RF TEST REPORT for Intentional Radiator
No. 160100483SHA-001

Applicant : RAE Systems INC.
3775 North First Street, San Jose, CA95134 USA

Product Name : WIFI Module
Type/Model : RMWIFI-QC

SUMMARY

The equipment complies with the requirements according to the following standard(s):

47CFR Part 15 (2015): Radio Frequency Devices (Subpart C)

ANSI C63.10 (2013): American National Standard for Testing Unlicensed Wireless Devices

RSS-247 Issue 1 (May 2015): Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

RSS-Gen Issue 4 (December 2014): General Requirements for Compliance of Radio Apparatus

Date of issue: March 23, 2016

Prepared by:

Wade Zhang (*Project Engineer*)

Reviewed by:

Daniel Zhao (*Reviewer*)

Description of Test Facility

Name:	Intertek Testing Services Limited Shanghai
Address:	Building No.86, 1198 Qinzhou Road(North), Shanghai 200233, P.R. China
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IC Assigned Code:	2042B-1
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Content

1. Test Summary

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TEST ITEM	FCC REFERANCE	IC REFERANCE	RESULT
Minimum 6dB bandwidth	15.247(a)(2)	RSS-247 Issue 1 Annex 5.2	Pass
Maximum conducted output power	15.247(b)	RSS-247 Issue 1 Annex 5.4	Pass
Power spectrum density	15.247(e)	RSS-247 Issue 1 Annex 5.2	Pass
Radiated emission	15.205 & 15.209	RSS-Gen Issue 4 Clause 8.9	Pass
Emission outside the frequency band	15.247(d)	RSS-247 Issue 1 Annex 5.5	Pass
Power line conducted emission	15.207	RSS-Gen Issue 4 Clause 8.8	Pass
Occupied bandwidth	-	RSS-Gen Issue 4 Clause 6.6	Tested

Notes: 1: NA =Not Applicable

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2. General Information

2.1 Applicant Information

Applicant	:	RAE Systems INC.
		3775 North First Street, San Jose, CA95134 USA
Name of contact	:	Wang Kai
Tel	:	021-69522616-6600
Fax	:	021-69522602
Manufacturer Site	:	RAE Systems (Shanghai) INC.
		990 East Huiwang Road, Jiading, Shanghai, China

2.2 Identification of the EUT

Equipment	:	WIFI Module
Type/model	:	RMWIFI-QC
FCC ID	:	SU3RMWIFI-QC
IC	:	20969-RMWIFIQC

2.3 Technical specification

Operation Frequency Band	:	2412~2462 MHz
Type of Modulation	:	CCK,BPSK,QPSK,DSSS,OFDM OFDM(BPSK,QPSK,16QAM)
EUT Modes of Modulation	:	802.11b/g
Channel Number	:	11Channel for 2412MHz~2462MHz for 11b,11g
Description of EUT	:	The EUT is a WIFI module and it has only one model.
Port identification	:	NA
Antenna	:	1: W1038, Omni-directional, Peak gain: 4.90dBi; 2: PCB Antenna, Monopole, Peak gain: 0dBi
Rating	:	3.3V DC
Declared Temperature range	:	-20°C ~ 60°C
Category of EUT	:	Class B
EUT type	:	☒ Table top☐ Floor standing
Sample received date	:	2015.11.25
Sample Identification No	:	*0151125-35-001*
Date of test	:	2015.11.25 ~ 2016.01.11

3. Test Specification

3.1 Instrument list

Selected	Instrument	EC no.	Model	Valid until date
☒	Semi anechoic chamber	EC 3048	-	2016-5-10
☒	EMI test receiver	EC 3045	ESIB26	2016-10-18
☒	Broadband antenna	EC 4206	CBL 6112D	2016-4-26
☒	Horn antenna	EC 3049	HF906	2016-4-26
☒	Pre-amplifier	EC 5262	pre-amp 18	2016-5-24
☒	Pre-amplifier	EC 4792-2	TPA0118-40	2016-4-9
☒	High Pass Filter	EC 4797-1	WHKX 1.0/15G-10SS	2017-1-6
☒	High Pass Filter	EC 4797-2	WHKX 2.8/18G-12SS	2017-1-6
☒	High Pass Filter	EC 4797-3	WHKX 7.0/1.8G-8SS	2017-1-6
☒	Band Reject Filter	EC 4797-4	WRCGV2400/2483/10SS	2017-1-6
☒	Fully anechoic chamber	EC 3047	-	2016-5-10
☒	PXA Signal Analyzer	EC5338	N9030A	2016-11-16
☒	Test Receiver	EC 4501	ESCI 7	2016-1-13
☒	Power sensor/Power meter	EC4318	N1911A/N1921A	2016-4-19
☒	Power sensor	EC5338-1	U2021XA	2016-10-1
☒	MXG Analog Signal Generator	EC5338-2	N5181A	2016-11-5
☒	MXG Vector Signal Generator	EC5338-1	N51812B	2015-12-29

3.2 Test Standard

47CFR Part 15 (2015): Radio Frequency Devices

ANSI C63.10 (2013): American National Standard for Testing Unlicensed Wireless Devices

RSS-247 Issue 1 (May 2015): Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

RSS-Gen Issue 4 (December 2014): General Requirements for Compliance of Radio Apparatus

3.3 Mode of operation during the test / Test peripherals used

Operation Frequency each of channel For 802.11b/g							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz	/	

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

Modulation	Lowest(MHz)	Middle(MHz)	Highest(MHz)
802.11b	2412	2437	2462
802.11g	2412	2437	2462

While testing transmitting mode of EUT, the internal modulation and continuously transmission was applied.

The test setting software and command is offered by the manufactory.

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, the pre-scan for all data rates in each modulation and bands was tested, and the worst case was found and used in all test cases.

After this pre-scan, we choose the following table of the data rata as the final test mode.

Modulation	Data rate
802.11b	1Mbps
802.11g	6Mbps
Duty cycle setting during the transmission is 100% with maximum power setting for all modulations.	

Radiated test construction:
Mode 1: EUT with antenna 1;
Mode 2: EUT with antenna 2;

Conducted test construction:
Mode 3: EUT RF port connected to SPA directly;

Test peripherals used:

Item No	Description	Band and Model	S/No
1	Laptop computer	HP ProBook 6470b	NA
2	USB-RS232 cable	1.8m Unshieling	NA
3	RF engineer board	NA	NA
Note: The accessories 1 and 2 are used for configuration only and not used during test.			

3.4 Measurement uncertainty

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

Test item	Measurement uncertainty
Maximum peak output power	± 0.74dB
Radiated Emissions in restricted frequency bands below 1GHz	± 4.90dB
Radiated Emissions in restricted frequency bands above 1GHz	± 5.02dB
Emission outside the frequency band	± 2.89dB
Power line conducted emission	± 3.19dB

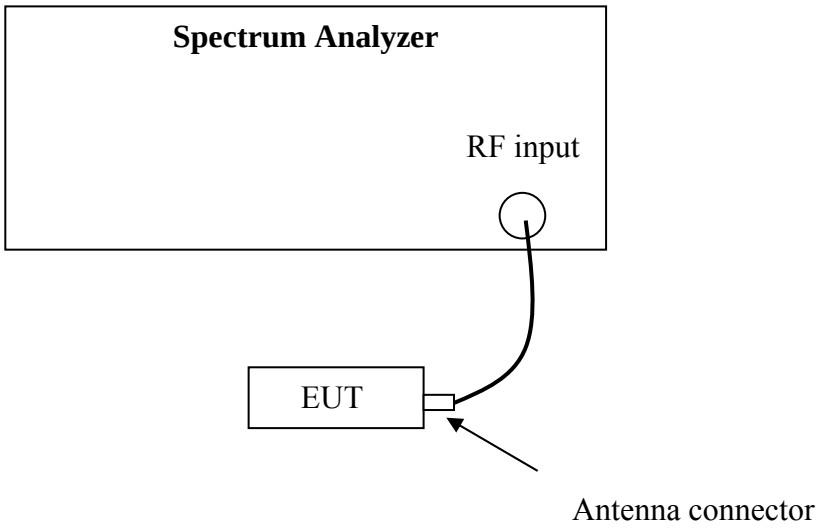
4. Minimum 6dB Bandwidth

Test result: PASS

4.1 Limit

For systems using digital modulation techniques that may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz and 5725 - 5850 MHz bands, the minimum 6 dB bandwidth shall be at least 500 kHz.

4.2 Test Configuration



4.3 Test Procedure and test setup

The minimum 6dB bandwidth per FCC §15.247(a)(2) is measured using the Spectrum Analyzer according to DTS test procedure of "KDB558074 D01 DTS Meas Guidance v03r02" for compliance to FCC 47CFR 15.247 requirements(clause 8.2).

a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

4.4 Test Protocol

Temperature: 22°C
Relative Humidity: 53%

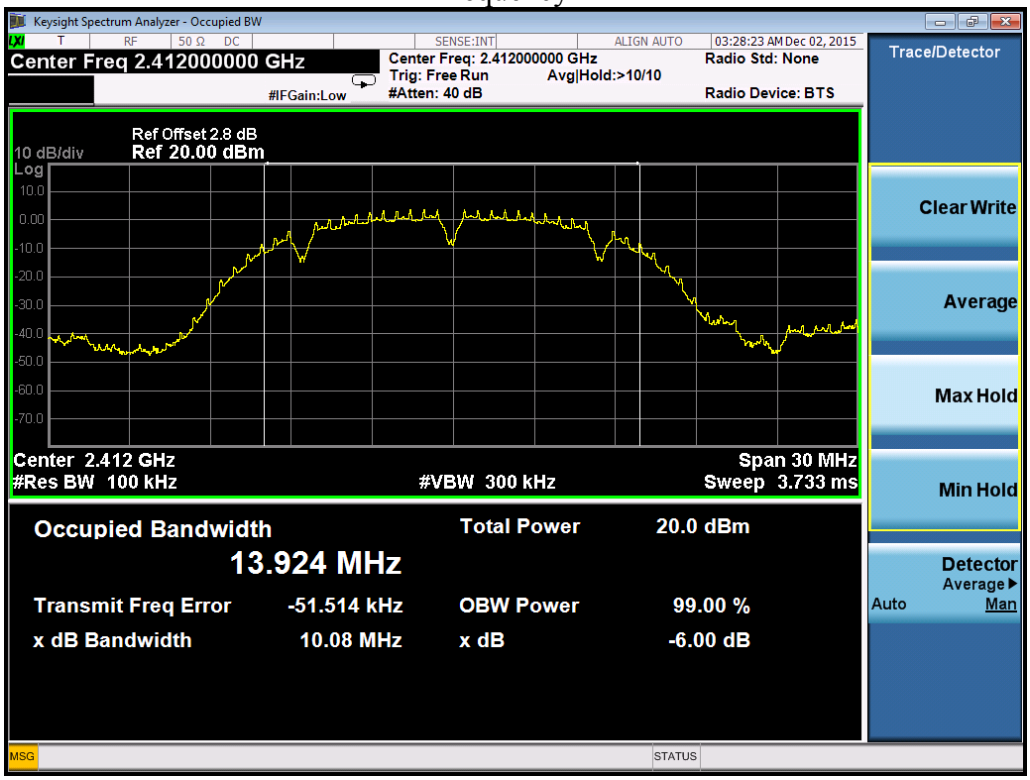
Mode	CH	6dB Emission Bandwidth (MHz)	Limit (MHz)
802.11b	L	10.08	≥0.5
	M	10.07	
	H	10.08	
802.11g	L	16.33	
	M	16.33	
	H	16.31	

Mode	CH	99% Occupy Bandwidth (MHz)	Limit (MHz)
802.11b	L	13.924	NA
	M	14.029	
	H	14.178	
802.11g	L	16.456	
	M	16.545	
	H	16.714	

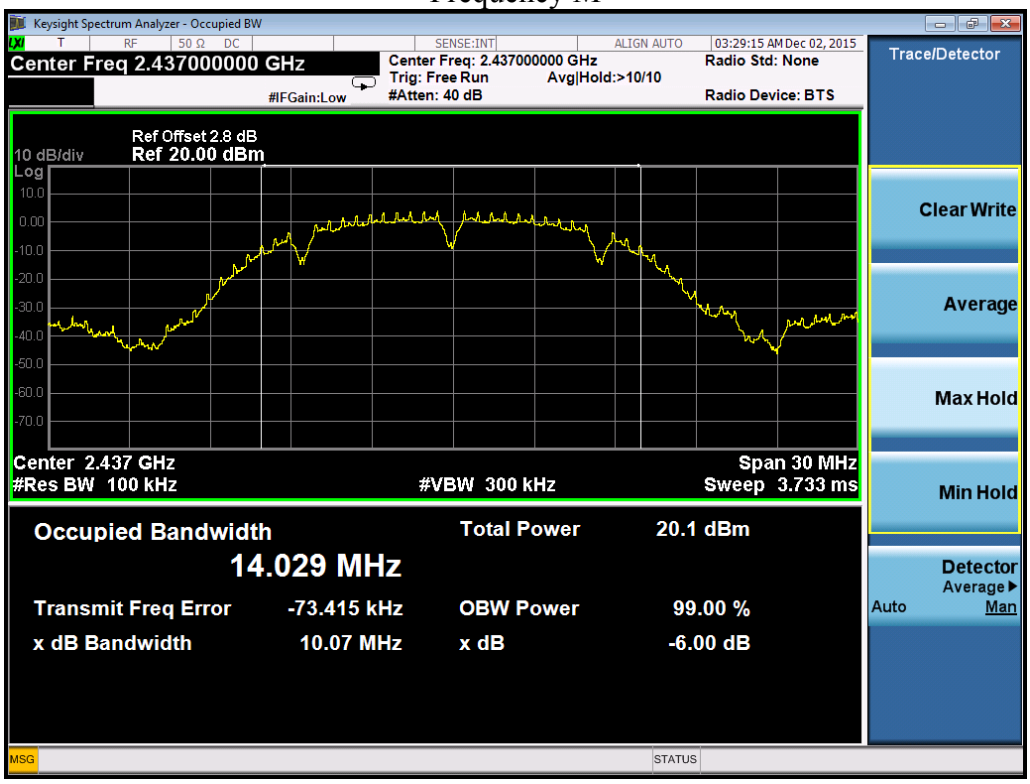
Test plot as follows:

802.11b

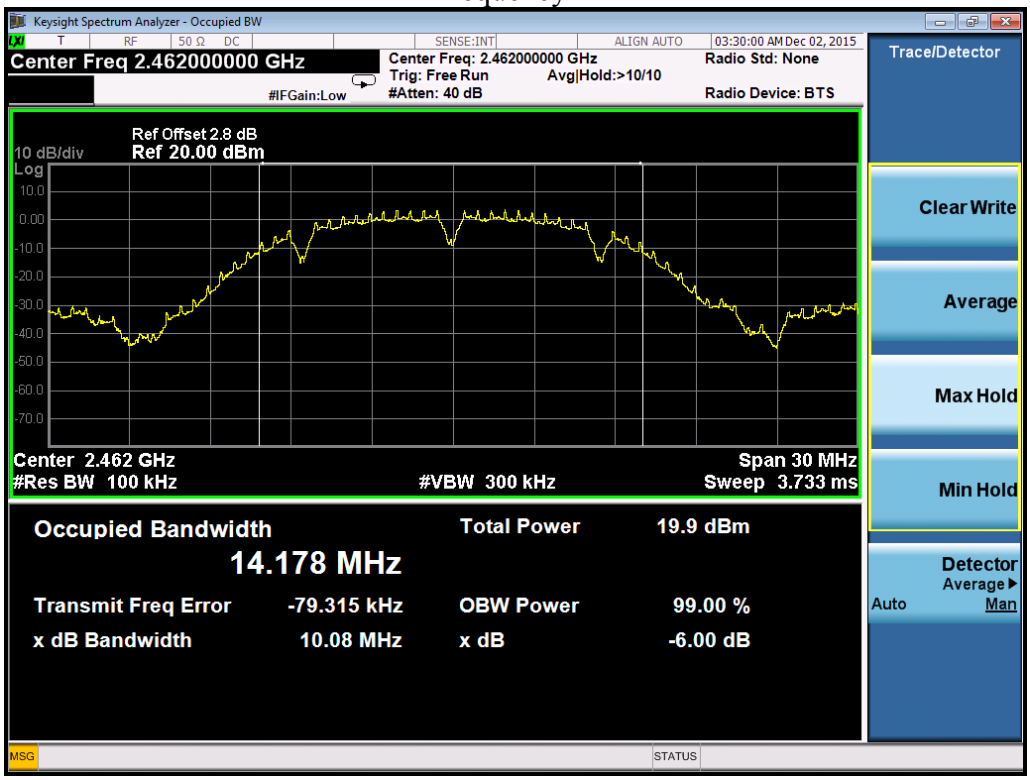
Frequency L



Frequency M

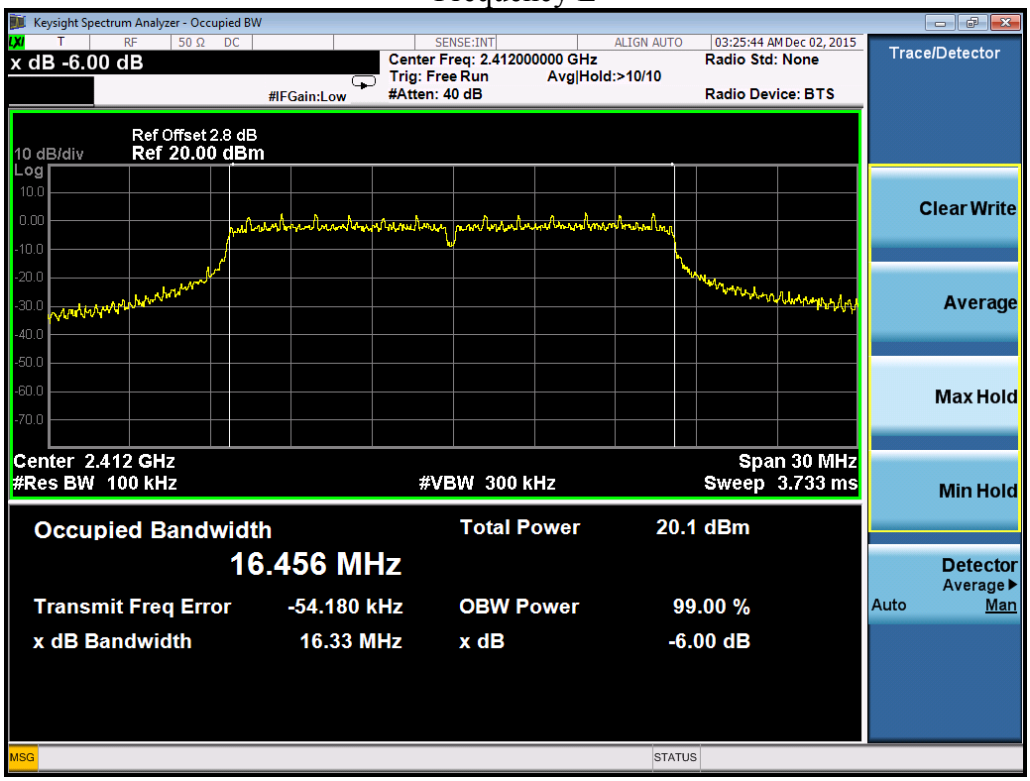


Frequency H

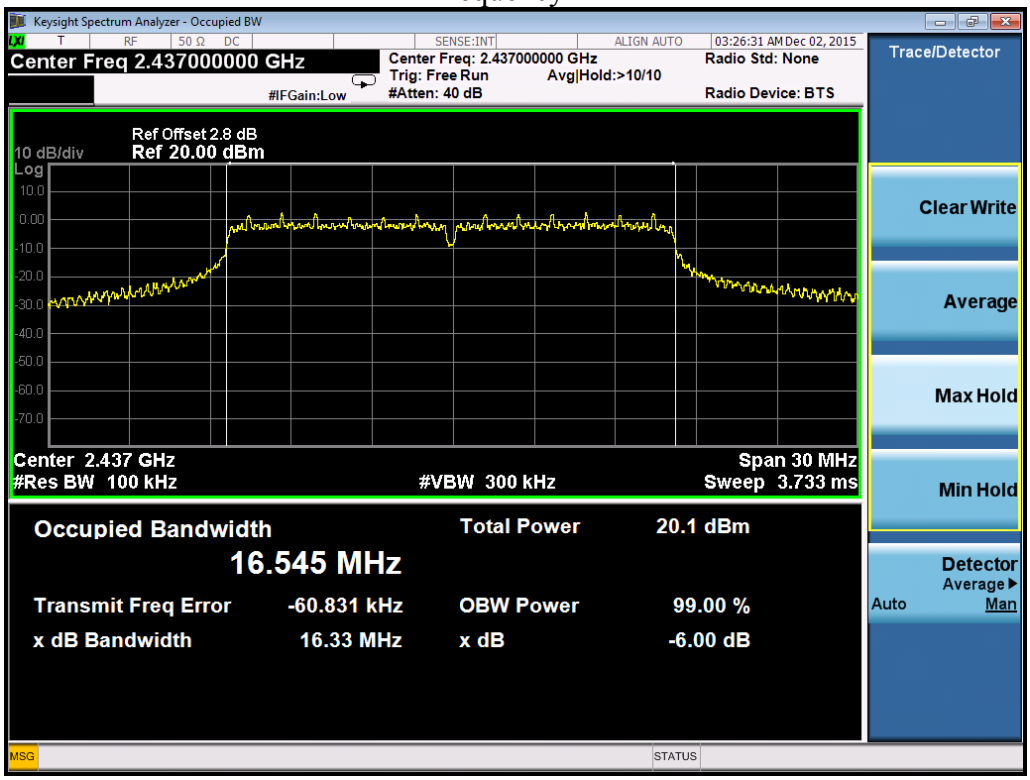


802.11g

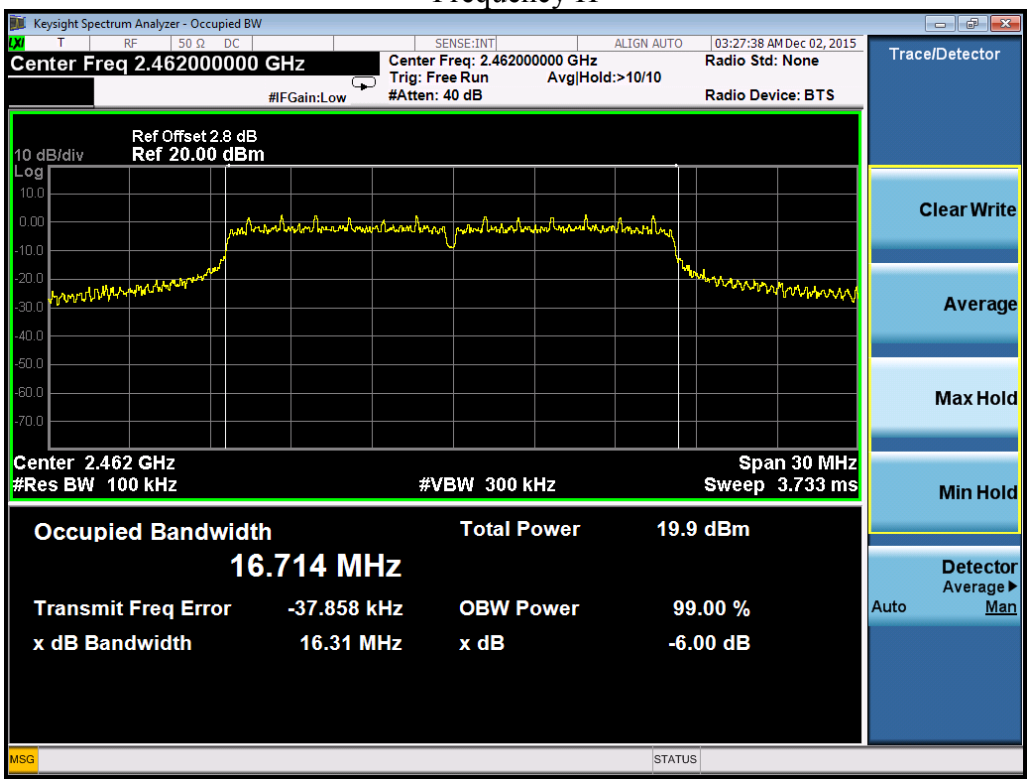
Frequency L



Frequency M



Frequency H



5. Maximum Conducted Output power

Test result: Pass

5.1 Test limit

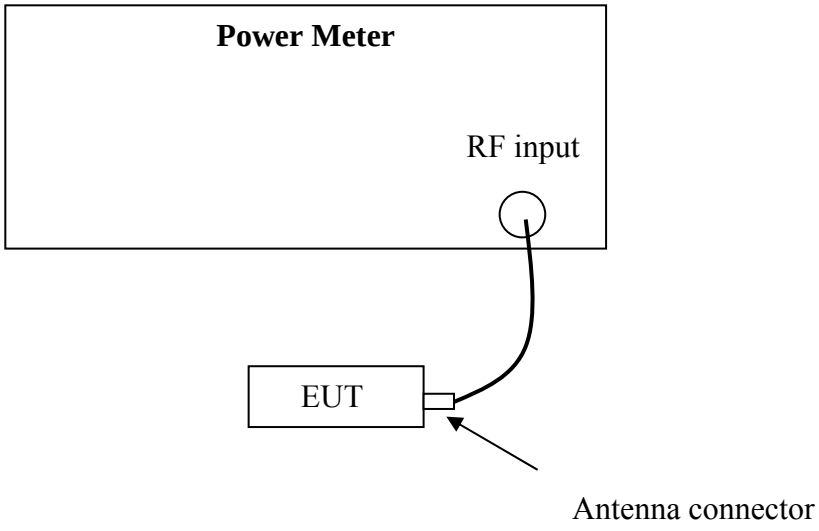
☐ For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt

☐ For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts

☒ For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt.

If the transmitting antenna of directional gain greater than 6dBi is used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi. If there have a beam forming type, the limit should be the minimum of 30dBm and 30+ (6 –antenna gain-beam forming gain).

5.2 Test Configuration



5.3 Test procedure and test setup

The EUT was tested according to DTS test procedure of "KDB558074 D01 DTS Meas Guidance v03r02" for compliance to FCC 47CFR 15.247 requirements (clause 9.1.2).

5.4 Test protocol

Temperature: 22 °C
Relative Humidity: 53 %

Mode	Frequency (MHz)	Reading Power (dBm)	Limit (dBm)	Margin (dB)
802.11b	2412	16.71	30.00	13.29
	2437	16.83	30.00	13.17
	2462	16.60	30.00	13.40
802.11g	2412	19.98	30.00	10.02
	2437	19.30	30.00	10.70
	2462	18.67	30.00	11.33

6. Power spectrum density

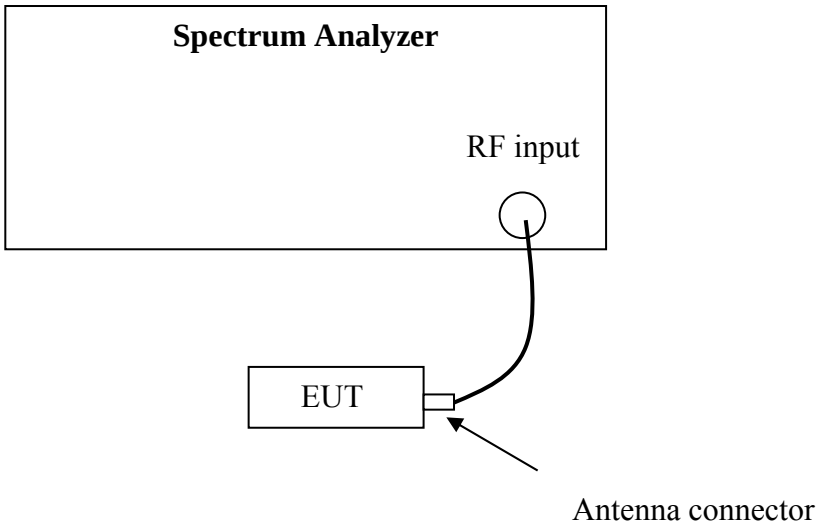
Test result: **Pass**

6.1 Test limit

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

If the transmitting antenna of directional gain greater than 6dBi is used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi. If there have a beam forming type, the limit should be the minimum of 8dBm/MHz and 8+ (6 – antenna gain-beam forming gain).

6.2 Test Configuration



6.3 Test procedure and test setup

The power output per FCC §15.247(e) was tested according to DTS test procedure of "KDB558074 D01 DTS Meas Guidance v03r02" (clause 10.2 Method PKPSD) for compliance to FCC 47CFR 15.247 requirements.

1) Set analyzer center frequency to DTS channel center frequency.
2) Set the span to 1.5 times the DTS bandwidth.
3) Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
4) Set the VBW ≥ 3 × RBW.
5) Detector = peak.
6) Sweep time = auto couple.
7) Trace mode = max hold.
8) Allow trace to fully stabilize.
9) Use the peak marker function to determine the maximum amplitude level within the RBW.
10) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

6.4 Test Protocol

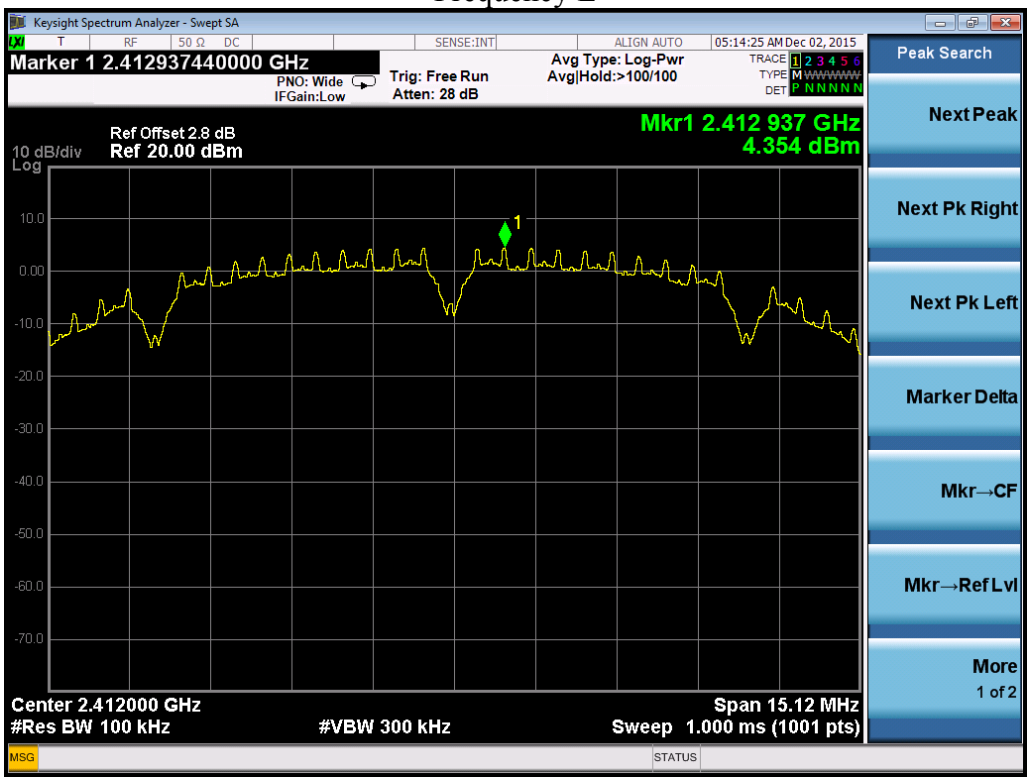
Temperature: 22 °C
Relative Humidity: 53 %

Mode	Frequency (MHz)	Total PSD (dBm/100KHz)	Limit (dBm/3KHz)	Margin (dB)
802.11b	2412	4.354	8.00	3.646
	2437	4.381	8.00	3.619
	2462	3.941	8.00	4.059
802.11g	2412	3.253	8.00	4.747
	2437	3.473	8.00	4.527
	2462	3.486	8.00	4.514

