CERTIFICATE OF COMPLIANCE
FCC PART 15C Certification

Applicant Name:	Date of Testing
Mobile Appliance, Inc.	October 17, 2014 to December 12, 2014
	Test Site/Location
Address:	#23, 480 Beongil Gokhyeon-ro, Mohyeon-Myeon, Cheoin-Gu, Yongin-City, Gyeonggi-Do 449-853, Korea
#701 Kranz Techno, Sangdaewon-1Dong, Jungwon-Gu, Seongnam- City, Gyeonggi-Do, KOREA	**Test Report No.:** BWS-14-RF-0001
	BWS FRN: 0009936881

FCC ID: WHBBMWHUS
APPLICANT: Mobile Appliance, Inc.

Model(s):	BMW Head-Up Screen
EUT Type:	Head-Up Screen
Frequency Range:	2412-2462 MHz
Modulation Type	DSSS(802.11b), OFDM(802.11g/n)
FCC Classification:	Digital Transmission System (DTS)
FCC Rule Part(s):	FCC Part 15 Subpart C

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated. And the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.
BWS TECH Inc. Certifies that no party to this application has been denied FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S C.862

(Date) 12/12/2014

Tested by **Cheol-Ho, Lee**

(Date)12/12/2014

Reviewed by **Bang-Hyeon, Nam**

TABLE OF CONTENTS

FCC TEST REPORT

Scope – *Measurement and determination of electromagnetic emission(EME) of radio frequency devices including intentional radiators and/or unintentional radiators for compliance with the technical rules and regulations of the U.S Federal Communications Commission(FCC)*

1. General Information

Applicant

Company Name	: Mobile Appliance, Inc.
Company Address	: #701 Kranz Techno, Sangdaewon-1Dong, Jungwon-Gu, Seongnam- City, Gyeonggi-Do, KOREA
Phone/Fax	: Tel No. : +82-31-777-8071 Fax No. : +82-31-777-8076

Manufacturer

Company Name	: Mobile Appliance, Inc.
Company Address	: #701 Kranz Techno, Sangdaewon-1Dong, Jungwon-Gu, Seongnam- City, Gyeonggi-Do, KOREA
Phone/Fax	: Tel No. : +82-31-777-8071 Fax No. : +82-31-777-8076

● **EUT Type**	: Head-Up Screen
● **Model Name**	: BMW Head-Up Screen
● **FCC ID**	: WHBBMWHUS
● **S/N**	: Prototype
● **Freq. Range**	: 2412-2462 MHz
● **Number of Channels**	: 11 Channel
● **Modulation Method**	: DSSS(802.11b), OFDM(802.11g/n)
● **FCC Rule Part(s)**	: Part 15 Subpart C
● **Test Procedure**	: ANSI C63.4-2009 KDB 558074 D01 DTS Meas Guidance v03r02
● **Dates of Tests**	:October 17, 2014 to December 09, 2014
● **Place of Tests**	: BWS TECH Inc.(FCC Registration Number : 287786) #23, 480 Beongil Gokhyeon-ro, Mohyeon-Myeon, Cheoin-Gu, Yongin-City, Gyeonggi-Do 449-853, Korea TEL: +82 31 333 5997 FAX: +82 31 333 0017
● **Test Report No.**	: BWS-14-RF-0001

2. Description of Test Facility

Site Description

Test Lab. : Accredited by Industry Canada, February 27, 2012
The Certificate Registration Number is 4963A-2.

Accredited by FCC, September 03, 2013
The Certificate Registration Number is 287786.

Accredited by TUV SUD, January 24, 2014
The Certificate Registration Number is CARAT 14 01 87242 001

Accredited by VCCI, July 10, 2012
The Certificate Registration Number is C-4326

Accredited by NRRA(EMC,RF, SAR), November 27, 2014
The Certificate Registration Number is KR0017

Accredited by KOLAS(KS Q ISO/IEC 17025), October 7, 2014
The Certificate Registration Number is KT174

Accredited by IEC(IECEE CB-SCHEME), March 25, 2014
The Certificate Registration Number is TL508

Name of Firm :
Site Location : BWS TECH Inc.
#23, 480 Beongil Gokhyeon-ro, Mohyeon-Myeon, Cheoin-Gu, Yongin-City, Gyeonggi-Do 449-853, Korea

3. Product Information

3.1 Equipment Description

The Equipment Under Test (EUT) is RF transmitter by the Mobile Appliance Inc.
Model : BMW Head-Up Screen. (FCC ID : WHBBMWHUS).

3.2 General Specification

The system specifications are subject to change without notice. For detailed system specifications, refer to the product catalog.

Frequency Range	2412-2462 MHz
Number of Channels	11 Channel
Modulation Method	DSSS(802.11b) OFDM(802.11g/n)
Transparent	OLED Display
Screen Dimensions	125 mm x 42 mm
Luminance	Approximately 800 cd / m² (max 1,100 cd / m².)
Transparency	About 55% (65% max.)
Operating temperature	-25 ° C ~ + 70 ° C
Humidity	up to 90%

4. Summary of Test Results

TEST Description	Standard Section	Requirements	Result
AC Power Conducted Emission	§15.207	§15.207	N/A(Note1)
Radiated Band Edges and Spurious Emission	§15.247(d), §15.209	§15.209, §15.247(d)	Pass
6dB Bandwidth	§15.247(a)(2)	≥500kHz	Pass
Maximum Peak Conducted Output Power	§15.247(b)(3)	≤30dBm	Pass
Conducted Band Edges and Spurious Emission	§15.247(d)	≥20dB/100kHz	Pass
Power Spectral Density	§15.247(e)	≤8dBm/3kHz	Pass
Antenna Application	§15.247(b), §15.203	§15.247(b), §15.203	Pass

Note1: Input power source is supplied by battery

5. Test Data

5.1 Radiated Band Edges and Spurious Emission

5.1.1 Test Equipment

EQUIPMENT	MODEL	MANUFACTURE	SERIAL NUMBER	Calibration Due date
Receiver	ESVN30	Rohde & Schwarz	832854/010	15/01/16
Spectrum analyzer	FSP13SE	Rohde & Schwarz	100760	15/02/04
Spectrum analyzer	N9020A	Agilent	US46220101	15/09/11
Power supply	UDP-6015	UNICORN TECH	1301006	15/09/11
AMPLIFIER	8447F	H.P	2805A02893	15/01/13
Bilog Antenna	VULB9161	Schwarzbeck	VULB9161-4068	14/11/14
Open Site Cable_0.5m	RG 214/U	SHUNER SWITZERLAND	509794	15/01/14
Open Site Cable_35m	SUCOTEST 18A	Hubersunhner	8400/18A	15/01/14
Antenna Master	JAC-3	DAE IL EMC	N/A	15/05/07
Antenna Turntable Controller	JAC-2	JAEMC	N/A	15/05/07
RF Cable_2m	Test No.1	Hubersunhner	N/A	15/01/14
RF Cable_10m	Test No.2	Hubersunhner	N/A	15/01/14
Loop Antenna	HFH2-Z2	Rohde & Schwarz	881056/6	14/12/11
Horn Antenna	BBHA 9120 D	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D 234	15/09/15
RF Amplifier	PAM-118A	COM-POWER	551019	15/07/21
Antenna Master	N/A	AUDIX	N/A	15/09/17
Antenna Turntable Controller	ACT	AUDIX	N/A	15/09/17
RE_Above 1 GHz CHAMBER	N/A	SeoYoungEMC	N/A	15/09/17

5.1.2 Test Limit

Frequency (MHz)	Limit(dBμV/m)	Measurement distance (meters)
0.009-0.490	48.5~13.8	300
0.490-1.705	33.8~29.2	30
1.705-30.0	29.5	30
30-88	40.0	3

88-216		43.5	3
216-960		46.0	3
960-1000		54.0	3
Above 1GHz	Average	54.0	3
	Peak	74.0	3

5.1.3 Test Procedure

The EUT has been operated and followed in the IEEE 802.11b/g/n mode, and could be controlled its channel. Printed out the test result from the spectrum by hard copy function.

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02.

2. The EUT was placed on a turn table which is 0.8m above ground plane.
3. Measurements were performed on the six highest emissions to ensure EUT compliance.
4. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
5. Repeat above procedures until all frequency measured was complete.

When spectrum scanned from 0.009 MHz to 30 MHz setting resolution bandwidth 120 kHz and video bandwidth 300kHz.
EMI Test Receiver Setting (Attenuation: Auto, RBW: 200 Hz, VBW 1 kHz, Detector: QP, Trace: Max hold)

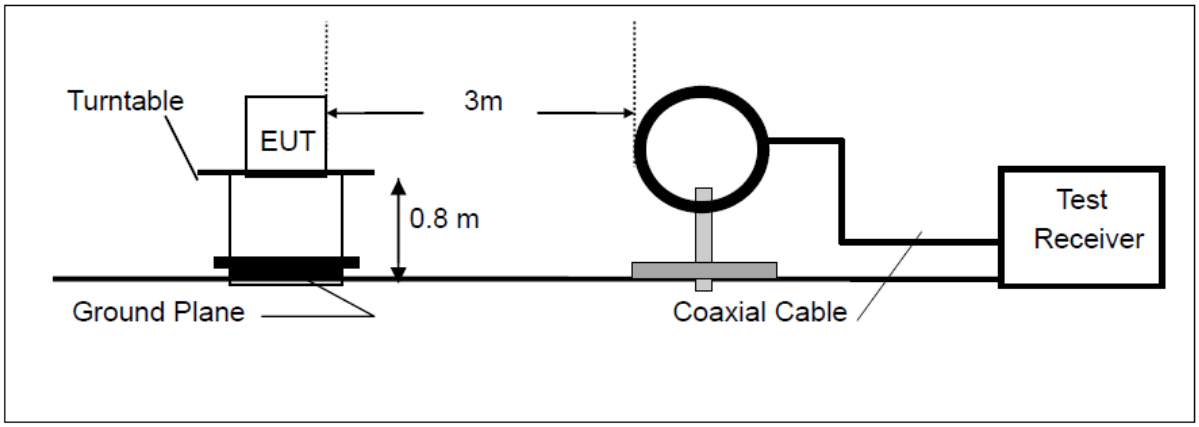
When spectrum scanned from 30 MHz to 1GHz setting resolution bandwidth 120 kHz and video bandwidth 300kHz.
EMI Test Receiver Setting (Attenuation: Auto, RBW: 120 kHz, VBW 300 kHz, Detector: QP, Trace: Max hold)

When spectrum scanned above 1GHz setting resolution bandwidth 1MHz, video bandwidth 3MHz.
EMI Test Receiver Setting (Attenuation: Auto, RBW: 1 MHz, VBW 3 MHz, Detector: Peak, Trace: Max hold)
For average measurement:
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- VBW $\geq$ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

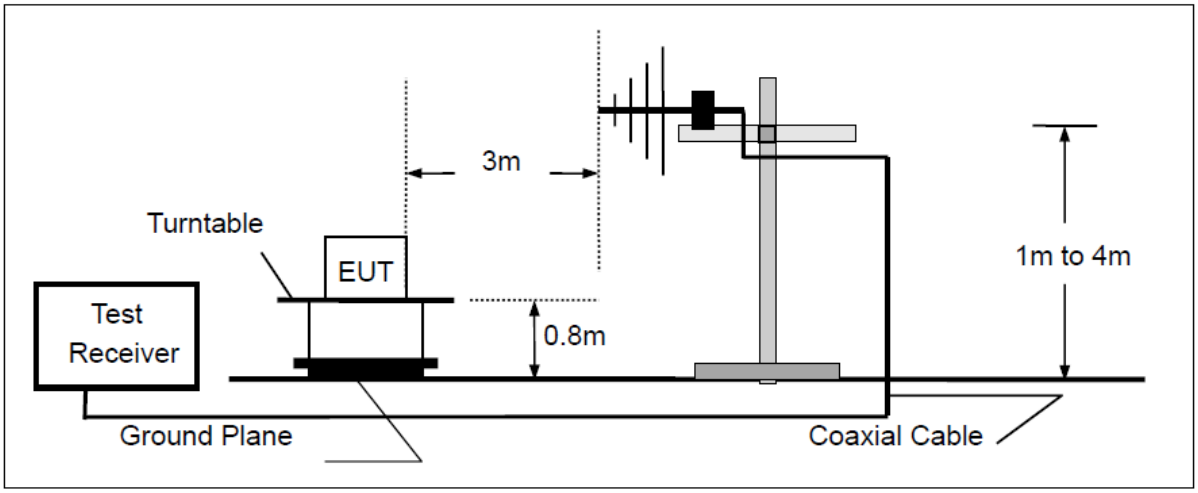
6. Measure and record the results in the test report.

5.1.4 Test SET-UP (Block Diagram of Configuration)

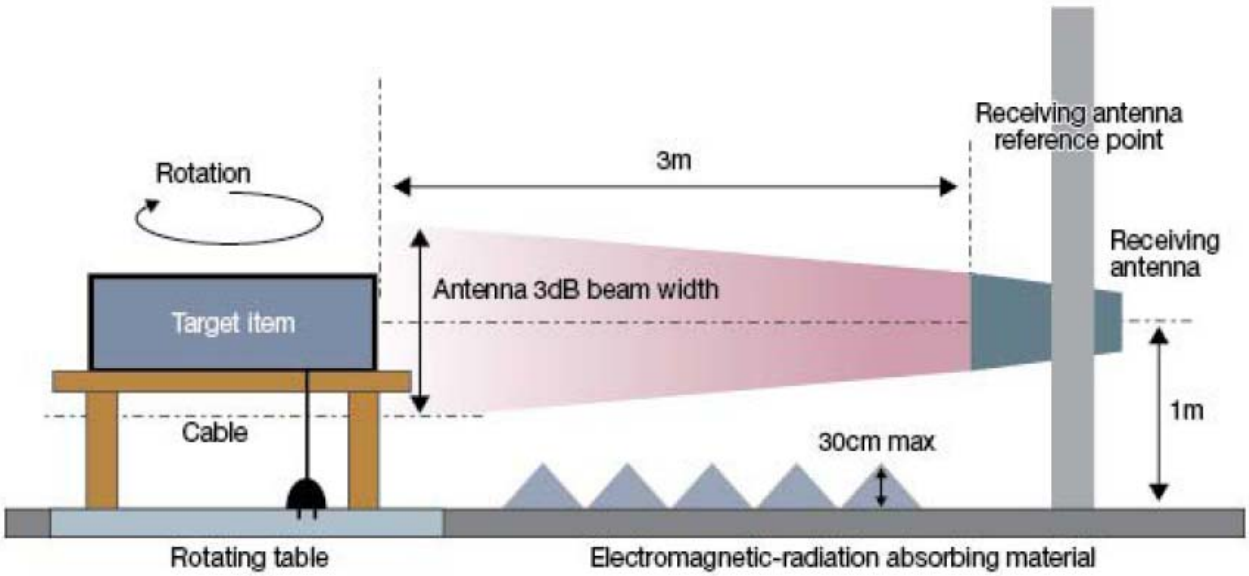
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



5.1.5 Test Result

5.1.5.1 0.009 – 30 MHz

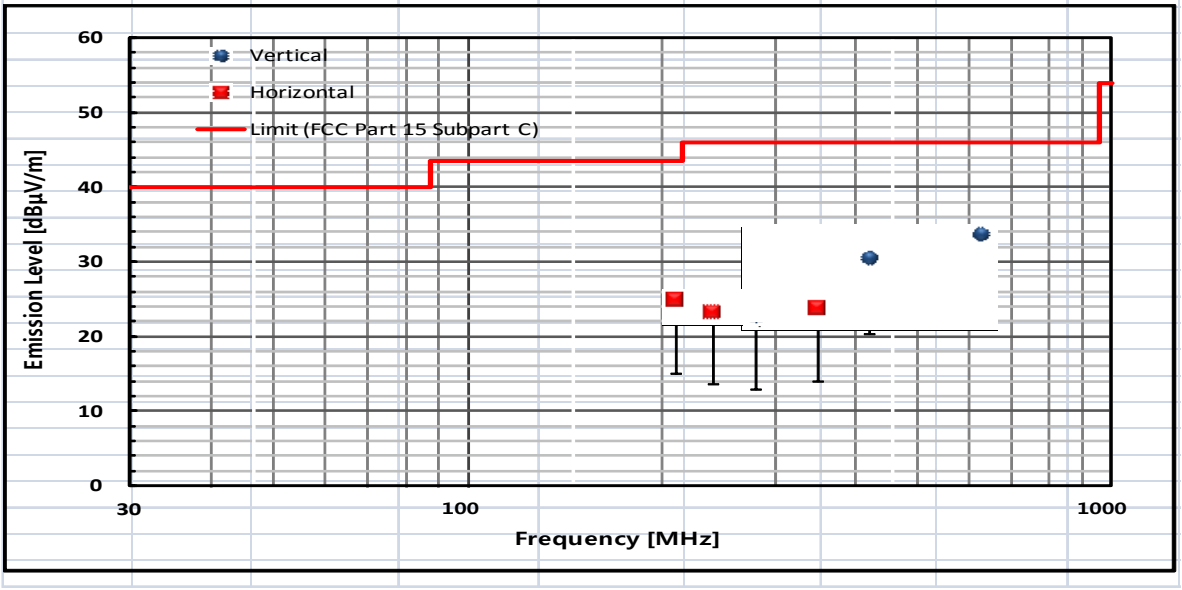
Frequency [MHz]	Reading [dB μV]	Polarization [*H/**V]	Ant. Factor [dB]	Cable Loss [dB]	AMP Gain [dB]	Limit [dB μV/m]	Emission Level [dB μV/m]	Margin [dB]
-	-	-	-	-	-	-	-	-

Note: §15.31(o)_The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this part.

5.1.5.2 30 – 1000 MHz

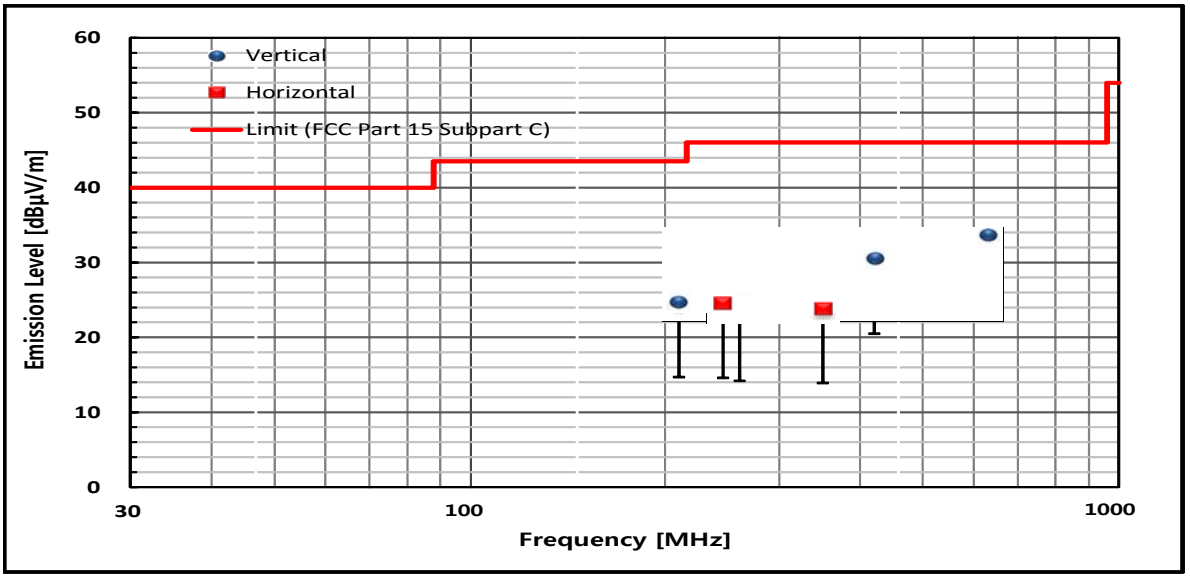
802.11b_2412MHz

Frequency [MHz]	Reading [dBμV]	Polarization [*H/**V]	Ant. Factor [dB]	Cable Loss [dB]	AMP Gain [dB]	Limit [dBμV/m]	Emission Level [dBμV/m]	Margin [dB]
210.25	35.30	H	10.36	4.65	25.20	43.52	25.10	18.42
240.50	31.90	H	11.73	4.95	24.97	46.02	23.60	22.42
280.02	29.73	V	13.31	5.32	25.46	46.02	22.90	23.12
349.89	28.42	H	14.67	5.91	25.00	46.02	24.00	22.02
420.20	34.59	V	15.66	6.46	26.31	46.02	30.40	15.62
625.40	33.74	V	19.02	7.85	27.00	46.02	33.60	12.42



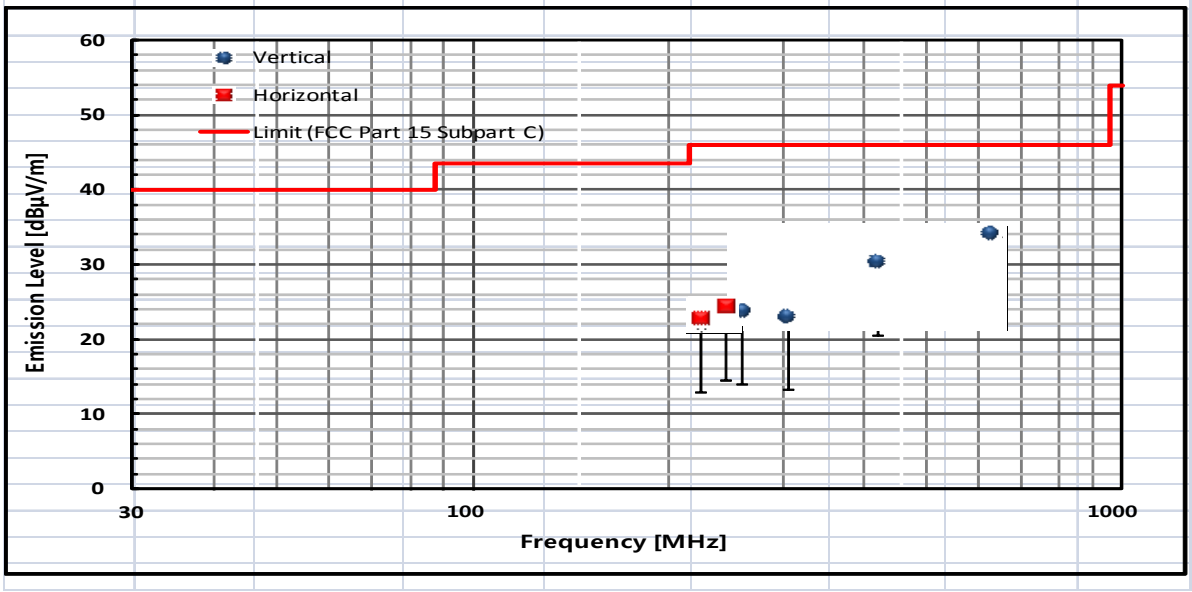
802.11b_2437MHz

Frequency [MHz]	Reading [dBμV]	Polarization [*H/**V]	Ant. Factor [dB]	Cable Loss [dB]	AMP Gain [dB]	Limit [dBμV/m]	Emission Level [dBμV/m]	Margin [dB]
210.10	34.90	V	10.35	4.65	25.21	43.52	24.70	18.82
245.71	32.68	H	11.94	5.00	25.02	46.02	24.60	21.42
260.53	31.01	V	12.41	5.14	24.36	46.02	24.20	21.82
349.89	28.32	H	14.67	5.91	25.00	46.02	23.90	22.12
420.19	34.69	V	15.65	6.46	26.31	46.02	30.50	15.52
625.40	33.74	V	19.02	7.85	27.00	46.02	33.60	12.42



