FCC TEST REPORT

for

YICHEN (SHENZHEN) TECHNOLOGY CO., LTD.

Wi-Fi Range Extender

Model Number: JWA-AC2319R

Serial Number: MD87648, WR05, JWA-AC2329R

FCC ID: 2AJSTJWA-AC2319R

Prepared for	:	YICHEN (SHENZHEN) TECHNOLOGY CO., LTD.
Address	:	23/F, Block C1, Nanshan I Park, No. 1001, Xueyuan Road, Taoyuan Street, Nanshan District, Shenzhen , China
Prepared by	:	Keyway Testing Technology Co., Ltd.
Address	:	Baishun Industrial Zone, Zhangmutou Town, Dongguan, Guangdong, China
		Tel: 86-769-8718 2258
		Fax: 86-769-8718 1058

Report No.	:	17KWE045317F
Date of Test	:	Mar. 28 ~ Apr. 6, 2017
Date of Report	:	Apr. 7, 2017

TABLE OF CONTENTS

Test Report Declaration Page
1. TEST SUMMARY 4
2. GENERAL PRODUCT INFORMATION 4
2.1.Product Function 4
2.2.Description of Device (EUT) 4
2.3.Test Supporting System 4
2.4.Independent Operation Modes 5
2.5.Test Sites 5
2.6.List of Test and Measurement Instruments 6
3. TEST SET-UP AND OPERATION MODES 7
3.1.Principle of Configuration Selection 7
3.2.Block Diagram of Test Set-up 7
3.3.Special Accessories and Auxiliary Equipment 7
3.4.Countermeasures to Achieve EMC Compliance 7
4. EMISSION TEST RESULTS 8
4.1.Conducted Emission at the Mains Terminals Test 8
4.2.Radiated Emission Test 13
5. BAND EDGE COMPLIANCE TEST 20
5.1.Limits 20
5.2.Test setup 20
5.3.Test Data 20
6. 26DB AND 6DB BANDWIDTH TEST 24
6.1.Applicable Standard 24
6.2.Test Procedure 24
6.3.Test setup 24
7. OUTPUT POWER TEST 29
7.1.Limits 29
7.2.Test setup 29
7.3.Test result 30
8. DUTY CYCLE 31
8.1.Test Procedure 31
8.2.Test Setup 31
9. PEAK POWER SPECTRAL DENSITY TEST 34
9.1.Limits 34
9.2.Test setup 34
9.3.Test data 35
10. FREQUENCY STABILITY TEST 39
10.1.Limit 39
10.2.Test Configuration 39
10.3.Test Procedure 39
10.4.Test result 40
11. ANTENNA REQUIREMENTS 42
11.1.Limits 42
11.2.Result 42
12. PHOTOGRAPHS OF TEST SET-UP 43
13. PHOTOGRAPHS OF THE EUT 45

Keyway Testing Technology Co., Ltd.

Applicant: **Address:**	YICHEN (SHENZHEN) TECHNOLOGY CO., LTD. 23/F, Block C1, Nanshan I Park, No. 1001, Xueyuan Road, Taoyuan Street, Nanshan District, Shenzhen, China
Manufacturer: **Address:**	YICHEN (SHENZHEN) TECHNOLOGY CO., LTD. 23/F, Block C1, Nanshan I Park, No. 1001, Xueyuan Road, Taoyuan Street, Nanshan District, Shenzhen, China
E.U.T:	Wi-Fi Range Extender
Model Number:	JWA-AC2319R
Serial Model:	MD87648, WR05, JWA-AC2329R
Trade Name:	JCG **Serial No.:** ------
Date of Receipt:	Mar. 28, 2017 **Date of Test:** Mar. 28 ~ Apr. 6, 2017
Test Specification:	FCC Part 15, Subpart 15.407: 2016 ANSI C63.10:2013 KDB789033 D02 v01r03
Test Result:	The equipment under test was found to be compliance with the requirements of the standards applied. **Issue Date: Apr. 7, 2017**

Tested by:	Reviewed by:	Approved by:
Keven Wu/ Engineer	Mark Li / Supervisor	Andy Gao/ Supervisor

Other Aspects:

None.

Abbreviations: OK/P=passed fail/F=failed n.a/N=not applicable E.U.T=equipment under tested

This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Keyway Testing Technology Co., Ltd.

1. TEST SUMMARY

Test Items	Test Requirement	Result
Conducted Emissions	15.207	PASS
Radiated Emissions	15.407(b)	PASS
26dB bandwidth and 99%dB Bandwidth	15.407 (a)	PASS
Power density	15.407 (a)	PASS
Maximum Peak Output Power	15.407 (a)	PASS
Emissions from out of band	15.407 (b)	PASS
Frequency Stability	15.407 (g)	PASS
Antenna Requirement	15.203	PASS

2. GENERAL PRODUCT INFORMATION

2.1.Product Function

Refer to Technical Construction Form and User Manual.

2.2.Description of Device (EUT)

Product Name:	Wi-Fi Range Extender
Model No.:	JWA-AC2319R
Serial Model:	MD87648, WR05, JWA-AC2329R
Model Difference	All the models are the same circuit and RF module, except the model names and colour.
Operation Frequency:	5180MHz ~ 5240MHz
Channel numbers:	4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40)
Modulation technology:	OFDM
Bit Rate of Transmitter	802.11a: 54/48/36/24/18/12/9/6Mbps 802.11n(HT20): 150/144.44/130/117/115.56/104/86.67/ 78/52/6.5Mbps 802.11n(HT40): 150/120/108/90/54/45/13.5Mbps
Antenna Type:	PIFA Antenna
Antenna gain:	2.6dBi

2.3.Test Supporting System

Notebook
Manufacturer: Lenovo
M/N: Lenovo G475
S/N: GB14477457

2.4.Independent Operation Modes

The basic operation modes are:

The EUT was configured for testing in an engineering mode which was provided by the manufacturer.

For 5150~5250 MHz band:

802.11a, 802.11n(HT20) mode Channel 5180MHz, 5200MHz, 5240MHz were tested.

802.11n(HT40) mode Channel 5190MHz, 5230MHz were tested.

802.11a data speed:54/48/36/24/18/12/9/6Mbps;

802.11n(HT20) data speed: 150/144.44/130/117/115.56/104/86.67/78/52/6.5Mbps;

802.11n(HT40) data speed: 150/120/108/90/54/45/13.5Mbps.

According to ANSI C63.10 standards, the test results only need to reflect the worst test case.

The worst test case: 6Mbps for 802.11a, 6.5Mbps for 802.11n(HT20), 13.5Mbps for 802.11n(HT40) and its data have been recorded in this report.

2.5.Test Sites

Test Facilities

Lab Qualifications : Certificated by Industry Canada
Registration No.: 9868A
Date of registration: December 8, 2011

Certificated by FCC, USA
Registration No.: 370994
Date of registration: February21, 2012

Certificated by CNASChina
Registration No.: CNAS L5783
Date of registration: August 8, 2012

2.6.List of Test and Measurement Instruments

For conducted emission at the mains terminals test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESCI	101156	Apr. 09,17	Apr. 09,18
Artificial Mains Network	Rohde&Schwarz	ENV216	101315	Apr. 09,17	Apr. 09,18
Artificial Mains Network (AUX)	Rohde&Schwarz	ENV216	101314	Apr. 09,17	Apr. 09,18
RF Cable	FUJIKURA	3D-2W	944 Cable	Apr. 09,17	Apr. 09,18

For radiated emission test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESCI	101156	Apr. 09,17	Apr. 09,18
System Simulator	Agilent	E5515C	GB43130245	Apr. 09,17	Apr. 09,18
Power Splitter	Weinschel	1506A	NW425	Apr. 09,17	Apr. 09,18
Bilog Antenna	ETS-LINDGREN	3142D	135452	Apr. 09,17	Apr. 09,18
Remark: Testable Frequency Range: 26MHz–6GHz					
Spectrum Analyzer	Agilent	E4407B	MY4511304	Apr. 09,17	Apr. 09,18
Remark: Testable Frequency Range: 100Hz–26.5GHz					
Spectrum Analyzer	R&S	FSV40	132.1.3008K39 -100967	Apr. 09,17	Apr. 09,18
Remark: Testable Frequency Range: 10Hz–40GHz					
3m Semi-anechoic Chamber	ETS-LINDGREN	966	KW01	Apr. 09,17	Apr. 09,18
Signal Amplifier	SONOMA	310	187016	Apr. 09,17	Apr. 09,18
Signal Amplifier	Agilent	8449B	3008A00251	Apr. 09,17	Apr. 09,18
RF Cable	IMRO	IMRO-400	966 Cable 1#	N/A	N/A
MULTI-DEVICE Controller	ETS-LINDGREN	2090	126913	N/A	N/A
Horn Antenna	DAZE	ZN30701	11003	Apr. 09,17	Apr. 09,18
Remark: Testable Frequency Range: 1GHz–18GHz					
Horn Antenna	SCHWARZBECK	BBHA9170	9170-068	Apr. 09,17	Apr. 09,18
Remark: Testable Frequency Range: 18GHz-40GHz					
Spectrum Analyzer	Agilent	8593E	3911A04271	Apr. 09,17	Apr. 09,18
Remark: Testable Frequency Range: 9kHz–22GHz					
Spectrum Analyzer	Agilent	E4408B	MY44211125	Apr. 09,17	Apr. 09,18
Remark: Testable Frequency Range: 9kHz–26.5GHz					
Signal Amplifier	DAZE	ZN3380C	11001	Apr. 09,17	Apr. 09,18
HighPass filter	Micro	HPM50111	324216	Apr. 09,17	Apr. 09,18
Filter	COM-MW	ZBSF-C836.5-25-X	KW032	Apr. 09,17	Apr. 09,18
Filter	COM-MW	ZBSF-C1747.5-75-X2	KW035	Apr. 09,17	Apr. 09,18
Filter	COM-MW	ZBSF-C1880-60-X2	KW037	Apr. 09,17	Apr. 09,18
Constant temperature and humidity box	GF	GTH-800-40-1P	MAA9906-005	Apr. 09,17	Apr. 09,18
Splitter	Agilent	11636B	0025164	Apr. 09,17	Apr. 09,18
Power Meter	Anritsu	ML2495A	1204003	Apr. 09,17	Apr. 09,18
Power Sensor	Anritsu	MA2411B	1126150	Apr. 09,17	Apr. 09,18
Spectrum Analyzer	Agilent	N9020A	MY56070279	Apr. 09,17	Apr. 09,18
Remark: Testable Frequency Range: 10Hz–26.5GHz					