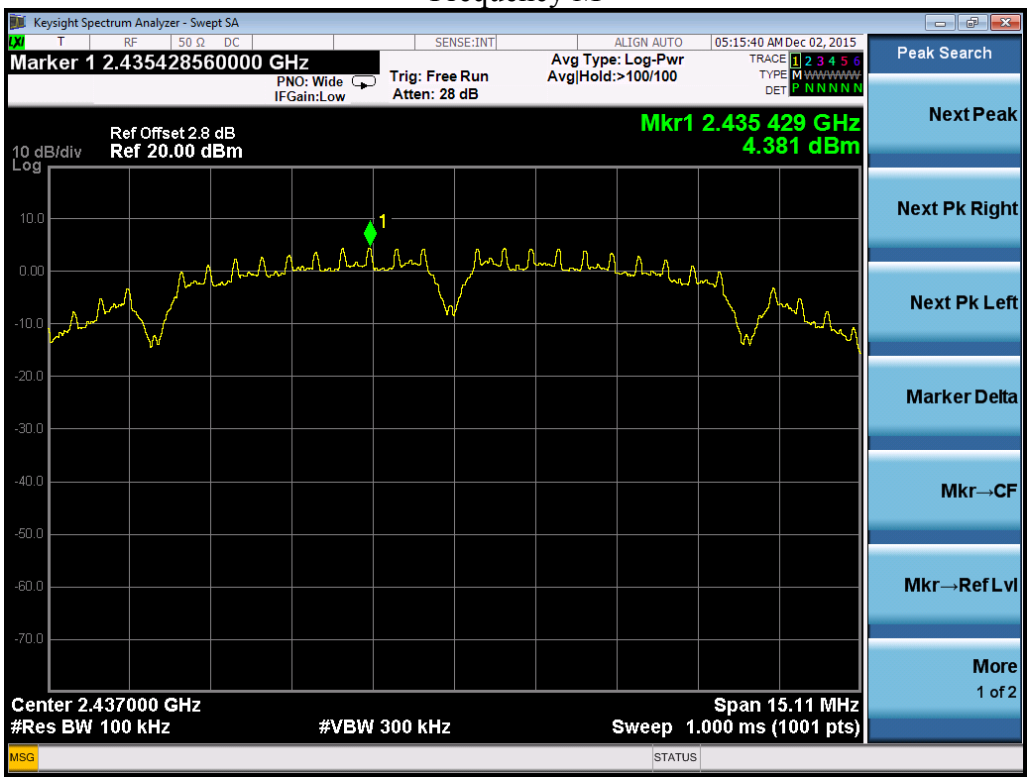
Test plot as follows:

802.11b

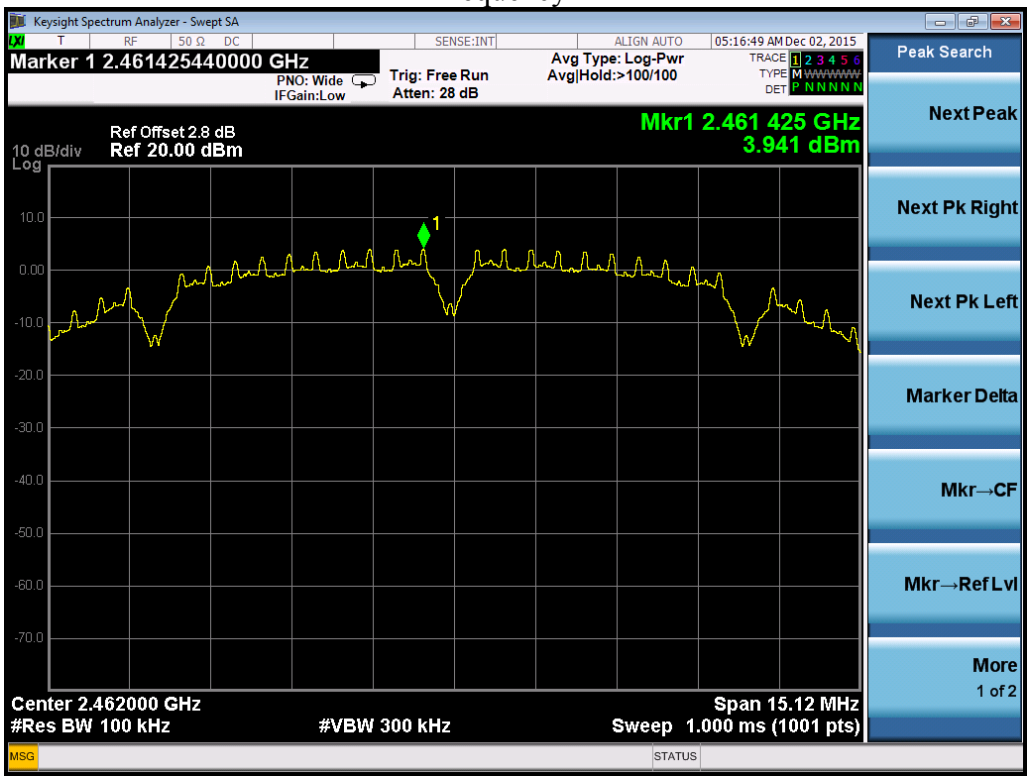
Frequency L



Frequency M

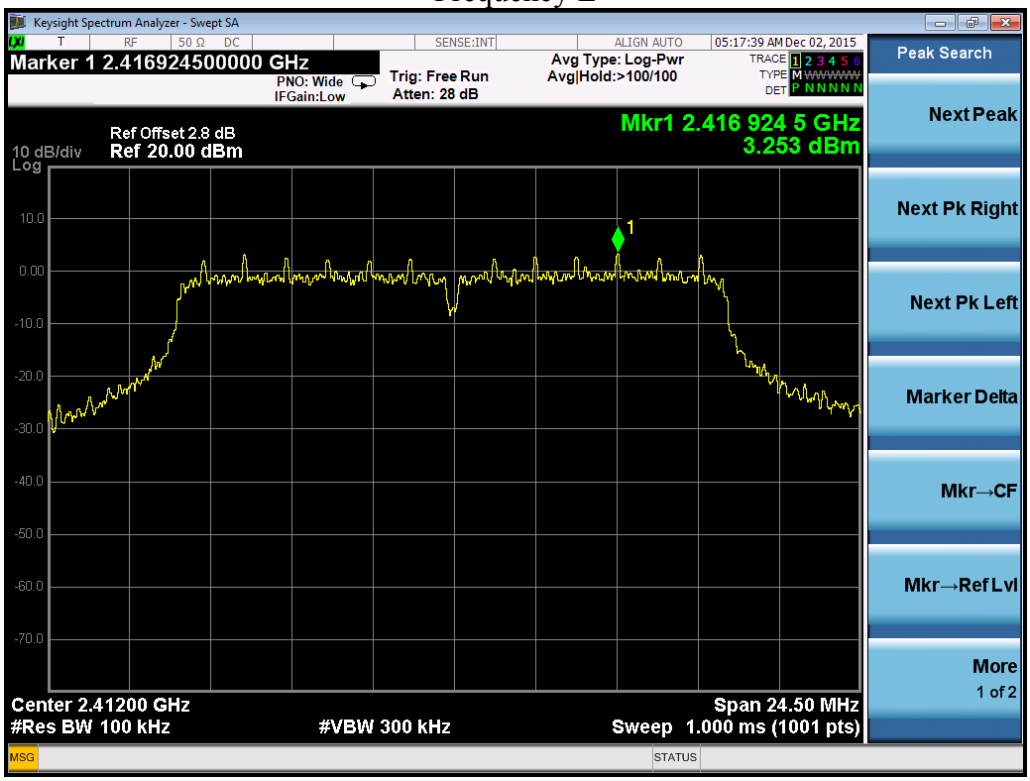


Frequency H

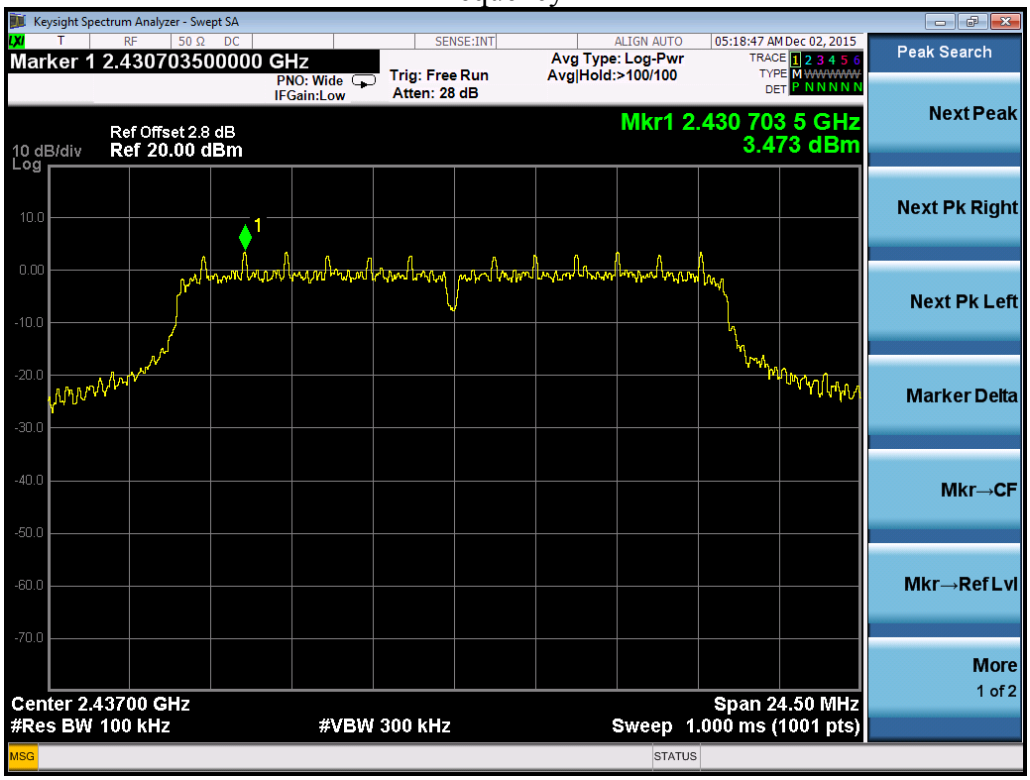


802.11g

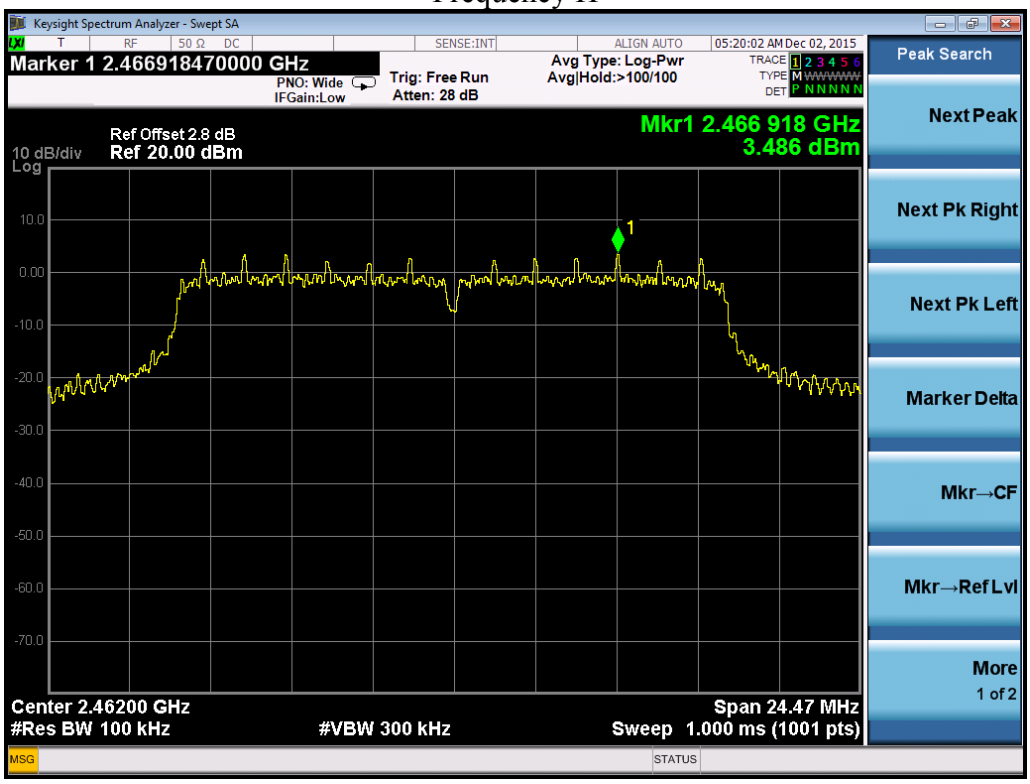
Frequency L



Frequency M



Frequency H



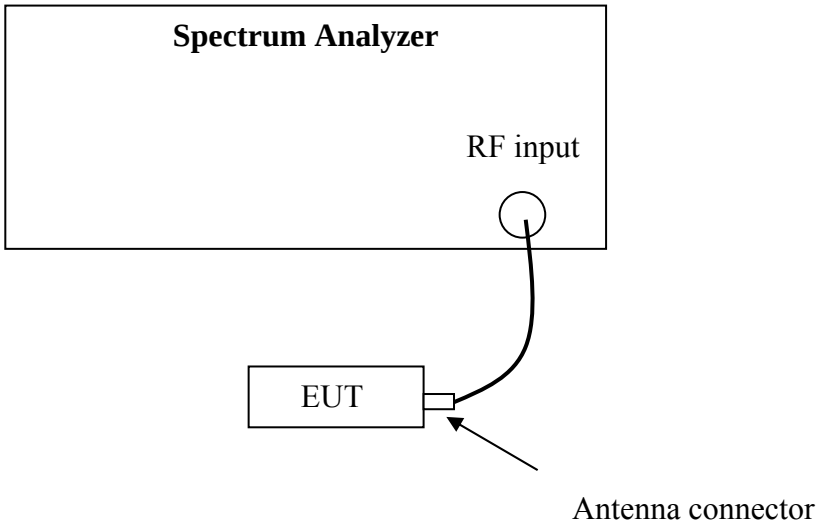
7. Emissions in non-restricted frequency bands

Test result: **Pass**

7.1 Test limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.

7.2 Test Configuration



7.3 Test procedure and test setup

The Emission outside the frequency Band per FCC § 15.247(d) is measured using the Spectrum Analyzer with the resolutions bandwidth set at 100kHz, the video bandwidth set at 300kHz, and the SPAN>>RBW.

The EUT was tested according to DTS test procedure of "KDB558074 D01 DTS Meas Guidance v03r02" (clause 11.0) for compliance to FCC 47CFR 15.247 requirements.

