Test Report

FCC Part15 Subpart C

Product Name	:	300Mbps Wi-Fi Range Extender with Power Outlet Pass-through
Model No.	:	TL-WA860RE
FCC ID	:	TE7WA860REV4

Applicant	:	TP-Link Technologies Co., Ltd..
Address	:	Building 24 (floors 1,3,4,5) and 28 (floors1-4) Central Science and Technology Park,Shennan Rd, Nanshan, Shenzhen,China

Date of Receipt	:	Jan. 06th, 2017
Test Date	:	Jan. 06th, 2017~ Apr. 12th, 2017
Issued Date	:	May. 09th, 2017
Report No.	:	1712029R-RF-US-P06V01
Report Version	:	V1.1

Test Report Certification

Issued Date : May. 09th, 2017
Report No. : 1712029R-RF-US-P06V01

Product Name	:	300Mbps Wi-Fi Range Extender with Power Outlet Pass-through
Applicant	:	TP-Link Technologies Co., Ltd..
Address	:	Building 24 (floors 1,3,4,5) and 28 (floors1-4) Central Science and Technology Park,Shennan Rd, Nanshan, Shenzhen,China
Manufacturer	:	TP-Link Technologies Co., Ltd..
Address	:	Building 24 (floors 1,3,4,5) and 28 (floors1-4) Central Science and Technology Park,Shennan Rd, Nanshan, Shenzhen,China
Model No.	:	TL-WA860RE
FCC ID	:	TE7WA860REV4
EUT Voltage	:	AC 120V/60Hz
Test Voltage	:	AC 120V/60Hz
Brand Name	:	TP-Link
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart C ANSI C63.4:2014; ANSI C63.10:2013; KDB 558074 D01v04 KDB 662911 D01 Multiple Transmitter Output v02r01
Test Result	:	Complied
Performed Location	:	DEKRA Testing and Certification (Suzhou) Co., Ltd. No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006, Jiangsu, China TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098 FCC Registration Number: 800392

Documented By : Kathy Feng

(Adm. Specialist: Kathy Feng)

Reviewed By : Frank He

(Senior Engineer: Frank He)

Approved By : Harry Zhao

(Engineering Manager: Harry Zhao)

TABLE OF CONTENTS

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
1712029R-RF-US-P06V01	V1.0	Initial Issued Report	Apr. 25th, 2017
1712029R-RF-US-P06V01	V1.1	Update the description about Mode 1 on page 17/18/29/30	May. 09th, 2017

1. General Information

1.1. EUT Description

Product Name	300Mbps Wi-Fi Range Extender with Power Outlet Pass-through
Brand Name	TP-Link
Model No.	TL-WA860RE
EUT Voltage	AC 120V/60Hz
Frequency Range	For 2.4GHz Band 802.11b/g/n(20MHz): 2412~2462MHz 802.11n(40MHz): 2422~2452MHz
Channel Number	For 2.4GHz Band 802.11b/g/n(20MHz): 11 802.11n(40MHz): 7
Type of Modulation	802.11b: DSSS
	802.11g: OFDM
Data Rate	802.11g: 6/9/12/18/24/36/48/54 Mbps
	802.11b: 1/2/5.5/11 Mbps
	802.11n: up to 300 Mbps
Channel Control	Auto

1.2. Working Frequency of Each Channel:

802.11b/g/n(20MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
01	2412 MHz	02	2417 MHz	03	2422 MHz	04	2427 MHz
05	2432 MHz	06	2437 MHz	07	2442 MHz	08	2447 MHz
09	2452 MHz	10	2457 MHz	11	2462 MHz	N/A	N/A
802.11n(40MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
03	2422 MHz	04	2427 MHz	05	2432 MHz	06	2437 MHz
07	2442 MHz	08	2447 MHz	09	2452 MHz	N/A	N/A

1.3. Antenna information

Model No.	N/A					
Antenna manufacturer	N/A					
Antenna Delivery	☐	1*TX+1*RX	☒	2*TX+2*RX	☐	3*TX+3*RX
Antenna technology	☐	SISO				
	☒	MIMO	☐	Basic		
			☒	CDD		
			☐	Sectorized		
			☐	Beam-forming		
Antenna Type	☒	External	☒	Dipole		
			☐	Sectorized		
	☐	Internal	☐	PIFA		
			☐	PCB		
			☐	Ceramic Chip Antenna		
			☐	Metal plate type F antenna		

Antenna Technology	Ant Gain (dBi)	Directional Gain (dBi)	
		For Power	For PSD
☒ CDD	Ant 0: 2 Ant 1: 2	2	5

1.4. Mode of Operation

Test Modes List
Mode 1: Transmit by 802.11b
Mode 2: Transmit by 802.11g
Mode 3: Transmit by 802.11n(20MHz)
Mode 4: Transmit by 802.11n(40MHz)

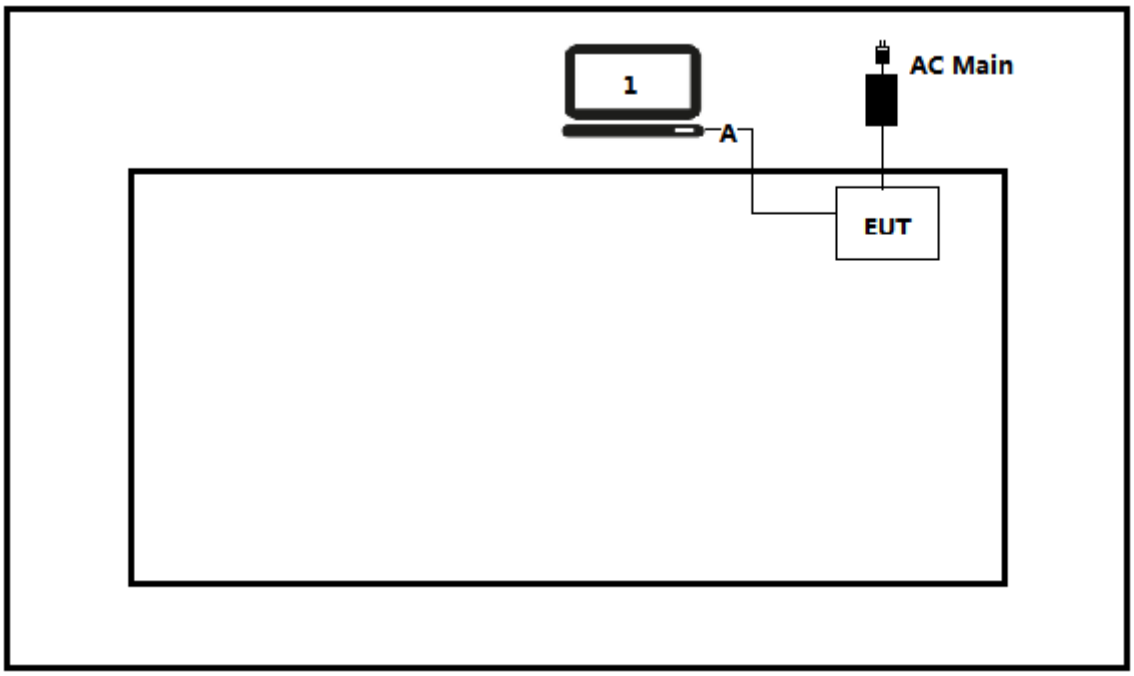
1.5. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

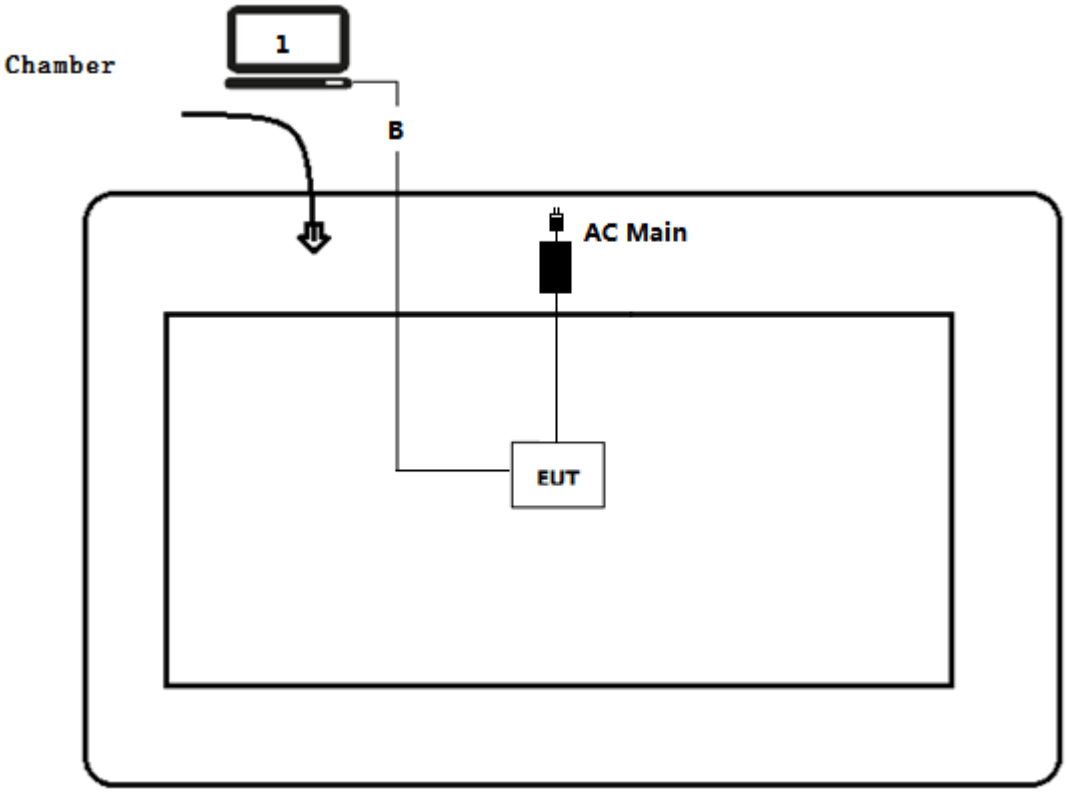
No.	Product	Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook	Lenovo	Think pad x220	SUA0600195	Non-shielded
A	LAN cable	N/A	N/A	N/A	Non-shielded,1.5m
B	LAN cable	N/A	N/A	N/A	Non-shielded,10m

1.6. Configuration of Tested System

Test setup Diagram- AC Line Conducted Emission Test



Test setup Diagram- Radiated Emission



2. Technical Test

2.1. Summary of Test Result

Performed Test Item	Normative References	Limit	Result
AC Power Line Conducted Emission	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.207	FCC 15.207	PASS
Emissions in restricted frequency bands	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.209	FCC 15.209	PASS
Emissions in non-restricted frequency bands	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(d)		

2.3. Power setting parameter

Test Software	QA Tool			
Modulation Mode	Test Frequency	Ant 0	Ant 1	Ant 0+1
802.11b	2412	N/A	N/A	21
	2417	N/A	N/A	21
	2437	N/A	N/A	25
	2457	N/A	N/A	1F
	2462	N/A	N/A	1F
802.11g	2412	N/A	N/A	1A
	2417	N/A	N/A	1E
	2437	N/A	N/A	28
	2457	N/A	N/A	1B
	2462	N/A	N/A	17
802.11n(20MHz)	2412	N/A	N/A	19
	2417	N/A	N/A	1D
	2437	N/A	N/A	28
	2457	N/A	N/A	1B
	2462	N/A	N/A	16
802.11n(40MHz)	2422	N/A	N/A	14
	2427	N/A	N/A	14
	2437	N/A	N/A	28
	2447	N/A	N/A	14
	2452	N/A	N/A	10

2.4. Power vs Data Rate

MCS Index for 802.11n	Spatial Streams	Data Rate (Mbps)						
		802.11b	802.11g		20MHz Bandwidth		40MHz Bandwidth	
					800ns GI	400ns GI	800ns GI	400ns GI
0	1	1	6	---	6.5	7.2	13.5	15.0
1	1	2	9	---	13.0	14.4	27.0	30.0
2	1	5.5	12	---	19.5	21.7	40.5	45.0
3	1	11	18	---	26.0	28.9	54.0	60.0
4	1	---	24	---	39.0	43.3	81.0	90.0
5	1	---	36	---	52.0	57.8	108.0	120.0
6	1	---	48	---	58.5	65.0	121.5	135.0
7	1	---	54	---	65.0	72.2	135.0	150.0
8	2	---	---	---	13.0	14.4	27.0	30.0
9	2	---	---	---	26.0	28.9	54.0	60.0
10	2	---	---	---	39.0	43.3	81.0	90.0
11	2	---	---	---	52.0	57.8	108.0	120.0
12	2	---	---	---	78.0	86.7	162.0	180.0
13	2	---	---	---	104.0	115.6	216.0	240.0
14	2	---	---	---	117.0	130.0	243.0	270.0
15	2	---	---	---	130.0	144.0	270.0	300.0

Note 1 : The blue form is the maximum power data rate

Note 2 : The EUT has two spatial Streams

2.5. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	21
Humidity (%RH)	25-75	50
Barometric pressure (mbar)	860-1060	950-1000

2.6. Measurement Uncertainty

Test Items	Uncertainty
AC Power Line Conducted Emission	

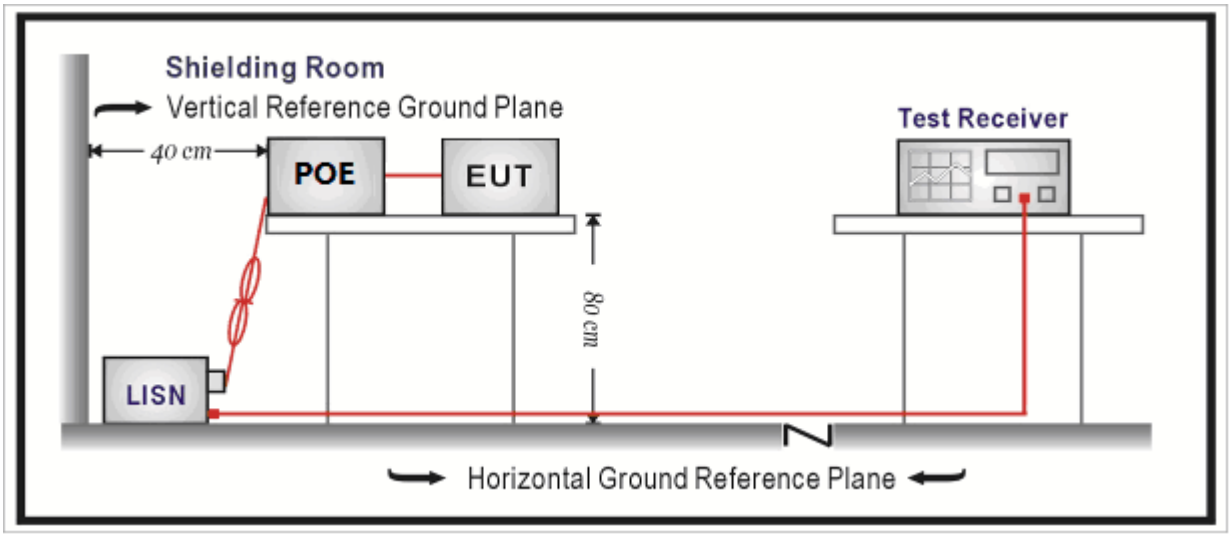
3. AC Power Line Conducted Emission

3.1. Test Equipment

AC Power Line Conducted Emission / TR-1					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100726	2017.03.29	2018.03.28
Two-Line V-Network	R&S	ENV216	100043	2017.03.29	2018.03.28
Two-Line V-Network	R&S	ENV216	100044	2016.09.17	2017.09.16
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	2017.03.02	2018.03.01
50ohm Termination	SHX	TF2	07081401	2016.09.17	2017.09.16
Temperature/Humidity Meter	zhichen	ZC1-2	TR1-TH	2017.01.04	2018.01.03
Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

3.2. Test Setup

AC Power Line Conducted Emission test setup

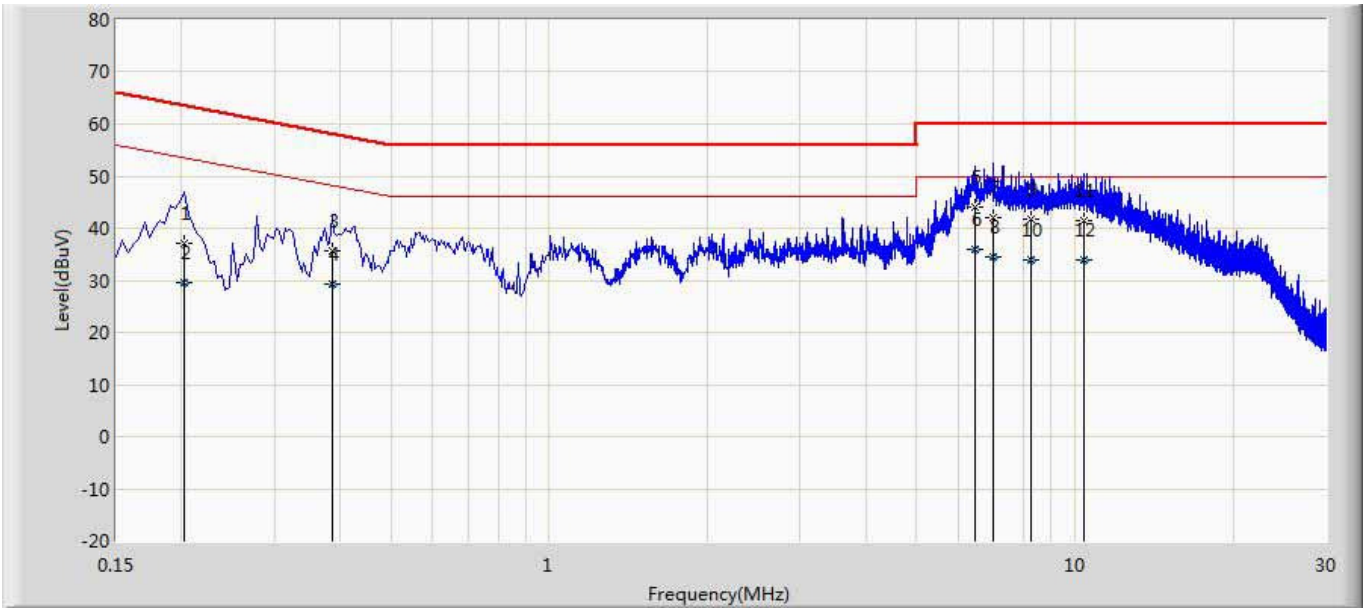


3.3. Limit

Frequency of Emission	Conducted Limit
(MHz)	Quasi-peak (dB

3.5. Test Result

Limit: FCC_Part15.107_CE_AC Power_ClassB	Margin: 0
Probe: ENV216-L1	Polarity: Line
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 1: transmit at 2402MHz by 802.11b	

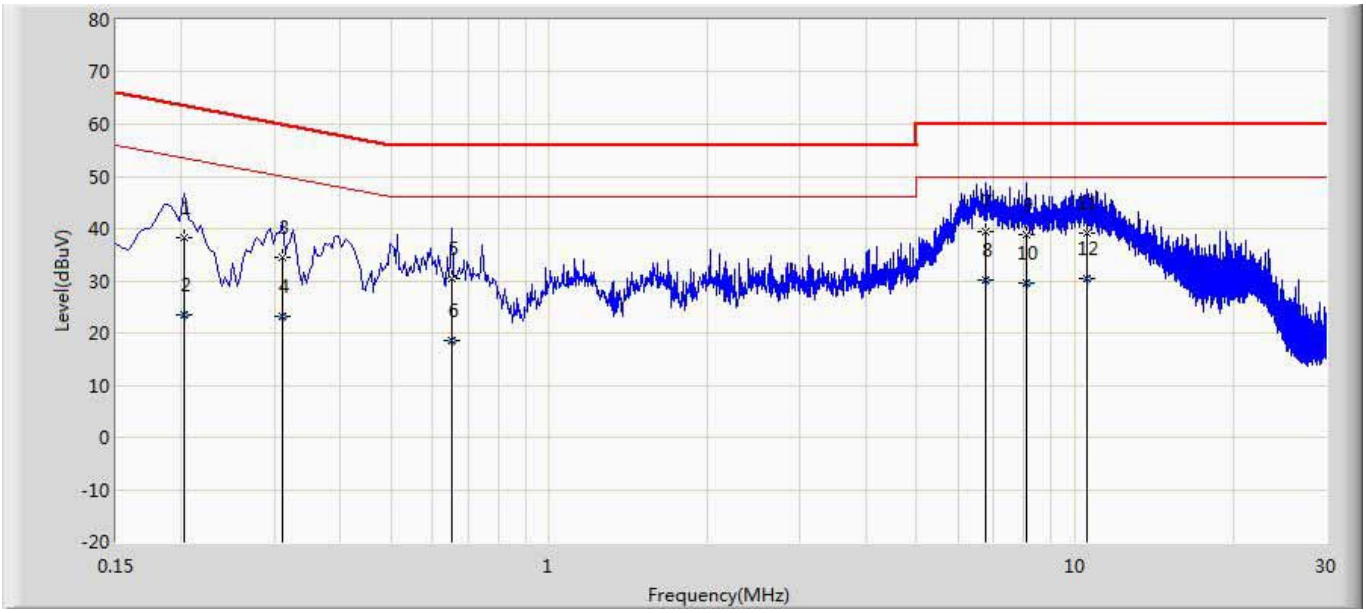


No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.202	37.044	27.334	-26.484	63.528	9.650	0.060	0.000	QP
2		0.202	29.529	19.819	-23.999	53.528	9.650	0.060	0.000	AV
3		0.386	35.732	26.032	-22.417	58.149	9.640	0.060	0.000	QP
4		0.386	29.161	19.461	-18.988	48.149	9.640	0.060	0.000	AV
5		6.434	44.020	34.140	-15.980	60.000	9.690	0.190	0.000	QP
6	*	6.434	35.819	25.939	-14.181	50.000	9.690	0.190	0.000	AV
7		7.010	41.974	32.074	-18.026	60.000	9.700	0.200	0.000	QP
8		7.010	34.390	24.490	-15.610	50.000	9.700	0.200	0.000	AV
9		8.242	41.737	31.797	-18.263	60.000	9.710	0.230	0.000	QP
10		8.242	33.823	23.883	-16.177	50.000	9.710	0.230	0.000	AV
11		10.394	41.581	31.581	-18.419	60.000	9.730	0.270	0.000	QP
12		10.394	33.842	23.842	-16.158	50.000	9.730	0.270	0.000	AV