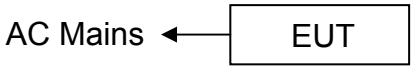
3. TEST SET-UP AND OPERATION MODES

3.1.Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

3.2.Block Diagram of Test Set-up

System Diagram of Connections between EUT and Simulators



(EUT: Wi-Fi Range Extender)

3.3.Special Accessories and Auxiliary Equipment

Notebook:

Manufacturer:	Lenovo
M/N:	Lenovo G475
S/N:	GB14477457

3.4.Countermeasures to Achieve EMC Compliance

None.

4. EMISSION TEST RESULTS

4.1.Conducted Emission at the Mains Terminals Test

Limit 15.207 limits

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

Test Setup

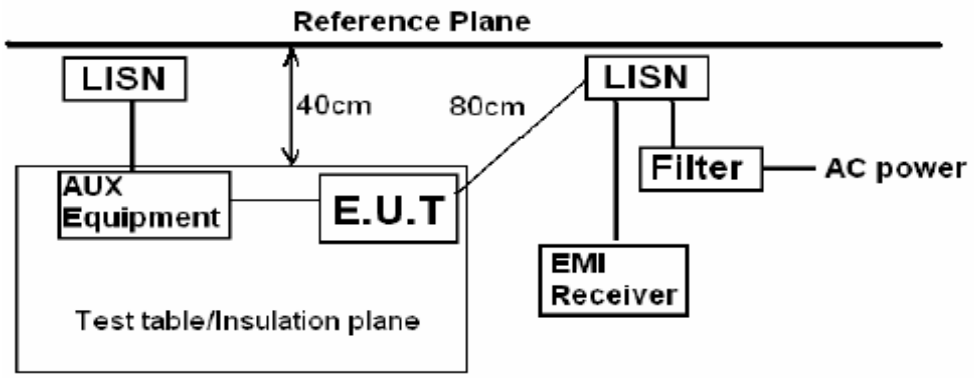
1.The EUT was put on a wooden table which was 0.8 m high above the ground and connected to the AC mains through the Artificial Mains Network (AMN). Where the mains cable supplied by the manufacture was longer than 0.8 m, the excess was folded back and forth parallel to the cable at the center so as to form a bundle no longer than 0.4 m.

2.The EUT was kept 0.4 m from any other earthed conducting surface. Both sides of AC line were checked to find out the maximum conducted emission levels according to the test procedure during the conducted emission test.

3.The frequency range from 150 kHz to 30 MHz was investigated.

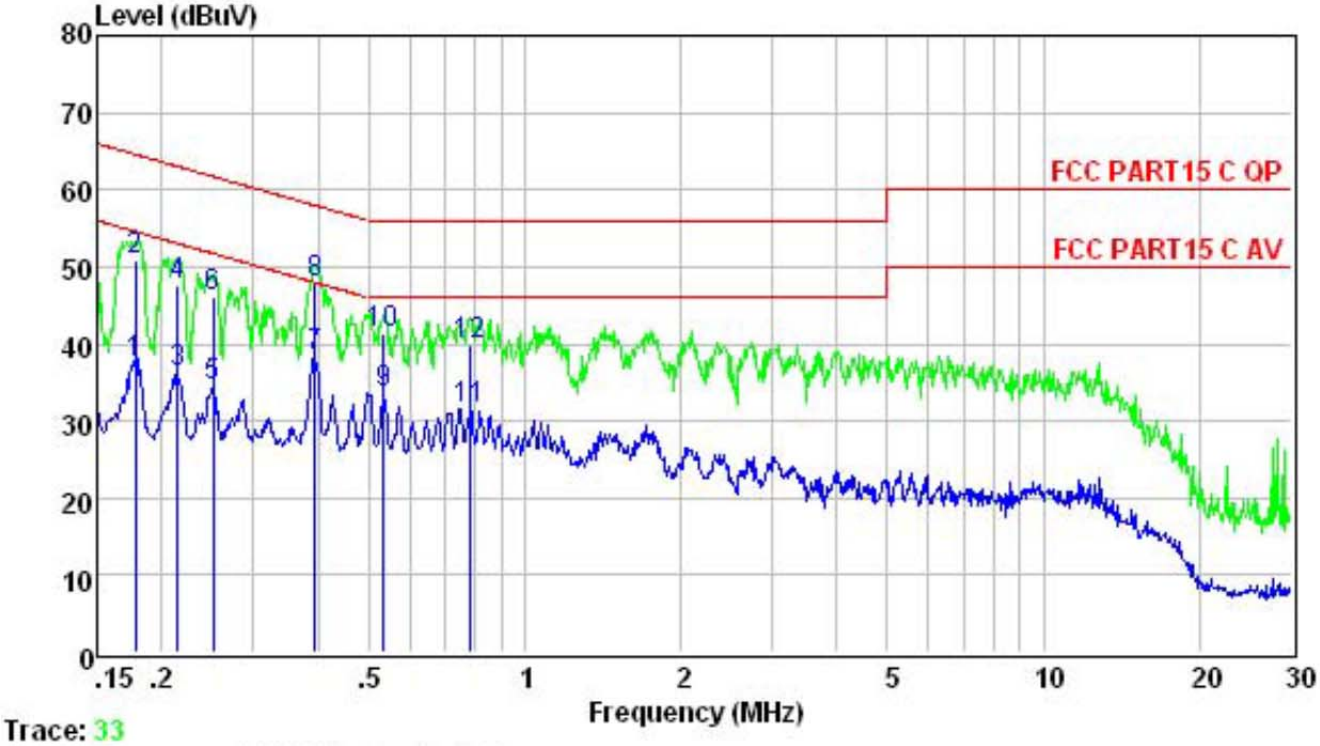
4.The bandwidth of the test receiver was set at 9 kHz.

5.Pretest for all mode, and the test data of the worst case condition(s) was reported on the following page.



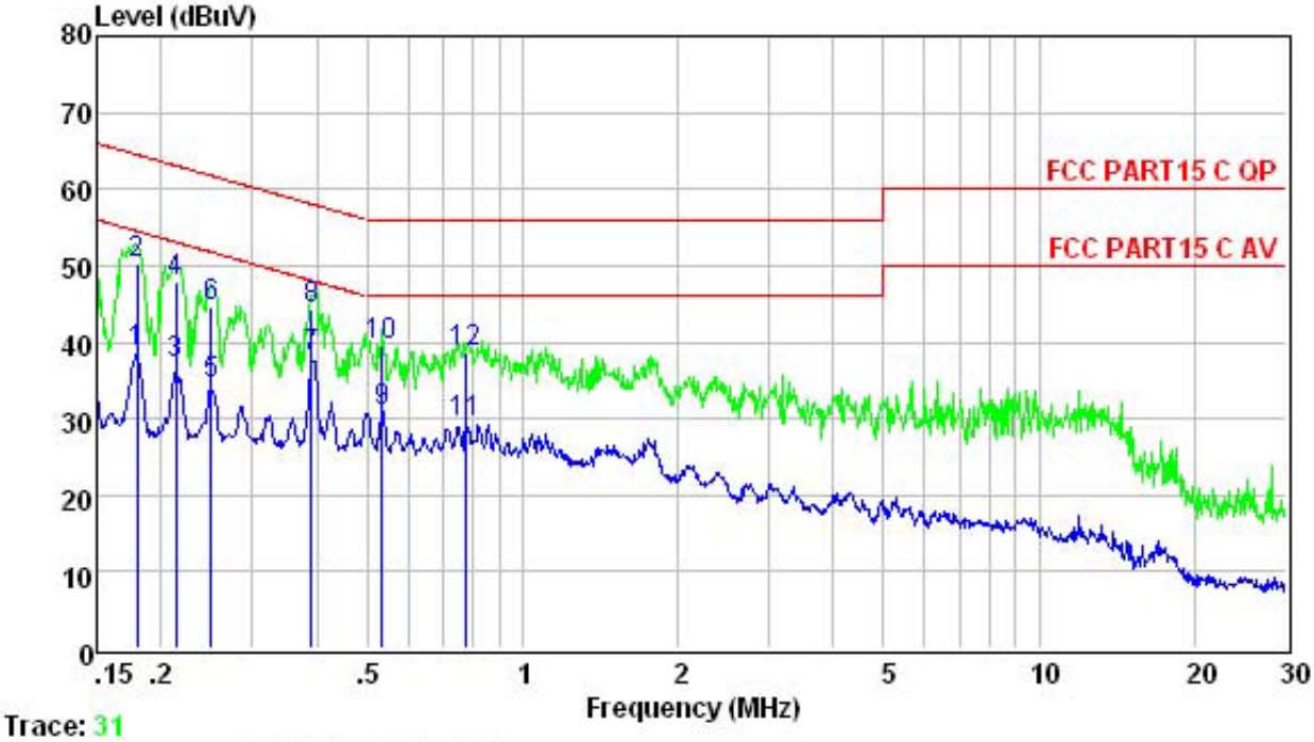
Remark:
E.U.T: Equipment Under Test
LISN: Line Impedence Stabilization Network
Test table height=0.8m

