 dBm
1
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 478 ms (1001 pts)

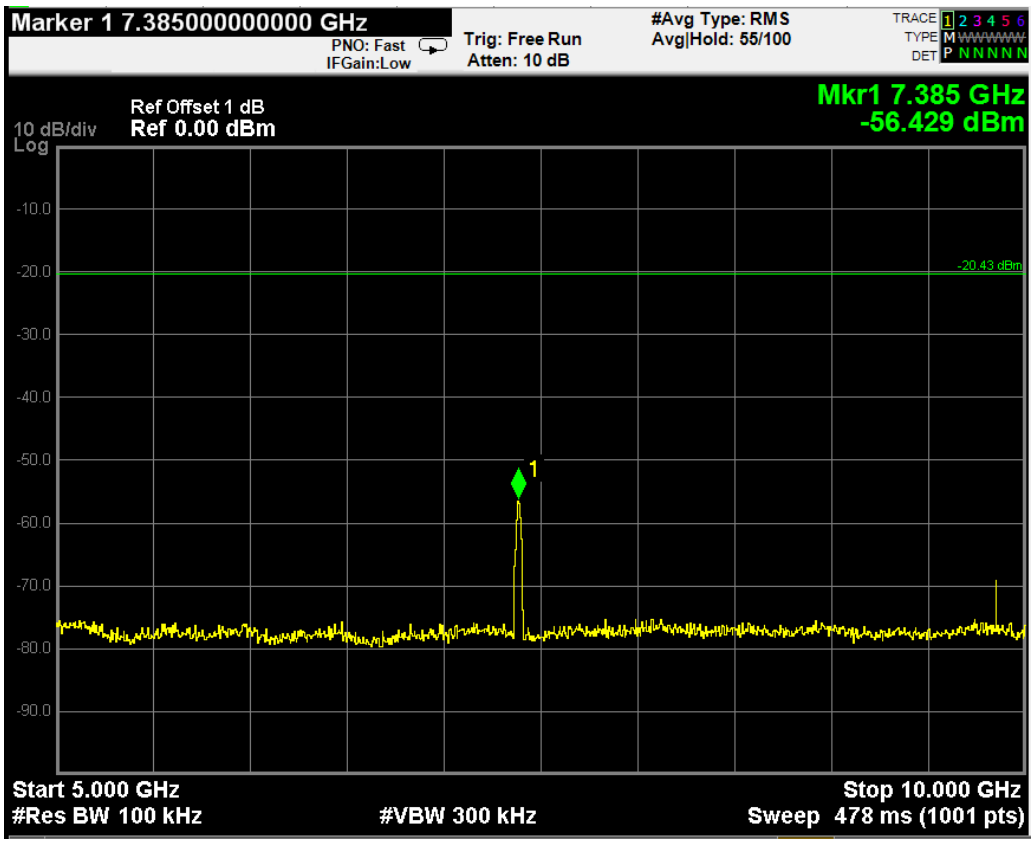

Marker 1 23.630000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 18/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 23.63 GHz
-71.913 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
21.28 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 956 ms (1001 pts)

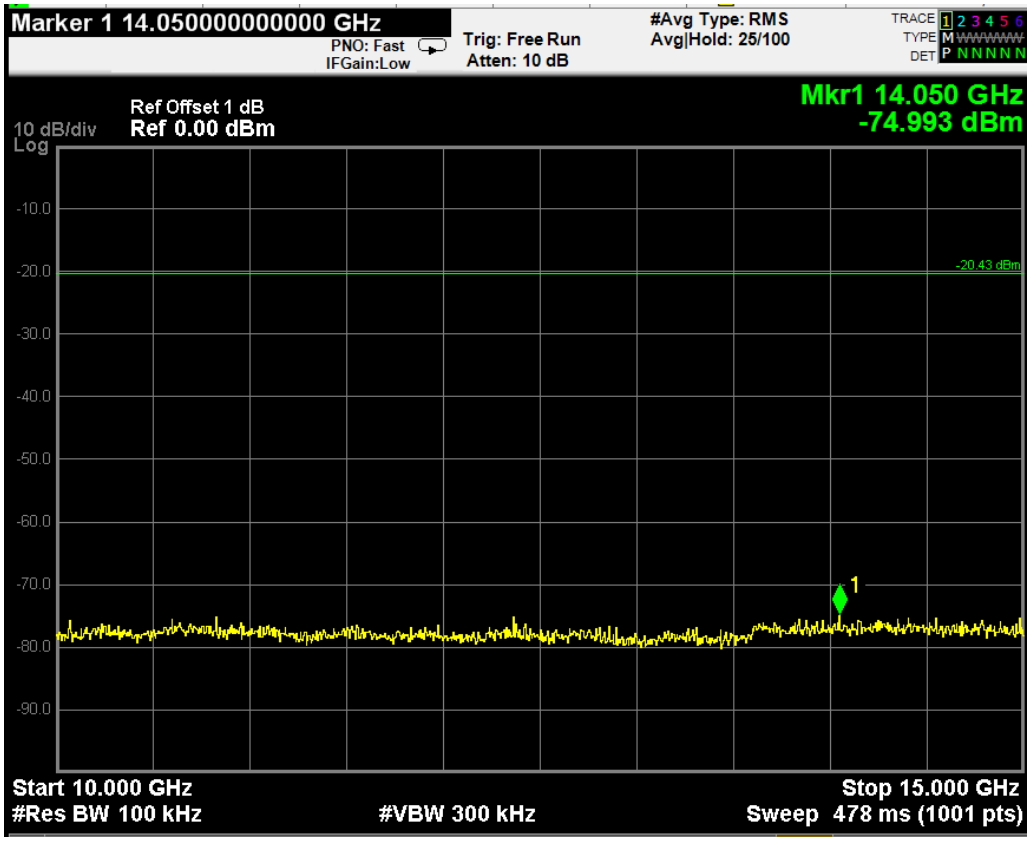
802.11g Ch 11 (2462 MHz)

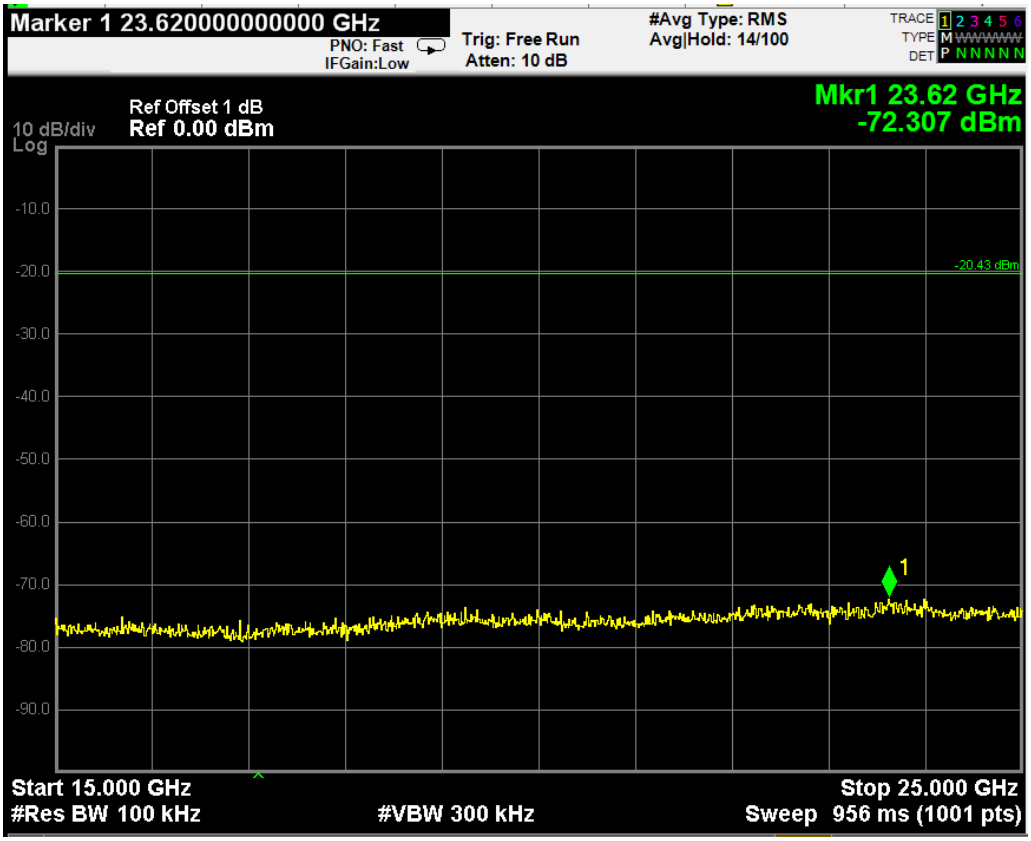




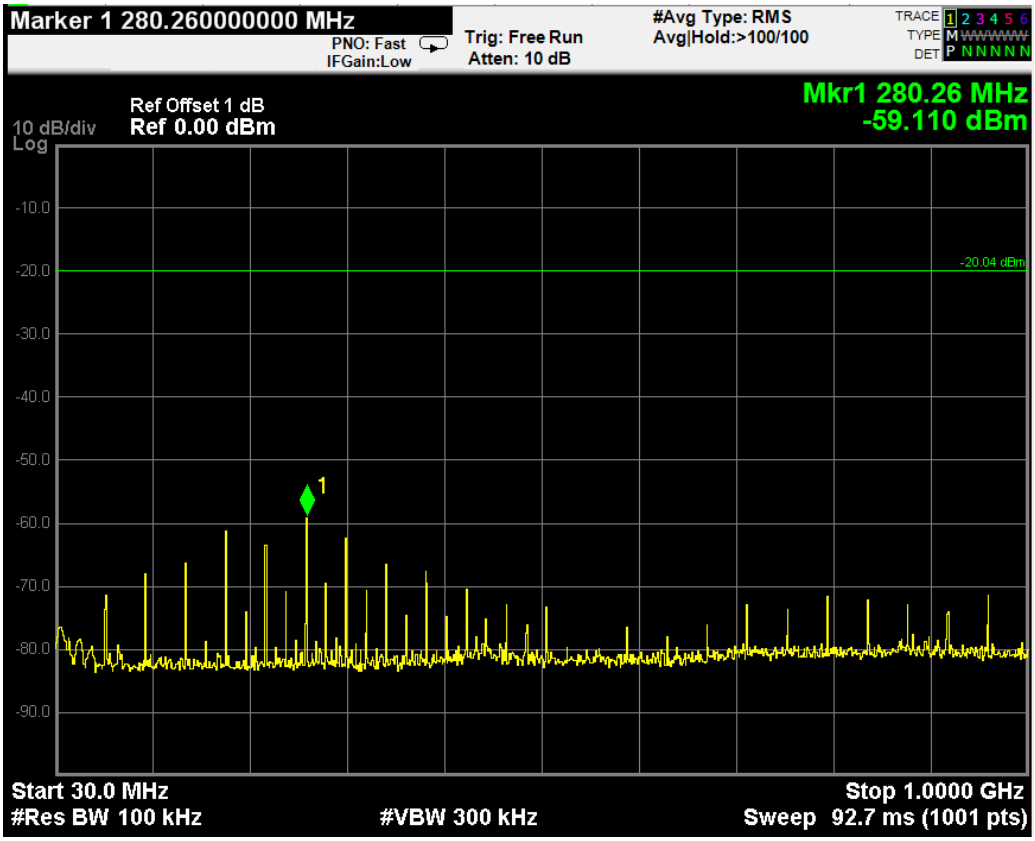
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.456 GHz	-0.428 dBm			
2	N	1	f	4.924 GHz	-42.877 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

