RF TEST REPORT for Intentional Radiator
No. 150501200SHA-003

Applicant	:	Shanghai Xiaoyi Technology Co., Ltd. 6F, Building E, No. 2889, Jinke Road, Shanghai, China
Manufacturer	:	Shanghai Xiaoyi Technology Co., Ltd. 6F, Building E, No. 2889, Jinke Road, Shanghai, China
Product Name	:	Yi Action Camera
Type/Model	:	YDXJ01XY
TEST RESULT	**:**	**PASS**

SUMMARY

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

47CFR Part 15 (2014): 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

Date of issue: Aug 21, 2015

Prepared by: Reviewed by:

Wade Zhang (*Project Engineer*) 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
FCC Registration Number:	236597
IC Assigned Code:	2042B-1
Name of contact:	Jonny Jing
Tel:	+86 21 61278271
Fax:	+86 21 54262353

Content

SUMMARY 1
DESCRIPTION OF TEST FACILITY 2
1. TEST SUMMARY 4
2. GENERAL INFORMATION 5
2.1 Applicant Information 5
2.2 Identification of the EUT 5
3. TEST SPECIFICATION 6
3.1 Instrument list 6
3.2 Test Standard 6
3.3 Mode of operation during the test / Test peripherals used 7
4. MINIMUM 6DB BANDWIDTH 9
4.1 Limit 9
4.2 Test Configuration 9
4.3 Test Procedure and test setup 9
4.4 Test Protocol 10
5. MAXIMUM CONDUCTED OUTPUT POWER 16
5.1 Test limit 16
5.2 Test Configuration 16
5.3 Test procedure and test setup 16
5.4 Test protocol 17
6. POWER SPECTRUM DENSITY 18
6.1 Test limit 18
6.2 Test Configuration 18
6.3 Test procedure and test setup 19
6.4 Test Protocol 19
7. EMISSIONS IN NON-RESTRICTED FREQUENCY BANDS 25
7.1 Test limit 25
7.2 Test Configuration 25
7.3 Test procedure and test setup 25
7.4 Test Protocol 26
8. RADIATED EMISSIONS IN RESTRICTED FREQUENCY BANDS 45
8.1 Test limit 45
8.2 Test Configuration 45
8.3 Test procedure and test setup 46
8.4 Test Protocol 47
9. POWER LINE CONDUCTED EMISSION 53
9.1 Limit 53
9.2 Test configuration 53
9.3 Test procedure and test set up 54
9.4 Test protocol 55
10. ANTENNA REQUIREMENT 57

1. Test Summary

This report applies to tested sample only. This report shall not be reproduced in part without written approval of Intertek Testing Service Shanghai Limited.

Test Items	FCC Reference	Result
Minimum 6dB Bandwidth	15.247(a)(2)	Pass
Output power	15.247(b)	Pass
Power spectrum density	15.247(e)	Pass
Emissions in non-restricted frequency bands	15.247(d)	Pass
Emissions in restricted frequency bands	15.247(d) & 15.205 & 15.209	Pass
Power line conducted emission	15.207	NA

Note: NA =Not Applicable

2. General Information

2.1 Applicant Information

Applicant	:	Shanghai Xiaoyi Technology Co., Ltd. 6F, Building E, No. 2889, Jinke Road, Shanghai, China
Name of contact	:	Weiming Chu
Tel	:	+86-21-61656722
Fax	:	+86-21-61656722
Manufacturer	:	Shanghai Xiaoyi Technology Co., Ltd. 6F, Building E, No. 2889, Jinke Road, Shanghai, China

2.2 Identification of the EUT

Equipment	:	Yi Action Camera
Type/model	:	YDXJ01XY
Operation Frequency Band	:	2412~2462 MHz
Type of Modulation	:	DBPSK, DQPSK, CCK, BPSK, QPSK, 16-QAM
Transfer Rate	:	802.11b: 11.0/5.5/2.0/1.0Mbps 802.11g: 54.0/48.0/36.0/24.0/18.0/12.0/9.0/6.0Mbps 802.11n: up to 72.2Mbps
Modulation	:	802.11b/g/n(HT20);
Channel Number	:	11Channel for 2412MHz~2462MHz for 11b,11g,11n(HT20);
Description of EUT	:	The EUT is an action camera which supports WIFI and BT function, and it has only one model. We tested it and listed the WIFI result in this report.
Antenna	:	0.16dBi Gain, Internal antenna
Rating	:	Input:5V DC 1A or Li-on Battery 3.7V 1010mA
Declared Temperature range	:	0°C ~ 45°C
Category of EUT	:	Class B
EUT type	:	☒ Table top☐ Floor standing
Sample received date	:	2015.06.15
Date of test	:	2015.06.15 ~ 2015.08.21

3. Test Specification

3.1 Instrument list

Equipment	Type	Manu.	Internal no.	Cal. Date	Due date
Test Receiver	ESCS 30	R&S	EC 2107	2014-10-20	2015-10-19
Test Receiver	ESIB 26	R&S	EC 3045	2014-10-19	2015-10-18
Test Receiver	ESCI 7	R&S	EC4501	2014-12-24	2015-12-23
Spectrum Analyzer	N9030	Agilent	EC4890	2014-10-20	2015-10-19
A.M.N.	ESH2-Z5	R&S	EC 3119	2015-1-8	2016-1-7
Bilog Antenna	CBL 6112D	TESEQ	EC 4206	2015-4-26	2016-4-25
Horn antenna	HF 906	R&S	EC 3049	2015-4-26	2016-4-25
Horn antenna	3117	ETS	EC 4792-1	2015-4-16	2016-4-15
Horn antenna	HAP18-26W		EC 4792-3	2015-4-8	2016-4-7
Pre-amplifier	Pre-amp 18	R&S	EC 3222	2015-4-11	2016-4-10
Pre-amplifier	Tpa0118-40	R&S	EC 4792-2	2015-4-10	2016-4-9
Semi-anechoic chamber	-	Albatross project	EC 3048	2015-5-10	2016-5-9
Therom-Hygrograph	ZJ1-2A	S.M.I.F.	EC 3323	2015-4-13	2016-4-12
Pressure meter	YM3	Shanghai Mengde	EC 3320	2015-6-12	2016-6-11
Shielded room	-	Zhongyu	EC 2838	2015-1-11	2016-1-9
High Pass Filter	WHKX 1.0/15G-10SS	Wainwright	EC4297-1	2015-1-7	2016-1-6
High Pass Filter	WHKX 2.8/18G-12SS	Wainwright	EC4297-2	2015-1-7	2016-1-6
High Pass Filter	WHKX 7.0/1.8G-8SS	Wainwright	EC4297-3	2015-1-7	2016-1-6
Band Reject Filter	WRCGV 2400/2483-2390/2493-35/10SS	Wainwright	EC4297-4	2015-1-7	2016-1-6
Power sensor / Power meter	N1911A/N1921A	Agilent	EC4318	2015-4-8	2016-4-7

3.2 Test Standard

47CFR Part 15 (2014): 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/n(HT20)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz	/	

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
802.11n(HT20)	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
802.11n HT20	6.5Mbps
Duty cycle setting during the transmission is 100% with maximum power setting for all modulations.	

Radiated test construction:
Mode 1: EUT transmitted signal with WIFI antenna;

Conducted test construction:
Mode 2: EUT transmitted signal from 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	Adaptor	YI, A8-501000	NA
Note: The accessories are used for configuration only and not used during test.			

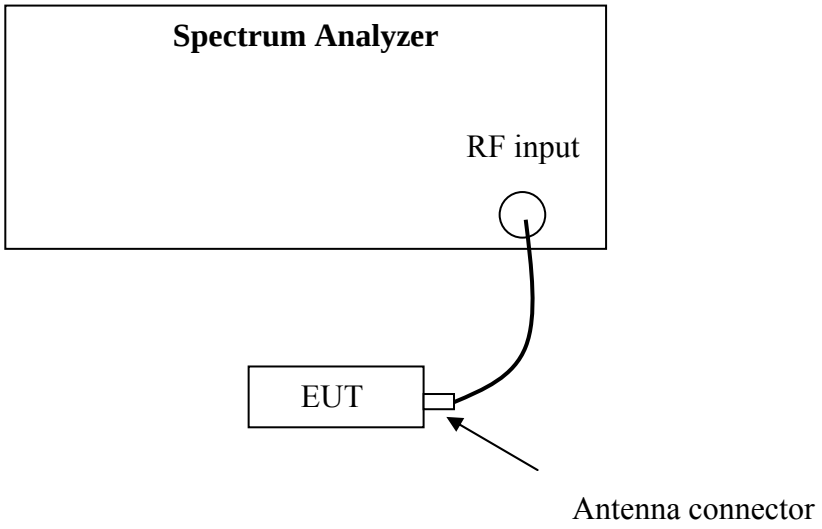
4. Minimum 6dB Bandwidth

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	8.036	⩾0.5
	M	8.025	
	H	8.067	
802.11g	L	15.11	
	M	15.11	
	H	15.11	
802.11n(HT20)	L	17.29	
	M	17.60	
	H	17.54	

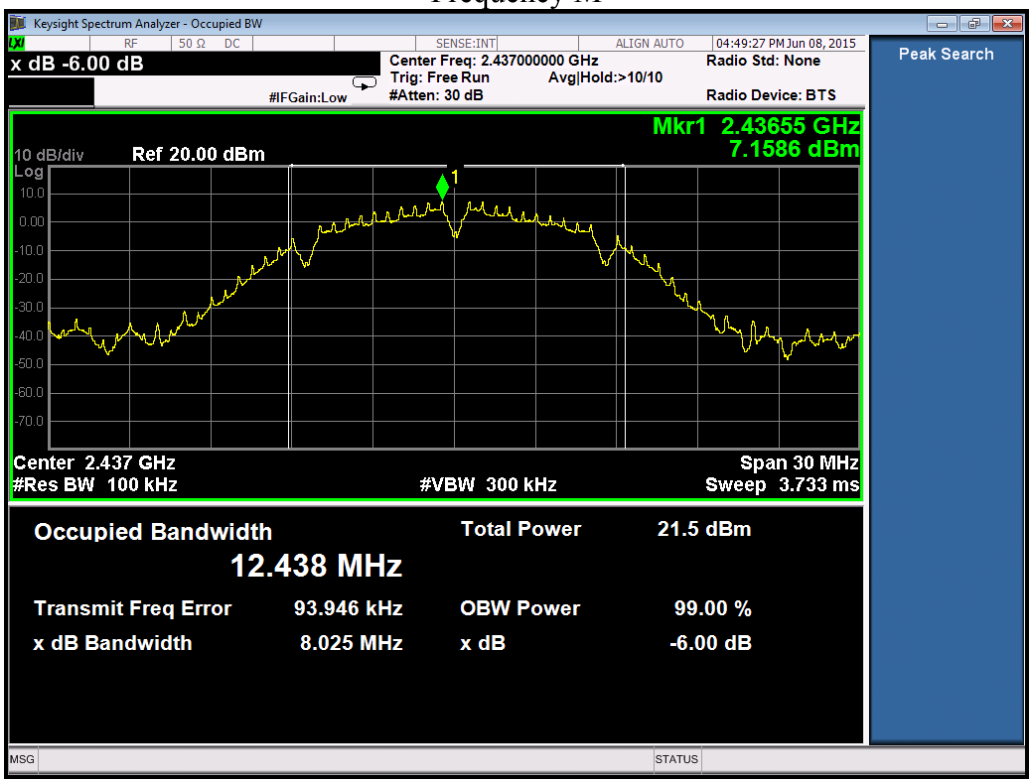
Mode	CH	99% Occupy Bandwidth (MHz)	Limit (MHz)
802.11b	L	12.496	NA
	M	12.438	
	H	12.365	
802.11g	L	16.379	
	M	16.382	
	H	16.357	
802.11n(HT20)	L	17.545	
	M	17.546	
	H	17.525	

Test plot as follows:

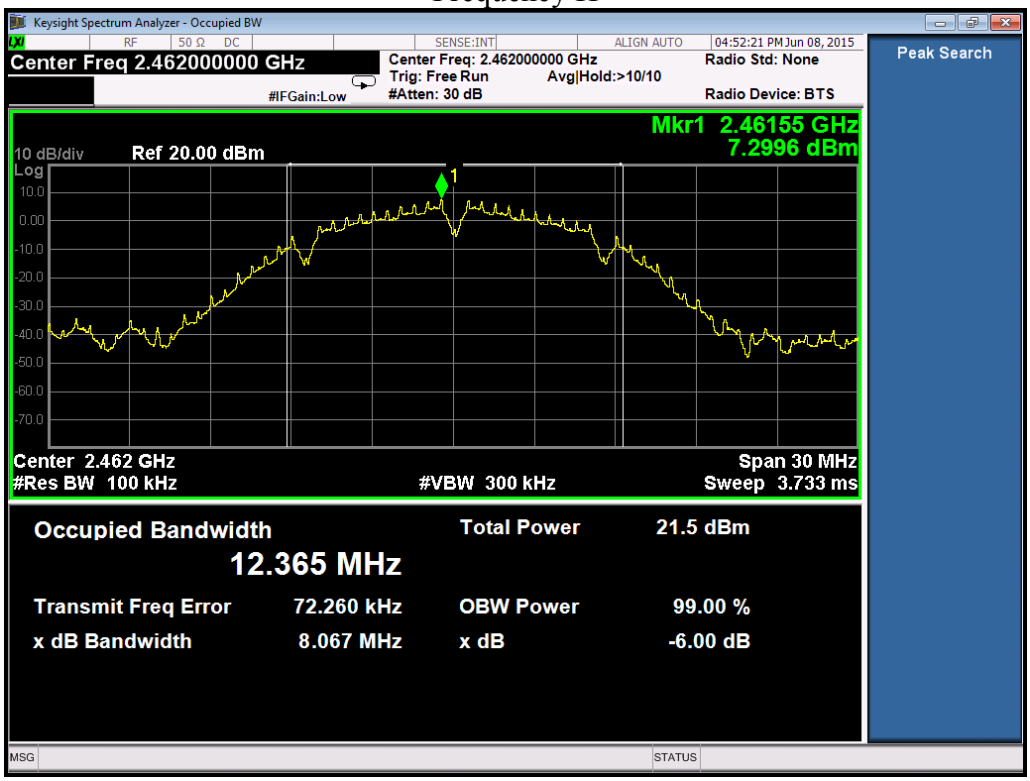
802.11b

Frequency L

Frequency M

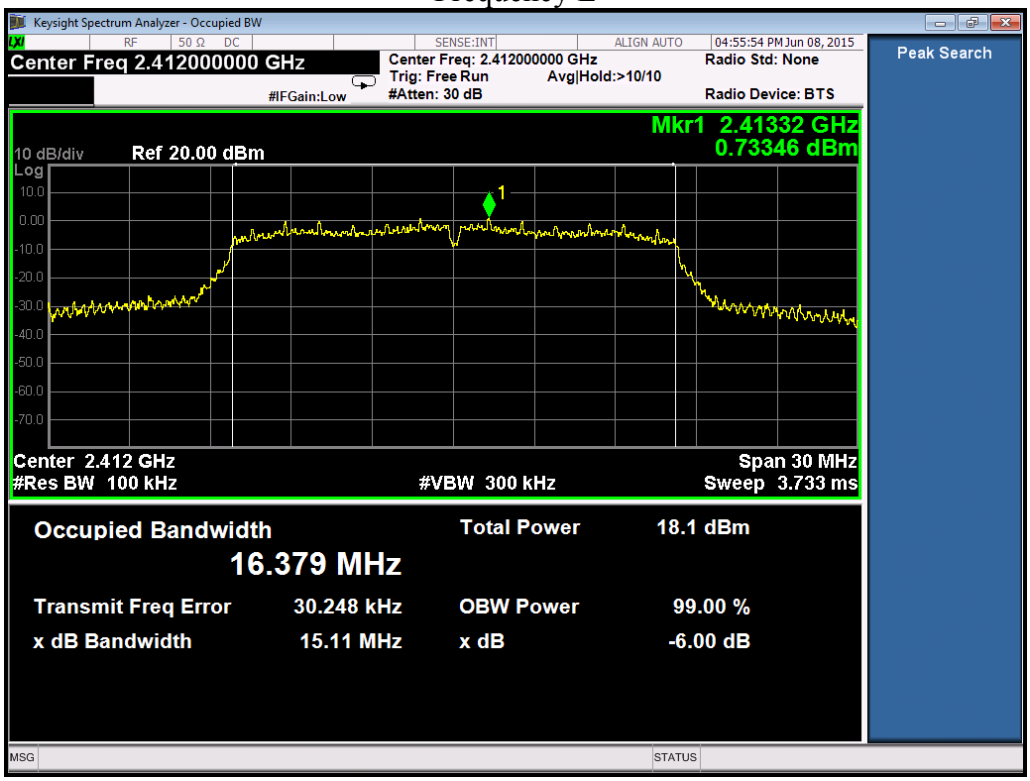


Frequency H

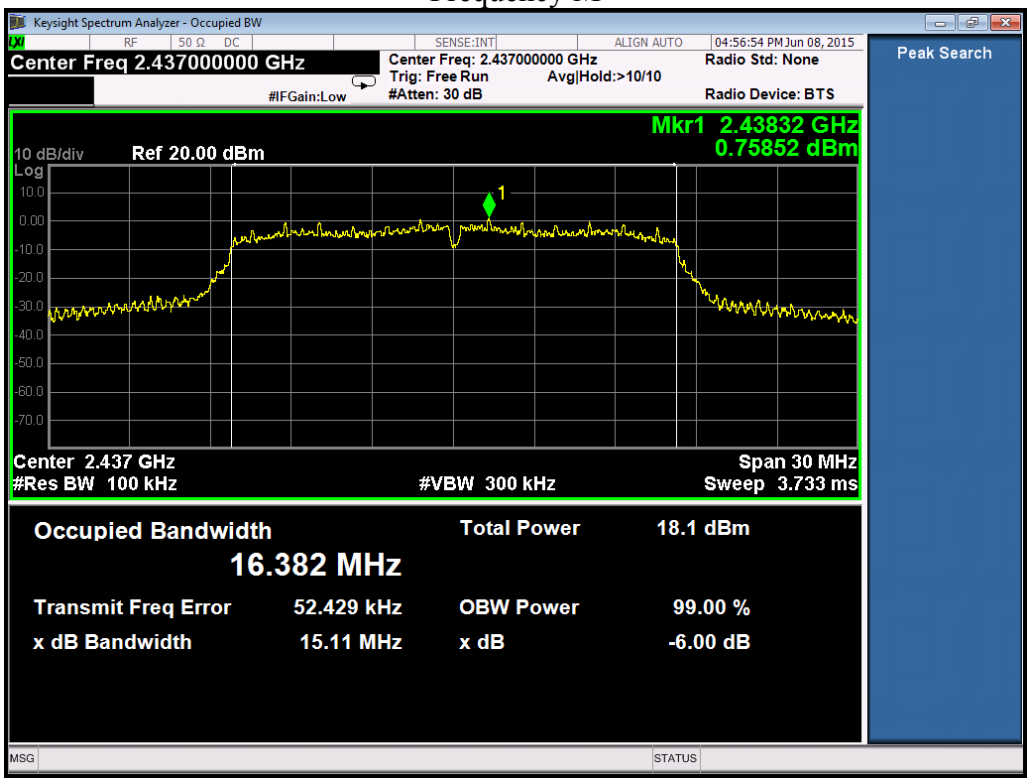


802.11g

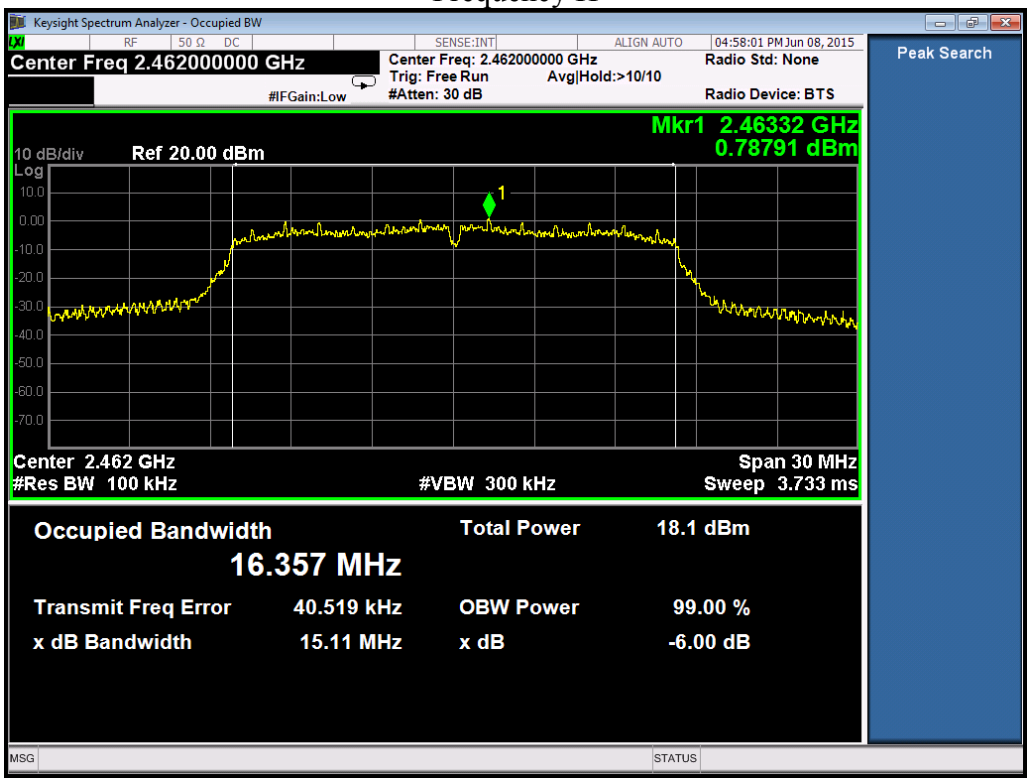
Frequency L



Frequency M

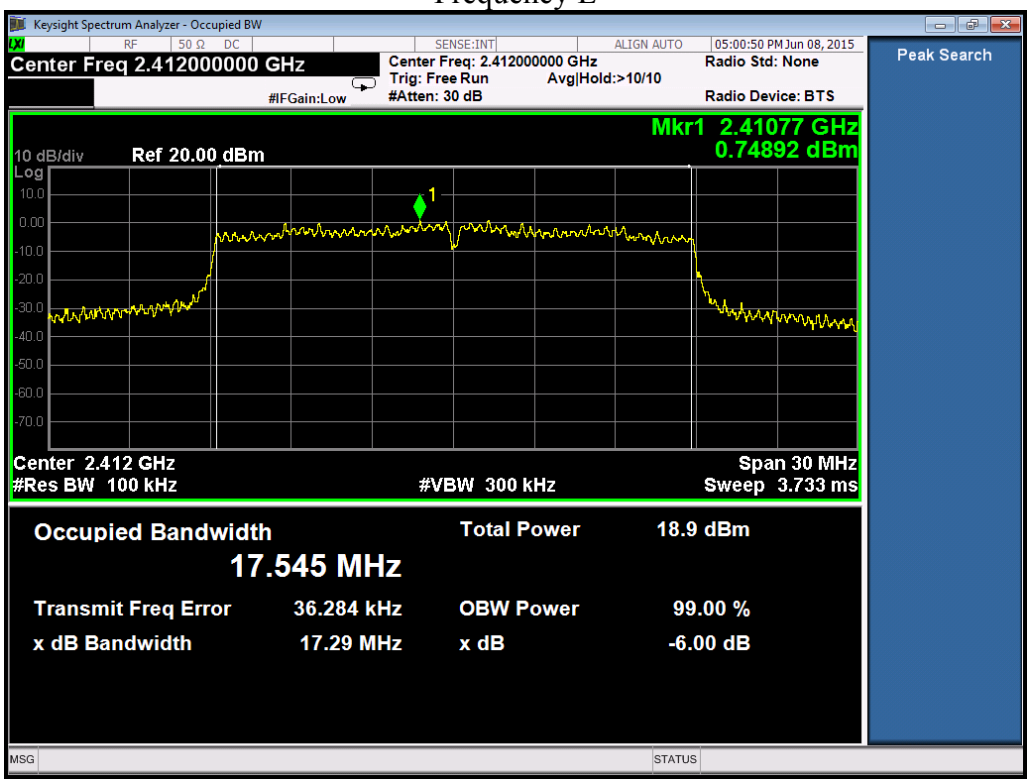


Frequency H

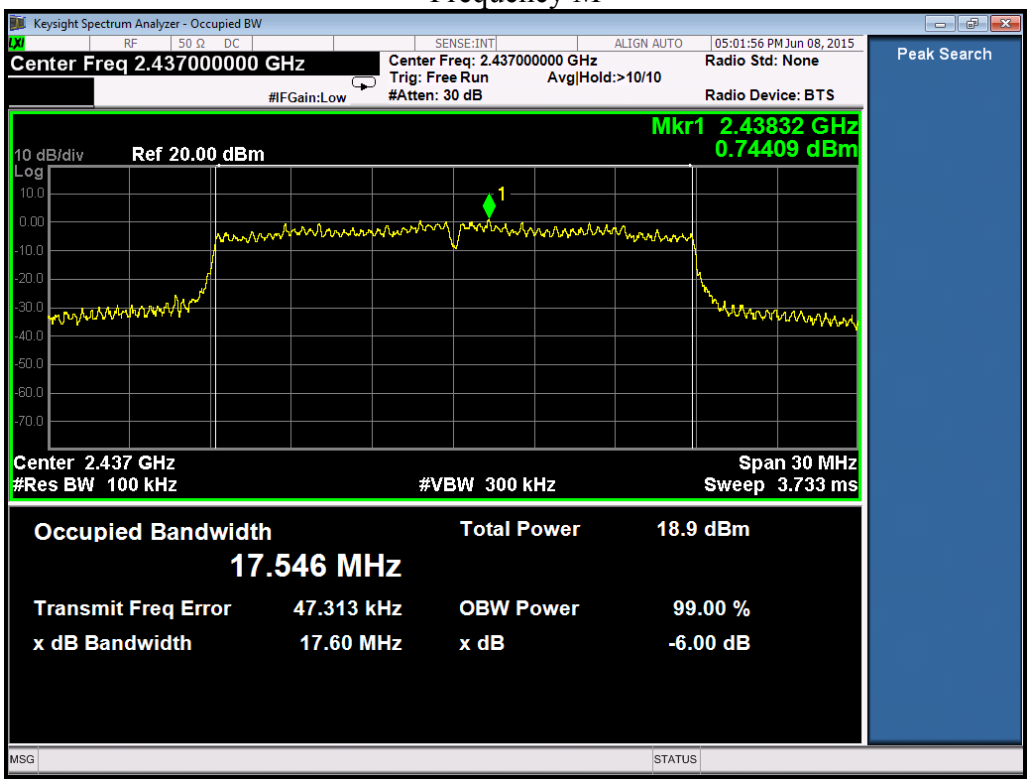


802.11n (HT20)

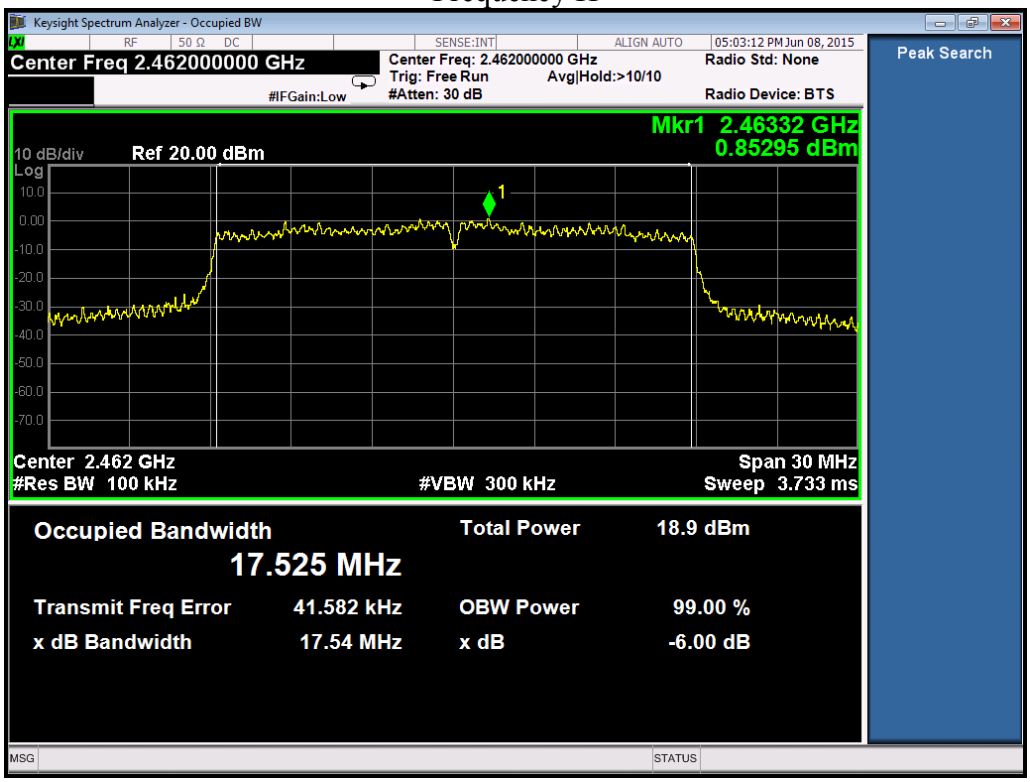
Frequency L



Frequency M



Frequency H


Keysight Spectrum Analyzer - Occupied BW
RF
50 Ω DC
SENSE:INT
ALIGN AUTO
05:03:12 PM Jun 08, 2015
Center Freq 2.462000000 GHz
#IFGain:Low
Center Freq: 2.462000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Peak Search
Mkr1 2.46332 GHz
0.85295 dBm
10 dB/div
Ref 20.00 dBm
Log
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 2.462 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 30 MHz
Sweep 3.733 ms
Occupied Bandwidth
17.525 MHz
Total Power 18.9 dBm
Transmit Freq Error 41.582 kHz
OBW Power 99.00 %
x dB Bandwidth 17.54 MHz
x dB -6.00 dB
MSG
STATUS

5. Maximum Conducted Output power

Test result: Pass

5.1 Test limit

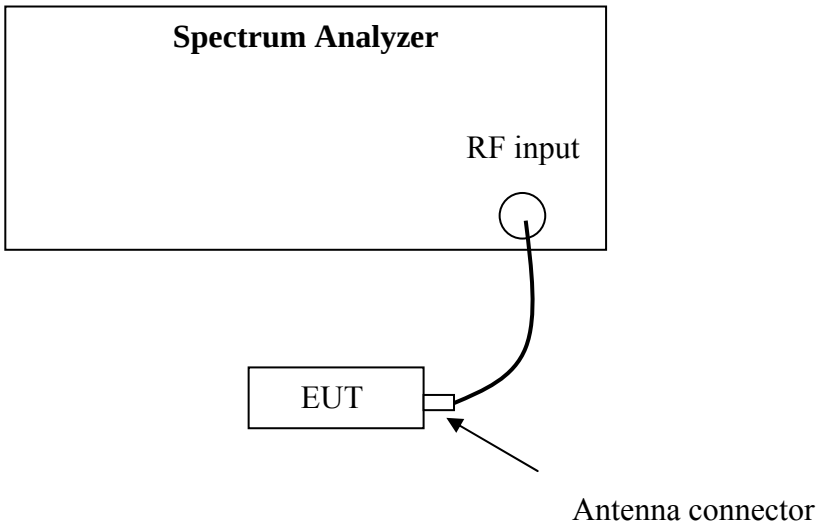
☐ For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt

☐ 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	CH	Conducted Power (dBm)	Limit (dBm)
802.11b	L	16.21	≤30
	M	16.11	
	H	15.97	
802.11g	L	22.21	≤30
	M	22.02	
	H	22.38	
802.11n (HT20)	L	21.95	≤30
	M	21.69	
	H	21.82	

6. Power spectrum density

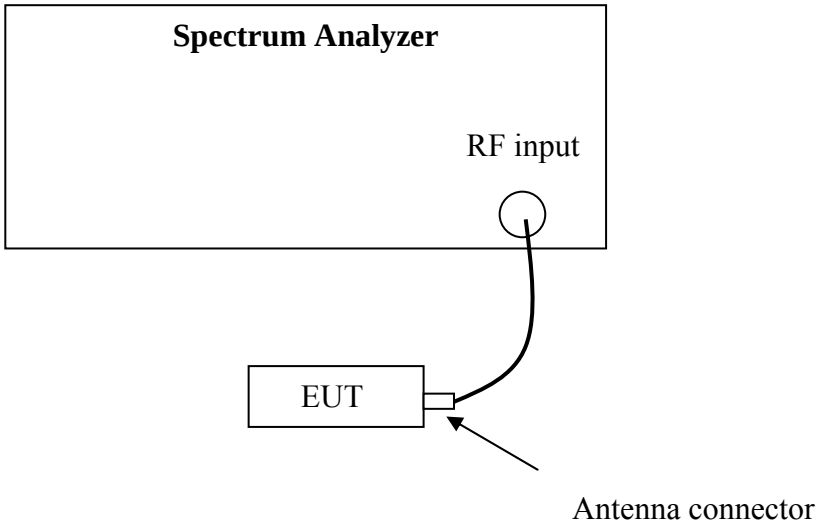
Test result: **Pass**

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	CH	Spectrum Density (dBm/100kHz)	Limit (dBm/3kHz)
802.11b	L	4.410	≤8.00
	M	4.480	
	H	4.304	
802.11g	L	1.463	≤8.00
	M	1.424	
	H	1.494	
802.11n (HT20)	L	1.609	≤8.00
	M	1.449	
	H	1.529	

Test plot as follows:

802.11b

Frequency L

Frequency M

Frequency H

802.11g

Frequency L

Frequency M

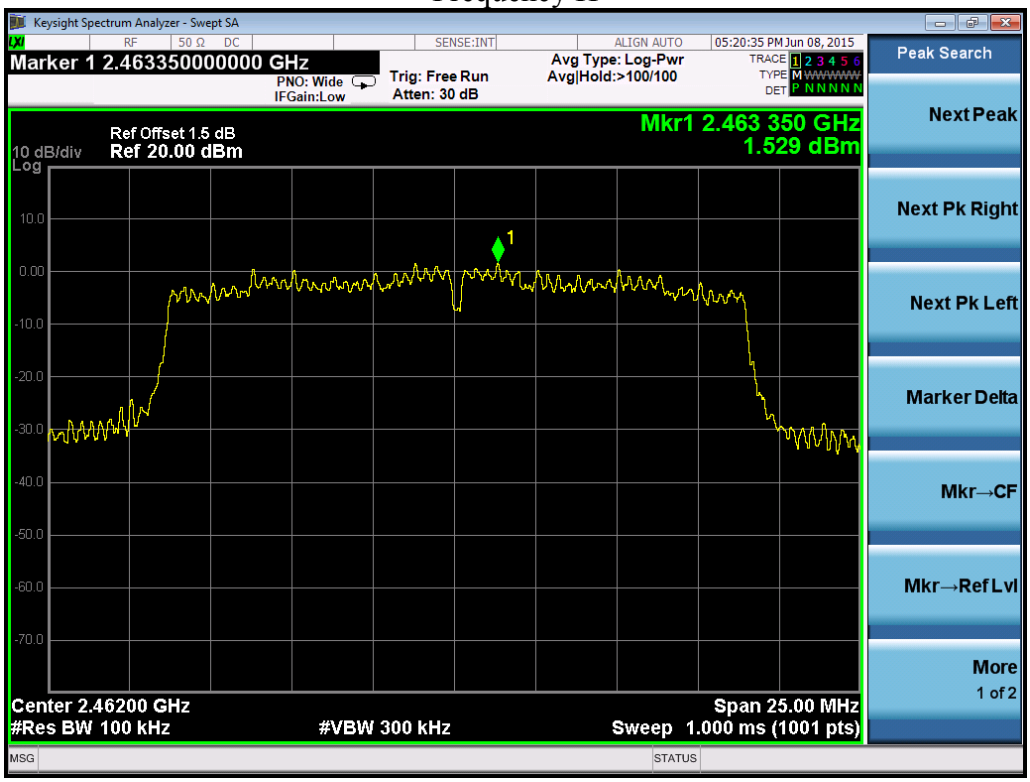
Frequency H

802.11n (HT20)

Frequency L

Frequency M

Frequency H


Keysight Spectrum Analyzer - Swept SA
RF
50 Ω DC
SENSE:INT
ALIGN AUTO
05:20:35 PM Jun 08, 2015
Marker 1 2.463350000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.463 350 GHz
1.529 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 2.46200 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 25.00 MHz
Sweep 1.000 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

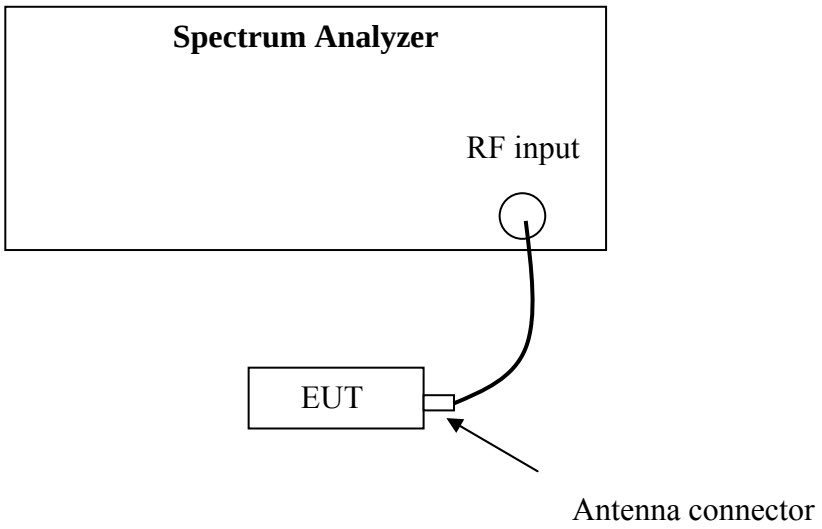
7. Emissions in non-restricted frequency bands