Note:

1. " * ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Limit: FCC_Part15.107_CE_AC Power_ClassB	Margin: 0
Probe: ENV216-N	Polarity: Neutral
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 1: transmit at 2402MHz by 802.11b	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.202	38.247	28.527	-25.281	63.528	9.660	0.060	0.000	QP
2		0.202	23.435	13.715	-30.093	53.528	9.660	0.060	0.000	AV
3		0.310	34.430	24.720	-25.540	59.970	9.650	0.060	0.000	QP
4		0.310	23.102	13.392	-26.868	49.970	9.650	0.060	0.000	AV
5		0.654	30.336	20.626	-25.664	56.000	9.640	0.070	0.000	QP
6		0.654	18.642	8.932	-27.358	46.000	9.640	0.070	0.000	AV
7		6.766	39.453	29.563	-20.547	60.000	9.690	0.200	0.000	QP
8		6.766	30.240	20.350	-19.760	50.000	9.690	0.200	0.000	AV
9		8.058	38.775	28.845	-21.225	60.000	9.710	0.220	0.000	QP
10		8.058	29.608	19.678	-20.392	50.000	9.710	0.220	0.000	AV
11		10.502	39.249	29.231	-20.751	60.000	9.740	0.278	0.000	QP
12	*	10.502	30.560	20.542	-19.440	50.000	9.740	0.278	0.000	AV

Note:

1. " * ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

4. Emissions in restricted frequency bands

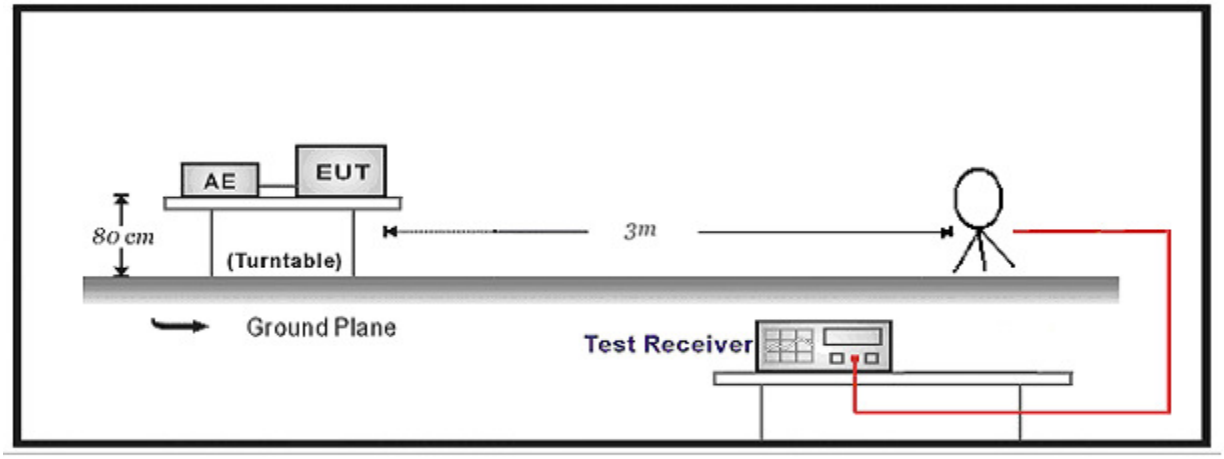
4.1. Test Equipment

Radiated Emission(Below 1GHz) / AC-2					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100573	2017.03.29	2018.03.28
Loop Antenna	R&S	HFH2-Z2	833799/003	2016.11.16	2017.11.15
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2016.10.16	2017.10.15
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2017.03.02	2018.03.01
Temperature/Humidity Meter	Zhichen	ZC1-2	AC2-TH	2017.01.04	2018.01.03
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

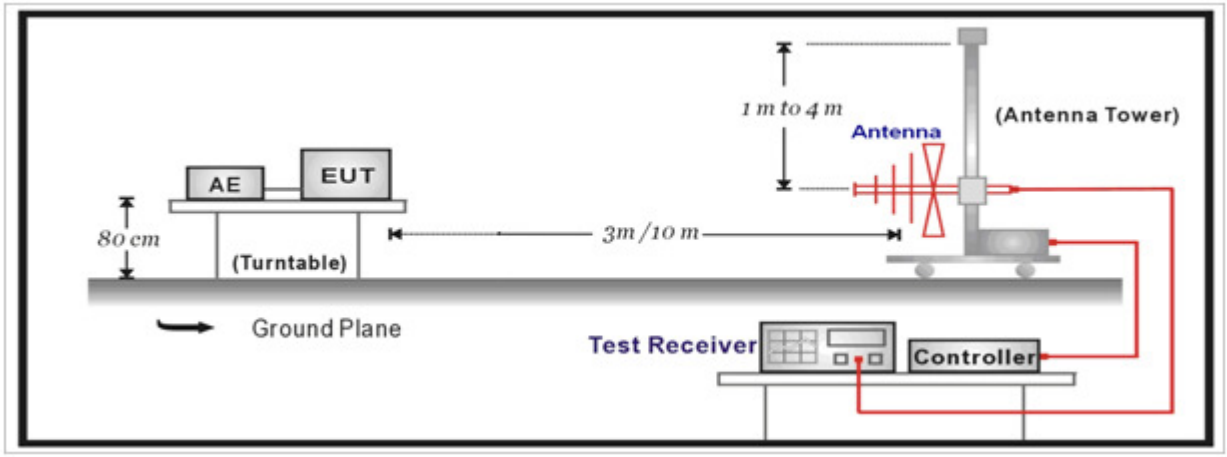
Radiated Emission(Above 1GHz) / AC-5					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2017.01.04	2018.01.03
Preamplifier	Miteq	NSP1800-25	1364185	2016.05.06	2017.05.05
Preamplifier	QuieTek	AP-040G	CHM-0906001	2016.05.06	2017.05.05
DRG Horn	ETS-Lindgren	3117	00123988	2017.01.22	2018.01.21
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2016.11.25	2017.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2017.03.02	2018.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2017.03.02	2018.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2017.03.02	2018.03.01
EMI Receiver	Agilent	N9038A	MY51210196	2016.06.10	2017.06.09
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2017.01.04	2018.01.03
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

4.2. Test Setup

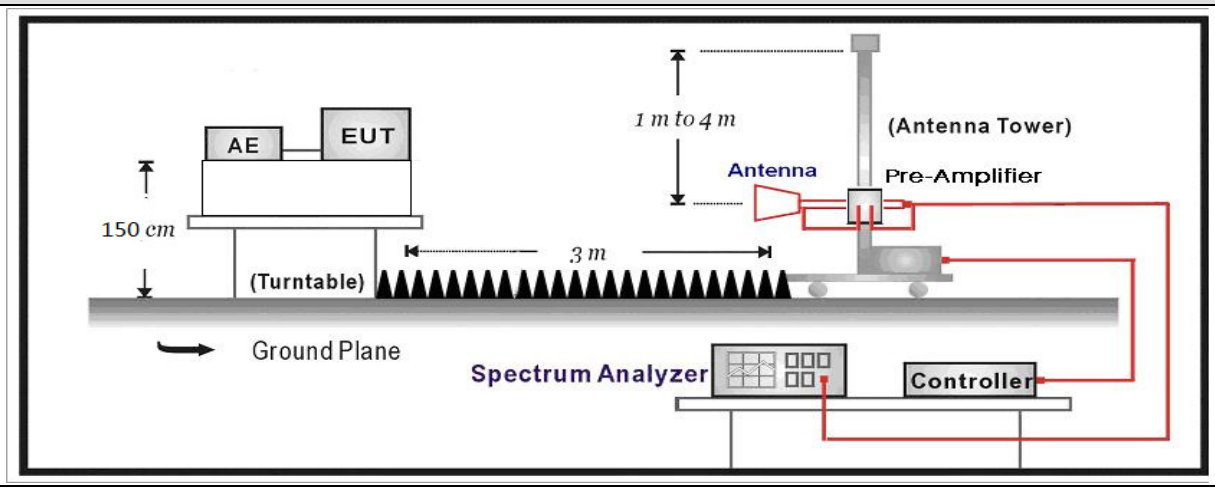
Below 30MHz Test Setup:



30MHz-1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limit

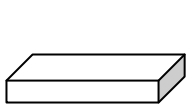
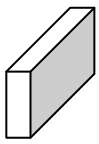
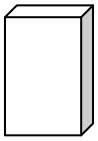
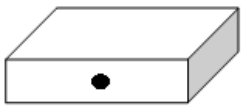
Restricted Bands of operation			
Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 – 0.110	16.42 – 16.423	399.9 – 410	4.5 – 5.15
0.495 – 0.505	16.69475 –16.69525	608 – 614	5.35 – 5.46
2.1735 – 2.1905	16.80425 – 16.80475	960 – 1240	7.25 – 7.75
4.125 – 4.128	25.5 – 25.67	1300 – 1427	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
8.81425 – 8.81475	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	
13.36 – 13.41			

Restricted Band Emissions Limit	
Frequency (MHz)	Field strength (

4.4. Test Procedure

Test Method						
	References Rule				Chapter	Description
☐	ANSI C63.10				11.11	Emissions in non-restricted frequency bands
	☐	ANSI C63.10			11.11.2	Reference level measurement
	☐	ANSI C63.10			11.11.3	Emission level measurement
☒	ANSI C63.10				11.12	Emissions in restricted frequency bands
	☒	ANSI C63.10			11.12.1	Radiated emission measurements
	☒	ANSI C63.10			11.12.2.7	Radiated spurious emission test
		☒	ANSI C63.10		6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
		☒	ANSI C63.10		6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
		☒	ANSI C63.10		6.6	Radiated emissions from unlicensed wireless devices above 1 GHz
	☐	ANSI C63.10			11.12.2	Antenna-port conducted measurements
		☒	ANSI C63.10		11.12.2.3	Quasi-peak measurement procedure
		☒	ANSI C63.10		11.12.2.4	Peak power measurement procedure
		☒	ANSI C63.10		11.12.2.5	Average power measurement procedures
			☐	ANSI C63.10	11.12.2.5.1	Trace averaging with continuous EUT transmission at full power
			☐	ANSI C63.10	11.12.2.5.2	Trace averaging across ON and OFF times of the EUT transmissions followed by duty cycle correction
			☒	ANSI C63.10	11.12.2.5.3	Reduced VBW averaging across ON and OFF times of the EUT transmissions with max hold

4.5. EUT test Axis definition

<table>
<tr><th>Item</th><th colspan="4">Emissions in restricted frequency bands</th></tr>
<tr><td rowspan="3">Device Category</td><td>☐</td><td colspan="3">Fixed point-to-point</td></tr>
<tr><td>☐</td><td colspan="3">Emit multiple directional beams, simultaneously or sequentially</td></tr>
<tr><td>☒</td><td colspan="3">Other cases</td></tr>
<tr><td>Test mode</td><td colspan="4">Mode 1~4</td></tr>
<tr><td rowspan="13">Test method</td><td>☒</td><td colspan="3">Radiated</td></tr>
<tr><td rowspan="3"></td><td>X Axis</td><td>Y Axis</td><td>Z Axis</td></tr>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td>Worst Axis ☒</td><td>Worst Axis ☐</td><td>Worst Axis ☐</td></tr>
<tr><td>☐</td><td colspan="3">Conducted</td></tr>
<tr><td>☐</td><td colspan="3">Chain 1</td></tr>
<tr><td></td><td colspan="3">  </td></tr>
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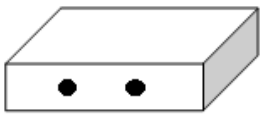
<tr><td></td><td colspan="3">  </td></tr>
<tr><td>☐</td><td>Chain 1</td><td>Chain 2</td><td>Chain 3</td></tr>
<tr><td></td><td colspan="3">  </td></tr>
</table>

4.6. Test Result

Product Name	:	300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power	:	AC 120V/60Hz
Test Mode	:	Mode 1	Test Site	:	AC-5
Test Date	:	2017.04.12			

Chain	CH	Antenna Polarity	Frequency (MHz)	Reading Level (dB

Product Name	:	300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power	:	AC 120V/60Hz
Test Site	:	Mode 2	Test Site	:	AC-5
Test Date	:	2017.04.12			

Chain	CH	Antenna Polarity	Frequency (MHz)	Reading Level (dB

Product Name	:	300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power	:	AC 120V/60Hz
Test Site	:	Mode 3	Test Site	:	AC-5
Test Date	:	2017.04.12			

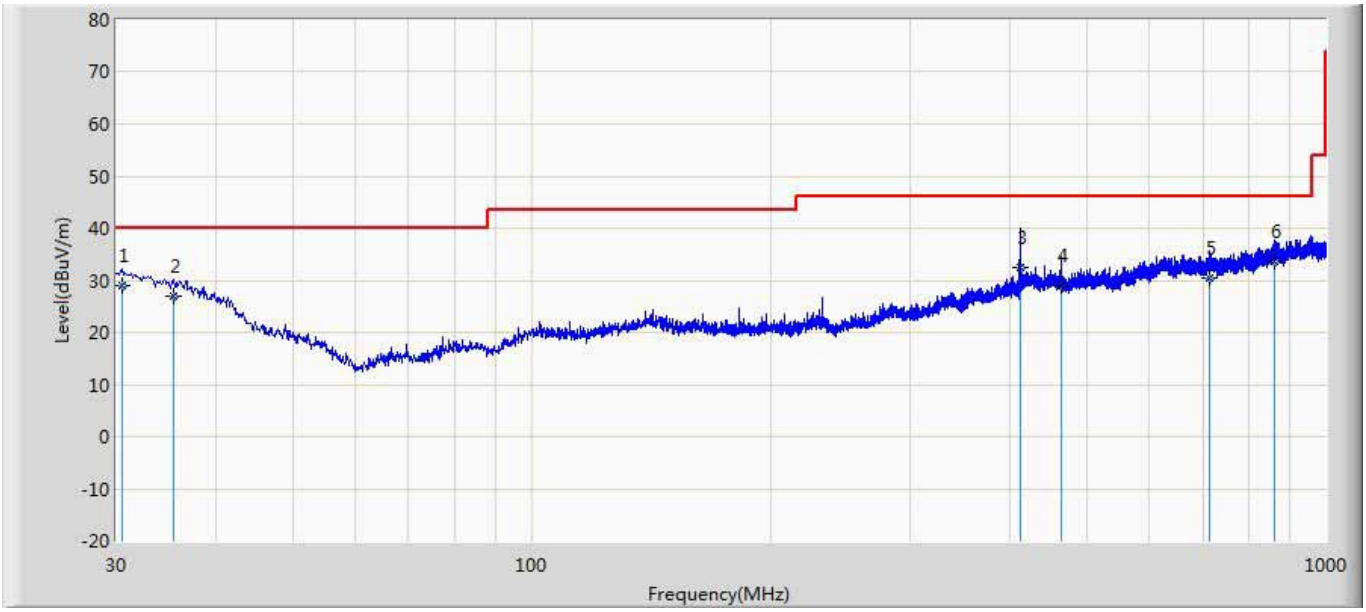
Chain	CH	Antenna Polarity	Frequency (MHz)	Reading Level (dB

Product Name	:	300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power	:	AC 120V/60Hz
Test Site	:	Mode 4	Test Site	:	AC-5
Test Date	:	2017.04.12			

Chain	CH	Antenna Polarity	Frequency (MHz)	Reading Level (dB

The worst case of Radiated Emission below 1GHz:

Site: AC2	Time: 2017/03/31
Limit: FCC_Part15.109_RE(3m)_ClassB	Margin: 0
Probe: CBL6112B_2931(30-1000MHz)	Polarity: Horizontal
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 1: transmit at 2402MHz by 802.11b	

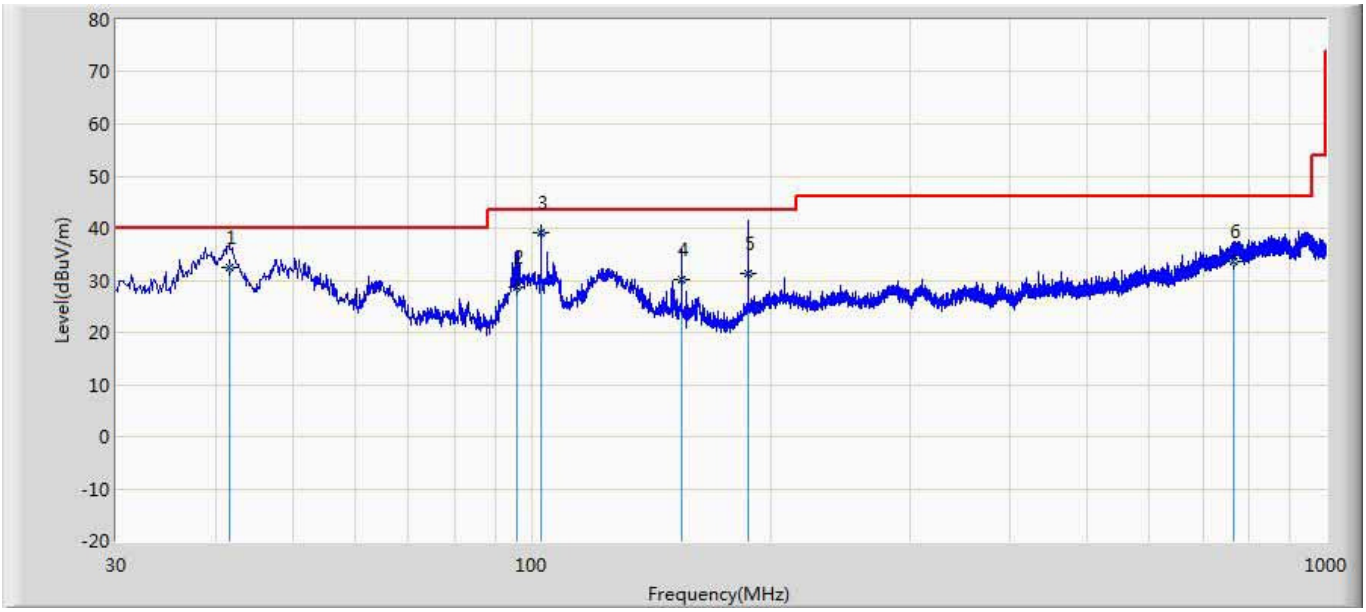


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1	*	30.590	29.125	33.154	-10.875	40.000	18.458	0.606	23.092	100	360	QP
2		35.490	26.885	33.799	-13.115	40.000	15.616	0.647	23.177	200	132	QP
3		411.650	32.443	36.945	-13.557	46.000	16.233	2.240	22.975	100	324	QP
4		463.820	29.033	32.232	-16.967	46.000	17.221	2.350	22.770	100	258	QP
5		712.052	30.299	30.782	-15.701	46.000	19.117	2.960	22.560	200	345	QP
6		862.230	33.730	32.665	-12.270	46.000	20.425	3.230	22.590	200	323	QP

Note:

1. " * ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Site: AC2	Time: 2017/03/31
Limit: FCC_Part15.109_RE(3m)_ClassB	Margin: 0
Probe: CBL6112B_2931(30-1000MHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 1: transmit at 2402MHz by 802.11b	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		41.690	32.428	42.954	-7.572	40.000	12.054	0.701	23.280	100	325	QP
2		95.750	28.693	40.543	-14.807	43.500	10.250	1.058	23.158	100	258	QP
3	*	102.805	39.075	49.754	-4.425	43.500	11.381	1.100	23.160	101	360	QP
4		154.650	30.007	41.446	-13.493	43.500	10.221	1.350	23.010	100	249	QP
5		187.527	31.170	43.591	-12.330	43.500	9.225	1.484	23.130	178	360	QP
6		766.150	33.514	33.139	-12.486	46.000	19.865	3.050	22.540	200	314	QP

Note:

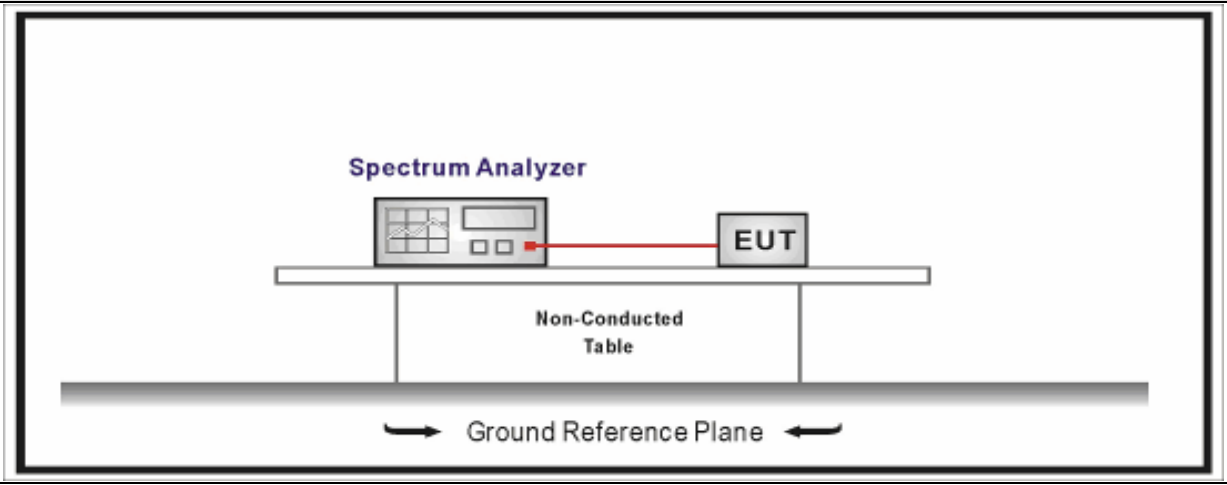
1. " * ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

5. Emissions in non-restricted frequency bands

5.1. Test Equipment

Emissions in non-restricted frequency bands / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2017.02.04	2018.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2017.04.09	2018.04.08
MXA Signal Anlyzer	Keysight	N9020A	MY56060147	2017.04.09	2018.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2017.04.10	2018.04.09
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

5.2. Test Setup

Emissions in non-restricted frequency bands


5.3. Limit

Un-Restricted Band Emissions Limit	
RF Output power (Detection methods)	Limit(dB)
RF Output power(Average detector)	30c(Note1)
RF Output power(PK detector)	20c(Note2)

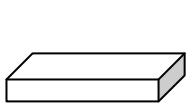
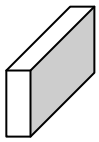
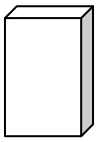
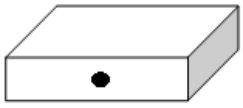
Note 1: If maximum conducted (average) output power was used to demonstrate compliance as described in 9.2, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 30 dBc).

Note 2: If the maximum peak conducted output power procedure was used, then the peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 20 dBc).

5.4. Test Procedure

Test Method						
	References Rule				Chapter	Description
☒	ANSI C63.10				11.11	Emissions in non-restricted frequency bands
	☒	ANSI C63.10			11.11.2	Reference level measurement
	☒	ANSI C63.10			11.11.3	Emission level measurement
☐	ANSI C63.10				11.12	Emissions in restricted frequency bands
	☐	ANSI C63.10			11.12.1	Radiated emission measurements
	☐	ANSI C63.10			11.12.2.7	Radiated spurious emission test
☐	ANSI C63.10				6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
☐	ANSI C63.10				6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
☒	ANSI C63.10				6.6	Radiated emissions from unlicensed wireless devices above 1 GHz
	☒	ANSI C63.10			11.12.2	Antenna-port conducted measurements
		☐	ANSI C63.10		11.12.2.3	Quasi-peak measurement procedure
		☒	ANSI C63.10		11.12.2.4	Peak power measurement procedure
		☐	ANSI C63.10		11.12.2.5	Average power measurement procedures
			☐	ANSI C63.10	11.12.2.5.1	Trace averaging with continuous EUT transmission at full power
			☐	ANSI C63.10	11.12.2.5.2	Trace averaging across ON and OFF times of the EUT transmissions followed by duty cycle correction
			☐	ANSI C63.10	11.12.2.5.3	Reduced VBW averaging across ON and OFF times of the EUT transmissions with max hold

5.5. EUT test Axis definition

<table>
<tr><th>Item</th><th colspan="4">Emissions in non-restricted frequency bands</th></tr>
<tr><td rowspan="3">Device Category</td><td>☐</td><td colspan="3">Fixed point-to-point</td></tr>
<tr><td>☐</td><td colspan="3">Emit multiple directional beams, simultaneously or sequentially</td></tr>
<tr><td>☒</td><td colspan="3">Other cases</td></tr>
<tr><td>Test mode</td><td colspan="4">Mode 1 ~ 4</td></tr>
<tr><td rowspan="12">Test method</td><td>☐</td><td colspan="3">Radiated</td></tr>
<tr><td rowspan="3"></td><td>X Axis</td><td>Y Axis</td><td>Z Axis</td></tr>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td>Worst Axis ☐</td><td>Worst Axis ☐</td><td>Worst Axis ☐</td></tr>
<tr><td>☒</td><td colspan="3">Conducted</td></tr>
<tr><td>☐</td><td colspan="3">Chain 0</td></tr>
<tr><td></td><td colspan="3">  </td></tr>
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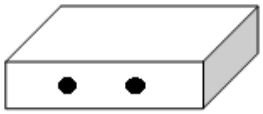
<tr><td></td><td colspan="3">  </td></tr>
<tr><td>☐</td><td>Chain 0</td><td>Chain 1</td><td>Chain 2</td></tr>
<tr><td></td><td colspan="3">  </td></tr>
</table>

5.6. Test Result

Product Name	:	300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power	:	AC 120V/60Hz
Test Mode	:	Mode1~4	Test Site	:	TR8
Test Date	:	2017.04.12			

Mode	Channel	Test Frequency (MHz)	Maximum In-Band PSD[a] (dBm/100kHz)	Frequency (MHz)	Out-Band PSD[b] (dBm/100kHz)	[a]-[b] (dB)	Limit (dB)	Result
1	01	2412	14.466	2400.00	-34.145	48.611	>30	Pass
1	11	2462	14.466	2500.00	-47.901	62.367	>30	Pass
2	01	2412	8.307	2412.82	-25.935	34.242	>30	Pass
2	11	2462	8.307	2500.00	-49.424	57.731	>30	Pass
3	01	2412	8.148	2400.00	-28.360	36.508	>30	Pass
3	11	2462	8.148	2500.00	-49.131	57.279	>30	Pass
4	03	2422	7.435	2400.00	-31.090	38.525	>30	Pass
4	09	2452	7.435	2500.00	-42.621	50.056	>30	Pass

Note: The worst case of emissions in non-restricted frequency bands as below:

Mode 2 CH01(2412MHz)

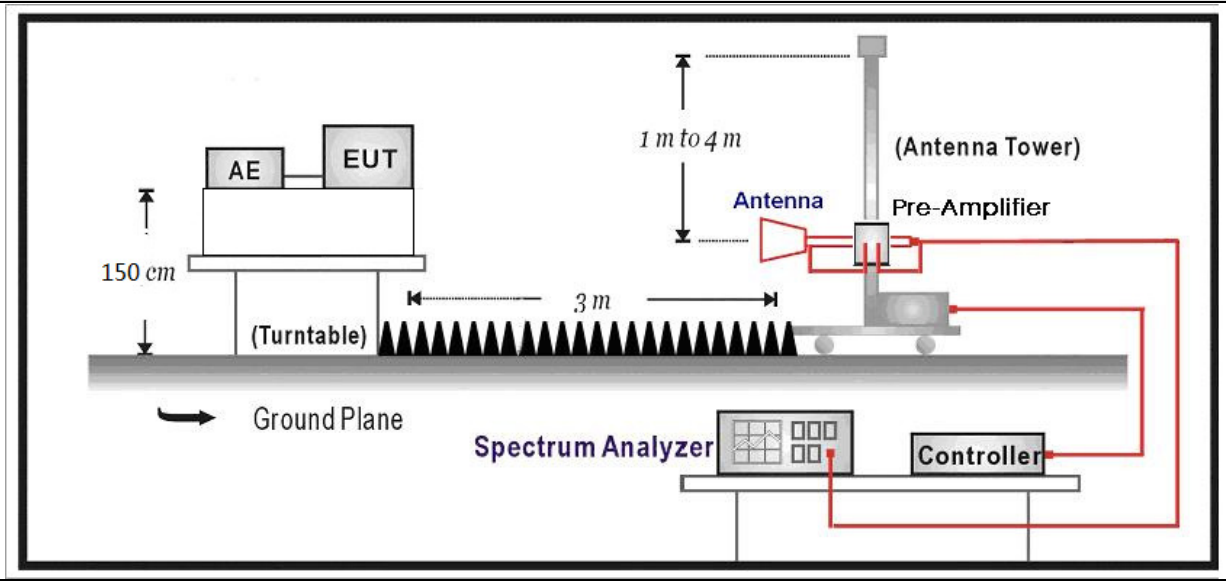
6. Radiated Emission Band Edge

6.1. Test Equipment

Radiated Emission Band Edge / AC-5					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2017.01.04	2018.01.03
Preamplifier	Miteq	NSP1800-25	1364185	2016.05.06	2017.05.05
Preamplifier	QuieTek	AP-040G	CHM-0906001	2016.05.06	2017.05.05
DRG Horn	ETS-Lindgren	3117	00123988	2017.01.22	2018.01.21
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2016.11.25	2017.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2017.03.02	2018.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2017.03.02	2018.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2017.03.02	2018.03.01
EMI Receiver	Agilent	N9038A	MY51210196	2016.06.10	2017.06.09
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2017.01.04	2018.01.03
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

6.2. Test Setup

Radiated Emission Band Edge



6.3. Limit

Band edge Limit		
Frequency bands (MHz)	Detector	Limit (dB

6.4. Test Procedure

Radiated Emission Band Edge			
	References Rule	Chapter	Description
☒	ANSI C63.10	6.10	Band-edge testing
☒	ANSI C63.10	6.10.5	Restricted-band band-edge measurements
☐	ANSI C63.10	6.10.6	Marker-delta method
☒	ANSI C63.10	11.12	Emissions in restricted frequency bands
☒	ANSI C63.10	11.12.1	Radiated emission measurements
☒	ANSI C63.10	11.12.2.7	Radiated spurious emission test
☐	ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
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☐	ANSI C63.10	11.12.2	Antenna-port conducted measurements
☐	ANSI C63.10	11.12.2.3	Quasi-peak measurement procedure
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☒	ANSI C63.10	11.12.2.5	Average power measurement procedures
☐	ANSI C63.10	11.12.2.5.1	Trace averaging with continuous EUT transmission at full power
☐	ANSI C63.10	11.12.2.5.2	Trace averaging across ON and OFF times of the EUT transmissions followed by duty cycle correction
☒	ANSI C63.10	11.12.2.5.3	Reduced VBW averaging across ON and OFF times of the EUT transmissions with max hold

6.5. EUT test definition

<table>
<tr><th>Item</th><th colspan="4">Radiated Emission Band Edge</th></tr>
<tr><td rowspan="3">Device Category</td><td>☐</td><td colspan="3">Fixed point-to-point</td></tr>
<tr><td>☐</td><td colspan="3">Emit multiple directional beams, simultaneously or sequentially</td></tr>
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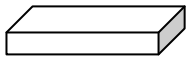
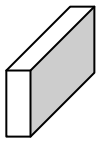
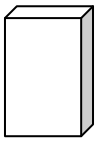
<tr><td rowspan="3"></td><td>X Axis</td><td>Y Axis</td><td>Z Axis</td></tr>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td>Worst Axis ☒</td><td>Worst Axis ☐</td><td>Worst Axis ☐</td></tr>
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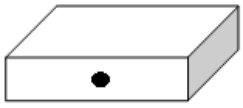
<tr><td>☐</td><td colspan="3">Chain 0</td></tr>
<tr><td></td><td colspan="3">  </td></tr>
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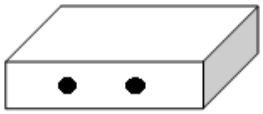
<tr><td></td><td colspan="3">  </td></tr>
<tr><td>☐</td><td>Chain 0</td><td>Chain 1</td><td>Chain 2</td></tr>
<tr><td></td><td colspan="3">  </td></tr>
</table>

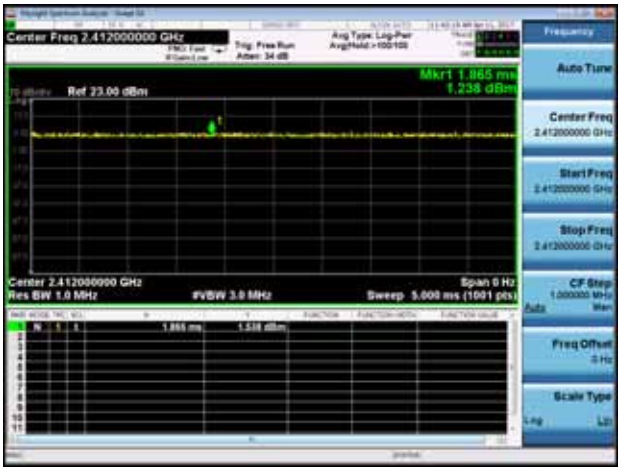
6.6. Duty Cycle

Test Mode	Tx On (ms)	Tx Off (ms)	VBW	Tx On + Tx Off (ms)	Duty Cycle
802.11b	-	-	10Hz	-	100%
802.11g	-	-	10Hz	-	100%
802.11n(20MHz)	-	-	10Hz	-	100%
802.11n(40MHz)	-	-	10Hz	-	100%

802.11b

802.11g

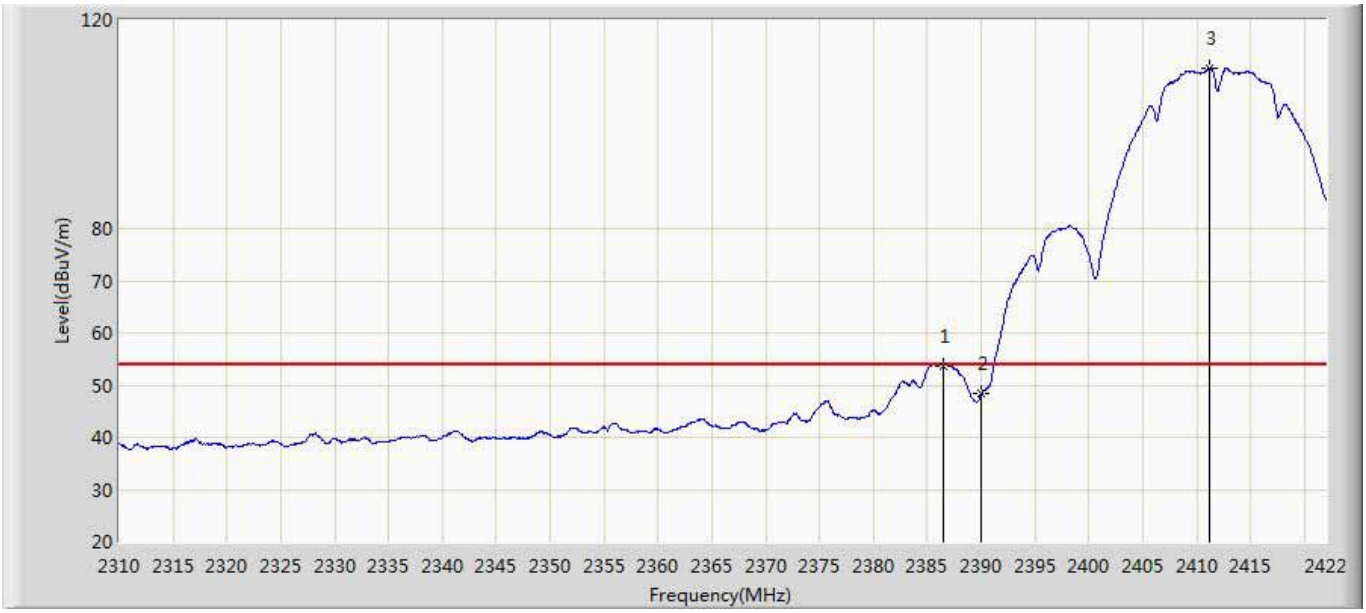
802.11n(20MHz)



802.11n(40MHz)

6.7. Test Result

Engineer: Bruce	
Site: AC5	Time: 2017/03/26 - 14:02
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2412Mhz by 802.11b with Antenna 0+1	

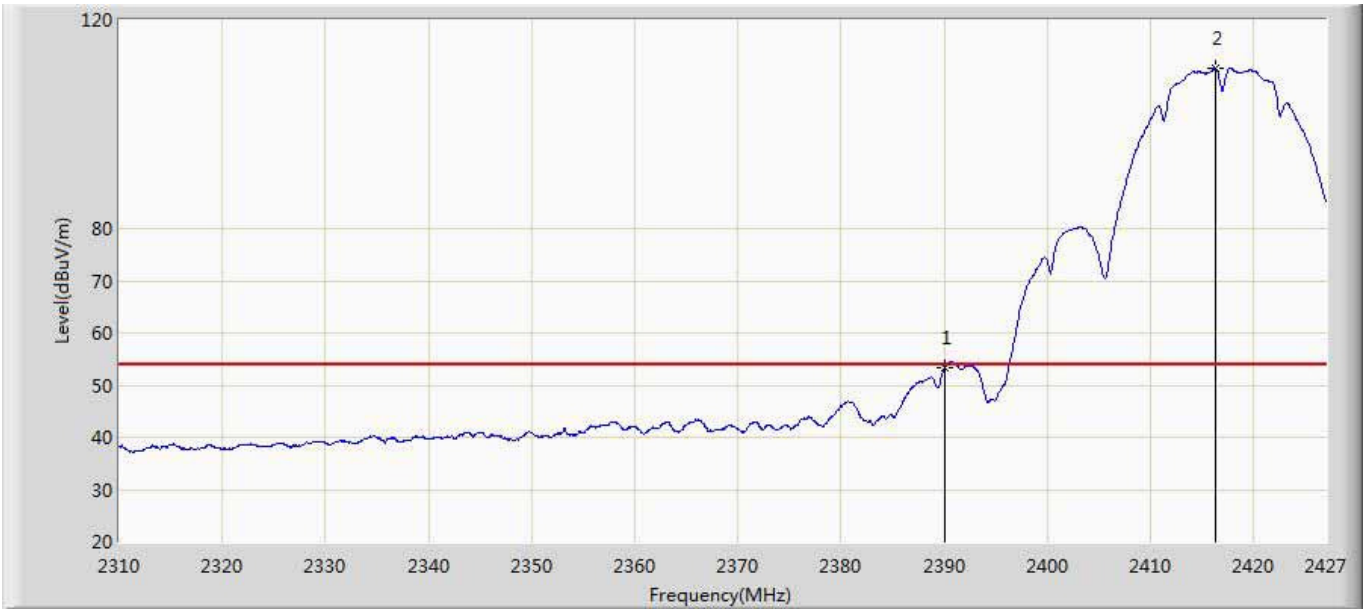


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2386.550	53.606	17.526	-0.394	54.000	36.080	AV
2		2390.000	48.278	12.192	-5.722	54.000	36.086	AV
3	*	2411.248	110.865	74.706	56.865	54.000	36.159	AV

Engineer: Bruce	
Site: AC5	Time: 2017/03/26 - 14:06
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2412Mhz by 802.11b with Antenna 0+1	