7.4 Test Protocol

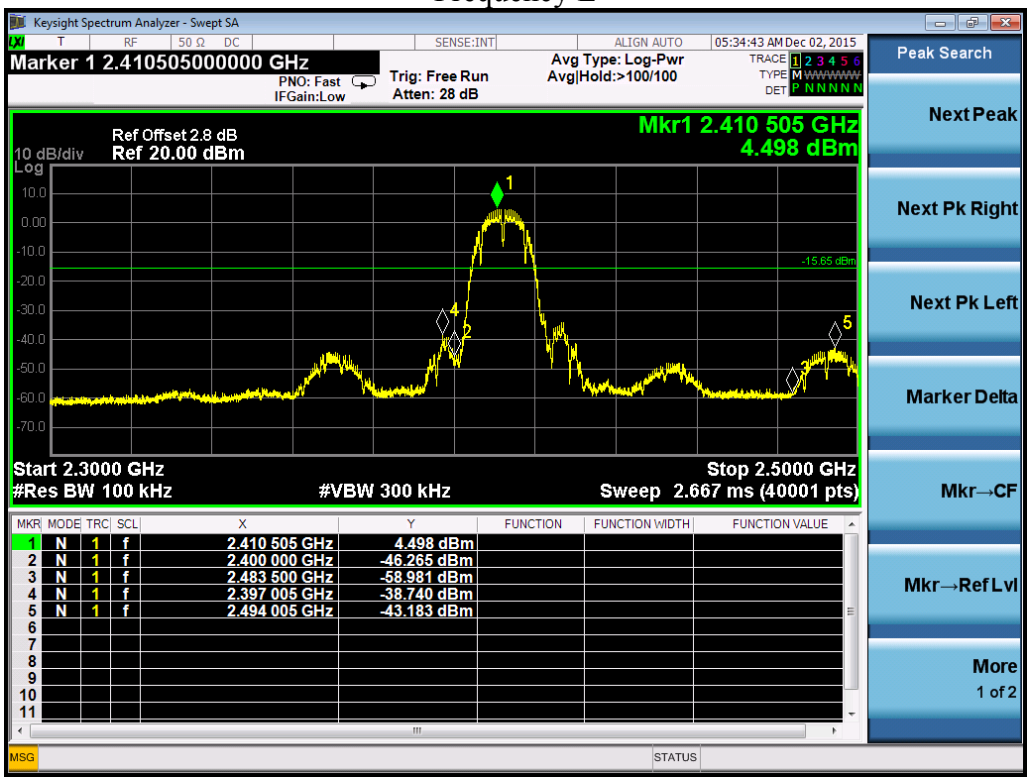
Temperature: 22 °C
Relative Humidity: 53 %

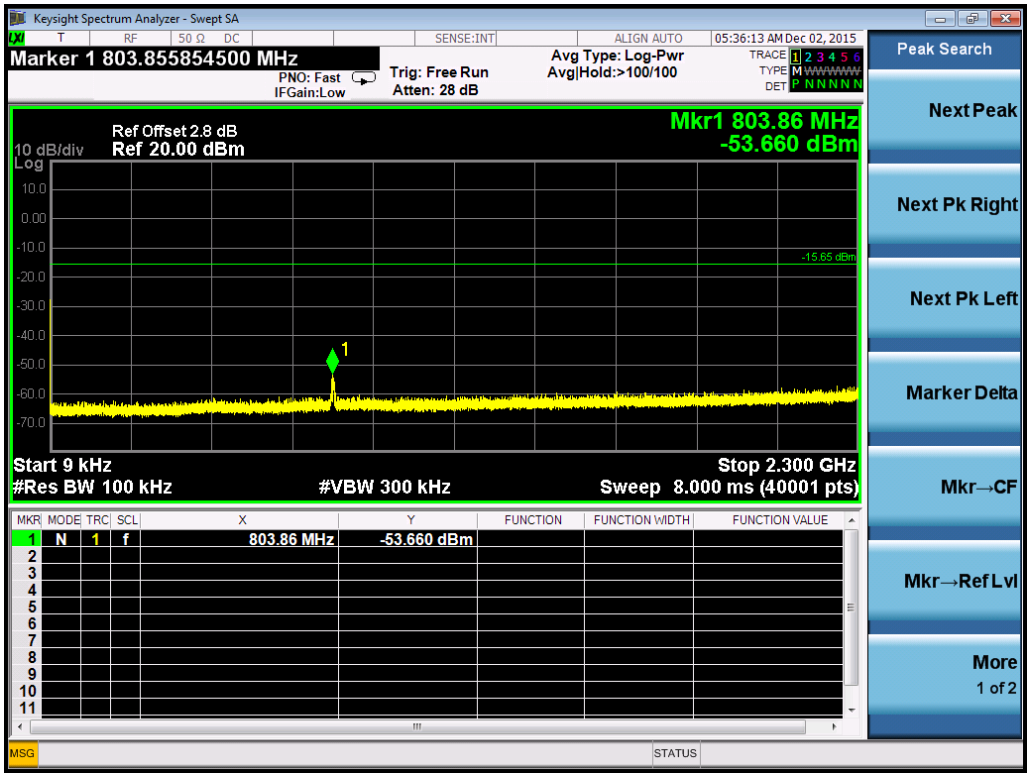
Test Mode	Frequency (MHz)	Results	Limit
802.11b	2412	Pass	>20dB
	2437	Pass	
	2462	Pass	
802.11g	2412	Pass	
	2437	Pass	
	2462	Pass	

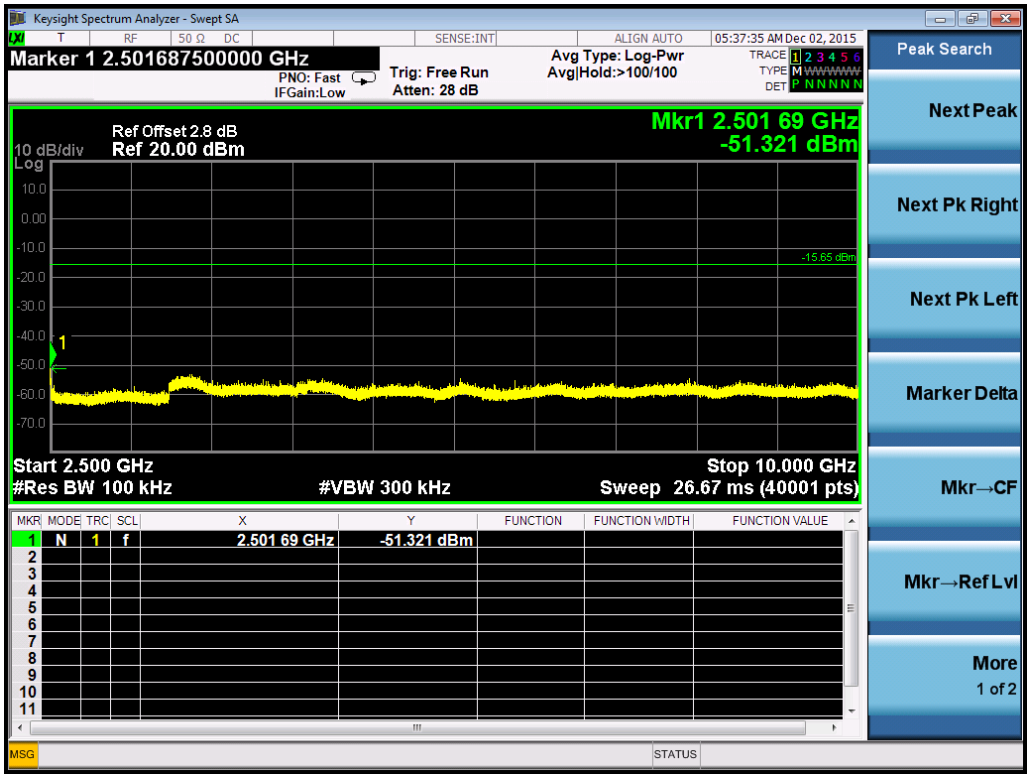
Test plot as follows:

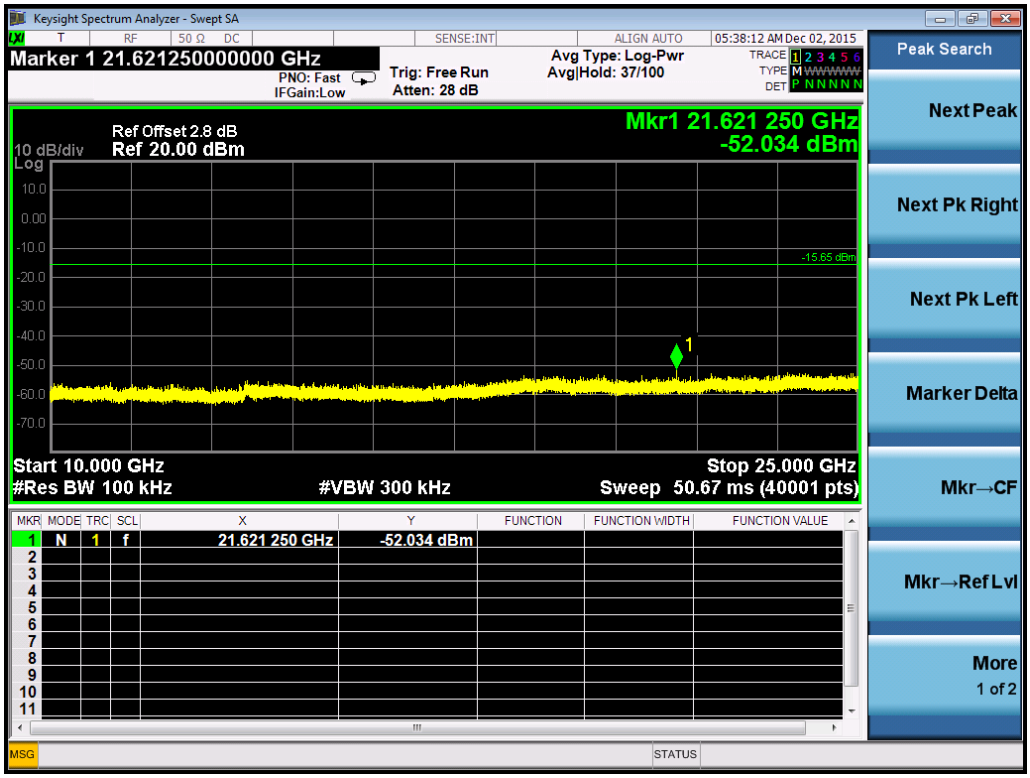
802.11b

Frequency L

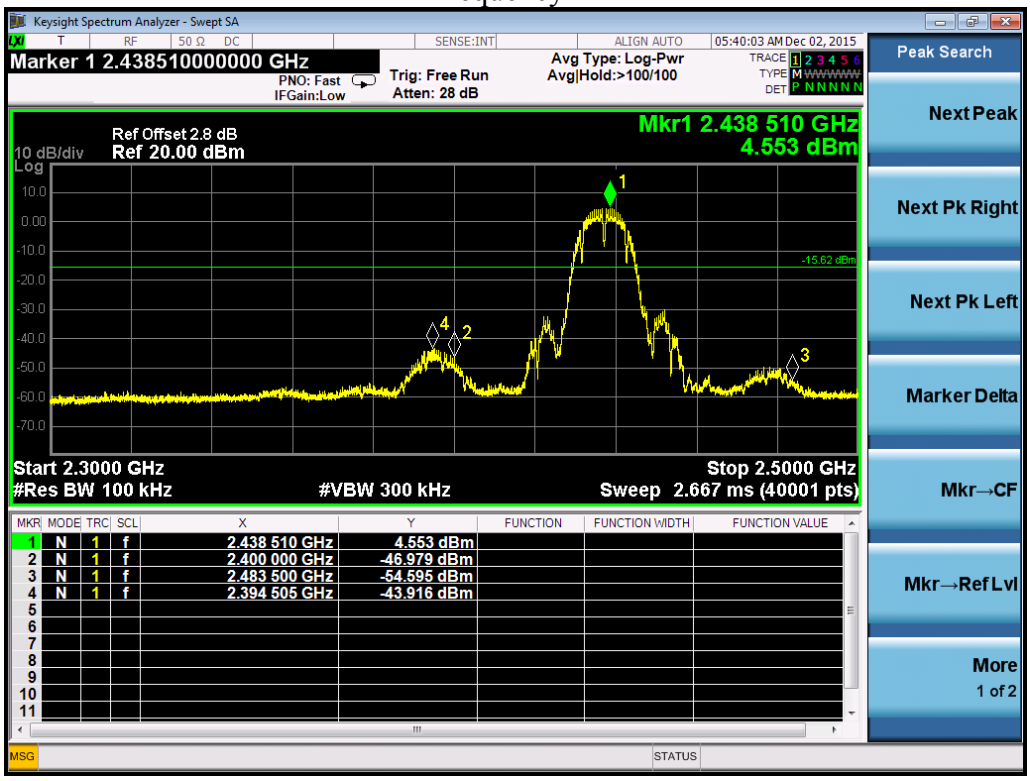


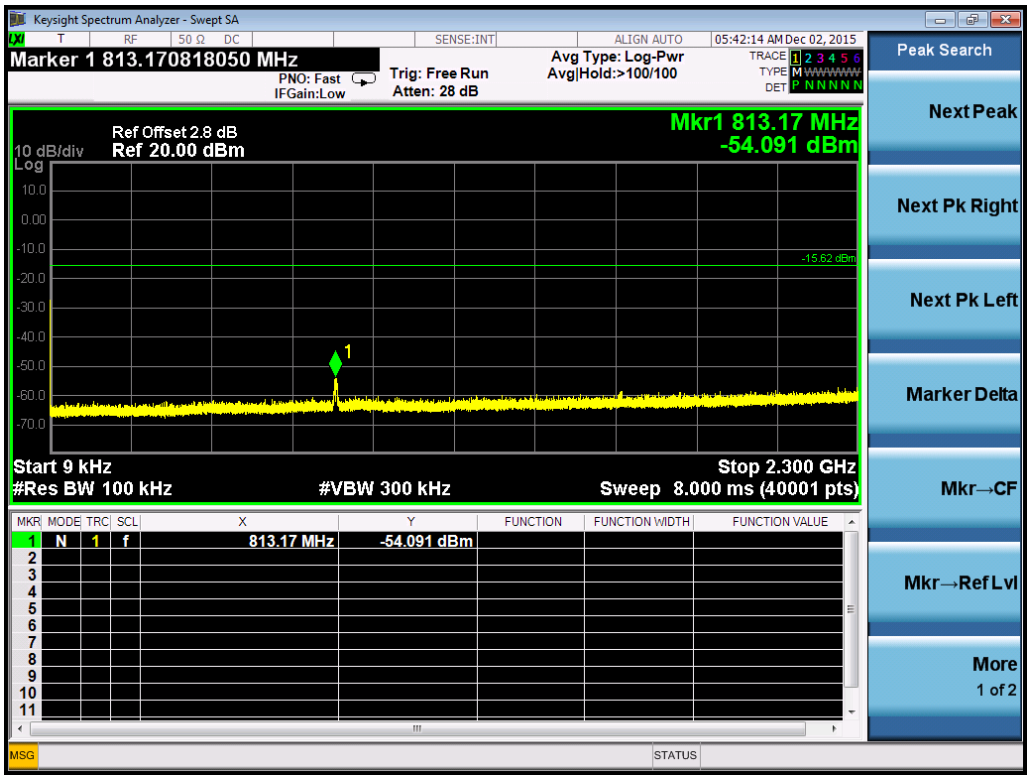


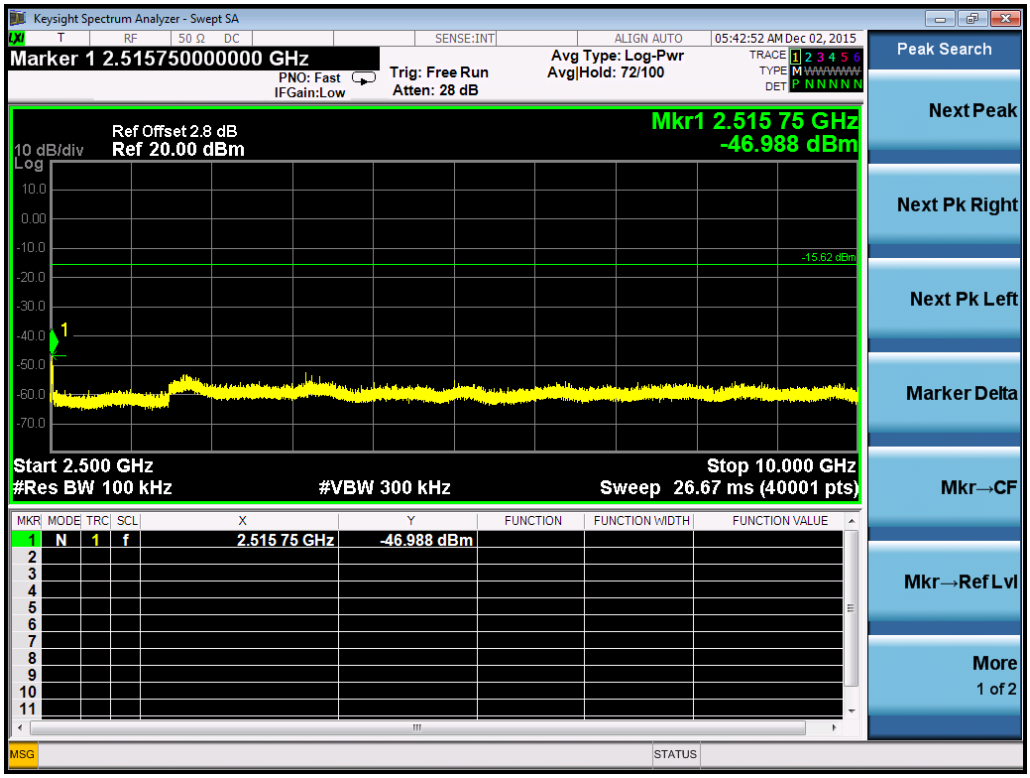


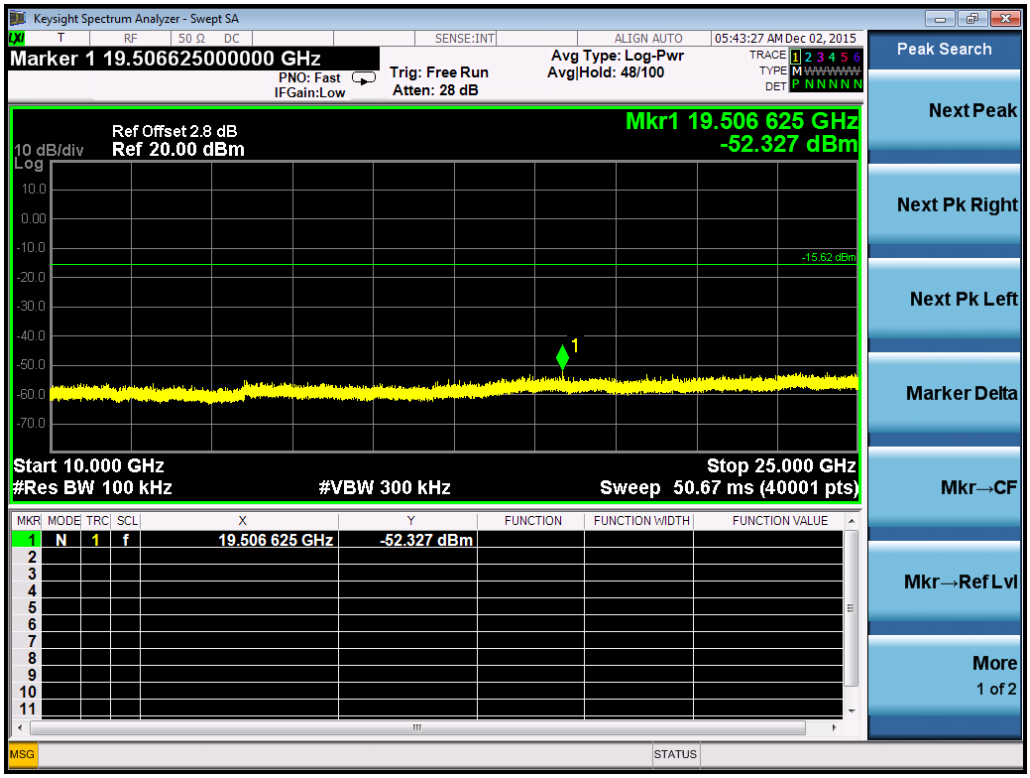


Frequency M

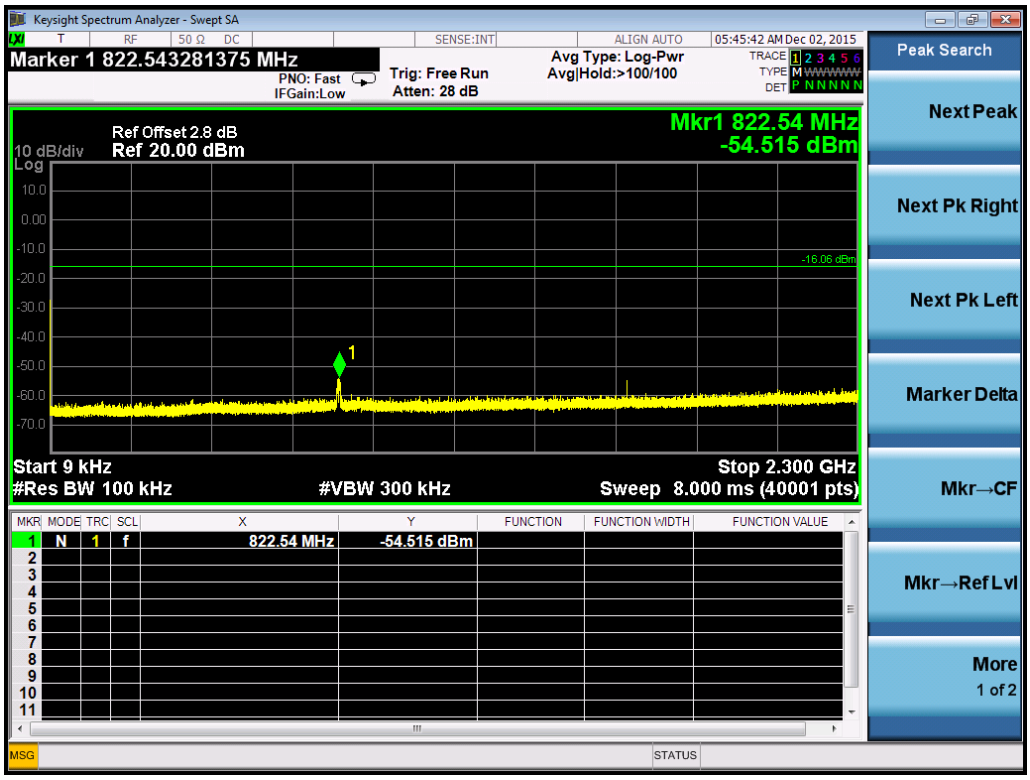


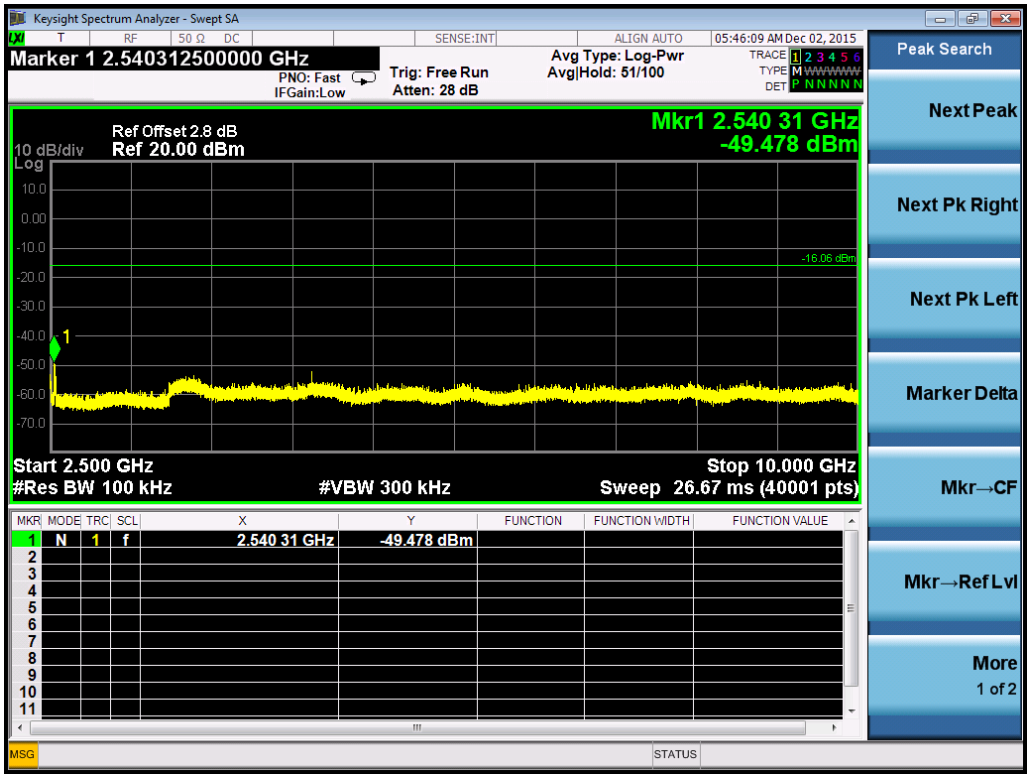


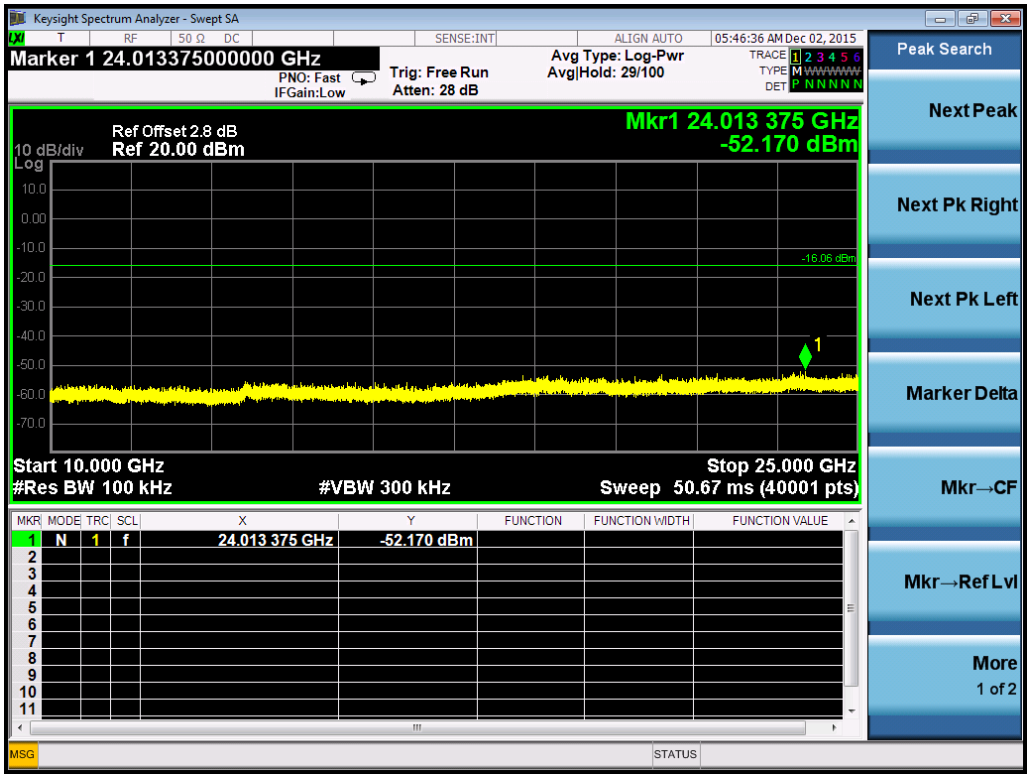




Frequency H

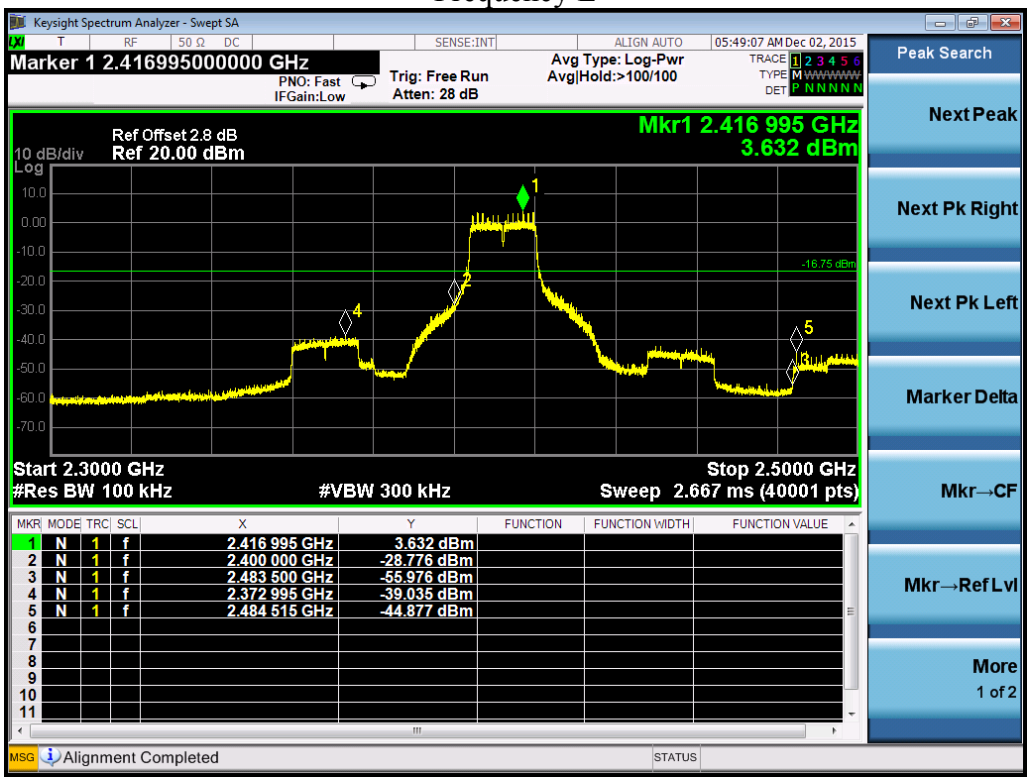


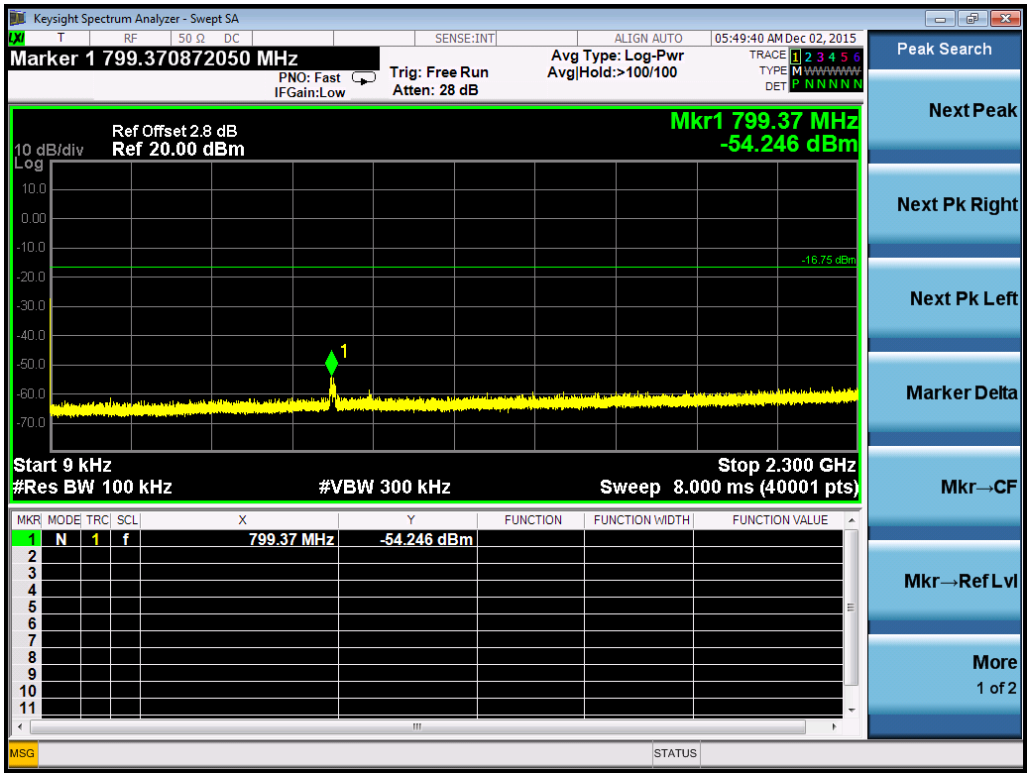


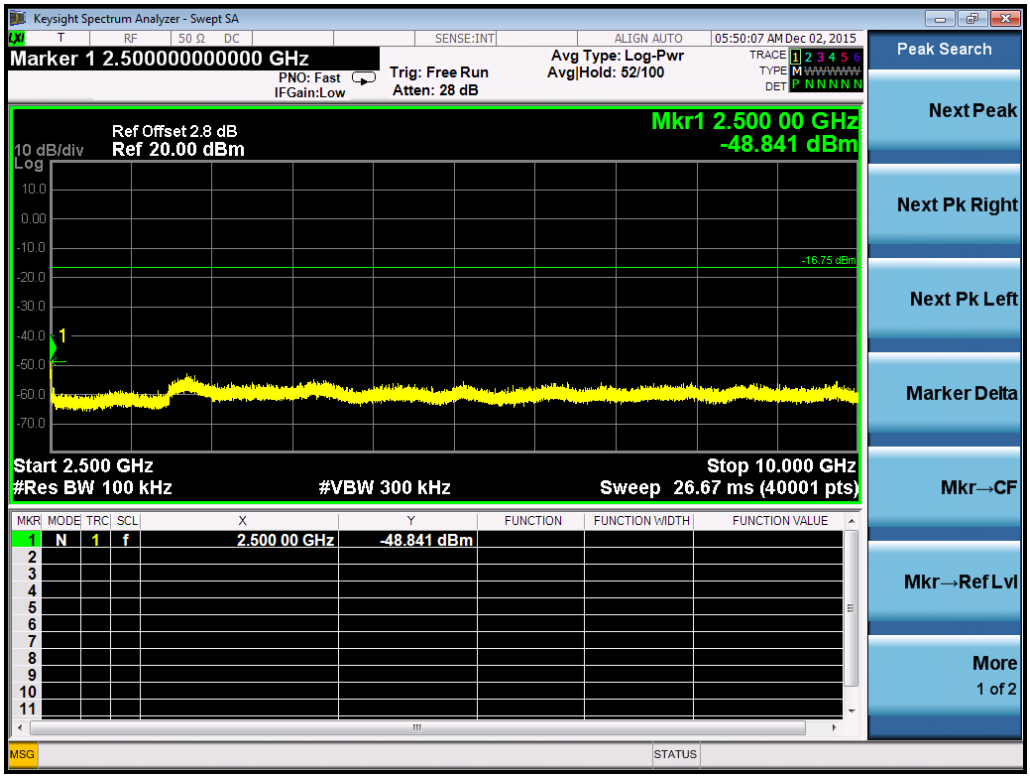


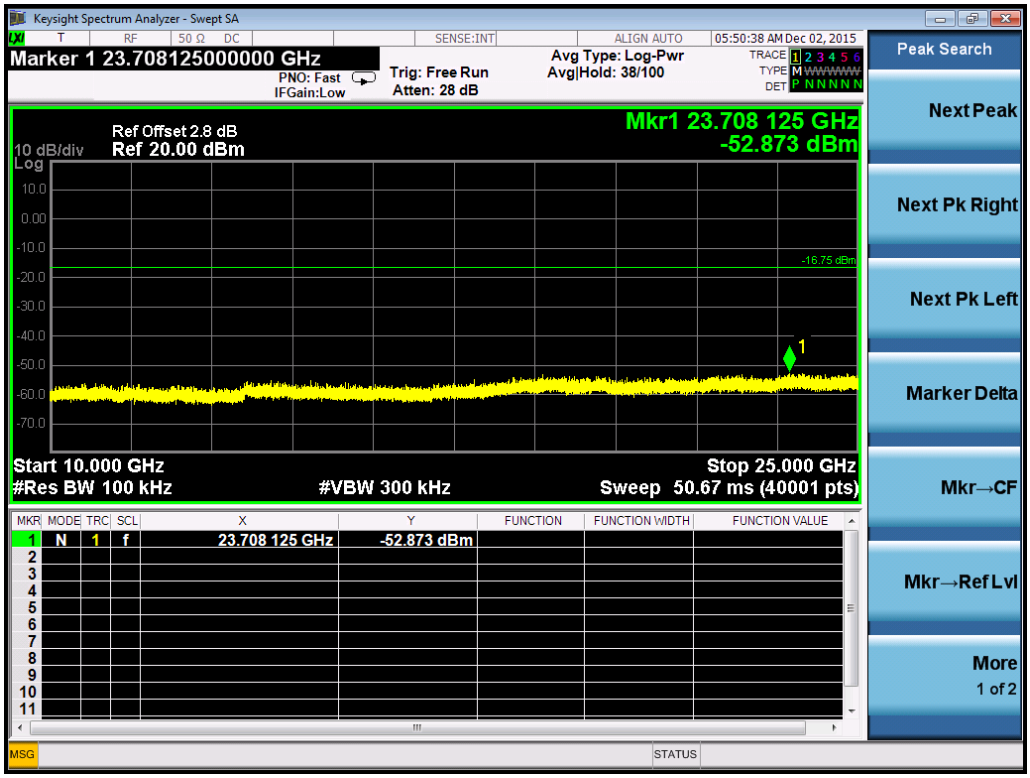
802.11g

Frequency L

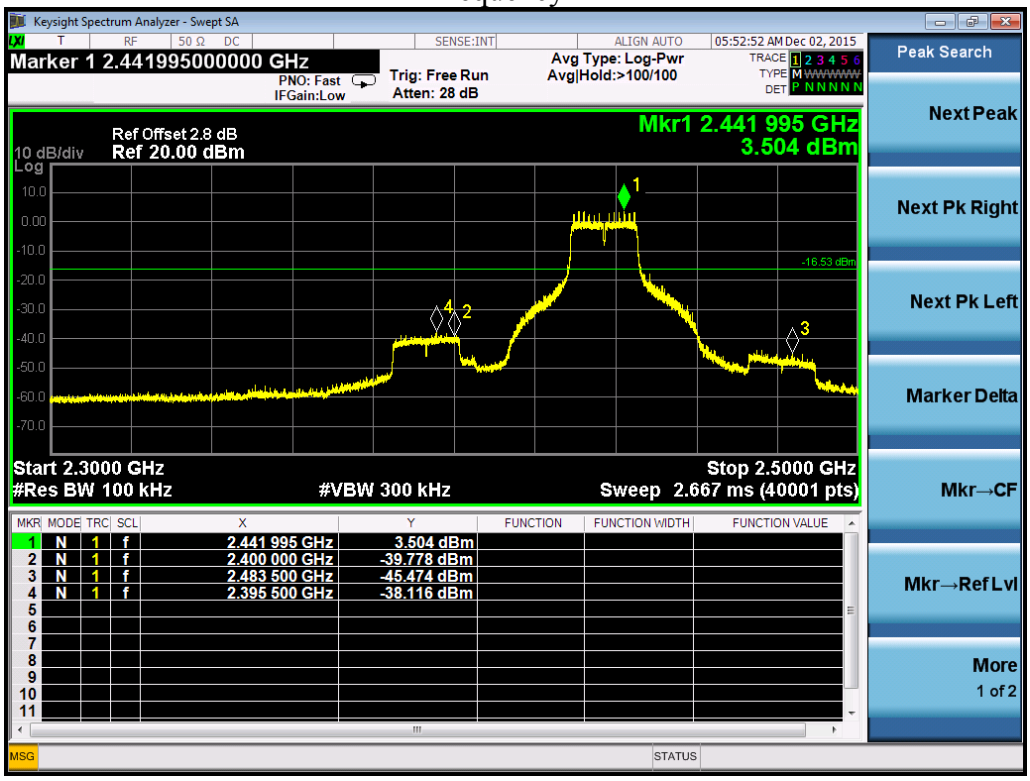


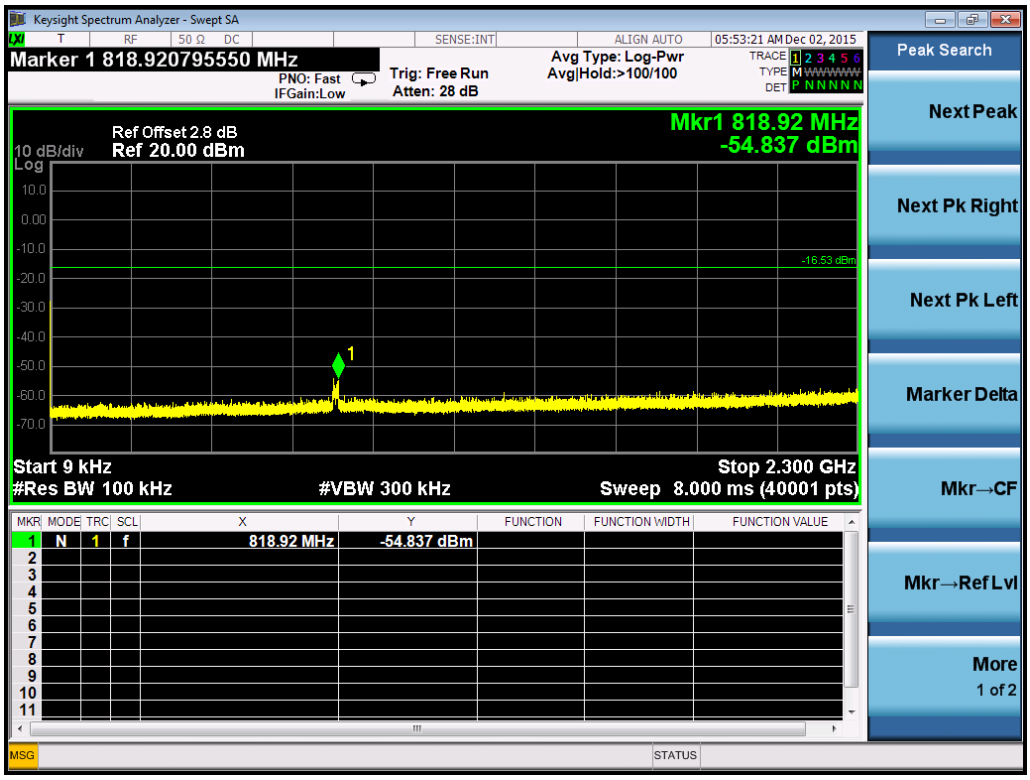


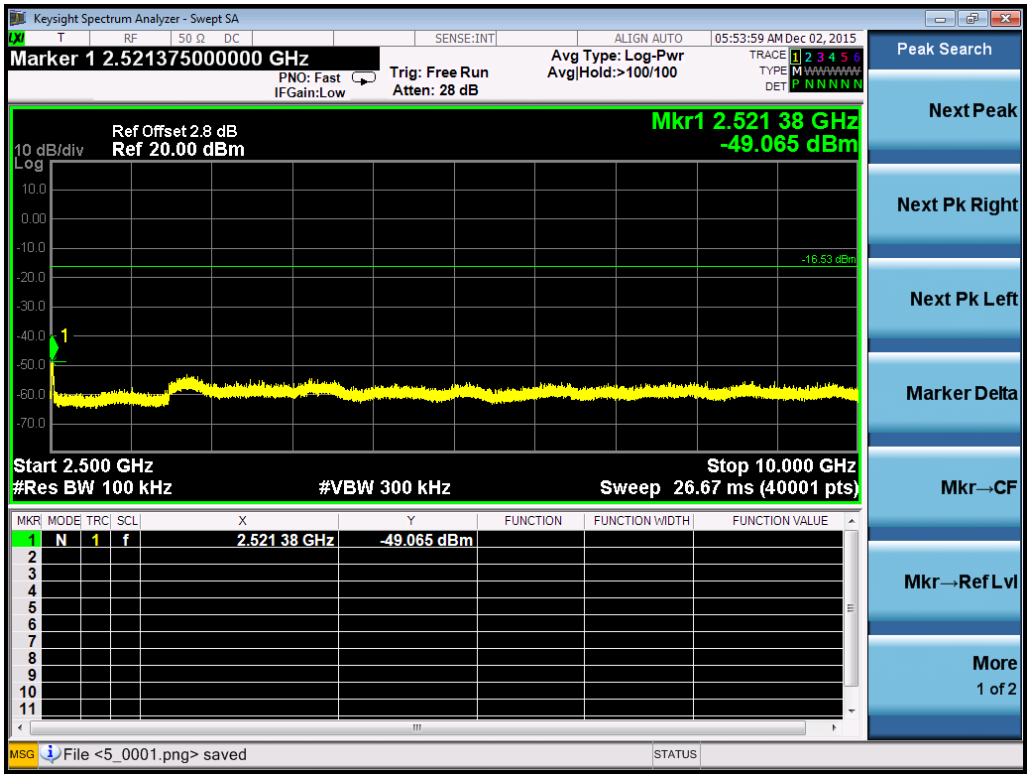


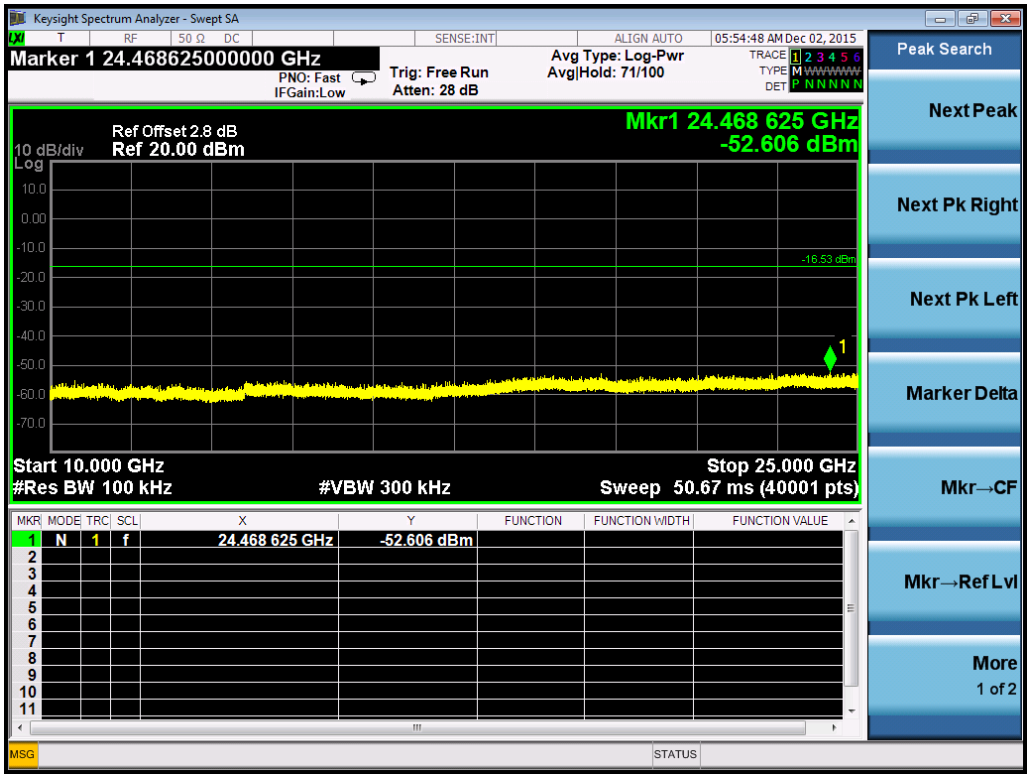


Frequency M

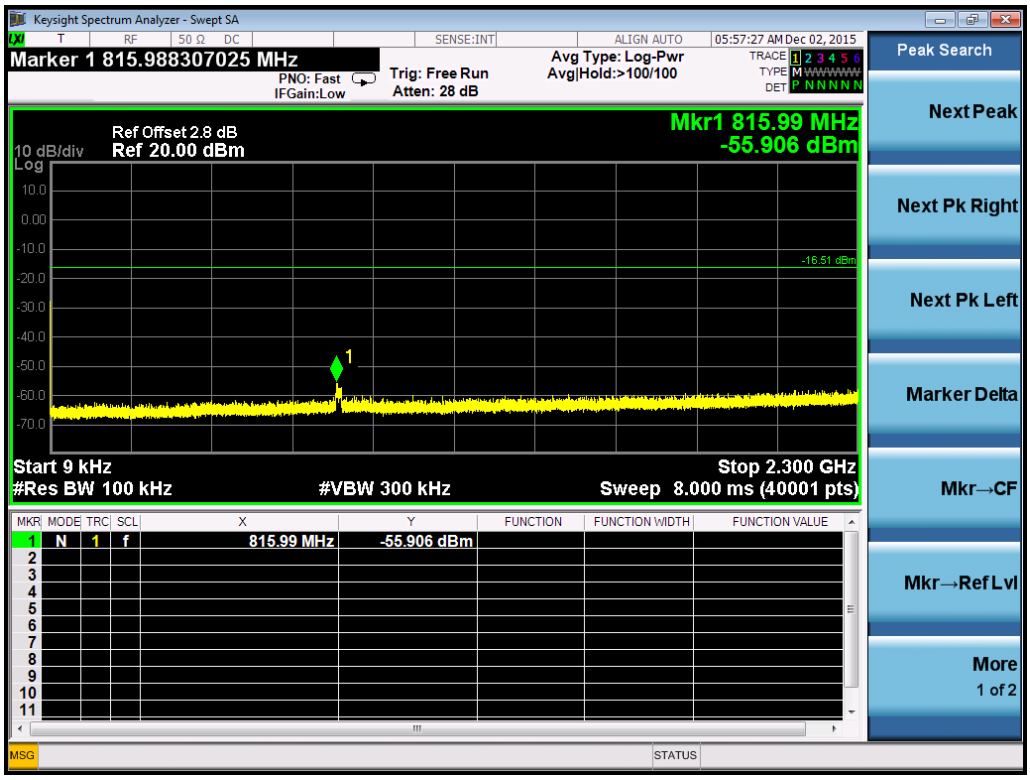


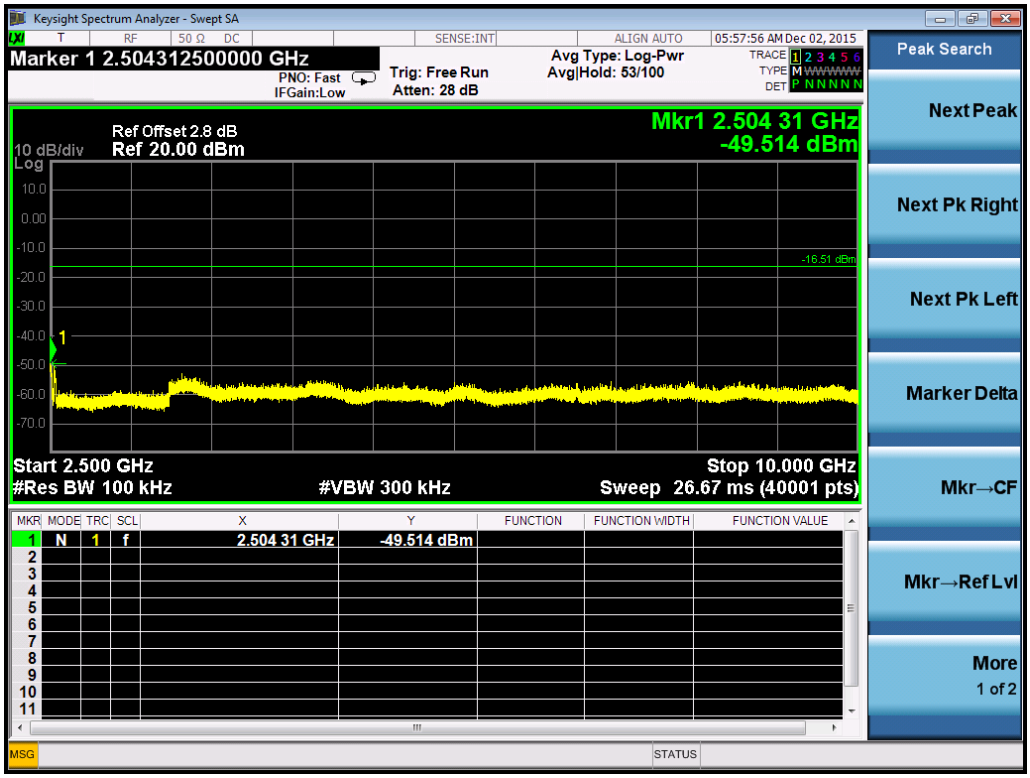


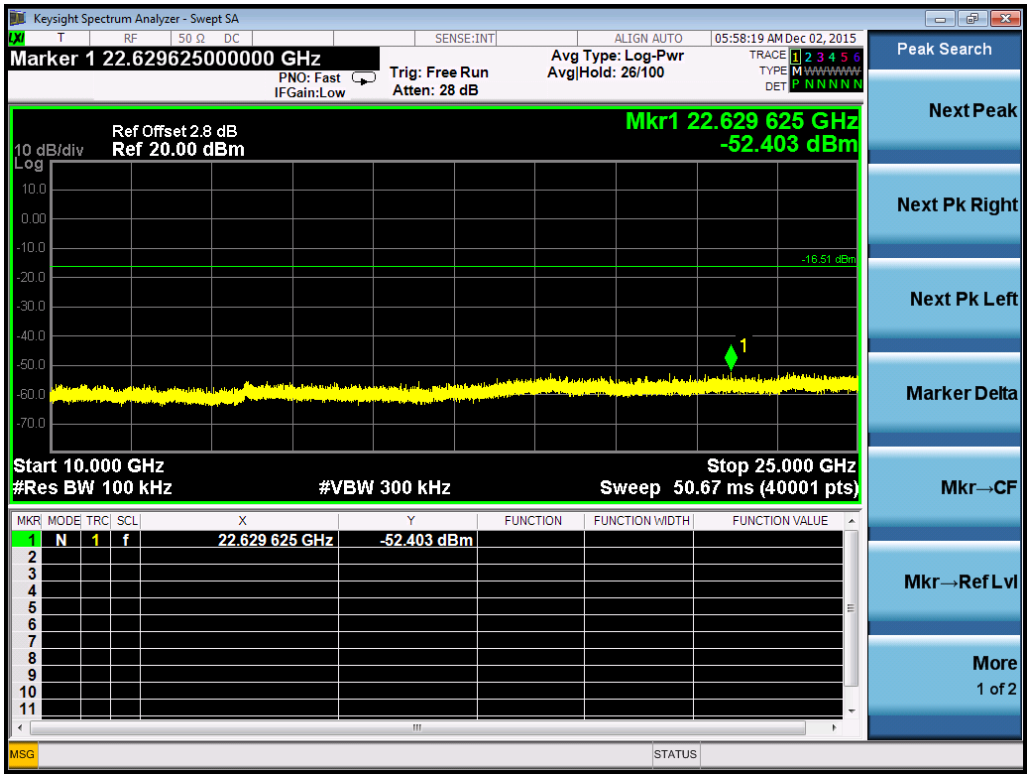




Frequency H







8. Radiated Emissions in restricted frequency bands

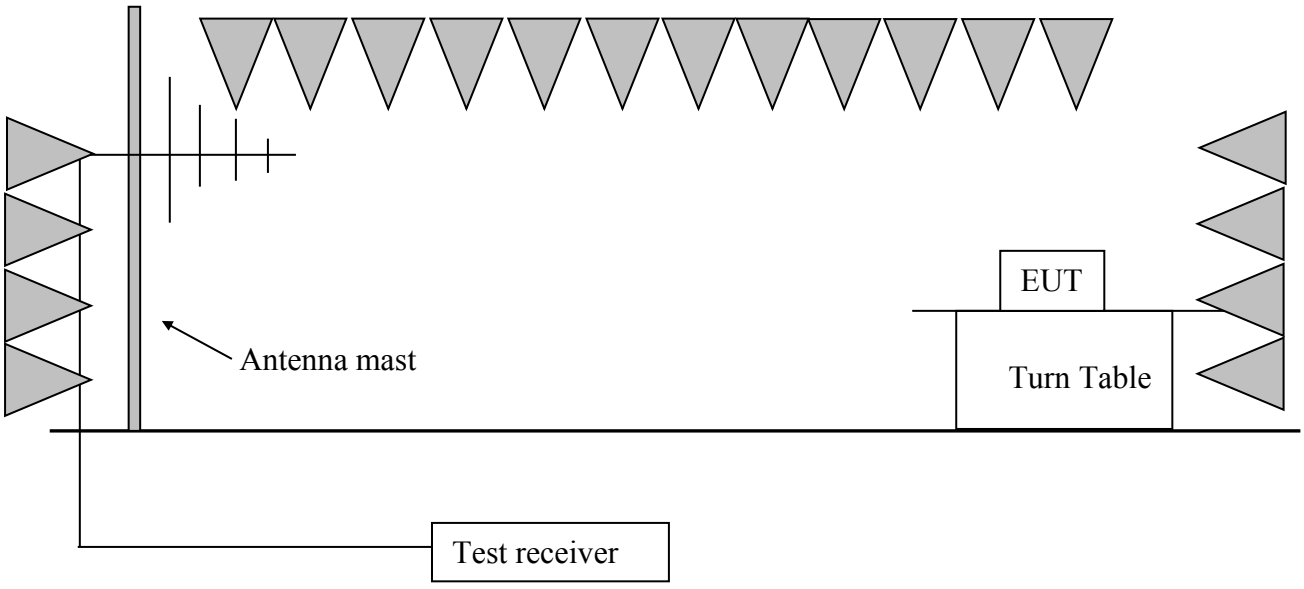
Test result: Pass

8.1 Test limit

The radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) showed as below:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

8.2 Test Configuration



8.3 Test procedure and test setup

The measurement was applied in a semi-anechoic chamber. While testing for spurious emission higher than 1GHz, if applied, the pre-amplifier would be equipped just at the output terminal of the antenna.