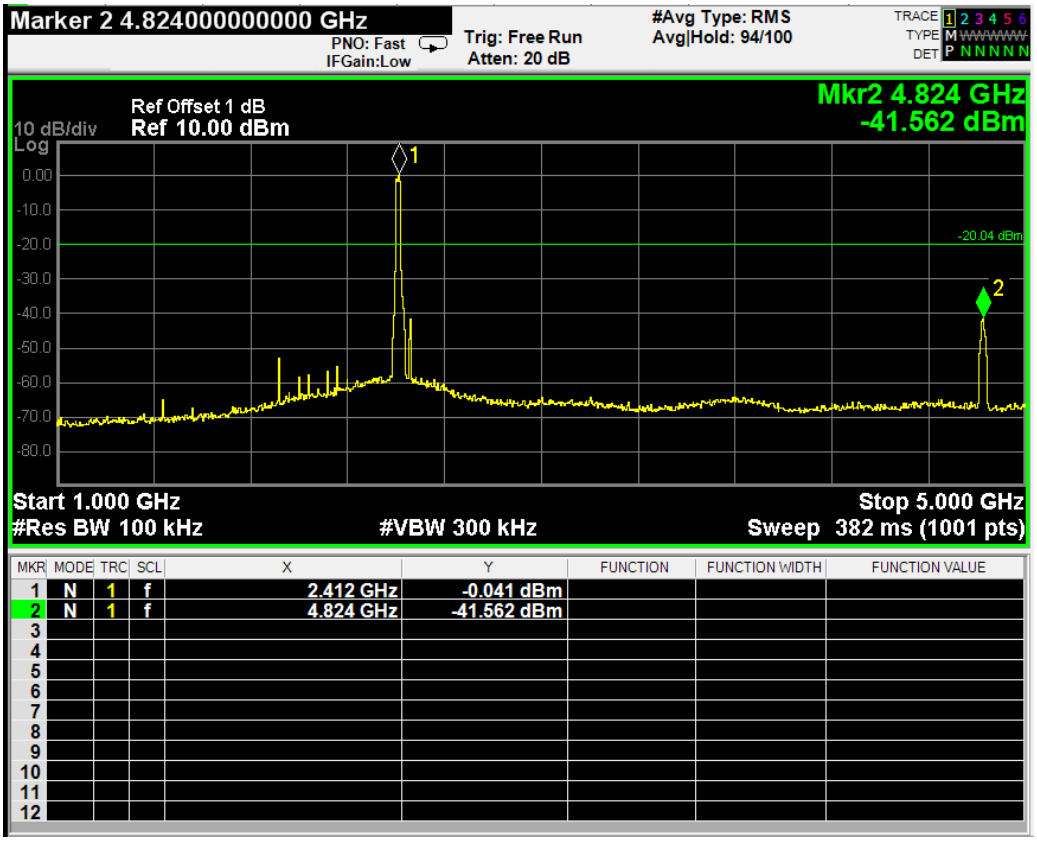

Marker 1 7.385000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 55/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 7.385 GHz
-56.429 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-20.43 dBm
1
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 478 ms (1001 pts)


Marker 1 14.050000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 25/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 14.050 GHz
-74.993 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-20.43 dBm
1
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 478 ms (1001 pts)

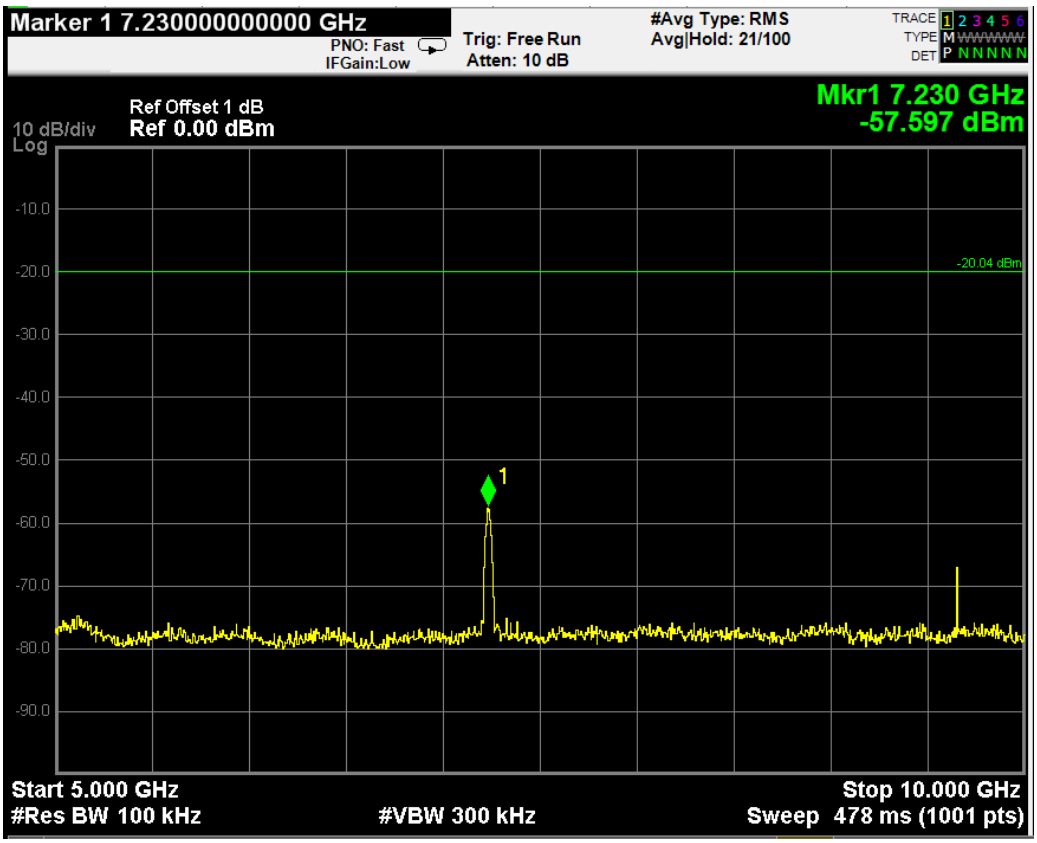

Marker 1 23.620000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 14/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 23.62 GHz
-72.307 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-20.43 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 956 ms (1001 pts)

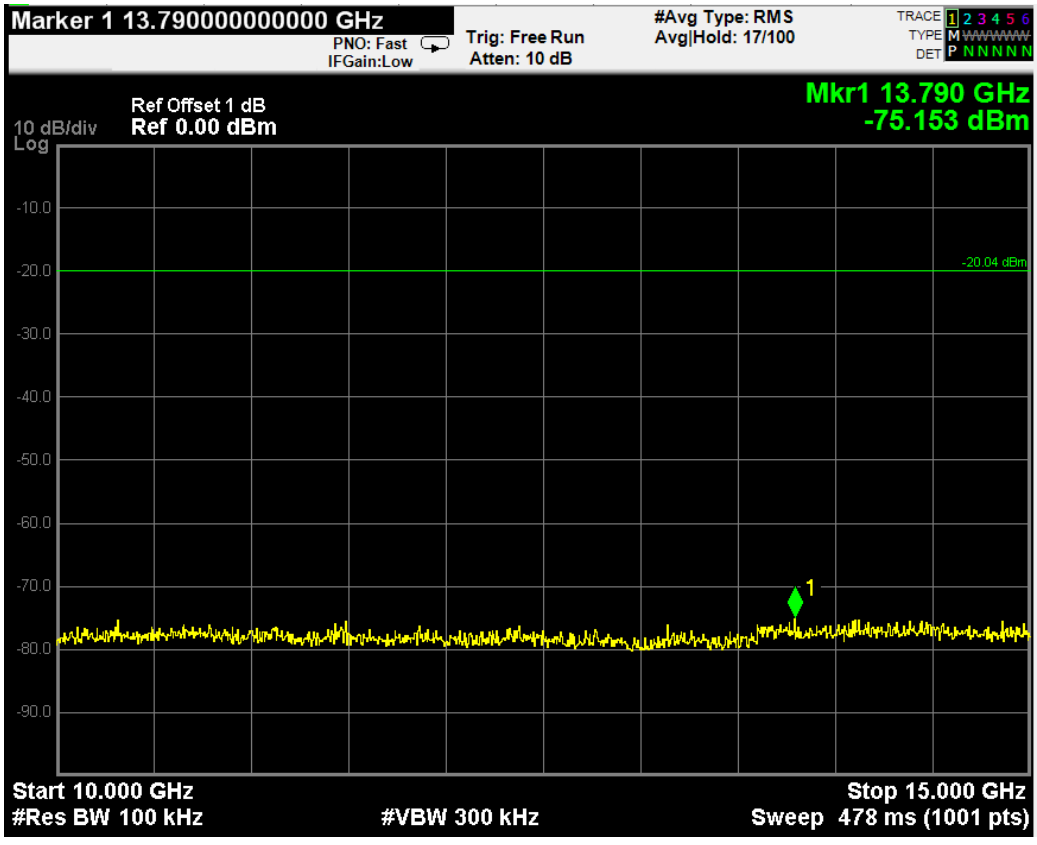
802.11n Ch 01 (2412 MHz)

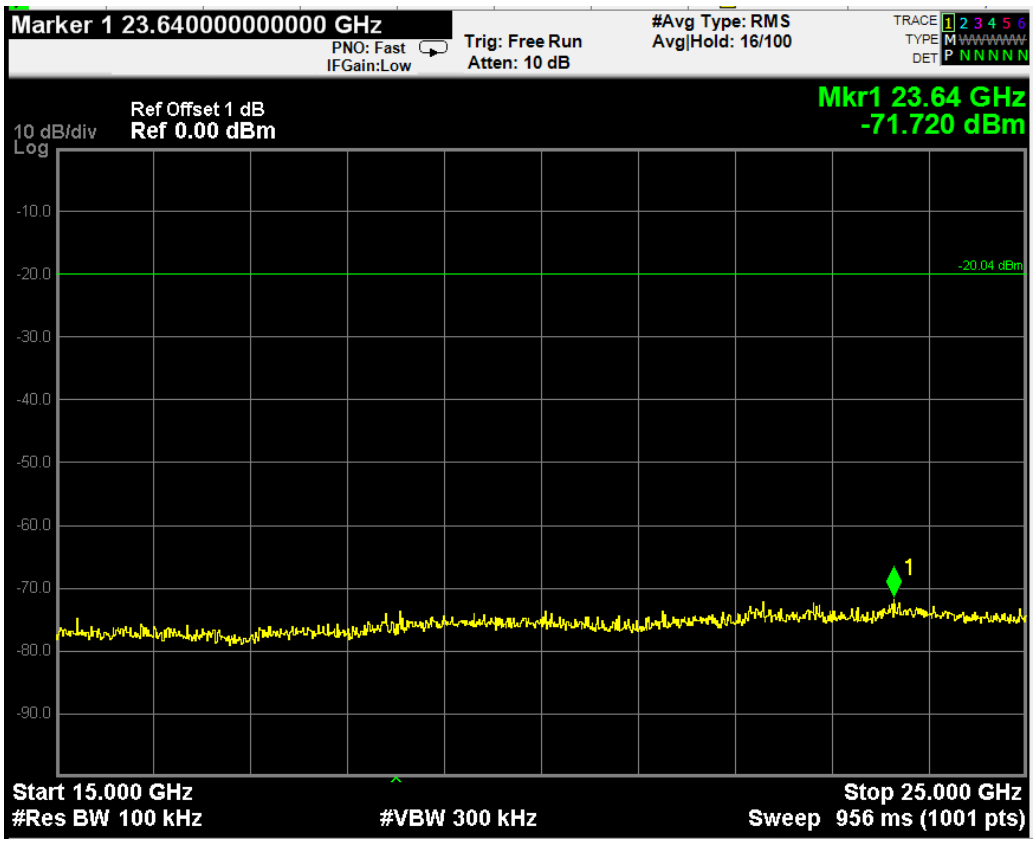




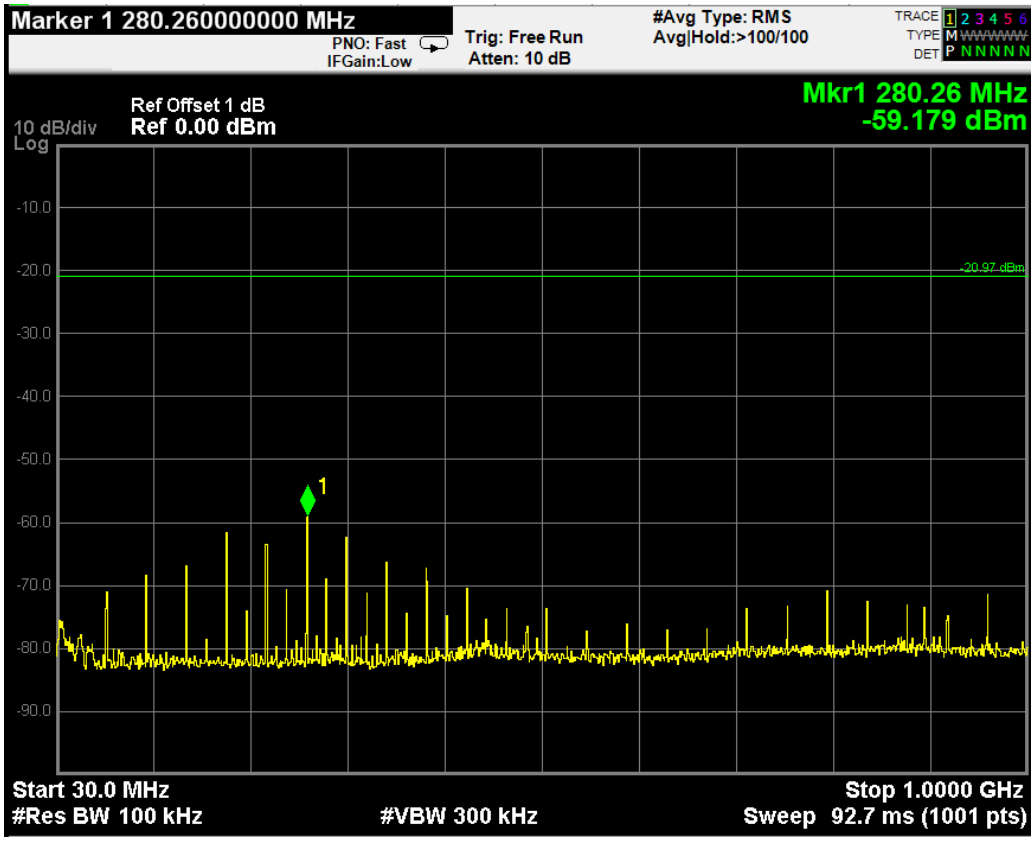
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.412 GHz	-0.041 dBm			
2	N	1	f	4.824 GHz	-41.562 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