EUT：	Wi-Fi Range Extender	Model Name ：	JWA-AC2319R
Temperature：	26℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase:	L
Test Voltage：	AC 120V/60Hz	Test Mode：	Link Mode



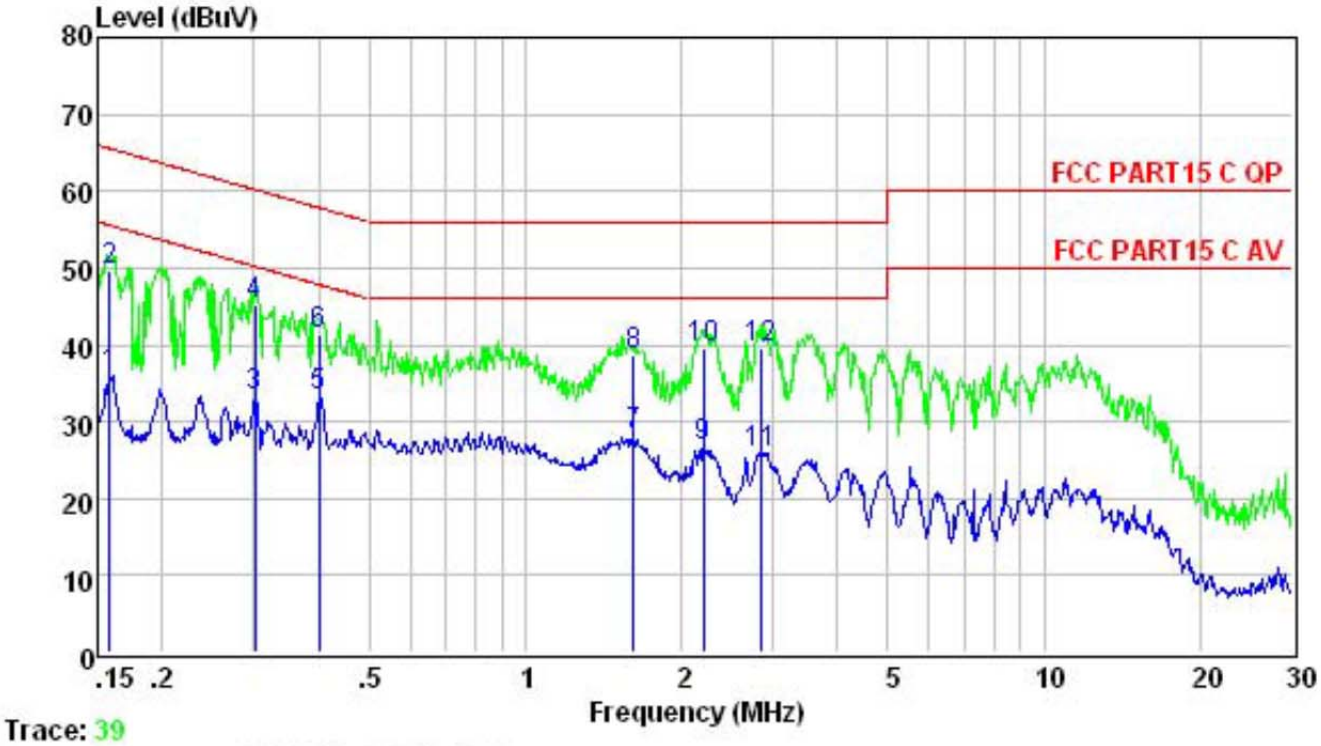
	Freq	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	
1	0.178	37.37	54.59	-17.22	Average
2	0.178	50.80	64.59	-13.79	QP
3	0.215	36.28	53.01	-16.73	Average
4	0.215	47.60	63.01	-15.41	QP
5	0.251	34.39	51.73	-17.34	Average
6	0.251	46.20	61.73	-15.53	QP
7	0.393	38.40	47.99	-9.59	Average
8	0.393	47.80	57.99	-10.19	QP
9	0.535	33.71	46.00	-12.29	Average
10	0.535	41.30	56.00	-14.70	QP
11	0.788	31.59	46.00	-14.41	Average
12	0.788	39.90	56.00	-16.10	QP

EUT：	Wi-Fi Range Extender	Model Name ：	JWA-AC2319R
Temperature：	26℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase:	N
Test Voltage：	AC 120V/60Hz	Test Mode：	Link Mode



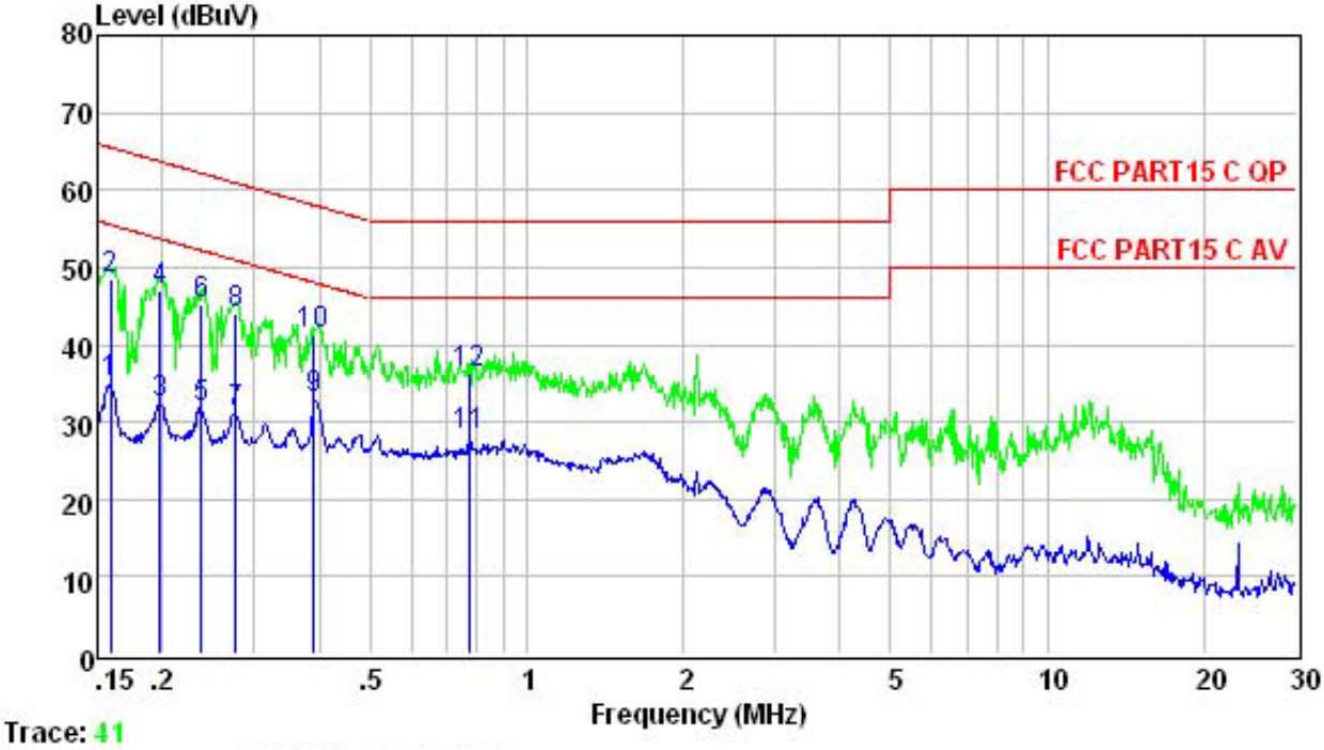
	Freq	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	
1	0.180	38.61	54.50	-15.89	Average
2	0.180	50.20	64.50	-14.30	QP
3	0.214	37.05	53.05	-16.00	Average
4	0.214	47.80	63.05	-15.25	QP
5	0.249	34.52	51.78	-17.26	Average
6	0.249	44.50	61.78	-17.28	QP
7	0.391	38.01	48.03	-10.02	Average
8	0.391	44.20	58.03	-13.83	QP
9	0.535	30.98	46.00	-15.02	Average
10	0.535	39.70	56.00	-16.30	QP
11	0.775	29.33	46.00	-16.67	Average
12	0.775	38.60	56.00	-17.40	QP