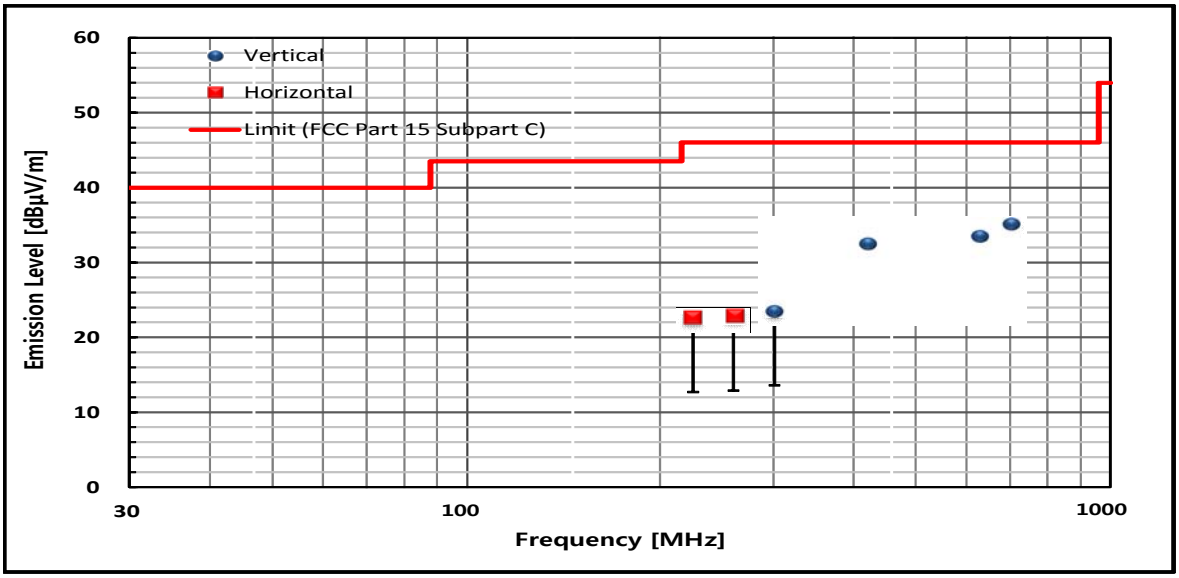
802.11b_2462MHz

Frequency [MHz]	Reading [dBμV]	Polarization [*H/**V]	Ant. Factor [dB]	Cable Loss [dB]	AMP Gain [dB]	Limit [dBμV/m]	Emission Level [dBμV/m]	Margin [dB]
225.00	32.30	H	10.99	4.80	25.19	46.02	22.90	23.12
245.71	32.58	H	11.94	5.00	25.02	46.02	24.50	21.52
260.49	30.82	V	12.41	5.14	24.36	46.02	24.00	22.02
305.60	28.38	V	13.91	5.55	24.54	46.02	23.30	22.72
420.19	34.69	V	15.65	6.46	26.31	46.02	30.50	15.52
625.40	34.34	V	19.02	7.85	27.00	46.02	34.20	11.82



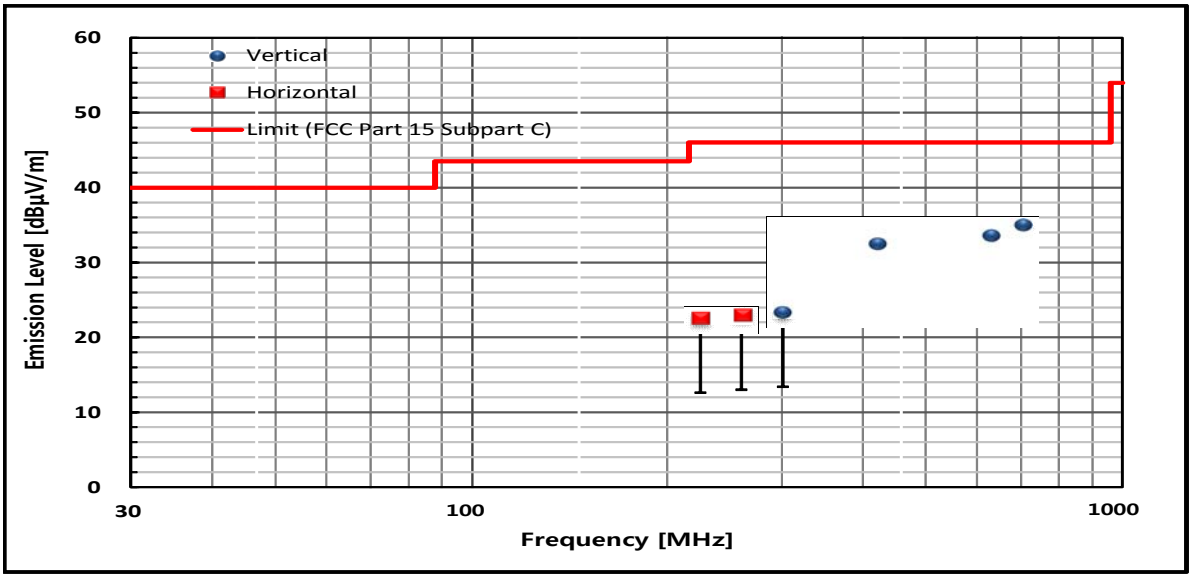
802.11g_2412MHz

Frequency [MHz]	Reading [dBμV]	Polarization [*H/**V]	Ant. Factor [dB]	Cable Loss [dB]	AMP Gain [dB]	Limit [dBμV/m]	Emission Level [dBμV/m]	Margin [dB]
225.01	32.10	H	10.99	4.80	25.19	46.02	22.70	23.32
260.03	29.76	H	12.39	5.13	24.38	46.02	22.90	23.12
301.05	28.62	V	13.80	5.51	24.33	46.02	23.60	22.42
419.85	36.69	V	15.65	6.46	26.30	46.02	32.50	13.52
625.38	33.64	V	19.02	7.85	27.00	46.02	33.50	12.52
699.30	34.04	V	19.63	8.34	26.91	46.02	35.10	10.92



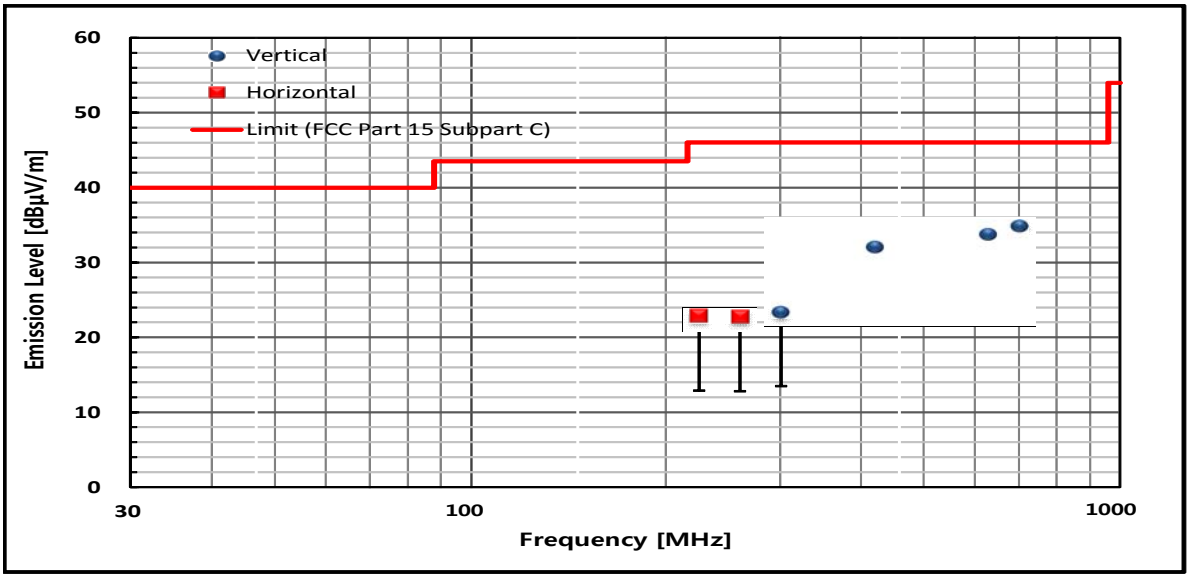
802.11g_2437MHz

Frequency [MHz]	Reading [dBμV]	Polarization [*H/**V]	Ant. Factor [dB]	Cable Loss [dB]	AMP Gain [dB]	Limit [dBμV/m]	Emission Level [dBμV/m]	Margin [dB]
225.00	32.00	H	10.99	4.80	25.19	46.02	22.60	23.42
260.03	29.86	H	12.39	5.13	24.38	46.02	23.00	23.02
301.02	28.42	V	13.80	5.51	24.33	46.02	23.40	22.62
419.85	36.69	V	15.65	6.46	26.30	46.02	32.50	13.52
625.38	33.74	V	19.02	7.85	27.00	46.02	33.60	12.42
699.30	33.94	V	19.63	8.34	26.91	46.02	35.00	11.02



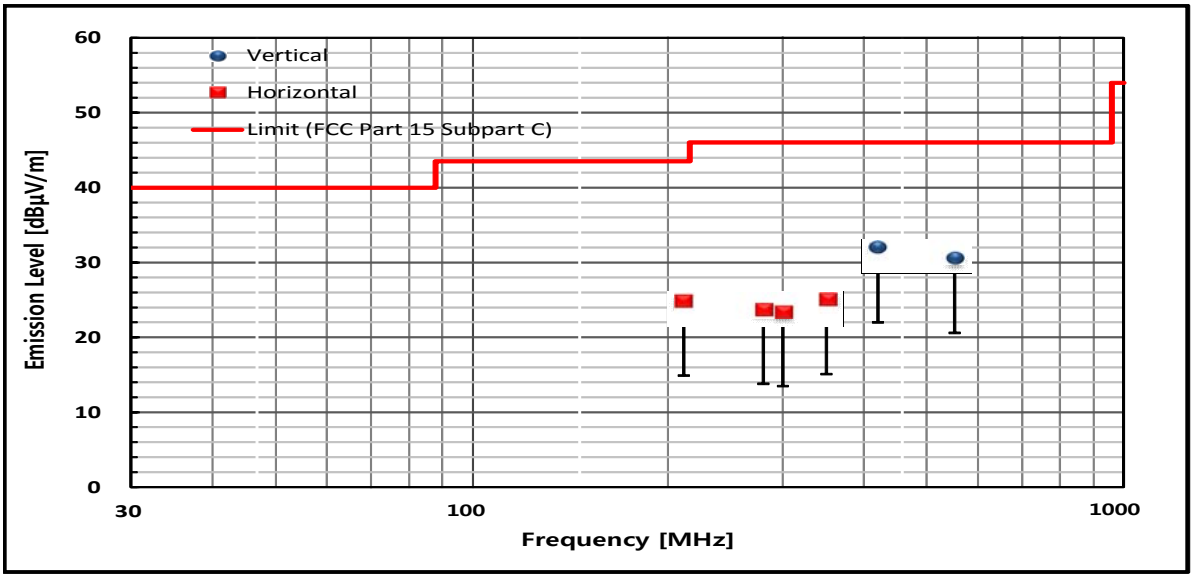
802.11g_2462MHz

Frequency [MHz]	Reading [dBμV]	Polarization [*H/**V]	Ant. Factor [dB]	Cable Loss [dB]	AMP Gain [dB]	Limit [dBμV/m]	Emission Level [dBμV/m]	Margin [dB]
225.02	32.30	H	10.99	4.80	25.19	46.02	22.90	23.12
260.05	29.66	H	12.39	5.13	24.38	46.02	22.80	23.22
300.95	28.51	V	13.80	5.51	24.32	46.02	23.50	22.52
419.85	36.29	V	15.65	6.46	26.30	46.02	32.10	13.92
625.40	33.94	V	19.02	7.85	27.00	46.02	33.80	12.22
699.33	33.84	V	19.63	8.34	26.91	46.02	34.90	11.12



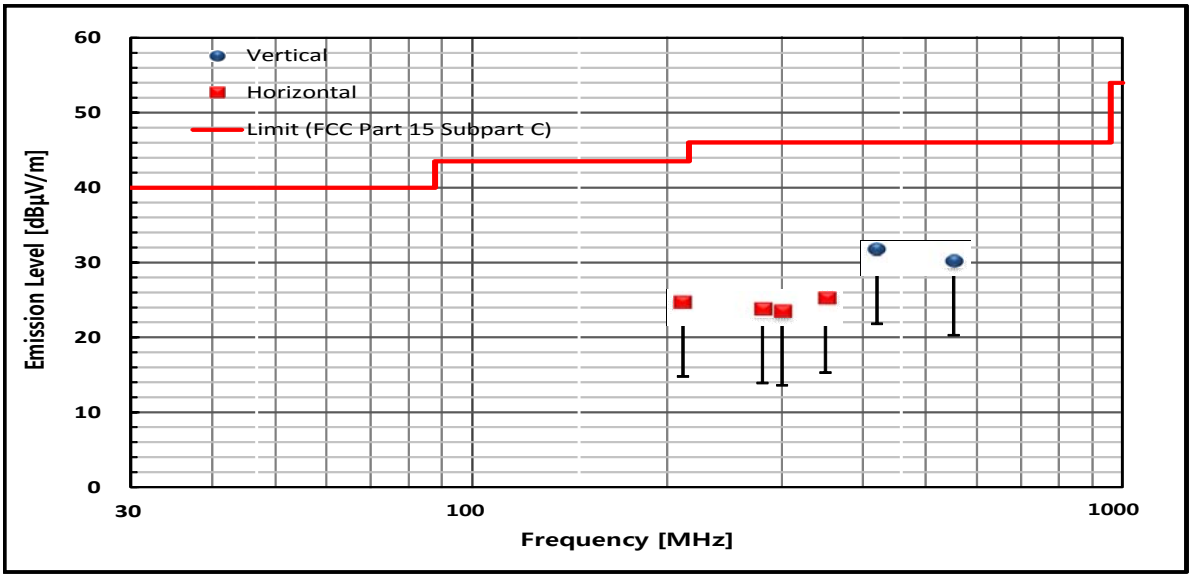
802.11n(20MHz)_2412MHz

Frequency [MHz]	Reading [dBμV]	Polarization [*H/**V]	Ant. Factor [dB]	Cable Loss [dB]	AMP Gain [dB]	Limit [dBμV/m]	Emission Level [dBμV/m]	Margin [dB]
211.50	35.03	H	10.40	4.66	25.19	43.52	24.90	18.62
280.02	30.63	H	13.31	5.32	25.46	46.02	23.80	22.22
300.05	28.50	H	13.78	5.50	24.28	46.02	23.50	22.52
349.99	29.52	H	14.67	5.91	25.00	46.02	25.10	20.92
420.00	36.19	V	15.65	6.46	26.30	46.02	32.00	14.02
550.56	32.18	V	18.09	7.35	27.03	46.02	30.60	15.42



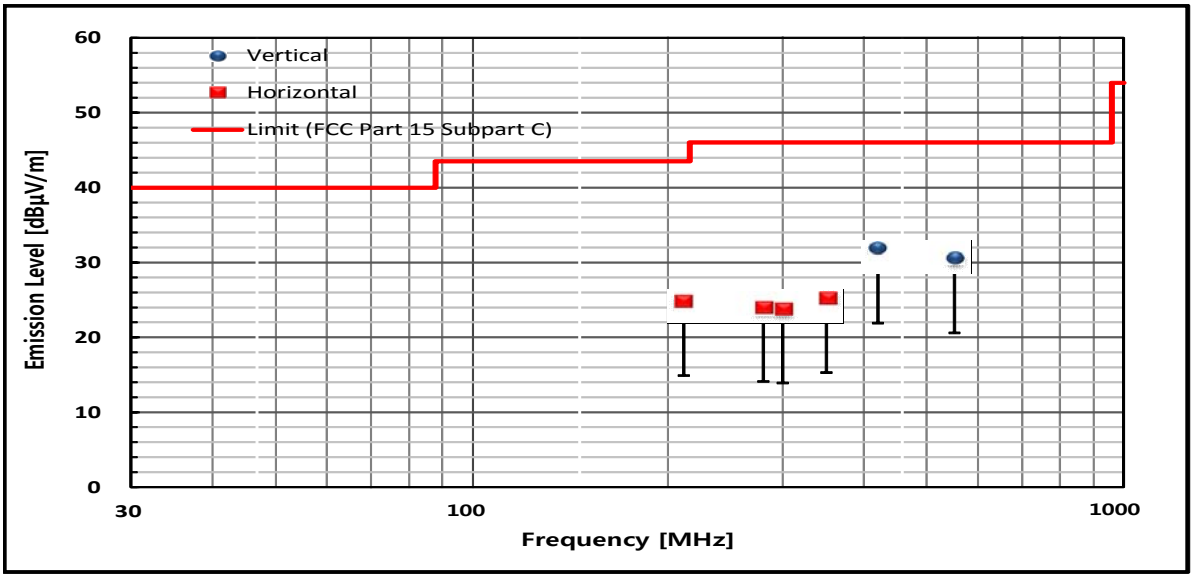
802.11n(20MHz)_2437MHz

Frequency [MHz]	Reading [dBμV]	Polarization [*H/**V]	Ant. Factor [dB]	Cable Loss [dB]	AMP Gain [dB]	Limit [dBμV/m]	Emission Level [dBμV/m]	Margin [dB]
211.52	34.93	H	10.40	4.66	25.19	43.52	24.80	18.72
280.01	30.73	H	13.31	5.32	25.46	46.02	23.90	22.12
300.05	28.60	H	13.78	5.50	24.28	46.02	23.60	22.42
350.00	29.72	H	14.67	5.91	25.00	46.02	25.30	20.72
419.95	35.99	V	15.65	6.46	26.30	46.02	31.80	14.22
550.50	31.88	V	18.09	7.35	27.03	46.02	30.30	15.72



802.11n(20MHz)_2462MHz

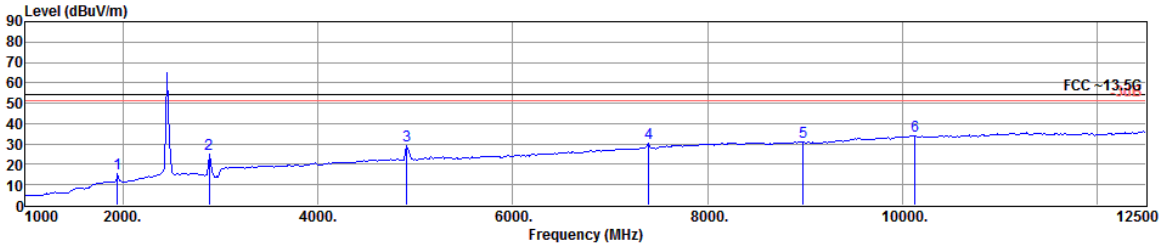
Frequency [MHz]	Reading [dBμV]	Polarization [*H/**V]	Ant. Factor [dB]	Cable Loss [dB]	AMP Gain [dB]	Limit [dBμV/m]	Emission Level [dBμV/m]	Margin [dB]
211.51	35.03	H	10.40	4.66	25.19	43.52	24.90	18.62
280.00	30.93	H	13.31	5.32	25.46	46.02	24.10	21.92
300.02	28.90	H	13.78	5.50	24.28	46.02	23.90	22.12
349.96	29.72	H	14.67	5.91	25.00	46.02	25.30	20.72
419.98	36.09	V	15.65	6.46	26.30	46.02	31.90	14.12
550.32	32.19	V	18.09	7.35	27.03	46.02	30.60	15.42



5.1.5.3 Above 1GHz

802.11b_2412MHz

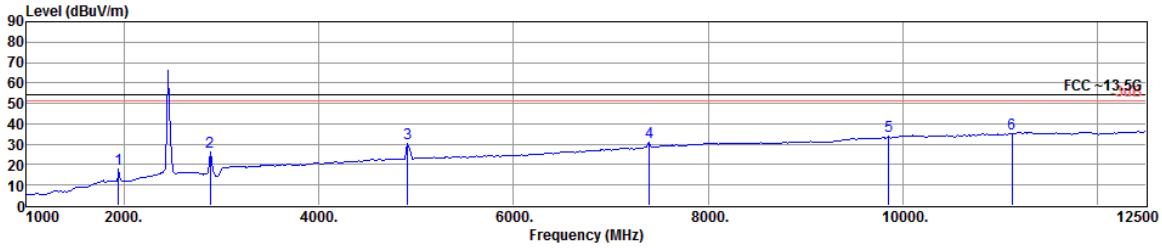
Horizontal



Site : SVSWR Chamber
Condition: FCC ~13.5G 3m BBHA9120D234_14G HORIZONTAL
eut :
mode :
memo :

	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg	
1	1943.00	26.51	25.75	40.73	4.09	15.62	53.97	-38.35	100	30	Average
2	2886.00	33.19	28.04	41.33	4.88	24.78	53.97	-29.19	100	230	Average
3	4910.00	32.49	31.28	41.20	6.49	29.06	53.97	-24.91	100	70	Average
4	7394.00	27.34	35.49	40.59	8.06	30.30	53.97	-23.67	100	80	Average
5	8981.00	25.20	36.72	40.34	9.48	31.06	53.97	-22.91	100	90	Average
6	10131.00	26.13	39.05	40.83	9.55	33.90	53.97	-20.07	100	100	Average

Vertical

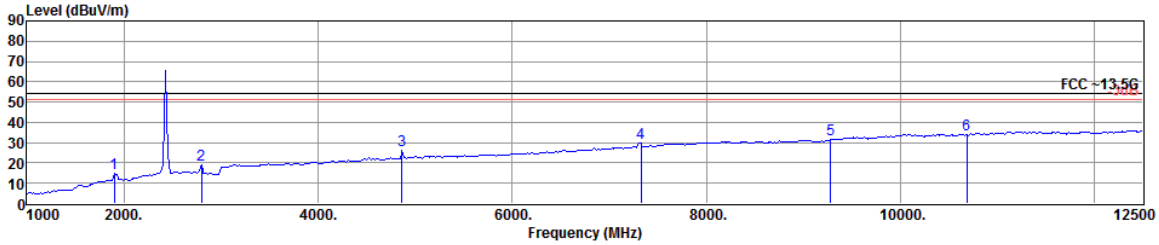


Site : SVSWR Chamber
Condition: FCC ~13.5G 3m BBHA9120D234_14G VERTICAL
eut :
mode :
memo :

	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg	
1	1943.00	28.68	25.75	40.73	4.09	17.79	53.97	-36.18	100	20	Average
2	2886.00	34.88	28.04	41.33	4.88	26.47	53.97	-27.50	100	10	Average
3	4910.00	33.96	31.28	41.20	6.49	30.53	53.97	-23.44	100	20	Average
4	7394.00	27.88	35.49	40.59	8.06	30.84	53.97	-23.13	100	90	Average
5	9855.00	26.69	38.59	40.98	9.48	33.78	53.97	-20.19	100	80	Average
6	11120.00	25.11	39.83	40.31	10.79	35.42	53.97	-18.55	100	120	Average