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

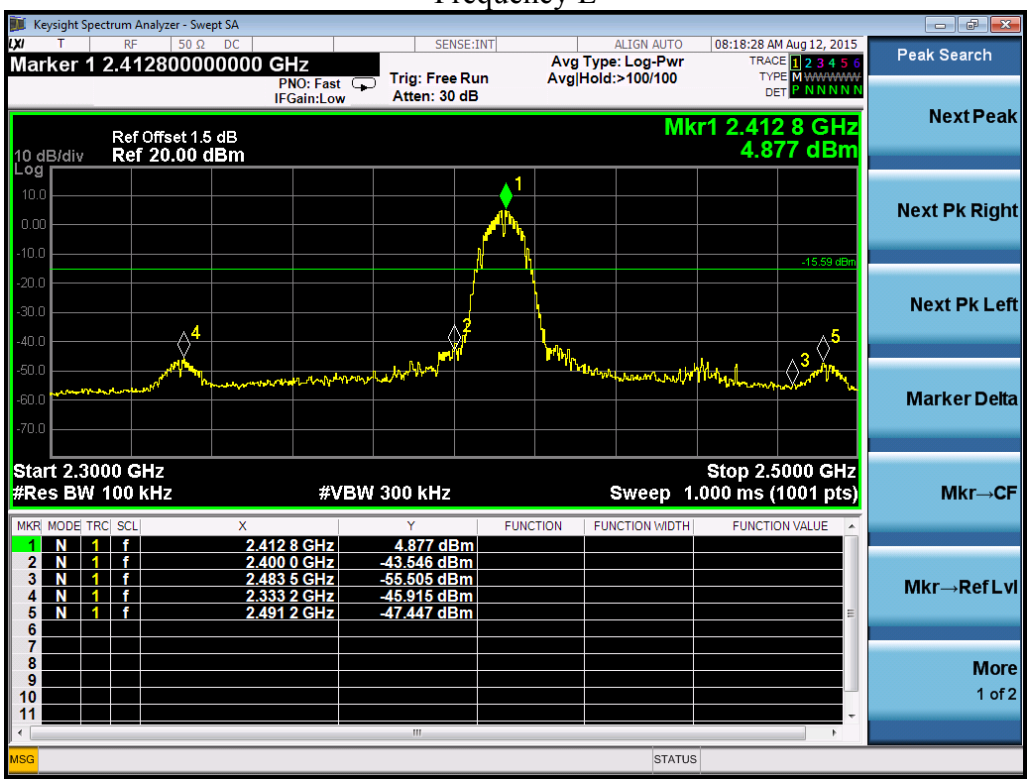
Temperature: 22 °C
Relative Humidity: 53 %

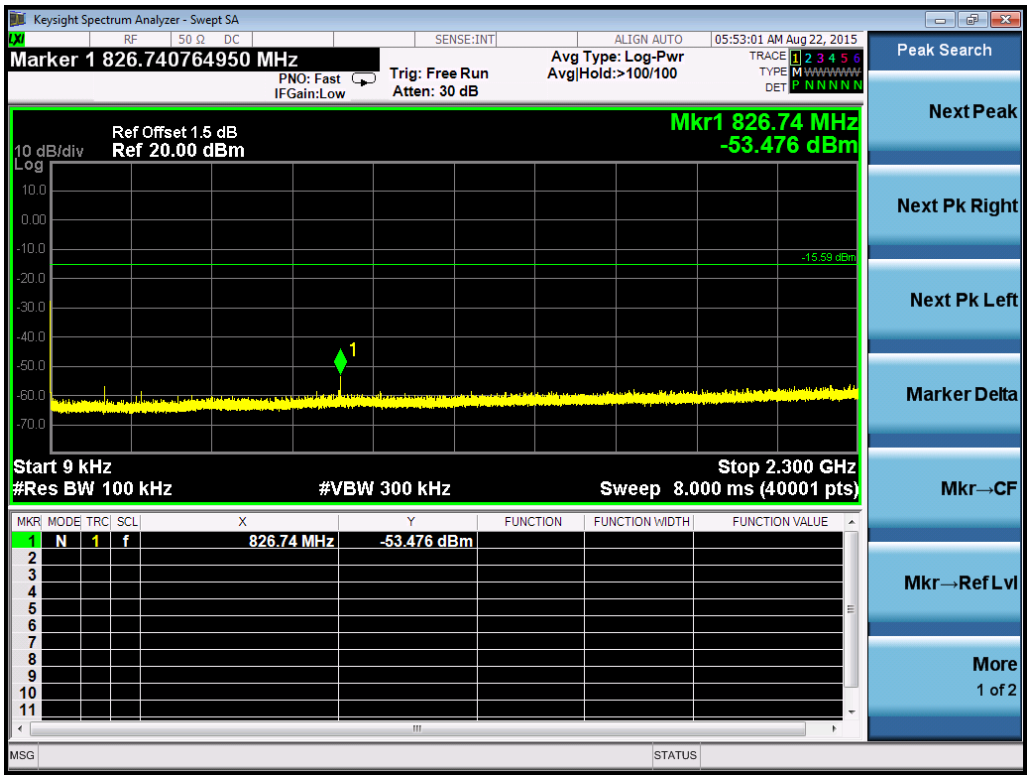
Test Mode	Frequency (MHz)	Results	Limit
802.11b	2412	Pass	>20dB
	2437	Pass	
	2462	Pass	
802.11g	2412	Pass	
	2437	Pass	
	2462	Pass	
802.11n (HT20)	2412	Pass	
	2437	Pass	
	2462	Pass	

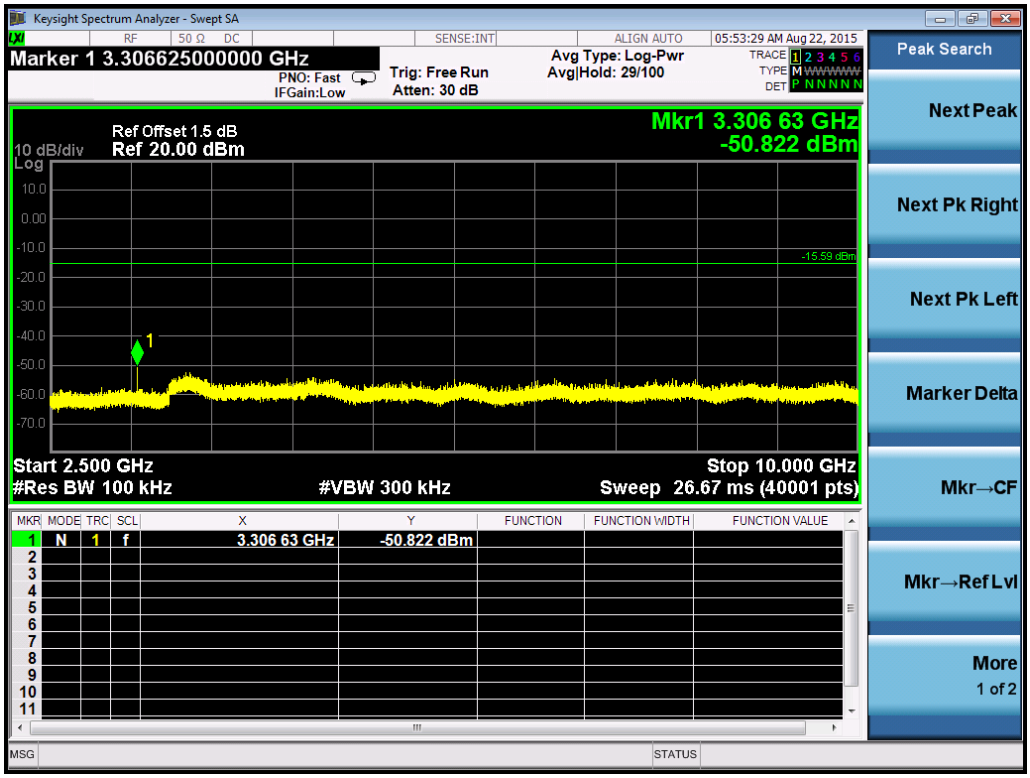
Test plot as follows:

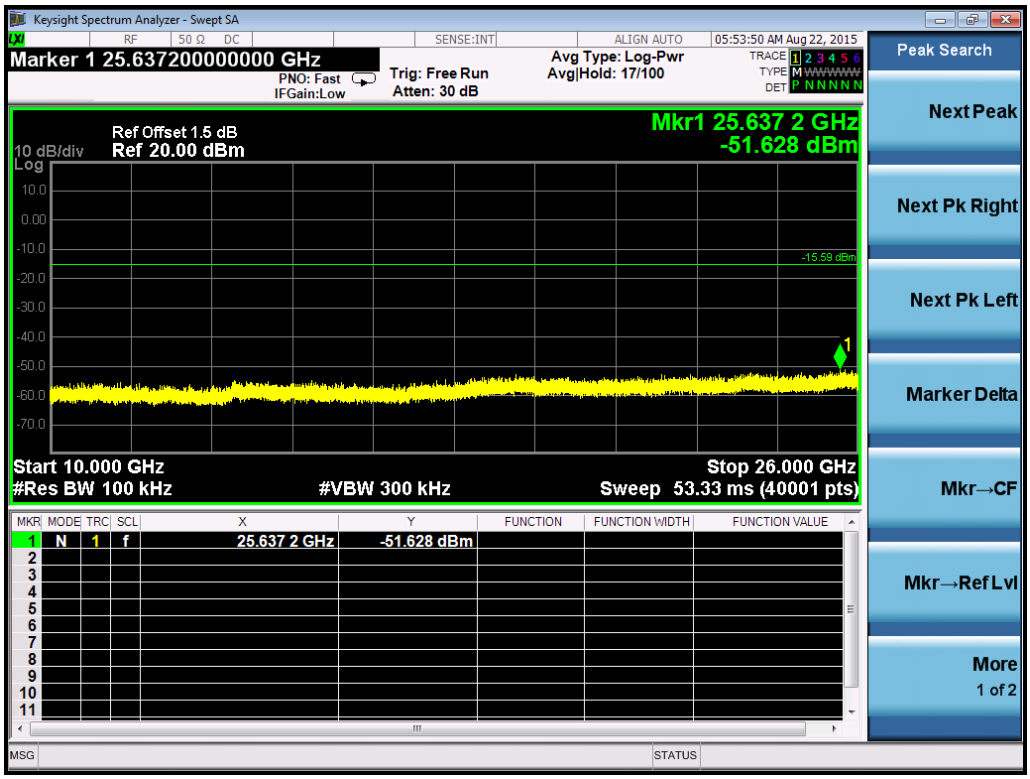
802.11b

Frequency L

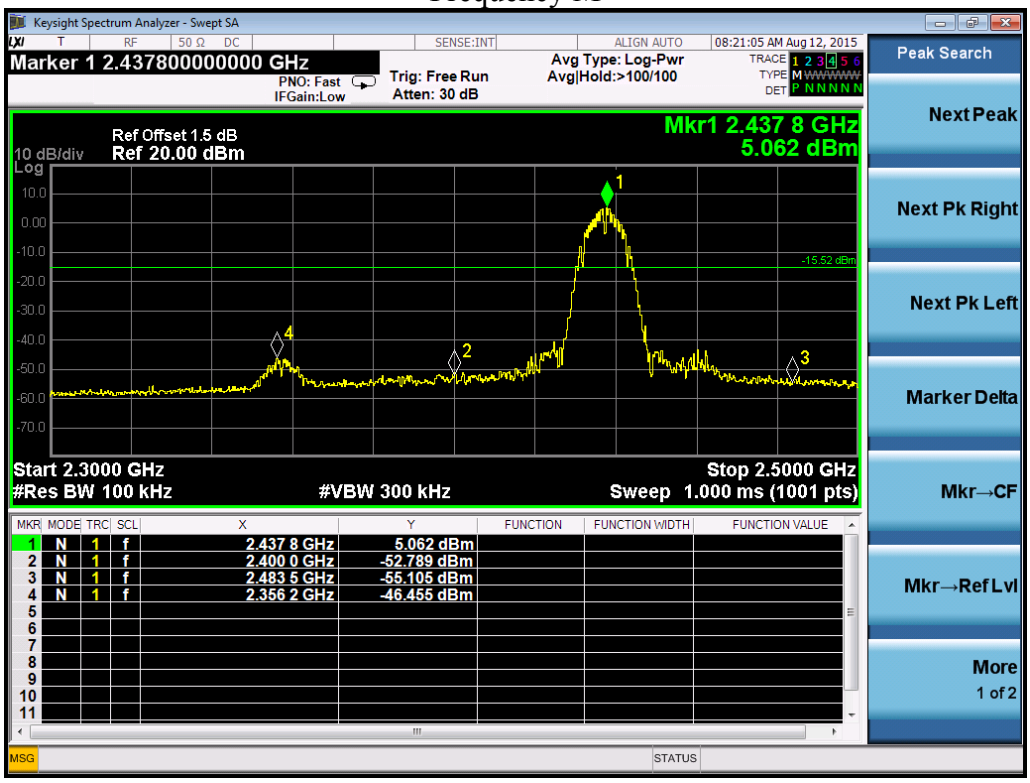




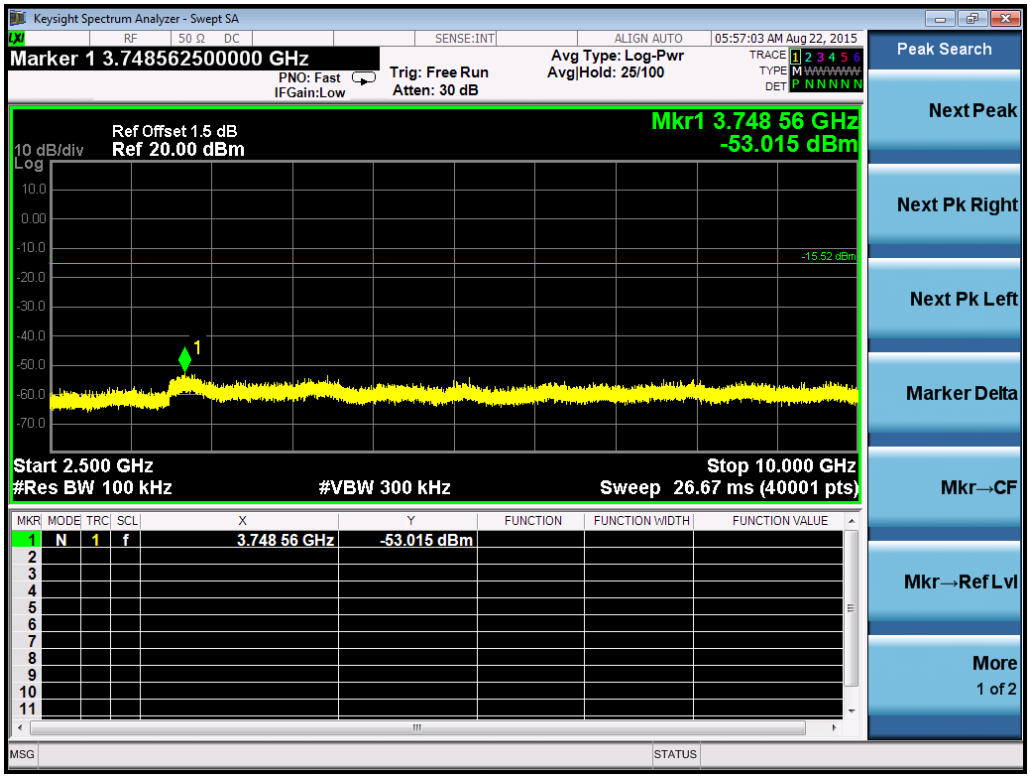

Keysight Spectrum Analyzer - Swept SA
Marker 1 3.306625000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 29/100
05:53:29 AM Aug 22, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 3.306 63 GHz
-50.822 dBm
-15.59 dBm
Start 2.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 26.67 ms (40001 pts)
1 N 1 f 3.306 63 GHz -50.822 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

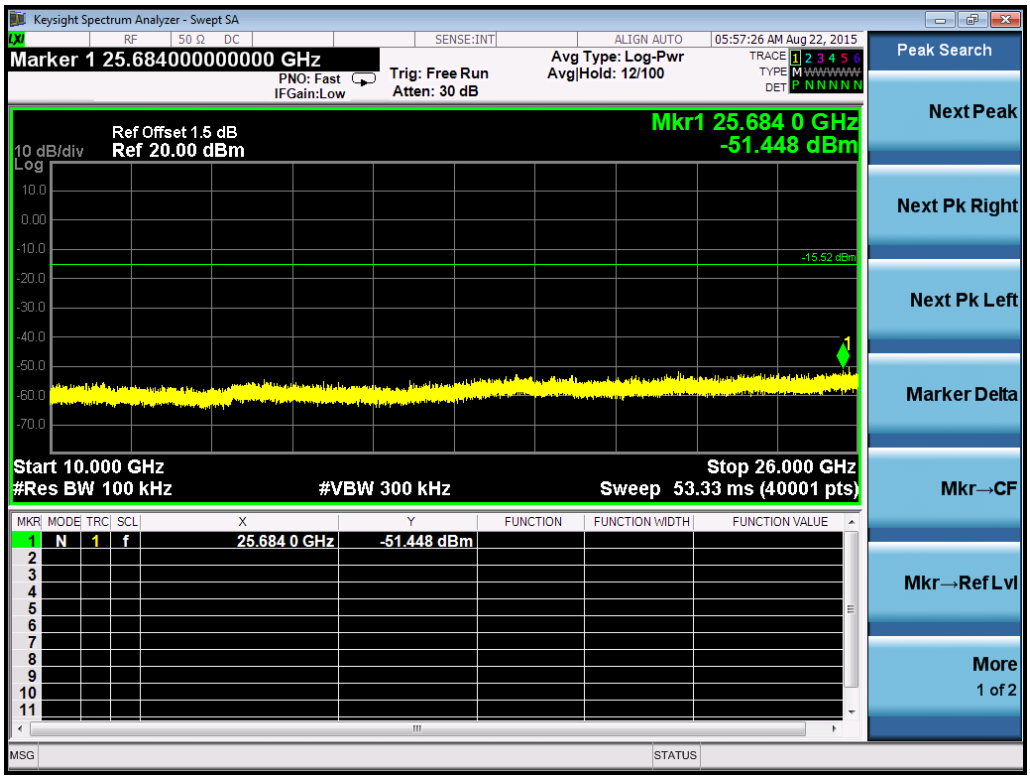

Keysight Spectrum Analyzer - Swept SA
Marker 1 25.637200000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 17/100
05:53:50 AM Aug 22, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 25.637 2 GHz
-51.628 dBm
-15.59 dBm
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.000 GHz
Sweep 53.33 ms (40001 pts)
1 N 1 f 25.637 2 GHz -51.628 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