EUT：	Wi-Fi Range Extender	Model Name ：	JWA-AC2319R
Temperature：	26℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase:	L
Test Voltage：	AC 240V/60Hz	Test Mode：	Link Mode



	Freq	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	
1	0.158	36.04	55.56	-19.52	Average
2	0.158	49.60	65.56	-15.96	QP
3	0.302	33.31	50.19	-16.88	Average
4	0.302	45.20	60.19	-14.99	QP
5	0.400	33.44	47.86	-14.42	Average
6	0.400	41.20	57.86	-16.66	QP
7	1.619	28.32	46.00	-17.68	Average
8	1.619	38.60	56.00	-17.40	QP
9	2.201	26.65	46.00	-19.35	Average
10	2.201	39.63	56.00	-16.37	QP
11	2.839	26.01	46.00	-19.99	Average
12	2.839	39.60	56.00	-16.40	QP

EUT：	Wi-Fi Range Extender	Model Name ：	JWA-AC2319R
Temperature：	26℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase:	N
Test Voltage：	AC 240V/60Hz	Test Mode：	Link Mode



	Freq	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	
1	0.159	34.98	55.52	-20.54	Average
2	0.159	48.60	65.52	-16.92	QP
3	0.198	32.56	53.71	-21.15	Average
4	0.198	46.90	63.71	-16.81	QP
5	0.238	31.90	52.17	-20.27	Average
6	0.238	45.20	62.17	-16.97	QP
7	0.276	31.17	50.94	-19.77	Average
8	0.276	44.10	60.94	-16.84	Peak
9	0.391	32.89	48.03	-15.14	Average
10	0.391	41.30	58.03	-16.73	QP
11	0.775	28.38	46.00	-17.62	Average
12	0.775	36.30	56.00	-19.70	QP

4.2.Radiated Emission Test

Limit 15.209 limits

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

Restricted bands of operation

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

Test setup

The EUT was placed on a turn table which was 0.8 m(above 1GHz, the high was 1.5m) above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 3 m away from the receiving antenna which was mounted on an antenna tower. The measuring antenna moved up and down to find out the maximum emission level. It moved from 1 m to 4 m for both horizontal and vertical polarizations.

The EUT was tested in the Chamber Site. It was pre-scanned with a Peak detector from the spectrum, and all the final readings from the test receiver were measured with the Quasi-Peak detector.

The bandwidth of the EMI test receiver is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's VBW is set at 3MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz, Both PK and AV measure, PK detector is used.

The frequency range from 30MHz to 10th harmonicare checked. and no any emissions were found from 18GHz to 40 GHz, So the radiated emissions from 18GHz to 40GHz were not record.

Notes: 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading-Preamp Factor.

2. Measurement Uncertainty: ±3.2 dB at a level of confidence of 95%.

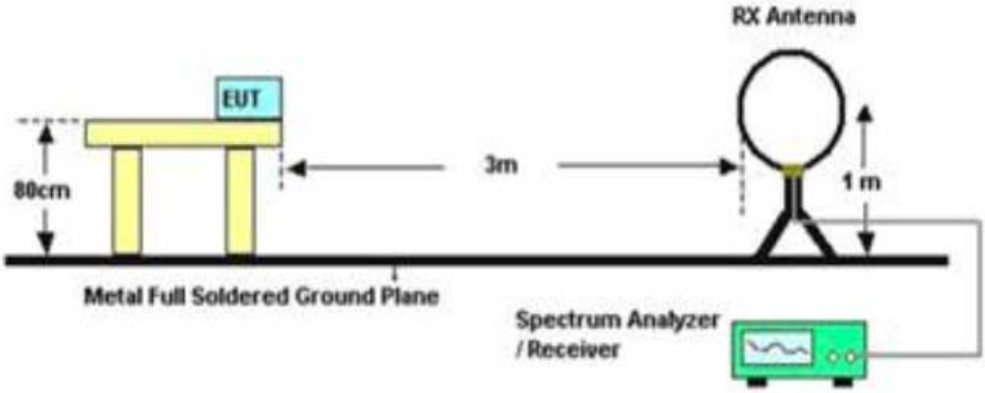
3. For emissions above 1GHz, if peak level comply with average limit, then the average level is deemed to comply with average limit.

4. For emissions below 1GHz, pretest for all mode, The test data of the worst case condition(s) was reported on the following pages.

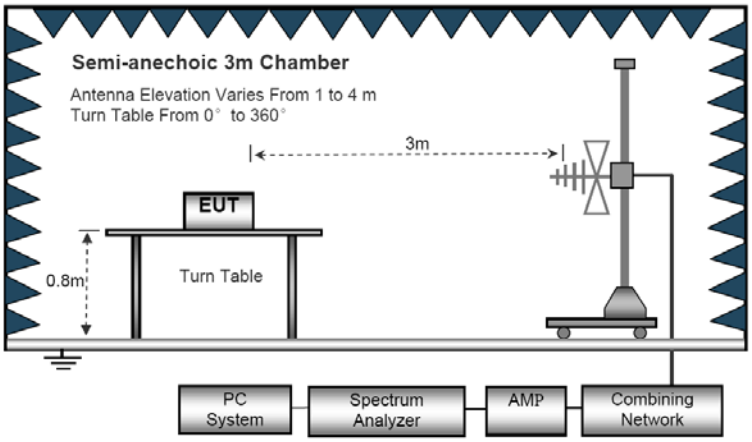
5. For Both PK and AV value above 1GHz, PK detector is used.

Radiated Emission Test-Up

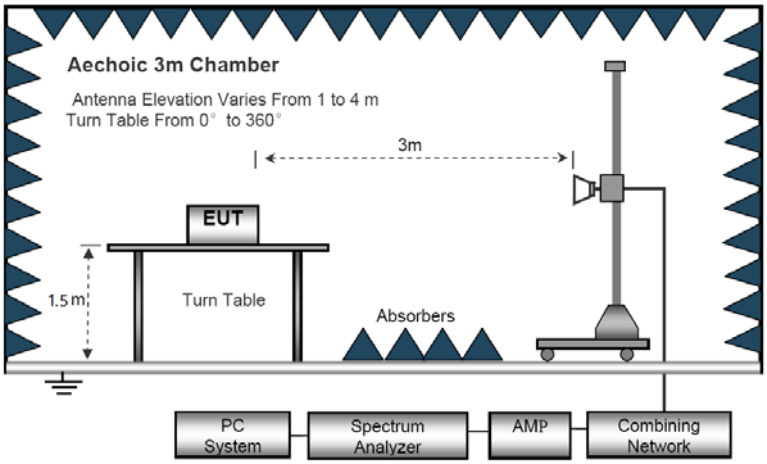
Below 30MHz



Below 1GHz



Above 1GHz



EUT：	Wi-Fi Range Extender	Model Name ：	JWA-AC2319R
Temperature：	20℃	Relative Humidity：	48%
Pressure：	1010hPa	Test Mode：	Link Mode
Test Voltage：	AC 120V/60Hz		

Below 30MHz

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	P
--	--	--	--	P

Note:

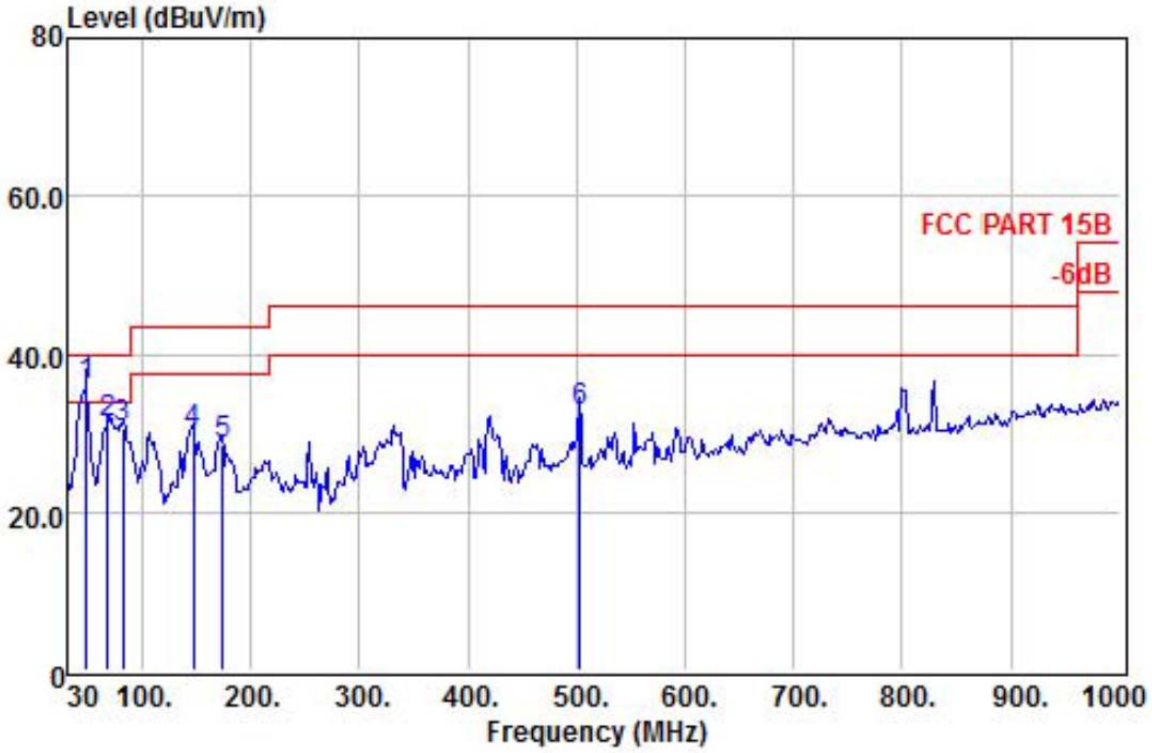
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =40 log (specific distance/test distance)(dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.