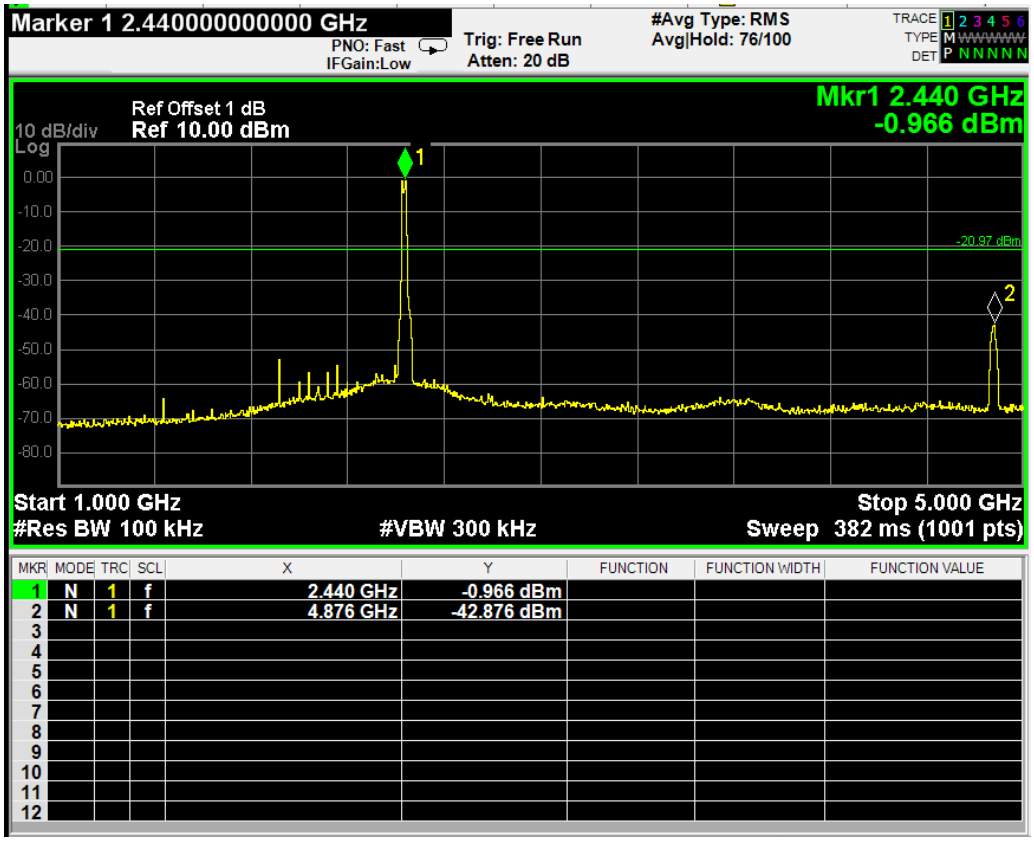

Marker 1 7.230000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 21/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 7.230 GHz
-57.597 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-20.04 dBm
1
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 478 ms (1001 pts)


Marker 1 13.790000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 17/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 13.790 GHz
-75.153 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-20.04 dBm
1
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 478 ms (1001 pts)

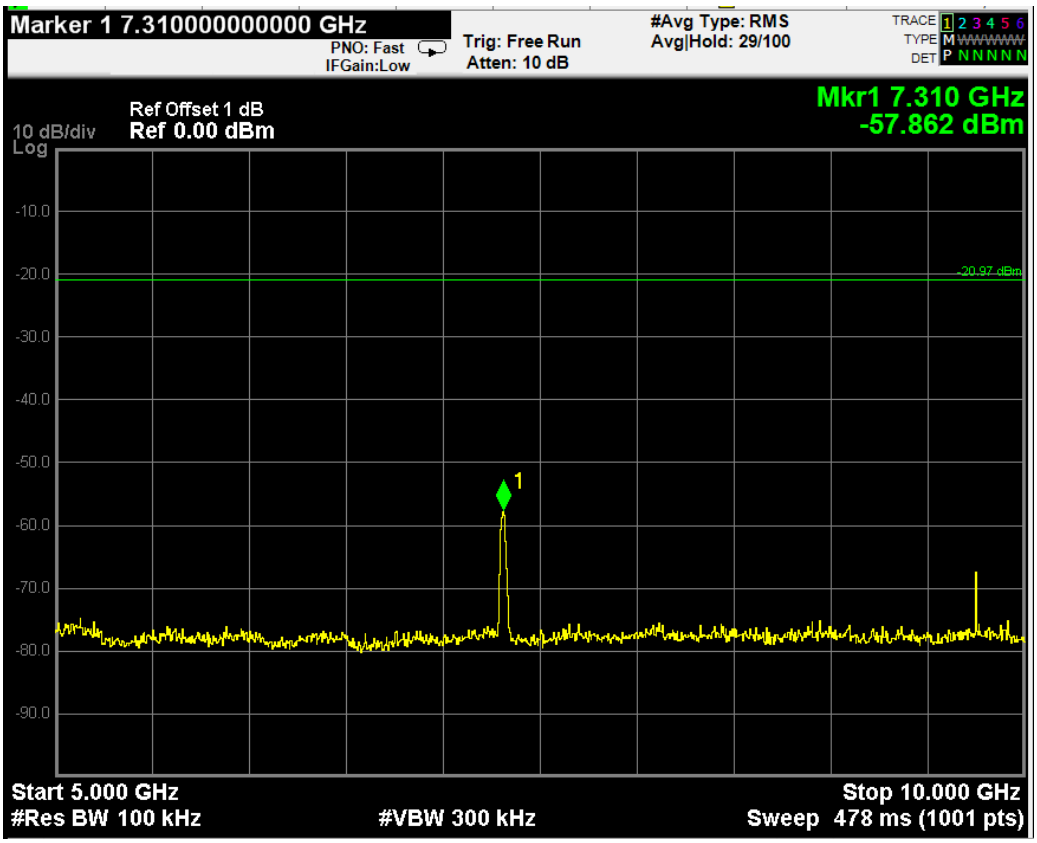

Marker 1 23.640000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 16/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 23.64 GHz
-71.720 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-20.04 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 956 ms (1001 pts)

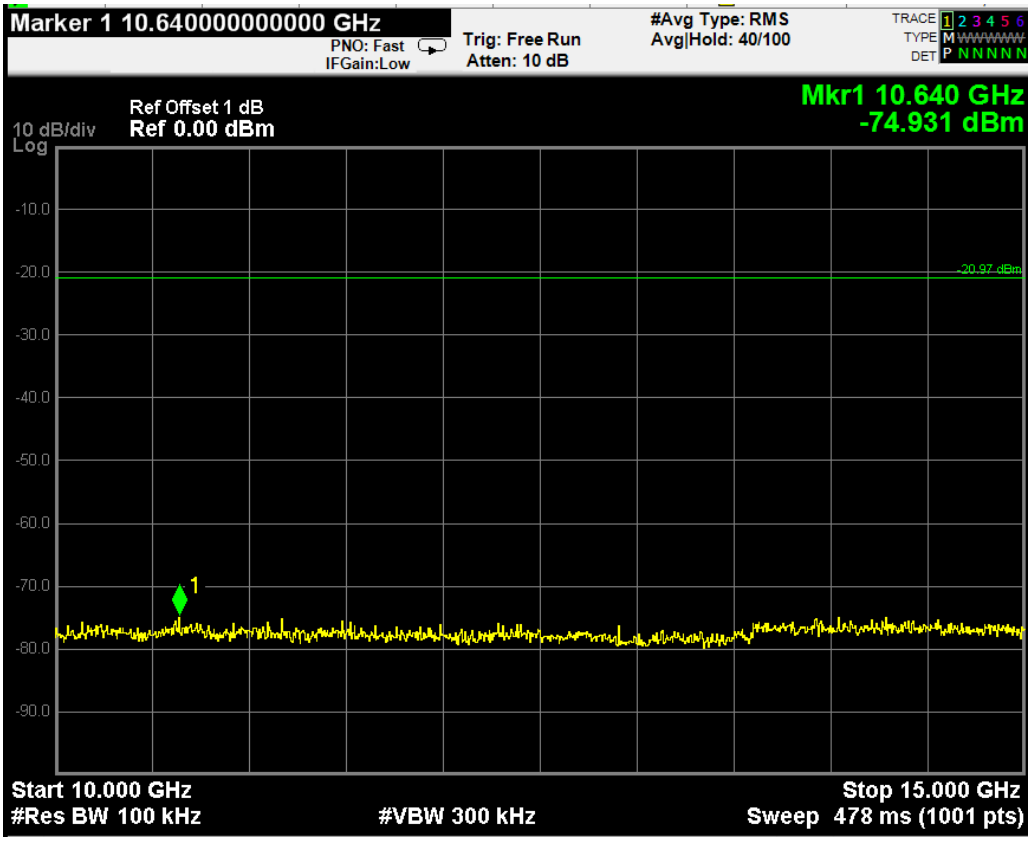
802.11n Ch 06 (2437 MHz)