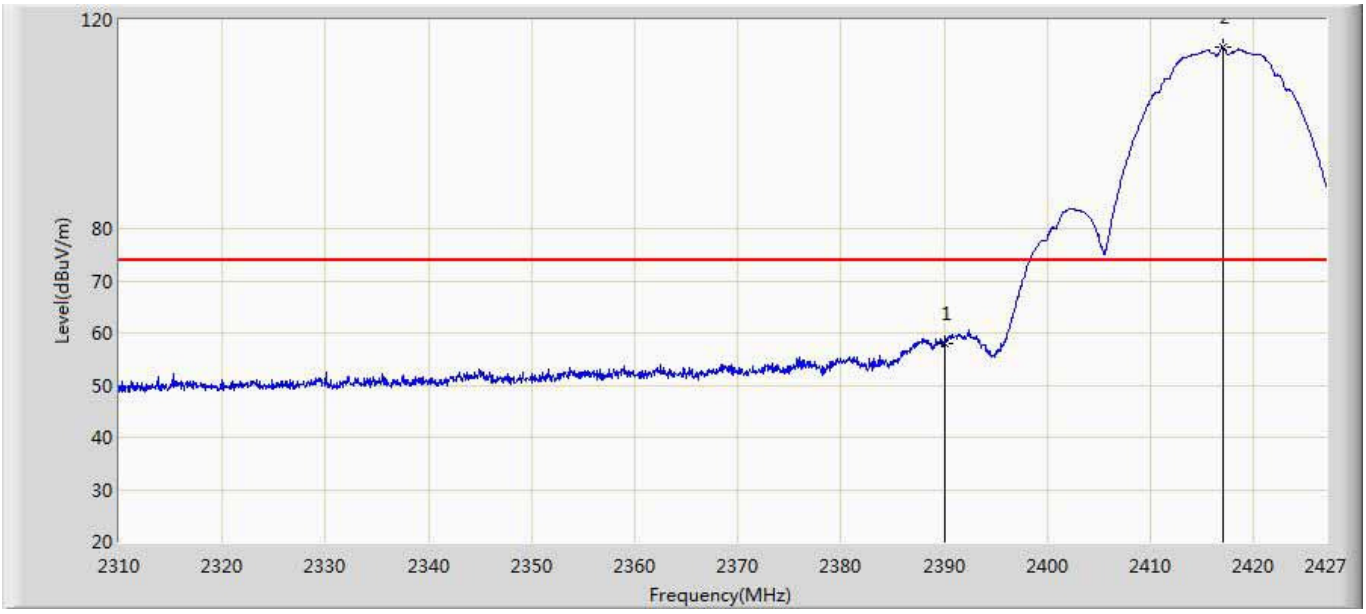
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	56.277	20.191	-17.723	74.000	36.086	PK
2	*	2411.976	114.696	78.537	40.696	74.000	36.159	PK

Engineer: Bruce	
Site: AC5	Time: 2017/03/26 - 15:19
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2417Mhz by 802.11b with Antenna 0+1	



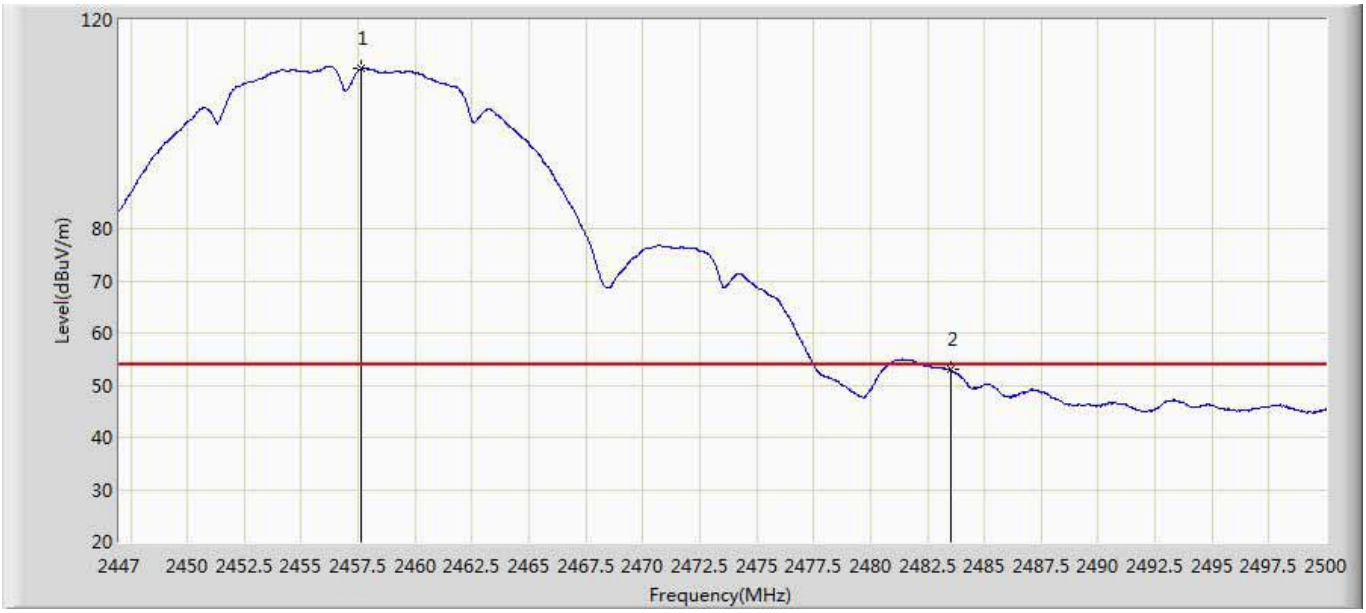
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	53.325	17.239	-0.675	54.000	36.086	AV
2	*	2416.294	110.808	74.647	56.808	54.000	36.161	AV

Engineer: Bruce	
Site: AC5	Time: 2017/03/26 - 15:27
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2417Mhz by 802.11b with Antenna 0+1	



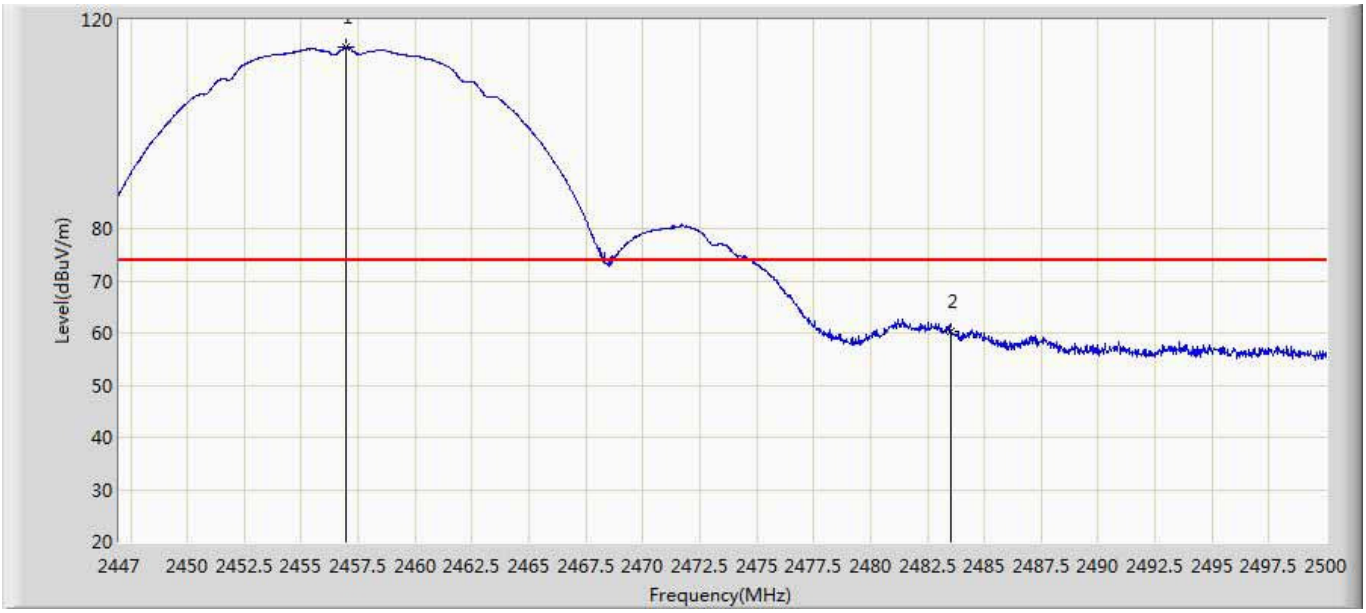
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	58.094	22.008	-15.906	74.000	36.086	PK
2	*	2417.055	114.702	78.541	40.702	74.000	36.161	PK

Engineer: Bruce	
Site: AC5	Time: 2017/03/26 - 15:29
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2457Mhz by 802.11b with Antenna 0+1	



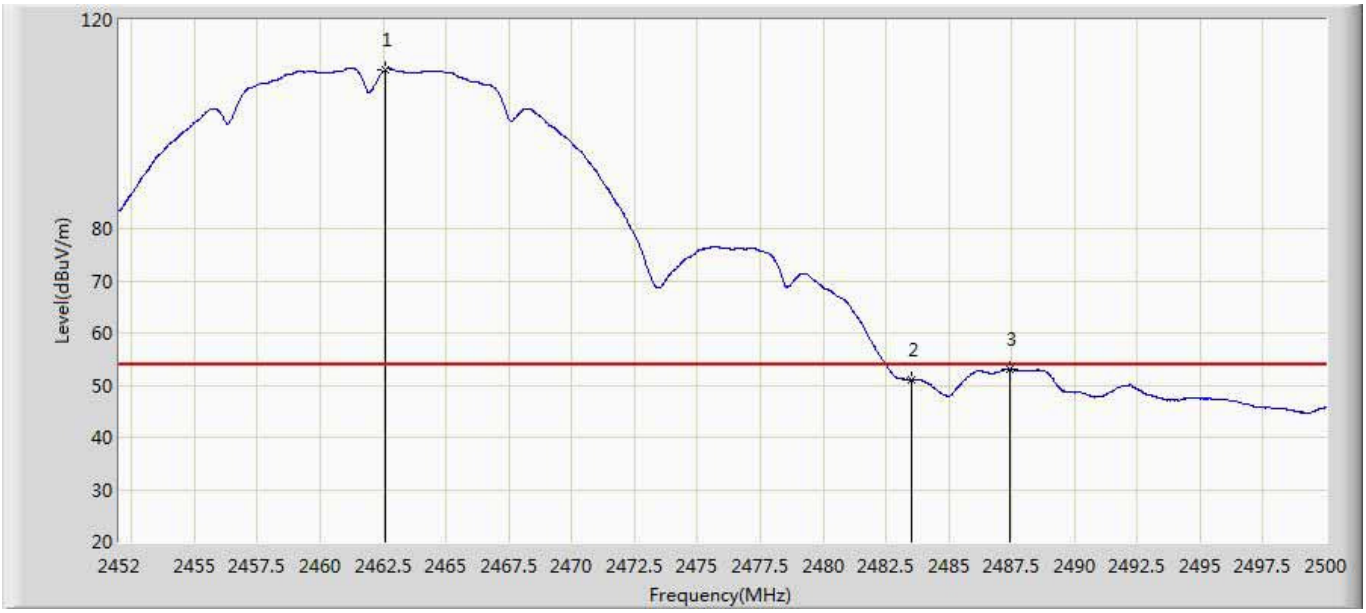
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2457.600	110.623	74.409	56.623	54.000	36.214	AV
2		2483.500	53.114	16.852	-0.886	54.000	36.261	AV

Engineer: Bruce	
Site: AC5	Time: 2017/03/26 - 15:40
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2457Mhz by 802.11b with Antenna 0+1	



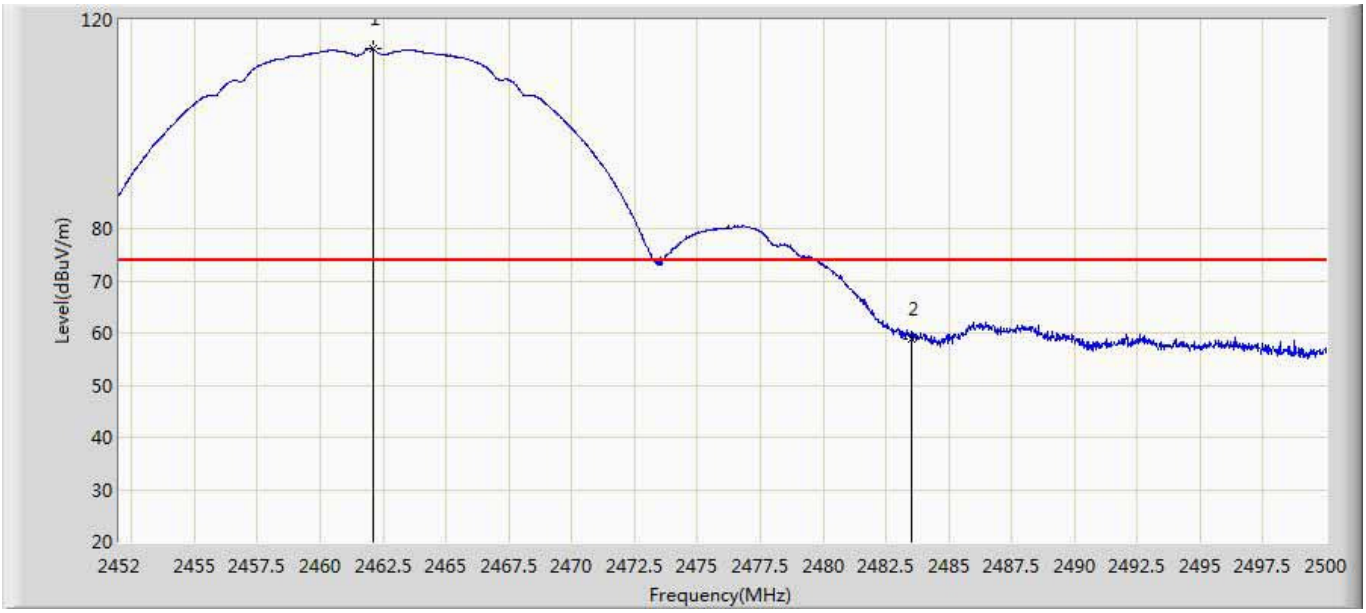
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2456.937	114.828	78.614	40.828	74.000	36.214	PK
2		2483.500	60.340	24.078	-13.660	74.000	36.261	PK

Engineer: Bruce	
Site: AC5	Time: 2017/03/26 - 14:10
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2462Mhz by 802.11b with Antenna 0+1	



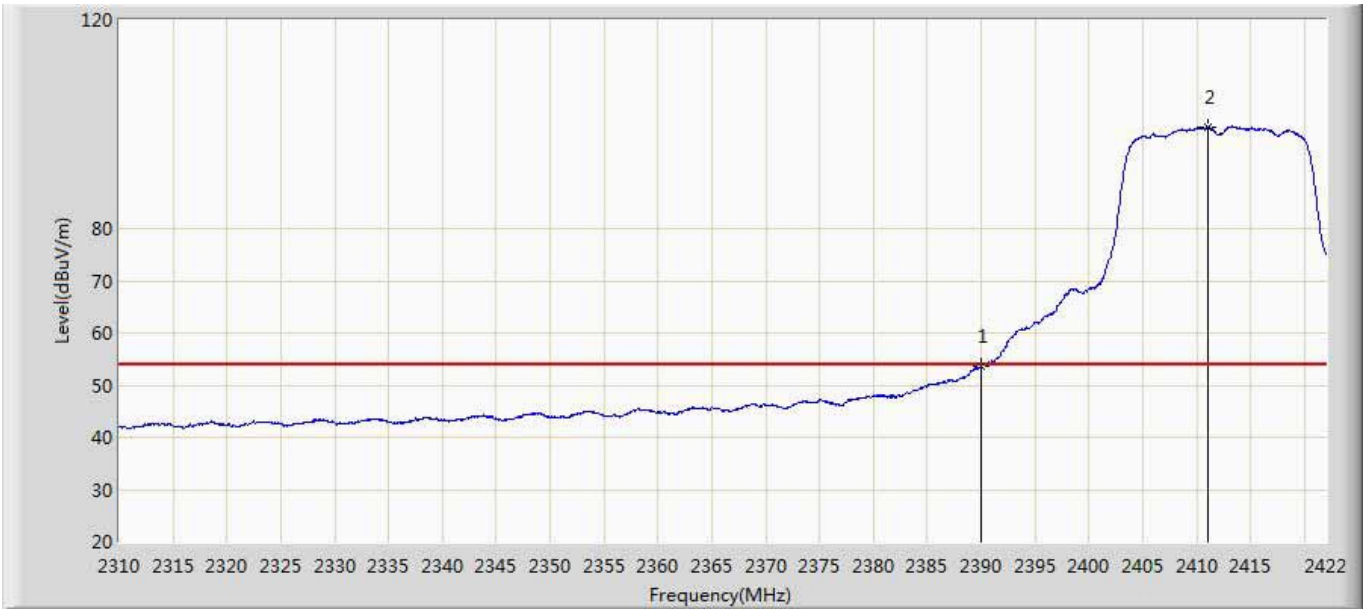
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2462.608	110.535	74.322	56.535	54.000	36.214	AV
2		2483.500	51.111	14.849	-2.889	54.000	36.261	AV
3		2487.424	53.143	16.870	-0.857	54.000	36.273	AV

Engineer: Bruce	
Site: AC5	Time: 2017/03/26 - 14:17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2462Mhz by 802.11b with Antenna 0+1	



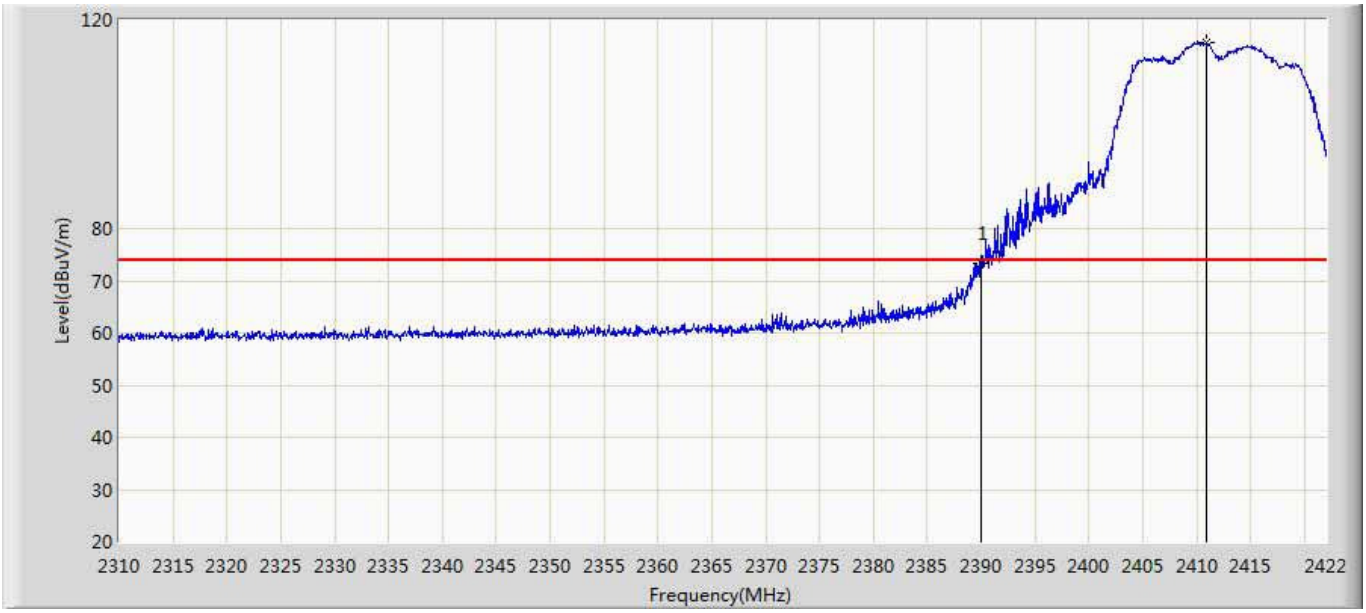
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2462.104	114.359	78.147	40.359	74.000	36.212	PK
2		2483.500	58.971	22.709	-15.029	74.000	36.261	PK

Engineer: Bruce	
Site: AC5	Time: 2017/03/05 - 18:15
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2412Mhz by 802.11g with Antenna 0+1	



