FCC TEST REPORT

For

Shenzhen Afoundry Electronic Co., Ltd.

Wireless Router

Model No.: AF-EW1200

Prepared for	:	Shenzhen Afoundry Electronic Co., Ltd.
Address	:	Longxin Industrial Park, Chuangye Road, Fenghuang 3rd industrial Zone, Fuyong Town, Baoan district, Shenzhen city, China
Prepared by	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Address	:	1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an District, Shenzhen, Guangdong, China
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Mail	:	webmaster@LCS-cert.com
Date of receipt of test sample	:	March 18, 2016
Number of tested samples	:	1
Serial number	:	Prototype
Date of Test	:	March 18, 2016 - March 31, 2016
Date of Report	:	March 31, 2016

FCC TEST REPORT
FCC CFR 47 PART 15 C(15.247): 2015

Report Reference No.	**:**	**LCS1603181539E**
Date of Issue	:	March 31, 2016
Testing Laboratory Name.....	**:**	**Shenzhen LCS Compliance Testing Laboratory Ltd.**
Address	:	1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an District, Shenzhen, Guangdong, China
Testing Location/ Procedure.....	:	Full application of Harmonised standards ■ Partial application of Harmonised standards □ Other standard testing method □
Applicant's Name.....	**:**	**Shenzhen Afoundry Electronic Co., Ltd.**
Address	:	Longxin Industrial Park, Chuangye Road, Fenghuang 3rd industrial Zone, Fuyong Town, Baoan district, Shenzhen city, China
Test Specification		
Standard	:	FCC CFR 47 PART 15 C(15.247): 2015
Test Report Form No.....	**:**	LCSEMC-1.0
TRF Originator	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Master TRF	:	Dated 2011-03

EUT Description.	**:**	**Wireless Router**
Trade Mark	:	AFOUNDRY®
Model/ Type reference.....	:	AF-EW1200
Ratings	:	DC 12.0V, 2.0A by AC Adapter
Result	:	**Positive**

Compiled by:	**Supervised by:**	**Approved by:**
Jacky Li		Gavin Liang
Jacky Li/ File administrators	Glin Lu/ Technique principal	Gavin Liang/ Manager

FCC -- TEST REPORT

Test Report No. : LCS1603181539E	March 31, 2016 Date of issue

EUT.....	:	Wireless Router
Type / Model.....	:	AF-EW1200
Applicant.....	**:**	**Shenzhen Afoundry Electronic Co., Ltd.**
Address.....	:	Longxin Industrial Park, Chuangye Road, Fenghuang 3rd industrial Zone, Fuyong Town, Baoan district, Shenzhen city, China
Telephone.....	:	/
Fax.....	:	/
Manufacturer.....	**:**	**Shenzhen Afoundry Electronic Co., Ltd.**
Address.....	:	Longxin Industrial Park, Chuangye Road, Fenghuang 3rd industrial Zone, Fuyong Town, Baoan district, Shenzhen city, China
Telephone.....	:	/
Fax.....	:	/
Factory.....	**:**	**Shenzhen Afoundry Electronic Co., Ltd.**
Address.....	:	Longxin Industrial Park, Chuangye Road, Fenghuang 3rd industrial Zone, Fuyong Town, Baoan district, Shenzhen city, China
Telephone.....	:	/
Fax.....	:	/

Test Result	**Positive**

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

TABLE OF CONTENTS

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	:	Wireless Router
Model Number	:	AF-EW1200
Power Supply	:	DC 12.0V, 2.0A by AC Adapter
Frequency Range	:	2412.00~2462.00MHz/2422.00~2452.00MHz； 5180.00-5240.00MHz/5745.00-5805.00MHz
Channel Number	:	11 Channels for WIFI 20MHz Bandwidth(802.11b/g/n-HT20) 7 Channels for WIFI 40MHz Bandwidth(802.11n-HT40) 4 Channels for 5180.00-5240.00MHz(802.11a/n-HT20/ac20) 5 Channels for 5745.00-5825.00MHz(802.11a/n-HT20/ac20) 2 Channels for 5190.00-5230.00MHz(802.11n-HT40/ac40) 2 Channels for 5755.00-5795.00MHz(802.11n-HT40/ac40) 1 Channels for 5210.00MHz(802.11ac80) 1 Channels for 5775.00MHz(802.11ac80)
Modulation Technology	:	IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n: OFDM (64QAM, 16QAM,QPSK,BPSK) IEEE 802.11a: OFDM (64QAM, 16QAM,QPSK,BPSK) IEEE 802.11ac: OFDM (64QAM, 16QAM,QPSK,BPSK)
Data Rates	:	IEEE 802.11b: 1-11Mbps IEEE 802.11g: 6-54Mbps IEEE 802.11n: MCS0-MCS15 IEEE 802.11a: 6-54Mbps IEEE 802.11ac: MCS0-MCS15
Antenna Type And Gain	:	Integral antenna, 4.0dBi(Max.) for 2412~2462MHz, 7.01dBi for MIMO; 7.0dBi(Max.) for 5180.00~5240.00MHz/5745.00~5805.00MHz, 10.01dBi for MIMO

1.2. Host System Configuration List and Details

Manufacturer	Description	Model	Serial Number	Certificate
--	AC ADAPTER	LY024SPS-120200UH	--	Voc

1.3. External I/O Cable

I/O Port Description	Quantity	Cable
DC	1	1.2m, Unshielded
USB	1	N/A
RJ45	5	0.8m, Shielded

1.4. Description of Test Facility

CNAS Registration Number. is L4595.
FCC Registration Number. is 899208.
Industry Canada Registration Number. is 9642A-1.
VCCI Registration Number. is C-4260 and R-3804.
ESMD Registration Number. is ARCB0108.
UL Registration Number. is 100571-492.
TUV SUD Registration Number. is SCN1081.
TUV RH Registration Number. is UA 50296516-001

1.5. Statement of The Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

1.6. Measurement Uncertainty

Test Item		Frequency Range	Uncertainty	Note
Radiation Uncertainty	:	9KHz~30MHz	±3.10dB	(1)
		30MHz~200MHz	±2.96dB	(1)
		200MHz~1000MHz	±3.10dB	(1)
		1GHz~26.5GHz	±3.80dB	(1)
		26.5GHz~40GHz	±3.90dB	(1)
Conduction Uncertainty	:	150kHz~30MHz	±1.63dB	(1)
Power disturbance	:	30MHz~300MHz	±1.60dB	(1)

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

1.7. Description Of Test Modes

The EUT has been tested under operating condition.

The EUT works in the X-axis.

Worst-case mode and channel used for 150kHz-30 MHz power line conducted emissions was the mode and channel with the highest output power, that was determined to be 802.11b mode(High Channel).

Worst-case mode and channel used for 9kHz-1000 MHz radiated emissions was the mode and channel with the highest output power, that was determined to be 802.11b mode(High Channel).

Worst-Case data rates were utilized from preliminary testing of the Chipset, worst-case data rates used during the testing are as follows:
802.11b Mode: 1 Mbps, DSSS.
802.11g Mode: 6 Mbps, OFDM.
802.11n Mode HT20: MCS0, OFDM.
802.11n Mode HT40: MCS8, OFDM.

Channel List & Frequency

802.11b/g/n(HT20)

Frequency Band	Channel No.	Frequency(MHz)	Channel No.	Frequency(MHz)
2412~2462MHz	1	2412	7	2442
	2	2417	8	2447
	3	2422	9	2452
	4	2427	10	2457
	5	2432	11	2462
	6	2437	--	--

802.11n(HT40)

Frequency Band	Channel No.	Frequency(MHz)	Channel No.	Frequency(MHz)
2422~2452MHz	1	--	7	2442
	2	--	8	2447
	3	2422	9	2452
	4	2427	10	--
	5	2432	11	--
	6	2437	--	--

2. TEST METHODOLOGY

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

The radiated testing was performed at an antenna-to-EUT distance of 3 meters. All radiated and conducted emissions measurement was performed at Shenzhen LCS Compliance Testing Laboratory Ltd..