Frequency M

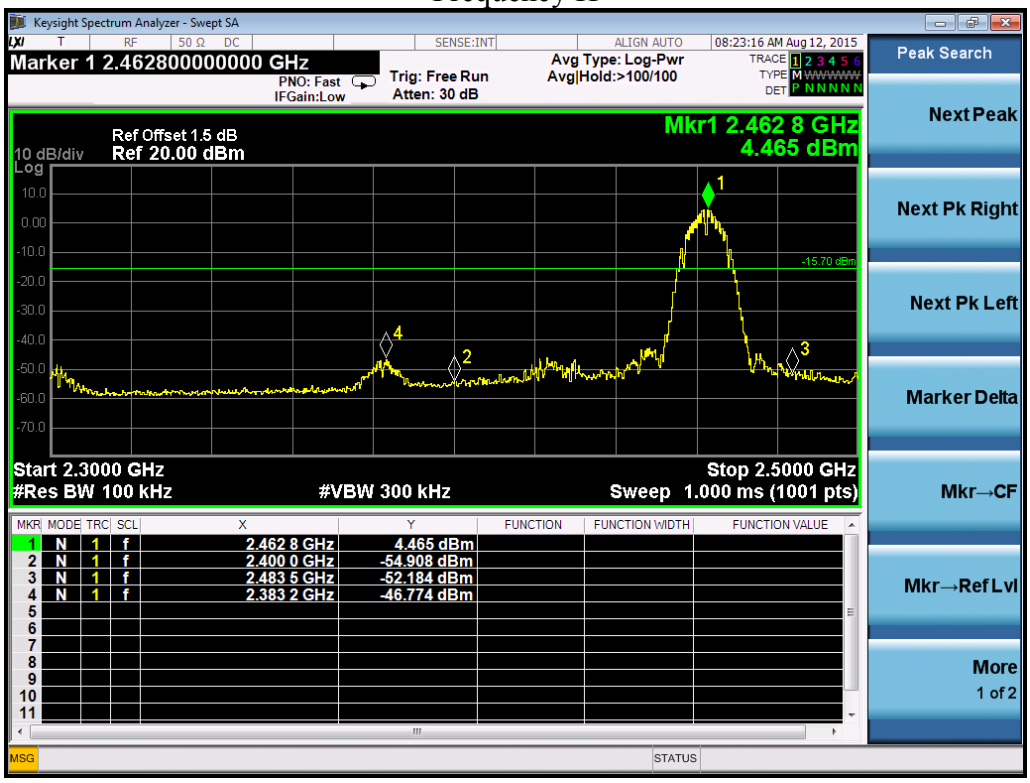

Keysight Spectrum Analyzer - Swept SA
Marker 1 2.437800000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
08:21:05 AM Aug 12, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.437 8 GHz
5.062 dBm
-15.52 dBm
Start 2.3000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.5000 GHz
Sweep 1.000 ms (1001 pts)
1 N 1 f 2.437 8 GHz 5.062 dBm
2 N 1 f 2.400 0 GHz -52.789 dBm
3 N 1 f 2.483 5 GHz -55.105 dBm
4 N 1 f 2.356 2 GHz -46.455 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

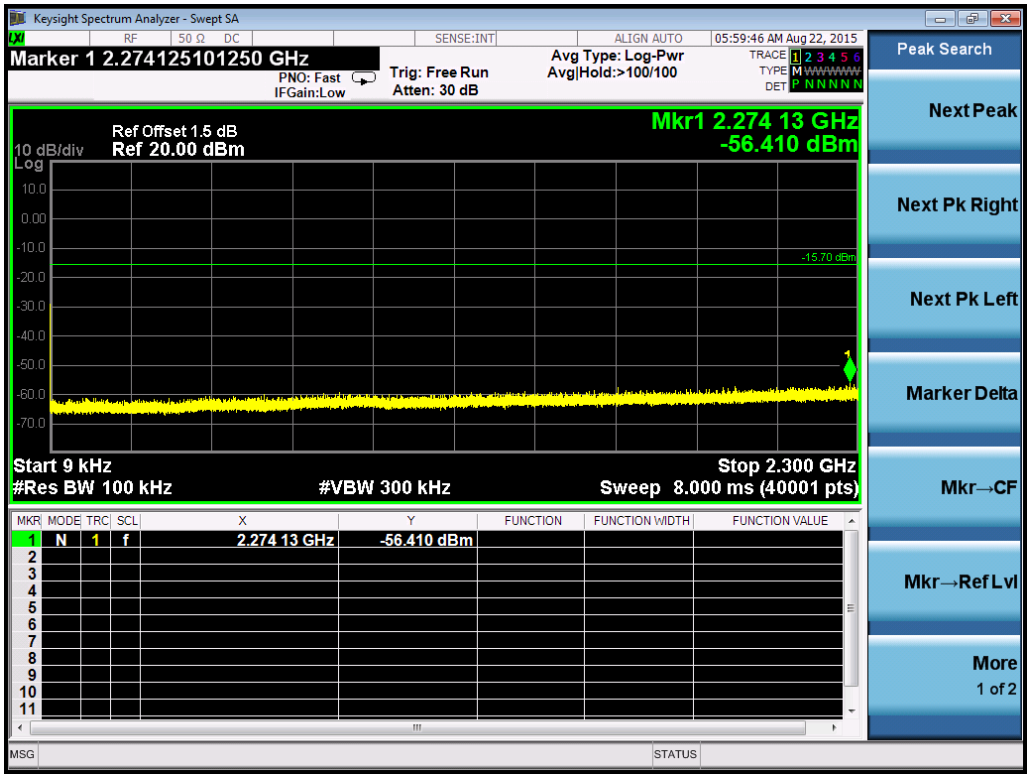
Keysight Spectrum Analyzer - Swept SA
Marker 1 2.269697618575 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
05:55:17 AM Aug 22, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.269 70 GHz
-56.379 dBm
-15.52 dBm
Start 9 kHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.300 GHz
Sweep 8.000 ms (40001 pts)
1 N 1 f 2.269 70 GHz -56.379 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

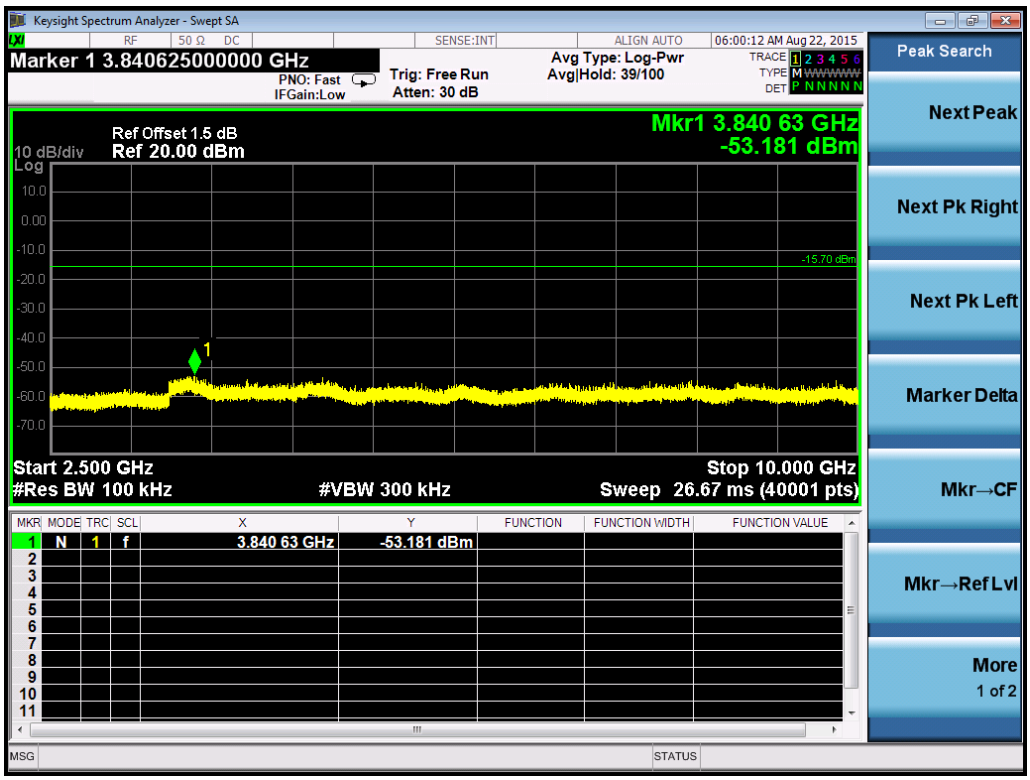

Keysight Spectrum Analyzer - Swept SA
Marker 1 3.748562500000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 25/100
05:57:03 AM Aug 22, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 3.748 56 GHz
-53.015 dBm
-15.52 dBm
Start 2.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 26.67 ms (40001 pts)
1 N 1 f 3.748 56 GHz -53.015 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

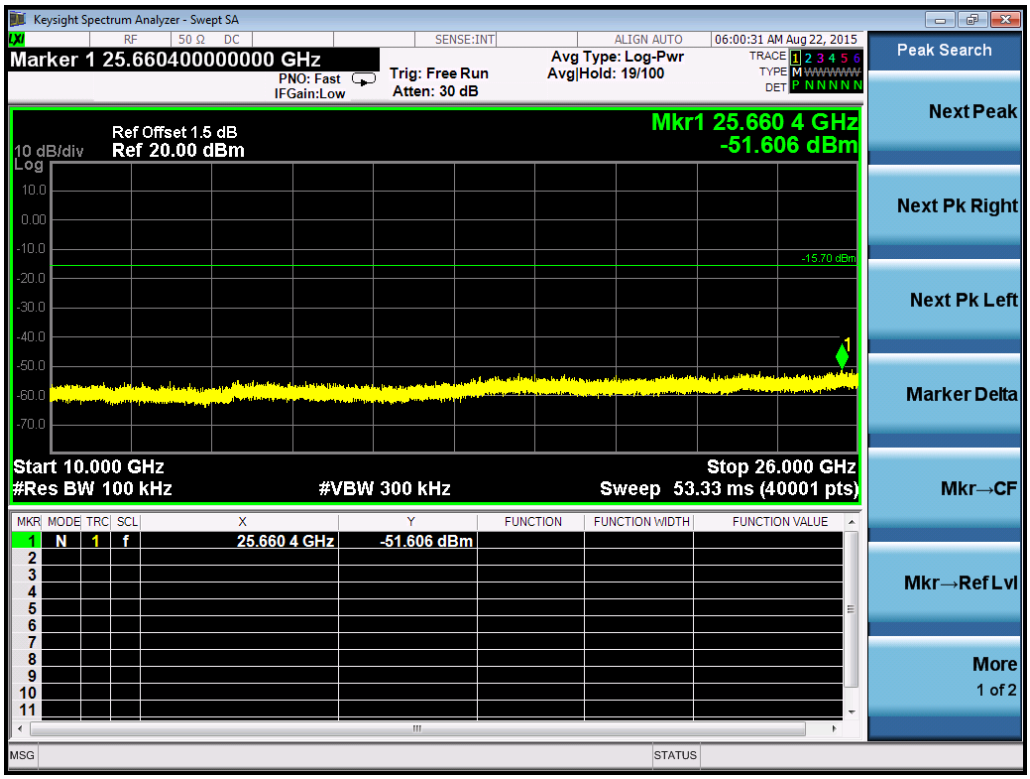

Keysight Spectrum Analyzer - Swept SA
Marker 1 25.684000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 12/100
05:57:26 AM Aug 22, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 25.684 0 GHz
-51.448 dBm
-15.52 dBm
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.000 GHz
Sweep 53.33 ms (40001 pts)
1 N 1 f 25.684 0 GHz -51.448 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

Frequency H


Keysight Spectrum Analyzer - Swept SA
Marker 1 2.462800000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
08:23:16 AM Aug 12, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.462 8 GHz
4.465 dBm
-15.70 dBm
Start 2.3000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.5000 GHz
Sweep 1.000 ms (1001 pts)
1 N 1 f 2.462 8 GHz 4.465 dBm
2 N 1 f 2.400 0 GHz -54.908 dBm
3 N 1 f 2.483 5 GHz -52.184 dBm
4 N 1 f 2.383 2 GHz -46.774 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

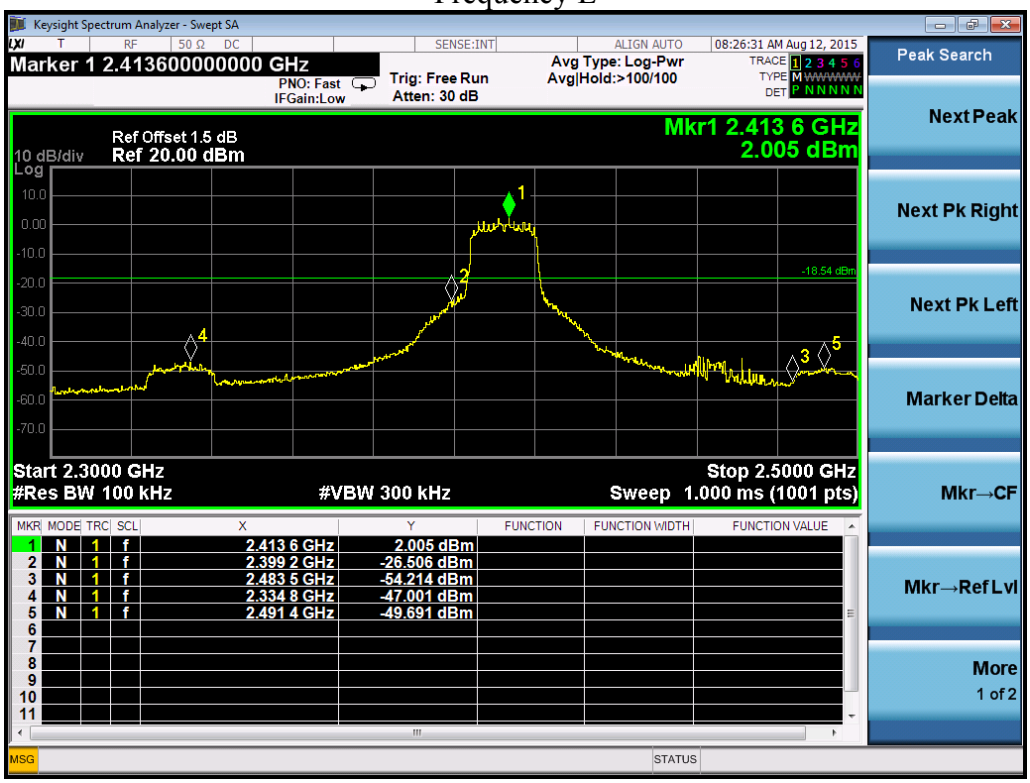

Keysight Spectrum Analyzer - Swept SA
Marker 1 2.274125101250 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
05:59:46 AM Aug 22, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.274 13 GHz
-56.410 dBm
-15.70 dBm
Start 9 kHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.300 GHz
Sweep 8.000 ms (40001 pts)
1 N 1 f 2.274 13 GHz -56.410 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

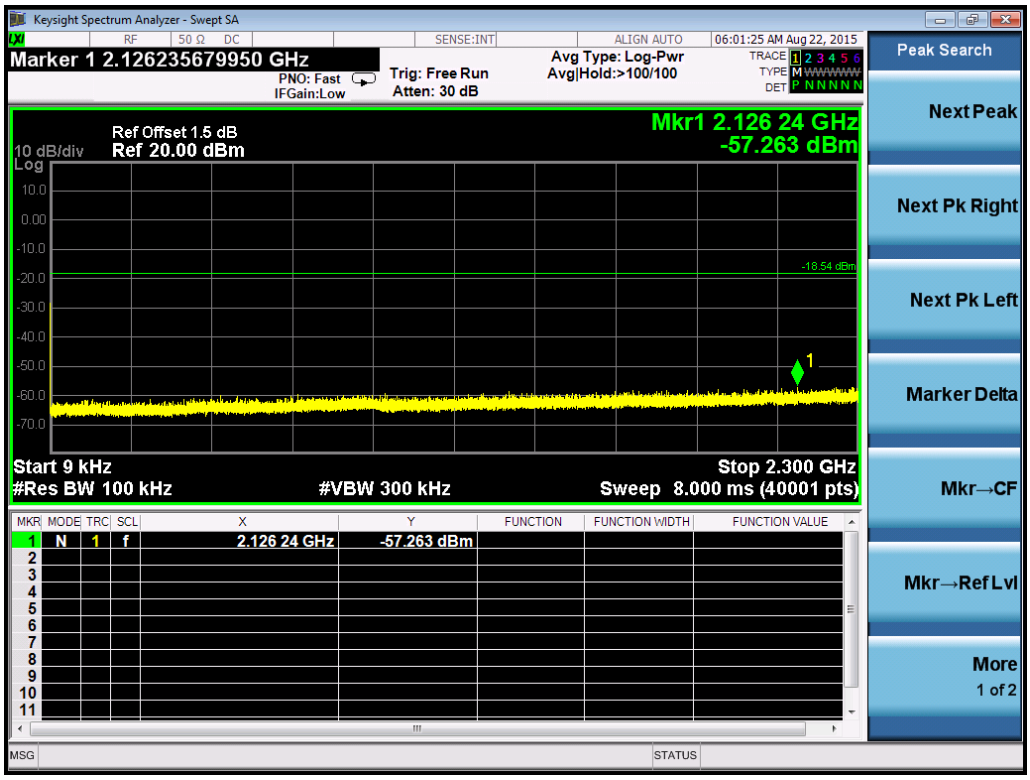

Keysight Spectrum Analyzer - Swept SA
Marker 1 3.840625000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 39/100
06:00:12 AM Aug 22, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 3.840 63 GHz
-53.181 dBm
-15.70 dBm
Start 2.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 26.67 ms (40001 pts)
1 N 1 f 3.840 63 GHz -53.181 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