The EUT and simulators were placed on a 0.8m high wooden turntable above the horizontal metal ground plane. 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 mast. The antenna moved up and down between from 1meter to 4 meters to find out the maximum emission level.

The EUT was tested according to DTS test procedure of KDB558074 D01 DTS "Meas Guidance v03r03" for compliance to FCC 47CFR 15.247 requirements.

The radiated emission was measured using the Spectrum Analyzer with the resolutions bandwidth set as:

RBW = 300 Hz, VBW = 1 kHz (9 kHz~150 kHz);
RBW = 10 kHz, VBW = 30 kHz (150 kHz~30MHz);
RBW = 100 kHz, VBW = 300 kHz (30MHz~1GHz for PK)
RBW = 1MHz, VBW = 3MHz (>1GHz for PK);

Remark:
1. Factor= Antenna Factor + Cable Loss (-Amplifier, is employed)
2. Measured level= Original Receiver Reading + Factor
3. Margin = limit – Measured level
4. If the PK measured level is lower than AV limit, the AV test can be elided.

Example:

Assuming Antenna Factor = 30.20dB/m, Cable Loss = 2.00dB,
Gain of Preamplifier = 32.00dB, Original Receiver Reading = 10dBuV.
Then Factor = 30.20 + 2.00 – 32.00 = 0.20dB/m;
Measured level = 10dBuV + 0.20dB/m = 10.20dBuV/m
Assuming limit = 54dBuV/m,
Measured level = 10.20dBuV/m, then Margin = 54 -10.20 = 43.80dBuV/m.

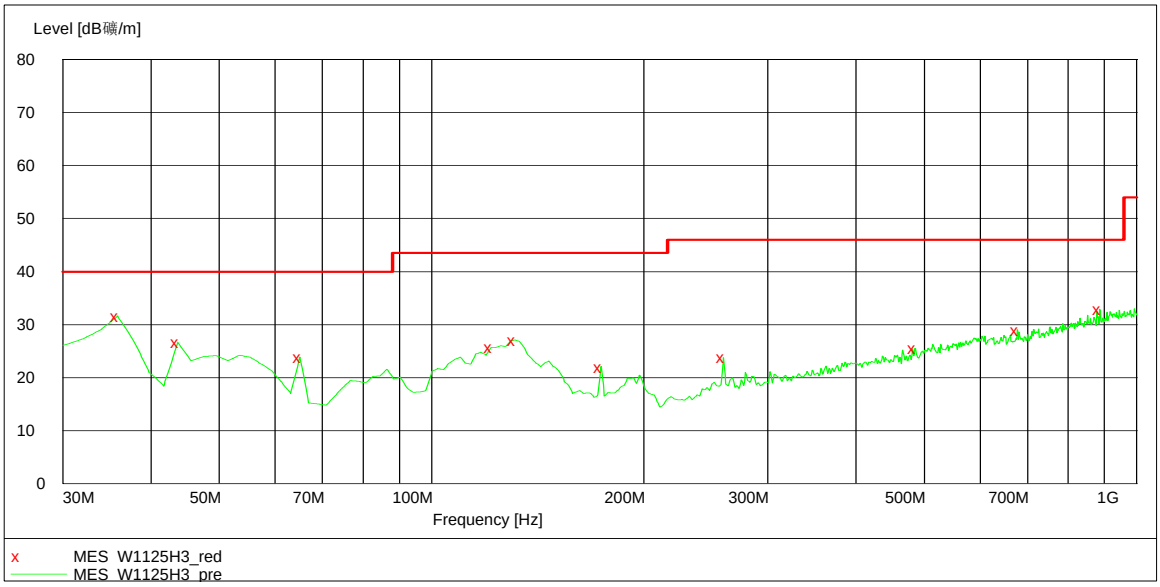
8.4 Test Protocol

Temperature: 25 °C
Relative Humidity: 55 %

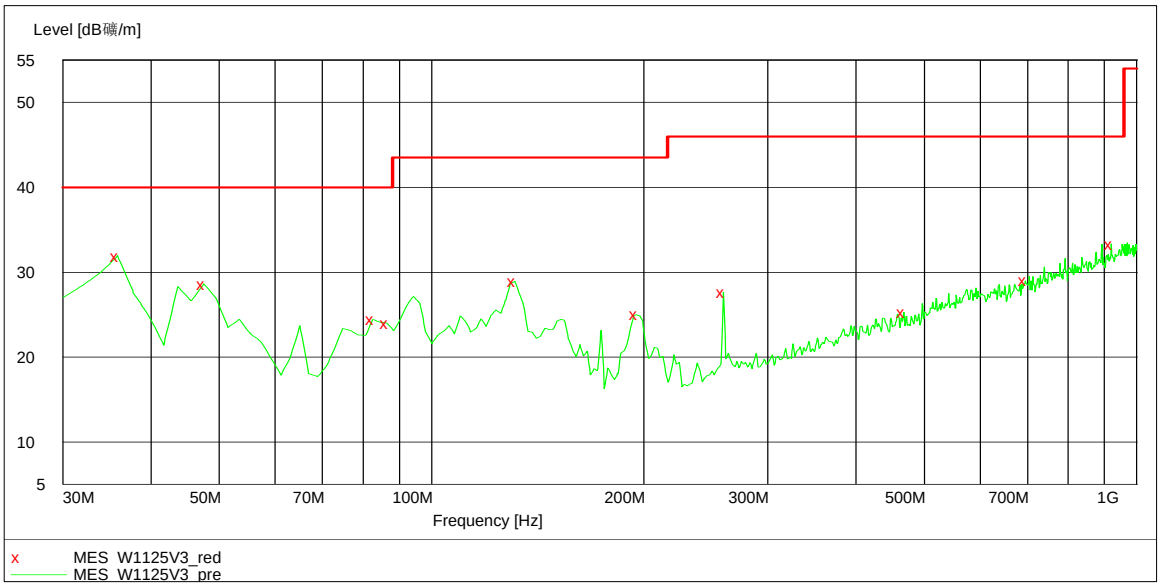
The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

Mode 1, 30MHz~1GHz, 802.11b mode

Horizontal