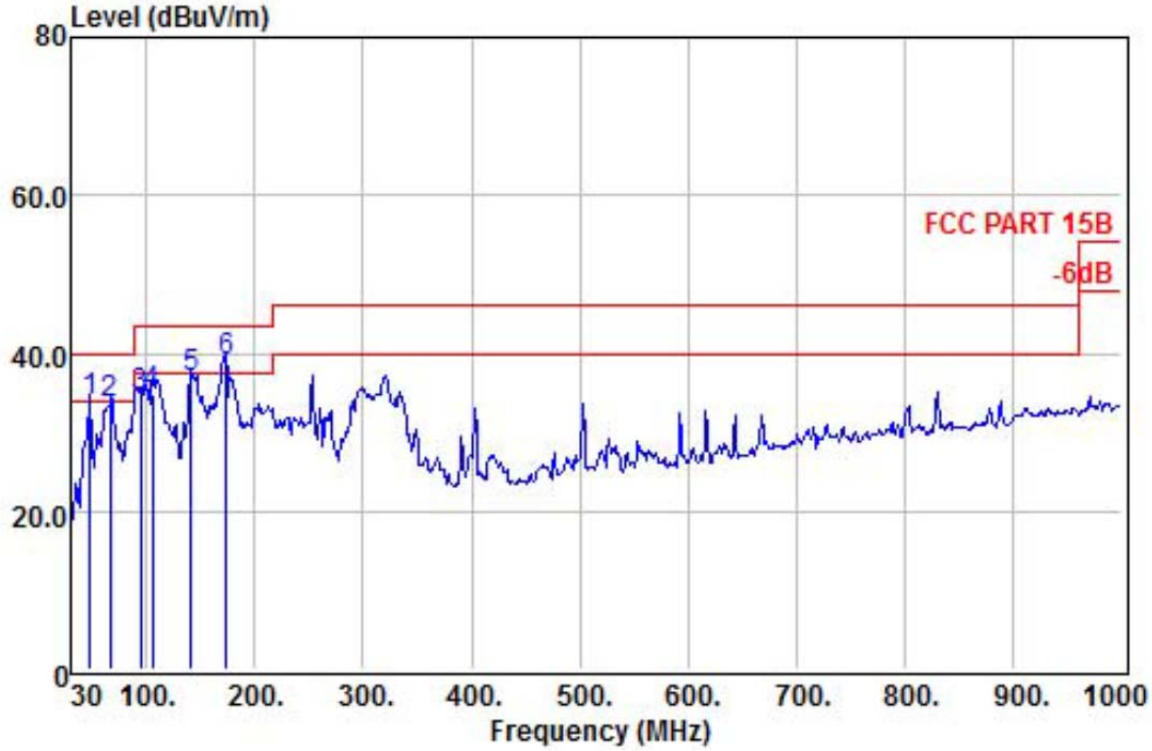
Below 1GHz			
EUT：	Wi-Fi Range Extender	Model Name ：	JWA-AC2319R
Temperature：	20℃	Relative Humidity：	48%
Pressure：	1010hPa	Test Mode：	TX-5180(802.11a)
Test Voltage：	AC 120V/60Hz		

Vertical



		Freq	Preamp Factor	ReadAntenna Level	Antenna Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
		MHz	dB	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB	
1	!	47.46	31.39	56.80	9.84	0.75	36.00	40.00	-4.00	QP
2		67.83	31.31	54.32	7.46	0.85	31.32	40.00	-8.68	QP
3		81.41	31.34	52.97	8.16	0.85	30.64	40.00	-9.36	QP
4		146.40	31.23	51.31	8.78	1.22	30.08	43.50	-13.42	QP
5		173.56	31.18	48.19	10.21	1.39	28.61	43.50	-14.89	QP
6		503.36	30.60	41.61	18.77	2.85	32.63	46.00	-13.37	QP

Horizontal



		Freq	Preamp Factor	Read Level	Antenna Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
		MHz	dB	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB	
1		47.46	31.39	54.70	9.84	0.75	33.90	40.00	-6.10	QP
2		66.86	31.31	56.52	7.44	0.85	33.50	40.00	-6.50	QP
3		94.02	31.35	55.66	9.30	0.94	34.55	43.50	-8.95	QP
4		105.66	31.33	55.69	9.43	1.03	34.82	43.50	-8.68	QP
5		141.55	31.22	58.41	8.49	1.22	36.90	43.50	-6.60	QP
6	!	173.56	31.18	58.57	10.21	1.39	38.99	43.50	-4.51	QP

Note:1. Absolute Level= Reading Level+ antenna Factor + cable loss - Preamp factor,
2. Over Limit= Absolute Level – Limit;
3.Only the worst case is presented in the report .

Above 1GHz			
EUT：	Wi-Fi Range Extender	Model Name ：	JWA-AC2319R
Temperature：	20℃	Relative Humidity：	48%
Pressure：	1010hPa	Test Mode：	TX-802.11a
Test Voltage：	AC 120V/60HZ		

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Antenna Factor (dB)	Cable loss (dB)	Preamp factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
802.11a-5180									
V	10360	33.52	23.76	17.06	28.84	45.5	54	-8.5	Average
V	10360	45.37	23.76	17.06	28.84	57.35	74	-16.65	Peak
V	15540	32.34	23.53	20.36	29.63	46.60	54	-7.4	Average
V	15540	39.85	23.53	20.36	29.63	54.11	74	-19.89	Peak
H	10360	31.35	23.76	17.06	28.84	43.33	54	-10.67	Average
H	10360	42.67	23.76	17.06	28.84	54.65	74	-19.35	Peak
H	15540	29.85	23.53	20.36	29.63	44.11	54	-9.89	Average
H	15540	36.27	23.53	20.36	29.63	50.53	74	-23.47	Peak
802.11a-5200									
V	10400	31.76	24.04	17.12	28.84	44.08	54	-9.92	Average
V	10400	42.85	24.04	17.12	28.84	55.17	74	-18.83	Peak
V	15600	31.68	23.81	20.39	29.64	46.24	54	-7.76	Average
V	15600	39.86	23.81	20.39	29.64	54.42	74	-19.58	Peak
H	10400	32.26	24.04	17.12	28.84	44.58	54	-9.42	Average
H	10400	43.65	24.04	17.12	28.84	55.97	74	-18.03	Peak
H	15600	28.48	23.81	20.39	29.64	43.04	54	-10.96	Average
H	15600	38.52	23.81	20.39	29.64	53.08	74	-20.92	Peak
802.11a-5240									
V	10480	31.37	25.18	17.06	28.85	44.76	54	-9.24	Average
V	10480	43.53	25.18	17.06	28.85	56.92	74	-17.08	Peak
V	15720	31.65	24.25	20.45	29.67	46.68	54	-7.32	Average
V	15720	38.71	24.25	20.45	29.67	53.74	74	-20.26	Peak
H	10480	30.75	25.18	17.06	28.85	44.14	54	-9.86	Average
H	10480	43.98	25.18	17.06	28.85	57.37	74	-16.63	Peak
H	15720	29.75	24.25	20.45	29.67	44.78	54	-9.22	Average
H	15720	38.53	24.25	20.45	29.67	53.56	74	-20.44	Peak

Note:

Absolute Level= Reading Level+Antenna Factor+Cable Loss-Preamp Factor,

Over Limit= Absolute Level – Limit

“802.11a” mode is the worst mode and show in the report. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has not to be reported.

5. BAND EDGE COMPLIANCE TEST

5.1.Limits

All emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.

5.2.Test setup

Test method: FCC KDB 789033 G)& Parts 15.407(b)(4) & 15.209(a)

Same as Clause 4.2.