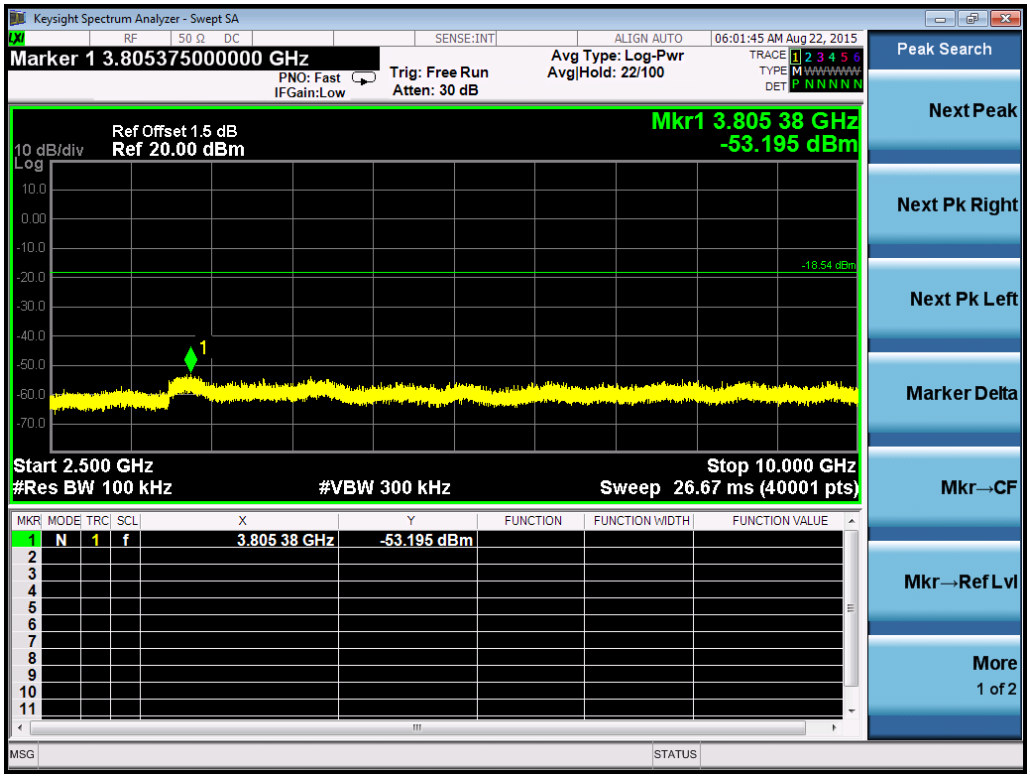

Keysight Spectrum Analyzer - Swept SA
Marker 1 25.660400000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 19/100
06:00:31 AM Aug 22, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 25.660 4 GHz
-51.606 dBm
-15.70 dBm
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.000 GHz
Sweep 53.33 ms (40001 pts)
1 N 1 f 25.660 4 GHz -51.606 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

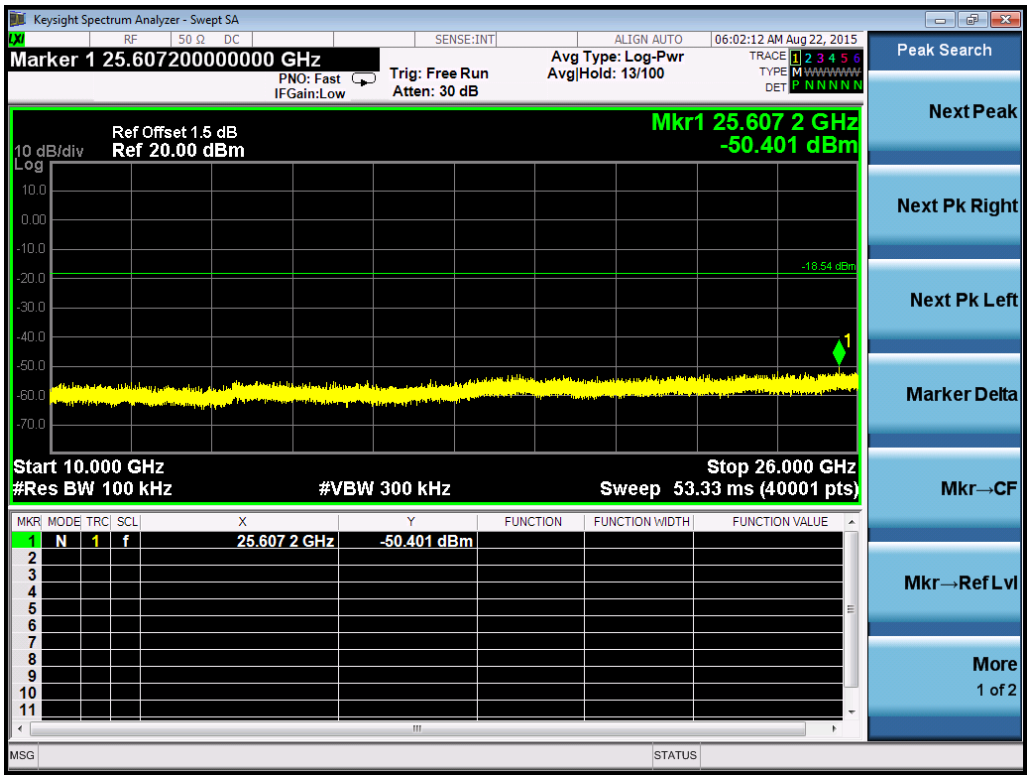
802.11g

Frequency L

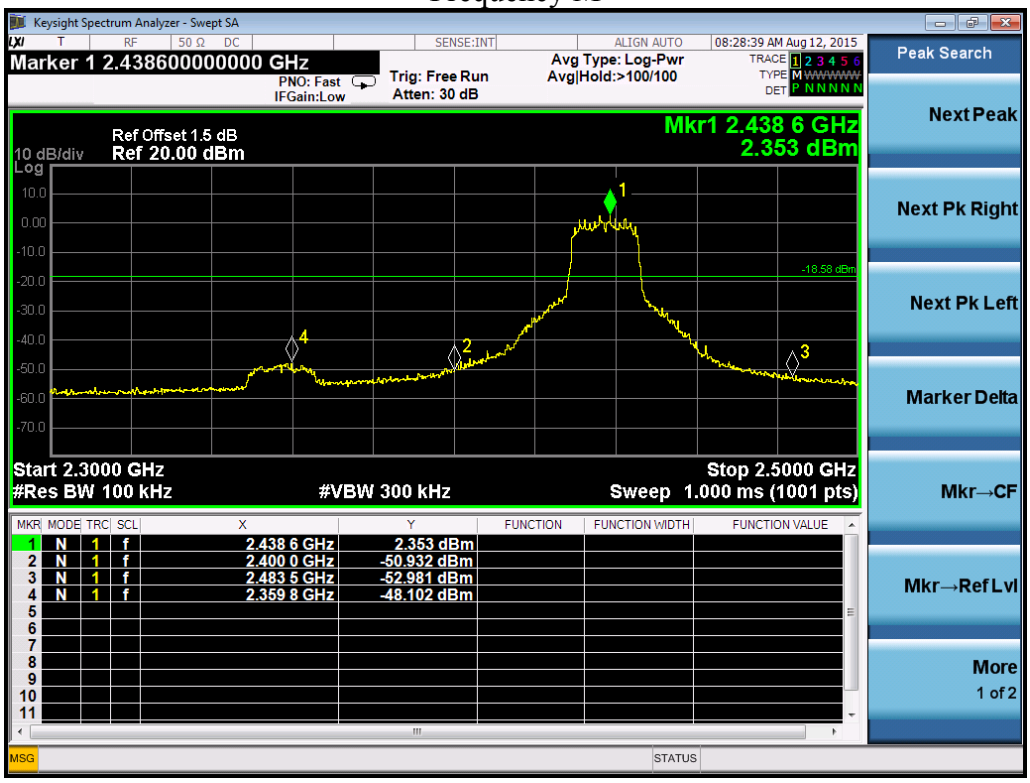




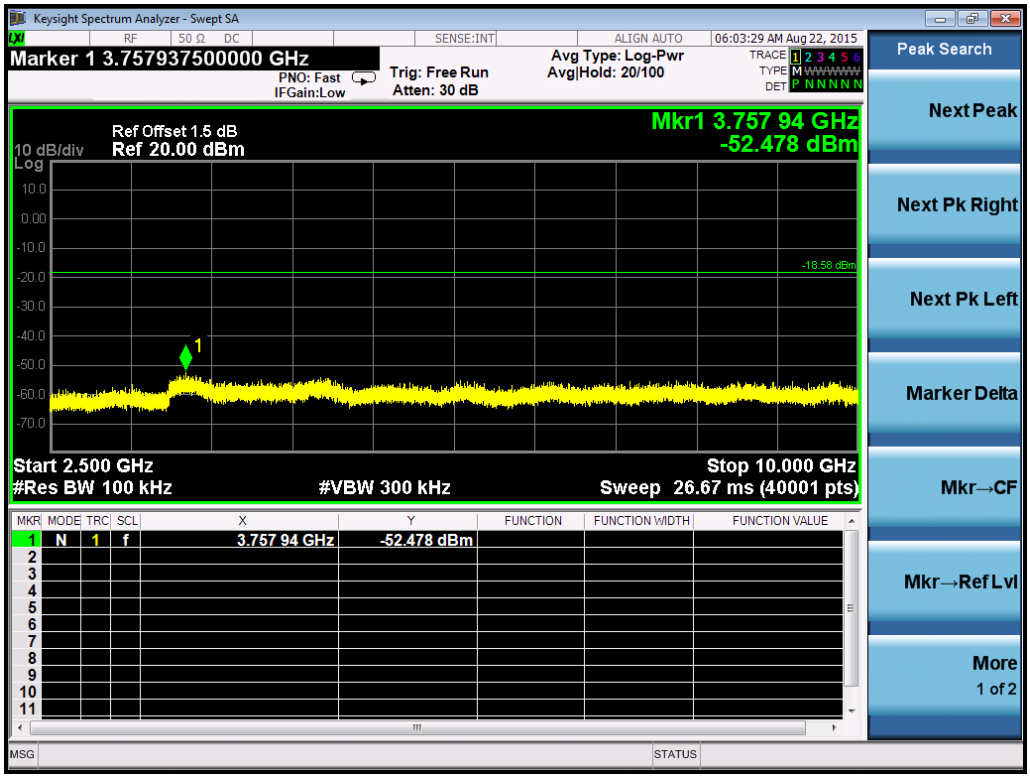

Keysight Spectrum Analyzer - Swept SA
Marker 1 3.805375000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 22/100
06:01:45 AM Aug 22, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 3.805 38 GHz
-53.195 dBm
-18.54 dBm
Start 2.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 26.67 ms (40001 pts)
1 N 1 f 3.805 38 GHz -53.195 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

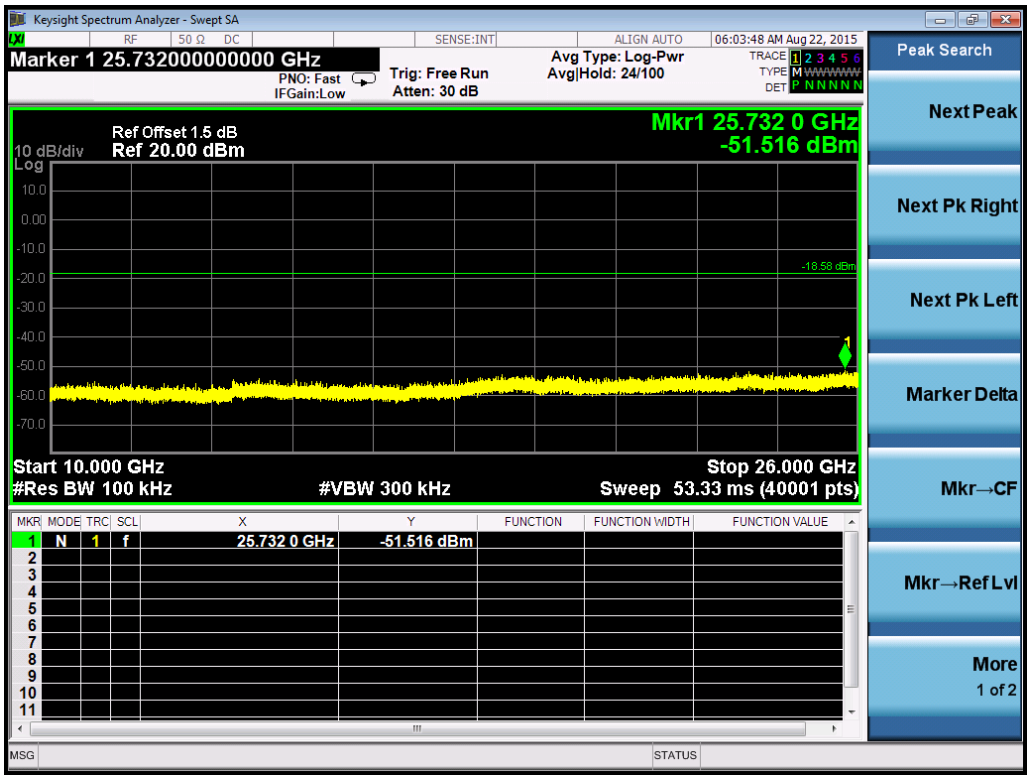

Keysight Spectrum Analyzer - Swept SA
Marker 1 25.607200000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 13/100
06:02:12 AM Aug 22, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 25.607 2 GHz
-50.401 dBm
-18.54 dBm
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.000 GHz
Sweep 53.33 ms (40001 pts)
1 N 1 f 25.607 2 GHz -50.401 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

Frequency M

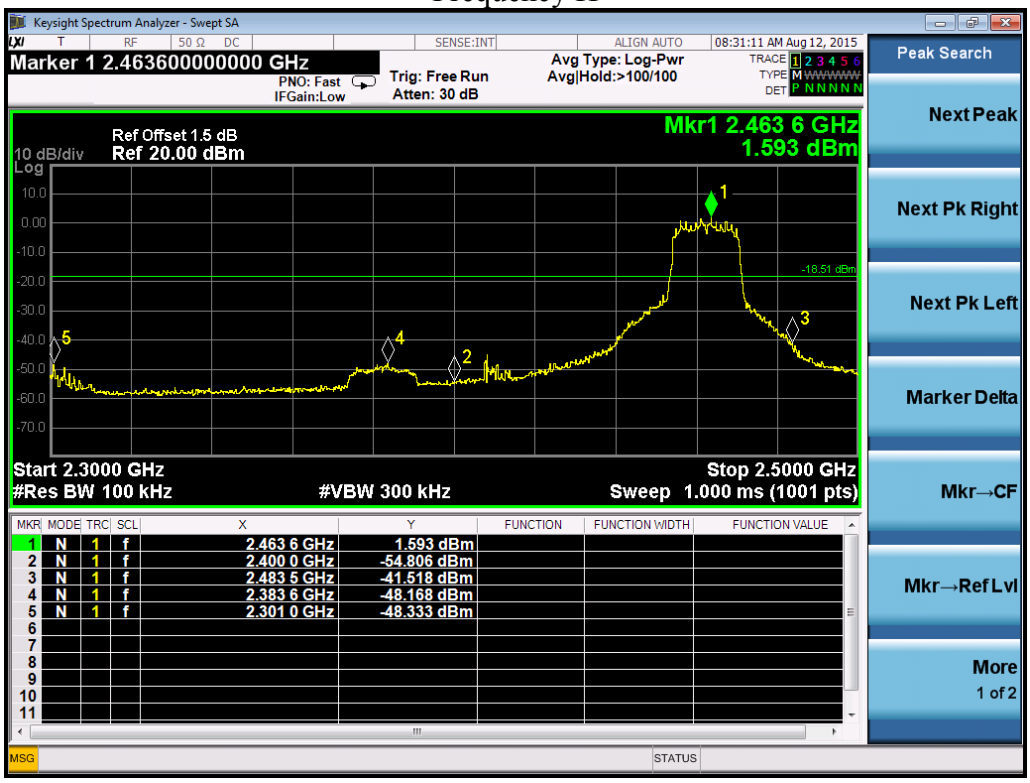

Keysight Spectrum Analyzer - Swept SA
Marker 1 2.438600000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
08:28:39 AM Aug 12, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.438 6 GHz
2.353 dBm
-18.58 dBm
Start 2.3000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.5000 GHz
Sweep 1.000 ms (1001 pts)
1 N 1 f 2.438 6 GHz 2.353 dBm
2 N 1 f 2.400 0 GHz -50.932 dBm
3 N 1 f 2.483 5 GHz -52.981 dBm
4 N 1 f 2.359 8 GHz -48.102 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

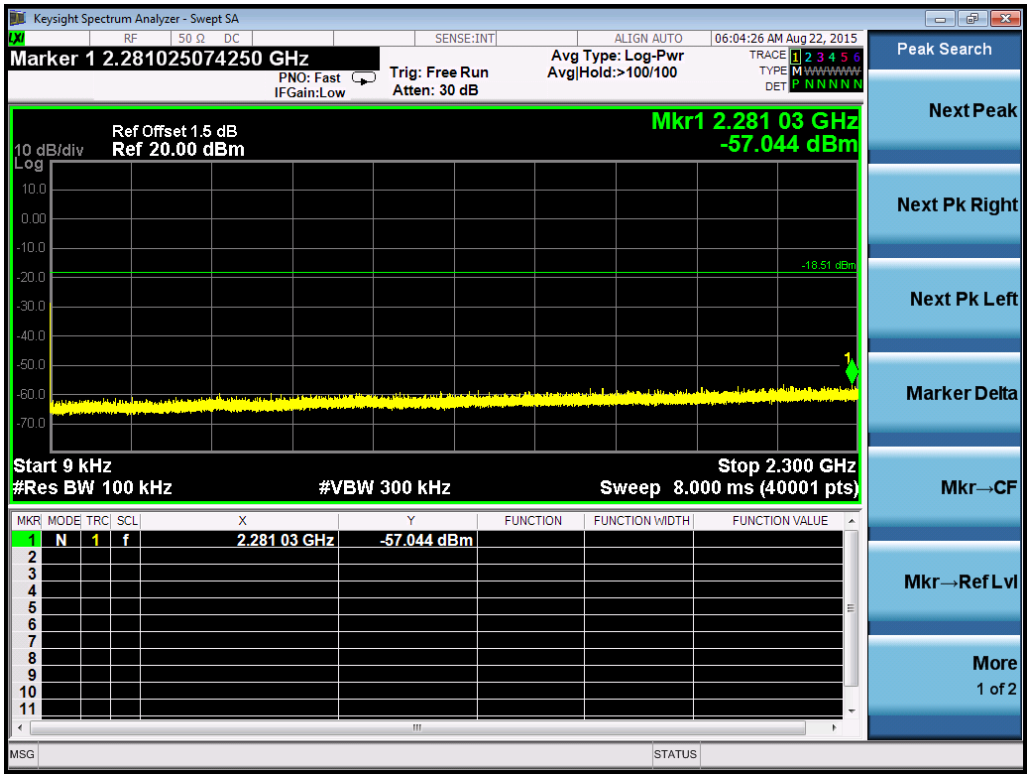
Keysight Spectrum Analyzer - Swept SA
Marker 1 2.266880129600 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
06:03:03 AM Aug 22, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.266 88 GHz
-56.726 dBm
-18.58 dBm
Start 9 kHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.300 GHz
Sweep 8.000 ms (40001 pts)
1 N 1 f 2.266 88 GHz -56.726 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