802.11b_2437MHz

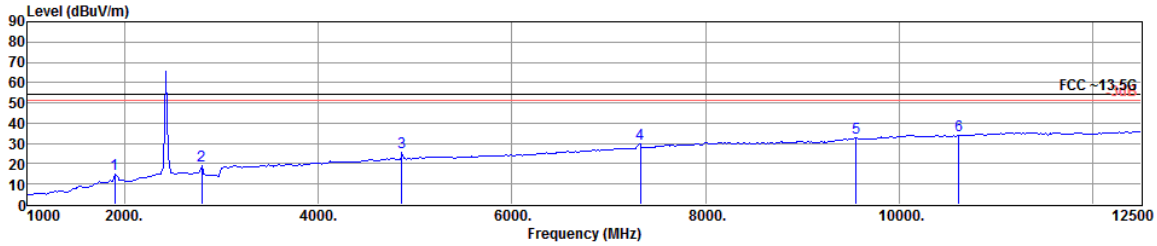
Horizontal



Site : SVSWR Chamber
Condition: FCC ~13.5G 3m BBHA9120D234_14G HORIZONTAL
eut :
mode :
memo :

	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg	
1	1897.00	25.78	25.73	40.70	4.04	14.85	53.97	-39.12	100	20	Average
2	2794.00	27.51	27.92	41.26	4.79	18.96	53.97	-35.01	100	60	Average
3	4864.00	29.95	31.19	41.24	6.48	26.38	53.97	-27.59	100	280	Average
4	7325.00	27.04	35.34	40.56	7.99	29.81	53.97	-24.16	100	150	Average
5	9280.00	25.31	37.33	40.81	9.63	31.46	53.97	-22.51	100	180	Average
6	10683.00	25.09	39.62	40.71	10.24	34.24	53.97	-19.73	100	320	Average

Vertical

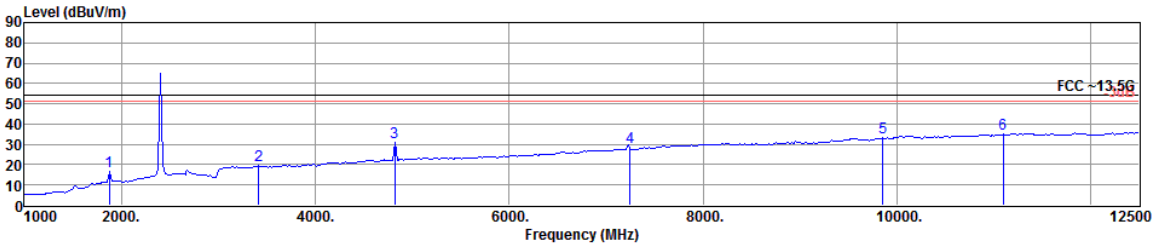


Site : SVSWR Chamber
Condition: FCC ~13.5G 3m BBHA9120D234_14G VERTICAL
eut :
mode :
memo :

	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg	
1	1897.00	25.73	25.73	40.70	4.04	14.80	53.97	-39.17	100	30	Average
2	2794.00	27.84	27.92	41.26	4.79	19.29	53.97	-34.68	100	120	Average
3	4864.00	29.38	31.19	41.24	6.48	25.81	53.97	-28.16	100	130	Average
4	7325.00	27.22	35.34	40.56	7.99	29.99	53.97	-23.98	100	200	Average
5	9556.00	26.37	37.94	41.15	9.68	32.84	53.97	-21.13	100	50	Average
6	10614.00	25.20	39.55	40.81	10.15	34.09	53.97	-19.88	100	310	Average

802.11b_2462MHz

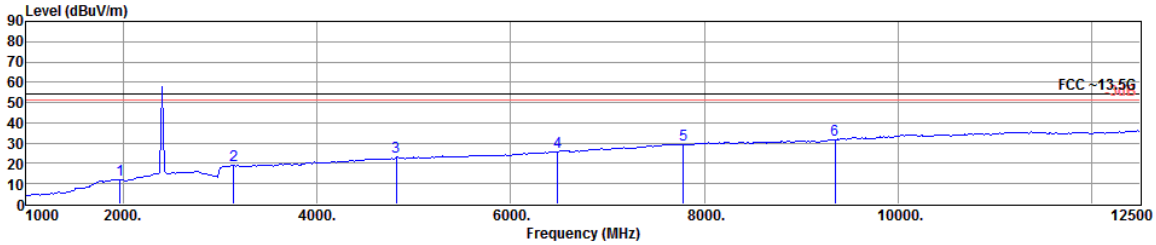
Horizontal



Site : SVSWR Chamber
Condition: FCC ~13.5G 3m BBHA9120D234_14G HORIZONTAL
eut :
mode :
memo :

	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg	
1	1874.00	27.45	25.72	40.68	4.02	16.51	53.97	-37.46	100	160	Average
2	3415.00	27.14	28.41	41.61	5.47	19.41	53.97	-34.56	100	20	Average
3	4818.00	34.50	31.10	41.28	6.47	30.79	53.97	-23.18	100	320	Average
4	7244.50	26.13	35.16	40.52	7.91	28.68	53.97	-25.29	100	190	Average
5	9855.00	26.06	38.59	40.98	9.48	33.15	53.97	-20.82	100	60	Average
6	11097.00	24.66	39.85	40.30	10.75	34.96	53.97	-19.01	100	210	Average

Vertical

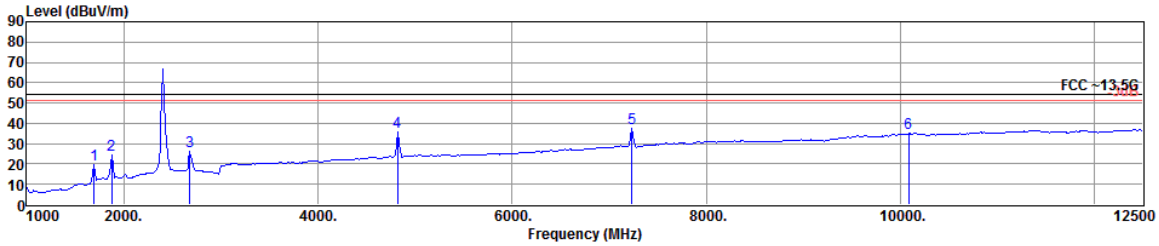


Site : SVSWR Chamber
Condition: FCC ~13.5G 3m BBHA9120D234_14G VERTICAL
eut :
mode :
memo :

	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg	
1	1966.00	22.98	25.76	40.74	4.11	12.11	53.97	-41.86	100	300	Average
2	3139.00	27.38	28.27	41.48	5.14	19.31	53.97	-34.66	100	250	Average
3	4818.00	27.09	31.10	41.28	6.47	23.38	53.97	-30.59	100	130	Average
4	6485.50	24.87	33.44	40.30	7.57	25.58	53.97	-28.39	100	50	Average
5	7785.00	25.29	36.37	40.68	8.38	29.36	53.97	-24.61	100	40	Average
6	9349.00	25.35	37.48	40.93	9.66	31.56	53.97	-22.41	100	190	Average

802.11g_2412MHz

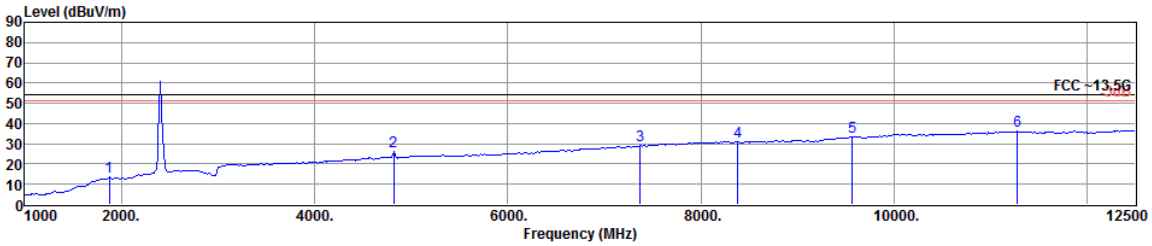
Horizontal



Site : SVSWR Chamber
Condition: FCC ~13.5G 3m BBHA9120D234_14G HORIZONTAL
eut :
mode :
memo :

	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg	
1	1690.00	30.84	25.65	40.58	3.85	19.76	53.97	-34.21	100	20	Average
2	1874.00	35.28	25.72	40.68	4.02	24.34	53.97	-29.63	100	30	Average
3	2679.00	34.77	27.77	41.19	4.68	26.03	53.97	-27.94	100	300	Average
4	4818.00	39.51	31.10	41.28	6.47	35.80	53.97	-18.17	100	50	Average
5	7233.00	35.21	35.13	40.52	7.90	37.72	53.97	-16.25	100	190	Average
6	10085.00	27.50	39.00	40.85	9.49	35.14	53.97	-18.83	100	90	Average

Vertical

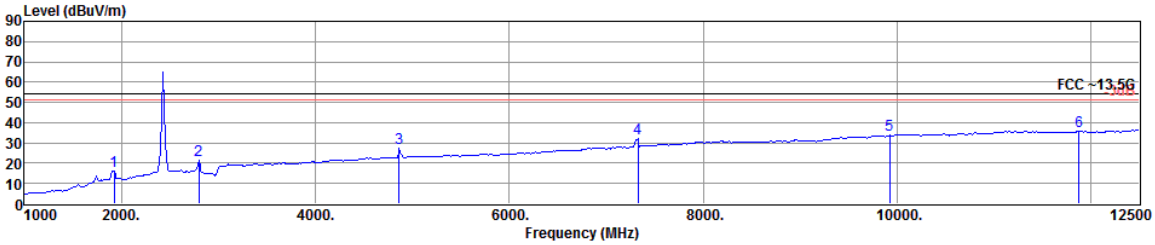


Site : SVSWR Chamber
Condition: FCC ~13.5G 3m BBHA9120D234_14G VERTICAL
eut :
mode :
memo :

	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg	
1	1874.00	24.77	25.72	40.68	4.02	13.83	53.97	-40.14	100	60	Average
2	4818.00	29.71	31.10	41.28	6.47	26.00	53.97	-27.97	100	110	Average
3	7371.00	26.04	35.44	40.58	8.04	28.94	53.97	-25.03	100	200	Average
4	8383.00	25.96	36.80	40.47	8.70	30.99	53.97	-22.98	100	80	Average
5	9567.50	27.10	37.96	41.14	9.67	33.59	53.97	-20.38	100	90	Average
6	11281.00	25.84	39.66	40.33	11.03	36.20	53.97	-17.77	100	30	Average

802.11g_2437MHz

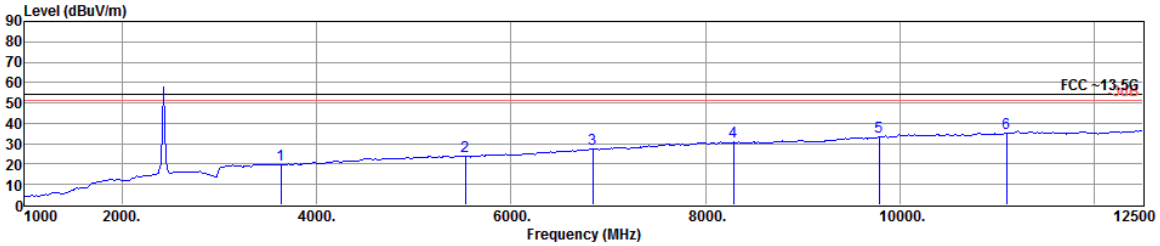
Horizontal



Site : SVSWR Chamber
Condition: FCC ~13.5G 3m BBHA9120D234_14G HORIZONTAL
eut :
mode :
memo :

	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg	
1	1920.00	27.24	25.74	40.71	4.06	16.33	53.97	-37.64	100	70	Average
2	2794.00	29.75	27.92	41.26	4.79	21.20	53.97	-32.77	100	90	Average
3	4864.00	30.74	31.19	41.24	6.48	27.17	53.97	-26.80	100	90	Average
4	7325.00	29.17	35.34	40.56	7.99	31.94	53.97	-22.03	100	250	Average
5	9924.00	26.49	38.74	40.94	9.43	33.72	53.97	-20.25	100	190	Average
6	11879.00	25.86	39.04	40.36	11.51	36.05	53.97	-17.92	100	140	Average

Vertical

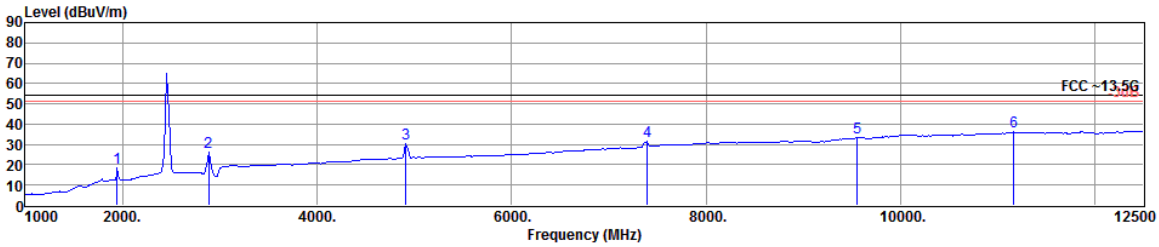


Site : SVSWR Chamber
Condition: FCC ~13.5G 3m BBHA9120D234_14G VERTICAL
eut :
mode :
memo :

	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg	
1	3633.50	27.26	28.68	41.68	5.65	19.91	53.97	-34.06	100	80	Peak
2	5531.00	26.02	31.72	40.68	6.74	23.80	53.97	-30.17	100	60	Peak
3	6842.00	25.90	34.25	40.38	7.65	27.42	53.97	-26.55	100	150	Peak
4	8291.00	25.85	36.81	40.53	8.66	30.79	53.97	-23.18	100	260	Peak
5	9786.00	26.53	38.44	41.02	9.53	33.48	53.97	-20.49	100	90	Average
6	11097.00	25.08	39.85	40.30	10.75	35.38	53.97	-18.59	100	60	Average

802.11g_2462MHz

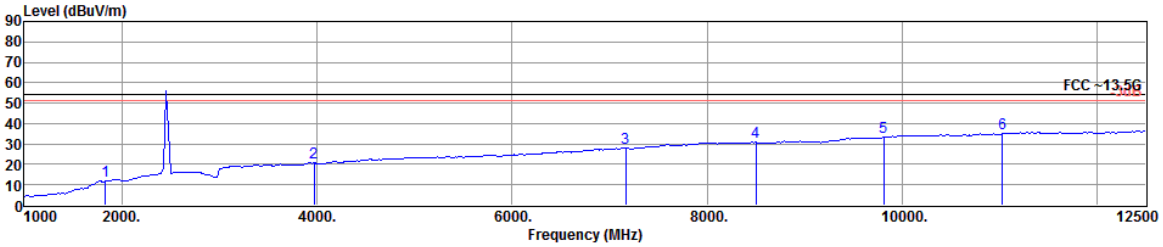
Horizontal



Site : SVSWR Chamber
Condition: FCC ~13.5G 3m BBHA9120D234_14G HORIZONTAL
eut :
mode :
memo :

	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg	
1	1943.00	29.52	25.75	40.73	4.09	18.63	53.97	-35.34	100	90	Average
2	2886.00	34.73	28.04	41.33	4.88	26.32	53.97	-27.65	100	10	Average
3	4910.00	33.92	31.28	41.20	6.49	30.49	53.97	-23.48	100	340	Average
4	7394.00	28.57	35.49	40.59	8.06	31.53	53.97	-22.44	100	180	Average
5	9556.00	26.95	37.94	41.15	9.68	33.42	53.97	-20.55	100	100	Average
6	11166.00	25.76	39.78	40.31	10.86	36.09	53.97	-17.88	100	60	Average

Vertical

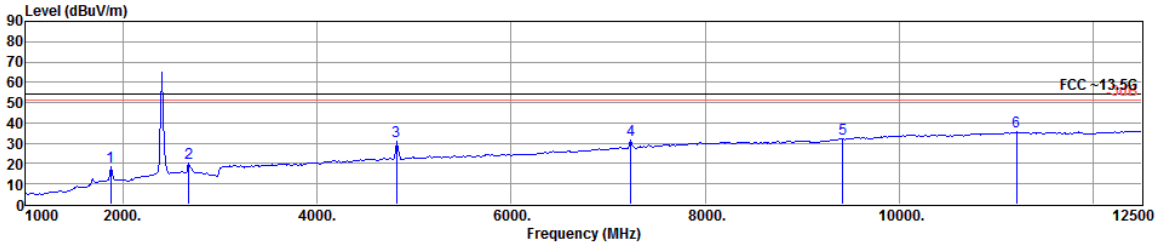


Site : SVSWR Chamber
Condition: FCC ~13.5G 3m BBHA9120D234_14G VERTICAL
eut :
mode :
memo :

	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg	
1	1828.00	22.91	25.70	40.66	3.98	11.93	53.97	-42.04	100	10	Average
2	3967.00	27.39	29.24	41.70	5.84	20.77	53.97	-33.20	100	120	Average
3	7164.00	25.82	34.98	40.49	7.84	28.15	53.97	-25.82	100	250	Average
4	8498.00	25.87	36.79	40.40	8.74	31.00	53.97	-22.97	100	120	Average
5	9809.00	26.53	38.49	41.01	9.51	33.52	53.97	-20.45	100	30	Average
6	11028.00	24.73	39.92	40.29	10.65	35.01	53.97	-18.96	100	20	Average

802.11n(20MHz)_2412MHz

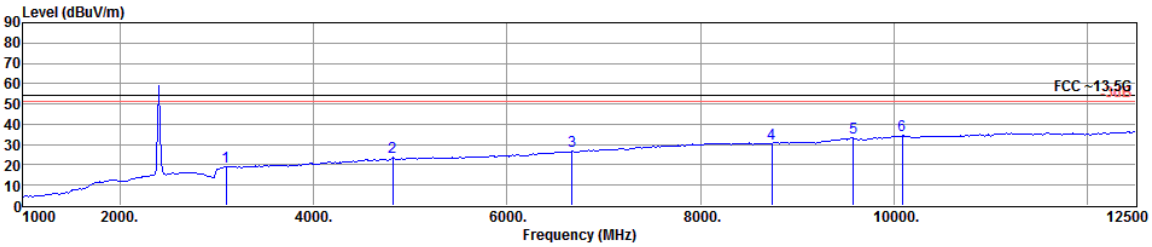
Horizontal



Site : SVSWR Chamber
Condition: FCC ~13.5G 3m BBHA9120D234_14G HORIZONTAL
eut :
mode :
memo :

	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg	
1	1874.00	29.13	25.72	40.68	4.02	18.19	53.97	-35.78	100	60	Average
2	2679.00	29.28	27.77	41.19	4.68	20.54	53.97	-33.43	100	200	Average
3	4818.00	34.80	31.10	41.28	6.47	31.09	53.97	-22.88	100	90	Average
4	7233.00	28.94	35.13	40.52	7.90	31.45	53.97	-22.52	100	160	Average
5	9418.00	26.10	37.64	41.04	9.69	32.39	53.97	-21.58	100	240	Average
6	11212.00	25.37	39.73	40.32	10.92	35.70	53.97	-18.27	100	50	Average

Vertical

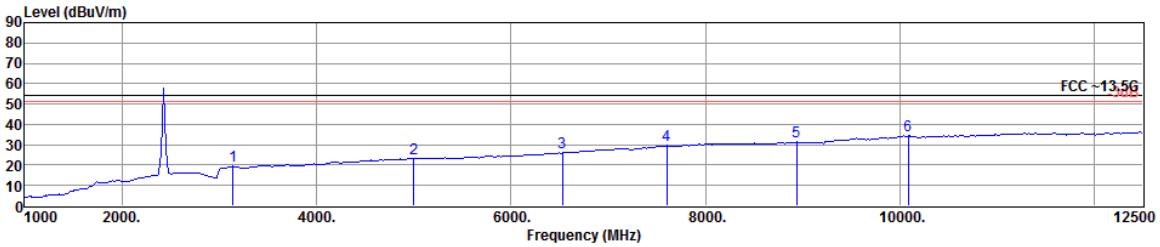


Site : SVSWR Chamber
Condition: FCC ~13.5G 3m BBHA9120D234_14G VERTICAL
eut :
mode :
memo :

	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg	
1	3093.00	27.36	28.24	41.46	5.09	19.23	53.97	-34.74	100	110	Average
2	4818.00	27.74	31.10	41.28	6.47	24.03	53.97	-29.94	100	350	Average
3	6669.50	25.40	33.86	40.34	7.61	26.53	53.97	-27.44	100	90	Average
4	8739.50	25.20	36.75	40.37	9.11	30.69	53.97	-23.28	100	170	Average
5	9579.00	26.60	37.99	41.14	9.67	33.12	53.97	-20.85	100	250	Average
6	10085.00	26.97	39.00	40.85	9.49	34.61	53.97	-19.36	100	260	Average

802.11n(20MHz)_2437MHz

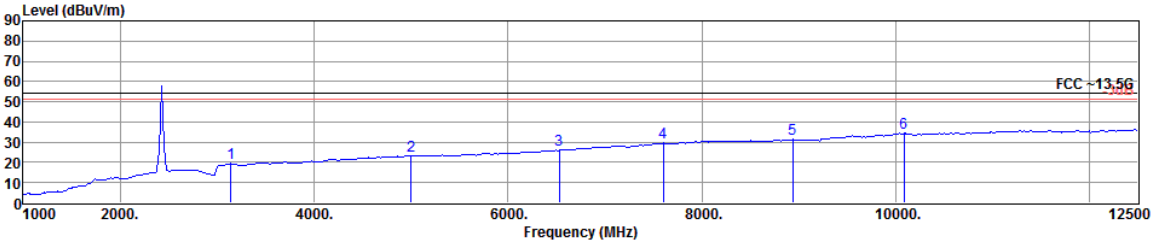
Horizontal



Site : SVSWR Chamber
Condition: FCC ~13.5G 3m BBHA9120D234_14G VERTICAL
eut :
mode :
memo :

	Freq	ReadAntenna Level	Factor	Preamp Factor	Cable Loss	Level	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg	
1	3139.00	27.50	28.27	41.48	5.14	19.43	53.97	-34.54	100	80	Average
2	5002.00	26.41	31.46	41.13	6.52	23.26	53.97	-30.71	100	150	Average
3	6531.50	25.22	33.55	40.31	7.59	26.05	53.97	-27.92	100	240	Average
4	7601.00	25.96	35.96	40.65	8.24	29.51	53.97	-24.46	100	300	Average
5	8935.00	25.53	36.73	40.35	9.41	31.32	53.97	-22.65	100	50	Average
6	10085.00	26.72	39.00	40.85	9.49	34.36	53.97	-19.61	100	120	Average

Vertical

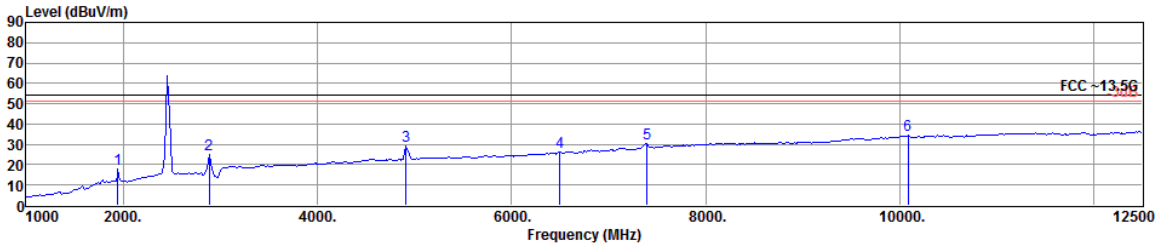


Site : SVSWR Chamber
Condition: FCC ~13.5G 3m BBHA9120D234_14G VERTICAL
eut :
mode :
memo :