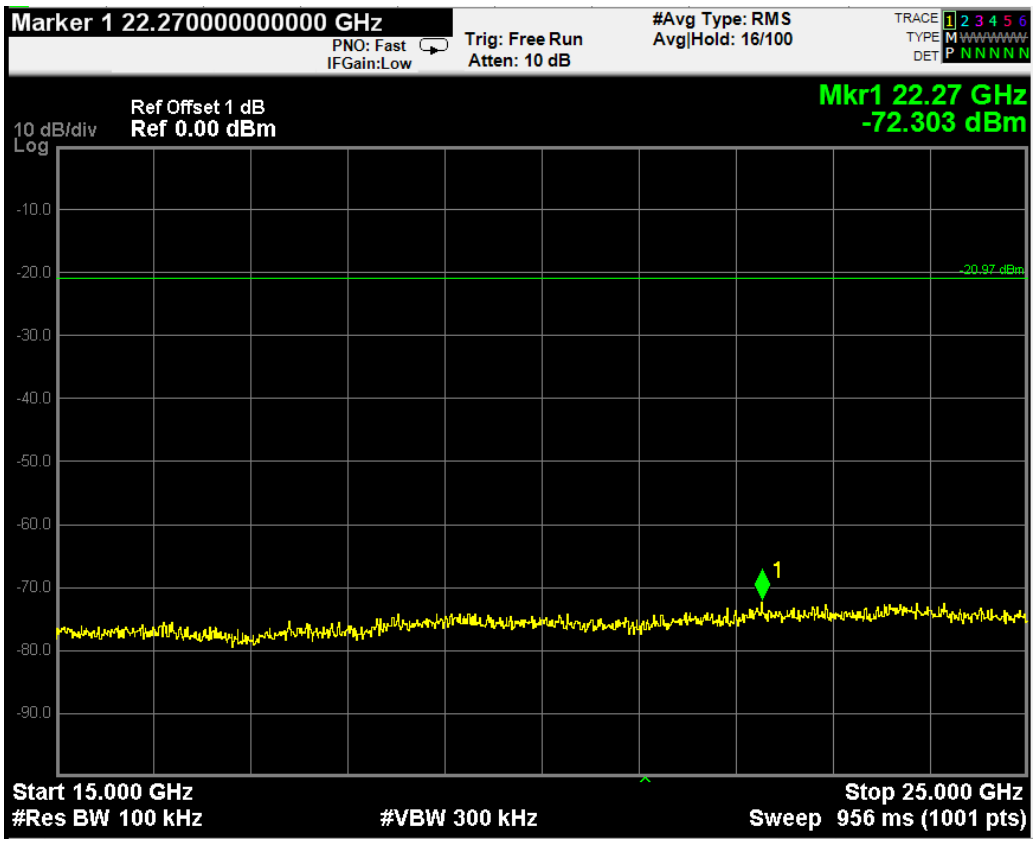




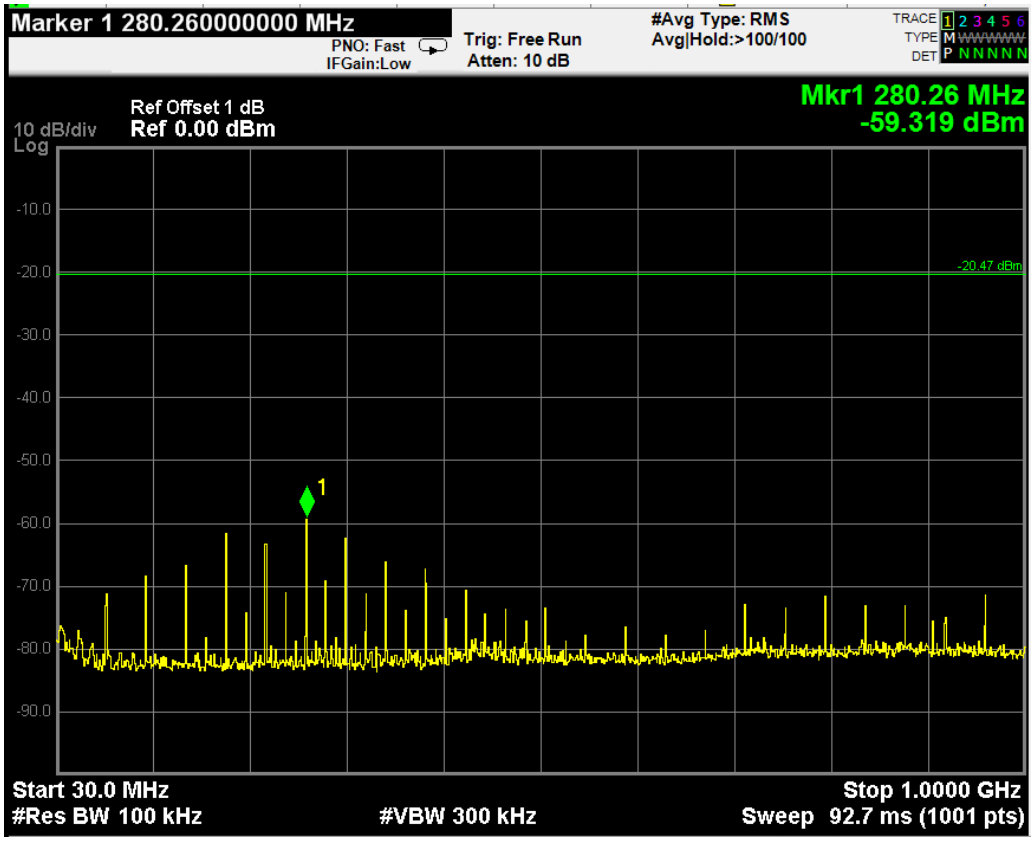
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.440 GHz	-0.966 dBm			
2	N	1	f	4.876 GHz	-42.876 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

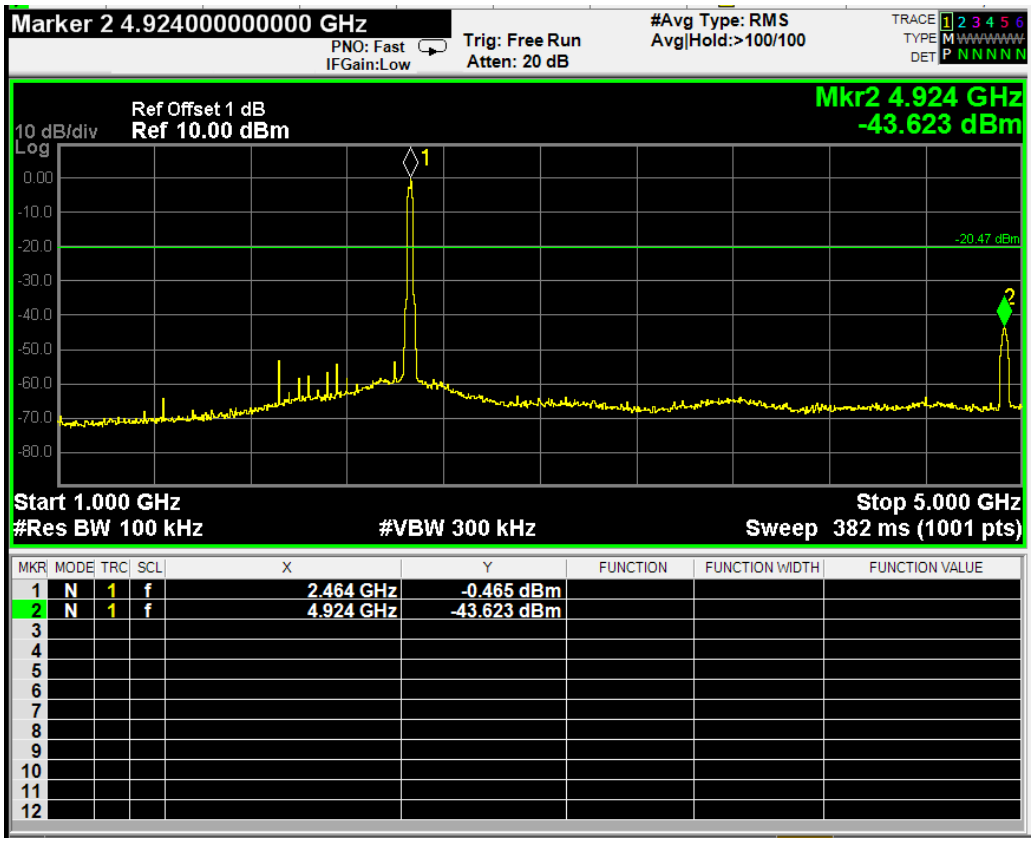

Marker 1 7.310000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 29/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 7.310 GHz
-57.862 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-20.97 dBm
1
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 478 ms (1001 pts)


Marker 1 10.640000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 40/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 10.640 GHz
-74.931 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-20.97 dBm
1
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 478 ms (1001 pts)

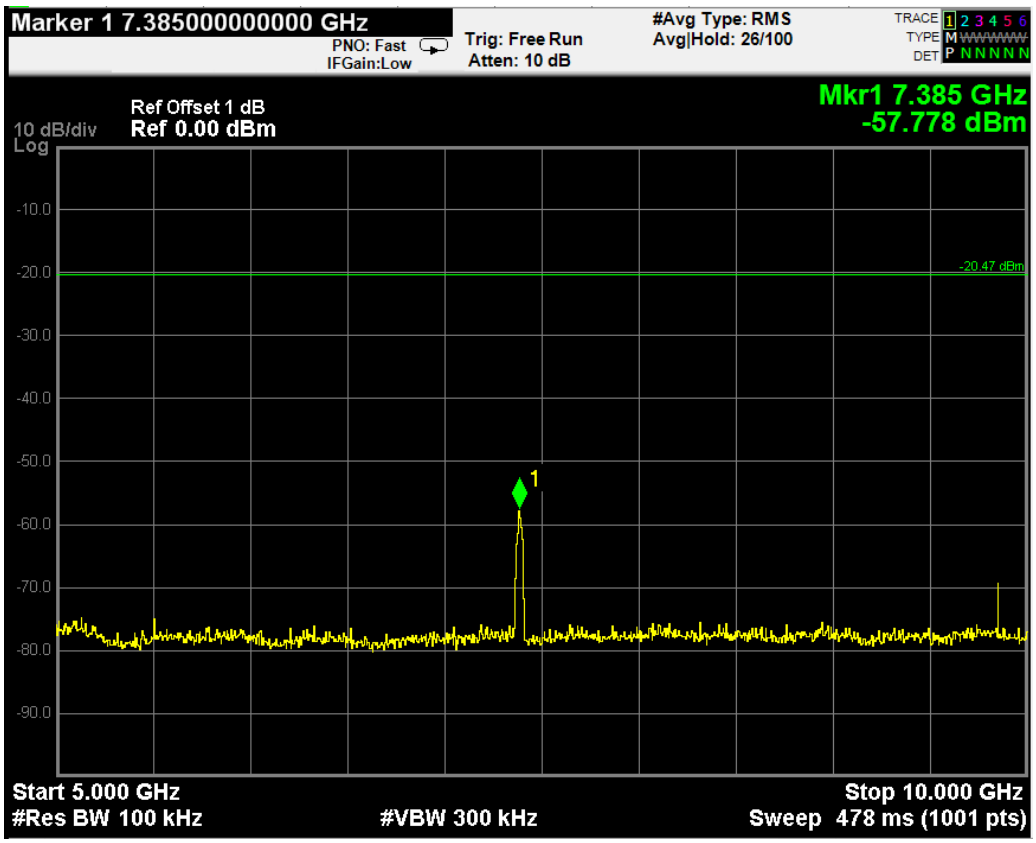

Marker 1 22.270000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 16/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 22.27 GHz
-72.303 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-20.97 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 956 ms (1001 pts)

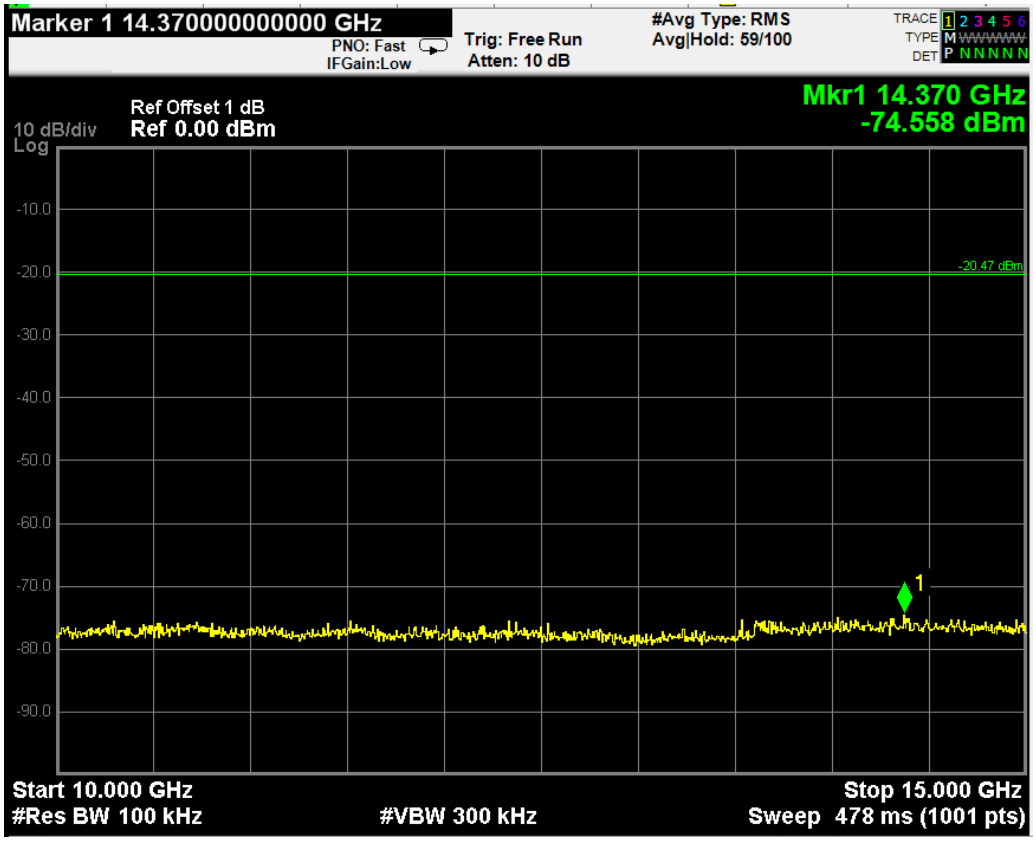
802.11n Ch 11 (2462 MHz)