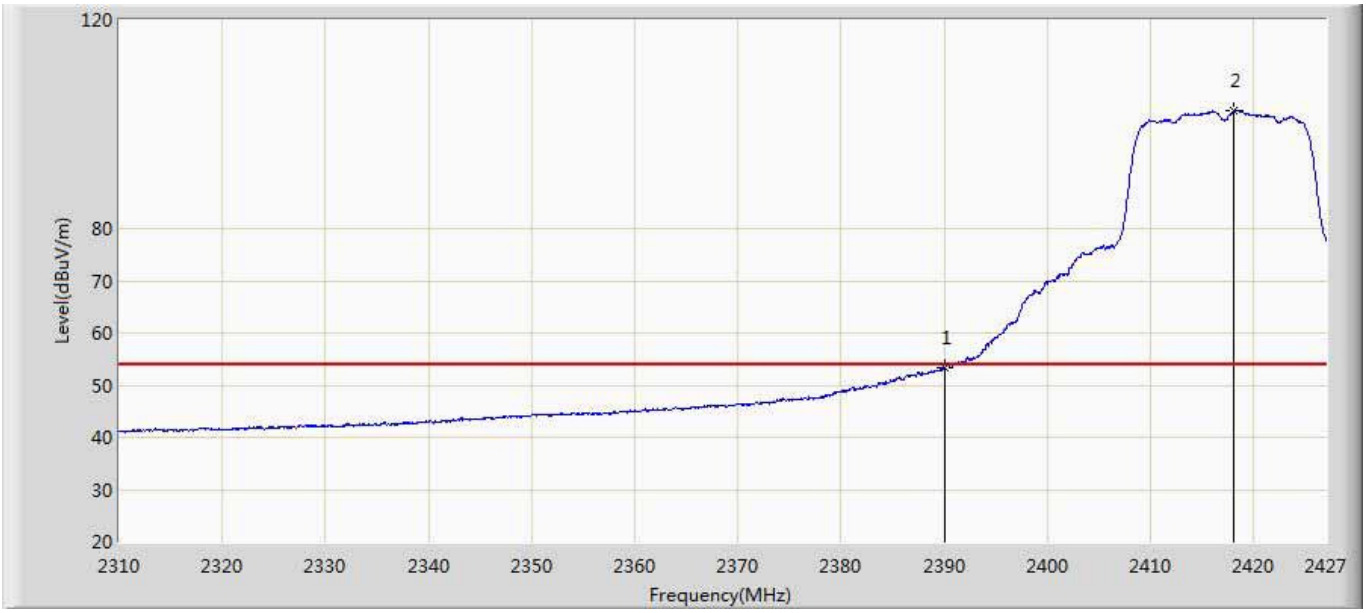
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	53.497	17.411	-0.503	54.000	36.086	AV
2	*	2411.080	99.501	63.342	45.501	54.000	36.159	AV

Engineer: Bruce	
Site: AC5	Time: 2017/03/05 - 18:19
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2412Mhz by 802.11g with Antenna 0+1	



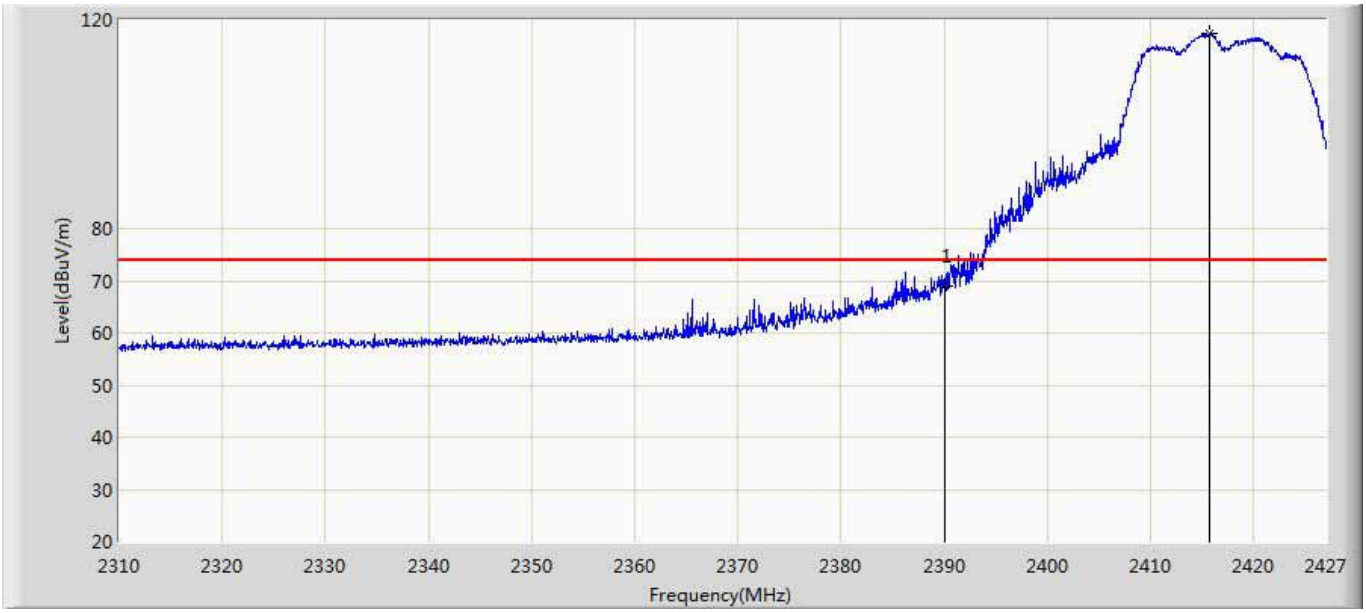
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	73.298	37.212	-0.702	74.000	36.086	PK
2	*	2410.912	115.560	79.401	41.560	74.000	36.159	PK

Engineer: Bruce	
Site: AC5	Time: 2017/03/05 - 19:39
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2417Mhz by 802.11g with Antenna 0+1	



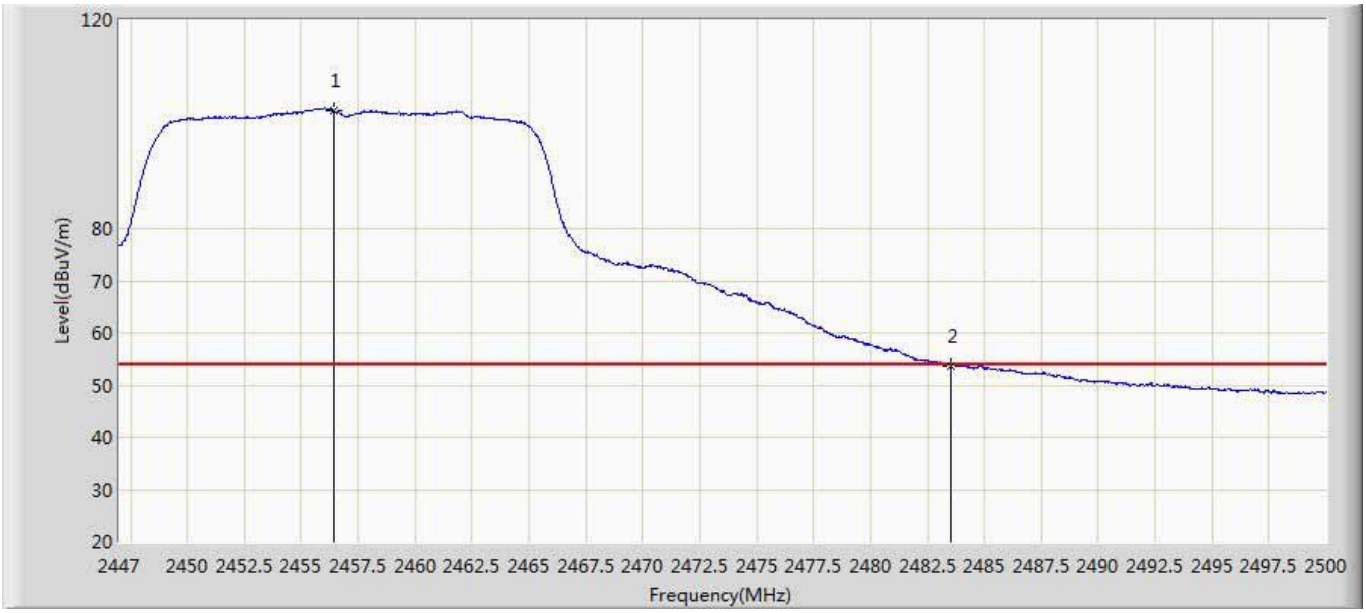
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	53.266	17.180	-0.734	54.000	36.086	AV
2	*	2418.108	102.520	66.358	48.520	54.000	36.162	AV

Engineer: Bruce	
Site: AC5	Time: 2017/03/05 - 19:42
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2417Mhz by 802.11g with Antenna 0+1	



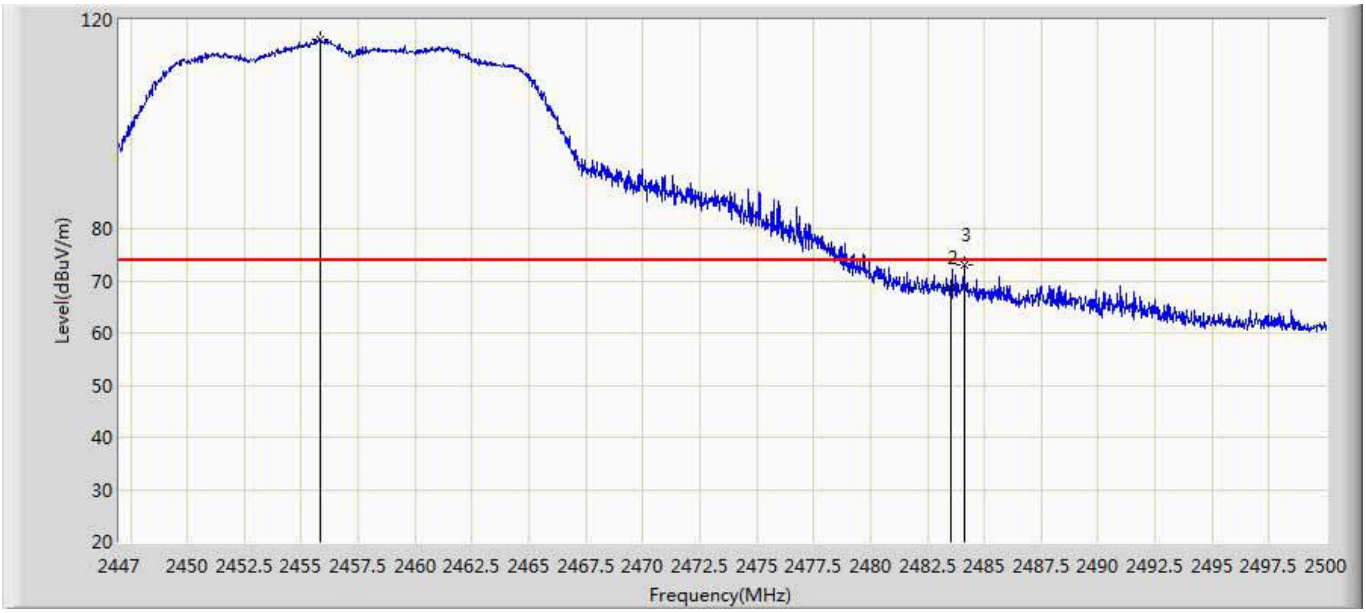
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	69.032	32.946	-4.968	74.000	36.086	PK
2	*	2415.709	117.453	81.292	43.453	74.000	36.161	PK

Engineer: Bruce	
Site: AC5	Time: 2017/03/05 - 19:44
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2457Mhz by 802.11g with Antenna 0+1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2456.434	102.571	66.356	48.571	54.000	36.214	AV
2		2483.500	53.606	17.345	-0.394	54.000	36.261	AV

Engineer: Bruce	
Site: AC5	Time: 2017/03/05 - 19:47
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2457Mhz by 802.11g with Antenna 0+1	

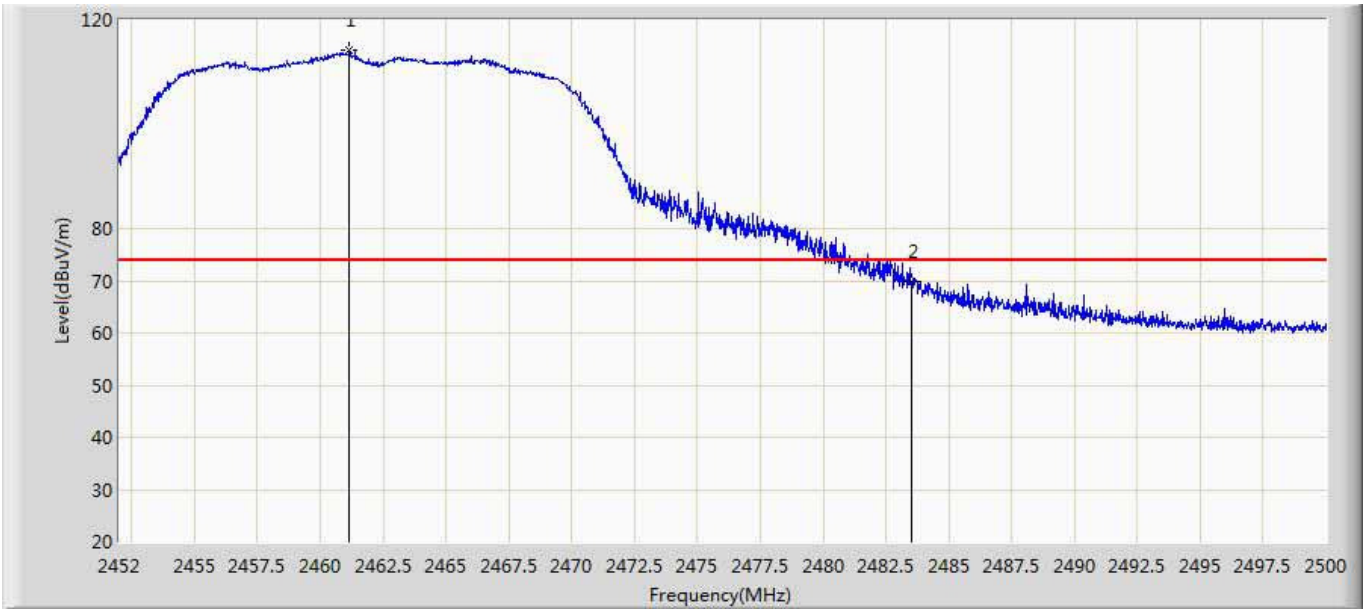


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2455.851	116.134	79.919	42.134	74.000	36.215	PK
2		2483.500	68.678	32.417	-5.322	74.000	36.261	PK
3		2484.126	72.969	36.706	-1.031	74.000	36.263	PK

Engineer: Bruce	
Site: AC5	Time: 2017/03/05 - 18:21
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2462Mhz by 802.11g with Antenna 0+1	

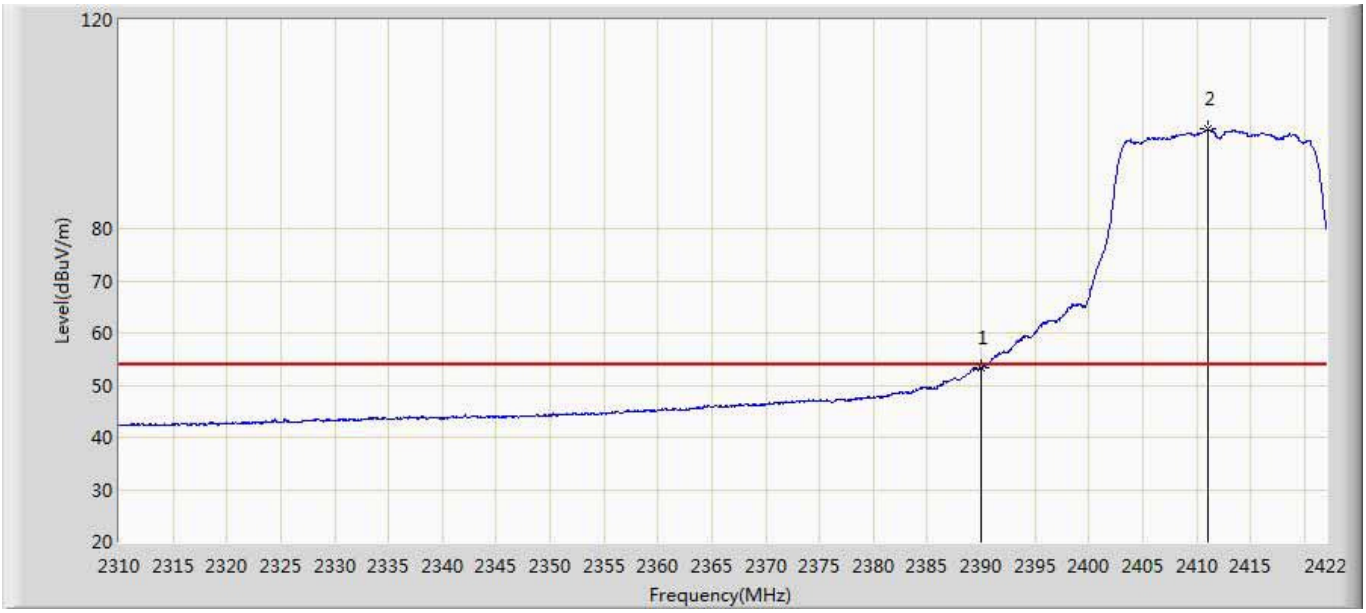
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2461.504	100.095	63.883	46.095	54.000	36.212	AV
2		2483.500	53.773	17.512	-0.227	54.000	36.261	AV

Engineer: Bruce	
Site: AC5	Time: 2017/03/05 - 18:26
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2462Mhz by 802.11g with Antenna 0+1	



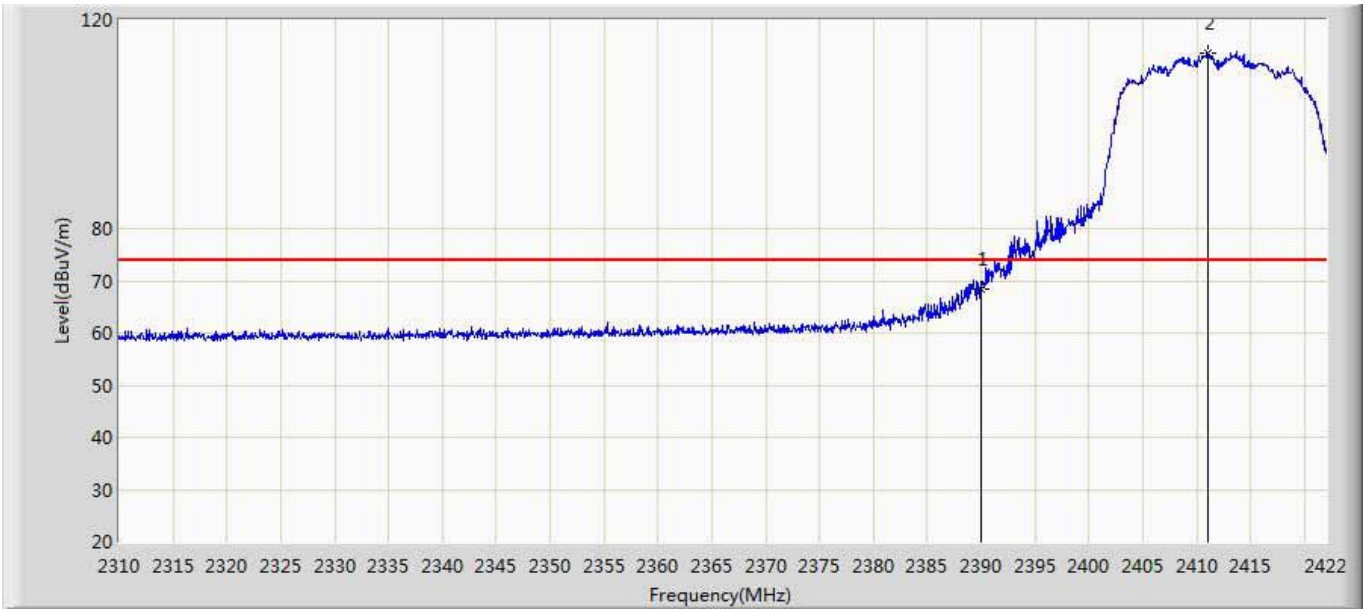
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2461.144	114.107	77.895	40.107	74.000	36.212	PK
2		2483.500	69.913	33.652	-4.087	74.000	36.261	PK

Engineer: Bruce	
Site: AC5	Time: 2017/03/05 - 18:27
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2412Mhz by 802.11n(20Mhz) with Antenna 0+1	