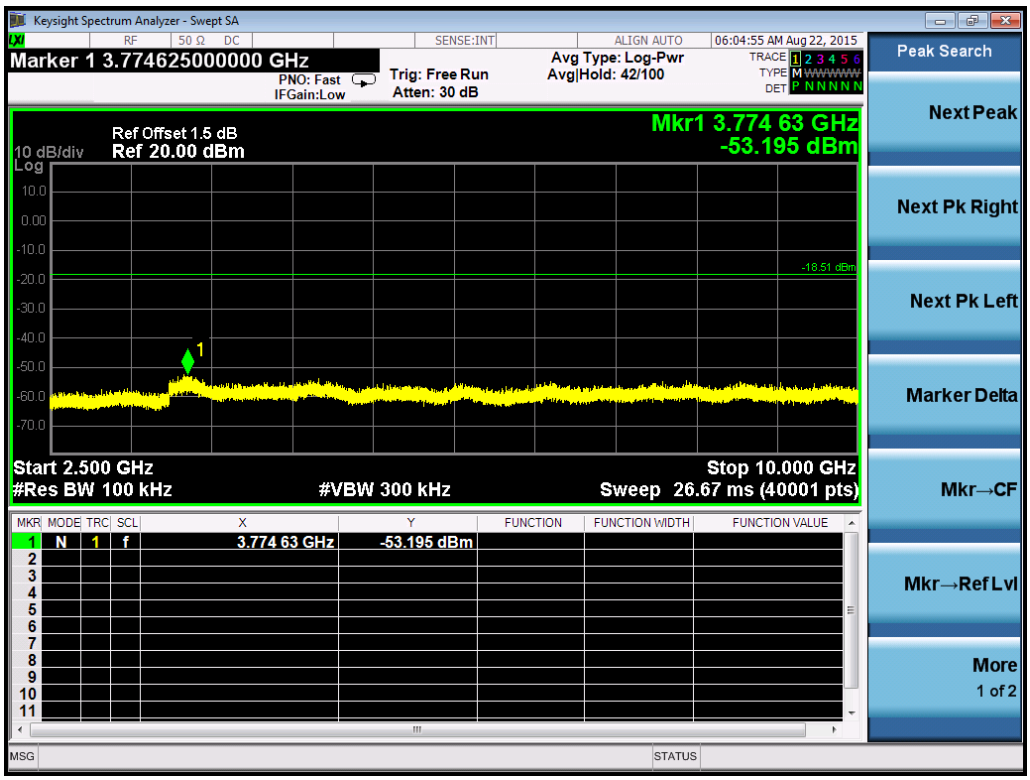

Keysight Spectrum Analyzer - Swept SA
Marker 1 3.757937500000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 20/100
06:03:29 AM Aug 22, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 3.757 94 GHz
-52.478 dBm
-18.58 dBm
Start 2.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 26.67 ms (40001 pts)
1 N 1 f 3.757 94 GHz -52.478 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

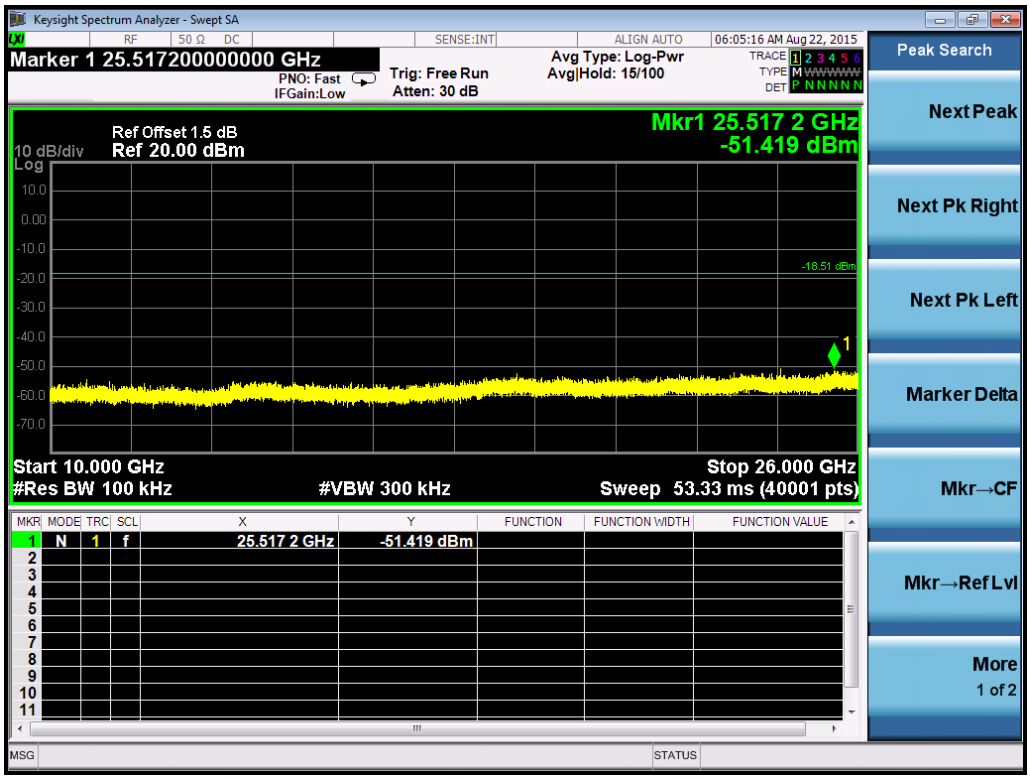

Keysight Spectrum Analyzer - Swept SA
Marker 1 25.732000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 24/100
06:03:48 AM Aug 22, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 25.732 0 GHz
-51.516 dBm
-18.58 dBm
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.000 GHz
Sweep 53.33 ms (40001 pts)
1 N 1 f 25.732 0 GHz -51.516 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

Frequency H


Keysight Spectrum Analyzer - Swept SA
Marker 1 2.463600000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
08:31:11 AM Aug 12, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.463 6 GHz
1.593 dBm
-18.51 dBm
Start 2.3000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.5000 GHz
Sweep 1.000 ms (1001 pts)
1 N 1 f 2.463 6 GHz 1.593 dBm
2 N 1 f 2.400 0 GHz -54.806 dBm
3 N 1 f 2.483 5 GHz -41.518 dBm
4 N 1 f 2.383 6 GHz -48.168 dBm
5 N 1 f 2.301 0 GHz -48.333 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

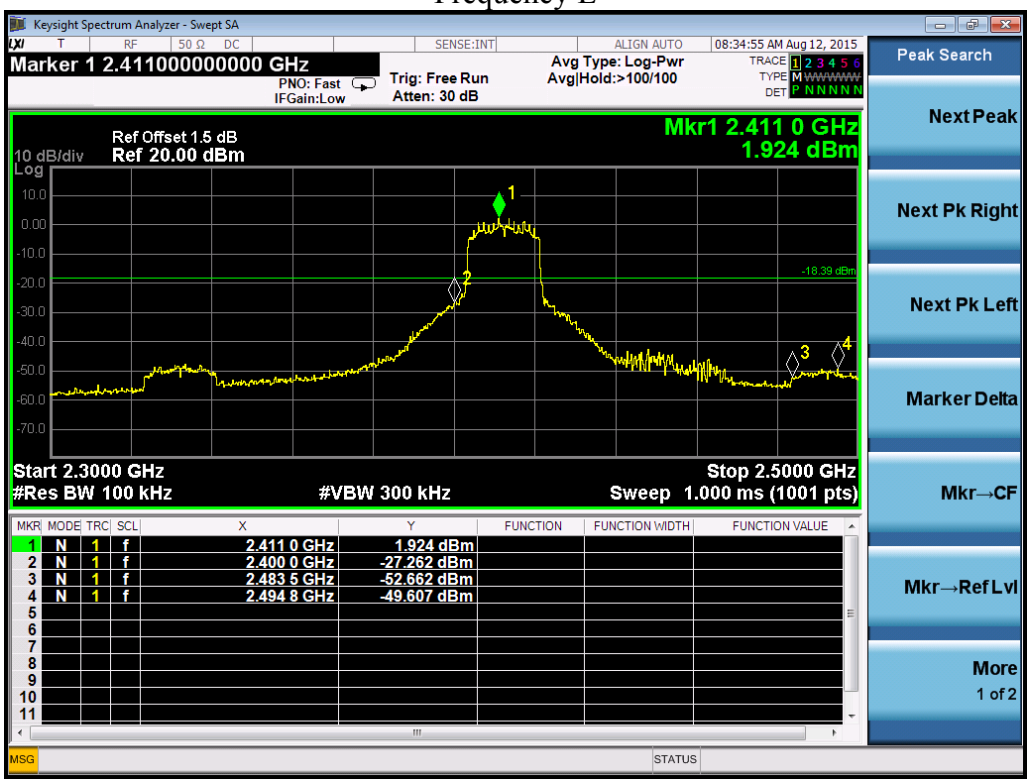

Keysight Spectrum Analyzer - Swept SA
Marker 1 2.281025074250 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
06:04:26 AM Aug 22, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.281 03 GHz
-57.044 dBm
-18.51 dBm
Start 9 kHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.300 GHz
Sweep 8.000 ms (40001 pts)
1 N 1 f 2.281 03 GHz -57.044 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

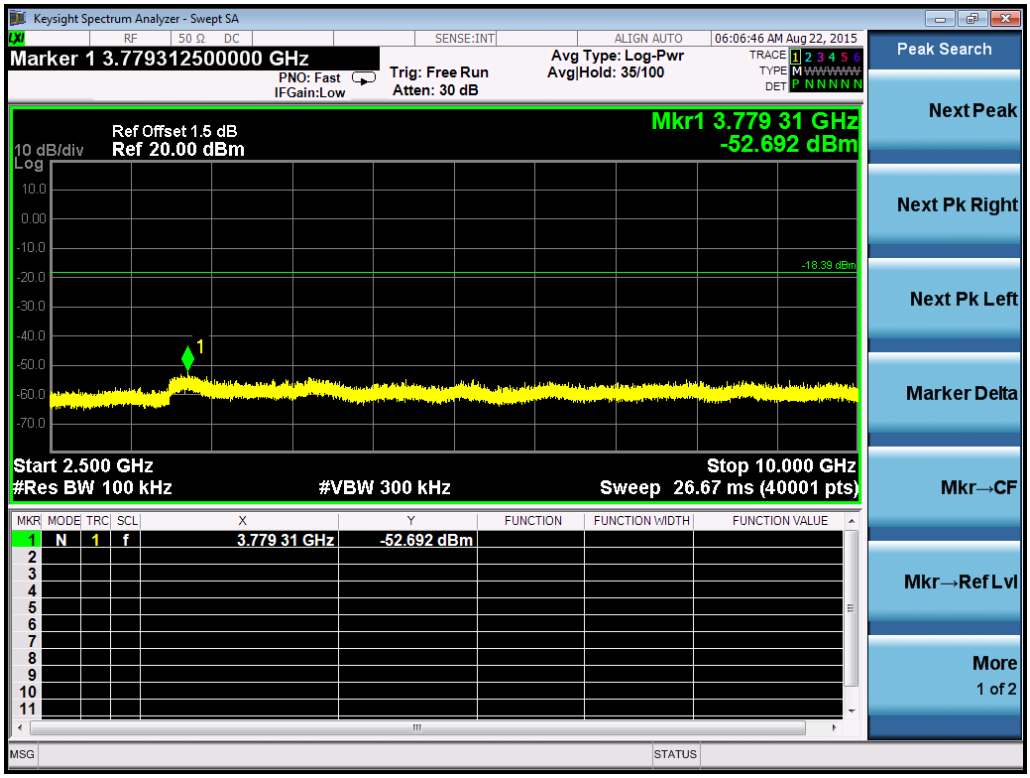

Keysight Spectrum Analyzer - Swept SA
Marker 1 3.774625000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 42/100
06:04:55 AM Aug 22, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 3.774 63 GHz
-53.195 dBm
-18.51 dBm
Start 2.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 26.67 ms (40001 pts)
1 N 1 f 3.774 63 GHz -53.195 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

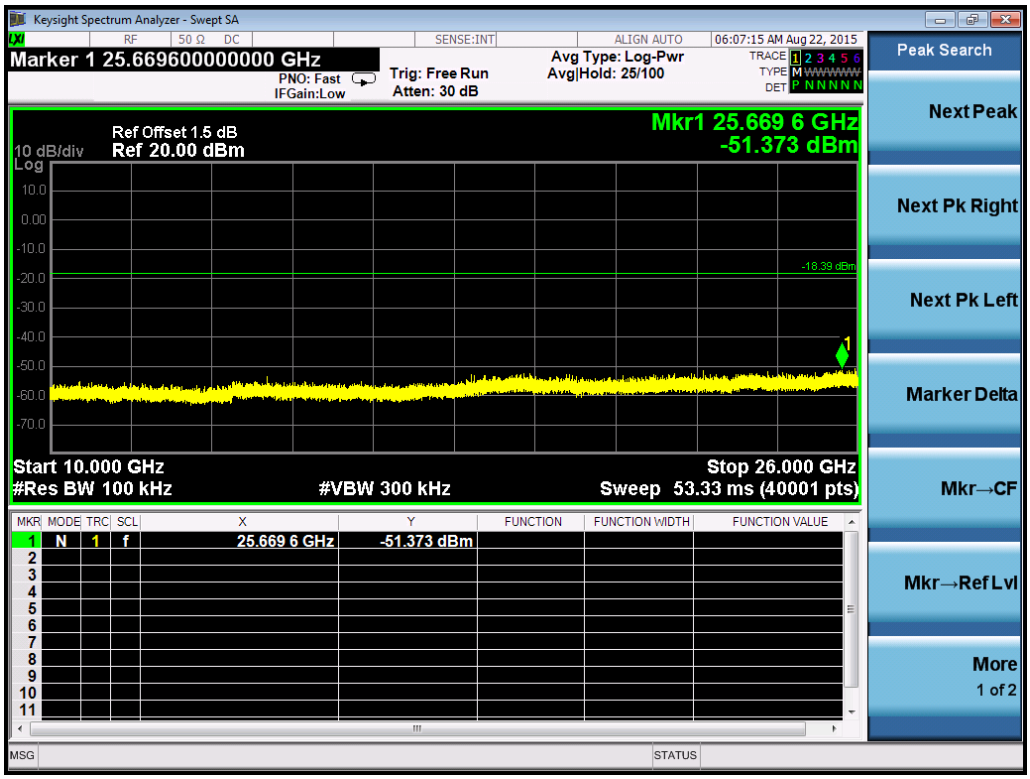

Keysight Spectrum Analyzer - Swept SA
Marker 1 25.517200000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 15/100
06:05:16 AM Aug 22, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 25.517 2 GHz
-51.419 dBm
-18.51 dBm
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.000 GHz
Sweep 53.33 ms (40001 pts)
1 N 1 f 25.517 2 GHz -51.419 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

802.11n (HT20)

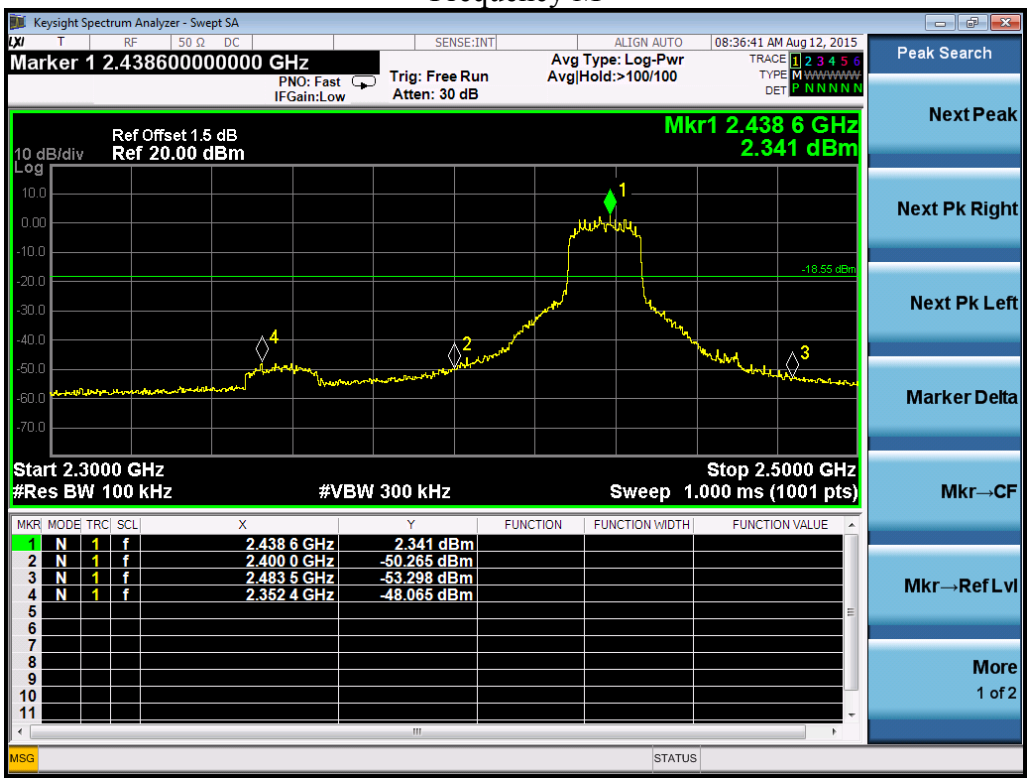
Frequency L



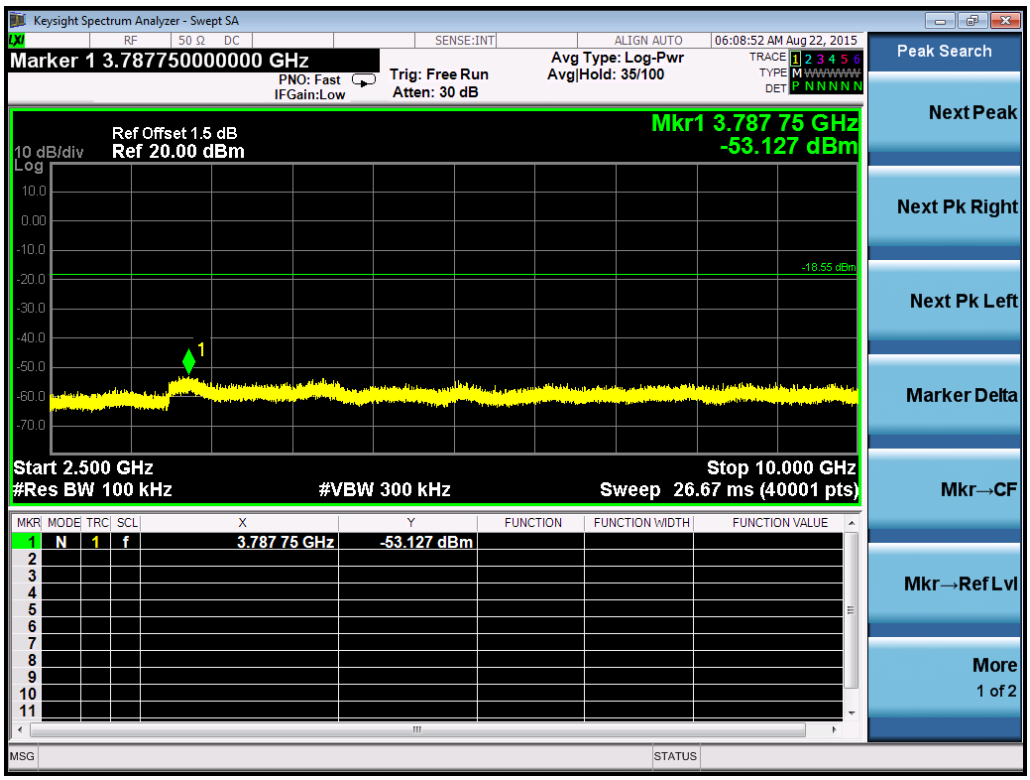

Keysight Spectrum Analyzer - Swept SA
Marker 1 3.779312500000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 35/100
06:06:46 AM Aug 22, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 3.779 31 GHz
-52.692 dBm
-18.39 dBm
Start 2.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 26.67 ms (40001 pts)
1 N 1 f 3.779 31 GHz -52.692 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