	Freq	ReadAntenna Level	Factor	Preamp Factor	Cable Loss	Level	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg	
1	3139.00	27.50	28.27	41.48	5.14	19.43	53.97	-34.54	100	80	Average
2	5002.00	26.41	31.46	41.13	6.52	23.26	53.97	-30.71	100	150	Average
3	6531.50	25.22	33.55	40.31	7.59	26.05	53.97	-27.92	100	240	Average
4	7601.00	25.96	35.96	40.65	8.24	29.51	53.97	-24.46	100	300	Average
5	8935.00	25.53	36.73	40.35	9.41	31.32	53.97	-22.65	100	50	Average
6	10085.00	26.72	39.00	40.85	9.49	34.36	53.97	-19.61	100	120	Average

802.11n(20MHz)_2462MHz

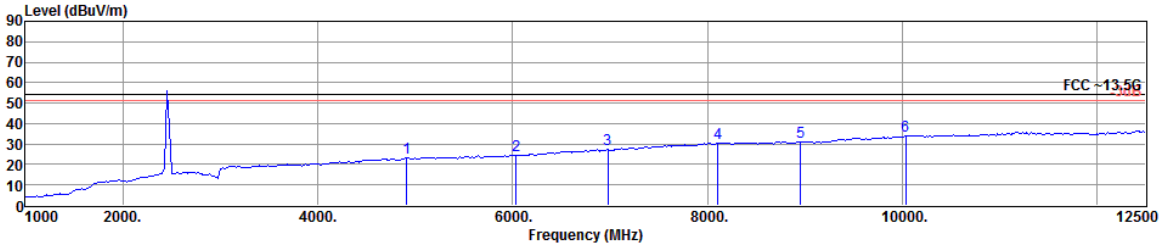
Horizontal



Site : SVSWR Chamber
Condition: FCC ~13.5G 3m BBHA9120D234_14G HORIZONTAL
eut :
mode :
memo :

	Freq	ReadLevel	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg	
1	1943.00	28.52	25.75	40.73	4.09	17.63	53.97	-36.34	100	180	Average
2	2886.00	33.17	28.04	41.33	4.88	24.76	53.97	-29.21	100	190	Average
3	4910.00	32.65	31.28	41.20	6.49	29.22	53.97	-24.75	100	260	Average
4	6497.00	25.59	33.47	40.30	7.58	26.34	53.97	-27.63	100	40	Average
5	7394.00	27.61	35.49	40.59	8.06	30.57	53.97	-23.40	100	90	Average
6	10085.00	26.79	39.00	40.85	9.49	34.43	53.97	-19.54	180	---	Average

Vertical



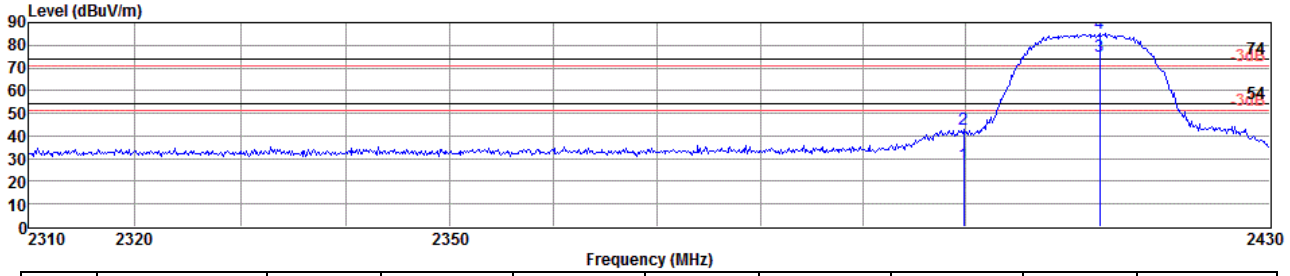
Site : SVSWR Chamber
Condition: FCC ~13.5G 3m BBHA9120D234_14G VERTICAL
eut :
mode :
memo :

	Freq	ReadLevel	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit Line	Over Limit	A/Pos	T/Pos	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg	
1	4910.00	26.59	31.28	41.20	6.49	23.16	53.97	-30.81	100	350	Average
2	6037.00	25.49	32.42	40.35	7.11	24.67	53.97	-29.30	100	170	Average
3	6980.00	25.61	34.56	40.42	7.68	27.43	53.97	-26.54	100	200	Average
4	8107.00	25.53	36.84	40.64	8.59	30.32	53.97	-23.65	100	210	Average
5	8958.00	25.29	36.73	40.35	9.45	31.12	53.97	-22.85	100	210	Average
6	10039.00	26.71	38.95	40.88	9.43	34.21	53.97	-19.76	100	230	Average

Note: For above 12.5GHz, noise level is below the noise flow.

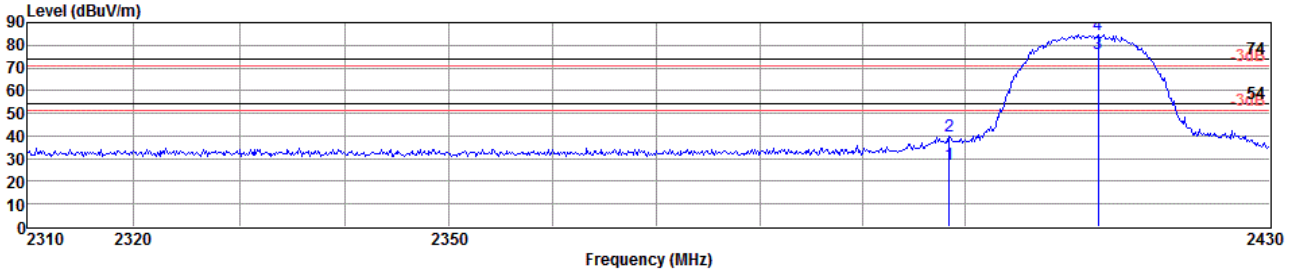
5.1.5.4 Radiated Band Edges

802.11b_Lowest
Vertical



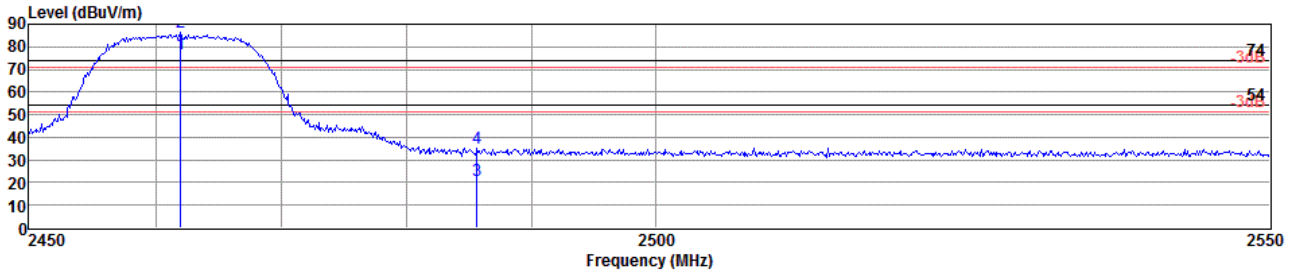
No	Frequency [MHz]	Read Level [dBµV]	Antenna Factor [dB/m]	Preamp Factor [dB]	Cable Loss	Level [dBµV/m]	Limit [dBµV/m]	Over Limit [dB]	Remark
1	2399.79	37.45	26.75	41.01	4.44	27.63	54	-26.37	Average
2	2399.79	52.61	26.75	41.01	4.44	42.79	74	-31.21	Peak
3	2413.20	85.06	26.77	41.02	4.45	75.26	-	-	Average
4	2413.20	95.03	26.77	41.02	4.45	85.23	-	-	Peak

Horizontal



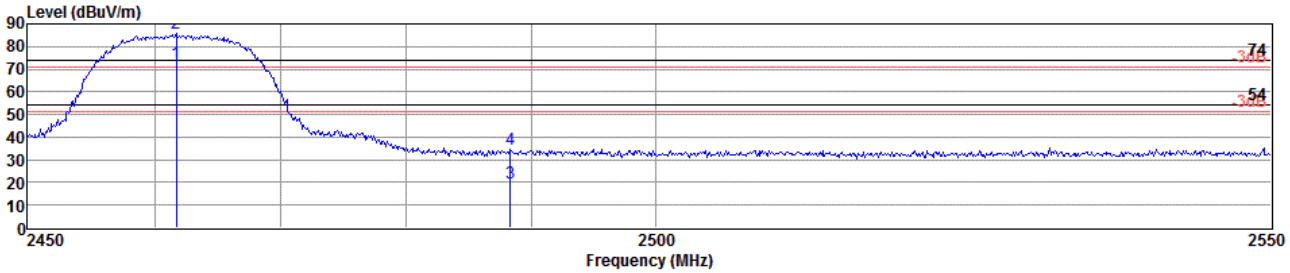
No	Frequency [MHz]	Read Level [dBµV]	Antenna Factor [dB/m]	Preamp Factor [dB]	Cable Loss	Level [dBµV/m]	Limit [dBµV/m]	Over Limit [dB]	Remark
1	2398.46	37.46	26.75	41.01	4.44	27.64	54	-26.36	Average
2	2398.46	49.54	26.75	41.01	4.44	39.72	74	-34.28	Peak
3	2413.08	86.12	26.77	41.02	4.45	76.32	-	-	Average
4	2413.08	94.62	26.77	41.02	4.45	84.82	-	-	Peak

802.11b_Highest
Vertical



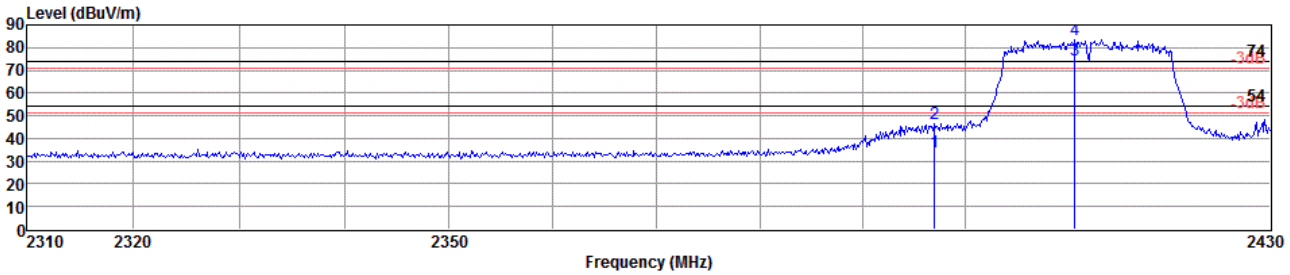
No	Frequency [MHz]	Read Level [dBµV]	Antenna Factor [dB/m]	Preamp Factor [dB]	Cable Loss	Level [dBµV/m]	Limit [dBµV/m]	Over Limit [dB]	Remark
1	2461.99	86.91	26.83	41.06	4.49	77.17	-	-	Average
2	2461.99	95.88	26.83	41.06	4.49	86.14	-	-	Peak
3	2485.64	30.28	30.28	41.07	4.51	20.58	54	-33.42	Average
4	2485.64	45.04	45.04	41.07	4.51	35.34	74	-38.42	Peak

Horizontal



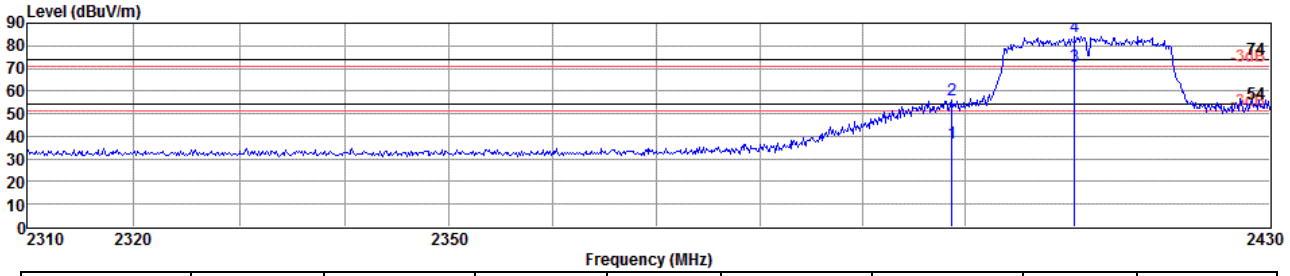
No	Frequency [MHz]	Read Level [dBµV]	Antenna Factor [dB/m]	Preamp Factor [dB]	Cable Loss	Level [dBµV/m]	Limit [dBµV/m]	Over Limit [dB]	Remark
1	2461.69	82.19	26.83	41.06	4.49	72.45	-	-	Average
2	2461.69	95.30	26.83	41.06	4.49	85.56	-	-	Peak
3	2488.33	29.11	26.87	41.07	4.51	19.42	54	-34.58	Average
4	2488.33	44.28	26.87	41.07	4.51	34.59	74	-39.41	Peak

802.11g_Lowest
Vertical



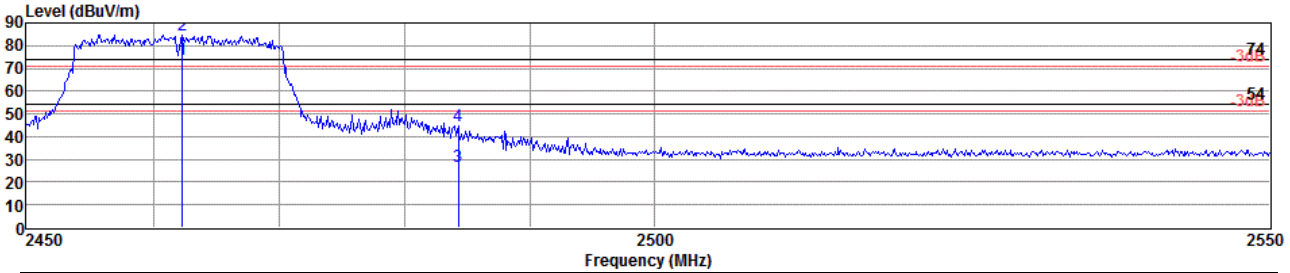
Frequency [MHz]	Read Level [dBµV]	Antenna Factor [dB/m]	Preamp Factor [dB]	Cable Loss	Level [dBµV/m]	Limit [dBµV/m]	Over Limit [dB]	Remark
2397.00	43.78	26.75	41.01	4.44	33.96	54	-20.04	Average
2397.00	56.59	26.75	41.01	4.44	46.77	74	-27.23	Peak
2410.76	84.41	26.77	41.02	4.45	74.61	-	-	Average
2410.76	93.35	26.77	41.02	4.45	83.55	-	-	Peak

Horizontal



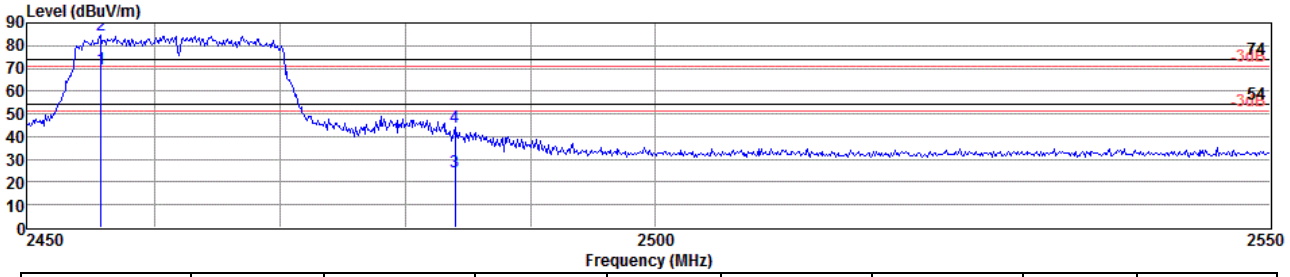
Frequency [MHz]	Read Level [dBµV]	Antenna Factor [dB/m]	Preamp Factor [dB]	Cable Loss	Level [dBµV/m]	Limit [dBµV/m]	Over Limit [dB]	Remark
2398.70	46.49	26.75	41.01	4.44	36.67	54	-17.33	Average
2398.70	65.99	26.75	41.01	4.44	56.17	74	-17.83	Peak
2410.76	80.84	26.77	41.02	4.45	71.04	-	-	Average
2410.76	94.01	26.77	41.02	4.45	84.21	-	-	Peak

802.11g_Highest
Vertical



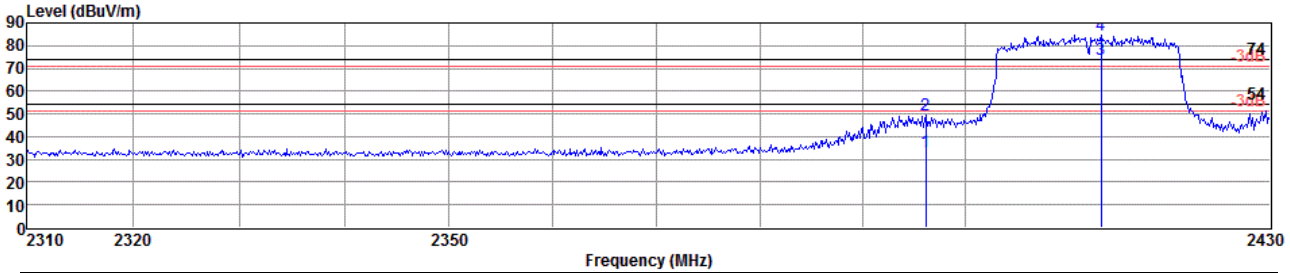
Frequency [MHz]	Read Level [dBµV]	Antenna Factor [dB/m]	Preamp Factor [dB]	Cable Loss	Level [dBµV/m]	Limit [dBµV/m]	Over Limit [dB]	Remark
2462.28	83.82	26.83	41.06	4.49	74.08	-	-	Average
2462.28	94.33	26.83	41.06	4.49	84.59	-	-	Peak
2484.25	36.33	26.86	41.07	4.51	26.63	54	-27.37	Average
2484.25	54.12	26.86	41.07	4.51	44.42	74	-29.58	Peak

Horizontal



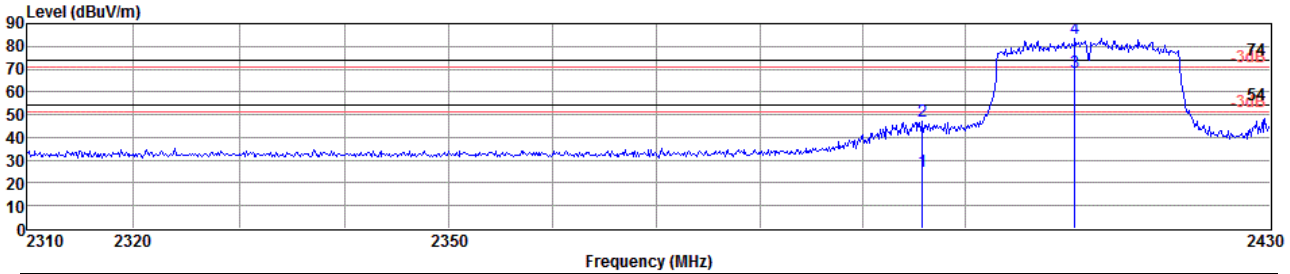
Frequency [MHz]	Read Level [dBµV]	Antenna Factor [dB/m]	Preamp Factor [dB]	Cable Loss	Level [dBµV/m]	Limit [dBµV/m]	Over Limit [dB]	Remark
2455.79	79.58	26.82	41.05	4.49	69.84	-	-	Average
2455.79	94.22	26.82	41.05	4.49	84.48	-	-	Peak
2483.95	34.21	26.86	41.07	4.51	24.51	54	-29.49	Average
2483.95	53.95	26.86	41.07	4.51	43.99	74	-30.01	Peak

802.11n(20MHz)_Lowest
Vertical



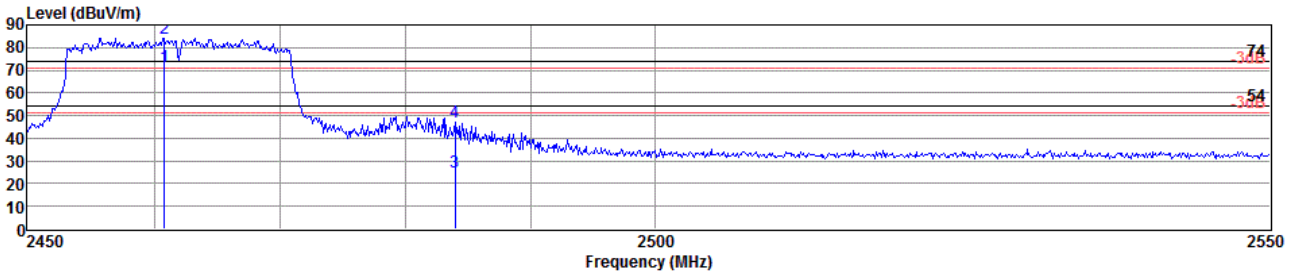
Frequency [MHz]	Read Level [dBµV]	Antenna Factor [dB/m]	Preamp Factor [dB]	Cable Loss	Level [dBµV/m]	Limit [dBµV/m]	Over Limit [dB]	Remark
2369.15	43.39	26.75	41.01	4.44	33.57	54	-20.43	Average
2369.15	59.26	26.75	41.01	4.44	49.44	74	-24.56	Peak
2413.32	83.42	26.77	41.02	4.45	73.62	-	-	Average
2413.32	94.21	26.77	41.02	4.45	84.41	-	-	Peak

Horizontal



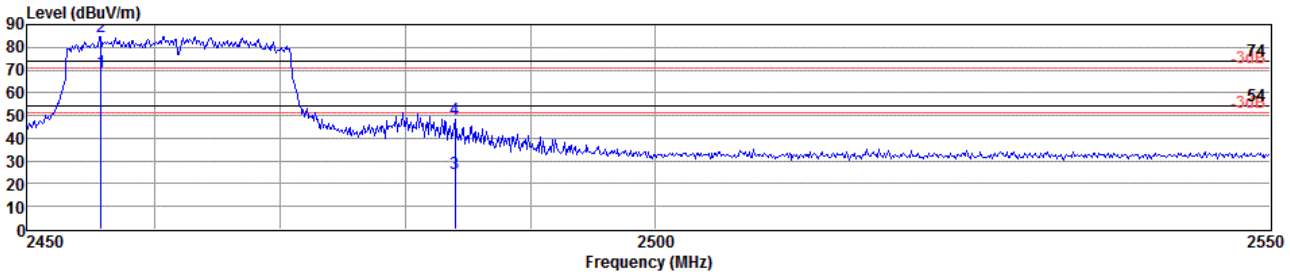
Frequency [MHz]	Read Level [dBµV]	Antenna Factor [dB/m]	Preamp Factor [dB]	Cable Loss	Level [dBµV/m]	Limit [dBµV/m]	Over Limit [dB]	Remark
2395.79	34.65	26.75	41.01	4.44	24.83	54	-29.17	Average
2395.79	57.19	26.75	41.01	4.44	47.37	74	-26.63	Peak
2410.76	78.61	26.77	41.02	4.45	68.81	-	-	Average
2410.76	93.15	26.77	41.02	4.45	83.35	-	-	Peak

802.11n(20MHz)_Highest
Vertical



Frequency [MHz]	Read Level [dBµV]	Antenna Factor [dB/m]	Preamp Factor [dB]	Cable Loss	Level [dBµV/m]	Limit [dBµV/m]	Over Limit [dB]	Remark
2460.81	80.97	26.83	41.05	4.49	71.24	-	-	Average
2460.81	93.88	26.83	41.05	4.49	84.15	-	-	Peak
2483.95	34.84	26.86	41.08	4.51	25.14	54	-28.86	Average
2483.95	56.88	26.86	41.08	4.51	47.18	74	-26.82	Peak

Horizontal



Frequency [MHz]	Read Level [dBµV]	Antenna Factor [dB/m]	Preamp Factor [dB]	Cable Loss	Level [dBµV/m]	Limit [dBµV/m]	Over Limit [dB]	Remark
2455.79	78.82	26.82	41.05	4.49	69.08	-	-	Average
2455.79	94.26	26.82	41.05	4.49	84.52	-	-	Peak
2483.95	34.00	26.86	41.07	4.51	24.30	54	-29.70	Average
2483.95	58.02	26.86	41.07	4.51	48.32	74	-25.68	Peak

5.2 6dB Bandwidth

5.2.1 Test Equipment

EQUIPMENT	MODEL	MANUFACTURE	SERIAL NUMBER	Calibration Due date
Spectrum analyzer	N9020A	Agilent	US46220101	15/09/11
Power supply	UDP-6015	UNICORN TECH	1301006	15/09/11
RF Cable_2m	Test No.1	Hubersunhner	N/A	15/01/14

5.2.2 Test Limit

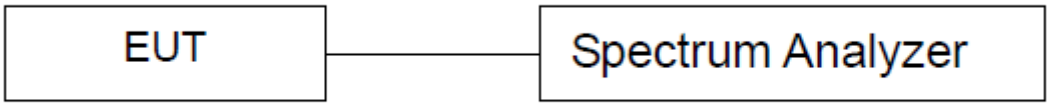
The minimum 6dB bandwidth shall be at least 500 kHz.