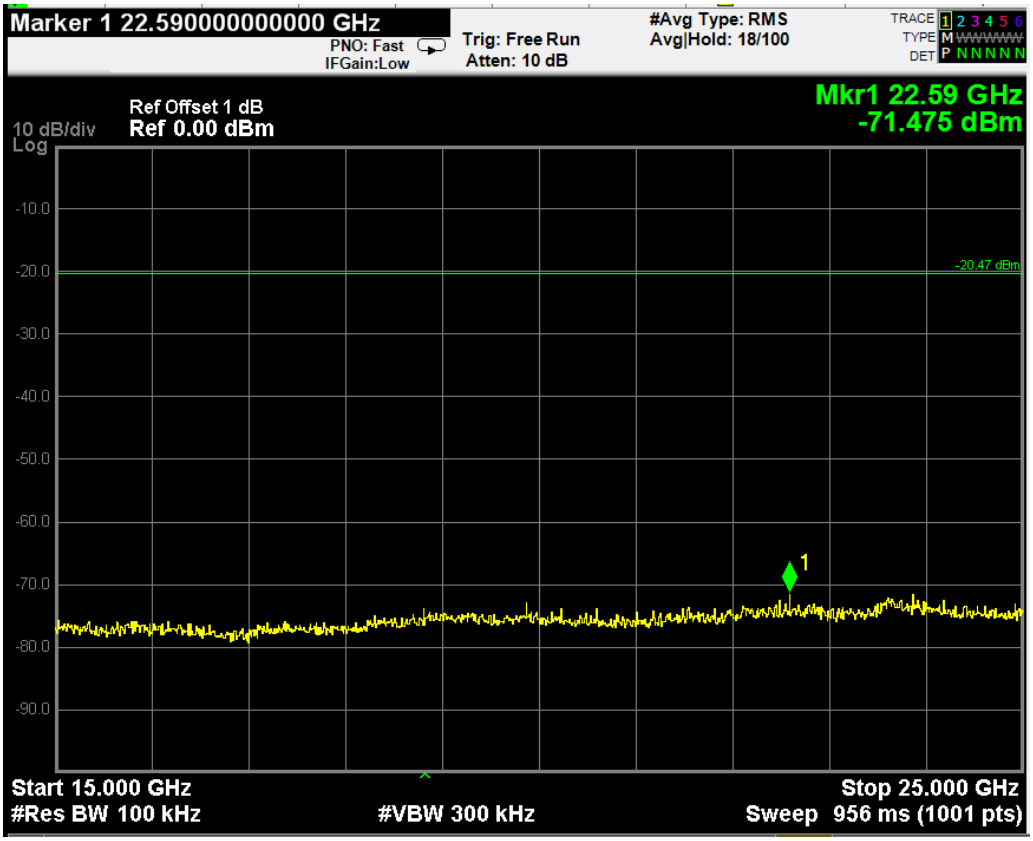




MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.464 GHz	-0.465 dBm			
2	N	1	f	4.924 GHz	-43.623 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								


Marker 1 7.385000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 26/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 7.385 GHz
-57.778 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-20.47 dBm
1
Start 5.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 478 ms (1001 pts)


Marker 1 14.370000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 59/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 14.370 GHz
-74.558 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-20.47 dBm
1
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 478 ms (1001 pts)


Marker 1 22.590000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 18/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 0.00 dBm
Mkr1 22.59 GHz
-71.475 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-20.47 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 956 ms (1001 pts)

8 BAND EDGES MEASUREMENT

8.1 Test Equipment

The following test equipment was used during the band edges measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9010A	MY52221182	Jun 14, 2014	Jun 13, 2015

8.2 Block Diagram of Test Setup

The same as section.5.2.

8.3 Specification Limits (§15.247(d))

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

8.4 Operating Condition of EUT

The test program "SecureCRT" was used to enable the EUT to transmit and receive data at different channel frequency individually.

8.5 Test Procedure

The transmitter output was connected to the Test Receiver. Set RBW of Test Receiver to 100kHz and VBW to 300kHz with suitable frequency span including 100kHz bandwidth from band edge.
The test procedure is defined in KDB558074 D01 v03r02 (the 11.3 Emission Level Measurement was used).

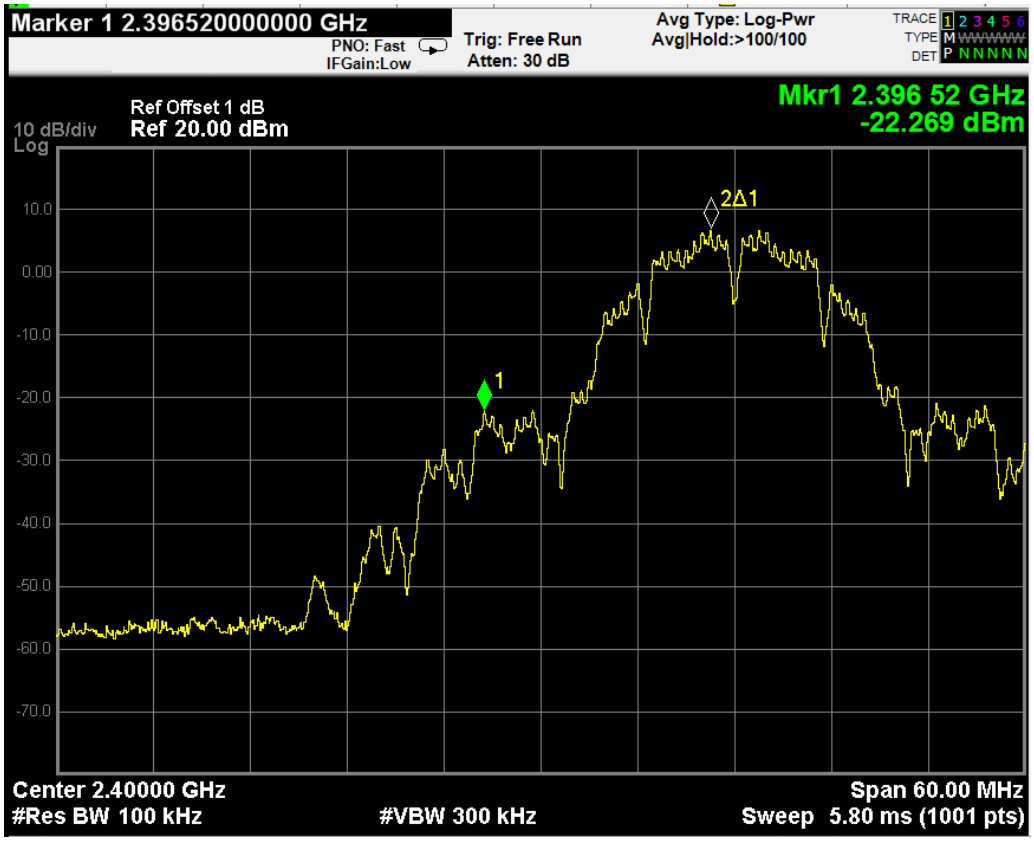
8.6 Test Results

PASSED. All the test results are attached in next pages.

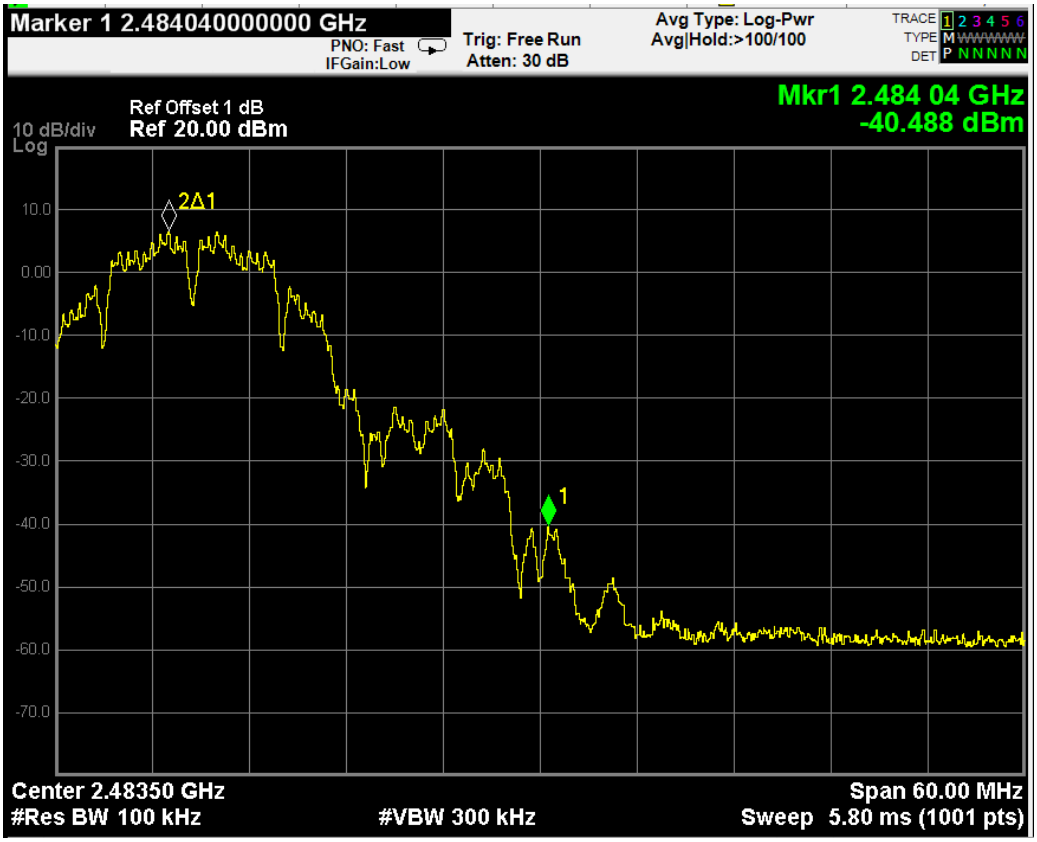
(Test Date: Nov. 25, 2014 Temperature: 20℃ Humidity: 44 %)

Modulation	Location	Channel	Frequency	**Delta Marker**	Result
802.11b	Below Band Edge	01	2412 MHz	**22.269 dB**	More than **20 dB** below the highest level of the desired power
	Upper Band Edge	11	2462 MHz	**40.488 dB**	
802.11g	Below Band Edge	01	2412 MHz	**33.096 dB**	
	Upper Band Edge	11	2462 MHz	**47.735 dB**	
802.11n	Below Band Edge	01	2412 MHz	**33.836 dB**	
	Upper Band Edge	11	2462 MHz	**43.530 dB**	

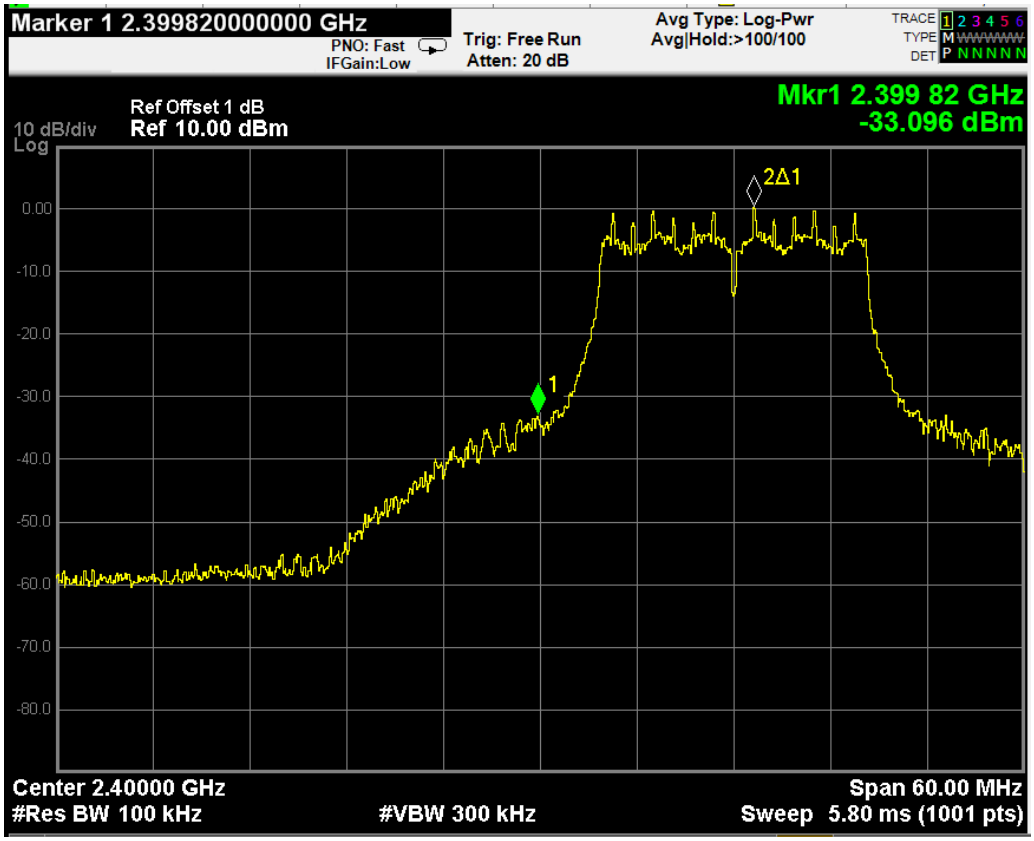
802.11b Ch01 2412MHz (Below Edge 2400 MHz)