2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2. EUT Exercise

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to FCC's request, Test Procedure KDB558074 D01 DTS Meas. Guidance v03r04 and KDB 6622911 are required to be used for this kind of FCC 15.247 digital modulation device.

According to its specifications, the EUT must comply with the requirements of the Section 15.203, 15.205, 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

2.3. General Test Procedures

2.3.1 Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2.1 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using Quasi-peak and average detector modes.

2.3.2 Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 6.3 of ANSI C63.10-2013

3. SYSTEM TEST CONFIGURATION

3.1. Justification

The system was configured for testing in a continuous transmit condition. The duty cycle is 100% and the average correction factor is 0.

3.2. EUT Exercise Software

N/A

3.3. Special Accessories

N/A

3.4. Block Diagram/Schematics

Please refer to the related document

3.5. Equipment Modifications

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

3.6. Test Setup

Please refer to the test setup photo.

4. SUMMARY OF TEST RESULTS

Applied Standard: FCC Part 15 Subpart C		
FCC Rules	**Description of Test**	**Result**
§15.247(b)	Maximum Conducted Output Power	Compliant
§15.247(e)	Power Spectral Density	Compliant
§15.247(a)(2)	6dB Bandwidth	Compliant
§15.247(a)	Occupied Bandwidth	Compliant
§15.209, §15.247(d)	Radiated and Conducted Spurious Emissions	Compliant
§15.205	Emissions at Restricted Band	Compliant
§15.207(a)	Conducted Emissions	Compliant
§15.203	Antenna Requirements	Compliant
§15.247(i) §2.1093	RF Exposure	Compliant

5. TEST RESULT

5.1. Maximum Conducted Output Power Measurement

5.1.1. Standard Applicable

According to §15.247(b): For systems using digital modulation in the 2400-2483.5 MHz and 5725-5850 MHz band, the limit for maximum peak conducted output power is 30dBm. The limited has to be reduced by the amount in dB that the gain of the antenna exceed 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.

Systems operating in the 5725-5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi without any corresponding reduction in transmitter peak output power.

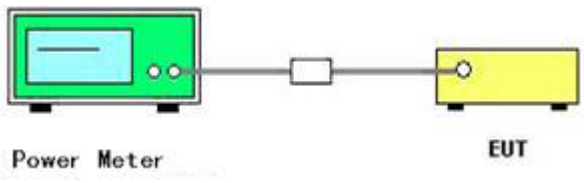
5.1.2. Measuring Instruments and Setting

Please refer to section 6 of equipments list in this report. The following table is the setting of the power meter.

5.1.3. Test Procedures

The transmitter output (antenna port) was connected to the power meter.

5.1.4. Test Setup Layout



5.1.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.1.6. Test Result of Maximum Conducted Output Power

Temperature	25℃	Humidty	60%
Test Engineer	Jacky	Configurations	802.11b/g/n

802.11b

Channel	Frequency (MHz)	Conducted Power (Peak, dBm)		Sum Power (dBm)	Max. Limit (dBm)	Result
		Chain0	Chain1			
1	2412	15.00	14.97	/	30	Complies
6	2437	14.20	14.21	/	30	Complies
11	2462	14.49	14.45	/	30	Complies

802.11g

Channel	Frequency (MHz)	Conducted Power (Peak, dBm)		Sum Power (dBm)	Max. Limit (dBm)	Result
		Chain0	Chain1			
1	2412	13.35	13.60	/	30	Complies
6	2437	13.75	13.86	/	30	Complies
11	2462	13.53	13.51	/	30	Complies

802.11n(HT20)

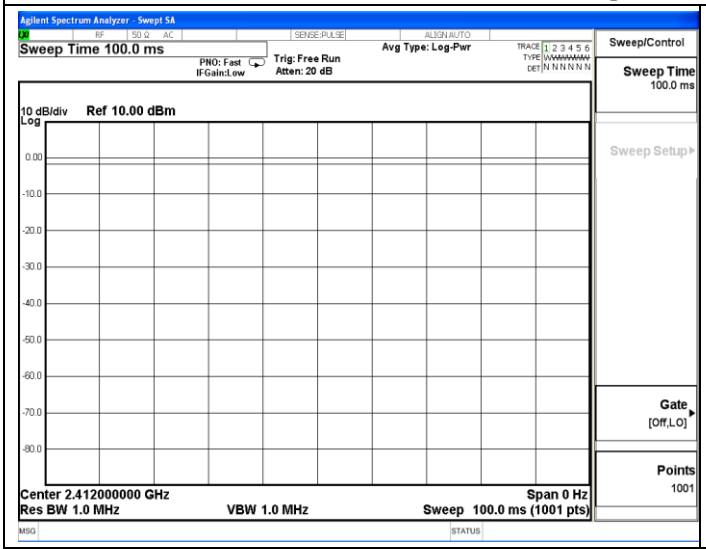
Channel	Frequency (MHz)	Conducted Power (Peak, dBm)		Sum Power (dBm)	Max. Limit (dBm)	Result
		Chain0	Chain1			
1	2412	13.49	13.64	16.58	28.99	Complies
6	2437	13.51	13.44	16.49	28.99	Complies
11	2462	13.37	13.33	16.36	28.99	Complies

802.11n(HT40)

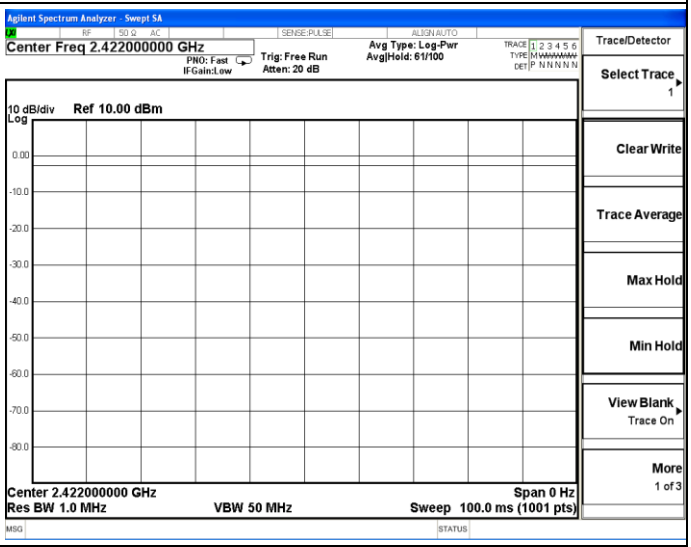
Channel	Frequency (MHz)	Conducted Power (Peak, dBm)		Sum Power (dBm)	Max. Limit (dBm)	Result
		Chain0	Chain1			
3	2422	12.45	12.34	15.41	28.99	Complies
6	2437	12.88	12.82	15.86	28.99	Complies
9	2452	12.52	12.24	15.39	28.99	Complies

Correct Limit=Limit-(Directional Gain-6dBi)

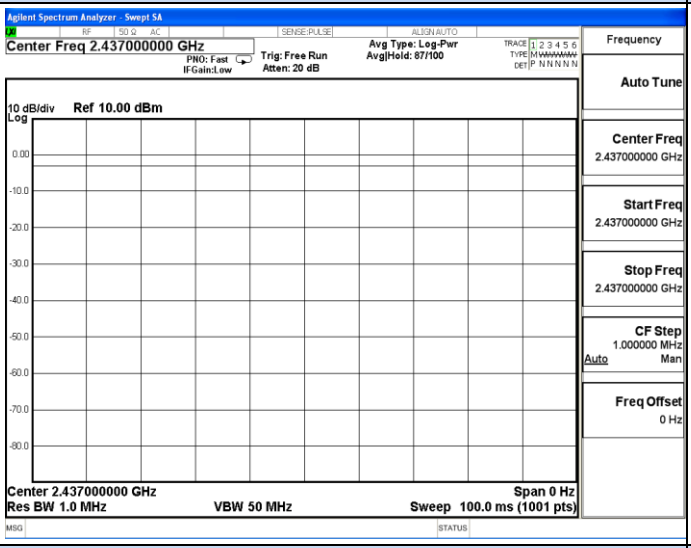
Tet plot of Duty Cycle:



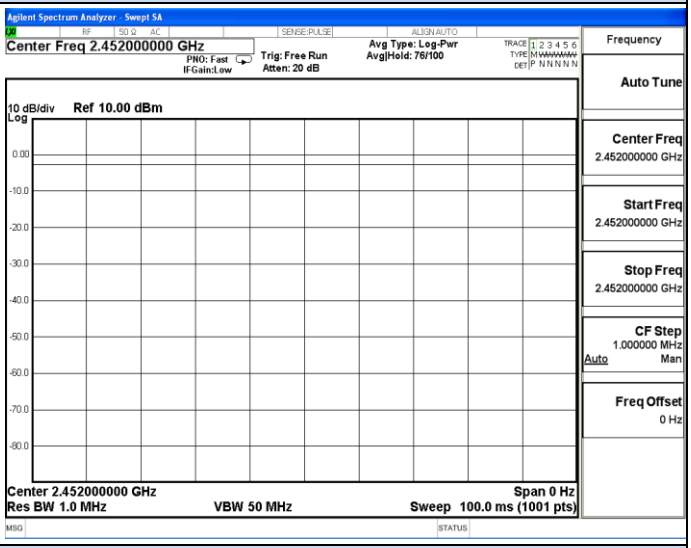
2412MHz



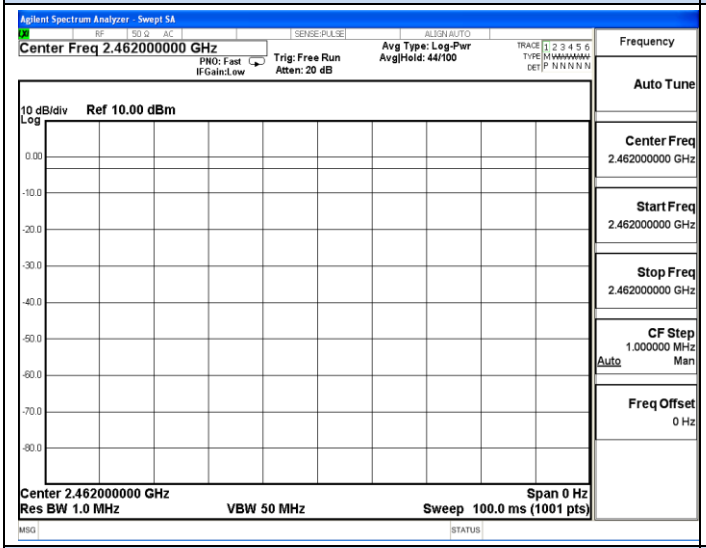
2422MHz



2437MHz



2452MHz



2462MHz

Note: The duty cycle is 100%

5.2. Power Spectral Density Measurement

5.2.1. Standard Applicable

According to §15.247(e): For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

5.2.2. Measuring Instruments and Setting

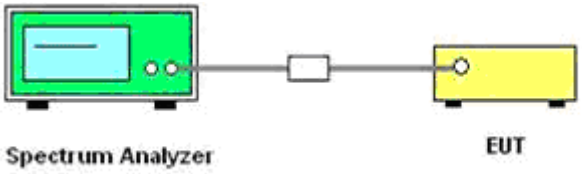
Please refer to section 6 of equipments list in this report. The following table is the setting of Spectrum Analyzer.

5.2.3. Test Procedures

802.11b/g/n

1. The transmitter was connected directly to a Spectrum Analyzer through a directional couple.
2. The power was monitored at the coupler port with a Spectrum Analyzer. The power level was set to the maximum level.
3. Set the RBW = 3 kHz~100kHz.
4. Set the VBW ≥ 3*RBW
5. Set the span to 1.5 times the DTS channel bandwidth.
6. Detector = peak.
7. Sweep time = auto couple.
8. Trace mode = max hold.
9. Allow trace to fully stabilize.
10. Use the peak marker function to determine the maximum power level in any 3 kHz band segment within the fundamental EBW.

5.2.4. Test Setup Layout



5.2.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.2.6. Test Result of Power Spectral Density

Temperature	25℃	Humidity	60%
Test Engineer	Jakcy	Configurations	802.11b/g/n

802.11b

Channel	Frequency (MHz)	Mearsured Power Density(dBm/3KHz)		Sum PSD (dBm/3KHz)	Max. Limit (dBm/3KHz)	Result
		Chain0	Chain1			
1	2412	-12.544	-12.603	/	8	Complies
6	2437	-12.181	-12.181	/	8	Complies
11	2462	-13.838	-13.859	/	8	Complies

802.11g

Channel	Frequency (MHz)	Mearsured Power Density(dBm/3KHz)		Sum PSD (dBm/3KHz)	Max. Limit (dBm/3KHz)	Result
		Chain0	Chain1			
1	2412	-18.422	-17.743	/	8	Complies
6	2437	-17.488	-19.198	/	8	Complies
11	2462	-17.660	-17.784	/	8	Complies

802.11n-HT20

Channel	Frequency (MHz)	Mearsured Power Density(dBm/3KHz)		Sum PSD (dBm/3KHz)	Max. Limit (dBm/3KHz)	Result
		Chain0	Chain1			
1	2412	-19.660	-18.337	-15.938	8	Complies
6	2437	-18.639	-19.159	-15.881	8	Complies
11	2462	-19.707	-19.132	-16.400	8	Complies

802.11n-HT40

Channel	Frequency (MHz)	Mearsured Power Density(dBm/3KHz)		Sum PSD (dBm/3KHz)	Max. Limit (dBm/3KHz)	Result
		Chain0	Chain1			
3	2422	-22.475	-22.554	-19.504	8	Complies
6	2437	-21.648	-22.365	-18.981	8	Complies
9	2452	-23.244	-22.447	-19.817	8	Complies

Test plot of Power Spectral Density:

802.11b Chain 0-Low channel

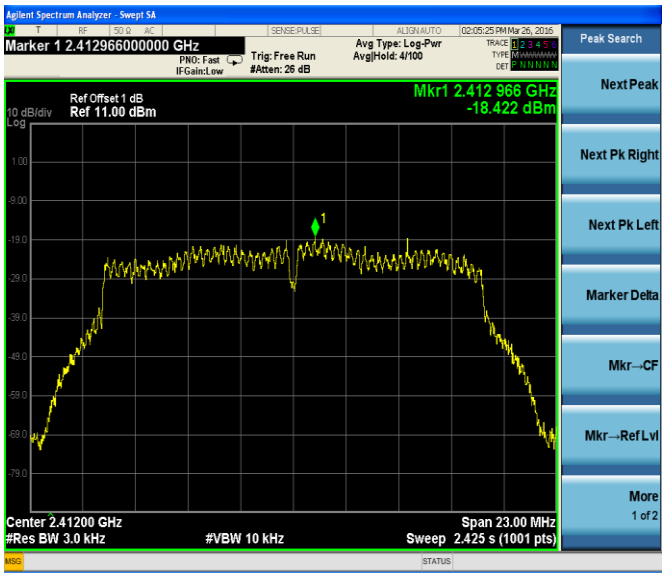
802.11b Chain 1-Low channel

802.11b Chain 0-Middle channel

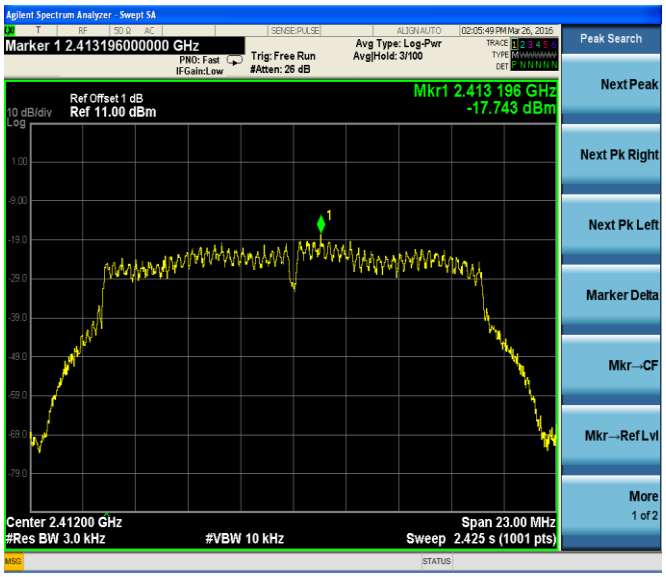
802.11b Chain 1-Middle channel

802.11b Chain 0-High channel

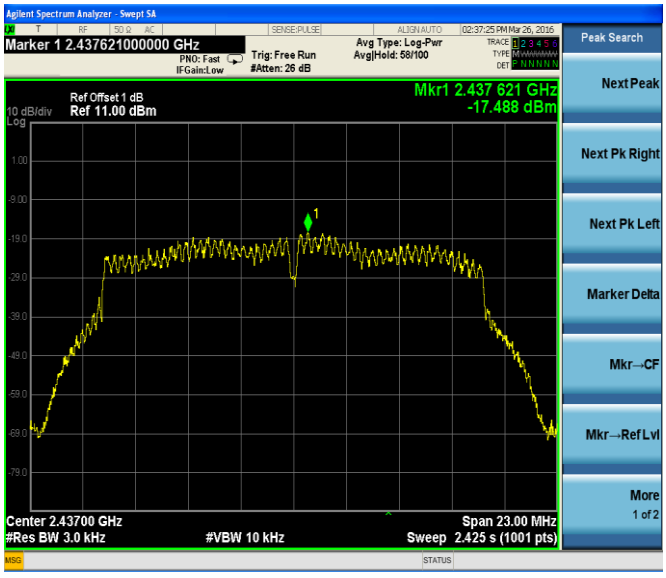
802.11b Chain 1-High channel



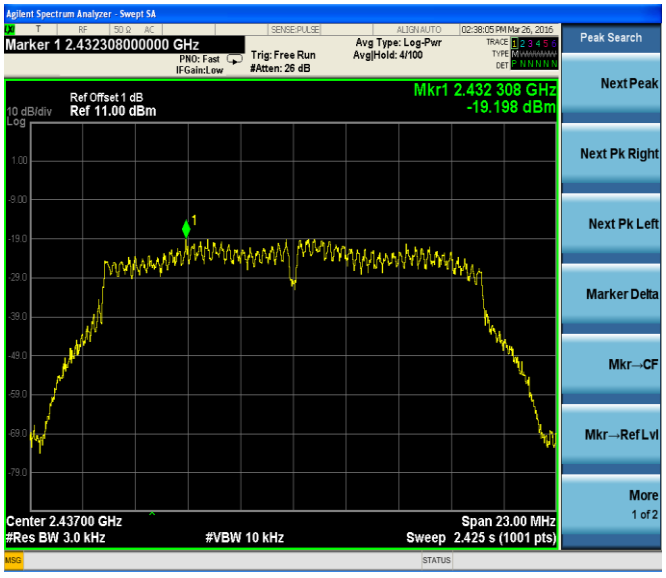
802.11g Chain 0-Low channel



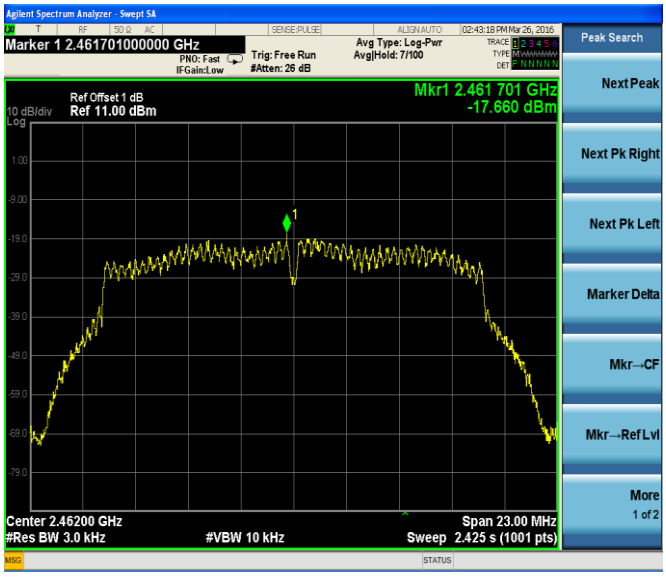
802.11g Chain 1-Low channel



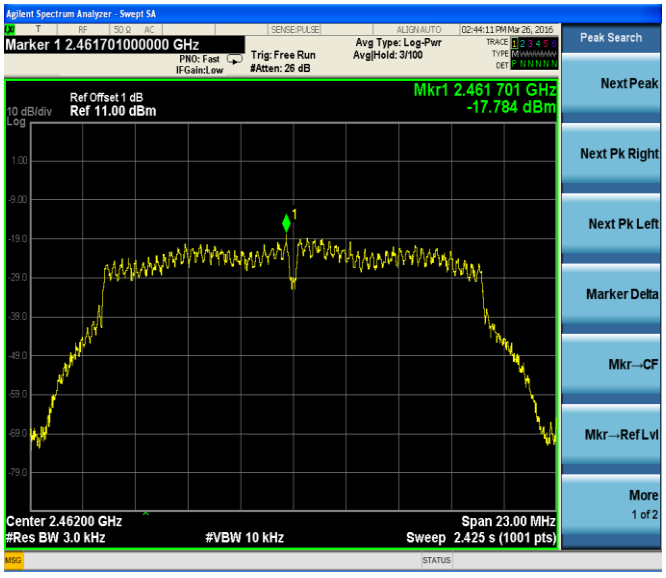
802.11g Chain 0-Middle channel



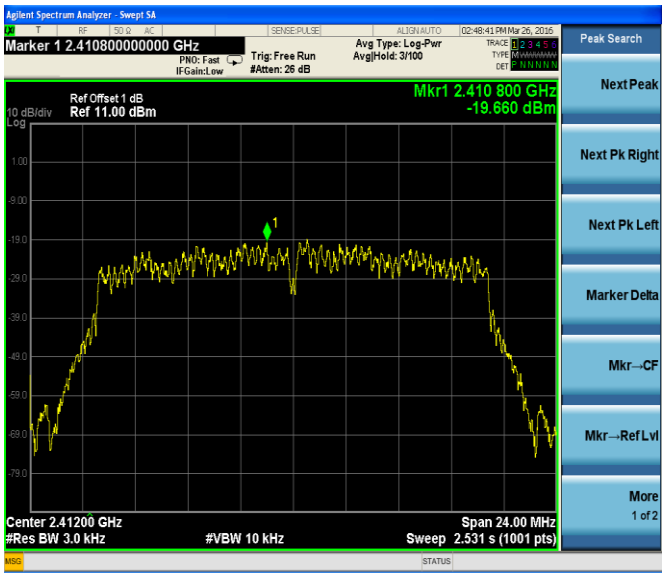
802.11g Chain 1-Middle channel



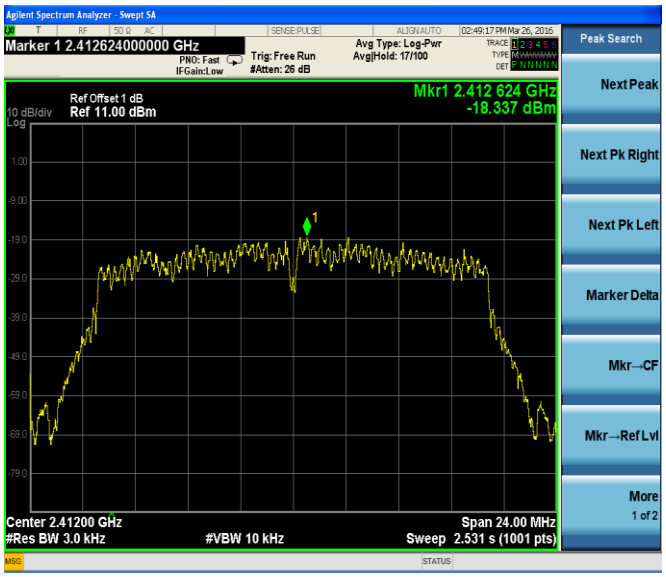
802.11g Chain 0-High channel



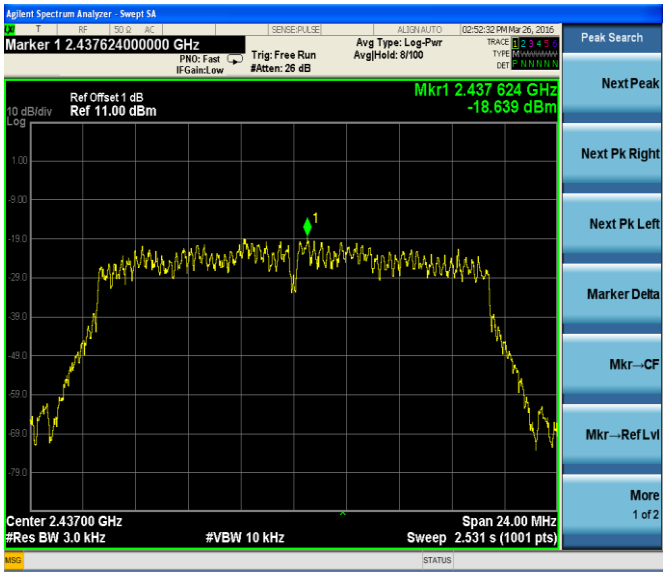
802.11g Chain 1-High channel