5.2.3 Measurement Procedure

The EUT has been operated and followed in the IEEE 802.11b/g/n mode, and could be controlled its channel. Printed out the test result from the spectrum by hard copy function.

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02.
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, Detector = Peak, Trace mode = Max Hold, Sweep = Auto)
5. Measure and record the results in the test report.

5.2.4 Test SET-UP (Block Diagram of Configuration)



5.2.5 Test Result

802.11b

Frequency(MHz)	Transfer Rate	Test Result(MHz)	Limit(kHz)
2412	11Mbps	7.88	≥500
2437	11Mbps	8.20	≥500
2462	11Mbps	8.25	≥500

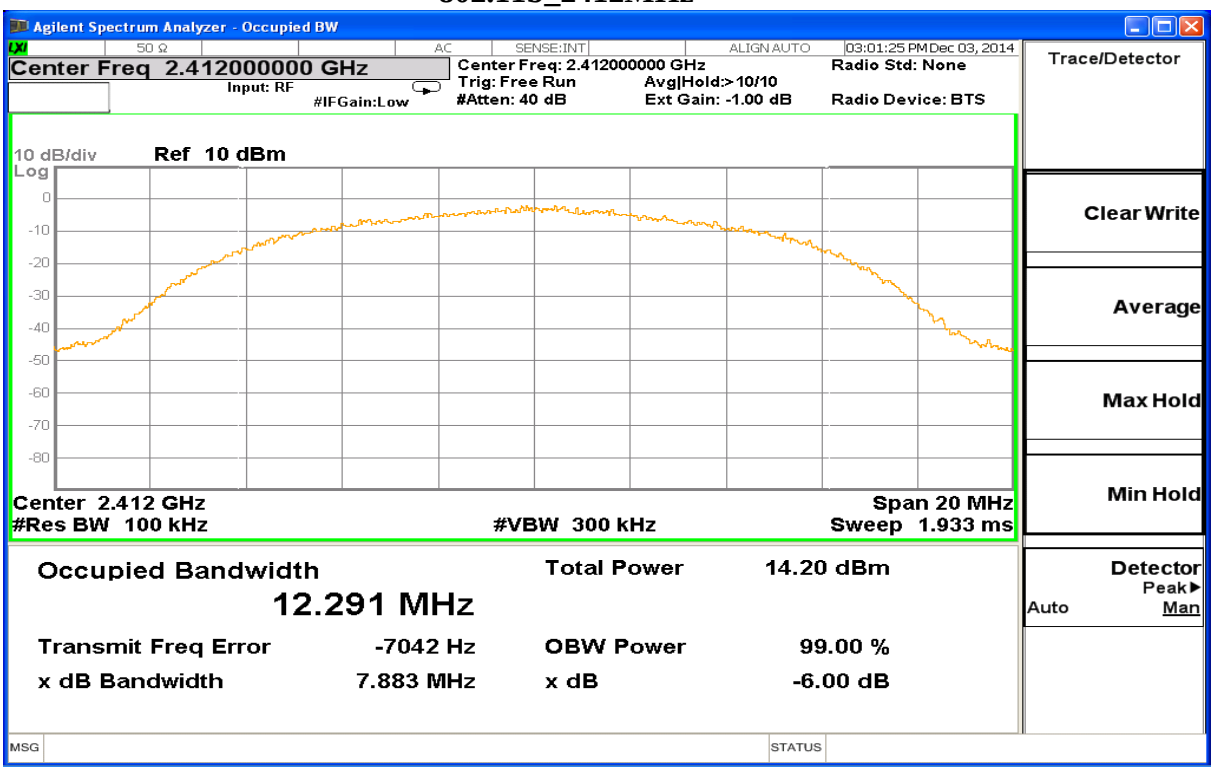
802.11g

Frequency(MHz)	Transfer Rate	Test Result(MHz)	Limit(kHz)
2412	54Mbps	16.31	≥500
2437	54Mbps	16.05	≥500
2462	54Mbps	16.03	≥500

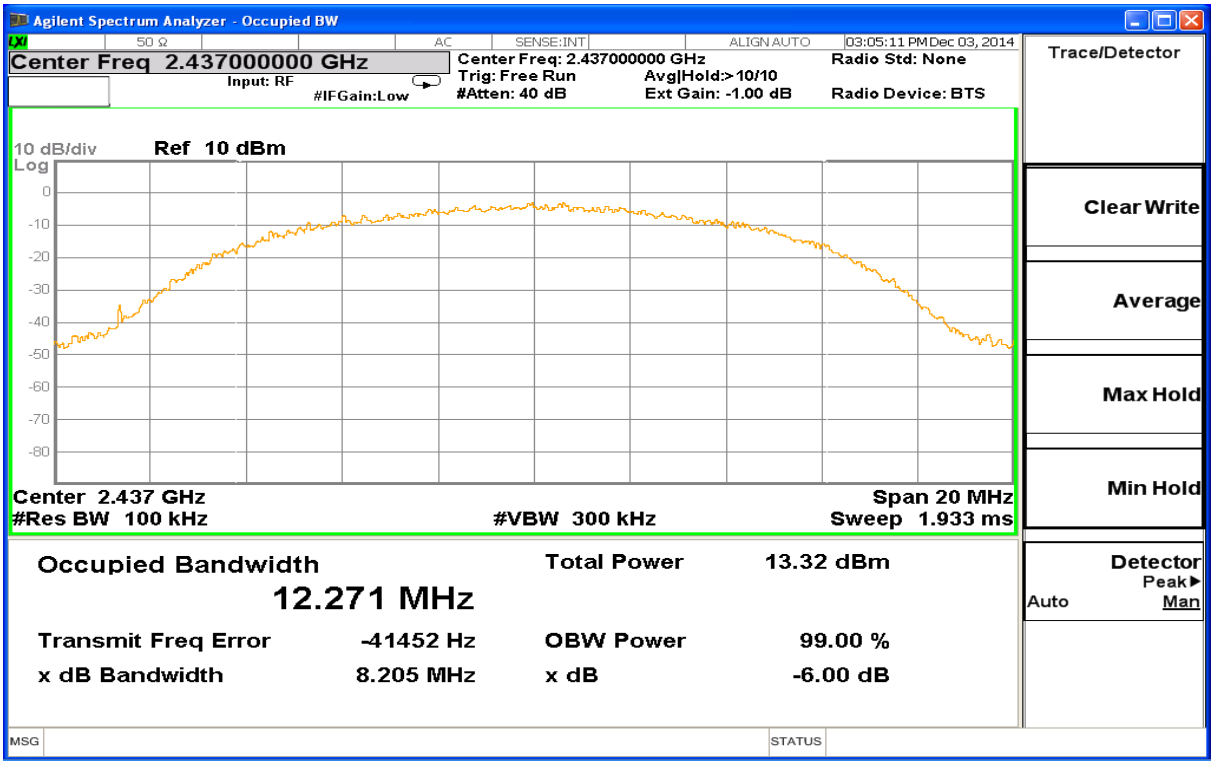
802.11n(20MHz)

Frequency(MHz)	Transfer Rate	Test Result(MHz)	Limit(kHz)
2412	MCS7	17.15	≥500
2437	MCS7	17.25	≥500
2462	MCS7	17.20	≥500