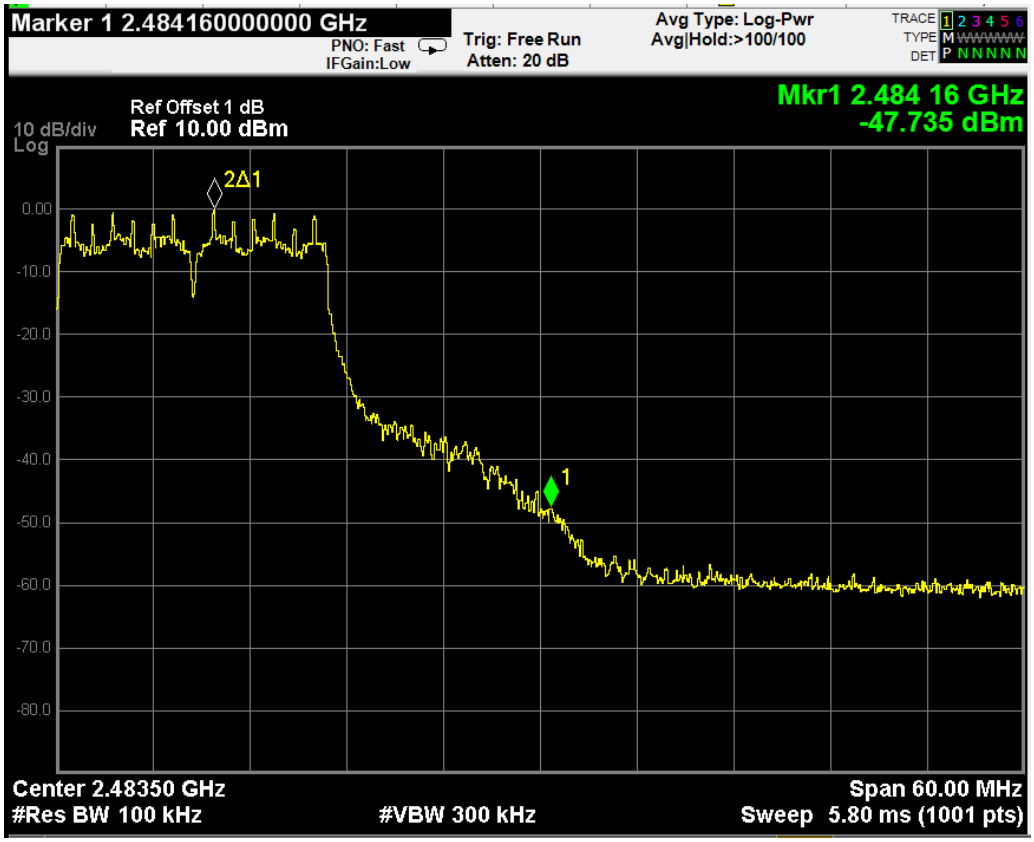
802.11b Ch11 2462MHz (Upper Edge 2483.5 MHz)



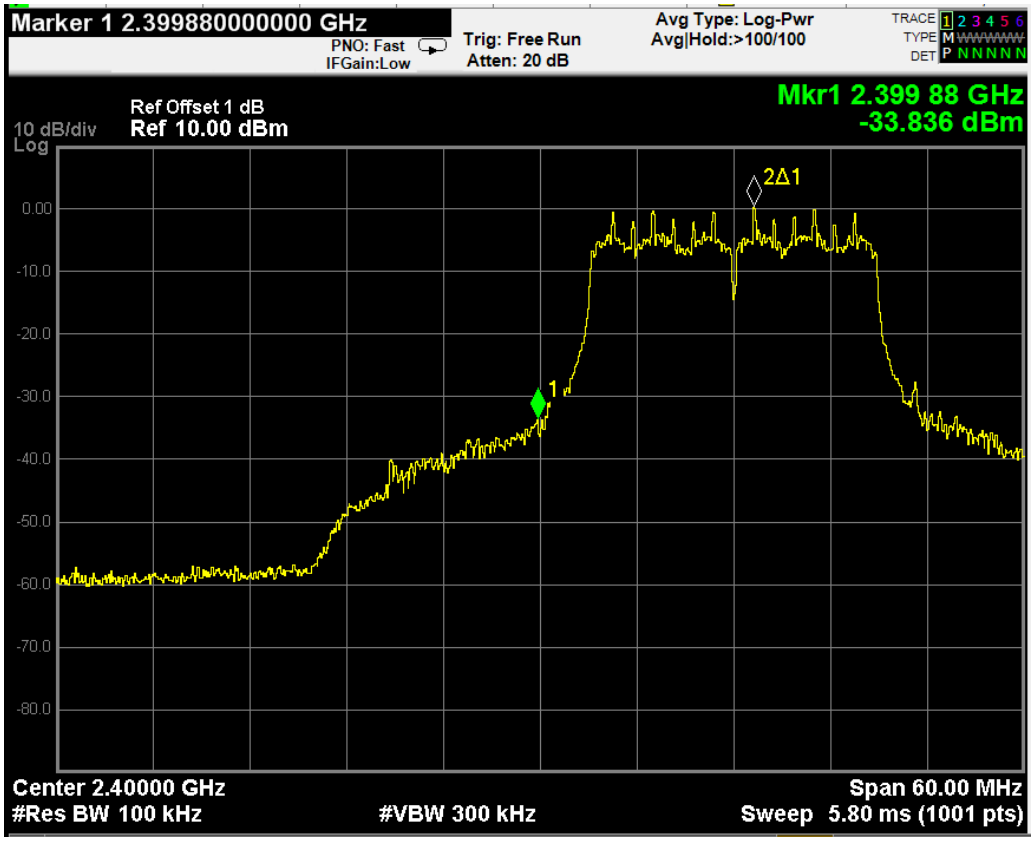
802.11g Ch01 2412MHz (Below Edge 2400 MHz)



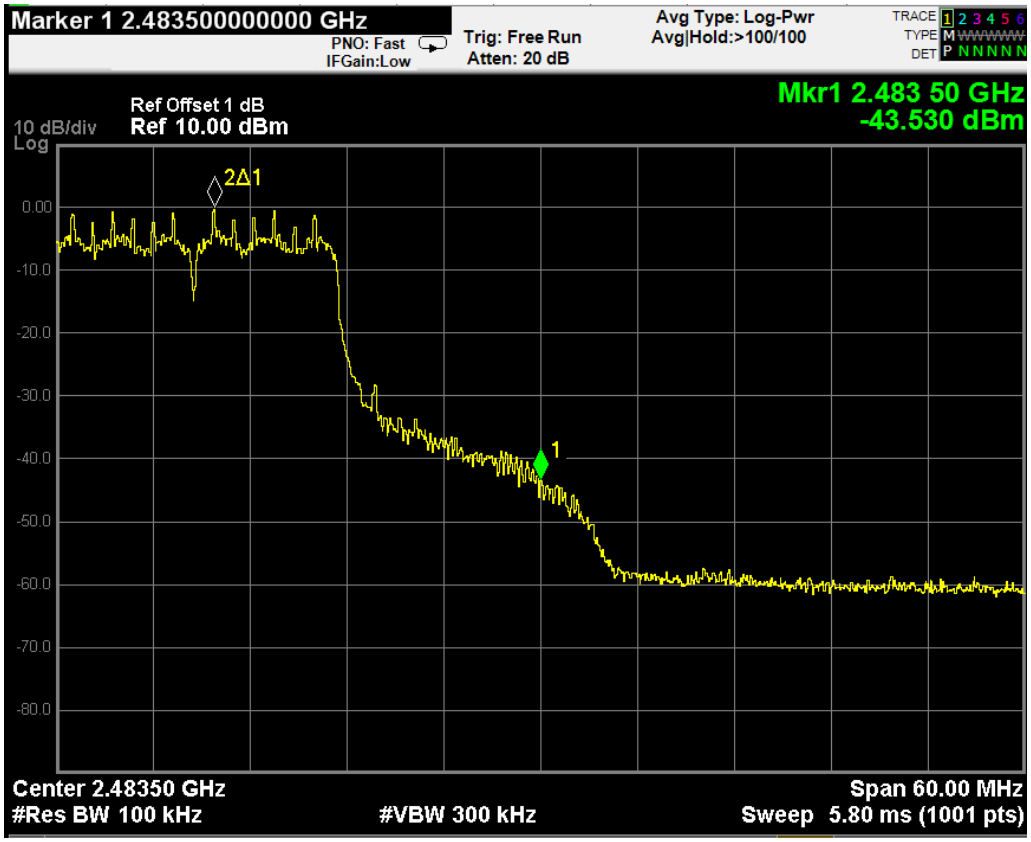
802.11g Ch11 2462MHz (Upper Edge 2483.5 MHz)



802.11n Ch01 2412MHz (Below Edge 2400 MHz)



802.11n Ch11 2462MHz (Upper Edge 2483.5 MHz)



9 POWER SPECTRAL DENSITY MEASUREMENT

9.1 Test Equipment

The following test equipment was used during the power spectral density measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9010A	MY52221182	Jun 14, 2014	Jun 13, 2015

9.2 Block Diagram of Test Setup

The same as section.5.2.

9.3 Specification Limits (§15.247(e))

The peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band.

9.4 Operating Condition of EUT

The test program "SecureCRT" was used to enable the EUT to transmit data at different channel frequency individually.

9.5 Test Procedure

The transmitter output was connected to the Test Receiver. The Test Receiver was set as 3kHz ≤ RBW ≤ 100kHz, VBW ≥ 3 x RBW, span = 1.5 times the DTS channel bandwidth.
The test procedure is defined in KDB558074 D01 v03r01 (the 10.2 Measurement Procedure "Method PKPSD (peak PSD)" was used).

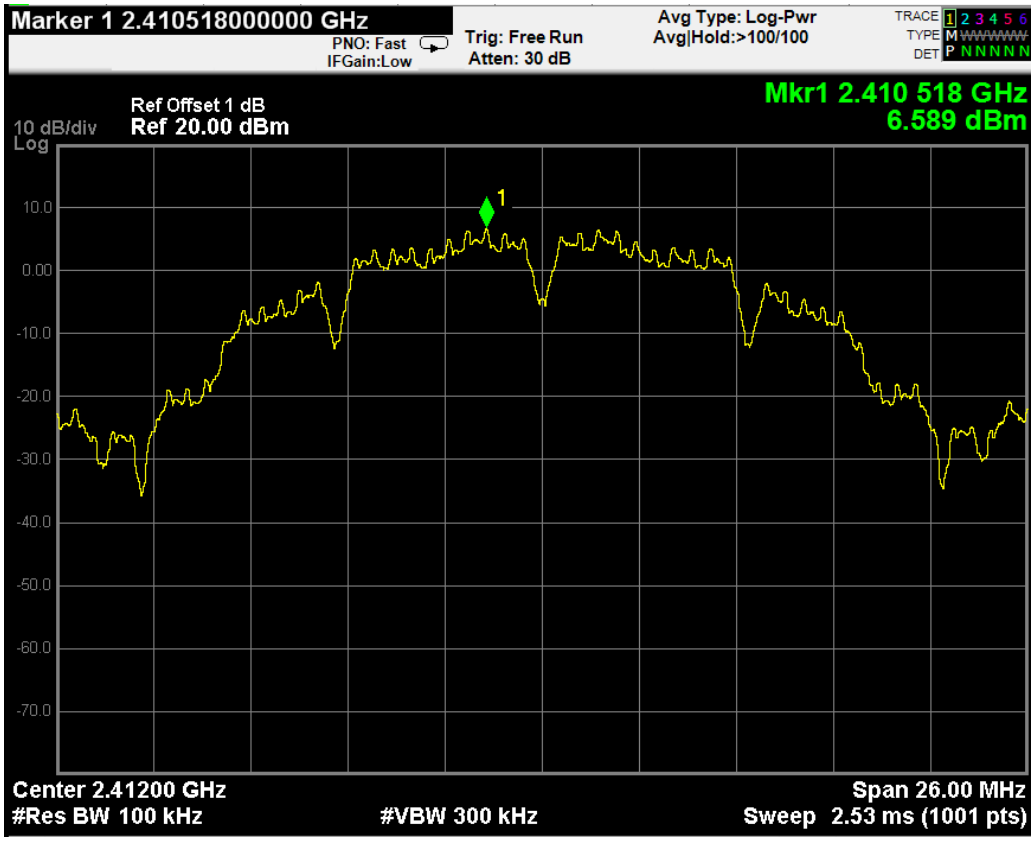
9.6 Test Results

PASSED. All the test results are attached in next pages.