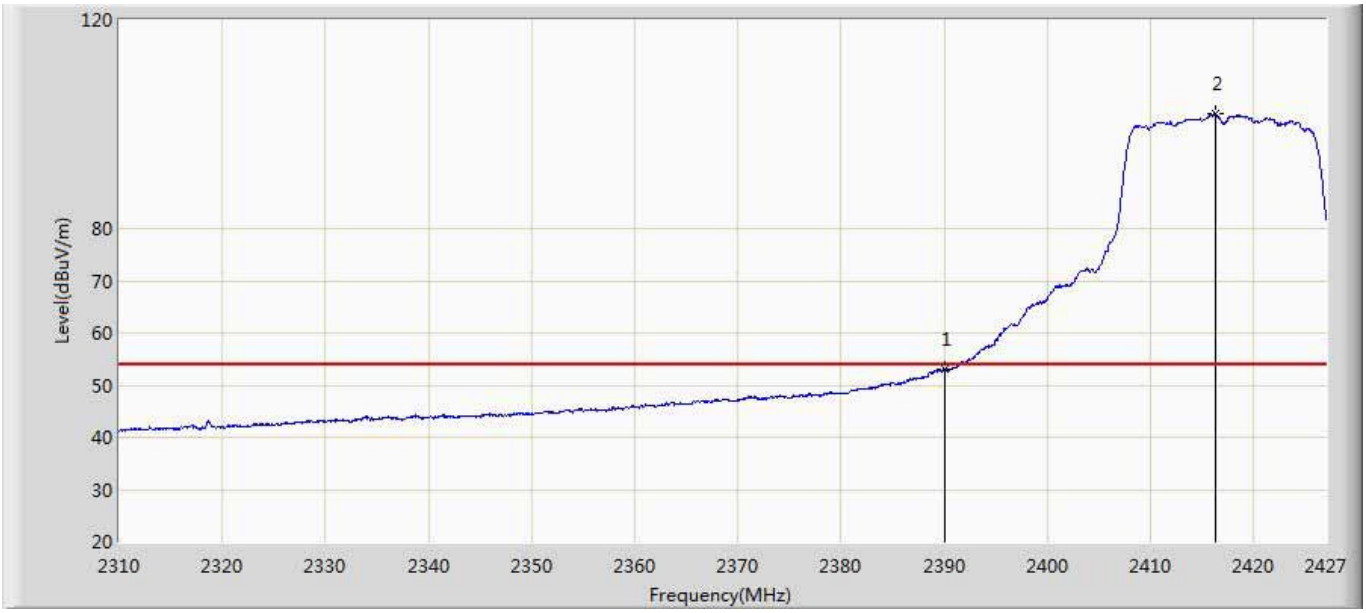
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	53.262	17.176	-0.738	54.000	36.086	AV
2	*	2411.080	99.079	62.920	45.079	54.000	36.159	AV

Engineer: Bruce	
Site: AC5	Time: 2017/03/05 - 18:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2412Mhz by 802.11n(20Mhz) with Antenna 0+1	



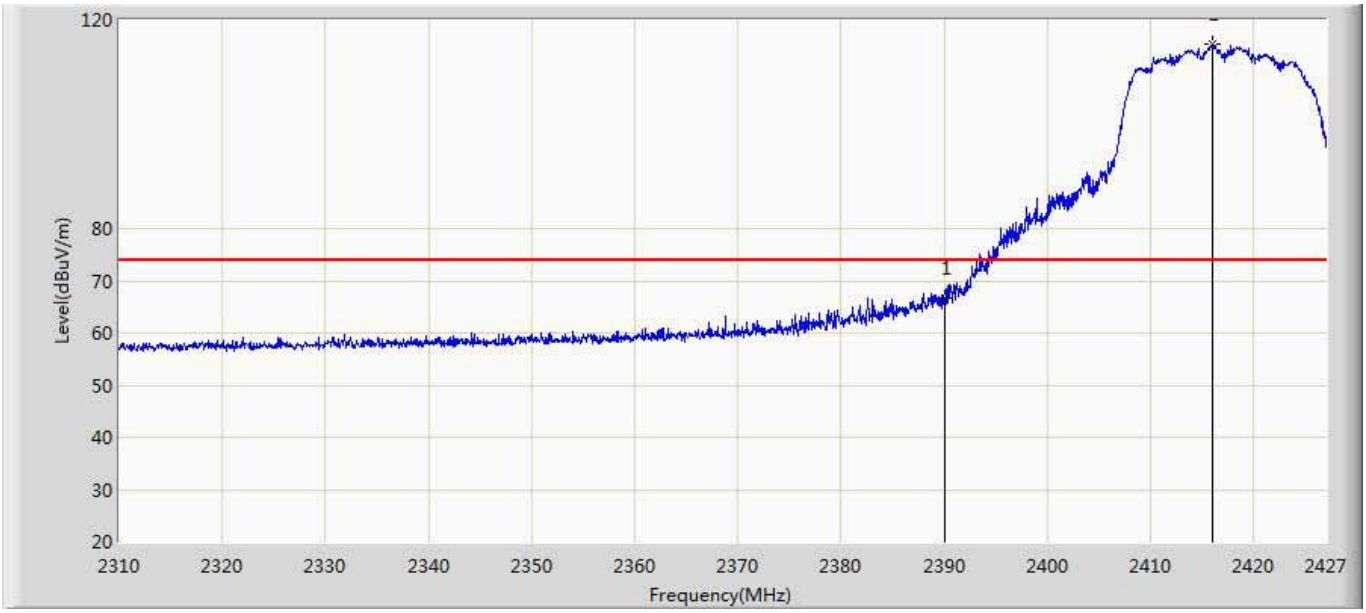
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	68.513	32.427	-5.487	74.000	36.086	PK
2	*	2411.080	113.669	77.510	39.669	74.000	36.159	PK

Engineer: Bruce	
Site: AC5	Time: 2017/03/05 - 19:49
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2417Mhz by 802.11n(20Mhz) with Antenna 0+1	



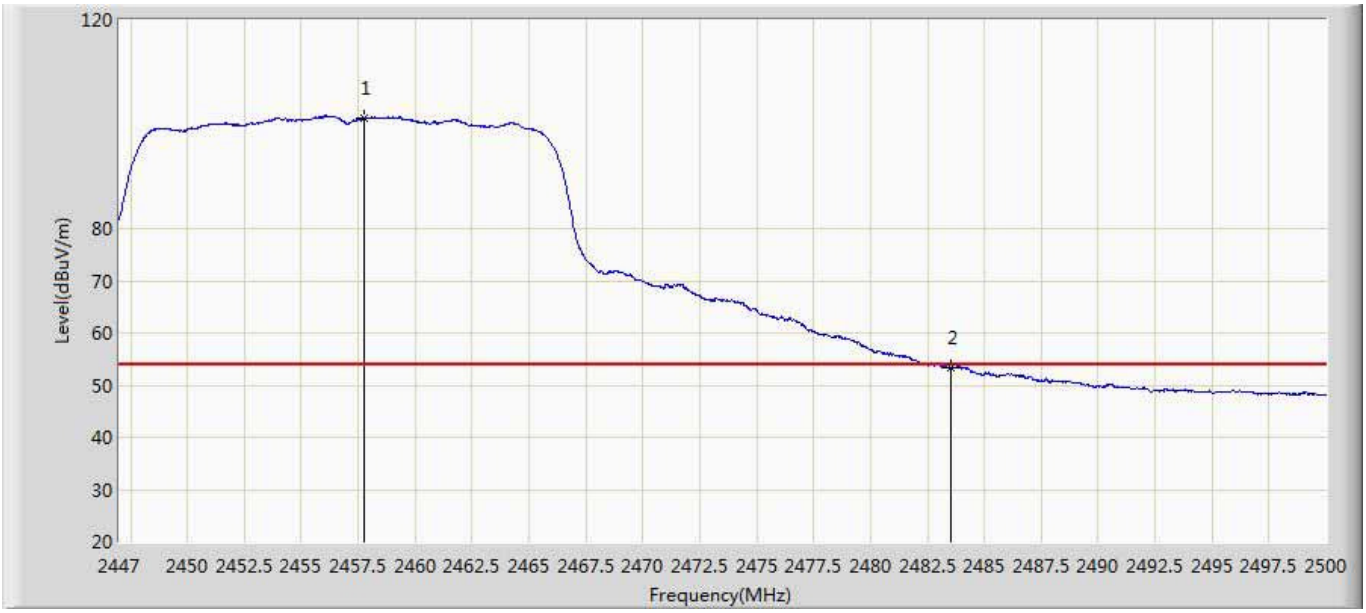
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	52.920	16.834	-1.080	54.000	36.086	AV
2	*	2416.294	101.935	65.774	47.935	54.000	36.161	AV

Engineer: Bruce	
Site: AC5	Time: 2017/03/05 - 19:55
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2417Mhz by 802.11n(20Mhz) with Antenna 0+1	



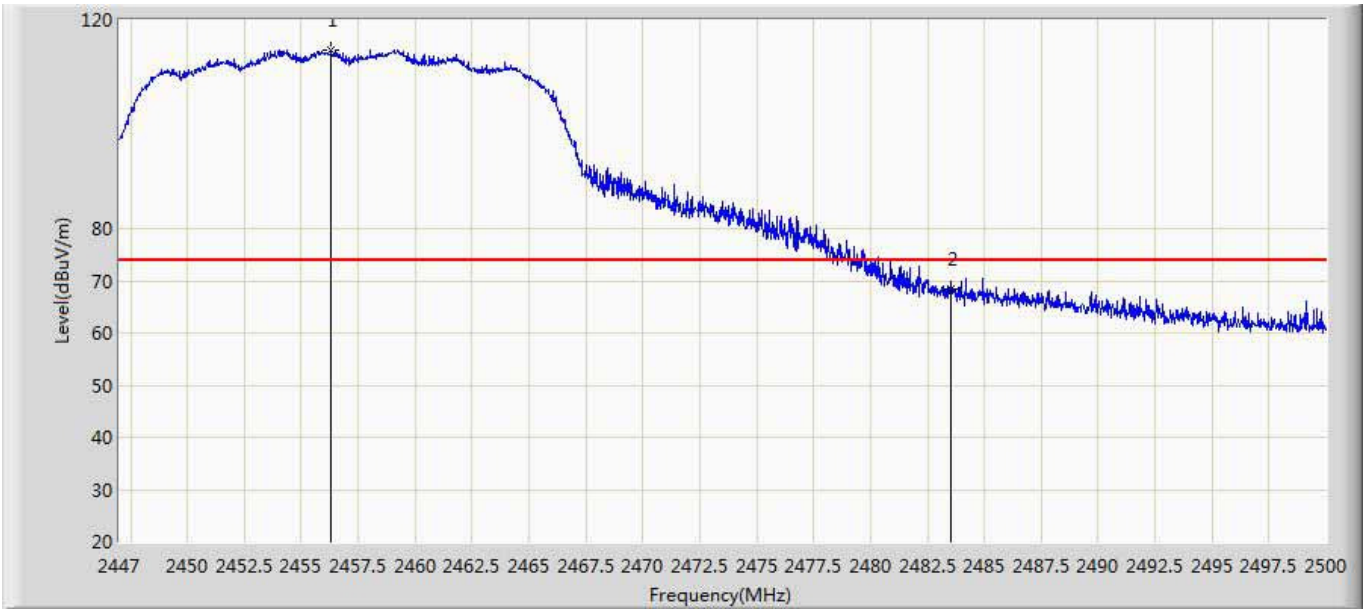
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	66.729	30.643	-7.271	74.000	36.086	PK
2	*	2415.944	115.342	79.181	41.342	74.000	36.161	PK

Engineer: Bruce	
Site: AC5	Time: 2017/03/05 - 19:57
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2457Mhz by 802.11n(20Mhz) with Antenna 0+1	



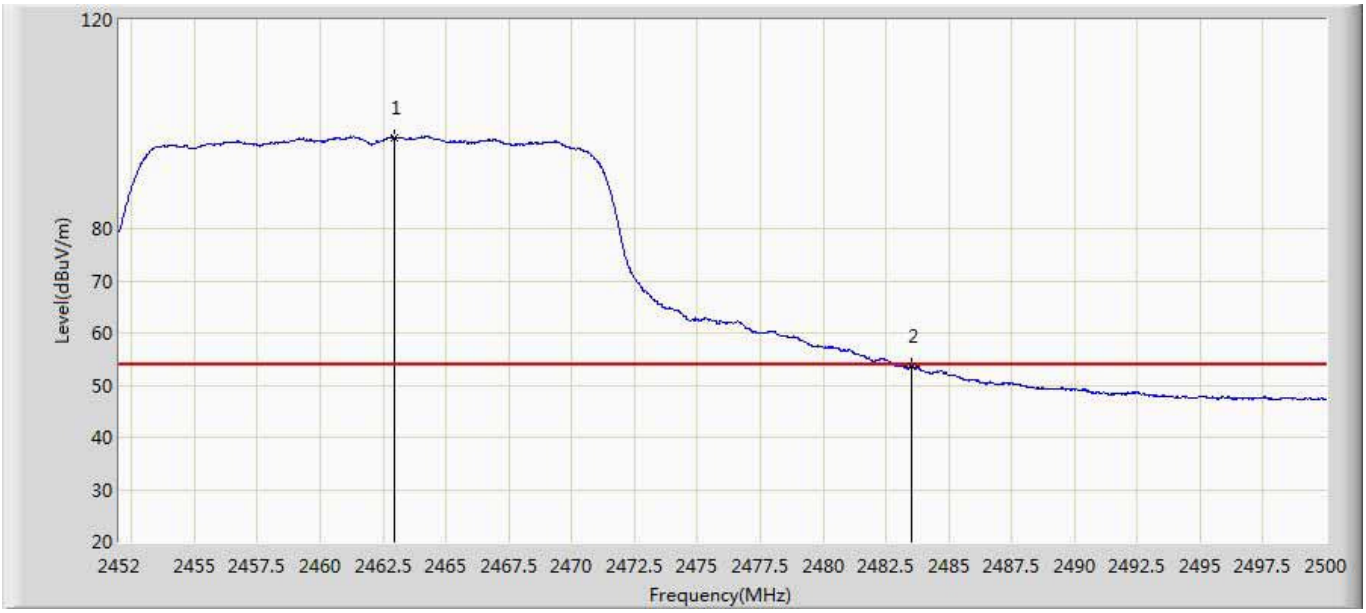
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2457.785	101.287	65.073	47.287	54.000	36.214	AV
2		2483.500	53.322	17.061	-0.678	54.000	36.261	AV

Engineer: Bruce	
Site: AC5	Time: 2017/03/05 - 20:01
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2457Mhz by 802.11n(20Mhz) with Antenna 0+1	



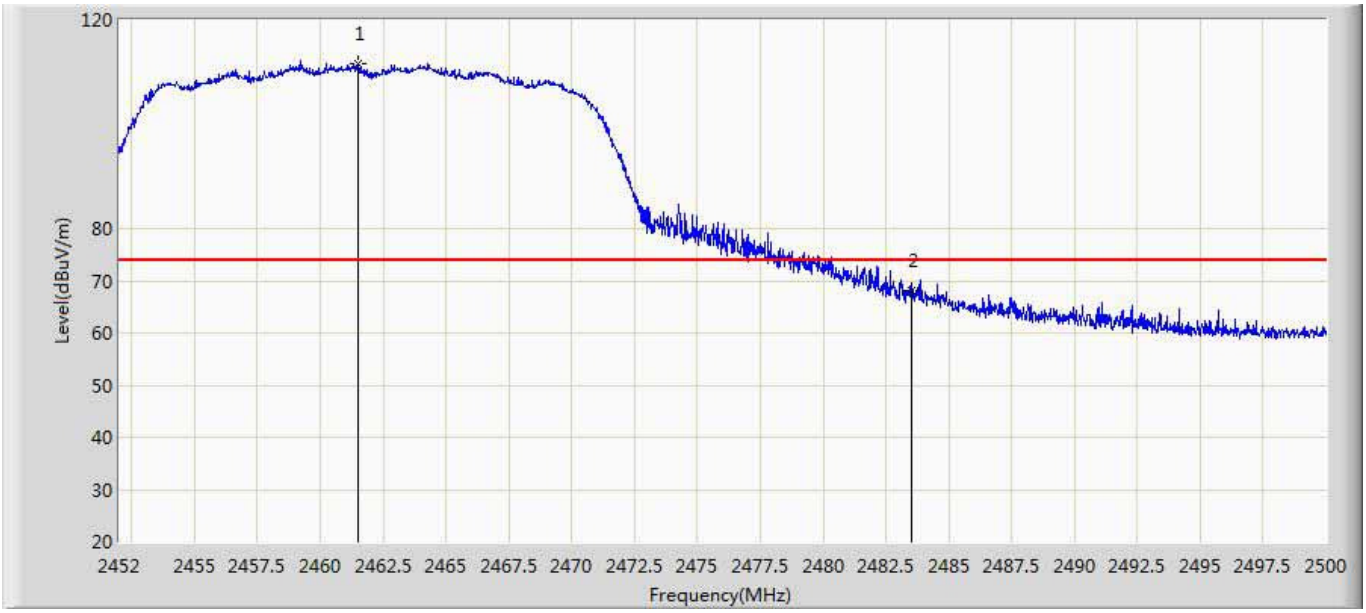
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2456.328	114.187	77.972	40.187	74.000	36.214	PK
2		2483.500	68.362	32.101	-5.638	74.000	36.261	PK

Engineer: Bruce	
Site: AC5	Time: 2017/03/05 - 18:34
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2462Mhz by 802.11n(20Mhz) with Antenna 0+1	



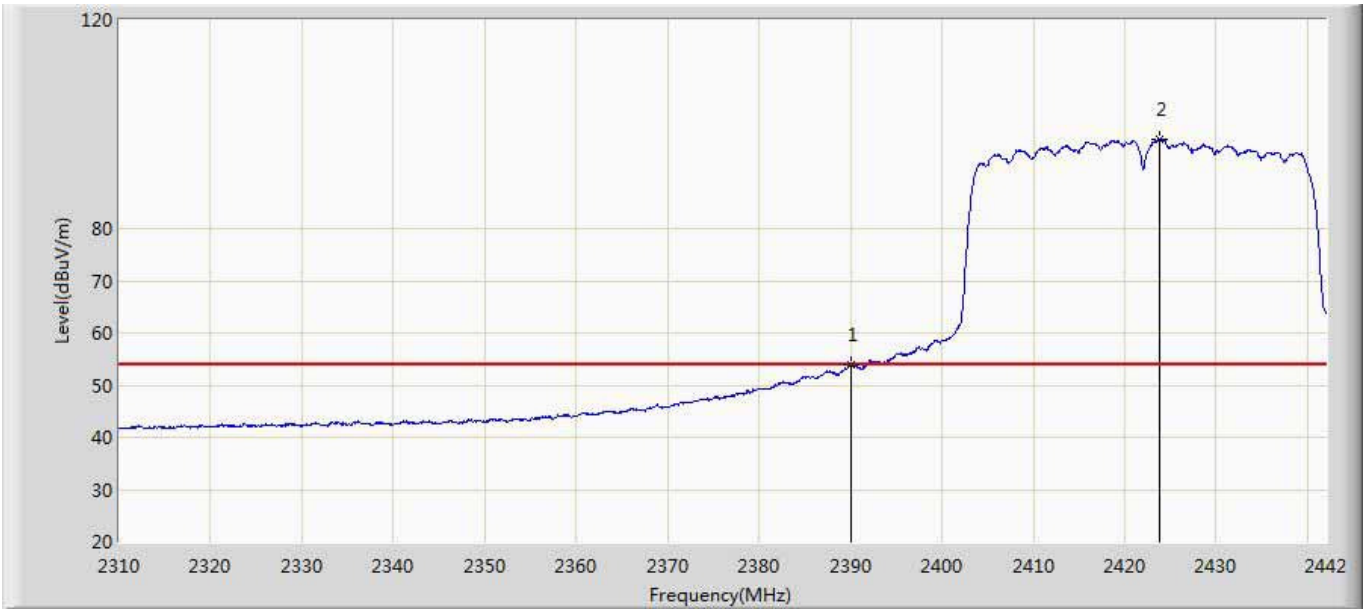
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2462.944	97.512	61.298	43.512	54.000	36.214	AV
2		2483.500	53.501	17.239	-0.499	54.000	36.261	AV

Engineer: Bruce	
Site: AC5	Time: 2017/03/05 - 18:37
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2462Mhz by 802.11n(20Mhz) with Antenna 0+1	