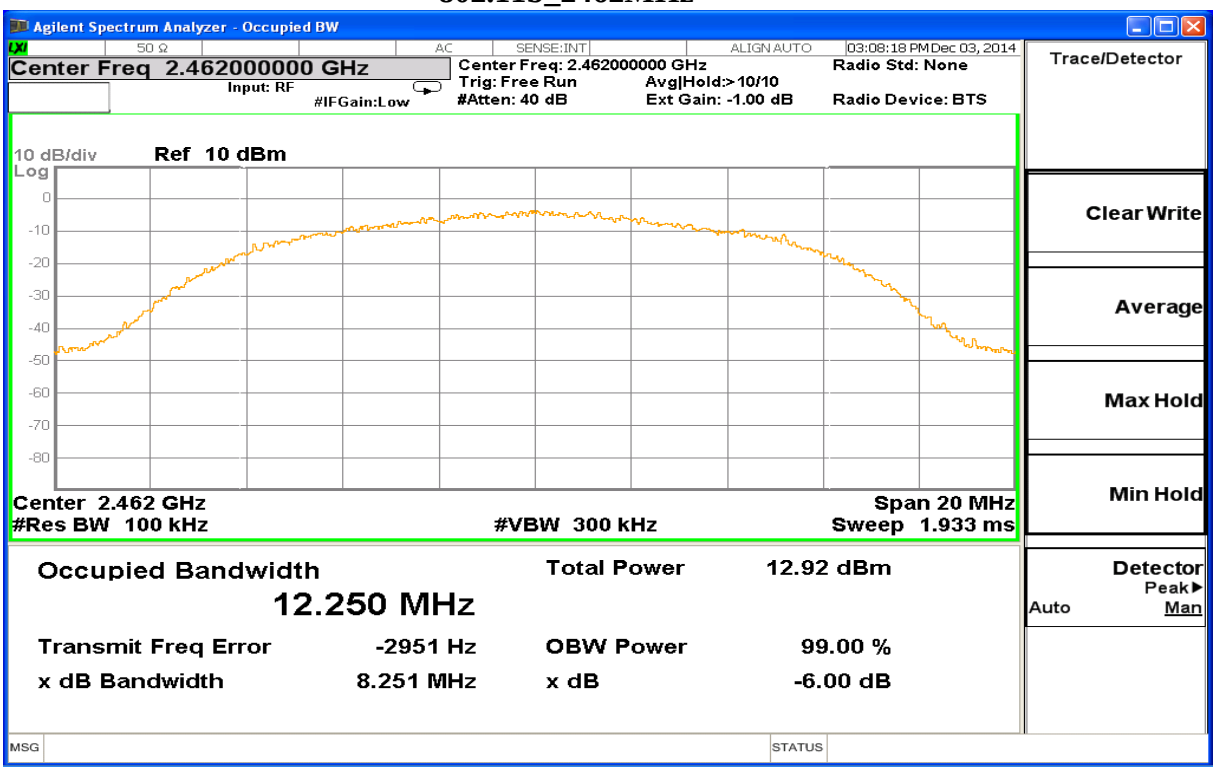
802.11b_2412MHz



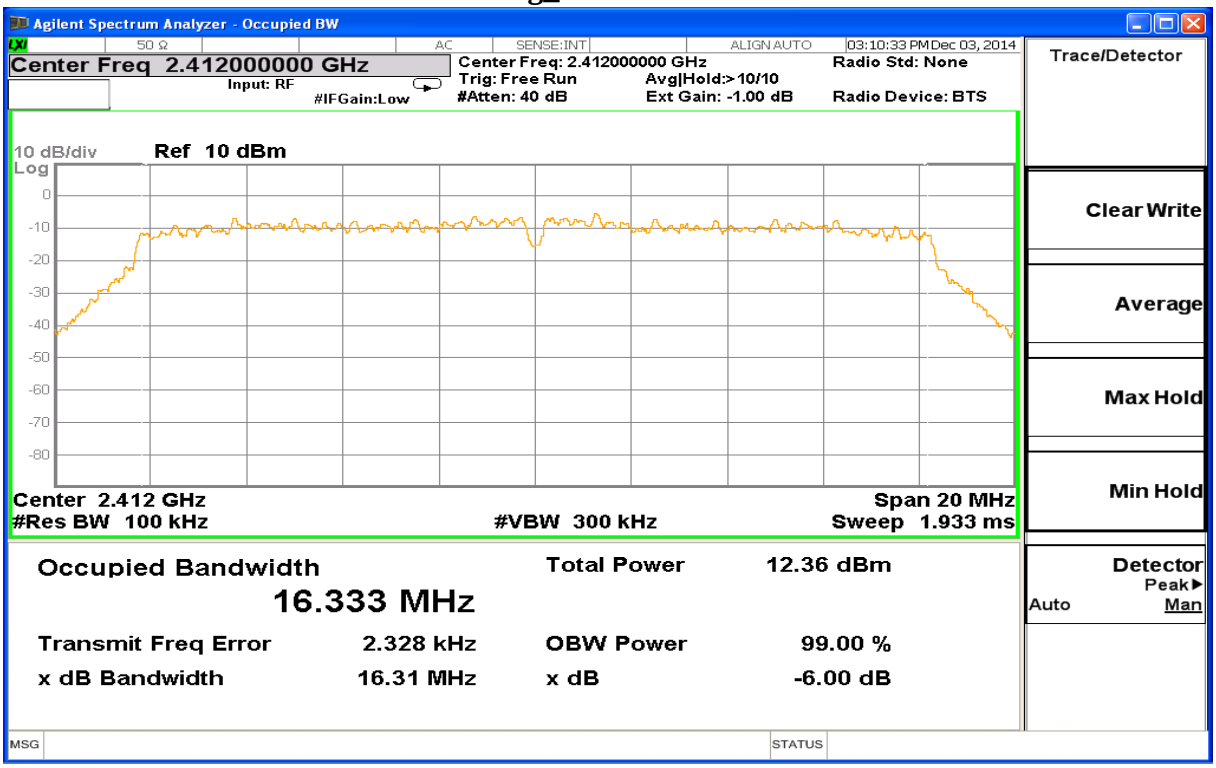
802.11b_2437MHz



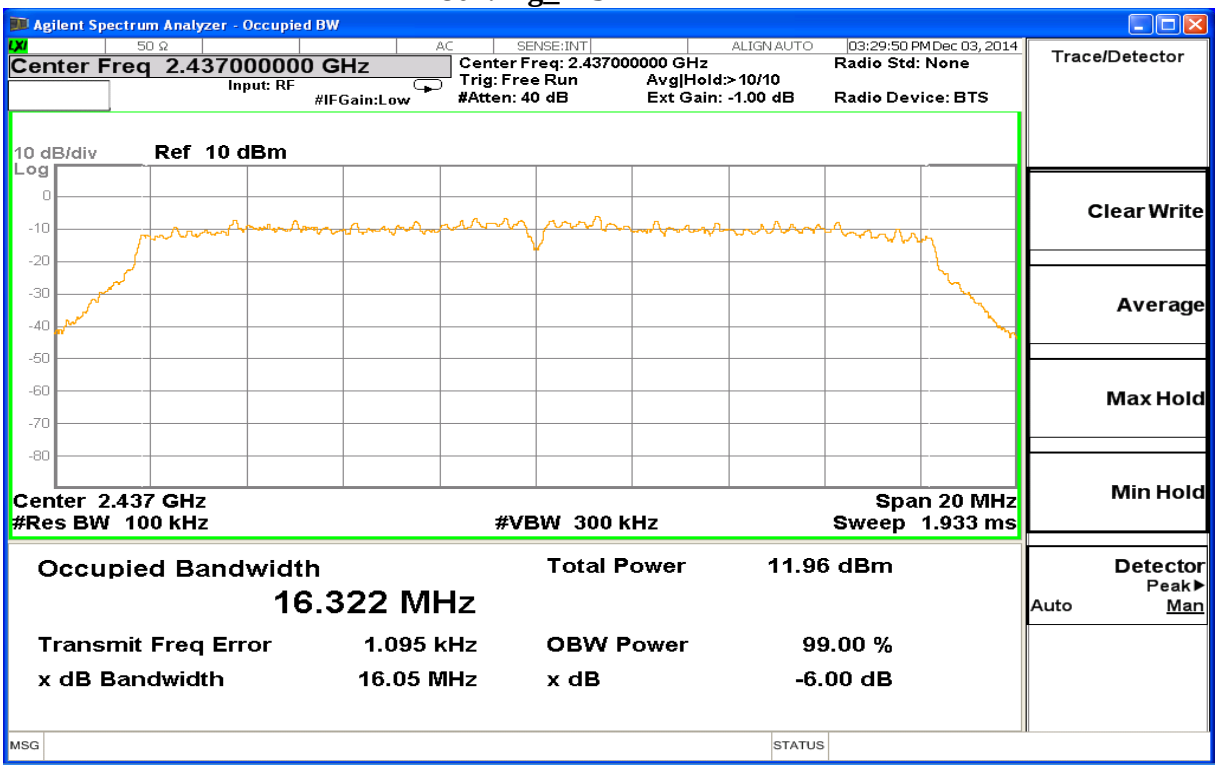
802.11b_2462MHz



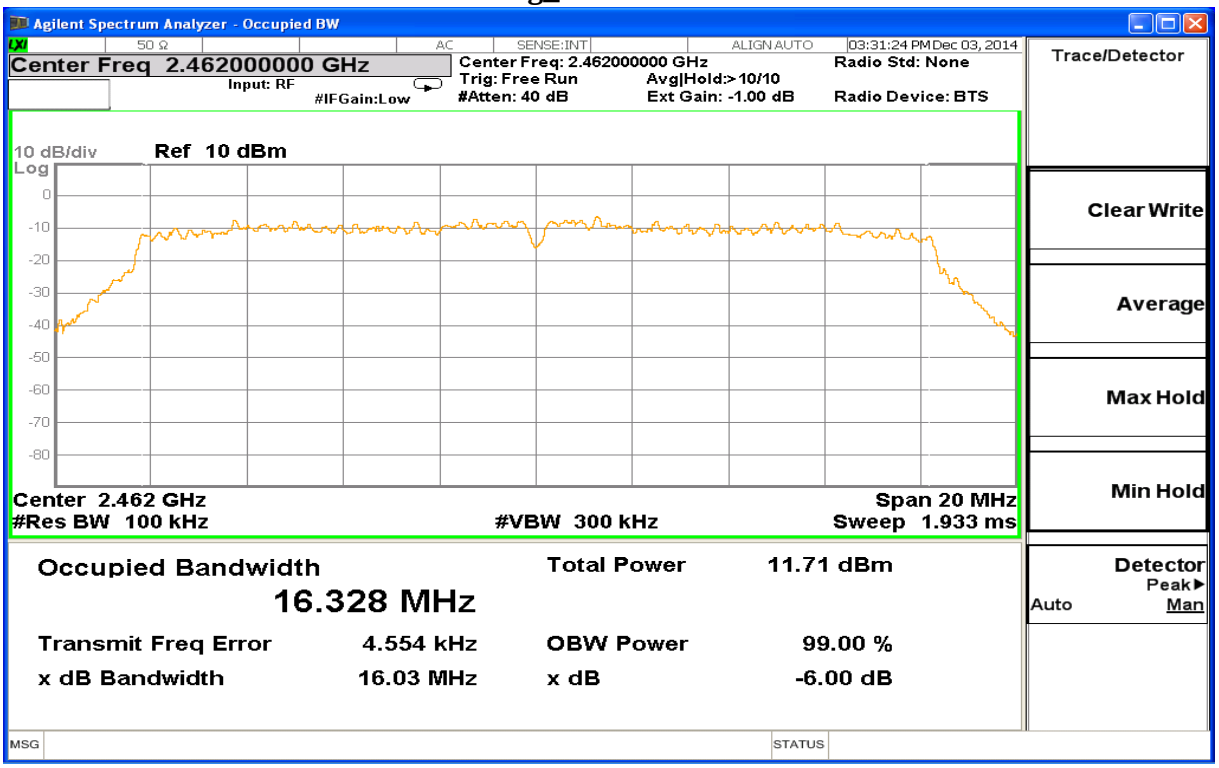
802.11g_2412MHz



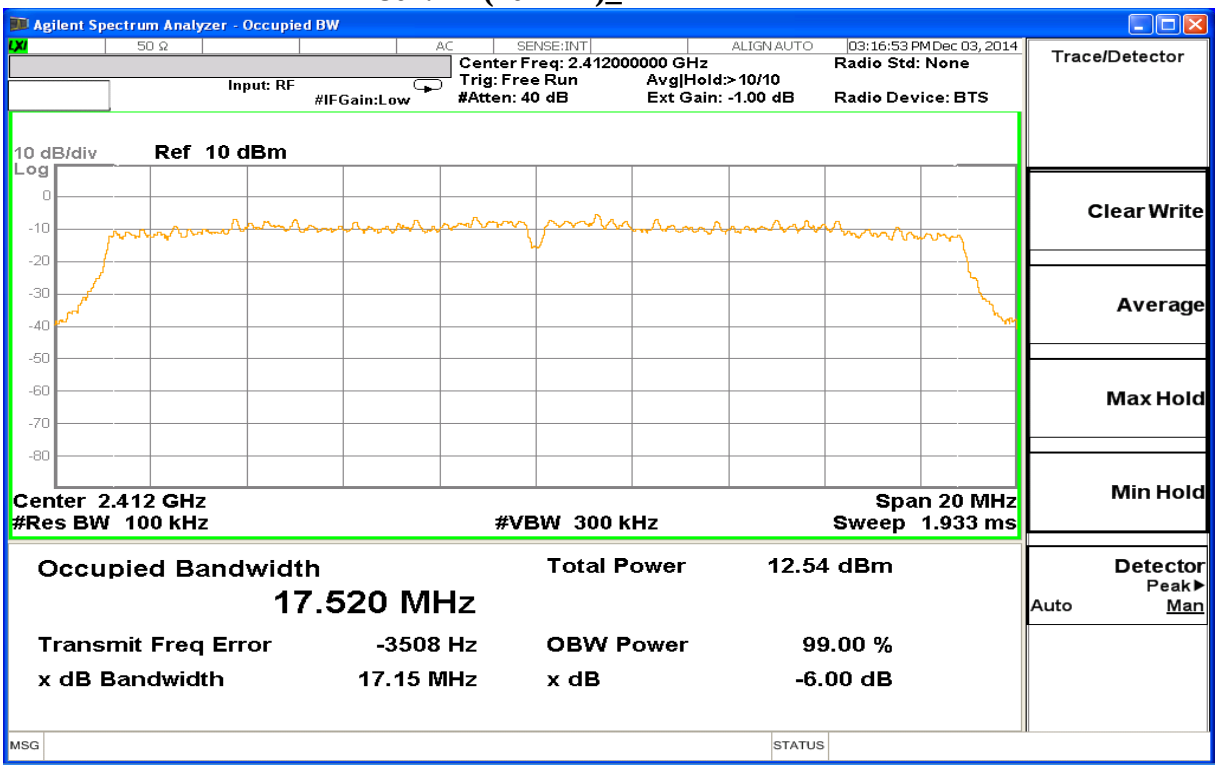
802.11g_2437MHz



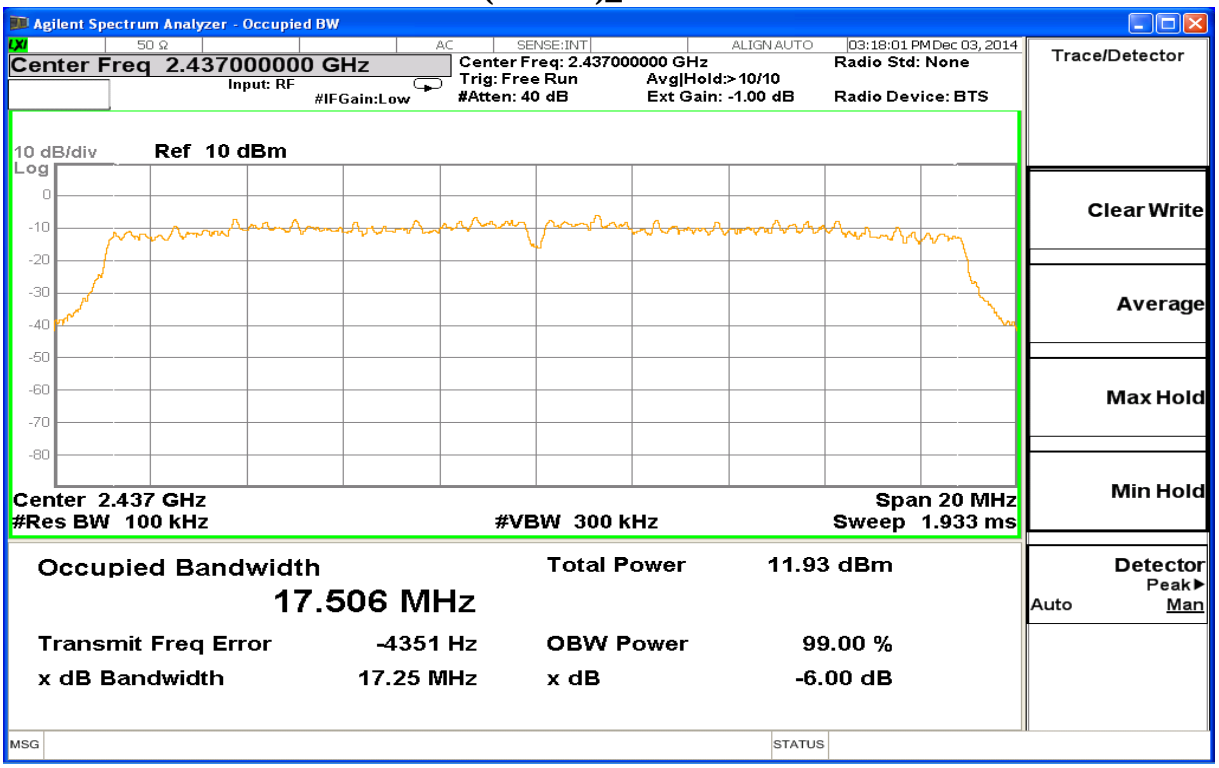
802.11g_2462MHz



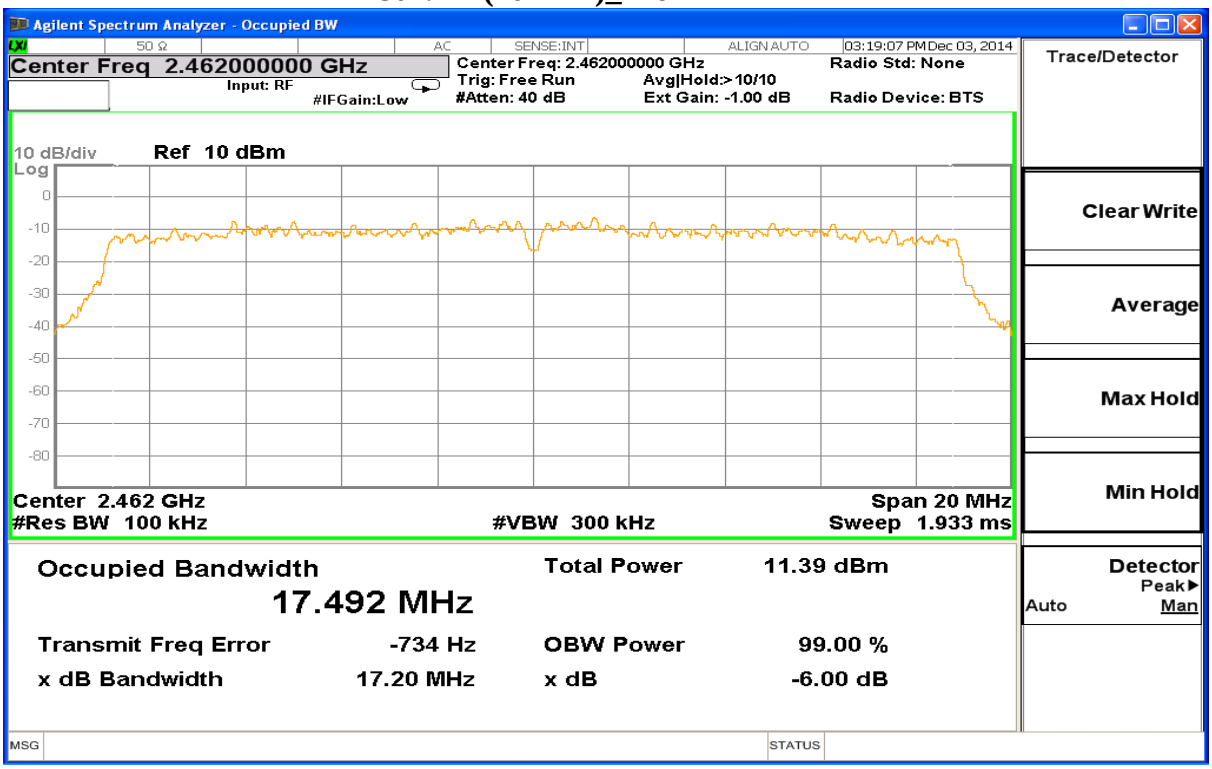
802.11n(20MHz)_2412MHz



802.11n(20MHz)_2437MHz



802.11n(20MHz)_2462MHz



5.3 Maximum Peak Conducted Output Power

5.3.1 Test Equipment

EQUIPMENT	MODEL	MANUFACTURE	SERIAL NUMBER	Calibration Due date
Power Meter	RPR3006W	D.A.R.E!! Insrtuments	14I00048SNO09	15/04/29
Power supply	UDP-6015	UNICORN TECH	1301006	15/09/11
RF Cable_2m	Test No.1	Hubersunhner	N/A	15/01/14

5.3.2 Test Limit

The maximum peak power shall be less than 1 Watt (30dBm).

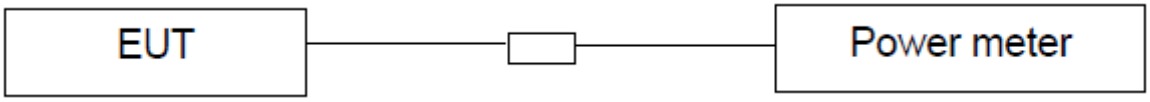
Note: If transmitting antenna of directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the direction gain of the antenna exceeds 6dBi, In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

5.3.3 Measurement Procedure

The EUT has been operated and followed in the IEEE 802.11b/g/n mode, and could be controlled its channel. Printed out the test result from the spectrum by hard copy function.

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum output power setting and enable the EUT transmit continuously.
4. Measure the conducted output power with cable loss and record the results in the test report.
5. Measure and record the results in the report.

5.3.4 Test SET-UP (Block Diagram of Configuration)



5.3.5 Test Result(Measurement value + Cable loss)

802.11b

Frequency(MHz)	Transfer Rate	Test Result(dBm)	Limit(dBm)
2412	11Mbps	4.6	≤30
2437	11Mbps	3.7	≤30
2462	11Mbps	3.0	≤30

802.11g

Frequency(MHz)	Transfer Rate	Test Result(dBm)	Limit(dBm)
2412	54Mbps	4.8	≤30
2437	54Mbps	3.8	≤30
2462	54Mbps	3.2	≤30

802.11n(20MHz)

Frequency(MHz)	Transfer Rate	Test Result(dBm)	Limit(dBm)
2412	MCS7	4.5	≤30
2437	MCS7	3.7	≤30
2462	MCS7	3.0	≤30

Note: Measurement has been performed with the Power Meter which is compliance with the 9.1.2 of KDB 558074 D01 DTS Meas. Guidance v03r02. (Power Meter Model : RPR 3006W)

5.4 Conducted Band Edges and Spurious Emission

5.4.1 Test Equipment

EQUIPMENT	MODEL	MANUFACTURE	SERIAL NUMBER	Calibration Due date
Spectrum analyzer	N9020A	Agilent	US46220101	15/09/11
Power supply	UDP-6015	UNICORN TECH	1301006	15/09/11
RF Cable_2m	Test No.1	Hubersunhner	N/A	15/01/14

5.4.2 Test Limit

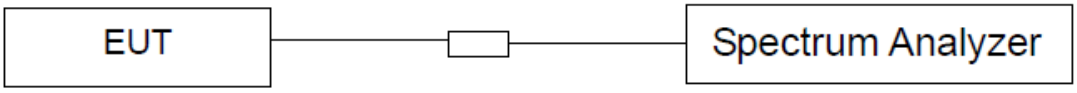
Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

5.4.3 Test Procedures

The EUT has been operated and followed in the IEEE 802.11b/g/n mode, and could be controlled its channel. Printed out the test result from the spectrum by hard copy function.

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02.
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, Detector = Peak, Trace mode = Max Hold, Sweep = Auto).
5. Measure and record the results in the test report.

5.4.4 Block Diagram of Test setup.



5.4.5 Test Result

802.11b

Frequency (MHz)	Transfer Rate	Max PSD Level (dBm)	Max Band Edge (dBm)	Difference Value(dB)	Limit
2412	11Mbps	-3.14	-43.81	40.67	Maximum Band Edge Level shall be at least 20 dB below Maximum PSD Level
2437	11Mbps	-4.08	-42.95	38.87	
2462	11Mbps	-4.52	-41.50	36.98	

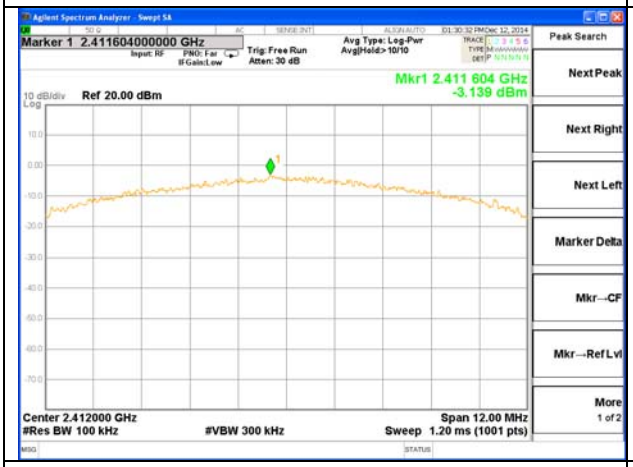
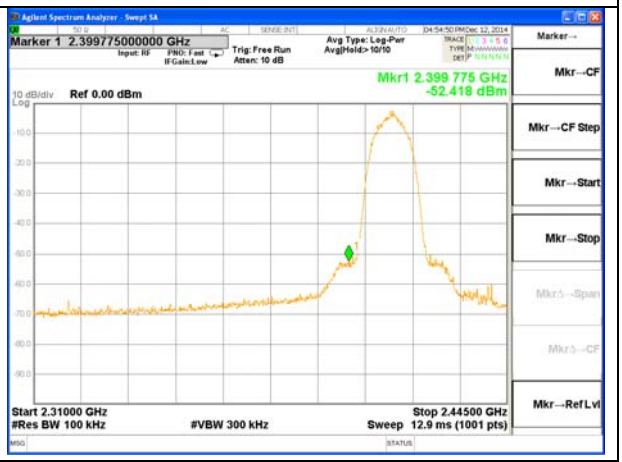
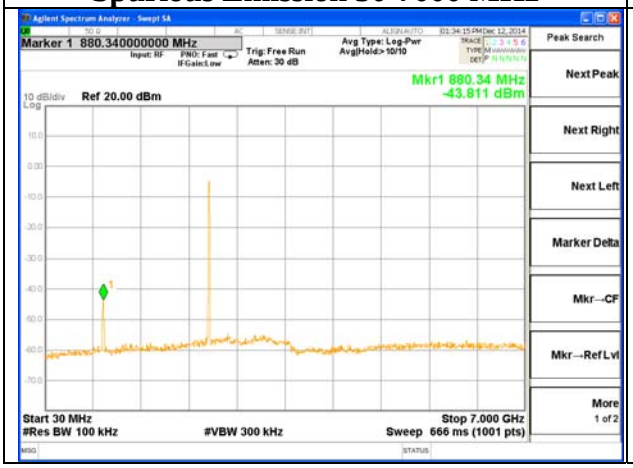
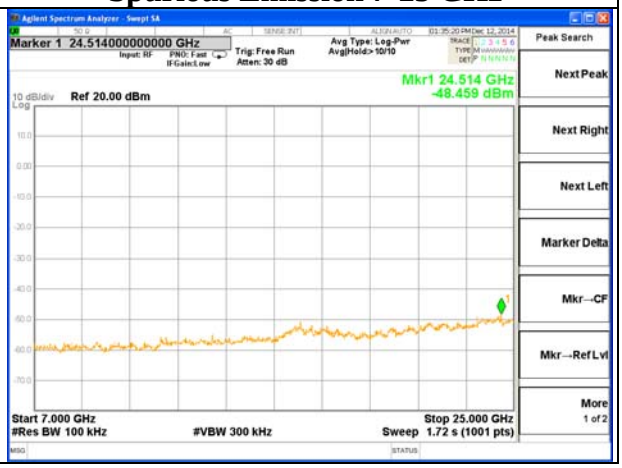
802.11g

Frequency (MHz)	Transfer Rate	PSD Reference (dBm)	Max Band Edge (dBm)	Difference Value(dB)	Limit
2412	54Mbps	-6.34	-42.81	36.38	Maximum Band Edge Level shall be at least 20 dB below Maximum PSD Level
2437	54Mbps	-7.01	-45.40	38.38	
2462	54Mbps	-7.46	-40.75	33.29	

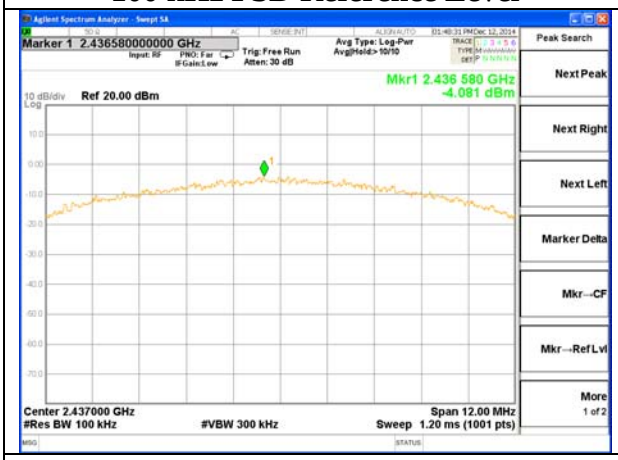
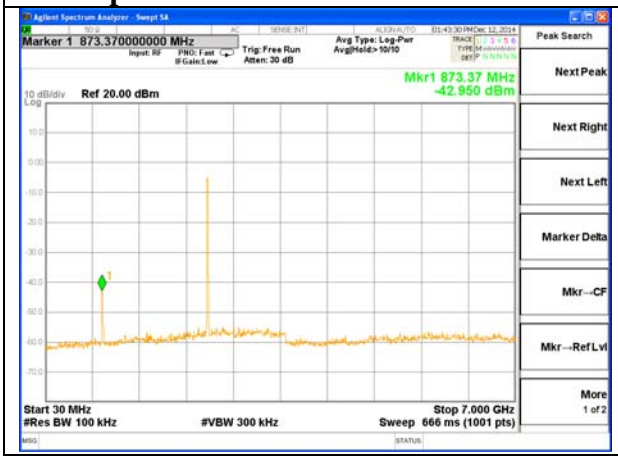
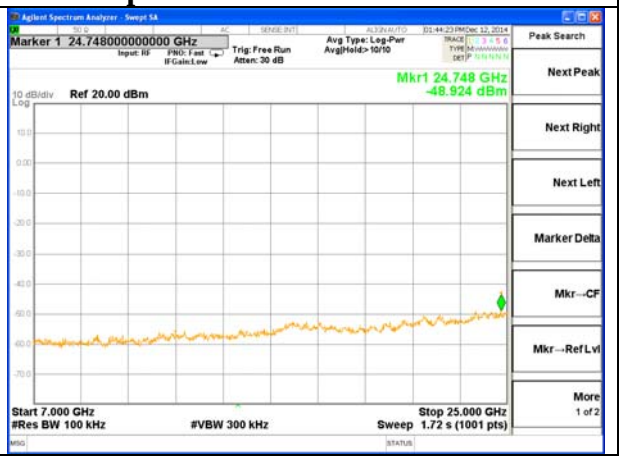
802.11n(20MHz)

Frequency (MHz)	Transfer Rate	PSD Reference (dBm)	Max Band Edge (dBm)	Difference Value(dB)	Limit
2412	MCS7	-6.48	-43.24	36.76	Maximum Band Edge Level shall be at least 20 dB below Maximum PSD Level.
2437	MCS7	-7.03	-39.89	32.86	
2462	MCS7	-7.46	-46.42	39.33	

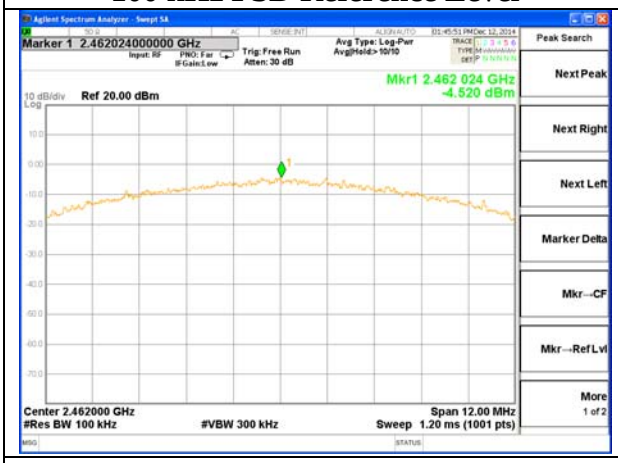
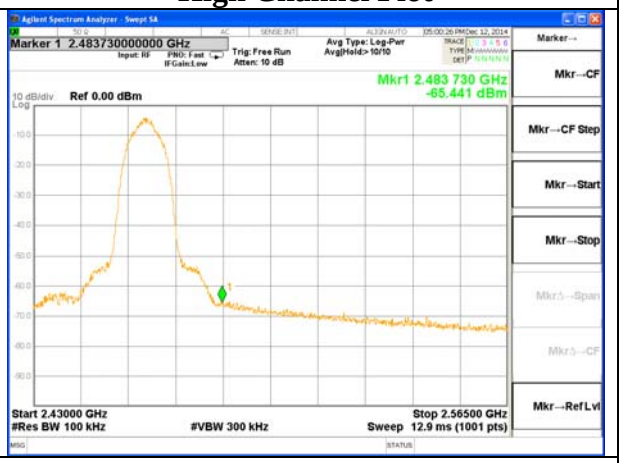
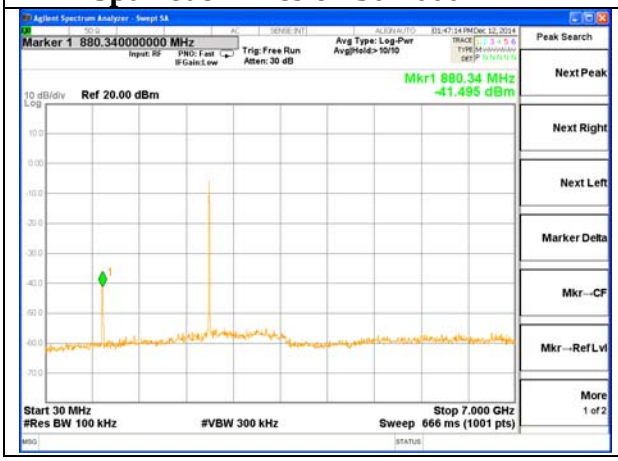
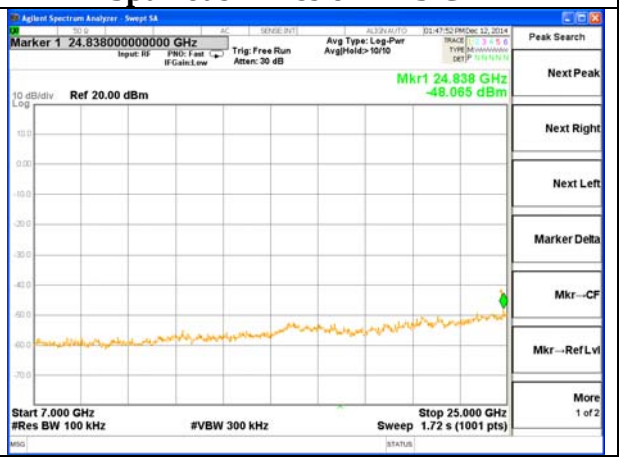
802.11b_2412MHz