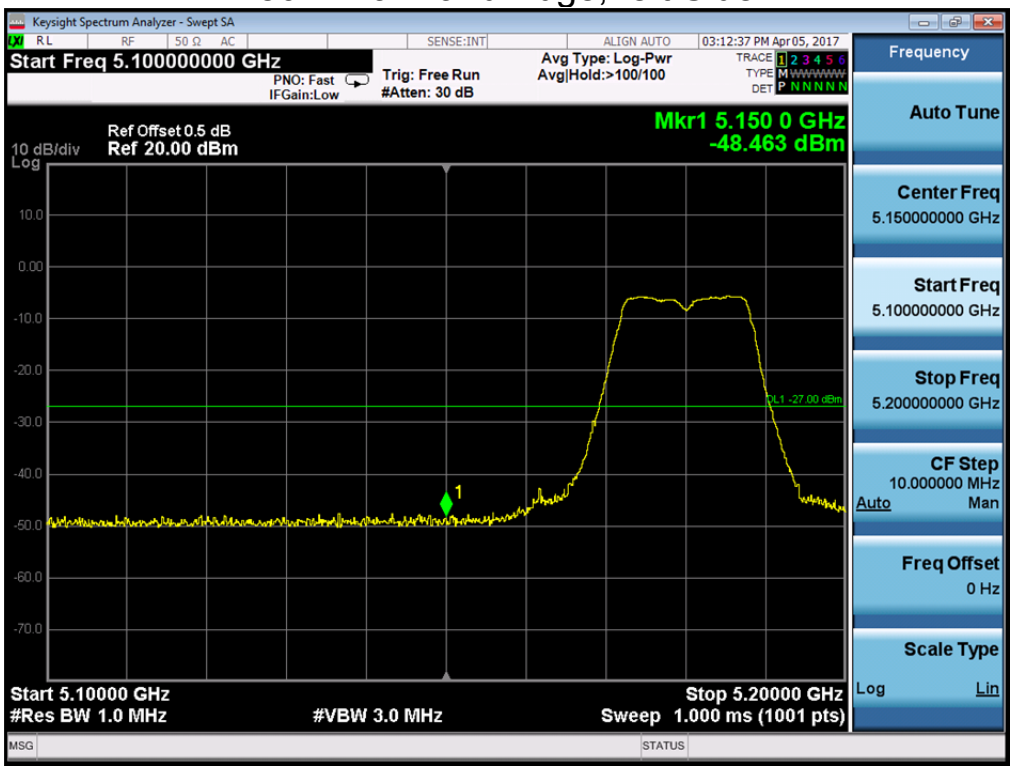
5.3.Test Data

Frequency	Meter Reading	antenna Factor	cable loss	preamp factor	Emission Level	EIRP	Limit	Result	Comment
(MHz)	(dBμV)	(dB)	(dB)	(dB)	(dBμV/m)	[dBm]	[dBm]		
802.11a									
5150	35.12	28.66	12.93	27.62	49.09	-46.11	-27.00	Pass	Vertical
5350	35.55	28.73	13.09	27.62	49.75	-45.45	-27.00	Pass	Vertical
5150	31.75	27.63	15.16	27.67	46.87	-48.33	-27.00	Pass	Horizontal
5350	32.98	27.82	15.66	27.68	48.78	-46.42	-27.00	Pass	Horizontal
802.11n(HT20)									
5150	34.84	28.66	12.93	27.62	48.81	-46.39	-27.00	Pass	Vertical
5350	34.12	28.73	13.09	27.62	48.32	-46.88	-27.00	Pass	Vertical
5150	30.34	27.63	15.16	27.67	45.46	-49.74	-27.00	Pass	Horizontal
5350	31.65	27.82	15.66	27.68	47.45	-47.75	-27.00	Pass	Horizontal
802.11n(HT40)									
5150	34.12	28.66	12.93	27.62	48.09	-47.11	-27.00	Pass	Vertical
5350	34.35	28.73	13.09	27.62	48.55	-46.65	-27.00	Pass	Vertical
5150	30.74	27.63	15.16	27.67	45.86	-49.34	-27.00	Pass	Horizontal
5350	31.43	27.82	15.66	27.68	47.23	-47.97	-27.00	Pass	Horizontal

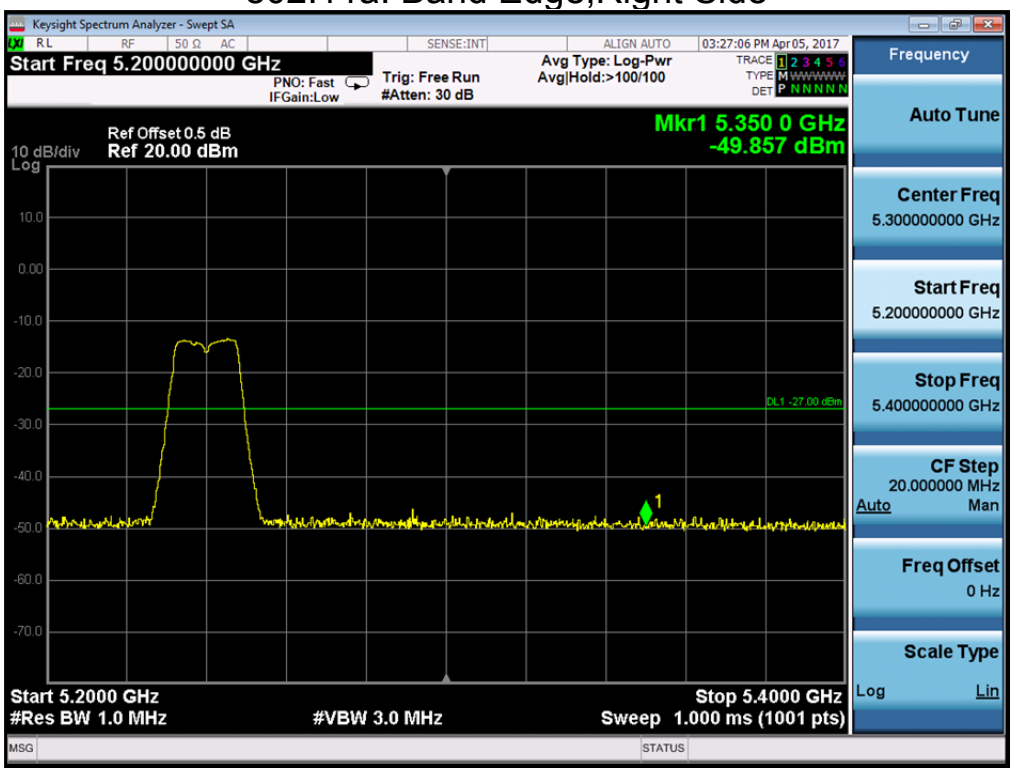
Remark: 1. According to KDB 789033 D02section H) d) (iii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows: EIRP[dBm] = E[dBμV/m] - 95.2

For conducted test:

802.11a: Band Edge,Left Side

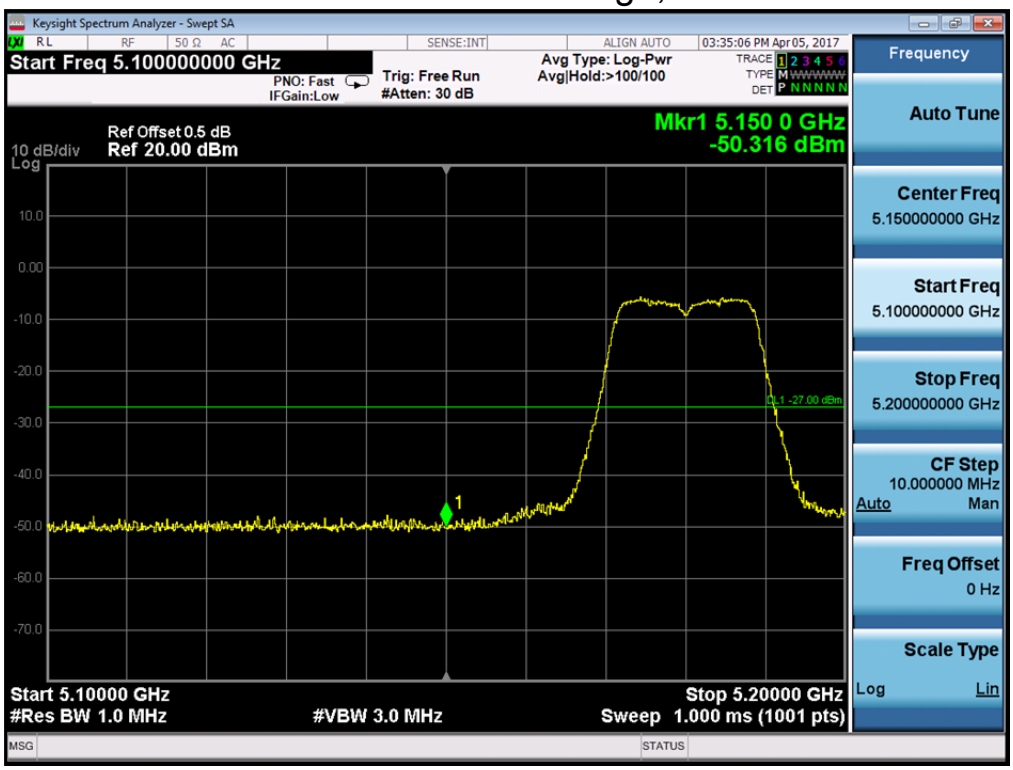


802.11a: Band Edge,Right Side

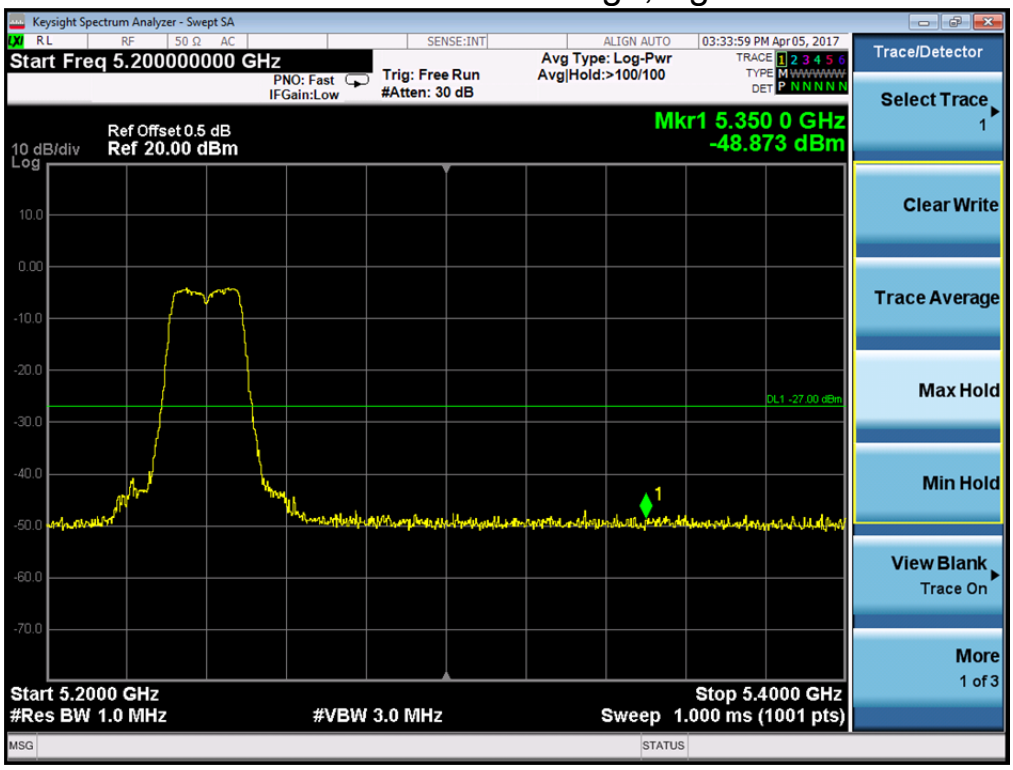


Note： EIRP BAND EDGE=Reading Level+antenna gain

802.11n（20）: Band Edge,Left Side

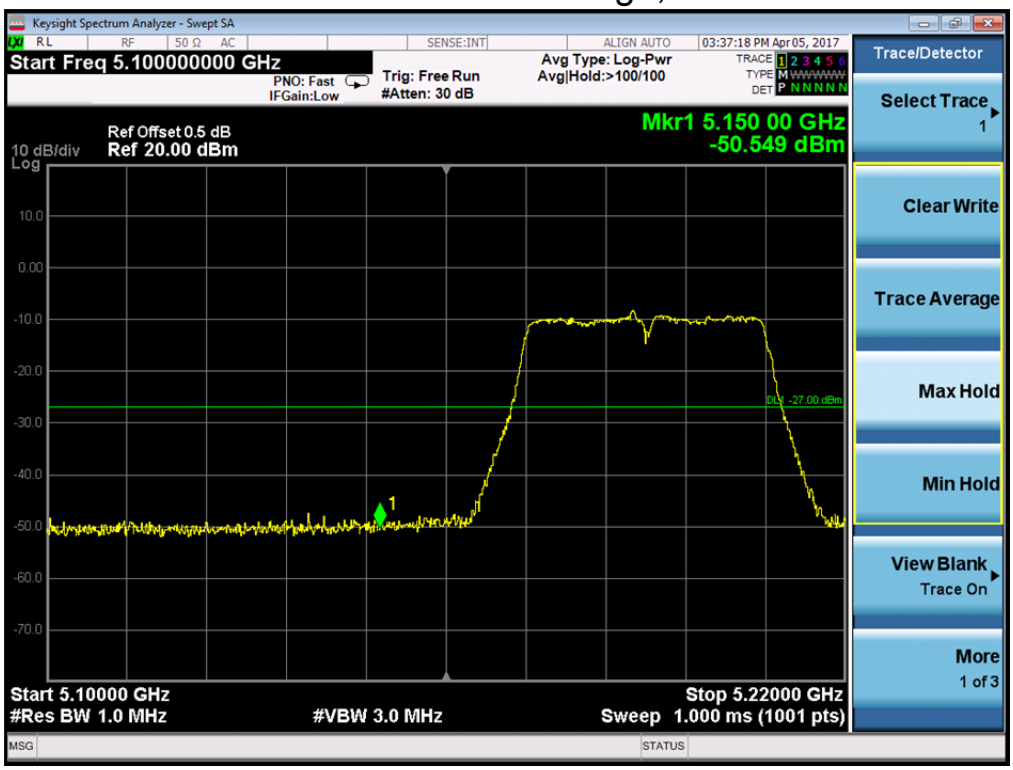


802.11n（20）: Band Edge,Right Side

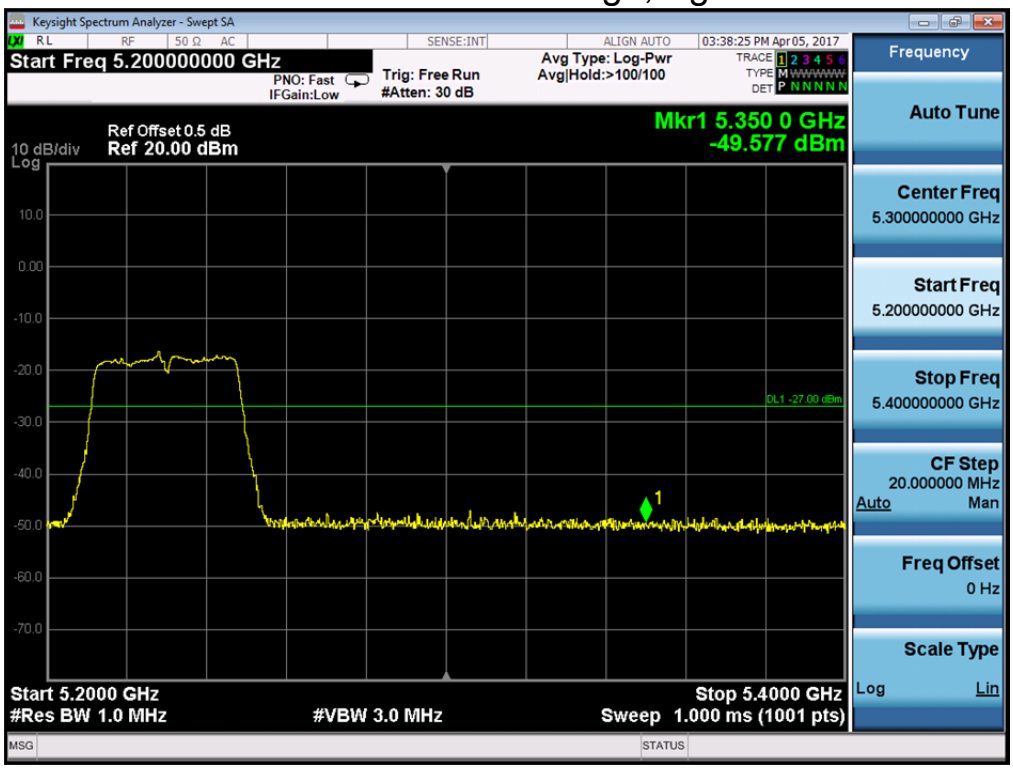


Note： EIRP BAND EDGE=Reading Level+antenna gain

802.11n（40）: Band Edge,Left Side



802.11n（40）: Band Edge,Right Side



Note： EIRP BAND EDGE=Reading Level+antenna gain

6. 26DB AND 6DB BANDWIDTH TEST

6.1.Applicable Standard

The bandwidth at 26 dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum power control level, as defined in KDB 789033, at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 26 dB bandwidth.

The 26 dB bandwidth is used to determine the conducted power limits.