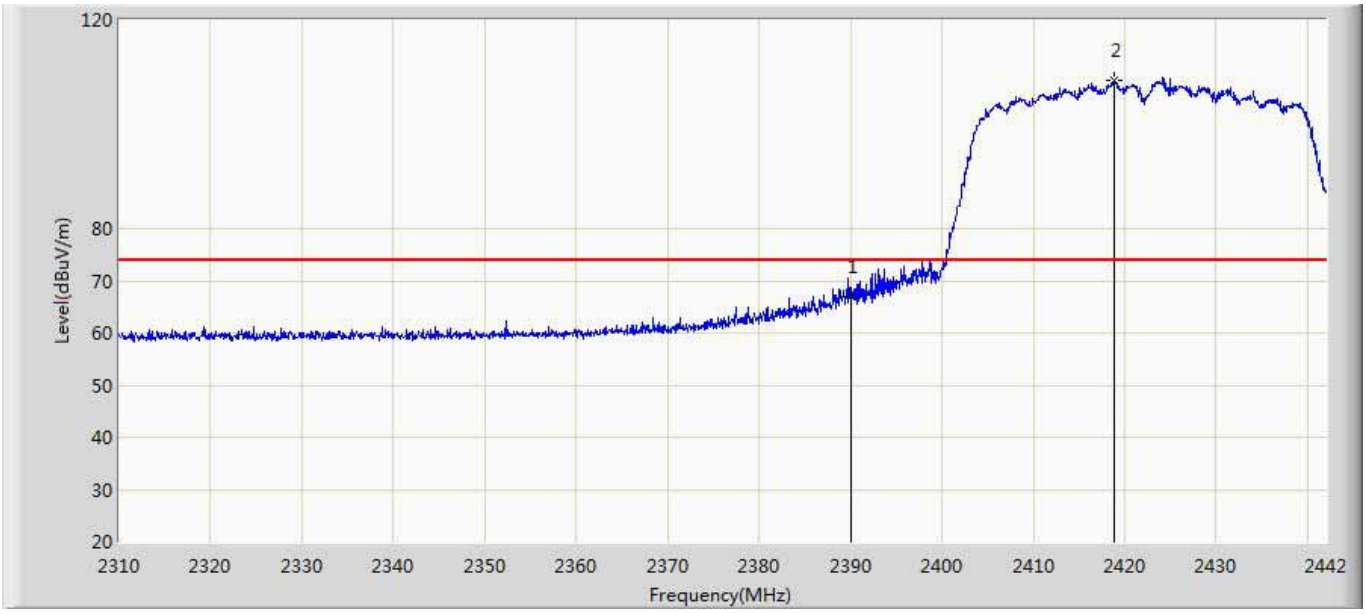
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2461.528	111.517	75.305	37.517	74.000	36.212	PK
2		2483.500	67.974	31.712	-6.026	74.000	36.261	PK

Engineer: Bruce	
Site: AC5	Time: 2017/03/05 - 18:38
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2422Mhz by 802.11n(40Mhz) with Antenna 0+1	



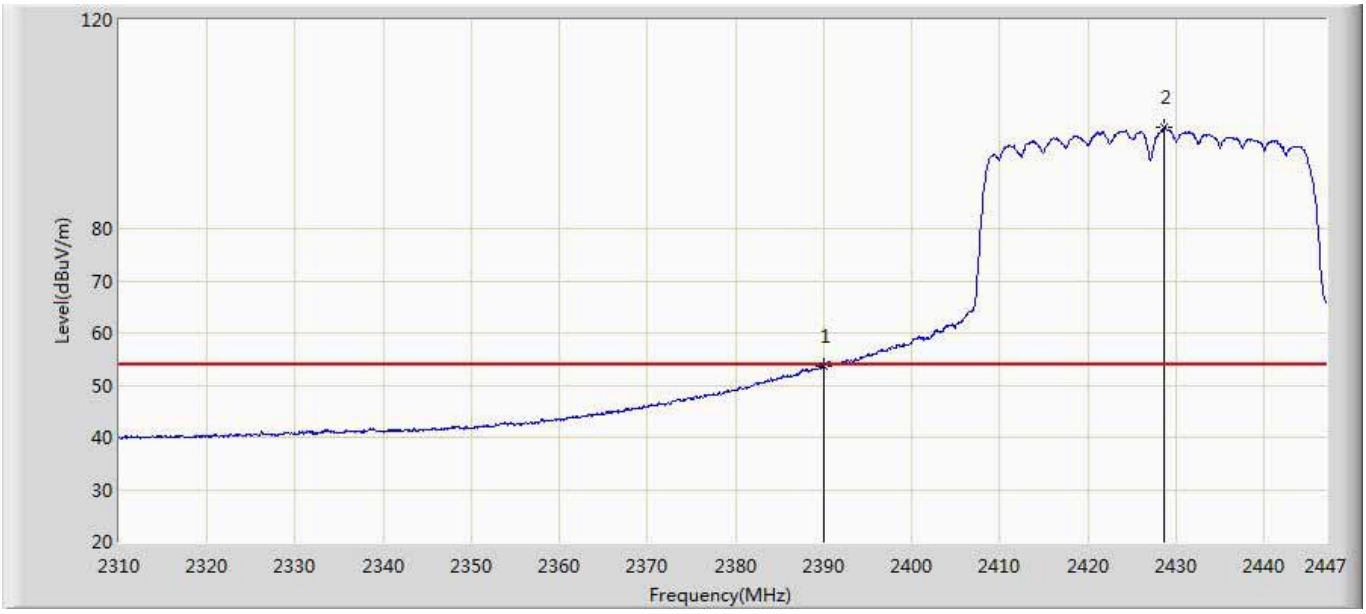
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	53.919	17.833	-0.081	54.000	36.086	AV
2	*	2423.784	97.074	60.910	43.074	54.000	36.164	AV

Engineer: Bruce	
Site: AC5	Time: 2017/03/05 - 18:43
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2422Mhz by 802.11n(40Mhz) with Antenna 0+1	



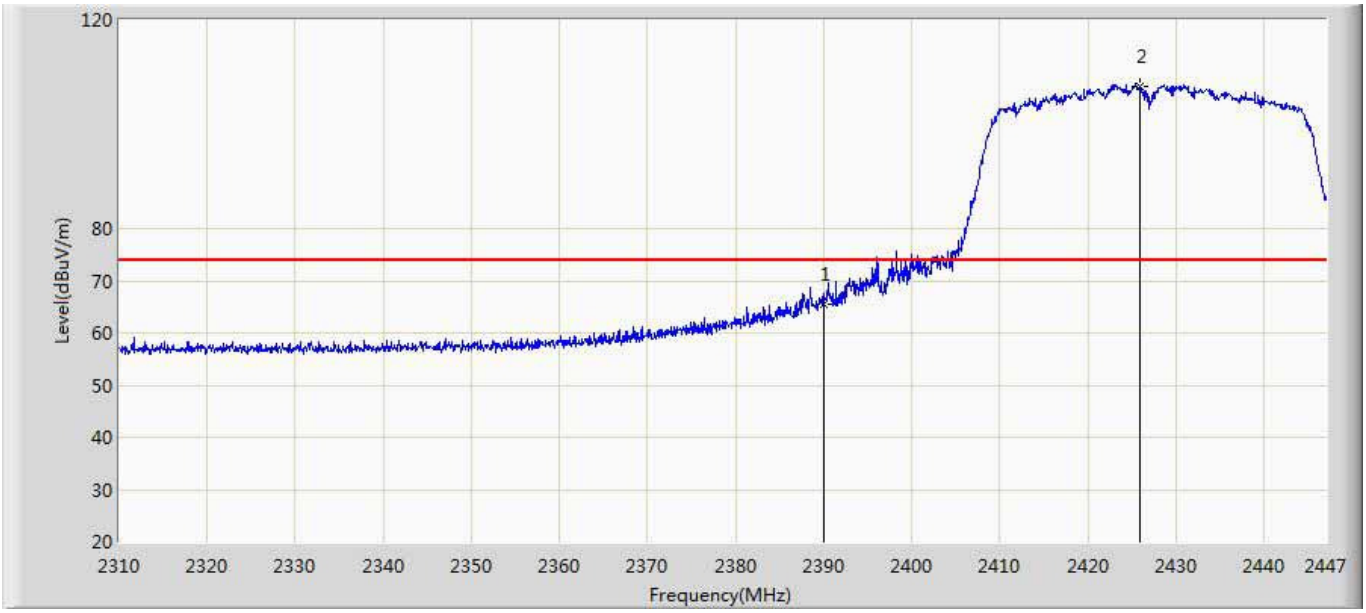
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	66.845	30.759	-7.155	74.000	36.086	PK
2	*	2418.768	108.317	72.155	34.317	74.000	36.162	PK

Engineer: Bruce	
Site: AC5	Time: 2017/03/05 - 20:02
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2427Mhz by 802.11n(40Mhz) with Antenna 0+1	



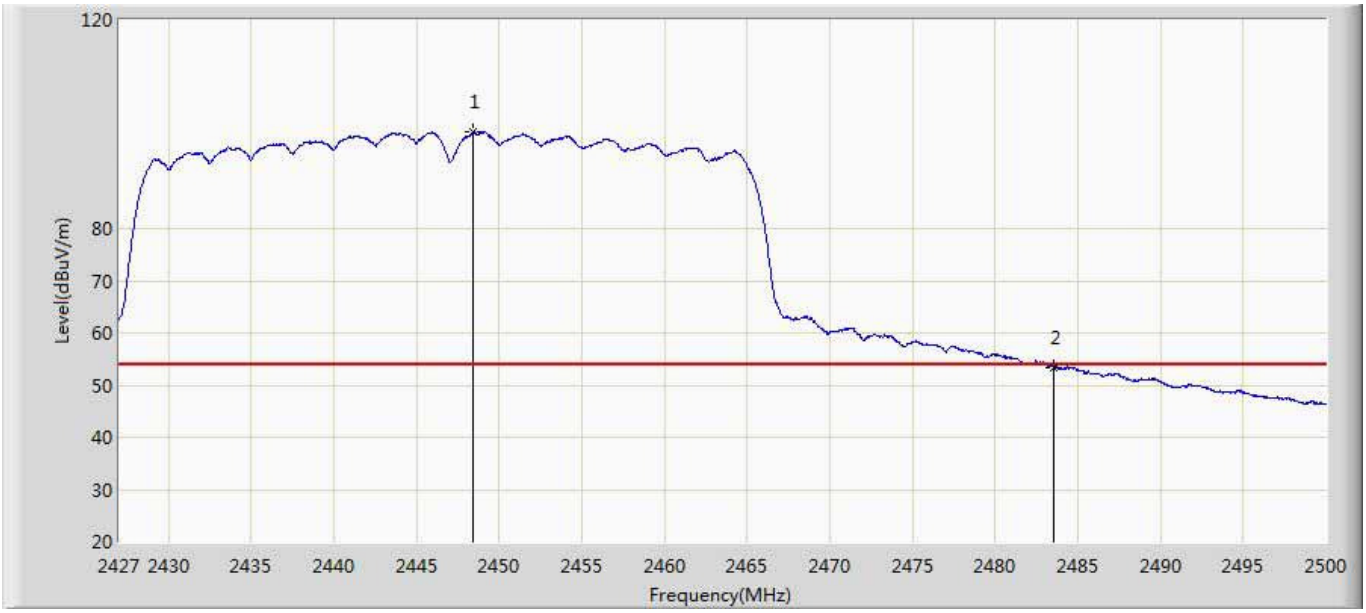
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	53.589	17.503	-0.411	54.000	36.086	AV
2	*	2428.710	99.391	63.224	45.391	54.000	36.167	AV

Engineer: Bruce	
Site: AC5	Time: 2017/03/05 - 20:07
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2427Mhz by 802.11n(40Mhz) with Antenna 0+1	



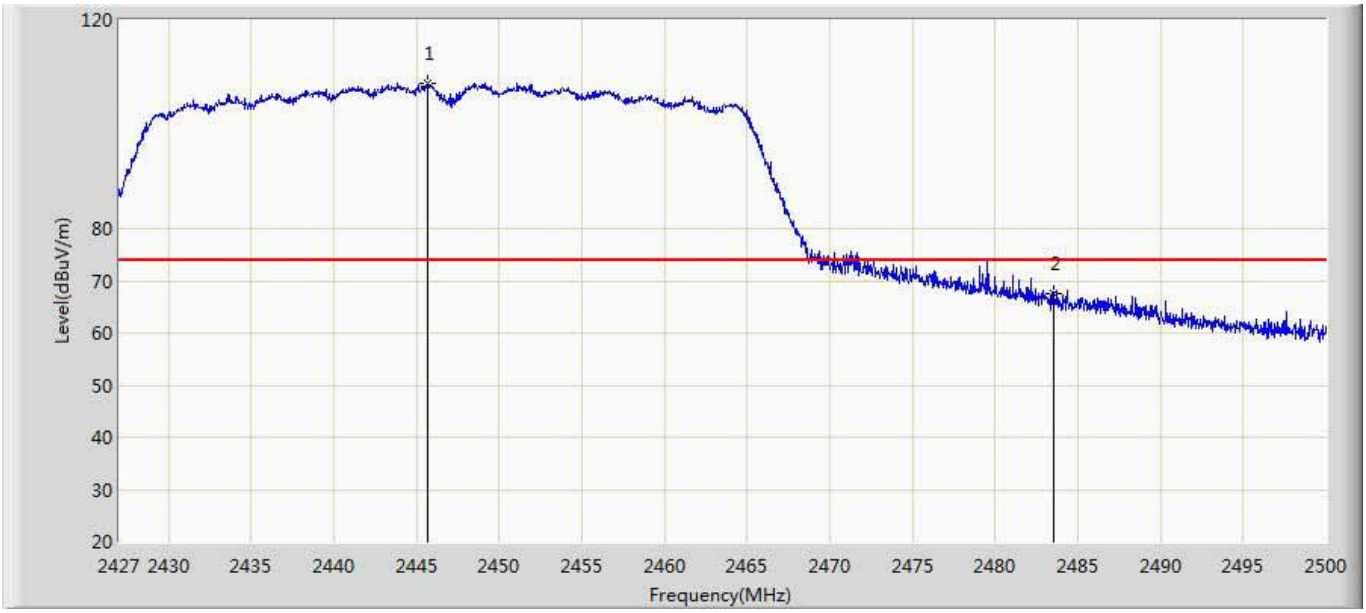
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	65.623	29.537	-8.377	74.000	36.086	PK
2	*	2425.902	107.139	70.975	33.139	74.000	36.164	PK

Engineer: Bruce	
Site: AC5	Time: 2017/03/05 - 20:09
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2447Mhz by 802.11n(40Mhz) with Antenna 0+1	



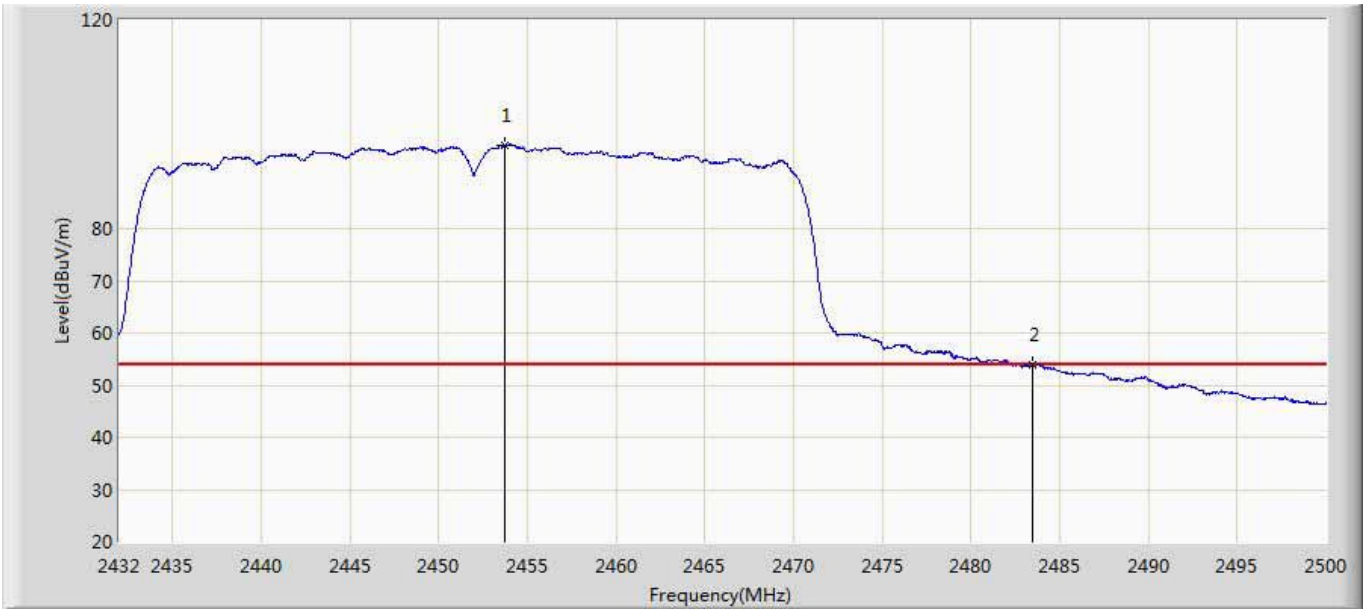
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2448.426	98.452	62.234	44.452	54.000	36.218	AV
2		2483.500	53.450	17.188	-0.550	54.000	36.261	AV

Engineer: Bruce	
Site: AC5	Time: 2017/03/05 - 20:10
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2447Mhz by 802.11n(40Mhz) with Antenna 0+1	



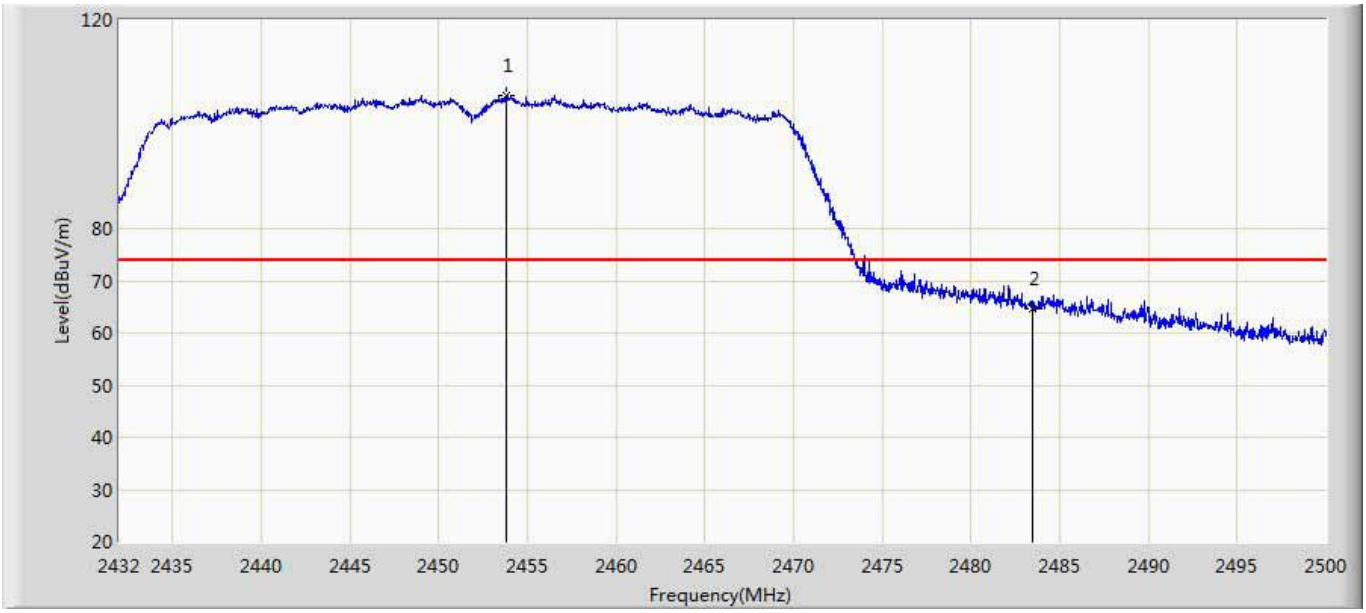
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2445.688	107.958	71.738	33.958	74.000	36.220	PK
2		2483.500	67.624	31.363	-6.376	74.000	36.261	PK

Engineer: Bruce	
Site: AC5	Time: 2017/03/05 - 18:45
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2452Mhz by 802.11n(40Mhz) with Antenna 0+1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2453.760	95.985	59.769	41.985	54.000	36.216	AV
2		2483.500	53.817	17.556	-0.183	54.000	36.261	AV

Engineer: Bruce	
Site: AC5	Time: 2017/03/05 - 18:49
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2452Mhz by 802.11n(40Mhz) with Antenna 0+1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2453.794	105.465	69.249	31.465	74.000	36.216	PK
2		2483.500	64.766	28.505	-9.234	74.000	36.261	PK