100 kHz PSD Reference Level	Low Channel Plot
	
Spurious Emission 30-7000 MHz	**Spurious Emission 7-25 GHz**
	

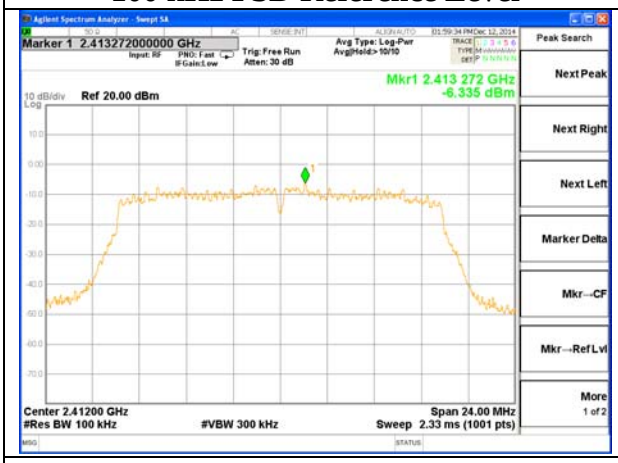
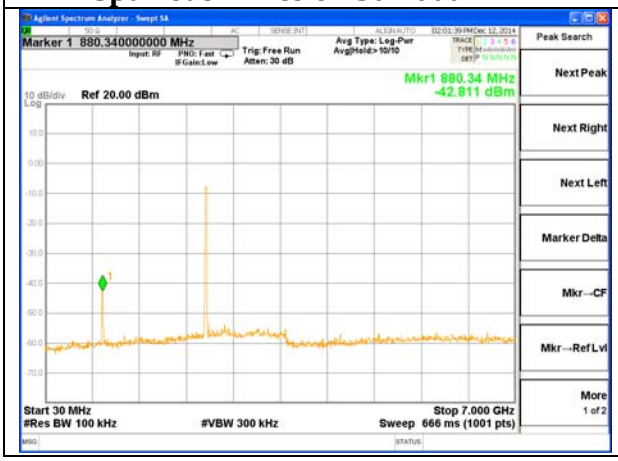
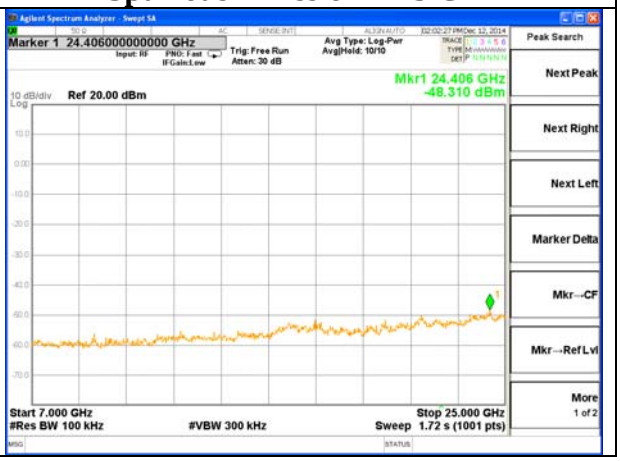
802.11b_2437MHz

100 kHz PSD Reference Level	
	
Spurious Emission 30-7000 MHz	**Spurious Emission 7-25 GHz**
	

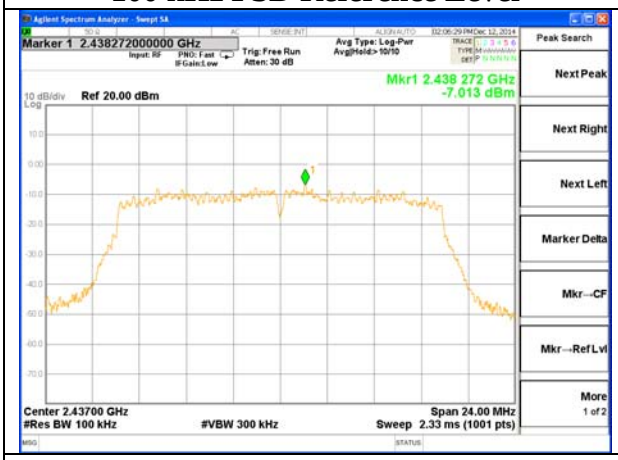
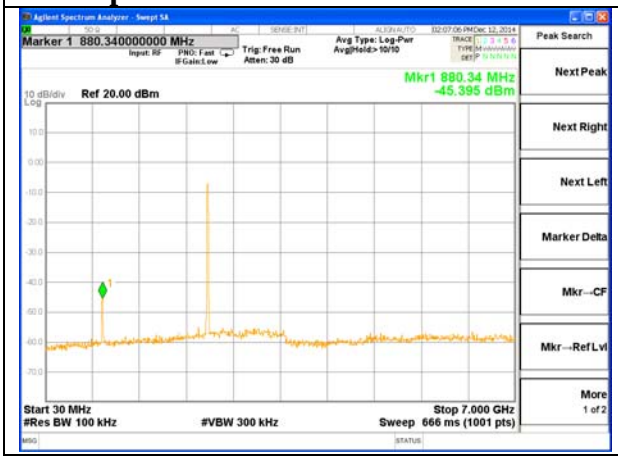
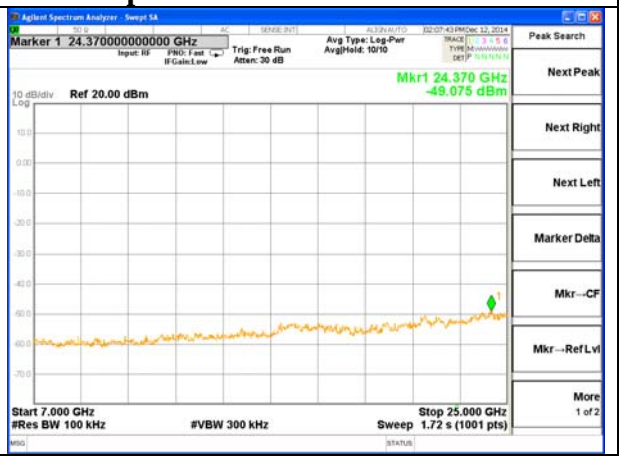
802.11b_2462MHz

100 kHz PSD Reference Level	High Channel Plot
	
Spurious Emission 30-7000 MHz	**Spurious Emission 7-25 GHz**
	

802.11g_2412MHz

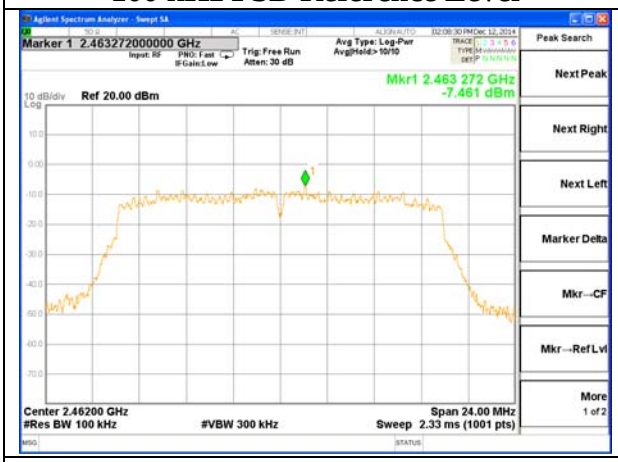
100 kHz PSD Reference Level	Low Channel Plot
	
Spurious Emission 30-7000 MHz	**Spurious Emission 7-25 GHz**
	

802.11g_2437MHz

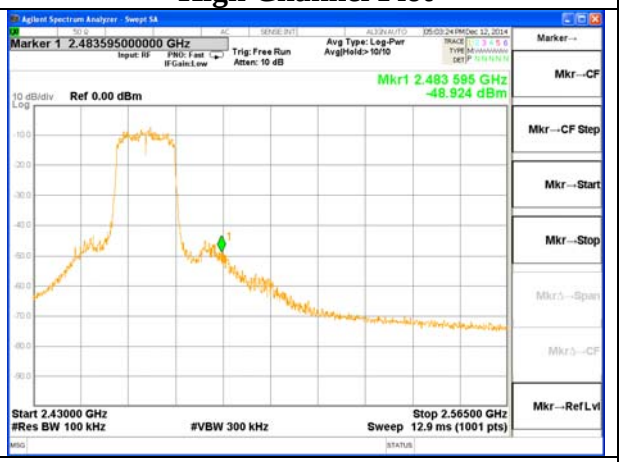
100 kHz PSD Reference Level	
	
Spurious Emission 30-7000 MHz	**Spurious Emission 7-25 GHz**
	

802.11g_2462MHz

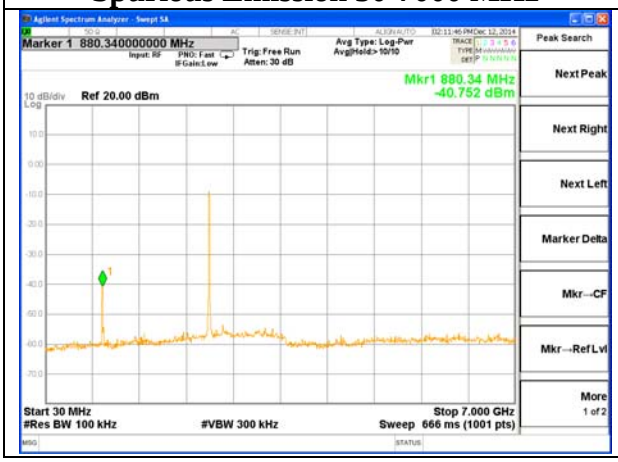
100 kHz PSD Reference Level



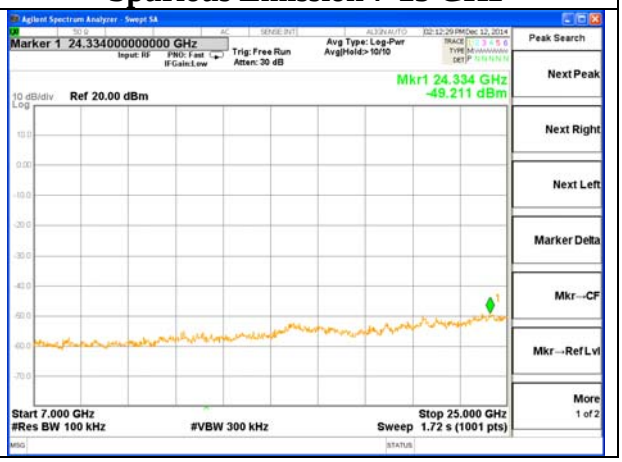
High Channel Plot



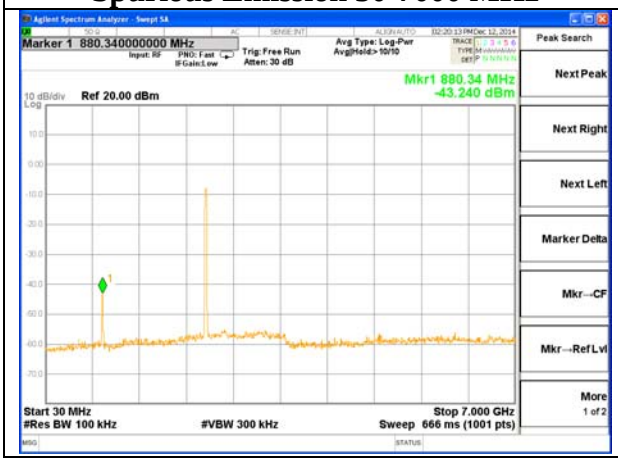
Spurious Emission 30-7000 MHz



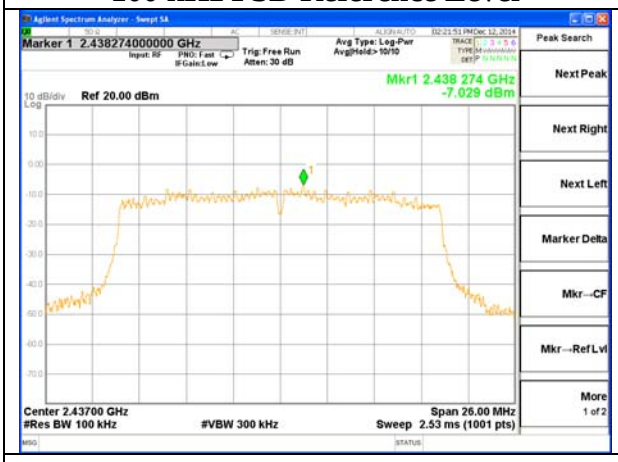
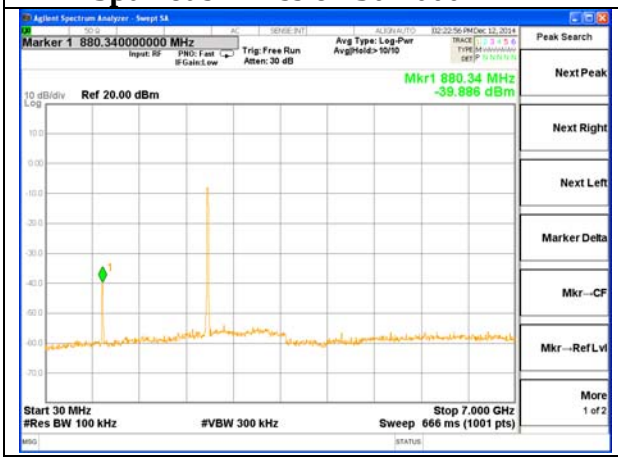
Spurious Emission 7-25 GHz



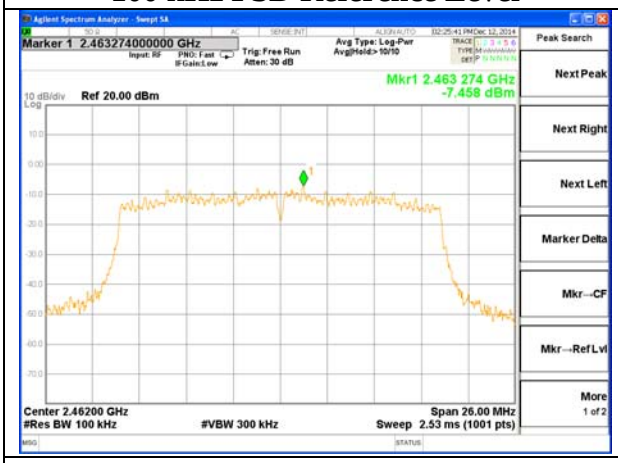
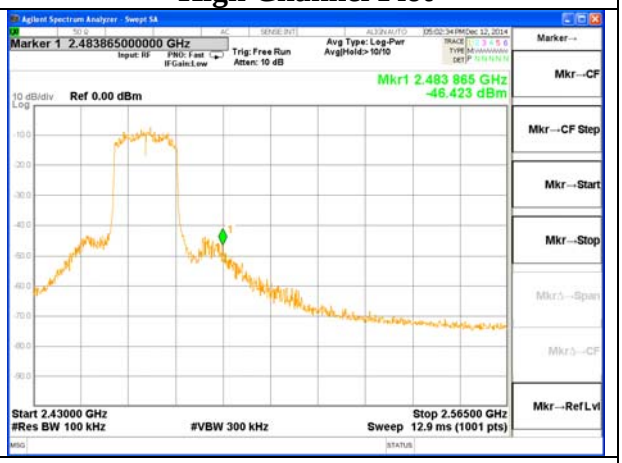
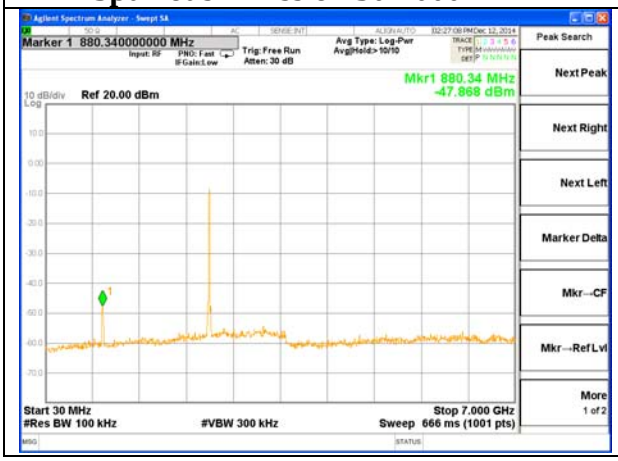
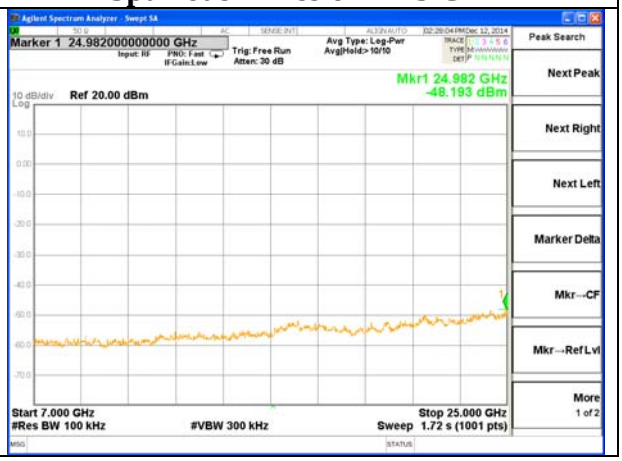
802.11n(20MHz)_2412MHz

100 kHz PSD Reference Level	Low Channel Plot
	
Spurious Emission 30-7000 MHz	**Spurious Emission 7-25 GHz**
	

802.11n(20MHz)_2437MHz

100 kHz PSD Reference Level	
	
Spurious Emission 30-7000 MHz	**Spurious Emission 7-25 GHz**
	

802.11n(20MHz)_2462MHz

100 kHz PSD Reference Level	High Channel Plot
	
Spurious Emission 30-7000 MHz	**Spurious Emission 7-25 GHz**
	

5.5 Power Spectral Density

5.5.1 Test Equipment

EQUIPMENT	MODEL	MANUFACTURE	SERIAL NUMBER	Calibration Due date
Spectrum analyzer	N9020A	Agilent	US46220101	15/09/11
Power supply	UDP-6015	UNICORN TECH	1301006	15/09/11
RF Cable_2m	Test No.1	Hubersunhner	N/A	15/01/14

5.5.2 Test Limit

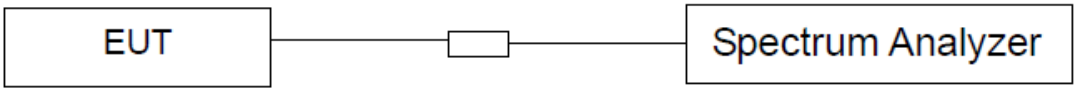
For digitally modulated systems, the power spectral density conducted from the intentional radiated to the Antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

5.5.3 Test Procedures

The EUT has been operated and followed in the IEEE 802.11b/g/n mode, and could be controlled its channel. Printed out the test result from the spectrum by hard copy function.

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02.
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 = 3 kHz, VBW = 10 kHz, Detector = Peak, Span = 1.5 times DTS Channel Bandwidth, Trace mode = Max Hold, Sweep = Auto)
5. Measure and record the results in the test report.

5.5.4 Block Diagram of Test Setup



5.5.5 Test Result(Measurement value + Cable loss)

802.11b

Frequency(MHz)	Transfer Rate	Test Result(dBm)	Limit(dBm)
2412	11Mbps	-17.61	≤8
2437	11Mbps	-15.84	≤8
2462	11Mbps	-16.27	≤8

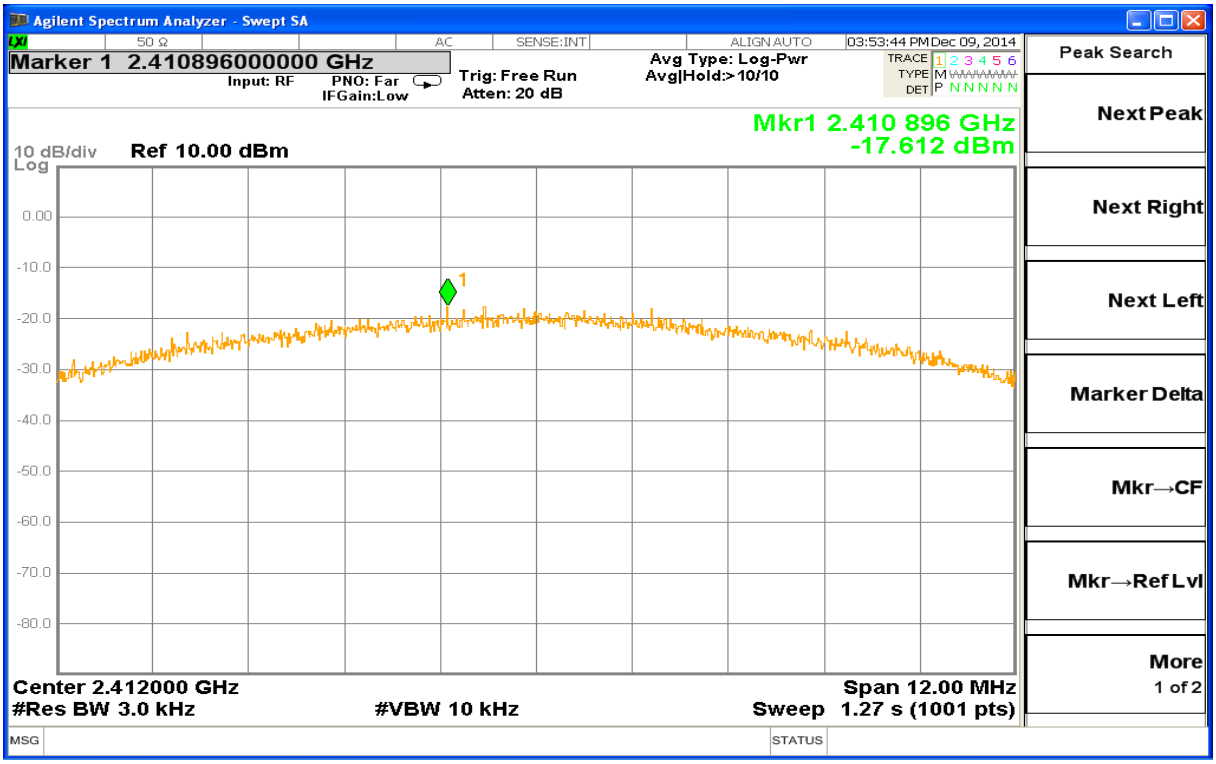
802.11g

Frequency(MHz)	Transfer Rate	Test Result(dBm)	Limit(dBm)
2412	54Mbps	-18.05	≤8
2437	54Mbps	-17.78	≤8
2462	54Mbps	-18.81	≤8

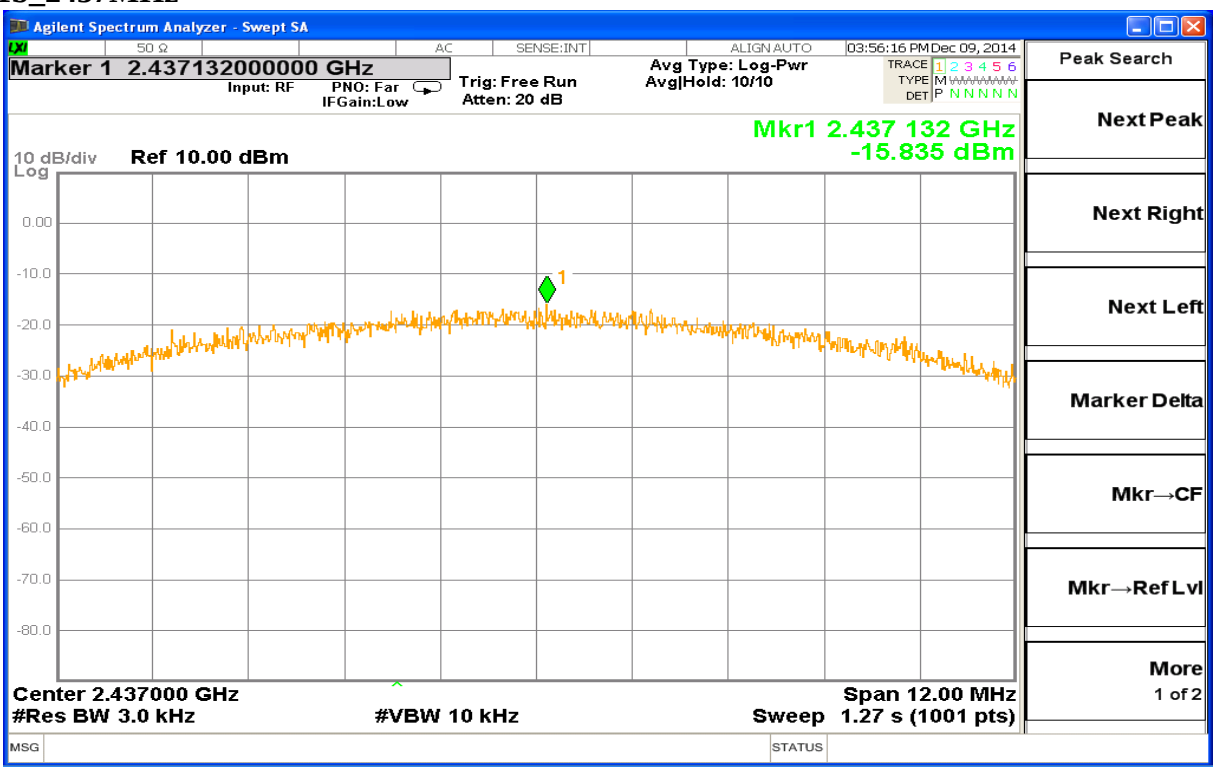
802.11n(20MHz)