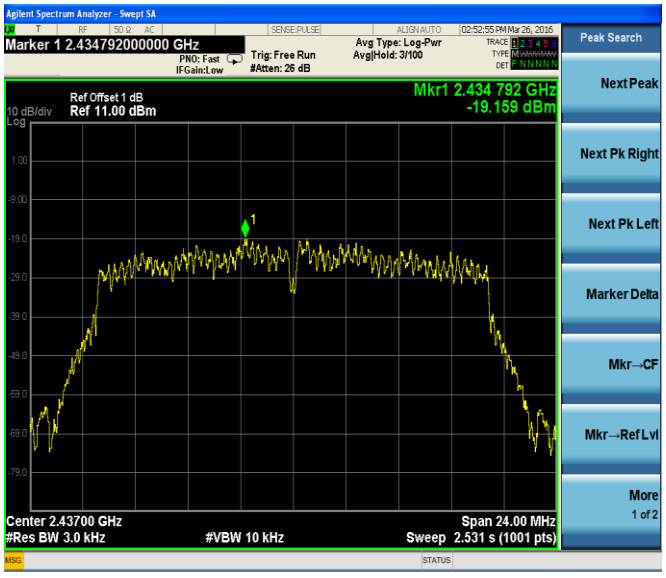
802.11n-HT20 Chain 0-Low channel



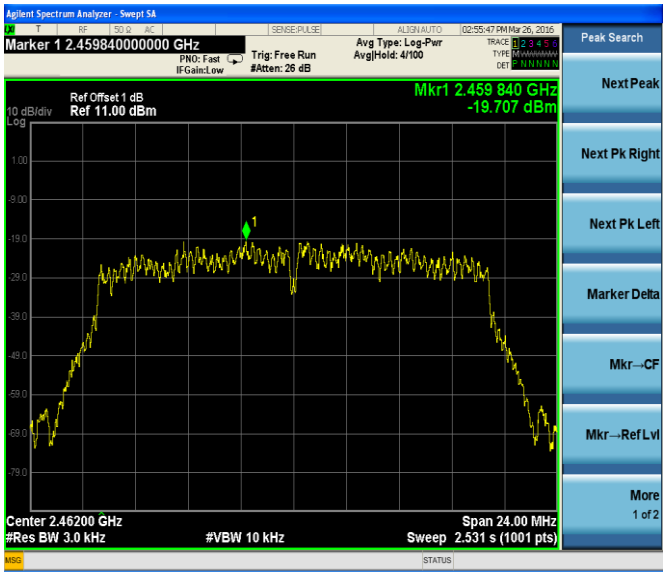
802.11n-HT20 Chain 1-Low channel



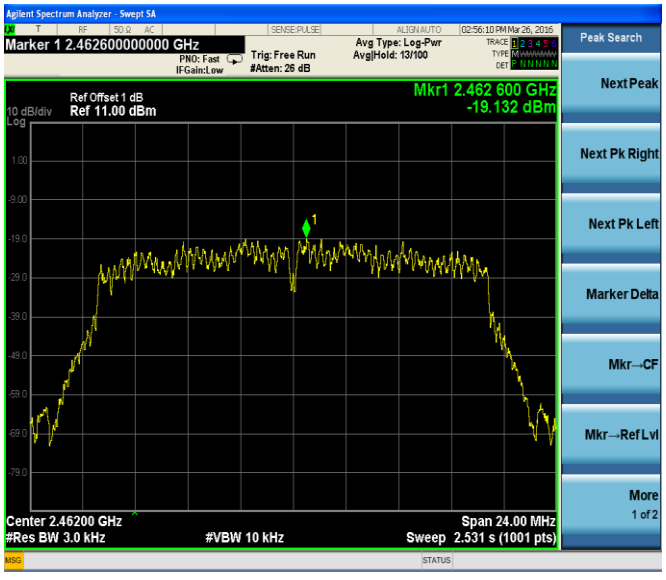
802.11n-HT20 Chain 0-Middle channel



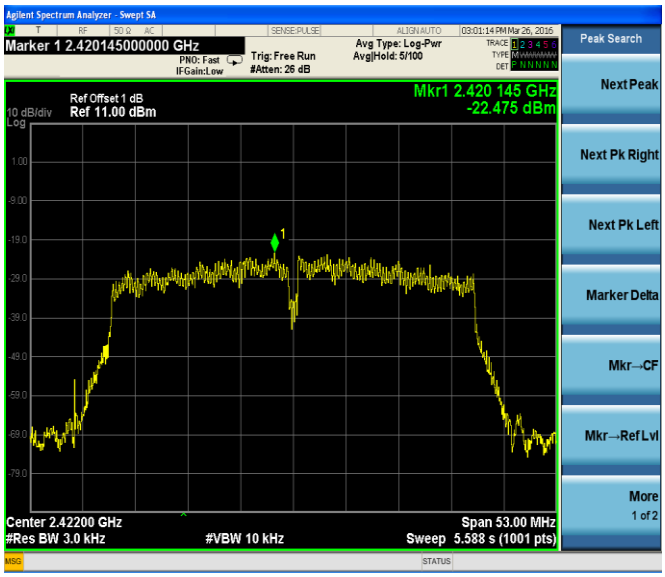
802.11n-HT20 Chain 1-Middle channel



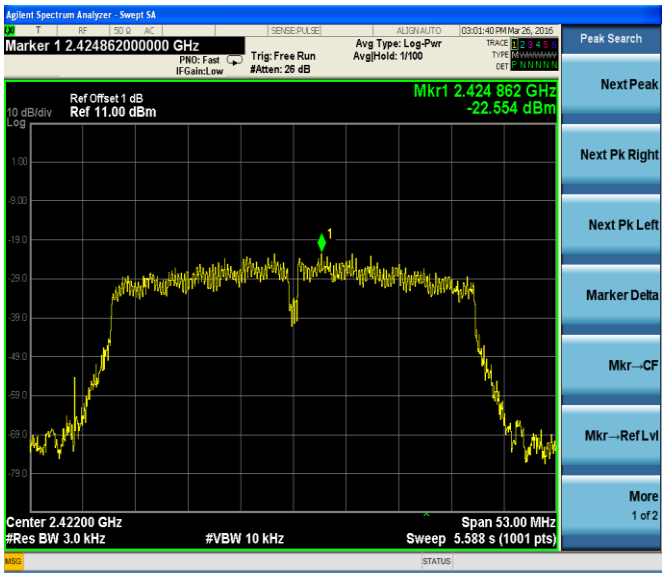
802.11n-HT20 Chain 0-High channel



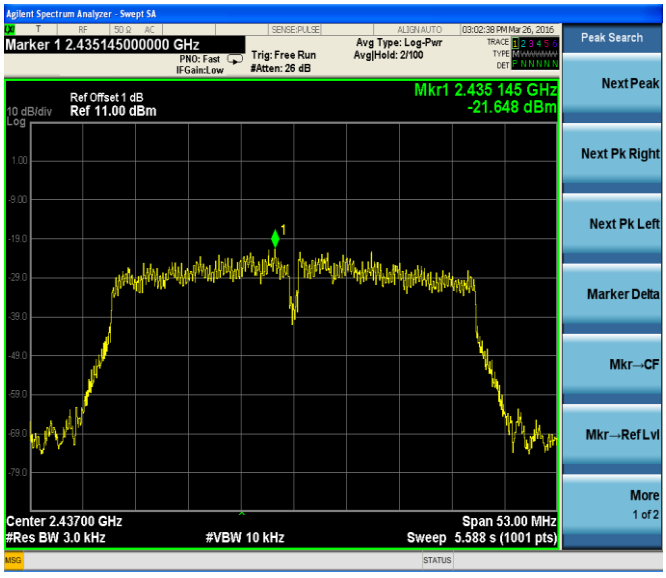
802.11n-HT20 Chain 1-High channel



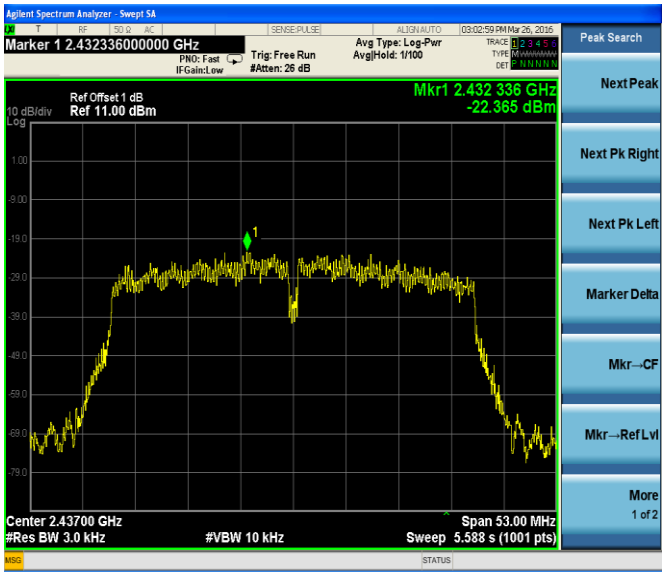
802.11n-HT40 Chain 0-Low channel



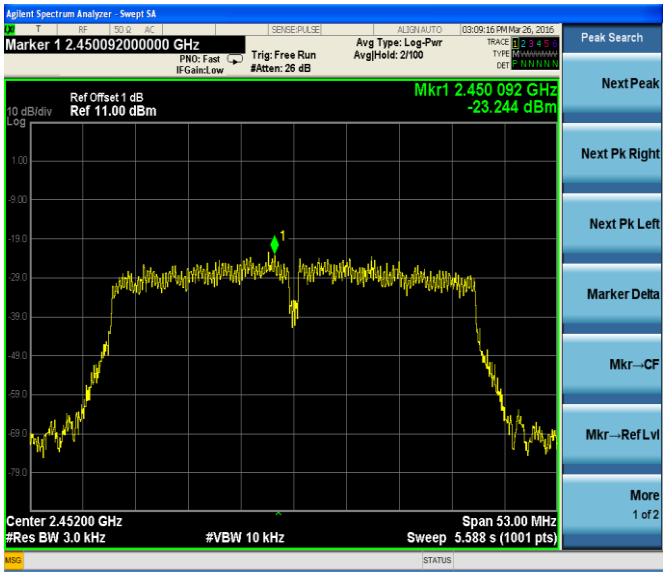
802.11n-HT40 Chain 1-Low channel



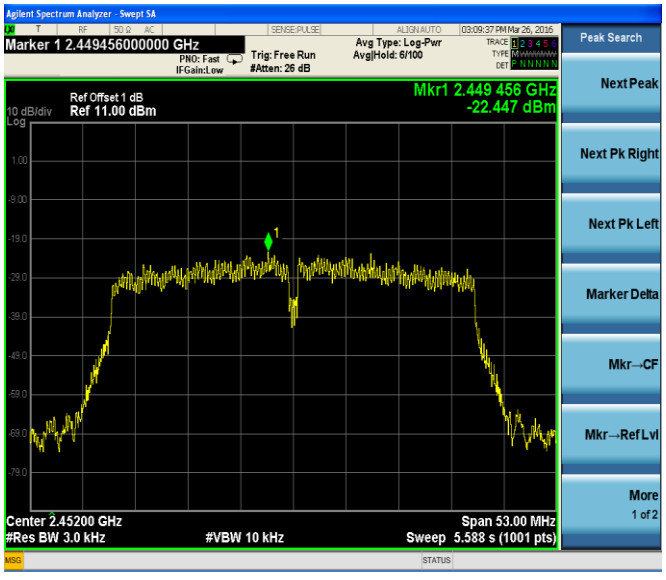
802.11n-HT40 Chain 0-Middle channel



802.11n-HT40 Chain 1-Middle channel



802.11n-HT40 Chain 0-High channel



802.11n-HT40 Chain 1-High channel

5.3. 6 dB Spectrum Bandwidth Measurement

5.3.1. Standard Applicable

According to §15.247(a)(2): For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

5.3.2. Measuring Instruments and Setting

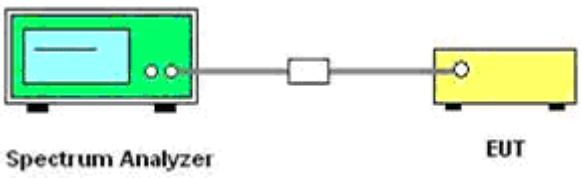
Please refer to section 6 of equipments list in this report. The following table is the setting of the Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> RBW
Detector	Peak
Trace	Max Hold
Sweep Time	100ms

5.3.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
2. The resolution bandwidth and the video bandwidth were set according to KDB558074.
3. Measured the spectrum width with power higher than 6dB below carrier.