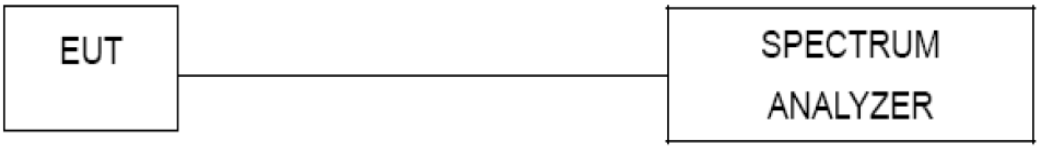
The minimum of 6dB Bandwidth measurement is 0.5 MHz for U-NII-3

6.2.Test Procedure

1. Emission Bandwidth (EBW)

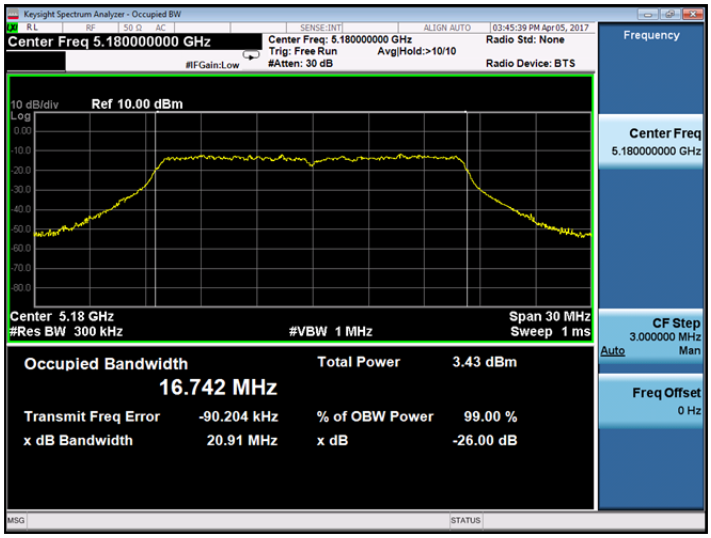
a) Set RBW = approximately 1% of the emission bandwidth.
b) Set the VBW > RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

6.3.Test setup



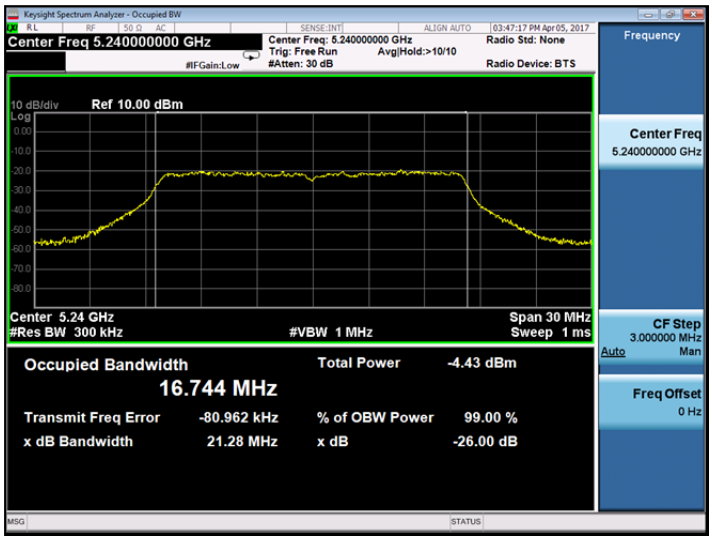
Mode	Channel number	Frequency (MHz)	26dB Bandwidth (MHz)
802.11a	36	5180	20.91
	40	5200	20.91
	48	5240	21.28
802.11n (HT20)	36	5180	21.65
	40	5200	21.68
	48	5240	21.61
802.11n (HT40)	38	5190	42.82
	46	5230	42.38

802.11a mode-ch36

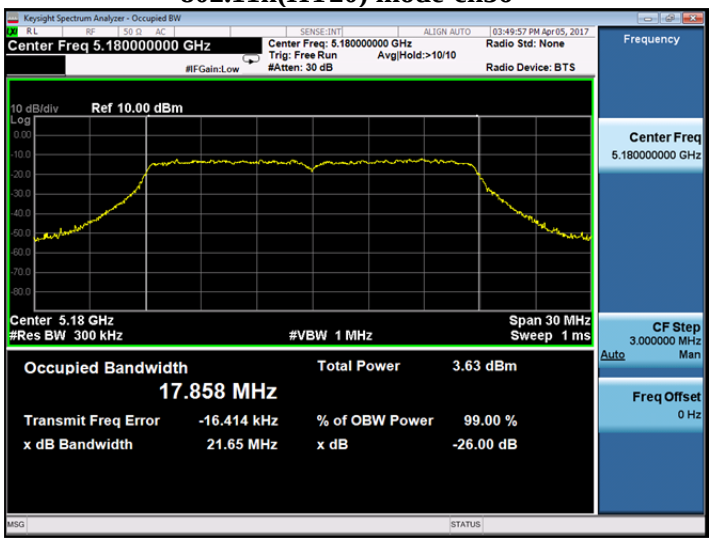


802.11a mode-ch40

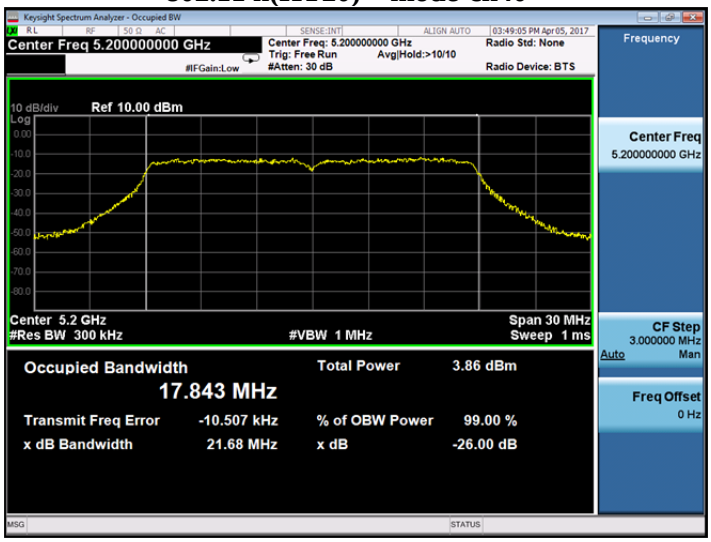
802.11a mode-ch48



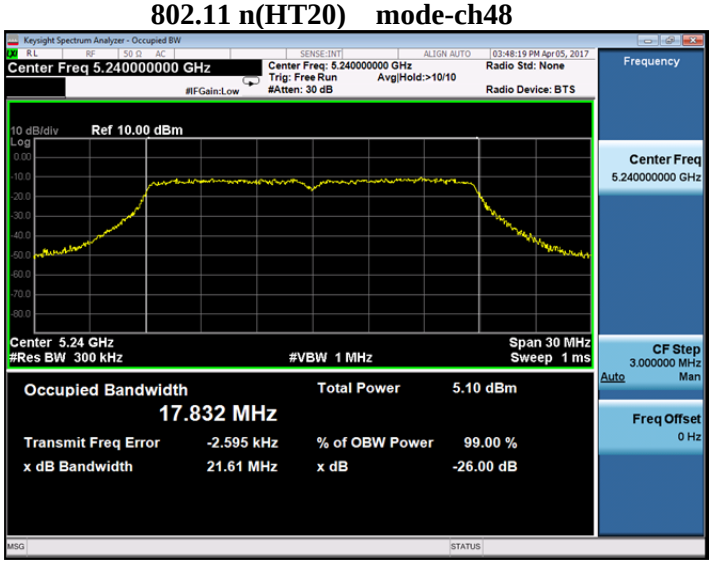
802.11n(HT20) mode-ch36



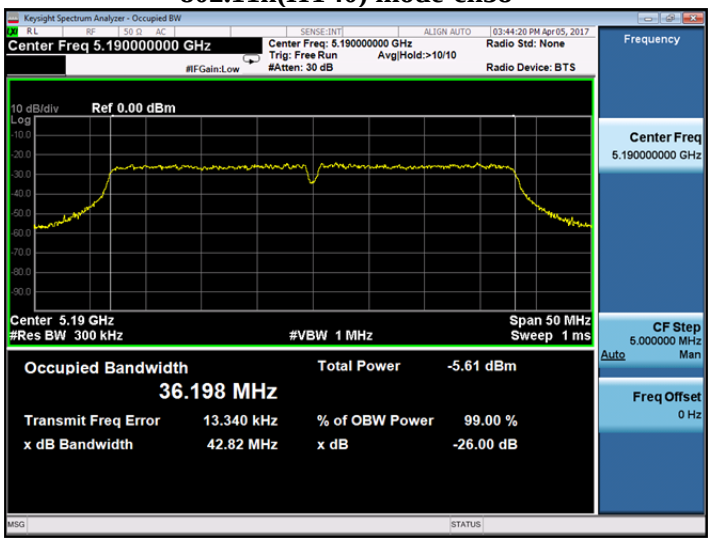
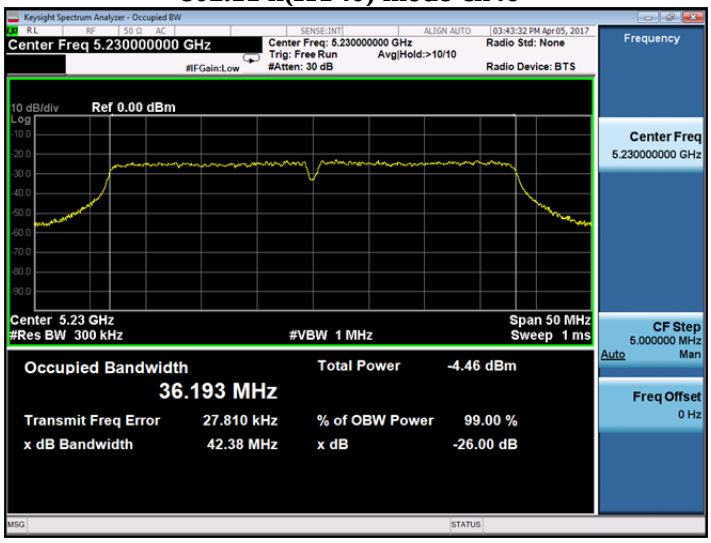
802.11 n(HT20) mode-ch40



802.11 n(HT20) mode-ch48



802.11n(HT40) mode-ch38



802.11 n(HT40) mode-ch46