Frequency(MHz)	Transfer Rate	Test Result(dBm)	Limit(dBm)
2412	MCS7	-17.33	≤8
2437	MCS7	-18.24	≤8
2462	MCS7	-18.36	≤8

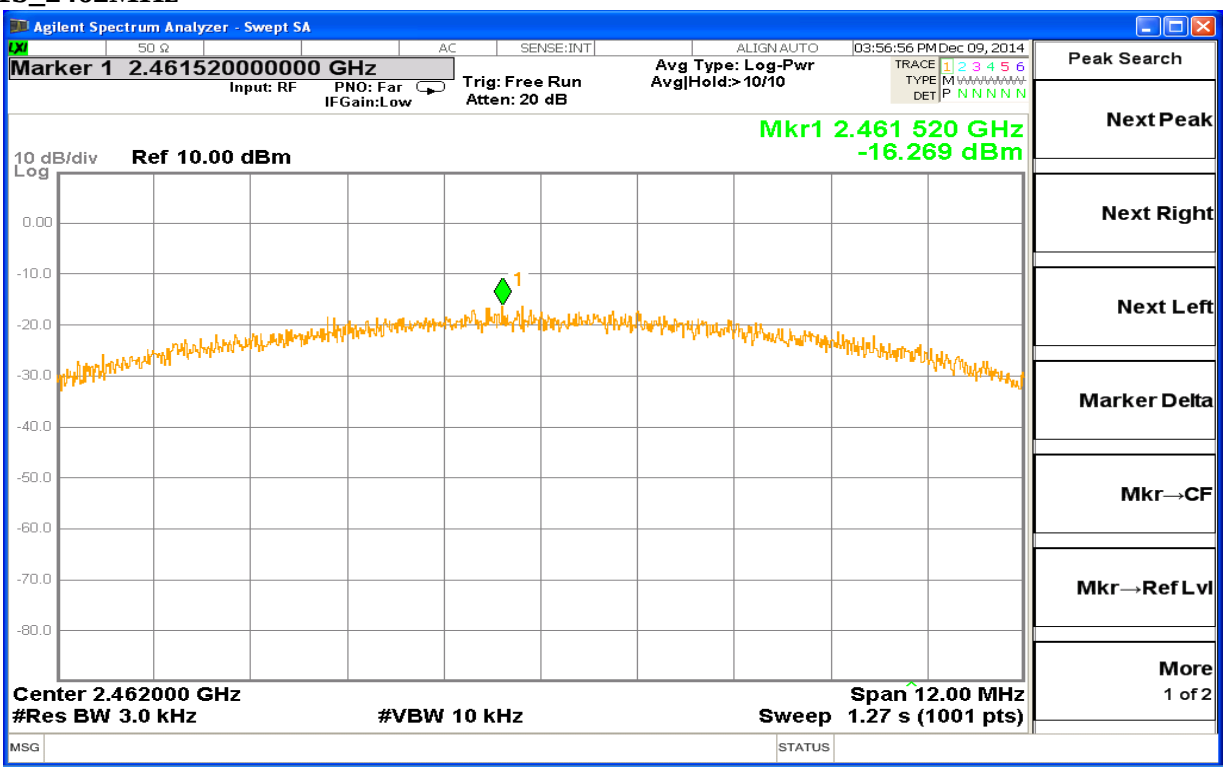
802.11b_2412MHz



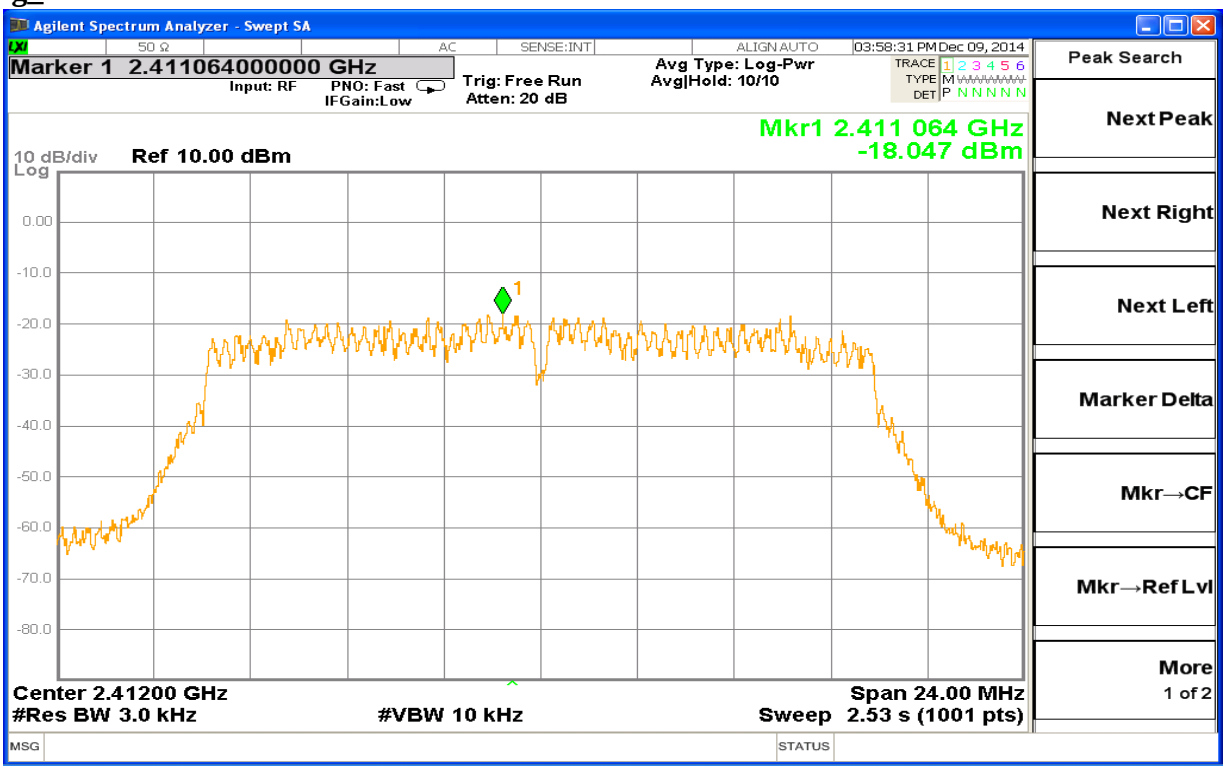
802.11b_2437MHz



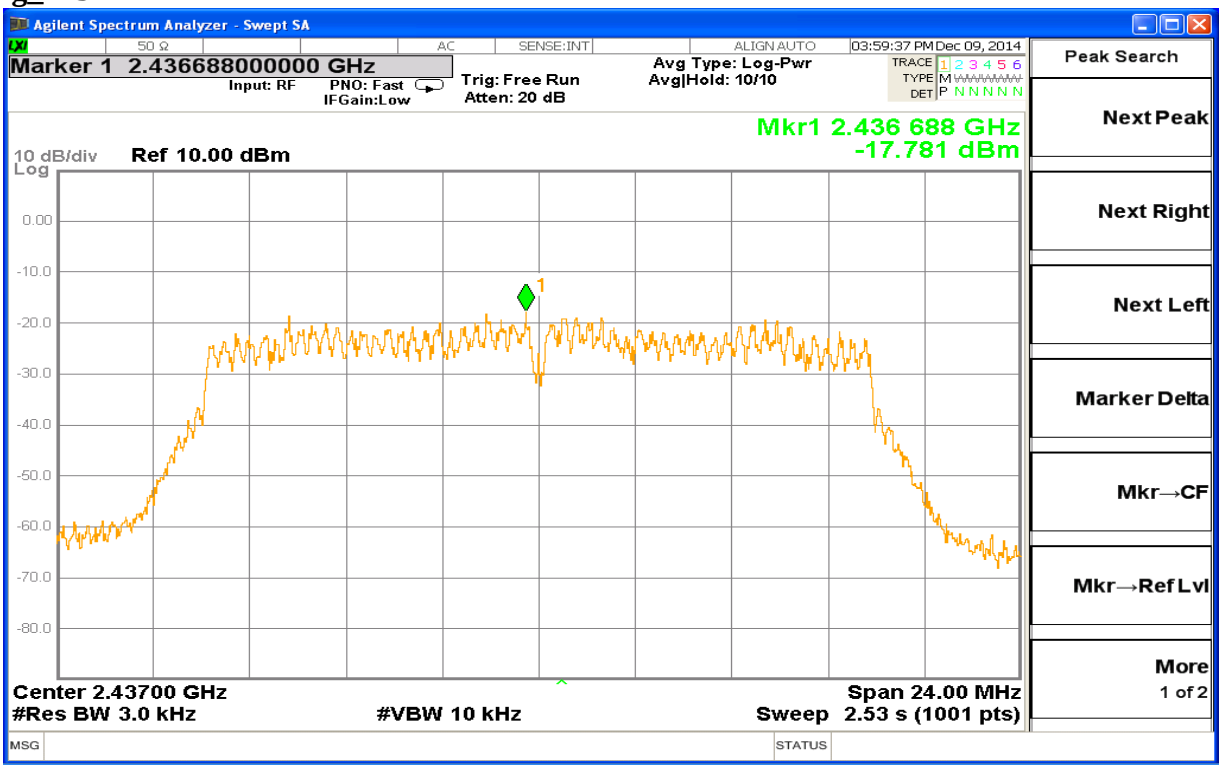
802.11b_2462MHz



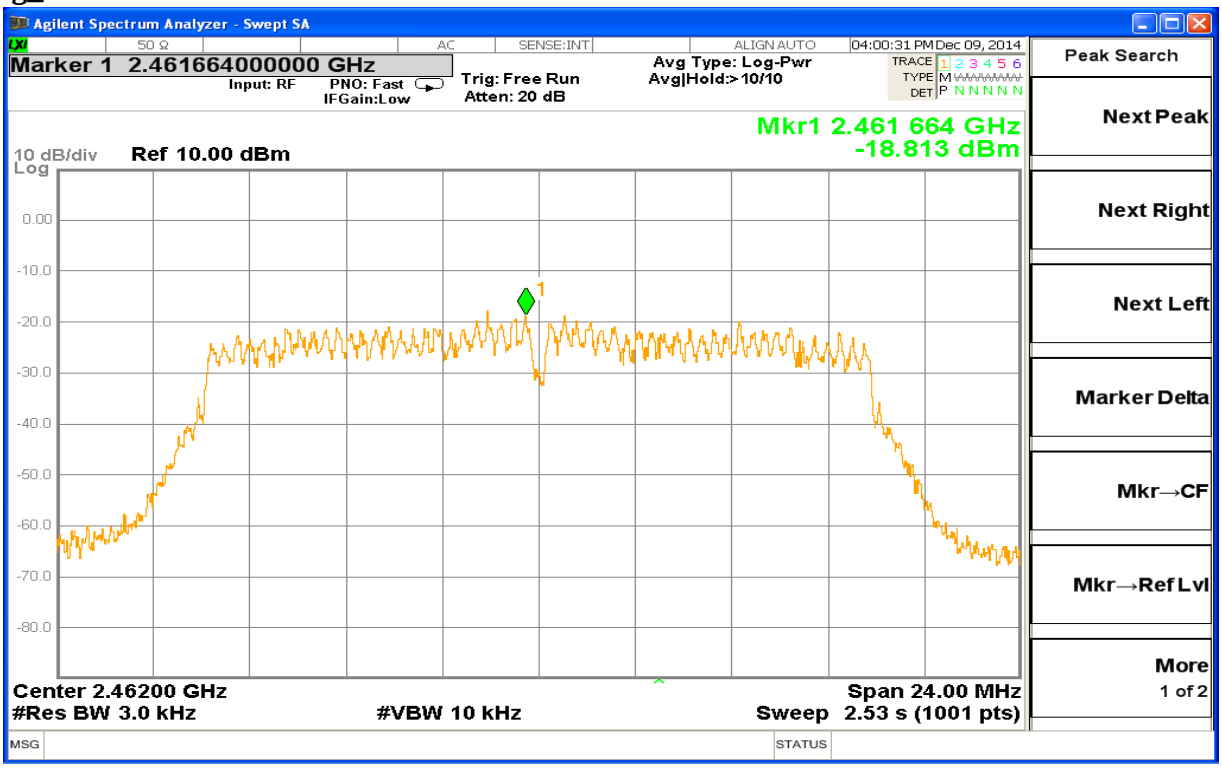
802.11g_2412MHz



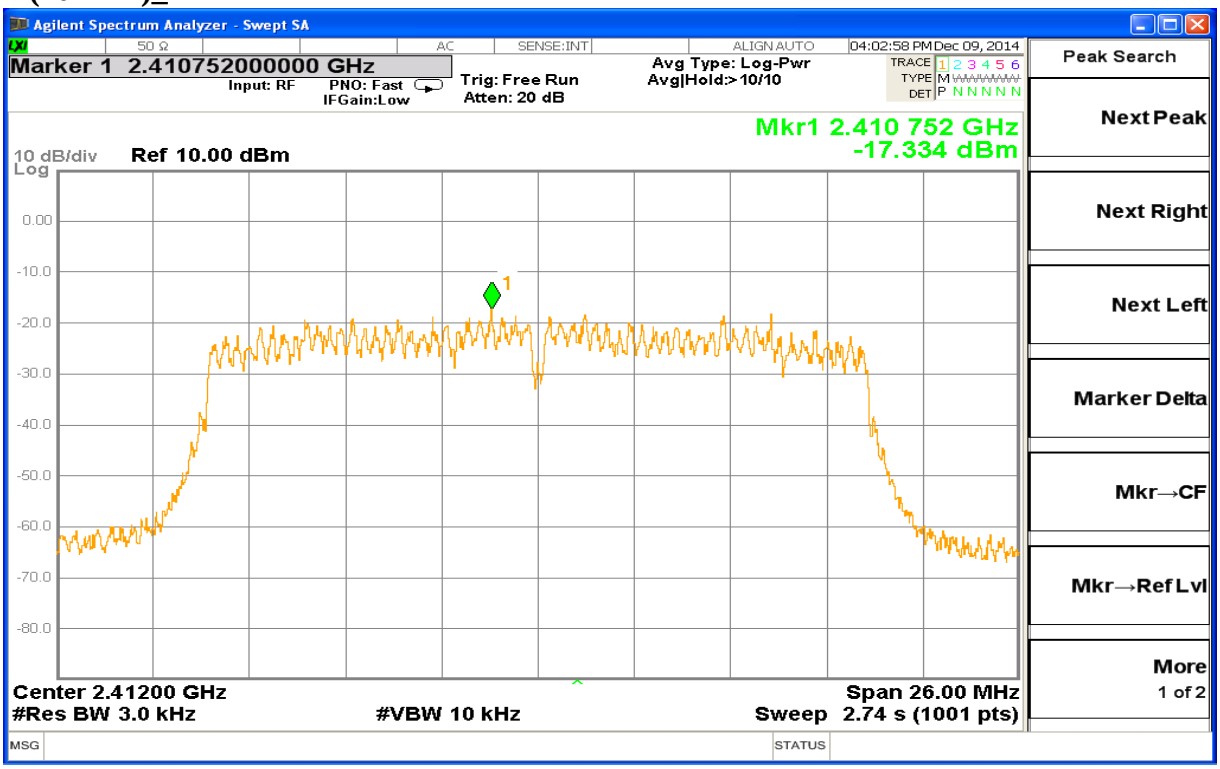
802.11g_2437MHz



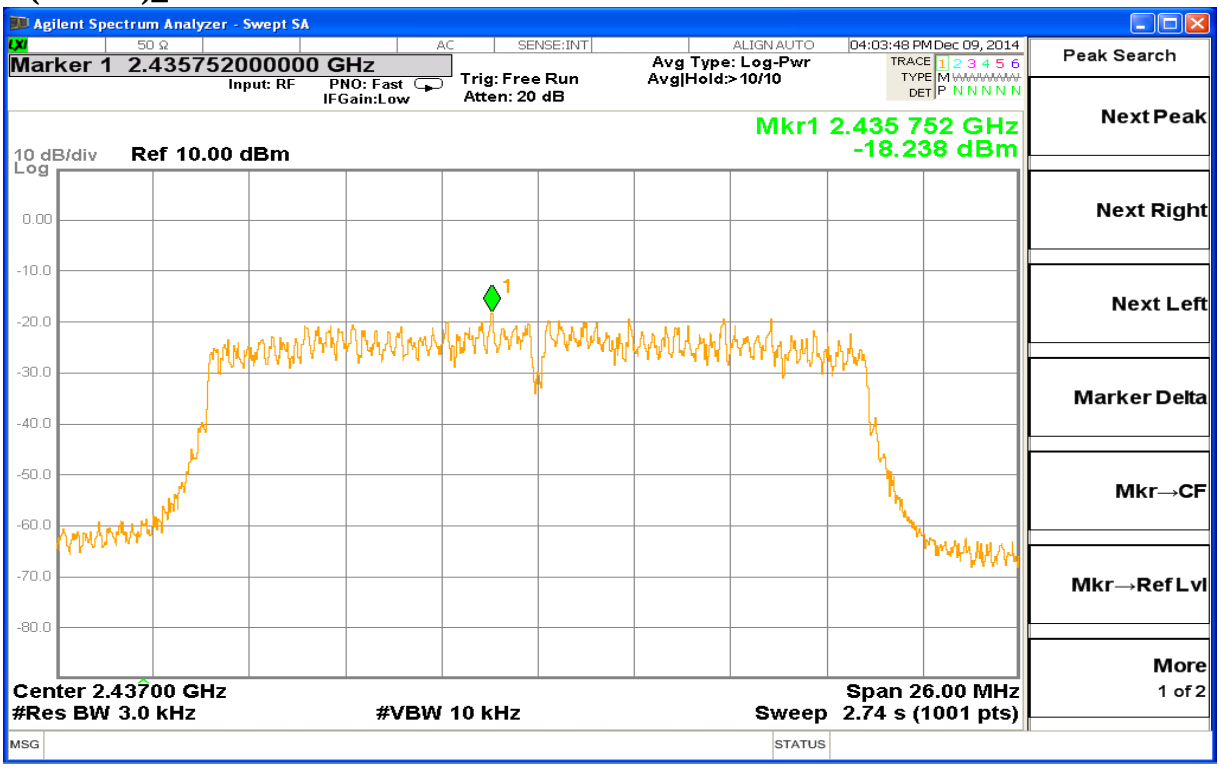
802.11g_2462MHz



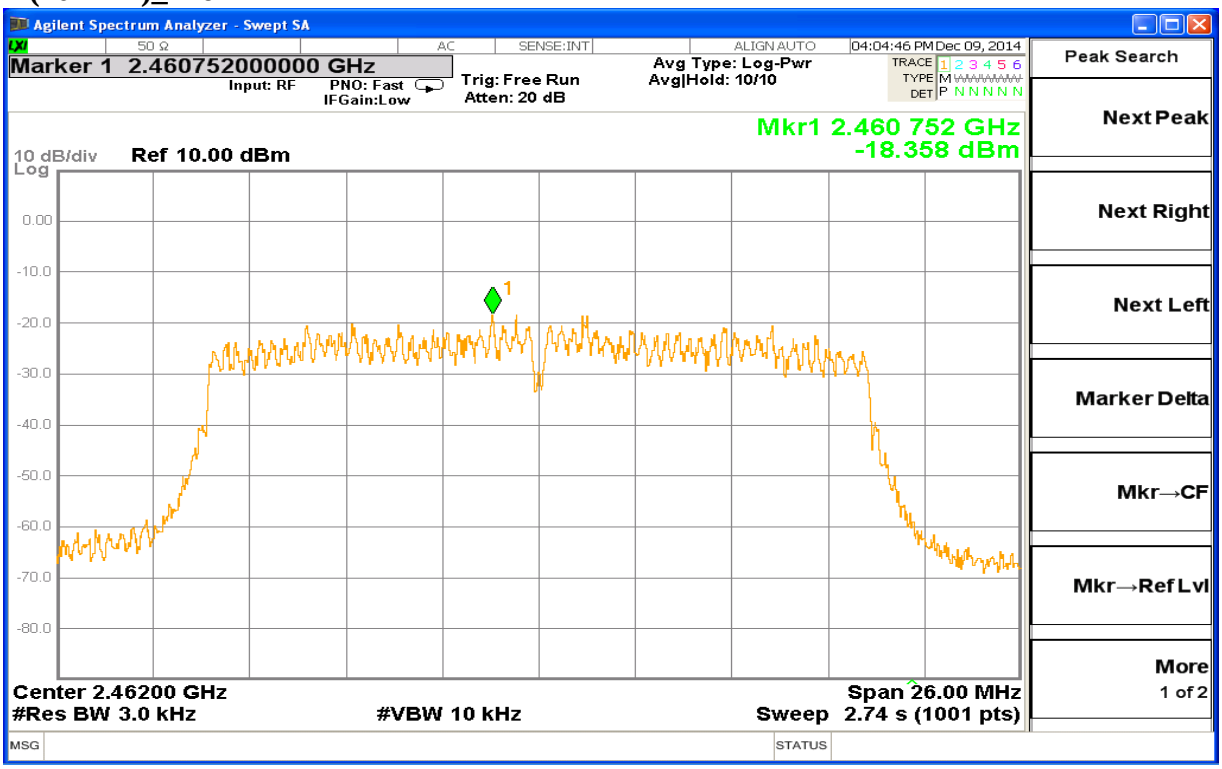
802.11n(20MHz)_2412MHz



802.11n(20MHz)_2437MHz



802.11n(20MHz)_2462MHz



5.6 Antenna Application

5.6.1 Antenna Requirement

Standard	Requirement
FCC CRF Part 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. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

For intentional device, according to FCC 47 CFR Section 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. And according to FCC 47 CFR Section 15.247 (b), 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.

Antenna Type	Frequency	Antenna Gain	Limit
Chip Antenna	2.4 GHz	3.5 dBi	≤6 dBi

5.6.2 Result

PASS