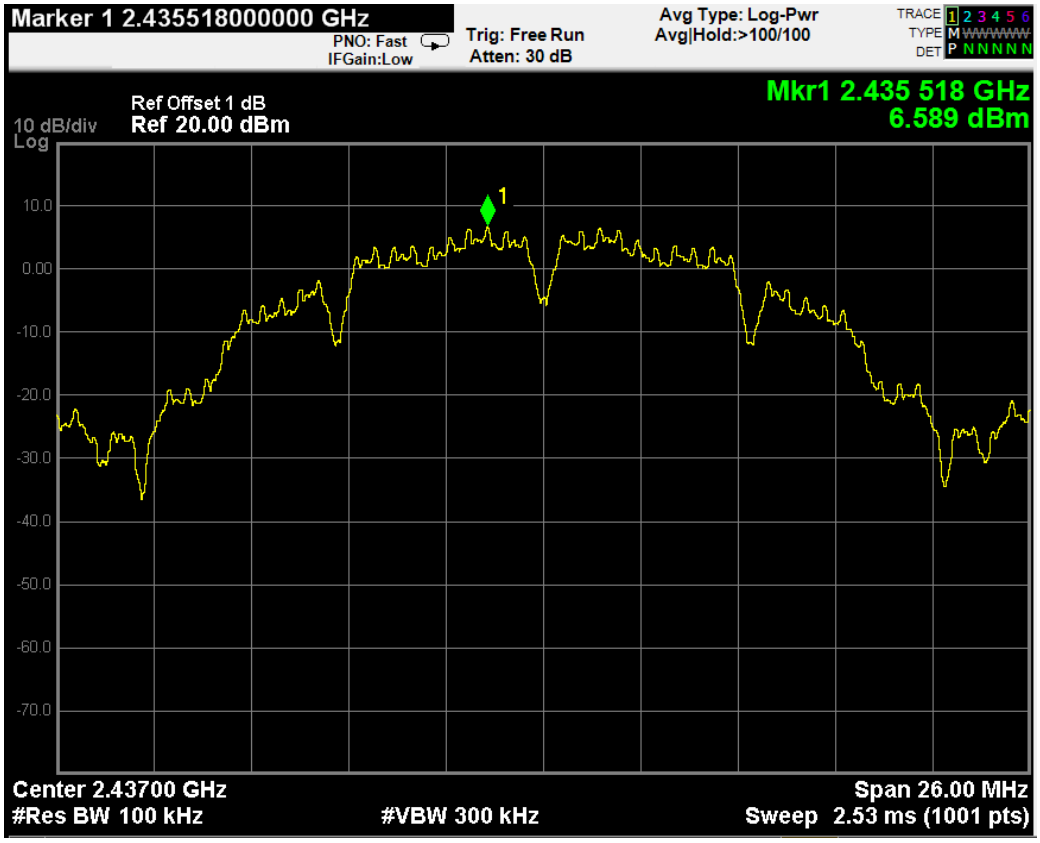
(Test Date: Nov. 25, 2014 Temperature: 20℃ Humidity: 44 %)

Modulation	Channel	Frequency	Power Spectral Density	Limit
802.11b	01	2412 MHz	6.589 dBm	8dBm
	06	2437 MHz	6.589 dBm	8dBm
	11	2462 MHz	6.420 dBm	8dBm
802.11g	01	2412 MHz	-0.065 dBm	8dBm
	06	2437 MHz	0.198 dBm	8dBm
	11	2462 MHz	-0.214 dBm	8dBm
802.11n	01	2412 MHz	0.086 dBm	8dBm
	06	2437 MHz	0.134 dBm	8dBm
	11	2462 MHz	-0.395 dBm	8dBm