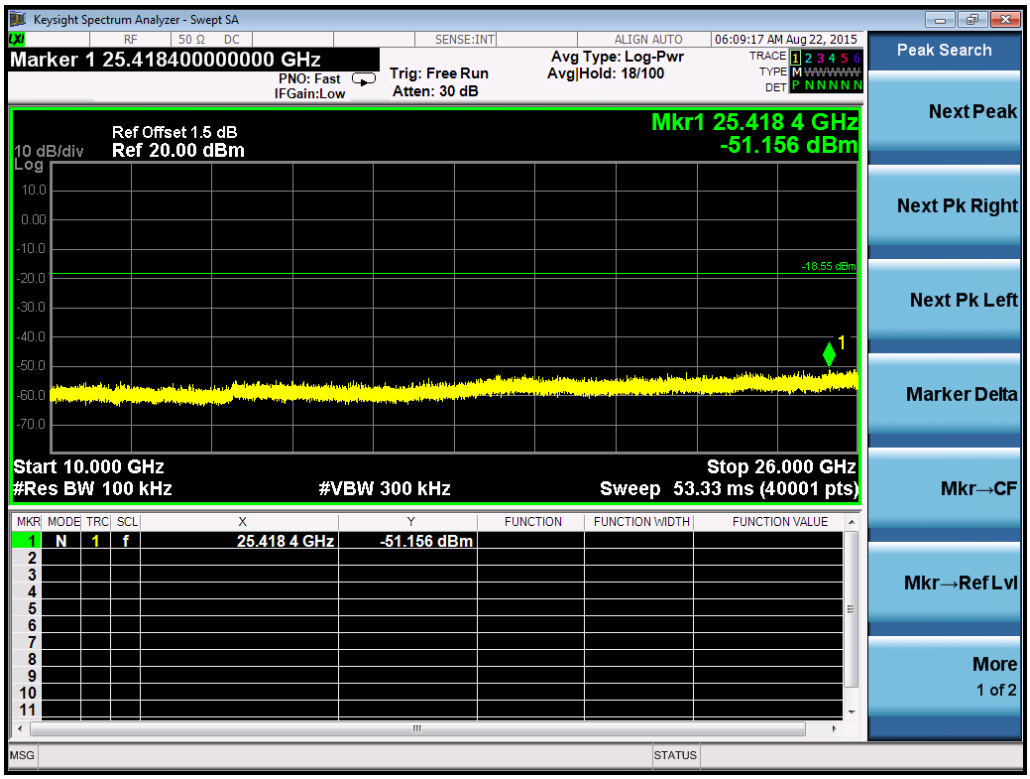

Keysight Spectrum Analyzer - Swept SA
Marker 1 25.669600000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 25/100
06:07:15 AM Aug 22, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 25.669 6 GHz
-51.373 dBm
-18.39 dBm
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.000 GHz
Sweep 53.33 ms (40001 pts)
1 N 1 f 25.669 6 GHz -51.373 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

Frequency M

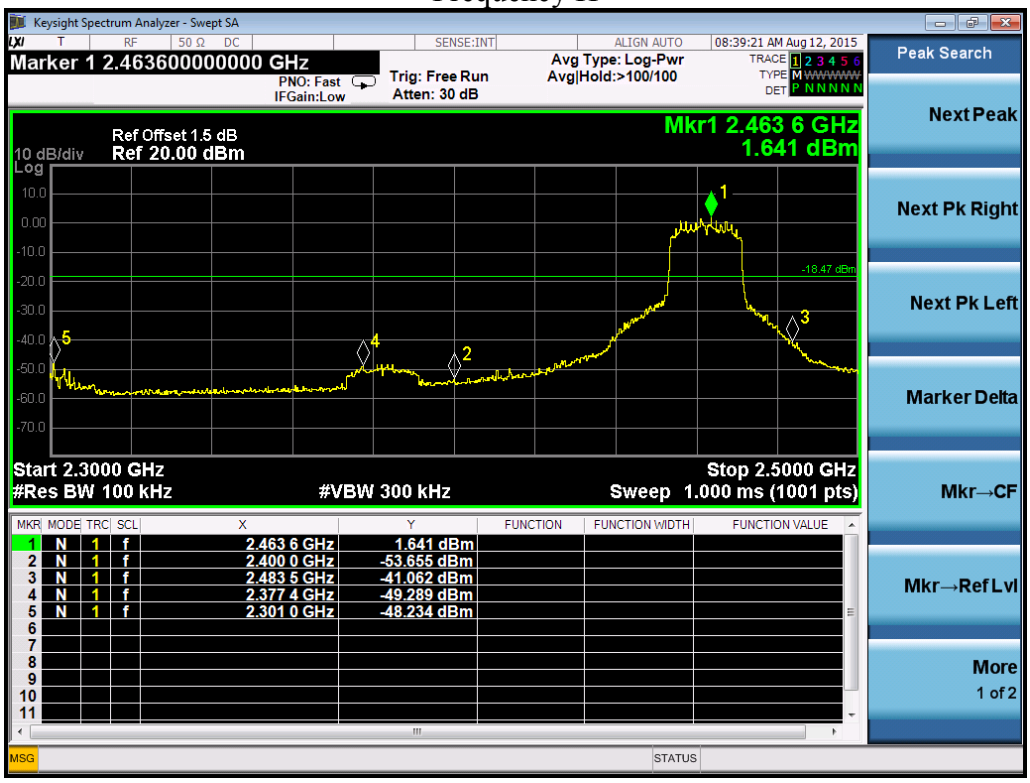

Keysight Spectrum Analyzer - Swept SA
Marker 1 2.438600000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
08:36:41 AM Aug 12, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.438 6 GHz
2.341 dBm
-18.55 dBm
Start 2.3000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.5000 GHz
Sweep 1.000 ms (1001 pts)
1 N 1 f 2.438 6 GHz 2.341 dBm
2 N 1 f 2.400 0 GHz -50.265 dBm
3 N 1 f 2.483 5 GHz -53.298 dBm
4 N 1 f 2.352 4 GHz -48.065 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

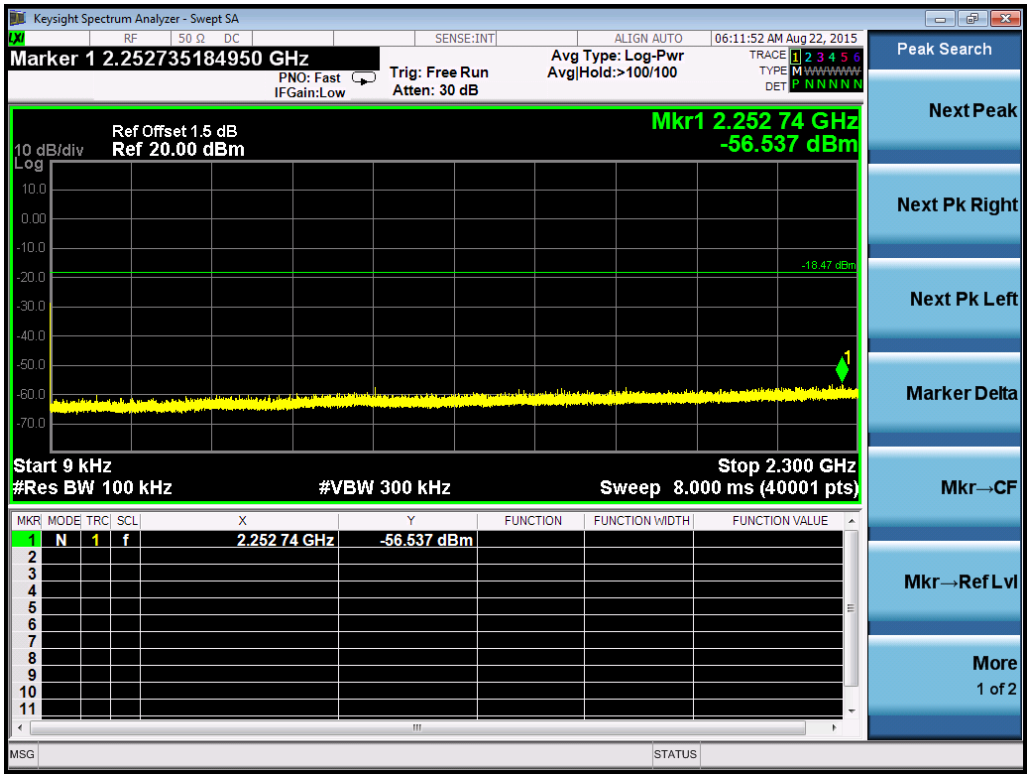
Keysight Spectrum Analyzer - Swept SA
Marker 1 2.217660322200 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
06:08:05 AM Aug 22, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.217 66 GHz
-56.532 dBm
-18.55 dBm
Start 9 kHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.300 GHz
Sweep 8.000 ms (40001 pts)
1 N 1 f 2.217 66 GHz -56.532 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

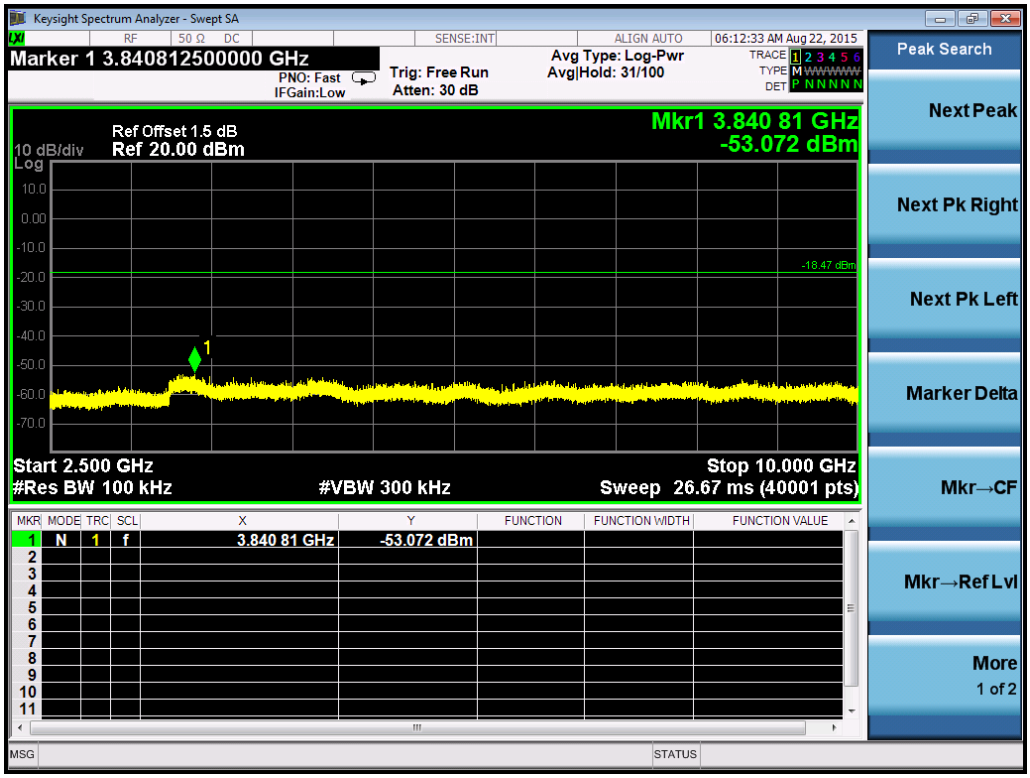

Keysight Spectrum Analyzer - Swept SA
Marker 1 3.787750000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 35/100
06:08:52 AM Aug 22, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 3.787 75 GHz
-53.127 dBm
-18.55 dBm
Start 2.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 26.67 ms (40001 pts)
1 N 1 f 3.787 75 GHz -53.127 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

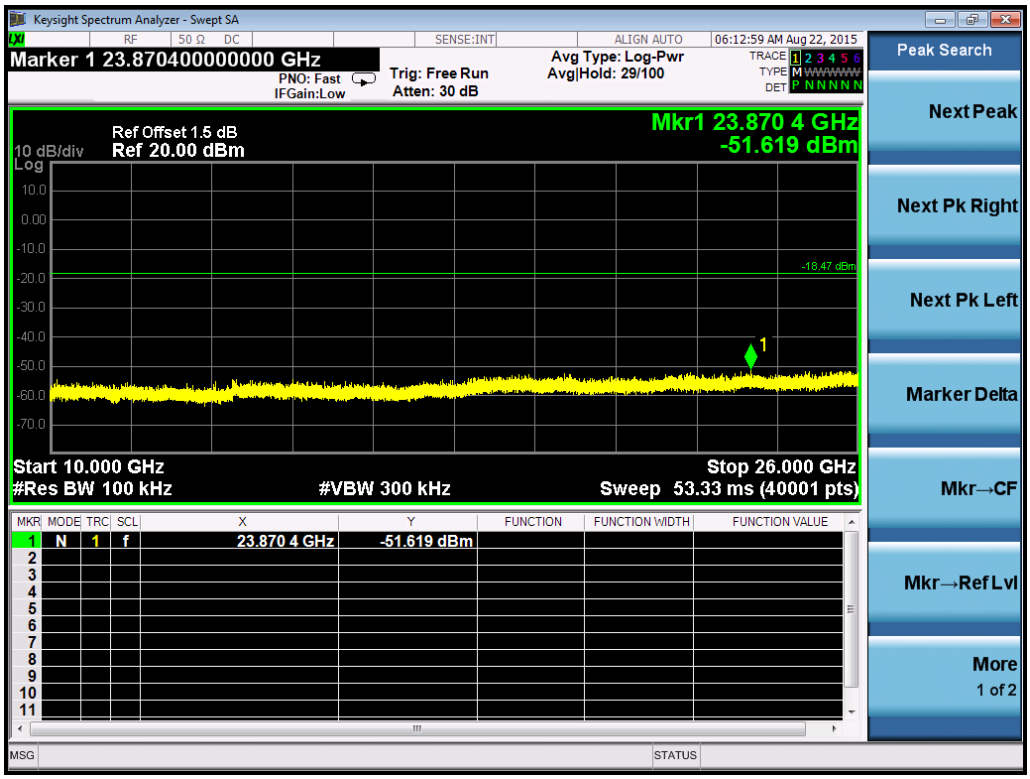

Keysight Spectrum Analyzer - Swept SA
Marker 1 25.418400000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 18/100
06:09:17 AM Aug 22, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 25.418 4 GHz
-51.156 dBm
-18.55 dBm
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.000 GHz
Sweep 53.33 ms (40001 pts)
1 N 1 f 25.418 4 GHz -51.156 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

Frequency H


Keysight Spectrum Analyzer - Swept SA
Marker 1 2.463600000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
08:39:21 AM Aug 12, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.463 6 GHz
1.641 dBm
-18.47 dBm
Start 2.3000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.5000 GHz
Sweep 1.000 ms (1001 pts)
1 N 1 f 2.463 6 GHz 1.641 dBm
2 N 1 f 2.400 0 GHz -53.655 dBm
3 N 1 f 2.483 5 GHz -41.062 dBm
4 N 1 f 2.377 4 GHz -49.289 dBm
5 N 1 f 2.301 0 GHz -48.234 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Keysight Spectrum Analyzer - Swept SA
Marker 1 2.252735184950 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
06:11:52 AM Aug 22, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.252 74 GHz
-56.537 dBm
-18.47 dBm
Start 9 kHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.300 GHz
Sweep 8.000 ms (40001 pts)
1 N 1 f 2.252 74 GHz -56.537 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Keysight Spectrum Analyzer - Swept SA
Marker 1 3.840812500000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 31/100
06:12:33 AM Aug 22, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 3.840 81 GHz
-53.072 dBm
-18.47 dBm
Start 2.500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 10.000 GHz
Sweep 26.67 ms (40001 pts)
1 N 1 f 3.840 81 GHz -53.072 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Keysight Spectrum Analyzer - Swept SA
Marker 1 23.870400000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 29/100
06:12:59 AM Aug 22, 2015
Ref Offset 1.5 dB
10 dB/div
Ref 20.00 dBm
Mkr1 23.870 4 GHz
-51.619 dBm
-18.47 dBm
Start 10.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.000 GHz
Sweep 53.33 ms (40001 pts)
1 N 1 f 23.870 4 GHz -51.619 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

8. Radiated Emissions in restricted frequency bands

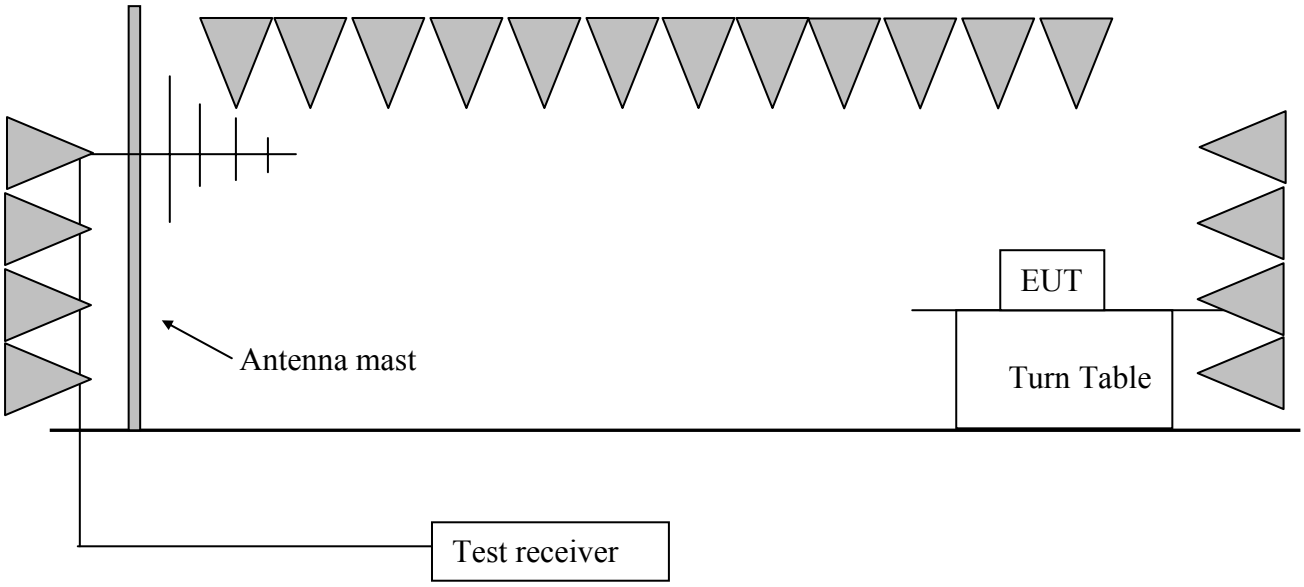
Test result: **Pass**

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 v03r02" for compliance to FCC 47CFR 15.247 requirements.