5.3.4. Test Setup Layout



5.3.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.3.6. Test Result of 6dB Spectrum Bandwidth

Temperature	25℃	Humidity	60%
Test Engineer	Jacky	Configurations	802.11b/g/n

802.11b

Channel	Frequency	6dB Bandwidth (MHz)		Min. Limit (kHz)	Result
		Chain0	Chain1		
1	2412	9.785	9.292	500	Complies
6	2437	9.056	9.056	500	Complies
11	2462	9.799	9.785	500	Complies

802.11g

Channel	Frequency	6dB Bandwidth (MHz)		Min. Limit (kHz)	Result
		Chain0	Chain1		
1	2412	15.040	15.060	500	Complies
6	2437	15.050	15.050	500	Complies
11	2462	15.020	15.030	500	Complies

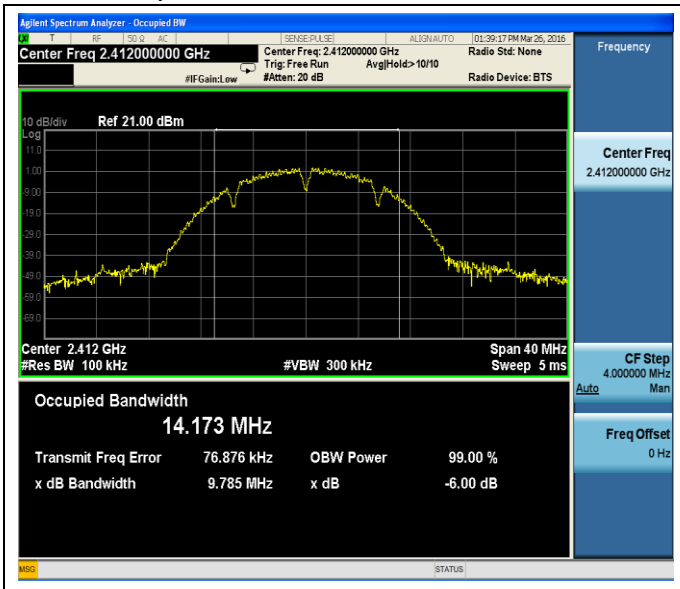
802.11n HT20

Channel	Frequency	6dB Bandwidth (MHz)		Min. Limit (kHz)	Result
		Chain0	Chain1		
1	2412	15.660	15.630	500	Complies
6	2437	15.050	15.050	500	Complies
11	2462	15.620	15.620	500	Complies

802.11n HT40

Channel	Frequency	6dB Bandwidth (MHz)		Min. Limit (kHz)	Result
		Chain0	Chain1		
3	2422	35.010	35.010	500	Complies
6	2437	34.370	34.980	500	Complies
9	2452	35.000	35.010	500	Complies

Test plot of 6 dB Bandwidth:



802.11b Chain 0-Low channel

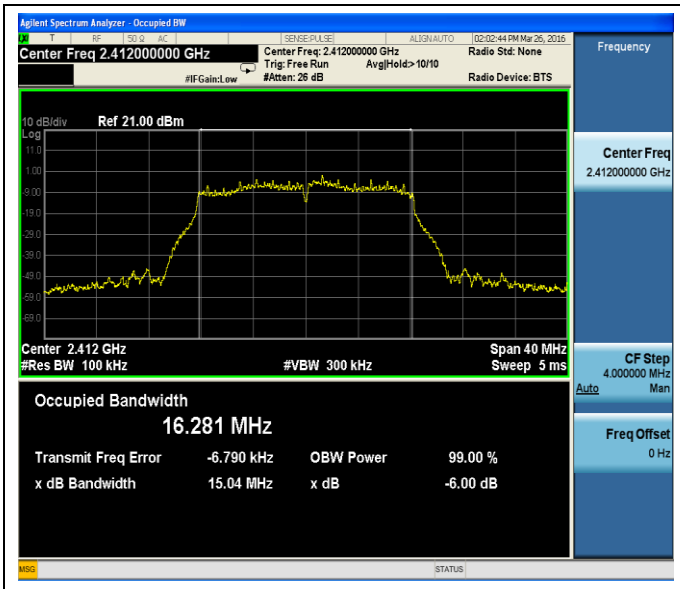
802.11b Chain 1-Low channel

802.11b Chain 0-Middle channel

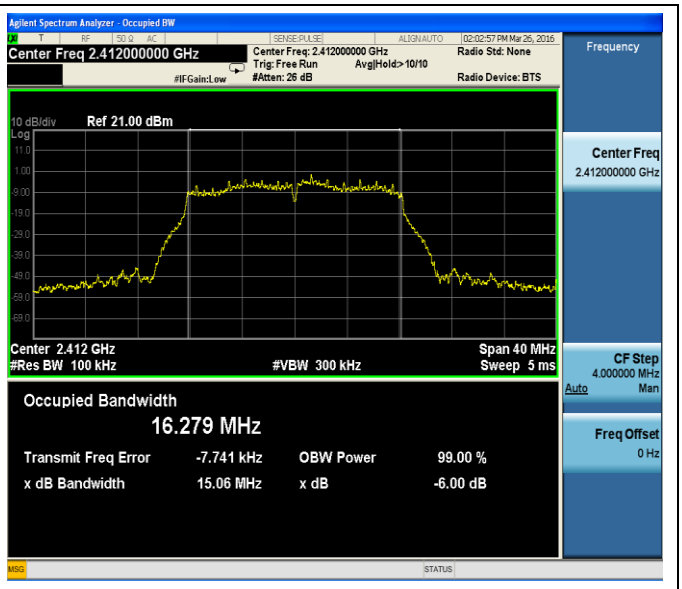
802.11b Chain 1-Middle channel

802.11b Chain 0-High channel

802.11b Chain 1-High channel



802.11g Chain 0-Low channel



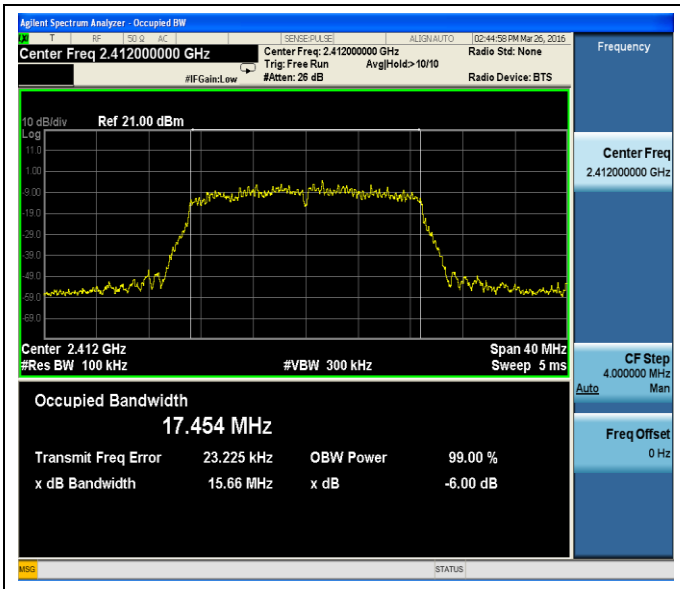
802.11g Chain 1-Low channel

802.11g Chain 0-Middle channel

802.11g Chain 1-Middle channel

802.11g Chain 0-High channel

802.11g Chain 1-High channel



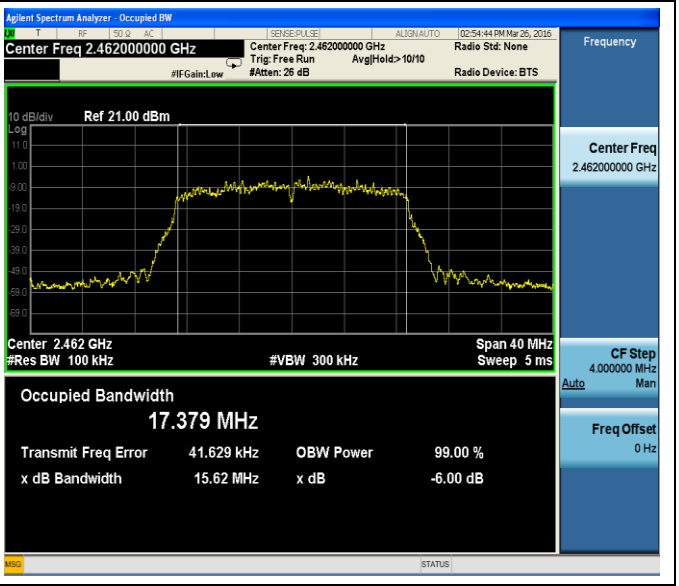
802.11n-HT20 Chain 0-Low channel

802.11n-HT20 Chain 1-Low channel

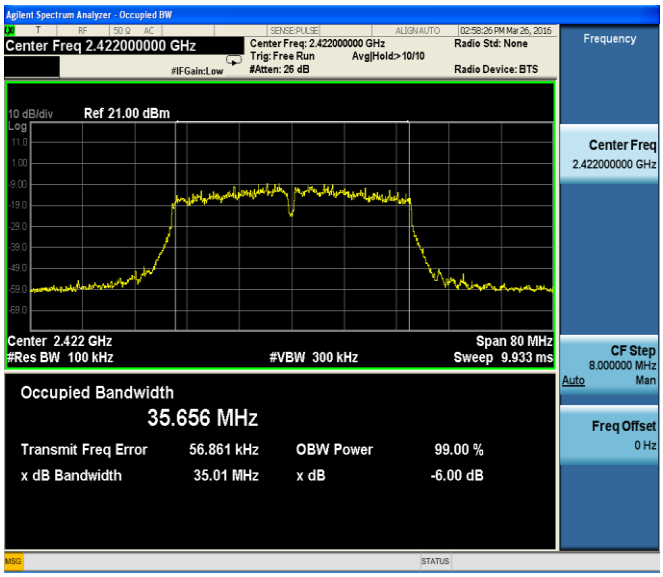
802.11n-HT20 Chain 0-Middle channel

802.11n-HT20 Chain 1-Middle channel

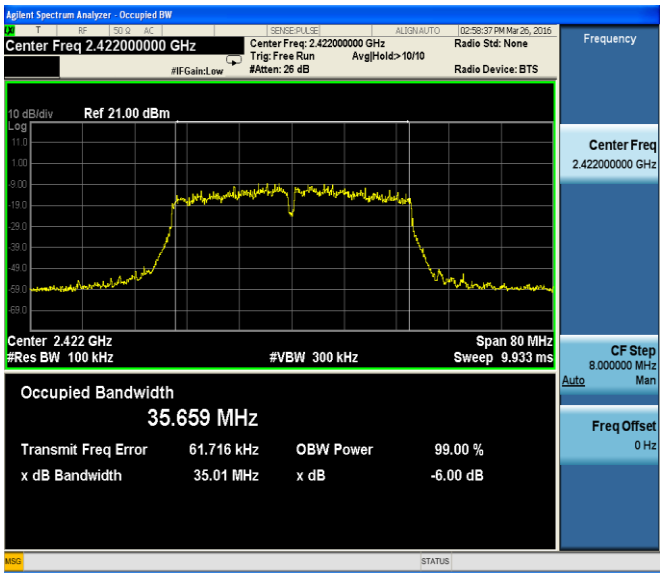
802.11n-HT20 Chain 0-High channel



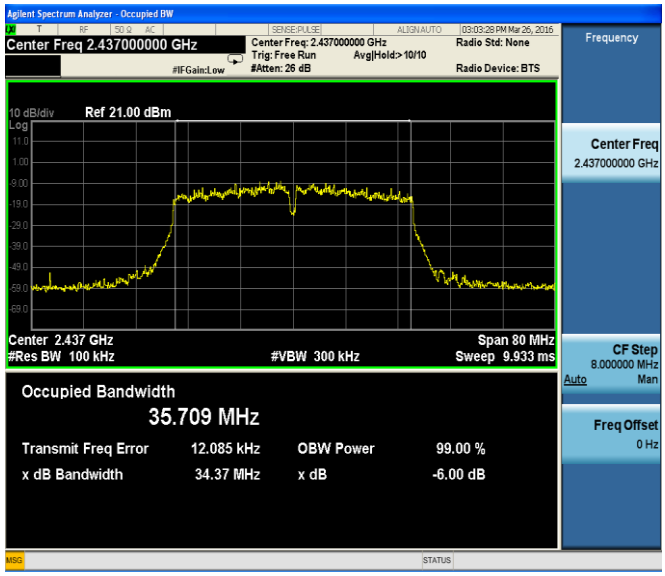
802.11n-HT20 Chain 1-High channel



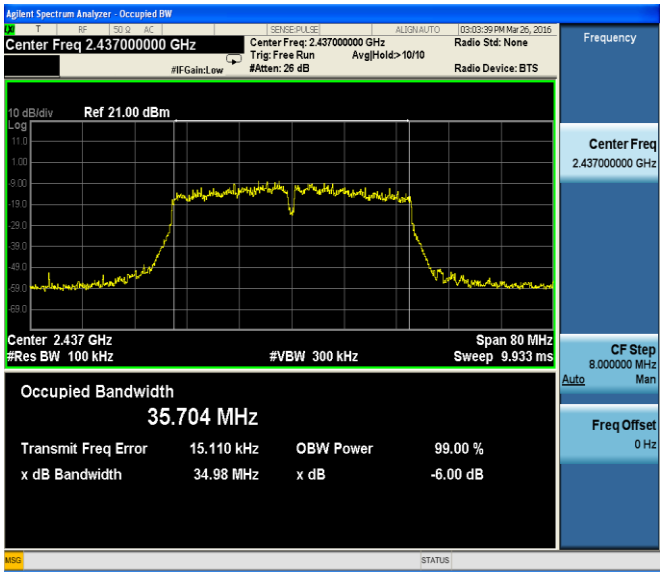
802.11n-HT40 Chain 0-Low channel



802.11n-HT40 Chain 1-Low channel



802.11n-HT40 Chain 0-Middle channel



802.11n-HT40 Chain 1-Middle channel

802.11n-HT40 Chain 0-High channel

802.11n-HT40 Chain 1-High channel

5.4. Radiated Emissions Measurement

5.4.1. Standard Applicable

According to §15.247 (d): 20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

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

5.4.2. Measuring Instruments and Setting

Please refer to section 6 of equipments list in this report. The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 100kHz for QP

5.4.3. Test Procedures

1) **Sequence of testing 9 kHz to 30 MHz**

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions.

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

Premeasurement:

--- The turntable rotates from 0 °to 315 °using 45 °steps.

--- The antenna height is 1.5 meter.

--- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

Final measurement:

--- Identified emissions during the premeasurement the software maximizes by rotating the turntable position (0 °to 360 °) and by rotating the elevation axes (0 °to 360 °).

--- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QPK detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

2) **Sequence of testing 30 MHz to 1 GHz**

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

Premeasurement:

--- The turntable rotates from 0 ° to 315 ° using 45 ° steps.

--- The antenna is polarized vertical and horizontal.

--- The antenna height changes from 1 to 3 meter.

--- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

Final measurement:

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position (± 45 °) and antenna movement between 1 and 4 meter.

--- The final measurement will be done with QP detector with an EMI receiver.

--- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

3) **Sequence of testing 1 GHz to 18 GHz**

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

Premeasurement:

--- The turntable rotates from 0 °to 315 °using 45 °steps.

--- The antenna is polarized vertical and horizontal.

--- The antenna height scan range is 1 meter to 2.5 meter.

--- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.

Final measurement:

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position (±45 °) and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.

--- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

4) **Sequence of testing above 18 GHz**

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 1 meter.

--- The EUT was set into operation.

Premeasurement:

--- The antenna is moved spherical over the EUT in different polarisations of the antenna.

Final measurement:

--- The final measurement will be performed at the position and antenna orientation for all detected emissions that were found during the premeasurements with Peak and Average detector.

--- The final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.