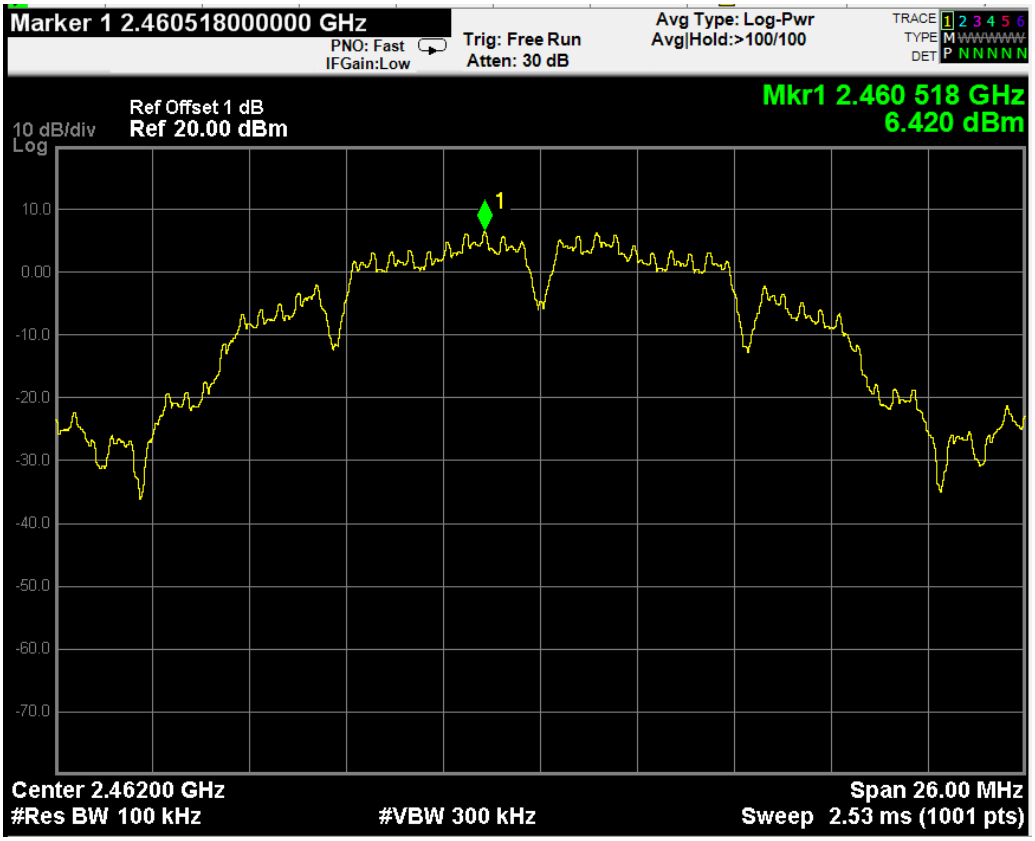
802.11b Ch01 2412 MHz



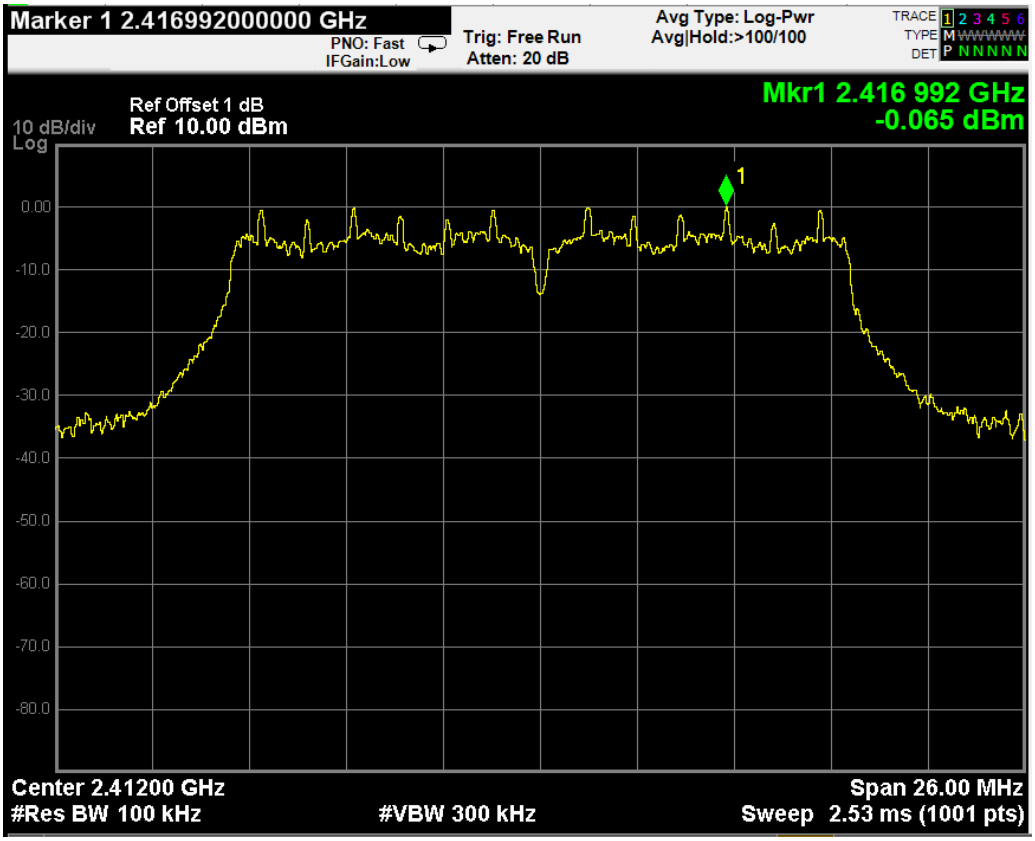
802.11b Ch06 2437 MHz



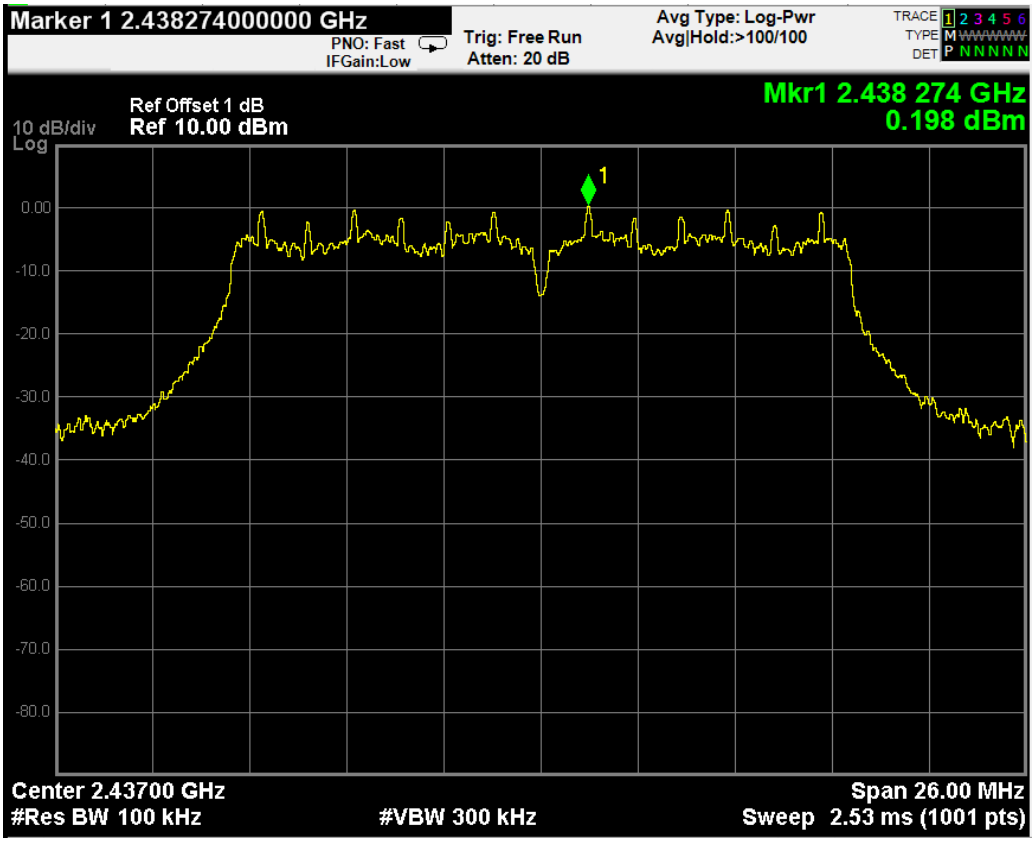
802.11b Ch11 2462 MHz



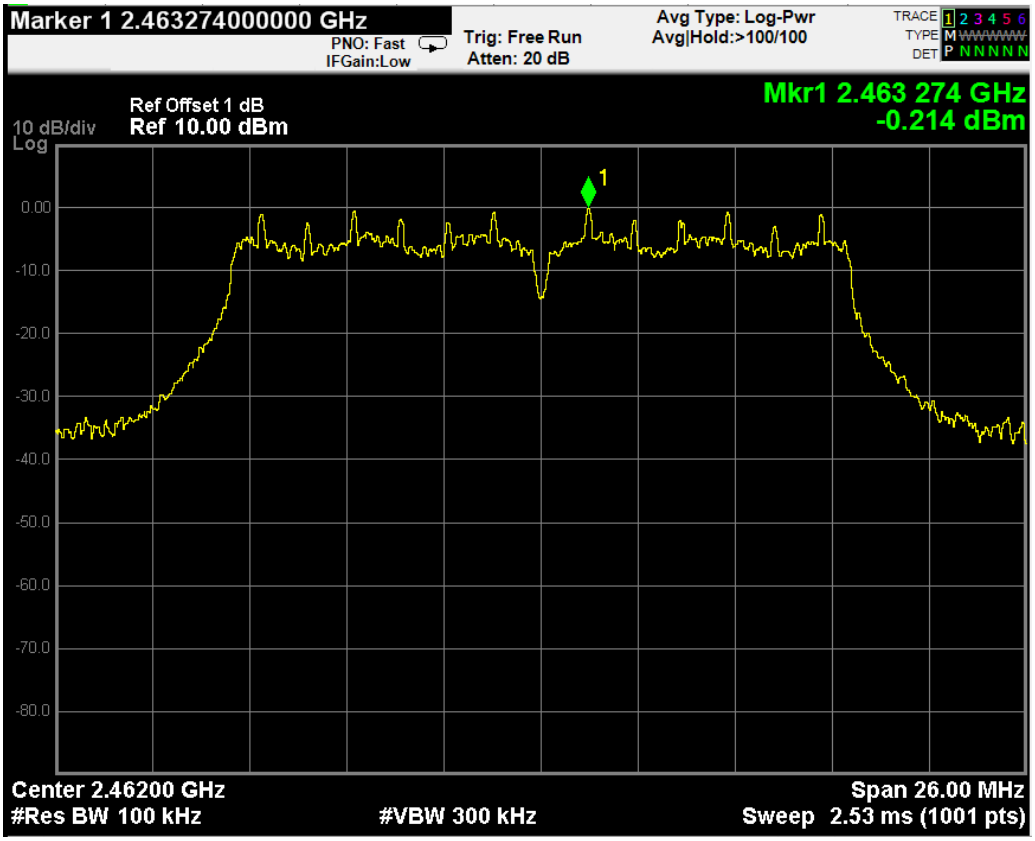
802.11g Ch01 2412 MHz



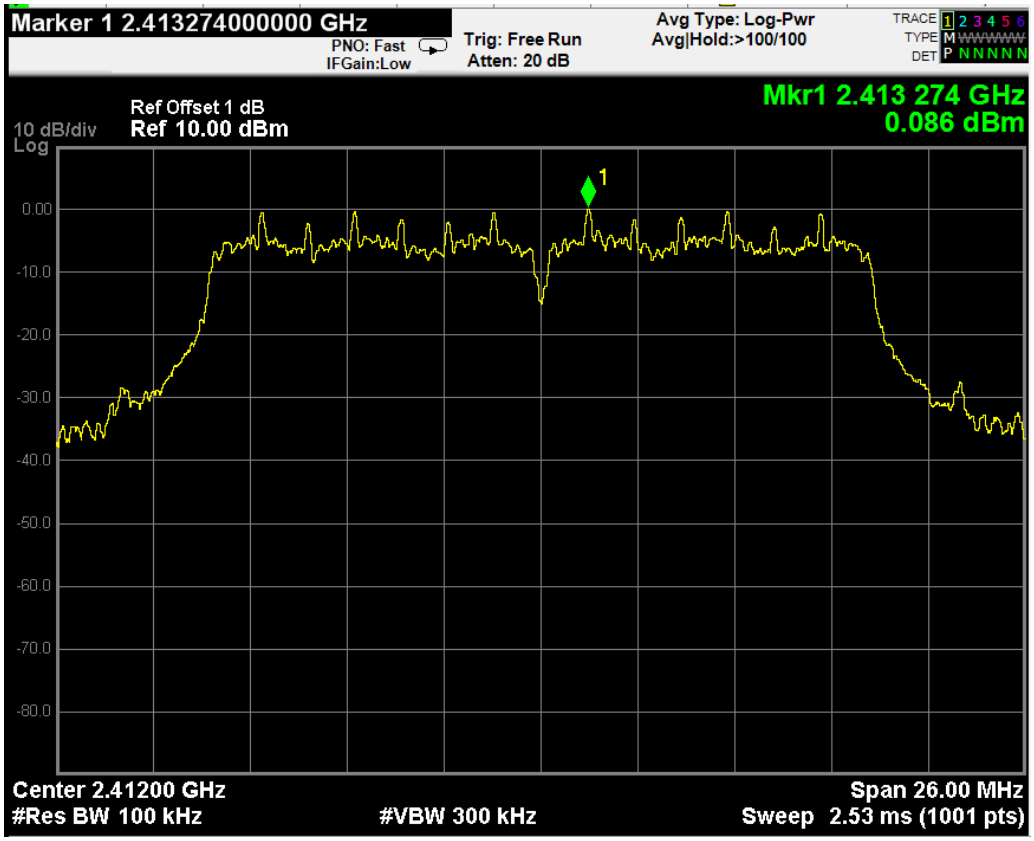
802.11g Ch06 2437 MHz



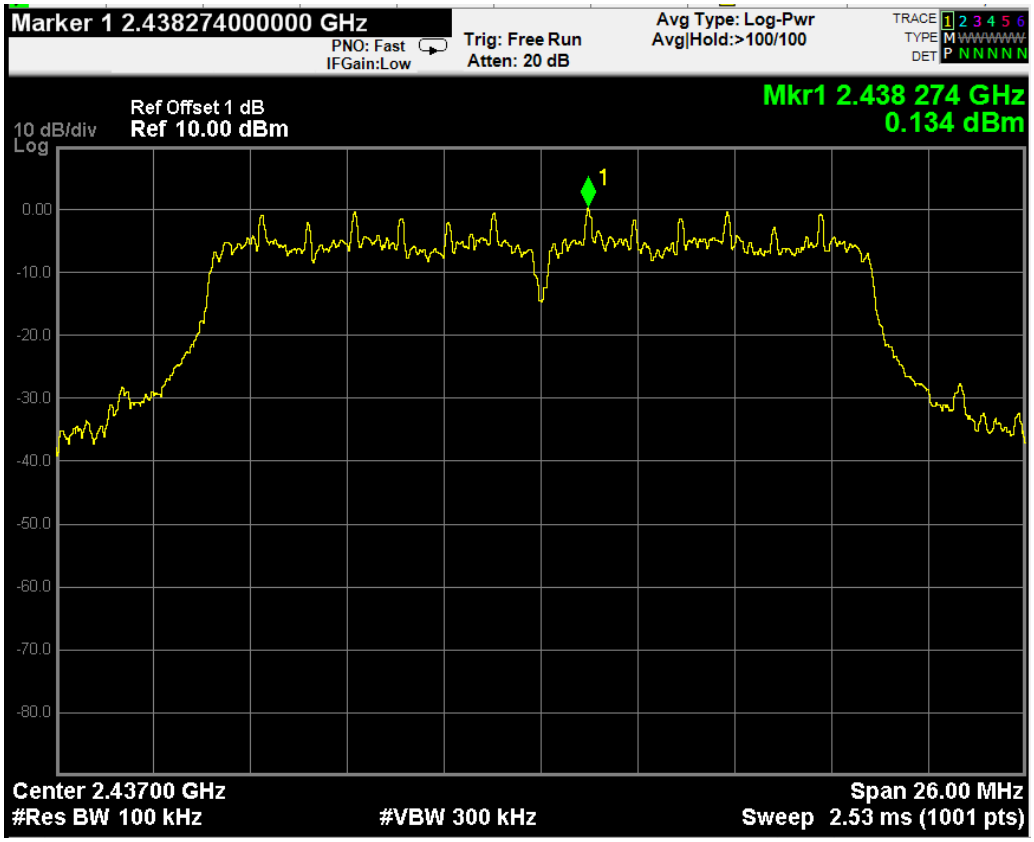
802.11g Ch11 2462 MHz



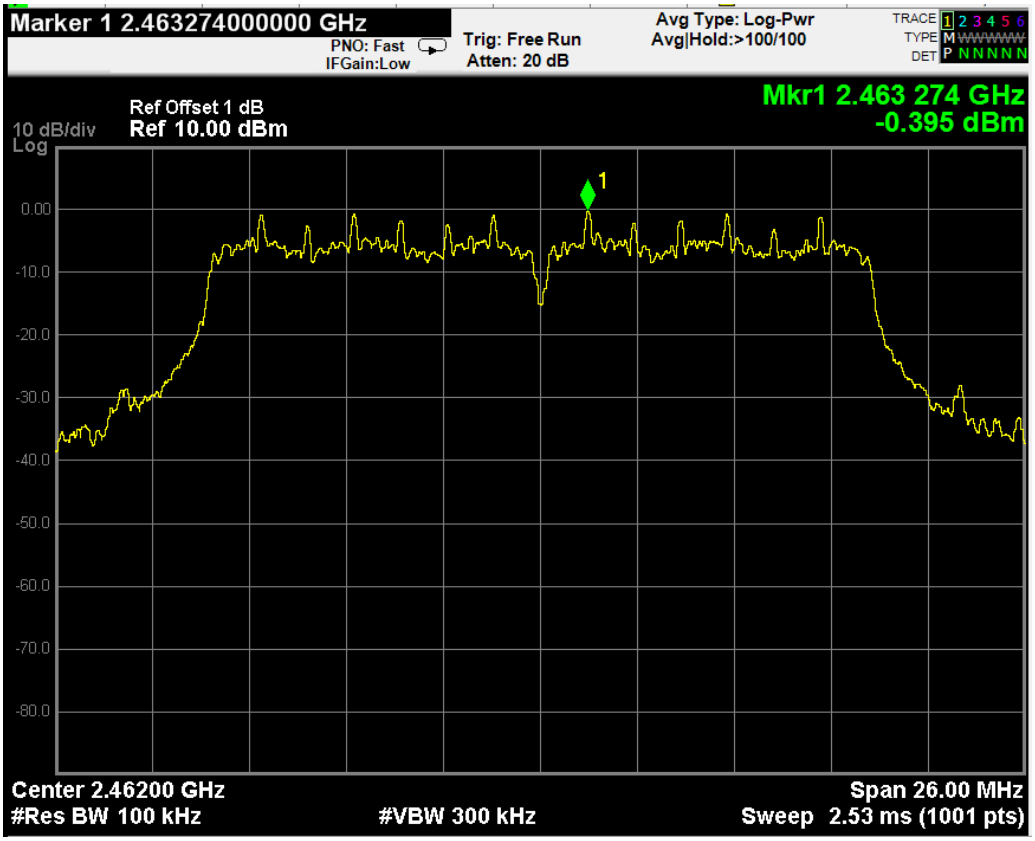
802.11n Ch01 2412 MHz



802.11n Ch06 2437 MHz



802.11n Ch11 2462 MHz



10 DEVIATION TO TEST SPECIFICATIONS

None.