Vertical

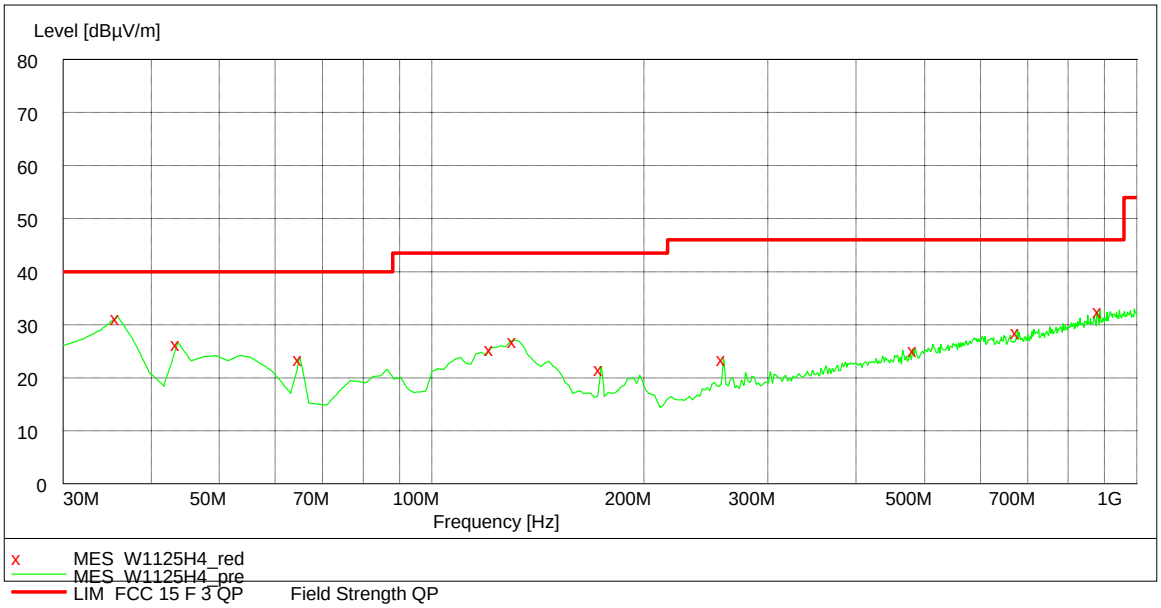


Mode 1, 30MHz~1GHz, Test data:

Polarization	Frequency (MHz)	Measured level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
H	35.83	31.6	40.0	8.4	PK
	43.61	26.6	40.0	13.4	PK
	64.99	23.9	40.0	16.1	PK
	121.36	25.7	43.5	17.8	PK
	131.08	27.1	43.5	16.4	PK
	173.85	22.0	43.5	21.5	PK
	259.38	23.8	46.0	22.2	PK
	484.87	25.5	46.0	20.5	PK
	677.31	29.0	46.0	17.0	PK
	887.25	32.9	46.0	13.1	PK
V	35.83	31.9	40.0	8.1	PK
	47.49	28.6	40.0	11.4	PK
	82.48	24.4	40.0	15.6	PK
	86.37	24.0	40.0	16.0	PK
	131.08	28.9	43.5	14.6	PK
	195.23	25.0	43.5	18.5	PK
	259.38	27.6	46.0	18.4	PK
	467.37	25.3	46.0	20.7	PK
	694.81	29.0	46.0	17.0	PK
	920.30	33.3	46.0	12.7	PK

Mode 2, 30MHz~1GHz, 802.11b mode

Horizontal



Vertical

Mode 1, 30MHz~1GHz, Test data:

Polarization	Frequency (MHz)	Measured level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
H	35.83	31.5	40.0	8.5	PK
	43.61	26.5	40.0	13.5	PK
	64.99	23.9	40.0	16.1	PK
	121.36	25.6	43.5	17.9	PK
	131.08	27.1	43.5	16.4	PK
	173.85	22.1	43.5	21.4	PK
	259.38	23.8	46.0	22.2	PK
	484.87	25.4	46.0	20.6	PK
	677.31	29.0	46.0	17.0	PK
	887.25	32.9	46.0	13.1	PK
V	35.83	31.8	40.0	8.2	PK
	47.49	28.5	40.0	11.5	PK
	82.48	24.4	40.0	15.6	PK
	86.37	24.0	40.0	16.0	PK
	131.08	28.6	43.5	14.9	PK
	195.23	25.0	43.5	18.5	PK
	259.38	27.4	46.0	18.6	PK
	467.37	25.3	46.0	20.7	PK
	694.81	29.0	46.0	17.0	PK
	920.30	33.4	46.0	12.6	PK

Test result above 1GHz (Mode 1):
The emission was conducted from 1GHz to 25GHz.