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

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

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:

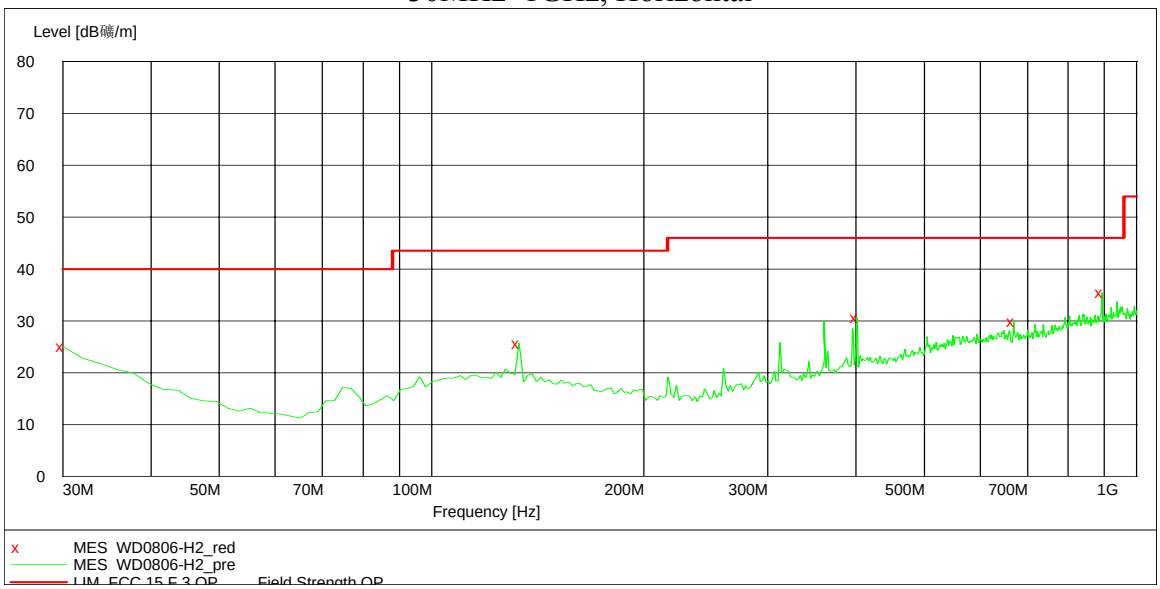
Assuming Antenna Factor = 30.20dB/m, Cable Loss = 2.00dB,
Gain of Preamplifier = 32.00dB, Original Receiver Reading = 10dBuV.
Then Factor = 30.20 + 2.00 – 32.00 = 0.20dB/m;
Measured level = 10dBuV + 0.20dB/m = 10.20dBuV/m
Assuming limit = 54dBuV/m,
Measured level = 10.20dBuV/m, then Margin = 54 -10.20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

30MHz~1GHz, Horizontal



30MHz~1GHz, Vertical

Test data at 30MHz~1GHz (Channel L):

Polarization	Frequency (MHz)	Measured level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
H	30.0	25.0	40.0	15.0	PK
	133.0	25.7	43.5	17.8	PK
	401.3	30.6	46.0	15.4	PK
	669.5	30.0	46.0	16.0	PK
	893.1	35.4	46.0	10.6	PK
V	30.0	25.3	40.0	14.7	PK
	43.6	20.8	40.0	19.2	PK
	133.0	34.3	43.5	9.2	PK
	222.4	29.2	46.0	16.8	PK
	311.9	26.7	46.0	19.3	PK
	490.7	32.3	46.0	13.7	PK
	580.1	35.9	46.0	10.1	PK
	937.8	34.0	46.0	12.0	PK

Test data at 30MHz~1GHz (Channel M):

Polarization	Frequency (MHz)	Measured level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
H	30.0	25.0	40.0	15.0	PK
	133.0	25.1	43.5	18.4	PK
	401.3	30.2	46.0	15.8	PK
	669.5	30.0	46.0	16.0	PK
	893.1	35.3	46.0	10.7	PK
V	30.0	25.3	40.0	14.7	PK
	43.6	20.8	40.0	19.2	PK
	133.0	34.1	43.5	9.4	PK
	222.4	29.2	46.0	16.8	PK
	311.9	26.5	46.0	19.5	PK
	490.7	32.2	46.0	13.8	PK
	580.1	35.7	46.0	10.3	PK
	937.8	34.0	46.0	12.0	PK

Test data at 30MHz~1GHz (Channel H):

Polarization	Frequency (MHz)	Measured level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
H	30.0	25.0	40.0	15.0	PK
	133.0	25.6	43.5	17.9	PK
	401.3	30.4	46.0	15.6	PK
	669.5	30.0	46.0	16.0	PK
	893.1	35.5	46.0	10.5	PK
V	30.0	25.3	40.0	14.7	PK
	43.6	20.8	40.0	19.2	PK
	133.0	34.2	43.5	9.3	PK
	222.4	29.2	46.0	16.8	PK
	311.9	26.7	46.0	19.3	PK
	490.7	32.1	46.0	13.9	PK
	580.1	35.6	46.0	10.4	PK
	937.8	33.8	46.0	12.2	PK

Note: The worst test plots (30MHz to 1GHz) of 802.11b channel L (2412MHz) chosen to list in the report as representative.

Test result above 1GHz:
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	53.15	74	-7.80	100	190	20.85	PK
		43.25	54	-7.80	100	190	10.75	AV
	2412	109.32	-	-7.80	100	190	-	PK
		103.44	-	-7.80	100	190	-	AV
	4824	51.23	74	-2.10	100	190	22.77	PK
		40.53	54	-2.10	100	190	13.47	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	110.54	-	-7.80	100	190	-	PK
		103.32	-	-7.80	100	190	-	AV
	4874	51.18	74	-2.10	100	190	22.82	PK
		40.37	54	-2.10	100	190	13.63	AV
	7311	53.48	74	6.50	100	190	20.52	PK
		42.45	54	6.50	100	190	11.55	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	109.30	-	-7.80	100	190	-	PK
		102.24	-	-7.80	100	190	-	AV
	2483.5	57.48	74	-7.50	100	190	16.52	PK
		47.17	54	-7.50	100	190	6.83	AV
	4924	51.51	74	-2.10	100	190	22.49	PK
		41.81	54	-2.10	100	190	12.19	AV
	7386	56.01	74	6.50	100	190	17.99	PK
		44.54	54	6.50	100	190	9.46	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	63.62	74	-7.80	100	190	10.38	PK
		49.47	54	-7.80	100	190	4.53	AV
	2412	113.38	-	-7.80	100	190	-	PK
		104.25	-	-7.80	100	190	-	AV
	4824	42.99	74	-2.10	100	190	31.01	PK
		31.44	54	-2.10	100	190	22.56	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	114.46	-	-7.80	100	190	-	PK
		105.36	-	-7.80	100	190	-	AV
	4874	43.15	74	-2.10	100	190	30.85	PK
		34.24	54	-2.10	100	190	19.76	AV
	7311	47.85	74	6.50	100	190	26.15	PK
		39.02	54	6.50	100	190	14.98	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	113.88	-	-7.80	100	190	-	PK
		105.52	-	-7.80	100	190	-	AV
	2483.5	66.78	74	-7.50	100	190	7.22	PK
		48.12	54	-7.50	100	190	5.88	AV
	4924	42.08	74	-2.10	100	190	31.92	PK
		32.58	54	-2.10	100	190	21.42	AV
	7386	45.18	74	6.50	100	190	28.82	PK
		36.21	54	6.50	100	190	17.79	AV
Note:	2462MHz is fundamental signal.							

3：2.4G band 802.11n HT20

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	2390	66.40	74	-7.80	100	190	7.60	PK
		49.48	54	-7.80	100	190	4.52	AV
	2412	113.38	-	-7.80	100	190	-	PK
		103.34	-	-7.80	100	190	-	AV
	4824	41.89	74	-2.10	100	190	32.11	PK
		32.94	54	-2.10	100	190	21.06	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	114.65	-	-7.80	100	190	-	PK
		104.45	-	-7.80	100	190	-	AV
	4874	45.87	74	-2.10	100	190	28.13	PK
		37.67	54	-2.10	100	190	16.33	AV
	7311	48.77	74	6.50	100	190	25.23	PK
		36.97	54	6.50	100	190	17.03	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	113.63	-	-7.80	100	190	-	PK
		102.12	-	-7.80	100	190	-	AV
	2483.5	64.77	74	-7.50	100	190	9.23	PK
		47.40	54	-7.50	100	190	6.60	AV
	4924	44.48	74	-2.10	100	190	29.52	PK
		34.98	54	-2.10	100	190	19.02	AV
	7386	46.08	74	6.50	100	190	27.92	PK
		37.01	54	6.50	100	190	16.99	AV
Note:	2462MHz is fundamental signal.							

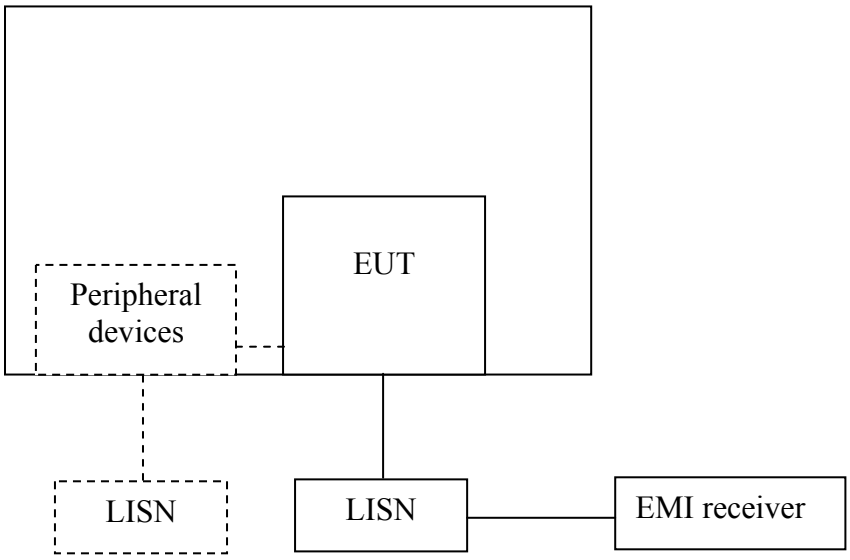
9. Power line conducted emission

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.

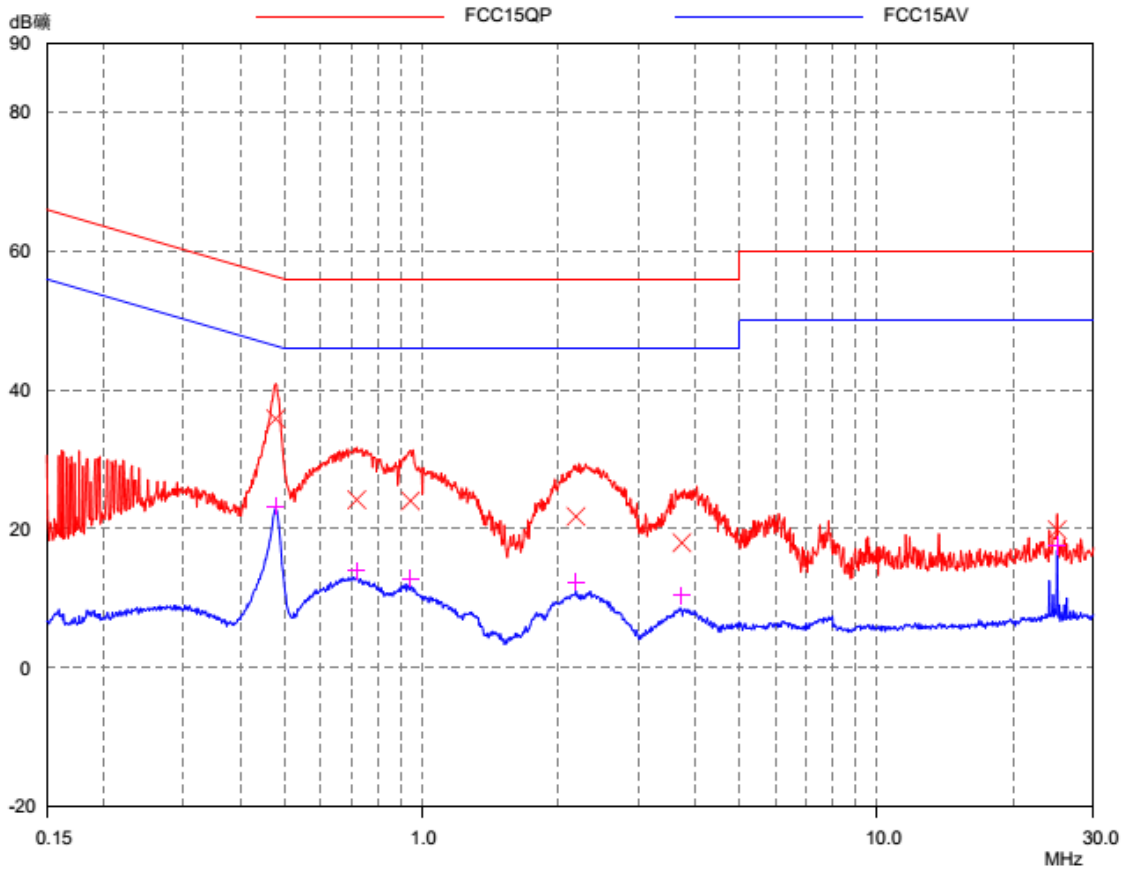
9.3 Test procedure and test set up

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 : 22°C
Relative Humidity : 52%

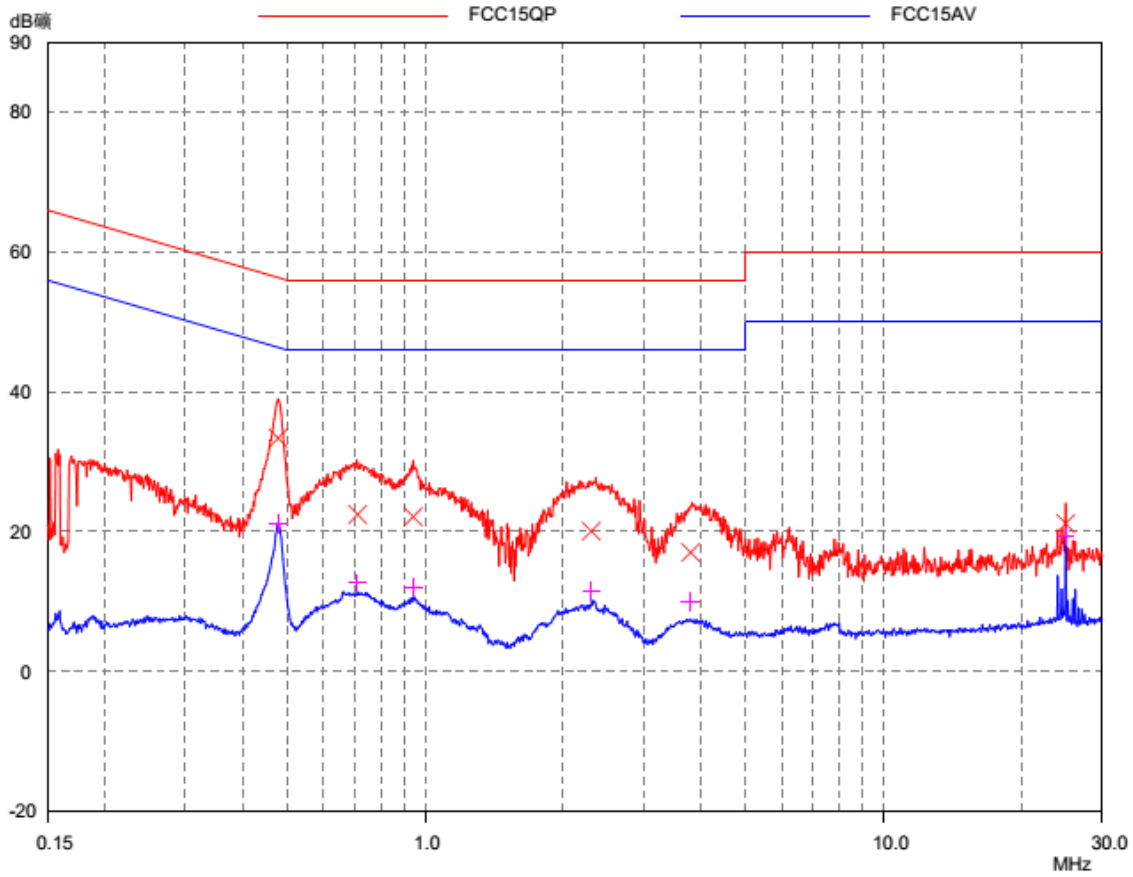
L line



Test Data:

Frequency (MHz)	Quasi-peak			Average		
	level dB(μV)	Limit dB(μV)	Margin (dB)	level dB(μV)	limit dB(μV)	Margin (dB)
0.48	35.9	56.4	20.5	23.2	46.4	23.1
0.72	24.2	56.0	31.8	13.9	46.0	32.1
0.94	24.1	56.0	31.9	12.9	46.0	33.1
2.18	21.8	56.0	34.2	12.3	46.0	33.7
3.73	18.0	56.0	38.0	10.4	46.0	35.6
24.94	19.9	60.0	40.1	17.6	50.0	32.4

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)
0.48	33.4	56.4	23.0	21.1	46.4	25.3
0.71	22.5	56.0	33.5	12.7	46.0	33.4
0.94	22.2	56.0	33.8	12.0	46.0	34.1
2.30	20.1	56.0	35.9	11.6	46.0	34.5
3.79	17.1	56.0	38.9	10.0	46.0	36.0
24.94	21.2	60.0	38.8	19.4	50.0	30.6

Note: The worst test results of channel L (2412MHz, 802.11b, 1Mbps) was chosen to list in the report as representative.

10. Antenna Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator 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.

The manufacturer used a unique connector. This antenna connector is a non-standard connector, so fulfill this requirement.