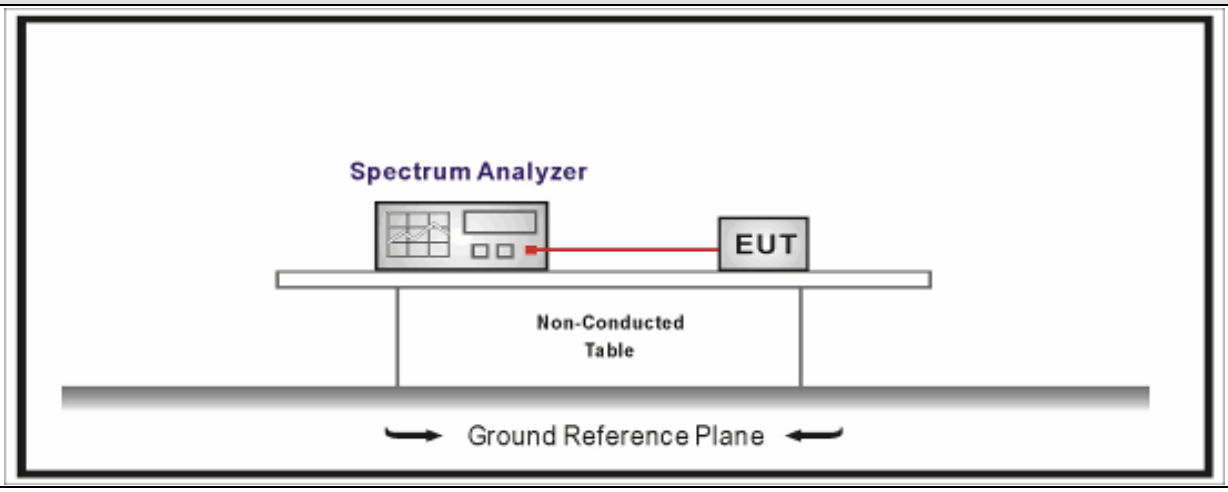
7. Occupied Bandwidth

7.1. Test Equipment

Occupied Bandwidth / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2017.02.04	2018.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2017.04.09	2018.04.08
MXA Signal Anlyzer	Keysight	N9020A	MY56060147	2017.04.09	2018.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2017.04.10	2018.04.09
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

7.2. Test Setup

Occupied Bandwidth test setup:



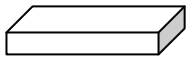
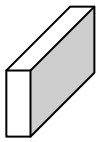
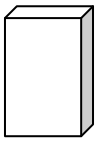
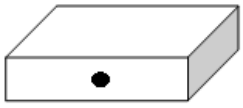
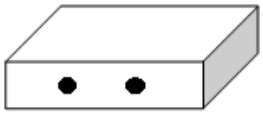
7.3. Limit

Occupied Bandwidth
Systems using digital modulation techniques operate in the2400-2483.5 MHz .The minimum 6 dB bandwidth shall be at least 500 kHz

7.4. Test Procedure

Test Method				
	Reference Rule		Chapter	Description
☒	ANSI C63.10		11.8	DTS bandwidth
	☐	ANSI C63.10	11.8.1	Option 1
	☒	ANSI C63.10	11.8.2	Option 2

7.5. EUT test definition

<table>
<tr><th>Item</th><th colspan="4">Occupied Bandwidth</th></tr>
<tr><td rowspan="3">Device Category</td><td>☐</td><td colspan="3">Fixed point-to-point</td></tr>
<tr><td>☐</td><td colspan="3">Emit multiple directional beams, simultaneously or sequentially</td></tr>
<tr><td>☒</td><td colspan="3">Other cases</td></tr>
<tr><td>Test mode</td><td colspan="4">Mode 1~4</td></tr>
<tr><td rowspan="11">Test method</td><td>☐</td><td colspan="3">Radiated</td></tr>
<tr><td rowspan="3"></td><td>X Axis</td><td>Y Axis</td><td>Z Axis</td></tr>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td>Worst Axis ☐</td><td>Worst Axis ☐</td><td>Worst Axis ☐</td></tr>
<tr><td>☒</td><td colspan="3">Conducted</td></tr>
<tr><td>☐</td><td colspan="3">Chain 0</td></tr>
<tr><td></td><td colspan="3">  </td></tr>
<tr><td>☒</td><td>Chain 0</td><td colspan="2">Chain 1</td></tr>
<tr><td></td><td colspan="3">  </td></tr>
<tr><td>☐</td><td>Chain 0</td><td>Chain 1</td><td>Chain 2</td></tr>
<tr><td></td><td colspan="3">  </td></tr>
</table>

7.6. Test Result

Product Name	:	300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power	:	AC 120V/60Hz
Test Mode	:	Mode1~4	Test Site	:	TR8
Test Date	:	2017.04.12			

Mode	CH.	Test Freq. (MHz)	99% Occupied Bandwidth (MHz)		6dB Occupied Bandwidth (MHz)		Limit (kHz)	Result
			Ant 0	Ant 1	Ant 0	Ant 1		
1	01	2412	14.813	14.839	9.060	9.061	>500	Pass
1	06	2437	14.798	14.860	9.060	9.061	>500	Pass
1	11	2462	14.701	14.807	9.057	9.057	>500	Pass
2	01	2412	16.746	16.761	15.11	13.83	>500	Pass
2	06	2437	16.668	16.659	15.10	14.01	>500	Pass
2	11	2462	16.663	16.602	15.11	15.12	>500	Pass
3	01	2412	17.645	17.654	15.12	15.08	>500	Pass
3	06	2437	17.658	17.651	15.08	15.06	>500	Pass
3	11	2462	17.648	17.646	15.08	15.08	>500	Pass
4	03	2422	35.709	35.742	35.07	35.05	>500	Pass
4	06	2437	35.731	35.717	32.54	35.03	>500	Pass
4	09	2452	35.738	35.735	35.06	35.04	>500	Pass

Note : The worst case of Occupied Bandwidth as below in next page:

Mode 1 CH11 (2462MHz) Ant 0

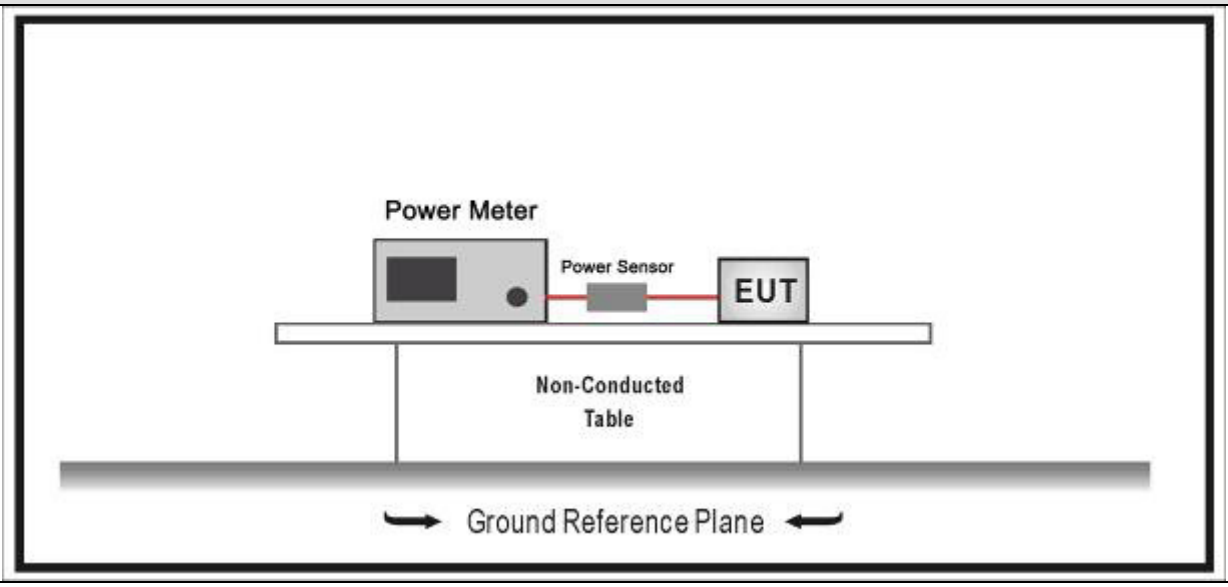
8. Fundamental emission output power

8.1. Test Equipment

Fundamental emission output power/ TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2017.01.04	2018.01.03
Spectrum Analyzer	Agilent	N9010A	MY48030494	2017.02.04	2018.02.03
Wideband Peak Power Meter	Anritsu	ML2495A	0905006	2016.10.14	2017.10.13
Power Sensor	Anritsu	MA2411B	0846014	2016.10.14	2017.10.13
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2017.04.10	2018.04.09
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

8.2. Test Setup

Fundamental emission output power test setup



8.3. Limit

Fundamental emission output power Limit

☒ GTX

8.4. Test Procedure

Fundamental emission output power Test Method				
	References Rule		Chapter	Description
☒	ANSI C63.10		11.9	Fundamental emission output power
	☐ ANSI C63.10		11.9.1	Maximum peak conducted output power
		☐ ANSI C63.10	11.9.1.1	RBW ≥ DTS bandwidth
		☐ ANSI C63.10	11.9.1.2	Integrated band power method
		☐ ANSI C63.10	11.9.1.3	PKPM1 Peak power meter method
	☒ ANSI C63.10		11.9.2	Maximum conducted (average) output power
		☐ ANSI C63.10	11.9.2.2	Measurement using a spectrum analyzer (SA)
		☐ ANSI C63.10	11.9.2.2.2	Method AVGSA-1(Duty cycle

Directional Gain Calculations for In-Band test method				
	References Rule		Chapter	Description
☐	KDB 662911		F2)a)	Basic methodology with NANT transmit antennas
	☐	KDB 662911	F2)a) (i)	transmit signals are correlated
	☐	KDB 662911	F2)a) (ii)	transmit signals are uncorrelated
☐	KDB 662911		F2)b)	Sectorized antenna systems.
☐	KDB 662911		F2)c)	Cross-polarized antennas
	☐	ANSI C63.10	F2)c) (i)	Cross-polarized antennas with NANT = 2.
	☐	ANSI C63.10	F2)c) (ii)	Multiple antennas
☐	KDB 662911		F2)e)	Spatial stream
	☐	KDB 662911	F2)e) (i)	Antennas have the same gain
	☐	KDB 662911	F2)e) (ii)	Antenna have the different gain with one spatial stream
	☐	KDB 662911	F2)e) (iii)	Antenna have the different gain with more than one spatial stream
☒	KDB 662911		F2)f)	Cyclic Delay Diversity (CDD)
	☒	KDB 662911	F2)f) (i)	Antennas have the same gain
	☐	KDB 662911	F2)f) (ii)	Antenna have the different gain with one spatial stream
	☐	KDB 662911	F2)f) (ii)	Antenna have the different gain with more than one spatial stream

8.5. EUT test definition

<table>
<tr><th>Item</th><th colspan="4">Fundamental emission output power</th></tr>
<tr><td rowspan="3">Device Category</td><td>☐</td><td colspan="3">Fixed point-to-point</td></tr>
<tr><td>☐</td><td colspan="3">Emit multiple directional beams, simultaneously or sequentially</td></tr>
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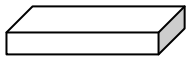
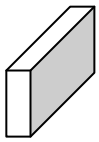
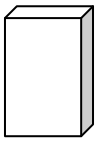
<tr><td>  </td><td>  </td><td>  </td></tr>
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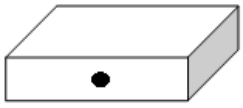
<tr><td>☒</td><td colspan="3">Conducted</td></tr>
<tr><td>☐</td><td colspan="3">Chain 0</td></tr>
<tr><td></td><td colspan="3">  </td></tr>
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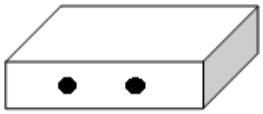
<tr><td></td><td colspan="3">  </td></tr>
<tr><td>☐</td><td>Chain 0</td><td>Chain 1</td><td>Chain 2</td></tr>
<tr><td></td><td colspan="3">  </td></tr>
</table>

8.6. Test Result

Product Name	:	300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power	:	AC 120V/60Hz
Test Mode	:	Mode1~4	Test Site	:	TR8
Test Date	:	2017.04.11			

Mode	Channel	Test Frequency (MHz)	Average Power Output (dBm)		Total Power (dBm)	Directional Gain (dBi)	Limit (dBm)	Result
			Ant 0	Ant 1				
1	01	2412	20.57	20.76	23.68	2	30	Pass
1	02	2417	20.62	20.88	23.76	2	30	Pass
1	06	2437	22.43	22.32	25.39	2	30	Pass
1	10	2457	19.67	19.87	22.78	2	30	Pass
1	11	2462	19.78	19.99	22.90	2	30	Pass
2	01	2412	17.16	17.44	20.31	2	30	Pass
2	02	2417	18.95	19.21	22.09	2	30	Pass
2	06	2437	22.46	22.19	25.34	2	30	Pass
2	10	2457	17.34	17.84	20.61	2	30	Pass
2	11	2462	15.64	15.97	18.82	2	30	Pass
3	01	2412	16.05	16.31	19.19	2	30	Pass
3	02	2417	18.46	18.95	21.72	2	30	Pass
3	06	2437	22.21	22.18	25.21	2	30	Pass
3	10	2457	17.74	18.21	20.99	2	30	Pass
3	11	2462	15.25	15.84	18.57	2	30	Pass

4	03	2422	13.68	13.98	16.84	2	30	Pass
4	04	2427	13.56	13.87	16.73	2	30	Pass
4	06	2437	22.12	21.74	24.94	2	30	Pass
4	08	2447	13.49	13.82	16.67	2	30	Pass
4	09	2452	11.35	11.52	14.45	2	30	Pass

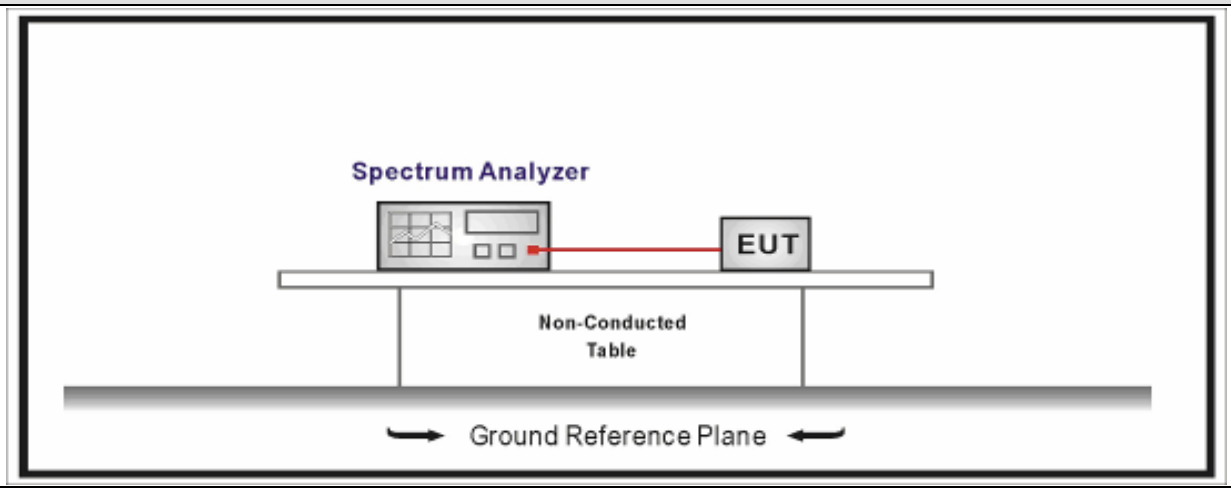
9. Power Spectral Density

9.1. Test Equipment

Power Spectral Density / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2017.02.04	2018.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2017.04.09	2018.04.08
MXA Signal Anlyzer	Keysight	N9020A	MY56060147	2017.04.09	2018.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2017.04.10	2018.04.09
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

9.2. Test Setup

Power Spectral Density test setup



9.3. Limit

Power Spectral Density Limit

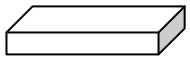
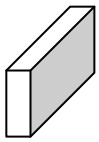
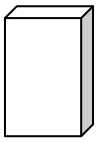
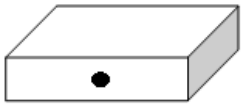
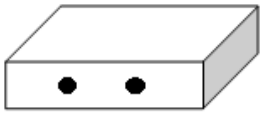
Power Spectral Density

9.4. Test Procedure

Power Spectral Density Test Method			
	References Rule	Chapter	Description
☒	ANSI C63.10	11.10	Maximum power spectral density level in the fundamental emission
	☒ ANSI C63.10	11.10.2	Method PKPSD (peak PSD)
	☐ ANSI C63.10	11.10.3	Method AVGPSD-1(Duty cycle

Directional Gain Calculations for In-Band test method				
	Referred Rule		Chapter	Description
☐	KDB 662911		F2)a)	Basic methodology with NANT transmit antennas
	☐	KDB 662911	F2)a) (i)	transmit signals are correlated
	☐	KDB 662911	F2)a) (ii)	transmit signals are uncorrelated
☐	KDB 662911		F2)b)	Sectorized antenna systems.
☐	KDB 662911		F2)c)	Cross-polarized antennas
	☐	ANSI C63.10	F2)c) (i)	Cross-polarized antennas with NANT = 2.
	☐	ANSI C63.10	F2)c) (ii)	Multiple antennas
☐	KDB 662911		F2)e)	Spatial stream
	☐	KDB 662911	F2)e) (i)	Antennas have the same gain
	☐	KDB 662911	F2)e) (ii)	Antenna have the different gain with one spatial stream
	☐	KDB 662911	F2)e) (iii)	Antenna have the different gain with more than one spatial stream
☒	KDB 662911		F2)f)	Cyclic Delay Diversity (CDD)
	☒	KDB 662911	F2)f) (i)	Antennas have the same gain
	☐	KDB 662911	F2)f) (ii)	Antenna have the different gain with one spatial stream
	☐	KDB 662911	F2)f) (ii)	Antenna have the different gain with more than one spatial stream

9.5. EUT test definition

<table>
<tr><th>Item</th><th colspan="4">Power Spectral Density Test Method</th></tr>
<tr><td rowspan="3">Device Category</td><td>☐</td><td colspan="3">Fixed point-to-point</td></tr>
<tr><td>☐</td><td colspan="3">Emit multiple directional beams, simultaneously or sequentially</td></tr>
<tr><td>☒</td><td colspan="3">Other cases</td></tr>
<tr><td>Test mode</td><td colspan="4">Mode 1~4</td></tr>
<tr><td rowspan="13">Test method</td><td>☐</td><td colspan="3">Radiated</td></tr>
<tr><td rowspan="3"></td><td>X Axis</td><td>Y Axis</td><td>Z Axis</td></tr>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td>Worst Axis ☐</td><td>Worst Axis ☐</td><td>Worst Axis ☐</td></tr>
<tr><td>☒</td><td colspan="3">Conducted</td></tr>
<tr><td>☐</td><td colspan="3">Chain 0</td></tr>
<tr><td></td><td colspan="3">  </td></tr>
<tr><td>☒</td><td>Chain 0</td><td colspan="2">Chain 1</td></tr>
<tr><td></td><td colspan="3">  </td></tr>
<tr><td>☐</td><td>Chain 0</td><td>Chain 1</td><td>Chain 2</td></tr>
<tr><td></td><td colspan="3">  </td></tr>
</table>

9.6. Test Result

Product Name	:	300Mbps Wi-Fi Range Extender with Power Outlet Pass-through	Power	:	AC 120V/60Hz
Test Mode	:	Mode1~4	Test Site	:	TR8
Test Date	:	2017.04.11			

Mode	Channel	Test Frequency (MHz)	Measurement PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	Directional Gain (dBi)	Limit (dBm/3kHz)	Result
			Ant 0	Ant 1				
1	01	2412	-3.232	-3.034	-0.12	5	8.0	Pass
1	06	2437	-3.042	-3.344	-0.18	5	8.0	Pass
1	11	2462	-2.966	-3.444	-0.19	5	8.0	Pass
2	01	2412	-4.285	-4.082	-1.17	5	8.0	Pass
2	06	2437	-3.378	-3.819	-0.58	5	8.0	Pass
2	11	2462	-4.058	-4.498	-1.26	5	8.0	Pass
3	01	2412	-4.012	-2.309	-0.07	5	8.0	Pass
3	06	2437	-3.581	-4.206	-0.87	5	8.0	Pass
3	11	2462	-4.062	-4.507	-1.27	5	8.0	Pass
4	03	2422	-6.010	-11.372	-4.90	5	8.0	Pass
4	06	2437	-4.626	-4.932	-1.77	5	8.0	Pass
4	09	2452	-13.23	-13.058	-10.13	5	8.0	Pass

Mode 1 CH11(2462MHz) Ant 1

10. Antenna Requirement

10.1. Limit

Antenna Requirement Limit
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

10.2. Antenna Connector Construction

Antenna Connector Construction	
☒	The use of a permanently attached antenna
☐	The antenna use of a unique coupling to the intentional radiator
☐	The use of a nonstandard antenna jack or electrical connector
Please refer to the attached document “Internal Photograph” to show the antenna connector.	

The End