1：2.4G band 802.11b

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	2390	47.25	74	-7.80	100	190	26.75	PK
		41.05	54	-7.80	100	190	13.85	AV
	2412	80.90	-	-7.80	100	190	-	PK
		71.42	-	-7.80	100	190	-	AV
	4824	51.15	74	-2.10	100	190	22.85	PK
		40.25	54	-2.10	100	190	13.75	AV
Note:	2412MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	2437	80.58	-	-7.80	100	190	-	PK
		70.44	-	-7.80	100	190	-	AV
	4874	51.40	74	-2.10	100	190	22.60	PK
		40.20	54	-2.10	100	190	13.80	AV
	7311	48.80	74	6.50	100	190	25.20	PK
		38.60	54	6.50	100	190	15.40	AV
Note:	2437MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	2462	81.80	-	-7.80	100	190	-	PK
		71.20	-	-7.80	100	190	-	AV
	2483.5	50.30	74	-7.50	100	190	23.70	PK
		41.10	54	-7.50	100	190	12.90	AV
	4924	51.10	74	-2.10	100	190	22.90	PK
		40.30	54	-2.10	100	190	13.70	AV
	7386	48.30	74	6.50	100	190	25.70	PK
		38.50	54	6.50	100	190	15.50	AV
Note:	2462MHz is fundamental signal.							

2：2.4G band 802.11g

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	2390	50.65	74	-7.80	100	190	23.35	PK
		41.45	54	-7.80	100	190	12.55	AV
	2412	76.80	-	-7.80	100	190	-	PK
		63.25	-	-7.80	100	190	-	AV
	4824	49.40	74	-2.10	100	190	24.60	PK
		36.30	54	-2.10	100	190	17.70	AV
Note:	2412MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	2437	75.48	-	-7.80	100	190	-	PK
		62.33	-	-7.80	100	190	-	AV
	4874	49.15	74	-2.10	100	190	24.85	PK
		42.20	54	-2.10	100	190	11.80	AV
	7311	46.85	74	6.50	100	190	25.15	PK
		39.50	54	6.50	100	190	14.50	AV
Note:	2437MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	2462	76.88	-	-7.80	100	190	-	PK
		62.52	-	-7.80	100	190	-	AV
	2483.5	50.08	74	-7.50	100	190	23.92	PK
		40.15	54	-7.50	100	190	13.85	AV
	4924	52.30	74	-2.10	100	190	21.70	PK
		40.50	54	-2.10	100	190	13.50	AV
	7386	45.10	74	6.50	100	190	28.90	PK
		36.20	54	6.50	100	190	17.80	AV
Note:	2462MHz is fundamental signal.							

Test result above 1GHz (Mode 2):
The emission was conducted from 1GHz to 25GHz. The antenna was placed with three axis(X, Y, Z) and the worst data was listed in the report.

1：2.4G band 802.11b

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	2390	46.40	74	-7.80	100	190	27.60	PK
		40.30	54	-7.80	100	190	13.70	AV
	2412	78.50	-	-7.80	100	190	-	PK
		68.60	-	-7.80	100	190	-	AV
	4824	49.30	74	-2.10	100	190	24.70	PK
		40.40	54	-2.10	100	190	13.60	AV
Note:	2412MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	2437	76.50	-	-7.80	100	190	-	PK
		68.40	-	-7.80	100	190	-	AV
	4874	50.20	74	-2.10	100	190	23.80	PK
		40.40	54	-2.10	100	190	13.60	AV
	7311	46.80	74	6.50	100	190	27.20	PK
		38.50	54	6.50	100	190	15.50	AV
Note:	2437MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	2462	77.80	-	-7.80	100	190	-	PK
		69.20	-	-7.80	100	190	-	AV
	2483.5	48.30	74	-7.50	100	190	25.70	PK
		41.60	54	-7.50	100	190	12.40	AV
	4924	51.10	74	-2.10	100	190	22.90	PK
		40.20	54	-2.10	100	190	13.80	AV
	7386	48.10	74	6.50	100	190	25.90	PK
		37.50	54	6.50	100	190	16.50	AV
Note:	2462MHz is fundamental signal.							

2：2.4G band 802.11g

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	2390	48.50	74	-7.80	100	190	25.50	PK
		41.30	54	-7.80	100	190	12.70	AV
	2412	70.70	-	-7.80	100	190	-	PK
		61.40	-	-7.80	100	190	-	AV
	4824	49.50	74	-2.10	100	190	24.50	PK
		35.30	54	-2.10	100	190	18.70	AV
Note:	2412MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	2437	70.80	-	-7.80	100	190	-	PK
		61.30	-	-7.80	100	190	-	AV
	4874	49.20	74	-2.10	100	190	24.80	PK
		41.30	54	-2.10	100	190	12.70	AV
	7311	46.20	74	6.50	100	190	27.80	PK
		39.30	54	6.50	100	190	14.70	AV
Note:	2437MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	2462	70.80	-	-7.80	100	190	-	PK
		61.50	-	-7.80	100	190	-	AV
	2483.5	48.60	74	-7.50	100	190	25.40	PK
		38.50	54	-7.50	100	190	15.50	AV
	4924	50.30	74	-2.10	100	190	23.70	PK
		40.60	54	-2.10	100	190	13.40	AV
	7386	45.50	74	6.50	100	190	28.50	PK
		35.60	54	6.50	100	190	18.40	AV
Note:	2462MHz is fundamental signal.							

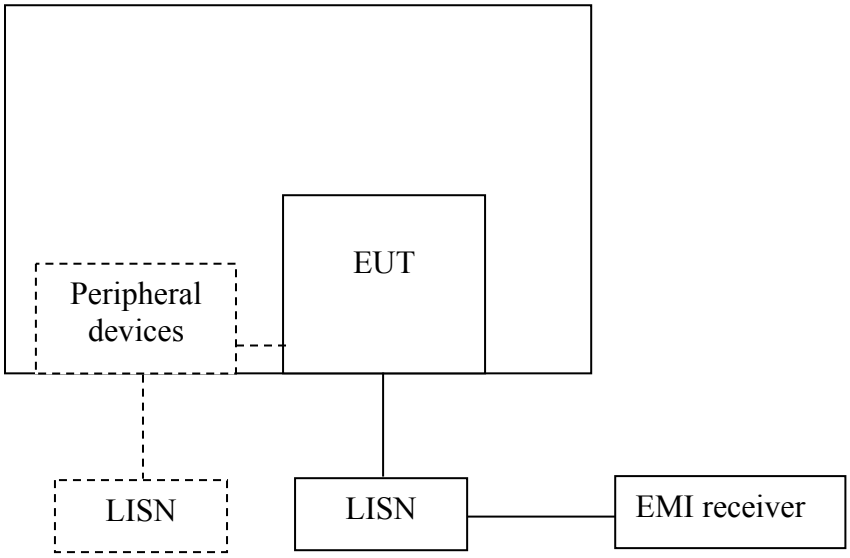
9. Power line conducted emission

Test result: **Pass**

9.1 Limit

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	QP	AV
0.15-0.5	66 to 56*	56 to 46 *
0.5-5	56	46
5-30	60	50
* Decreases with the logarithm of the frequency.		

9.2 Test configuration



☒ For table top equipment, wooden support is 0.8m height table

☐ For floor standing equipment, wooden support is 0.1m height rack.

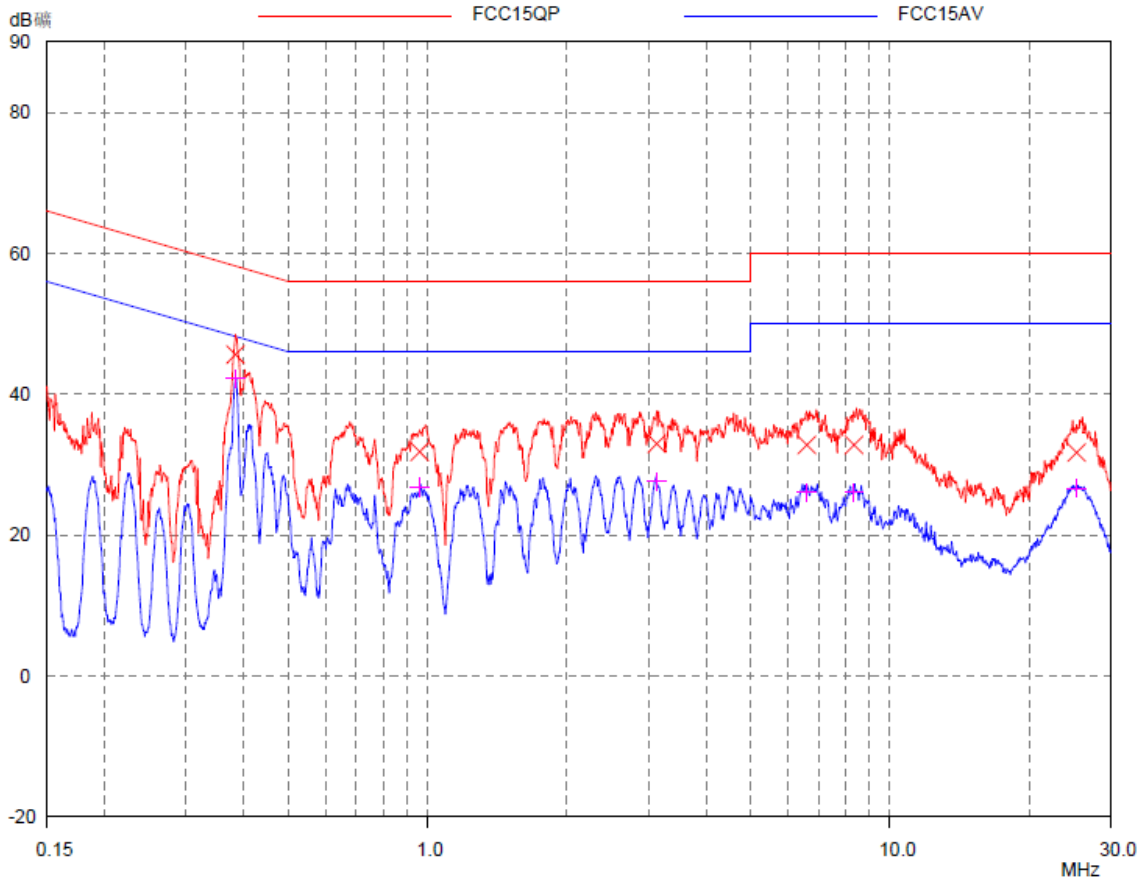
9.3 Test procedure and test set up

The EUT are connected to the main power through a line impedance stabilization network (LISN). This provides a 50Ω/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50Ω/50uH coupling impedance with 50Ω termination.
Both sides (Line and Neutral) of AC line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4 on conducted measurement.
The bandwidth of the test receiver is set at 9 kHz.

9.4 Test protocol

Temperature	:	21 °C
Relative Humidity	:	51 %

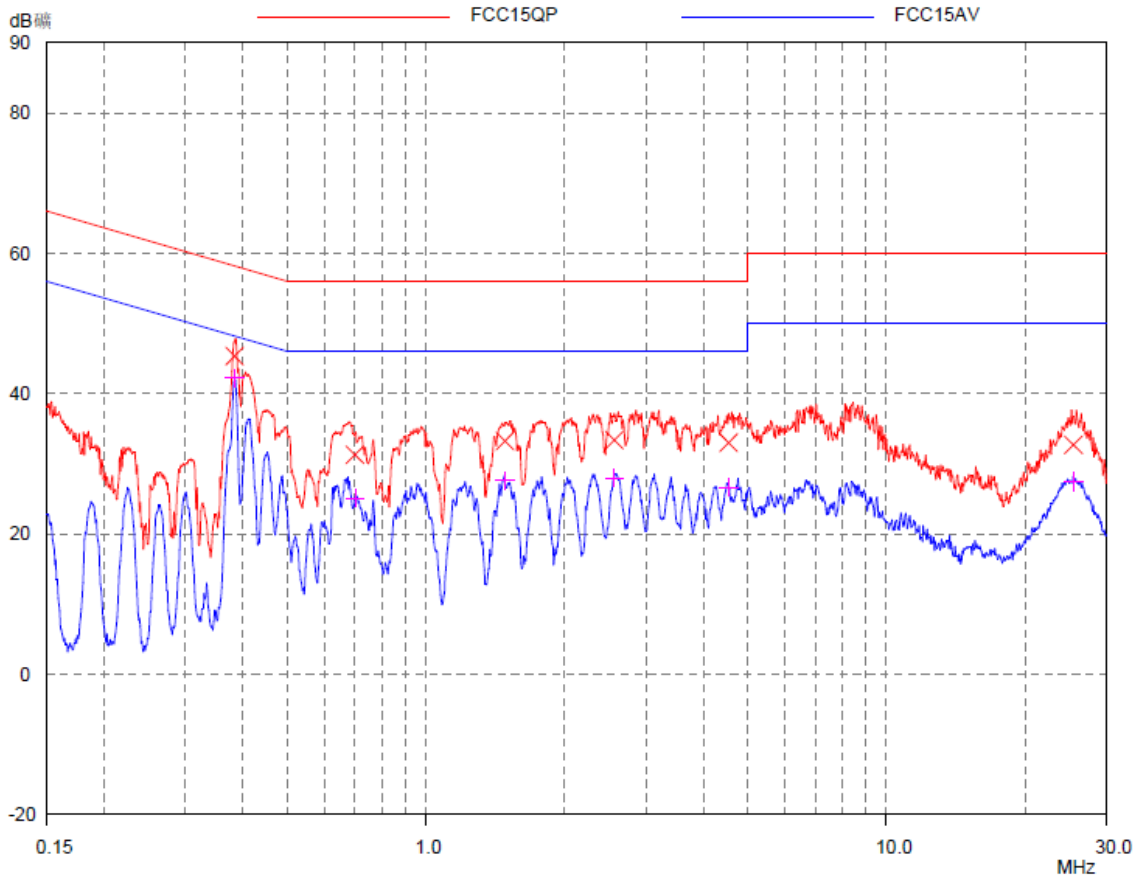
L line



Test Data:

Frequency (MHz)	Quasi-peak			Average		
	level dB(μV)	Limit dB(μV)	Margin (dB)	level dB(μV)	limit dB(μV)	Margin (dB)
0.38	45.6	58.2	12.6	42.2	48.2	6.0
0.96	31.8	56.0	24.2	26.9	46.0	19.2
3.13	33.0	56.0	23.0	27.6	46.0	18.4
6.60	32.8	60.0	27.2	26.0	50.0	24.0
8.35	32.8	60.0	27.2	26.1	50.0	23.9
25.35	31.7	60.0	28.3	26.6	50.0	23.4

N line



Test Data:

Frequency (MHz)	Quasi-peak			Average		
	level dB(μV)	Limit dB(μV)	Margin (dB)	level dB(μV)	limit dB(μV)	Margin (dB)
0.38	45.3	58.2	12.9	42.2	48.2	6.0
0.70	31.3	56.0	24.7	25.1	46.0	20.9
1.48	33.3	56.0	22.7	27.6	46.0	18.4
2.56	33.4	56.0	22.6	28.0	46.0	18.0
4.54	33.0	56.0	23.0	26.7	46.0	19.3
25.45	32.7	60.0	27.3	27.5	50.0	22.5